

# INEQUALITY AND ECONOMIC MARGINALISATION



## Inequality, unemployment and poverty in South Africa

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## ABOUT THIS RESEARCH

The 2007 Annual Report of the Accelerated Shared Growth Initiative of South Africa (AsgiSA) identified a need to focus on what was then called 'the second economy', and on mechanisms to ensure shared growth reaches the margins of the economy. The Second Economy Strategy Project was initiated in this context. It reported to the AsgiSA High Level Task Team in the Presidency, but was located outside government in TIPS.

A review of the performance of government programmes targeting the second economy was completed in early 2008. The project then commissioned research and engaged with practitioners and policymakers inside and outside government. A strategic framework and headline strategies arising from this process were approved by Cabinet in January 2009, and form part of the AsgiSA Annual Report tabled on 16 April 2009.

In South Africa, people with access to wealth experience the country as a developed modern economy, while the poorest still struggle to access even the most basic services. In this context of high inequality, the idea that South Africa has 'two economies' can seem intuitively correct, and has informed approaches that assume there is a structural disconnection between the two economies. The research and analysis conducted as part of the Second Economy Strategy Project highlighted instead the extent to which this high inequality is an outcome of common processes, with wealth and poverty in South Africa connected and interdependent in a range of complex ways. The different emphasis in this analysis leads to different strategic outcomes.

Instead of using the analytical prism of 'two economies', the strategy process placed the emphasis on the role of structural inequality in the South African economy, focused on three crucial legacies of history:

- The structure of the economy: its impacts on unemployment and local economic development, including competition issues, small enterprise, the informal sector, value chains and labour markets.
- Spatial inequality: the legacy of the 1913 Land Act, bantustans and apartheid cities, and the impacts of recent policies, looking at rural development, skewed agriculture patterns, and the scope for payment for environmental services to create rural employment.
- Inequality in the development of human capital: including education and health.

TIPS's work around inequality and economic marginalisation is built on the outcomes of this strategy process.

The research undertaken under the auspices of the Second Economy Strategy Project continues to be relevant today as government explores policy options to reduce inequality and bring people out of the margins of the economy. This report forms part of that research.

A list of the research completed is available at the end of this report. Copies are available on the TIPS website: [www.tips.org.za](http://www.tips.org.za).

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## ABSTRACT

Unemployment and earnings inequality in South Africa have declined in recent years, while the trend in overall income inequality is unclear. Inequality and unemployment both remain at extremely high levels by historical and international standards. There has been a very close relationship between trends in unemployment and earnings inequality in recent years. The decomposition of earnings inequality by employment status reveals the importance of unemployment in accounting for the level and trend of earnings inequality. The distribution of employment in the formal and informal sectors is also found to be important in explaining earnings inequality, as is wage dispersion within each of these sectors. Decomposing overall income inequality by income source confirms the overwhelming importance of earnings in income inequality more generally. Inequality is only likely to be dramatically reduced through a significant expansion of decent work for the low- and semi-skilled. Simulations of an expansion of low-wage employment show that this would reduce inequality, but the effect would be limited if wages are too low. While the introduction of a minimum wage would be expected to reduce inequality, its overall effects are contingent on the extent of any associated job losses.

We frame government's stated target of halving poverty by 2014 in terms of specific measures of the poverty gap and poverty headcount ratio. Growth alone will be insufficient to halve poverty, and any worsening of inequality will put the target of halving poverty by 2014 beyond reach. However, simulating the effects of a range of growth and distributional scenarios indicate that halving poverty is feasible with reasonable growth rates and some equalising distributional change.

Keywords: Inequality, income distribution, earnings distribution, unemployment, poverty, South Africa.

JEL codes: D30, E24, I32, I38, J31, J68.

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## EXECUTIVE SUMMARY

### Introduction

It is well-known that the levels of both inequality and unemployment in South Africa are amongst the highest in the world. While some relationship between inequality and unemployment would be expected, it is unclear a priori quite how these affect each other, and how this relationship has changed over time. One central issue which this research tackles is therefore how much of inequality, and of the changes in inequality over time, can be explained by unemployment and other dimensions of employment structure.

While we would expect unemployment to be part of the story explaining inequality, the nature of employment would surely also be relevant. It is generally thought that wage dispersion has increased in South Africa, and also that there has been a shift in employment structure towards the informal sector and towards various forms of atypical employment. How much have these changes in employment structure contributed to inequality?

The second main issue which this report tackles is the growth and distributional aspects of meeting the AsgiSA targets for poverty reduction. AsgiSA sets targets for growth rates and for halving unemployment and poverty by 2014. Inequality is not explicitly targeted, but the targets for growth, unemployment, and poverty would both imply and require distributional change. Distributional change can be thought of as the 'missing link' in the relationship between growth and poverty reduction. We thus factor distributional change explicitly into the analysis of the AsgiSA growth and poverty targets, asking what distributional change would be required to halve poverty under a range of growth scenarios.

This executive summary highlights some of the key issues addressed in the report, while skipping over much of the details, technical and methodological issues, and nuances of the analysis.

### The relationship between unemployment and inequality

Two main themes emerge from the dominant international literature on the relationship between labour markets and inequality. Firstly, there is a prominent view that increases in unemployment and wage inequality are 'alternative' results of changes in the structure of the demand for labour, specifically of relative labour demand. An adverse trade or technology shock may lead to some combination of lower wages in existing jobs, loss of some existing jobs and re-employment in lower-wage jobs, and loss of some existing jobs without replacement. Insofar as the jobs affected are disproportionately low-wage jobs, as is most likely to be the case empirically, any of these outcomes will tend to increase inequality. The particular combination of these three outcomes that an economy experiences in response to an adverse shock depends on various institutional features. In this type of thinking in the literature, unemployment and inequality are essentially viewed

as alternative equilibrating mechanisms to technological, trade, or other shocks that affect the relative demand for different types of labour.

However, this apparent trade-off between increases in unemployment and inequality is not unidimensional or linear. Furthermore, to the extent that unemployment is a structural macroeconomic problem, and particularly to the extent that it is a product of problems in macroeconomic management, it cannot be considered in narrow labour market terms or as a result of excessive wages.

The nature and extent of the perceived 'trade-off' between changes in unemployment and in inequality are also subject to policy interventions. No 'exogenous shock' is ever completely delinked from policy choices. The vulnerability of a country to such a shock is affected by previous policy choices (for example, around financial and capital account liberalisation). In addition, the way in which a shock affects an economy is subject to policy mediation. The distributional impact of any exogenous shock is not predetermined. Even if the shock would have primarily or disproportionately affected low income earners, some of these costs can be redistributed (through fiscal and other measures) such that the net impact on inequality is mitigated.

However, in the absence of specific measures to counteract this, a change in relative labour demand in which the demand for unskilled or low-skilled labour falls and is indeed likely to result either in higher rates of unemployment or in increased wage inequality, or more likely in a combination of these.

A second major theme of the literature is a consistent finding of a negative causal relationship between unemployment and inequality. Internationally, time-series analysis of the effects of unemployment on inequality within countries generally finds that increases in unemployment worsen income inequality.

Several studies, utilising earlier datasets than those used for this report, find a strong relationship between labour market issues and inequality in South Africa. Relevant findings from the existing literature include that unemployment contributed to increasing inequality; that earnings inequality contributes most to overall income inequality; and that labour market factors are significant contributors to households' movements in and out of poverty.

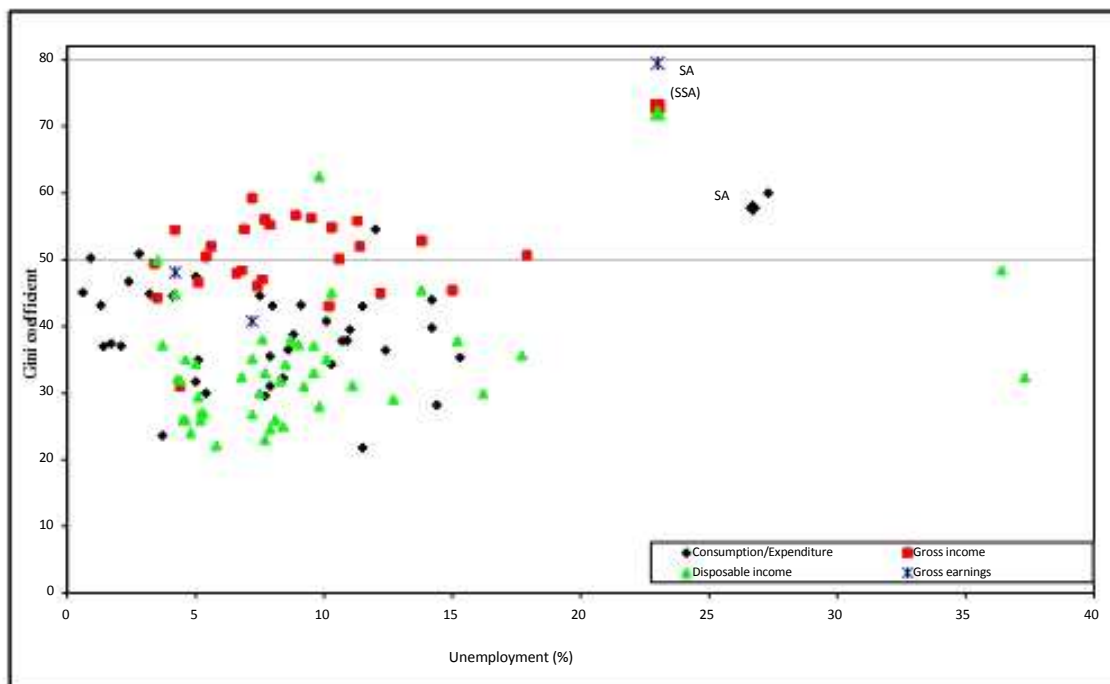
See section 2 of the report for more on the theoretical relationship between labour markets, unemployment, and inequality, and a critical review of the international literature in this regard. Findings from the South African literature on the relationship between labour markets and inequality are summarised in section 5.1.

## Inequality in South Africa

The poorest decile in South Africa has levels of consumption below those of the poorest decile in countries such as China, Peru, Morocco, and Indonesia. Meanwhile at the other end of the spectrum, the richest decile receives income at levels well above those in other countries at a similar or higher level of development and which are also regarded as highly unequal (such as Brazil, Mexico, and Argentina), and above that of new members of the EU such as the Czech Republic or Poland. The income levels of the richest decile in South Africa is actually not that far below that of some European countries such as the Netherlands, since although such countries have much higher levels of income per capita it is far more equitably distributed than in South Africa.

South Africa has extremely high levels of inequality by international standards, but our combination of inequality and unemployment is almost unique internationally. The chart below shows countries' levels of unemployment and inequality internationally. South Africa stands out as a clear outlier; only Lesotho is in the same neighbourhood. Notwithstanding the problems of data and comparability of these variables internationally, it is clear that there is something particular and wrong in the case of South Africa.

Fig. a: International comparison of inequality and unemployment



The Lorenz curves of income and expenditure are shown in Figure b (the dashed diagonal line represents a completely equal distribution). The Gini is 0.72 for income and 0.67 for expenditure.

Fig. b: Lorenz curves of income and expenditure

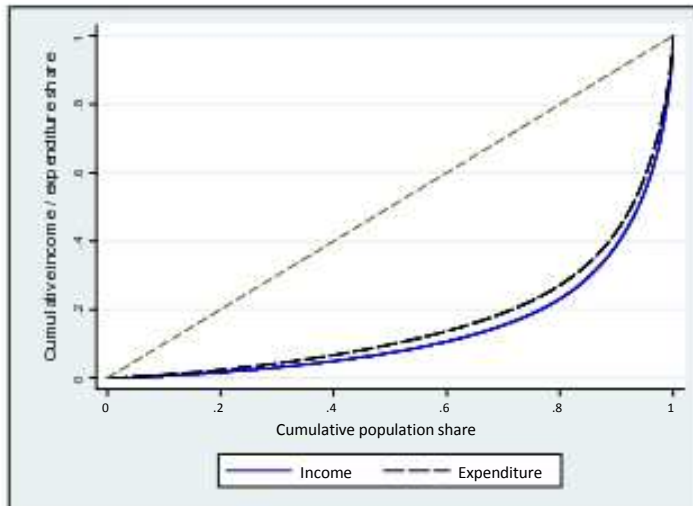
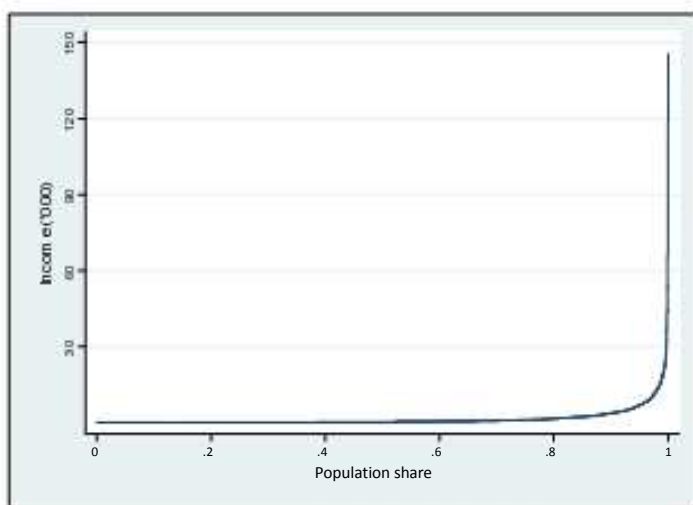
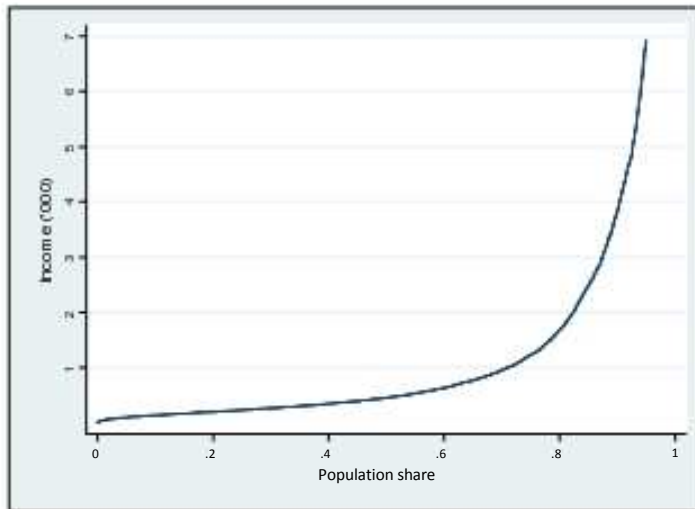


Fig. c: Pen's Parade of Income



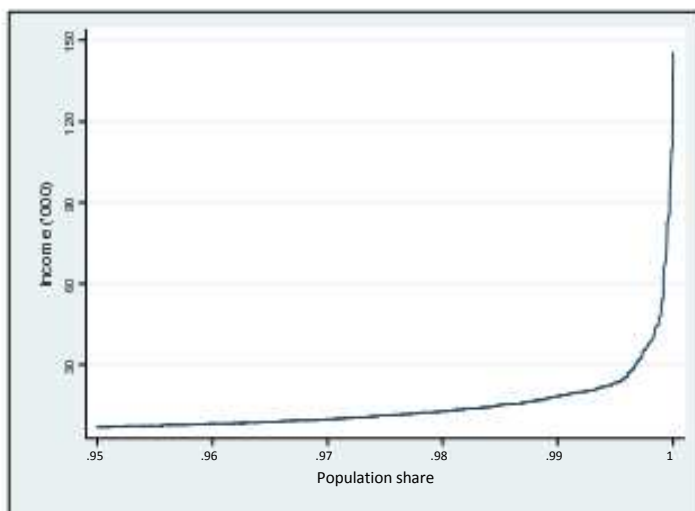
In this 'parade' the height of each person denotes their income, with distribution represented by a 'parade' of people walking past from poorest to richest. The actual income of a person at any point of the distribution can be read directly off the vertical axis. Even knowing how unequally income is distributed, the curvature of the plot is amazing. It appears flat for most of the distribution, rising extremely steeply at the top end.

Fig. d: Pen's Parade of Income excluding top 5%



The extreme convexity of Pen's Parade of South African income distribution makes it difficult to observe the distributional pattern for all but the top end. We thus break the distribution up and show the Pen Parade for the 'bottom' 95% and thereafter the same for the top 5% of the distribution. As we go up the distribution, income increases at an increasing rate.

Fig. e: Pen's Parade of Income of top 5%



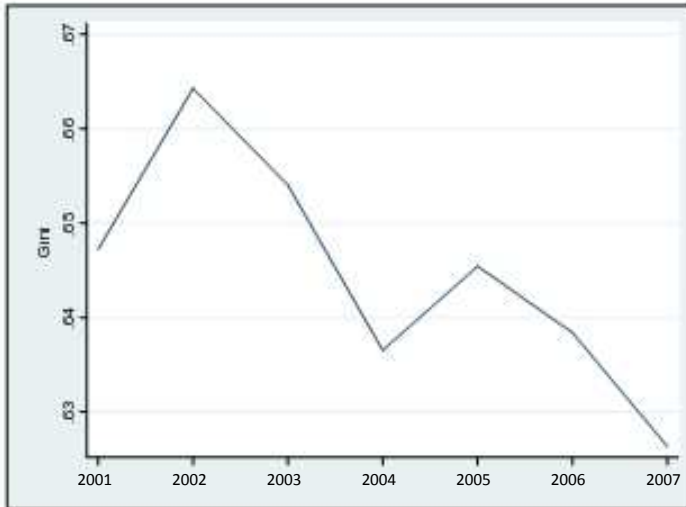
Even amongst the richest 5%, the distribution of income is extremely convex. It is amongst the highest 1% that the distribution is most steeply distorted. We can clearly see the presence of a small group of super-rich in South Africa, whose incomes depart radically from those of even the rest of the extremely wealthy.

In section 3.2 of the report we show a range of measures of inequality, using each of income and expenditure, several different ways of converting household to per capita values, and a variety of indices of inequality.

Somewhat surprisingly, earnings inequality has actually declined over the past five years or so, after a sustained rise up to late 2002.



Fig. f: Earnings inequality amongst employed, 2001-2007



This seems to be basically because of some relative gains for the lower segments of the employed, with relative losses amongst the middle-upper parts of the distribution. Figure g below shows how the share of each tenth of the earnings distribution changed between 2001 and 2007. Figure h shows the real growth rates of earnings experienced by different parts of the distribution over the same period.

Fig. g: Change in earnings share by decile

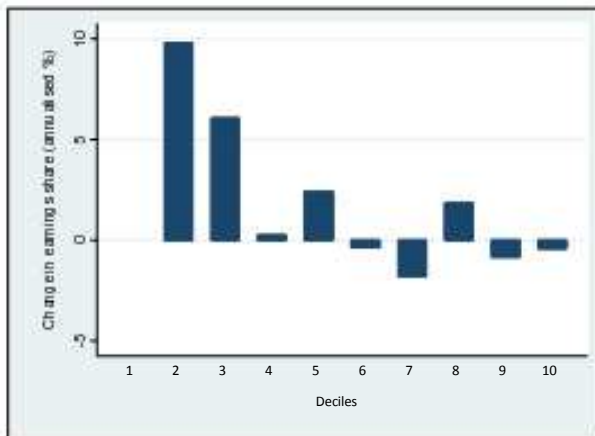
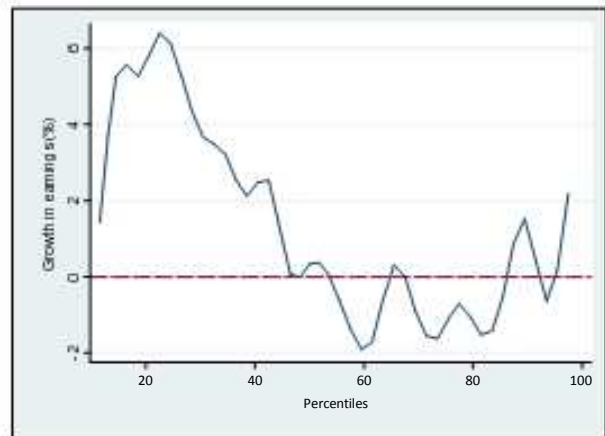


Fig. h: Growth incidence curve of earnings



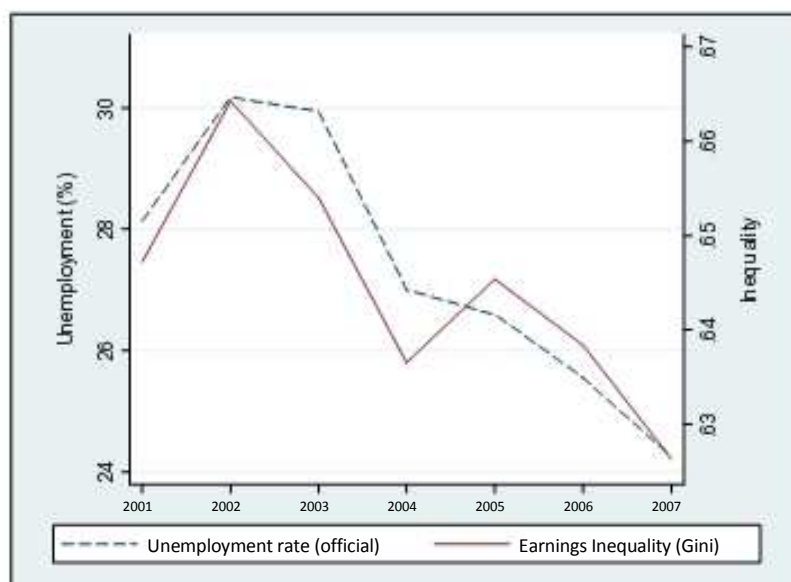
See section 3.3 for more detail on the recent trends in inequality.

### Trends in inequality and unemployment

The trend in earnings inequality is remarkably closely matched by the trend in unemployment, as shown in figure h below. Both peaked in the second half of 2002 and have been coming down since then. It is surprising how close this relationship appears to be - and this holds with various measures of inequality and for both the official and expanded definitions of unemployment, as shown in the report. There is no clear evidence

here for a trade-off between changes in inequality and unemployment, as the international literature suggests there might be.

Fig. i: Unemployment and earnings inequality among employed



We suggest three explanations for this apparent relationship. Firstly, a direct causal relationship running from the rate of unemployment to the level of earnings inequality, operating through the effects of changes in unemployment on the composition of the employed. For instance, a fall in the rate of unemployment would have an equalising effect on earnings inequality if those gaining net new jobs resulted in a ‘thickening out’ of the middle section of the income distribution. Secondly, an indirect causal relationship from the rate of unemployment to earnings inequality, through ‘reserve army’ type effects. The higher the rate of unemployment among the less-skilled, the lower the bargaining power of the less-skilled who are employed, and the lower their wages are likely to be relative to the higher-skilled in the middle and upper parts of the earnings distribution. Thirdly, that unemployment and earnings distribution are both driven by common underlying factors associated with the changing distributional character of the growth path.

Should these trends continue, this would bode well for reducing both inequality and unemployment. The pace at which earnings inequality and unemployment have been falling since about 2002/2003 is slow, given the depth of each of these problems.

Section 4 shows the trends in unemployment in more detail, and also analyses the incidence of unemployment in terms of race, sex, age, and education level. Section 5.2 looks in more detail at the relationship between inequality and unemployment over time.

How much do earnings from work explain of overall inequality?

Work income is very important to households' economic status. Households that receive no income from work have far lower levels of overall income and expenditure than households that do receive some income from work. 92% of households receiving no income from work are African, and 63% are female-headed.

We decomposed total income inequality to find out how much is accounted for by inequality in earnings, and how much by other components of income such as income from capital or welfare grants. Income from work accounts for 79% of total income inequality (which is an even higher proportion of total income inequality than its share in total income).

See section 5.3 for further analysis of the importance of income from work, and more details on the decomposition of total income inequality by income source

How does labour market structure affect earnings inequality?

We use decomposition analysis to investigate how much of earnings inequality can be accounted for by the fact that the employed receive earnings and the unemployed do not, and how much can be accounted for by inequality in earnings amongst the employed. The results vary considerably according to which measure of inequality we use, but what is clear is that both the rate of unemployment and earnings dispersion amongst the employed are very important in explaining overall earnings inequality, with neither being overwhelmingly dominant over the other.

The division amongst the employed between the formal and informal sectors is also germane to earnings inequality. Wage dispersion within each of the formal and informal sectors is important in explaining the overall level of earnings inequality. But perhaps of somewhat greater importance are the gaps between the average earnings of the formal and informal sectors and between these are the zero earnings received by the unemployed. These findings suggest that reducing the rate of unemployment, moving people from the informal to formal sectors, closing the wage gap between the formal and informal sectors, and reducing earnings dispersion within each of the formal and informal sectors are all important to bringing down overall earnings inequality.

We also ask how much of the changes in inequality over time can be explained by unemployment and by the structure of employment. The results from dynamic decompositions of earnings inequality point to the importance of changes in the proportions of people employed and unemployed in explaining changes in earnings inequality within the labour force. Both during the period of increasing unemployment and inequality and during the subsequent period in which both declined, most of earnings inequality across the entire labour force can be accounted for by changes in the rate of unemployment. This finding highlights the huge importance of the unemployment rate in explaining earnings inequality.

See section 5.4.1. and 5.4.2 for more on the static decomposition of earnings inequality by labour market status and employment type, and section 5.4.3 for the dynamic decomposition of the changes in earnings inequality over time.

How much could a minimum wage reduce earnings inequality?

The introduction of a national minimum wage has had a significant impact in reducing poverty and inequality in other countries. South Africa has no minimum wage at present, and many people in full-time employment currently earn extremely low wages. We explore several scenarios as to how much a low minimum wage of R1000 might affect earnings inequality.

A minimum wage of R1000 applying only to people employed by someone else and enforced only in the formal sector could reduce the Gini of earnings amongst the employed from 0.63 to 0.60. This could raise the wages of about 1.6 million workers, and would cost under 2% of the current wage bill. However, if extensive job losses were to result from the introduction of a minimum wage, much of its equalising influence could be negated (unless active steps are taken to avoid these). Further research is needed, focused specifically on modelling the introduction of a minimum wage, to gauge what its full impact might be.

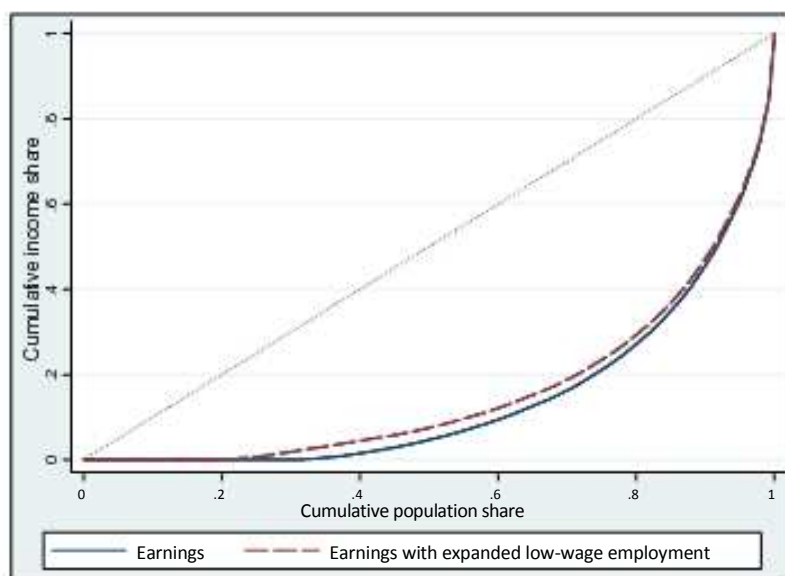
A fuller analysis of the effects of a minimum wage on earnings inequality can be found in section 6.1 of the report.

How much might expanded low-wage employment reduce earnings inequality?

We also simulated an expansion of low-wage employment on earnings inequality. This could be a deliberate strategy to create low-wage jobs, or a by-product of a growth path which increases demand for jobs at the bottom end of the earnings distribution.

We looked at scenarios in which between a third and two-thirds of the unemployed gained employment, either at the current median informal sector wage (R800 per month) or the average informal sector wage (R1461 per month) as benchmarks of low-wage employment. Inequality would be brought down under all of these scenarios. The current Gini coefficient of 0.71 for earnings across the whole labour force would be reduced to levels between 0.64 and 0.69, depending on the scenario.

Fig. j: Lorenz curves of earnings, simulated earnings with expanded low-wage employment



To illustrate, figure j compares the Lorenz curve of current earnings (across the labour force) with the Lorenz curve if half of the unemployed were employed at just R800 per month.

An expansion of low-wage employment would bring down earnings inequality amongst the labour force. As would be expected, inequality falls more the greater the proportion of the unemployed brought into low-wage employment, and the higher the wage which they are employed at. The expansion of employment at these low wages (the median informal wage in particular) does not make as much of an impact on inequality as could be the case if wages were not as low. For instance, a scenario in which half of the unemployed were to gain employment would mean a huge change in the labour market and almost 2 million new jobs; were these jobs to be only at the median informal wage the reduction in the Gini coefficient from 0.71 to 0.68 is significant but is mitigated by the low wage.

See section 6.2 for the analysis of how expanded low-wage employment could affect inequality under various assumptions.

Growth, inequality, and poverty: How can we halve poverty by 2014?

AsgiSA sets targets of halving the rates of unemployment and of poverty by 2014. A reduction in inequality is not explicitly targeted in its own right, but halving poverty would have distributional implications.

Government is still in the process of finalising the poverty line to be used to frame the target of halving poverty. We thus use the lower line suggested in the Statistics SA/National Treasury Discussion Document, inflated appropriately (to March 2006 to use with the most recent IES data), yielding a poverty line of R450 per person per month. We measure poverty using both the poverty headcount ratio (what proportion of people fall below the poverty line) and the poverty gap (which is the sum of the gaps between the poverty line and the income or expenditure of people falling below it). This is important for indicating both the incidence and the intensity of poverty.

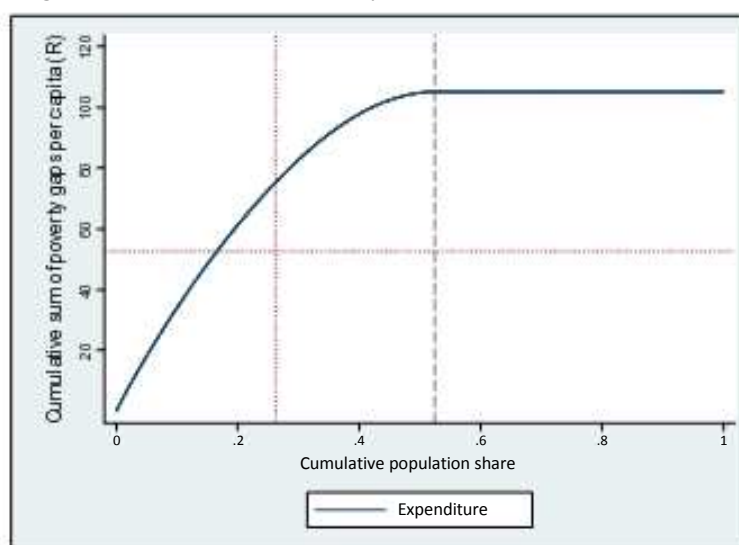
We thus frame the ‘halving of poverty’ target as cutting the percentage of people falling below the poverty line to 25% and reducing the poverty gap to R30 billion by 2014.

Section 7.1 discusses various options for a poverty line, the implications of using the poverty headcount ratio or poverty gap, and how the AsgiSA target of halving poverty can be framed in monetary terms.

Poverty under the current distribution of expenditure and under the various scenarios we will consider are shown below using TIP curves. These plot the cumulative population share against the cumulative sum of poverty gaps. A TIP curve indicates the incidence of poverty, in terms of the poverty headcount ratio, which is the point at which the curve flattens out. Everyone to the right of this point is above the poverty line. The intensity of poverty is shown by the height of the curve. Thus if we are comparing two TIP curves, the higher one shows a distribution with a greater poverty gap. The curve which flattens out to the right of the other one has a higher poverty headcount ratio. The TIP curve is thus useful in showing both of the dimensions of poverty relevant to the target of halving poverty - the poverty gap and poverty headcount ratio - under the various scenarios.

Figure k: TIP curve of current expenditure

About half the population currently falls under the poverty line. This can be seen as the point at which the curve becomes flat, at about 0.5. Halving the poverty headcount ratio means cutting it to about a quarter, as shown by the dotted vertical line at about 0.26. For the poverty headcount ratio to be halved, the curve thus needs to flatten out to the left of the dotted



vertical line. The poverty gap per person over the whole population (i.e. the average poverty gap per person and not just amongst the poor) can be read off the y-axis at the point where the TIP curve becomes flat: here it is about R105 per person per month. Halving the poverty gap would mean bringing it down to about R53 per person, and this target is shown by the horizontal dashed line.

To sum up, meeting the targets of halving both the poverty gap and the poverty headcount ratio would mean bringing the point of the TIP curve at which it becomes flat below the horizontal dotted line (for the poverty gap) as well as to the left of the vertical dotted line (for the poverty headcount ratio).

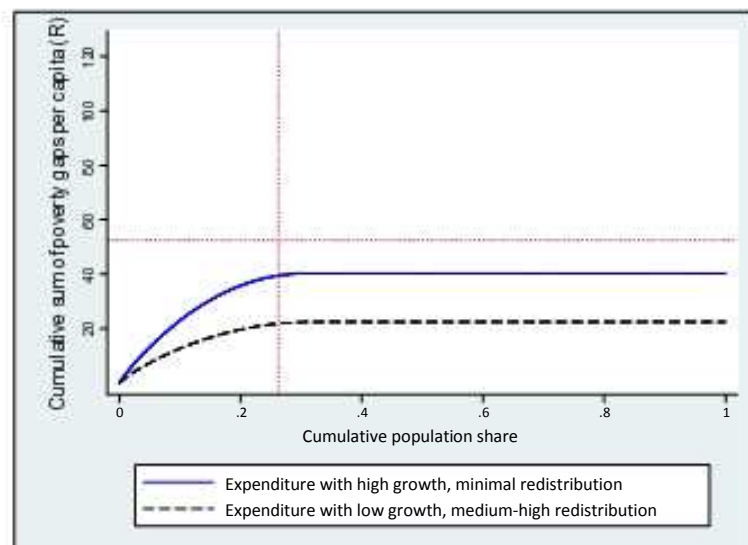
Our analysis shows that even if the growth rates targeted in AsgiSA through to 2014 were to materialise, poverty would be significantly reduced but cannot be halved with the current distribution. If actual growth is closer to the rates forecast by National Treasury or by the private sector, we will be further from meeting the targets. Poverty cannot be halved by 2014 through growth alone.

In section 7.2 we explore how poverty could be reduced with growth alone under the current distribution, under alternative growth forecasts.

We therefore investigate what growth-distribution scenarios could allow South Africa to meet this target. A range of equalising distributional changes are simulated in which the income or expenditure of the poorest South African increases by between R50 and R300 per month, with the gain decreasing incrementally up the distribution to a 'neutral' point (such as the person in the middle of the distribution, or the person at the 75<sup>th</sup> percentile), and thereafter relative losses. These distributional changes thus keep average income or expenditure constant, but look at fairly small changes in its distribution. The distributional changes simulated here are not intended as transfers, but as proxies for the distributional effects of more pro-poor growth paths. Combining these distributional changes with a range of growth scenarios between 3% and 7% per annum yields sixty different growth/distributional scenarios, for which we can compare the impact on poverty and inequality.

Figure I: TIP curve under growth/distribution scenarios

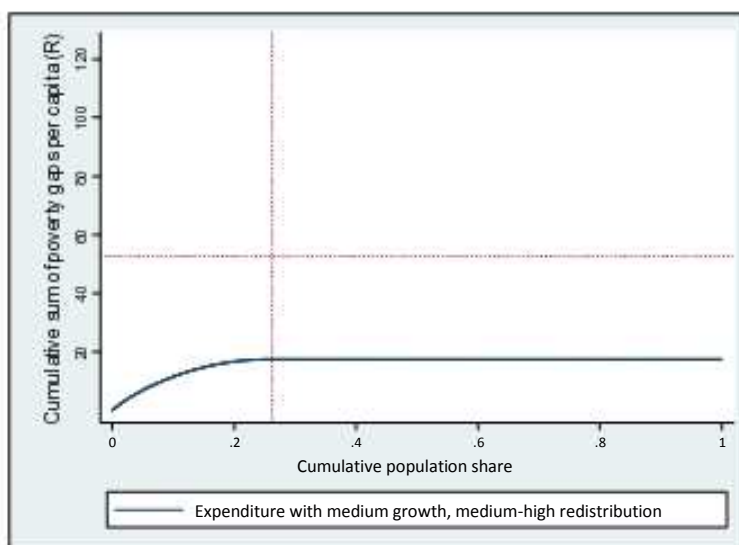
Two such scenarios are shown here. The solid line shows the expenditure pattern that would result from 6% GDP average growth, combined with a progressive distributional change in which the poorest South African is just R50 better off than they would otherwise have been. The dashed line shows a scenario in which growth is fairly low at 3% per annum but with more intensive distributional



change, so the poorest person gaining an additional R200 per month (with decreasing amounts thereafter). The poverty gap is halved in both of these scenarios (as can be seen by the fact that both curves lie below the horizontal dotted line). However, while the poverty headcount ratio is reduced in both cases, this is by less than half (both curves flatten out a bit to the right of the vertical dotted line). Neither of these particular growth/distribution combinations is quite enough to halve the proportion of people living below the poverty line.

This is a scenario in which both the poverty gap and the poverty headcount ratio are halved. In this simulation GDP grows at 4% per annum, while in terms of distribution the poorest person benefits from an additional R200 per month. The TIP curve for this scenario falls well below the horizontal dotted line, indicating that the poverty gap is actually cut by much more than half. It flattens out to the left of the vertical dotted line,

Figure m: TIP curve of scenario halving poverty gap and headcount ratio



showing that the poverty headcount ratio is cut by at least half. This growth/distribution scenario is one in which the AsgiSA target of halving poverty is achieved. Furthermore, it is in the realm of scenarios which seem to be feasible.

A sample of the results are summarised in tables a and b below. Table a shows under which combinations of growth and distributional change the poverty headcount ratio could be halved (H) and the poverty gap could be halved (G), using expenditure and with distributional changes revolving around the 66.6<sup>th</sup> percentile. Growth/distributional scenarios in which poverty is halved are shaded in. The level of inequality under each scenario is shown in table b.

Table a: Meeting of poverty targets under alternative growth/distribution scenarios

Growth	Distribution				
	R300	R200	R100	R50	None
7%	H, G	H, G	H, G	-, G	-, G
6%	H, G	H, G	-, G	-, G	-, G
5%	H, G	H, G	-, G	-, G	-, -
4%	H, G	H, G	-, G	-, -	-, -
3%	H, G	-, G	-, G	-, -	-, -

Notes:

Growth refers to the average annualised growth rate between 2006 and 2014.

Distribution refers to the distribution scenarios as set out in the text. R300 means that the expenditure of the poorest person is R300 per month higher than it would otherwise have been (with amounts decreasing from there as income rises); similarly for R200, R100, and R50.

For each scenario (growth/distribution combination), H means that the poverty headcount ratio is at least halved and G indicates that the poverty gap is at least halved; - means that those measures are not halved.



Table b: Inequality (Gini coefficient) under alternative growth/distribution scenarios

Growth	Distribution				
	R300	R200	R100	R50	None
7%	0.61	0.63	0.65	0.66	0.67
6%	0.60	0.62	0.65	0.66	0.67
5%	0.60	0.62	0.65	0.66	0.67
4%	0.59	0.62	0.64	0.66	0.67
3%	0.58	0.61	0.64	0.66	0.67
-	0.56	0.60	0.63	0.65	0.67

Some important conclusions can be drawn from these scenarios concerning the meeting of the AsgiSA poverty target.

Firstly, the AsgiSA target of halving poverty by 2014 is achievable. It should certainly not be given up upon or treated as some distant goal or rhetorical aspiration.

Secondly, it is highly improbable that the AsgiSA poverty reduction targets will be met without a pro-poor shift in the growth trajectory. Growth alone will not allow us to halve poverty. Furthermore, it is unlikely that the growth path would endogenously evolve in a sufficiently pro-poor way, without active policy interventions designed to achieve this.

Thirdly, these scenarios warn that any worsening of inequality will make the meeting of the AsgiSA poverty targets virtually impossible. Specifically, should distribution worsen for the bottom half of the population, improbably high growth rates would be needed to halve poverty. South Africa thus cannot afford any worsening of inequality if we are to halve poverty by 2014.

Fourthly, the temptation to set the poverty line too low should be avoided. It currently appears that, notwithstanding the background research by Stats SA into the minimum amount which could be used for a poverty line, government is considering setting it even lower than this level. This might be motivated at least in part by the realisation of just how many people would fall under such a line, and perhaps a concern that it would be difficult to halve that number of people within a reasonable timeframe. One insight that emerges from this analysis is that even middling growth with no distributional change takes us a long way towards halving of poverty by 2014, and with some pro-poor distributional change the halving of poverty is eminently feasible. While a poverty line in the region of R450 per person per month means that a very large number of South Africans would currently be classified as poor, this should not necessarily motivate the choice of a lower poverty line given the feasibility of dramatically cutting poverty over the next few years.

See section 7.3 for more on how we modelled various distributional changes, and how poverty would be affected under a range of growth/distributional scenarios.

## Conclusions

Our empirical investigation points to the critical importance of addressing the crisis of unemployment if South Africa's scandalously high levels of inequality are to be brought down. Earnings from work account for most of total income, and the inequality in households' receipt of earnings from work account for almost 80% of overall income inequality. We found a surprisingly close relationship between the trends in unemployment and in earnings inequality over time. This suggests that rather than there being a trade-off between employment generation and reducing inequality, similar policies might address both of these issues. A shift in the growth path in which the relative and absolute demand for unskilled and semi-skilled labour increased could bring down both unemployment and inequality.

The relevance of unemployment to inequality is underscored by the results from the static and dynamic decomposition analyses of earnings inequality. The rate of unemployment was found to account for a significant part of earnings inequality. Further, changes in unemployment account for most of the changes in inequality, both during the rise in inequality up to late 2002 and during the subsequent decline.

However, earnings dispersion amongst the employed as well as the proportions of people in the formal and informal sectors, are also important contributors to inequality amongst the labour force as a whole. Wage gaps in South Africa are ridiculously high by international standards. Having established the centrality of addressing unemployment in order to address inequality, we also cannot say that just 'any jobs' would really bring down inequality even if these jobs are very badly paid. An increase in the dispersion of earnings amongst the employed, or a shifting from the formal to the informal sectors, would tend to worsen inequality.

This conclusion from the decomposition analysis is reinforced by the simulations of the effects of expanded low-wage employment on inequality. Whilst the generation of millions of very low-wage jobs would reduce inequality, these reductions might not be as much as one might hope (relative to the scale of such employment creation) if the wages are too low.

On the other hand, whereas the introduction of a statutory national minimum wage would generally tend to reduce inequality, its overall effect would depend on the extent of any associated job losses. In our view, a minimum wage could be an important instrument for addressing poverty, inequality, and exploitation. However, its design and implementation would need to be carefully managed so as to maximise the positive effects and minimise job losses. Further research on this issue could be useful.

These findings highlight the importance of decent work: employment creation at a much higher rate than has been the case is absolutely imperative, and these jobs need to be decently paid. A massive expansion of decent employment opportunities, particularly for the low-skilled and semi-skilled, could be the most important means of bringing down overall inequality in South Africa. However, an expansion of the 'working poor', poorly

remunerated and excluded from the mainstream of the economy, is not a solution to the problem of inequality in South Africa. Furthermore, an approach which emphasises the mass creation of very low-wage jobs risks of institutionalising and legitimising a distorted and inegalitarian earnings distribution.

A continuation of an inappropriately capital-intensive and skills-intensive growth path is unlikely to fundamentally address either unemployment or inequality. While decent rates of growth could make some inroads into unemployment and inequality, given the scale of these problems growth alone will fall far short. The sustainability of the current growth path is also questionable even in its own terms, but that is another matter.

South Africa needs economic policies targeted far more strongly at employment creation than has been the case thus far. Policies also need to be targeted specifically at the absorption of labour categories which the economy has up until now been least successful in absorbing. There are currently about three million South Africans below the age of 35 who are (officially) unemployed and another about two-and-a-half million discouraged jobs-seekers. Close to two-thirds of these unemployed young people have never done work of any sort. While South Africa's overall rate of unemployment is anomalous by international standards, the rate of youth unemployment is even more so.

One of the devastating legacies of the growth path followed in the first decade or so after democratisation is this huge and unprecedented number of unemployed young people, whose human capital and future employment prospects have deteriorated with every year of being out of work. Their employability is far lower now than if they had gained employment soon after leaving school, and will continue to worsen the longer from now it takes to create jobs.

Specific policies will be needed to effect the changes in the economy necessary for the absorption of these millions of unemployed people, particularly young people with very limited employment experience. The scale of unemployment demands measures that go far beyond 'active labour market policies'. Rather, a shift in the growth path is needed. This is highly unlikely to materialise without aggressive industrial policies and a supportive macroeconomic environment.

Given South Africa's levels of income per capita and status as an upper-middle income country, the scale of poverty that we are faced with is associated more with distributional patterns than with the total amount of resources available. With our levels of national income, poverty would be far lower than it is if we had anything approaching a 'normal' level of inequality by international standards. But inequality in South Africa is extreme by international standards. Higher growth would generally lift people out of poverty. However, when we look at South Africa in a global context, the real explanation for our high levels of poverty lies in our distributional structure.

We recommend that the AsgiSA target of 'halving poverty' be framed in terms of both the halving of the poverty headcount ratio and of the poverty gap. This would take account of both the incidence and intensity of poverty. Our simulations of the effects of

various growth/distributional scenarios suggest that the AsgiSA target of halving poverty by 2014 can be achieved. However, this will not happen through growth alone. Halving poverty requires a 'pro-poor' shift in the growth trajectory, such that distribution becomes less unequal. Conversely, any worsening of inequality will put the AsgiSA poverty targets out of reach.

Dramatic improvements in distribution rarely come about without active measures targeted specifically at lessening inequality. Moderate decreases in inequality may well come about as a by-product of other dynamics. However, the magnitude of the reduction in inequality that would be required to bring South Africa anywhere in line with international norms is not going to happen without policies dedicated to that end.

Distributional changes would not in practice unfold in the way we have modelled them here, but these simulations are indicative of the scale of distributional changes needed to halve poverty. The most important dynamic underlying actual distributional change is likely to be through the labour market, in terms of both employment creation (or losses) and the distribution of earnings amongst the employed. Social spending certainly has a role to play in ameliorating inequality and poverty, particularly in the short-medium term. However, South Africa's inequality can not feasibly be brought down to 'decent' levels - at least to 'normal' standards of inequality internationally - through social spending, but rather through increased demand for low- and semi-skilled labour and through a closing of wage gaps.

A stylised fact of distributional changes internationally, at least in recent decades, is what we might term a 'downward stickiness' of inequality. Increases in inequality are much less reversible than are decreases. For instance, in countries where a government has come into power which instituted conservative economic policies that worsened income distribution, followed by the election of a government that switched to more 'progressive' policies, the distribution of income typically hardly comes down and certainly not down to the initial levels. Even where the intention is genuinely to improve income distribution, this often turns out to be far more difficult than anticipated. This is not surprising, as the wealthy are generally far better able to protect their income than are the poor. This asymmetry in distributional changes underlines the point that a significant improvement in income distribution is highly unlikely to materialise without strong policy interventions geared towards that goal. Improving income distribution is possible, but it takes effort.

In this vein we would suggest that the reduction of inequality be placed as a more central and explicit goal of government policy than is currently the case. Objectives such as employment creation and poverty reduction do overlap with the reduction of inequality, but these should not be conflated. This is obviously a political issue: whether the reduction of inequality is a desirable goal in its own right. If it is, this calls for measures targeted specifically at that end. An associated consideration, if indeed the reduction of inequality is accepted as an objective, how strongly and in what ways this is to be pursued insofar as there are tensions between this and other public policy goals. International comparisons reveal how well of elites in South Africa are doing, even relative to countries with higher levels of income per capita and even compared to

countries such as Brazil where the elites are notoriously successful in capturing a large share of national income. There is abundant scope for progressive distributional change in South Africa. Even mild distributional change in which the incomes of the well-off fell slightly, could mean dramatic increases in the incomes of the poorest. With the poverty line used in this research (R450 per person per month), the entire poverty gap comes out to only about 3% of GDP. The resources are available to decisively deal with poverty and reduce inequality. Policies would have to be well defined and carefully implemented in order to do so, but whether this happens is ultimately a question of political will.

### Structure of the report

After the introduction, Section 2 considers the relationship between labour market structure (and specifically unemployment) and inequality from a theoretical perspective. We distil some useful insights and evidence from the international literature, and consider the factors that can mediate the relationship between labour market structure and inequality.

Section 3 focuses on the state of inequality in South Africa. This begins by summarising the findings from the existing literature on the level and trends of inequality in South Africa. We then analyse the current levels earnings inequality as well as inequality in total income and expenditure, using the most recently available data and with a wide range of measures of inequality. Trends in earnings inequality are analysed in more detail. This throws up somewhat surprising results in terms of how earnings inequality has evolved over the past seven years, how the shares of different groups have changed over time, and the effective growth rates experienced across the distribution spectrum.

A brief overview of unemployment in South Africa is provided in Section 4, focusing on trends in the rates of unemployment and the nature and incidence of unemployment.

The relationship between unemployment and inequality is investigated in Section 5. We review some useful findings from the existing South African literature in this area. The empirical analysis begins by considering the relationship between unemployment and earnings inequality over time. We find a surprisingly close relationship between the trends in unemployment and earnings inequality. This motivates a more detailed analysis of this relationship. Earnings from work are found to account for the vast bulk of overall income inequality, even when income from sources such as welfare grants and income from capital are factored in. We then analyse the relationship between labour market structure and earnings inequality, using static and dynamic decomposition techniques to quantify how much of inequality can be accounted for by various aspects of labour market structure such as unemployment, wage dispersion, and the proportions of formal and informal employment.

Section 6 briefly explores what the effects of two types of labour market changes might be on inequality. Firstly, we look at how the introduction of a national minimum wage could affect earnings inequality. Secondly, we model the effects of an expansion of low-wage employment on inequality. This shows how much inequality would fall under

various scenarios in which significant portions of the unemployed gain employment at current informal sector wage levels.

The relationship between growth, poverty, and inequality is dealt with in Section 7. This analysis is framed explicitly in terms of the AsgiSA target of halving poverty by 2014. Since government is still finalising a poverty line that will help define exactly what this target means, we weigh up the implications of alternative measures and put forward a concrete interpretation and quantification of 'halving poverty' in terms of both the poverty headcount ratio and poverty gap. This gives a basis for analysing the relationship between growth, distributional change, and the halving of poverty. Finding that poverty cannot be halved by 2014 by growth alone, we model various combinations of growth and equalising distributional change in terms of their effects on poverty. This leads to interesting conclusions about the type of growth path which will be needed to meet the AsgiSA goal of halving poverty.

Finally, section 8 concludes and draws out some policy implications of the analysis. The Appendices to the report contain much of the technical details, explanations of the methodology, and mathematical derivations.

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## 1. INTRODUCTION

It is well-known that the levels of both inequality and unemployment in South Africa are amongst the highest in the world. In fact, while there are a few countries more unequal than South Africa, and a few countries with higher rates of unemployment, our combination of inequality and unemployment is uniquely high. Whereas some relationship between inequality and unemployment would be expected, it is unclear a priori quite how these affect each other, and how this relationship has changed over time. One question which this research tackles is therefore how much of inequality, and of the changes in inequality over time, can be explained by unemployment and other dimensions of employment structure.

While we would expect unemployment to be part of the story explaining inequality, the nature of employment would surely also be relevant. It is generally thought that wage dispersion has increased in South Africa, and furthermore that there has been a shift in employment structure towards the informal sector and towards various forms of atypical employment. How much have these changes in employment structure contributed to inequality?

Understanding these issues has implications for policy if there is an objective of bringing down inequality. To put it simplistically, from the standpoint of reducing inequality is it better to create any jobs, even if they are poorly paid? Or should we rather focus on improving existing jobs? There are no clear-cut answers to these questions, as might be expected, but this research does shed some light on them.

AsgiSA sets targets for growth rates and for halving unemployment and poverty by 2014. Inequality is not explicitly targeted, but the targets for growth, unemployment, and poverty would both imply and require distributional change. Distributional change can be thought of as the 'missing link' in the relationship between growth and poverty reduction. We thus factor distributional change explicitly into the analysis of the AgsiSA growth and poverty targets, asking what distributional change would be required to halve poverty under a range of growth scenarios.

Section 2 introduces the relationship between labour market structure (and specifically unemployment) and inequality from a theoretical perspective. We distil some useful insights and evidence from the international literature, and consider the factors that can mediate the relationship between labour market structure and inequality.

Section 3 focuses on the state of inequality in South Africa. This begins by summarising the findings from the existing literature on the level and trends of inequality in South Africa. We then analyse the current levels earnings inequality as well as inequality in total income and expenditure, using the most recently available data and with a wide range of measures of inequality. Trends in earnings inequality are analysed in more detail. This throws up somewhat surprising results in terms of how earnings inequality has evolved over the past seven years, how the shares of different groups have changed over time, and the effective growth rates experienced across the distribution spectrum.

An overview of unemployment in South Africa is provided in Section 4. This focuses on trends in the rates of unemployment, and the nature and incidence of unemployment.

The relationship between unemployment and inequality is investigated in Section 5. We review some useful findings from the existing South African literature in this area. The empirical analysis begins by considering the relationship between unemployment and earnings inequality over time. We find a surprisingly close relationship between the trends in unemployment and earnings inequality. This motivates a more detailed analysis of this relationship. Earnings from work are found to account for the vast bulk of overall income inequality, even when income from sources such as welfare grants and income from capital are factored in. We then analyse the relationship between labour market structure and earnings inequality, using static and dynamic decomposition techniques to quantify how much of inequality can be accounted for by various aspects of labour market structure such as unemployment, wage dispersion, and the proportions of formal and informal employment.

Section 6 briefly explores what the effects of two types of labour market changes might be on inequality. Firstly, we look at how the introduction of a national minimum wage could affect earnings inequality. Secondly, we model the effects of an expansion of low-wage employment on inequality. This shows how much inequality would fall under various scenarios in which significant portions of the unemployed gain employment at current informal sector wage levels.

The relationship between growth, poverty, and inequality is dealt with in Section 7. This analysis is framed explicitly in terms of the AsgiSA target of halving poverty by 2014. Since government is still finalising a poverty line that will help define exactly what this target means, we weigh up the implications of alternative measures and put forward a concrete interpretation and quantification of 'halving poverty' in terms of both the poverty headcount ratio and poverty gap. This gives a basis for analysing the relationship between growth, distributional change, and the halving of poverty. Finding that poverty cannot be halved by 2014 by growth alone, we model various combinations of growth and equalising distributional change in terms of their effects on poverty. This leads to interesting conclusions about the type of growth path which will be needed to meet the AsgiSA goal of halving poverty.

Finally, section 8 concludes and draws out some policy implications of the analysis.

Although the empirical work includes fairly complex technical analysis, we have attempted to make this report as reader-friendly as possible so as to maximise its usefulness. Technical jargon and mathematical formulations are kept to a minimum and out of the main text. Much of the technical details, explanations of the methodology, and mathematical derivations are contained in the seven Appendices to this report. Furthermore, in some parts of the empirical analysis only the main results or a sample thereof are included in the main text, with more detailed tables and charts included in the Appendices. In the main text we have also included a number of Boxes which include

more detailed information or explanation of particular issues, but which can be skipped without losing the flow of the argument. Finally, a separate executive summary is provided, which highlights some of the main findings of the report in a non-technical way.

## 2. LABOUR MARKETS AND INEQUALITY

### 2.1. Why look at inequality and unemployment?

South Africa ranks among the most unequal countries in the world as well as amongst the countries with the highest rates of unemployment. We are unique in the combined level of inequality and unemployment.<sup>1</sup> At the opposite end of the spectrum are countries such as Norway, Pakistan, Bangladesh, Hungary, Slovenia, Japan, New Zealand, and Ethiopia, which all have low unemployment as well as low inequality. These two issues do not necessarily go together, however. Albania, Slovakia, Croatia and Iran are examples of countries which have very high unemployment but comparatively egalitarian income distribution. On the other hand there are countries that are highly unequal yet which have relatively low rates of unemployment, such as Malawi, Singapore, Guatemala, and Malaysia. There is no systematic correlation internationally between rates of inequality and of unemployment.

Nevertheless, some relationship between unemployment and inequality would be expected, if not in levels then at least in changes. An increase in unemployment would tend to have a disequalising impact on income distribution because the unemployed and those at most risk of becoming unemployed are generally those with relatively low earnings capacity. Their status as unemployed rather than being employed at low incomes means a thinning out of the low positive section of the earnings spectrum and a concomitant increase of zero-earners, and this would probably be associated with higher inequality. Conversely, a reduction in unemployment in South Africa would be expected to shift people up from zero-incomes to low incomes with some reduction in inequality (although an increase in inequality amongst the employed).

The effects of a change in inequality on unemployment, on the other hand, are a priori indeterminate. One channel of the relationship could be through the effects of an increase of earnings inequality specifically on relative factor costs (labour/capital as well as between different categories of labour). A reduction in inequality associated with a relative increase in unskilled wages, for instance, might be expected to reduce the demand for unskilled labour and hence raise unemployment. On the other hand, an increase in inequality would affect patterns of expenditure and would be expected to reduce the demand for relatively labour-intensive domestically produced goods and services (given varying consumption patterns and import propensities across income groups), which might negatively affect domestic production and thus employment. The overall effects of changes in inequality on unemployment would depend on various factors, including the causes of the change in inequality and on the structure of the

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<sup>1</sup> Data for the international comparisons in this paragraph is drawn from the United Nations University World Institute for Development Economics Research (UNU-WIDER) World Income Inequality Database for inequality data, and the International Labour Organisation (ILO) Key Indicators of the Labour Market for the unemployment figures. International comparisons of inequality and unemployment are shown in more detail in section 3.4.

economy and the constraints it faces (for instance the relative importance of a demand constraint, a skills constraint, and so on).

More broadly, rates of unemployment and inequality would not necessarily be expected to always move in the same direction. This is contingent on what causes the change in inequality or in unemployment.

## 2.2. Theoretical background: Labour markets, unemployment, and inequality

Before exploring the empirical relationship between unemployment and inequality in South Africa, we consider the relationship at a theoretical level. In this section we critically review the existing literature and international evidence in this regard, and explore the factors which mediate the relationship between labour market structure, unemployment, and distribution.

Two main issues are addressed in the dominant literature on unemployment and inequality. The first of these is the way in which unemployment and inequality react to underlying changes in the economy (for example a trade or technological shock). Secondly, there are studies that look at the causal relationship between unemployment and inequality (mostly in that direction).

In terms of the first of these issues, there is a prominent view in the international literature that increases in unemployment and wage inequality are 'alternative' results of changes in the structure of the demand for labour, specifically of relative labour demand.<sup>2</sup> This would imply that at the policy level there is a trade-off between increasing income inequality (more specifically, wage inequality) and increasing unemployment.

The notion of a trade-off between increasing income inequality and increasing unemployment has been considered to explain the differences in patterns of unemployment and income or wage inequality when comparing the US and Europe, as well as to a lesser extent the US and Canada. Rates of unemployment tend to be lower in the US but wage dispersion considerably higher. Further, in a dynamic sense adverse shocks tend to result predominantly in increases in wage dispersion in the US, but primarily in increases in unemployment in the comparator countries. In other words, in the US adjustment tends to occur through prices, and in Europe through quantities. Unemployment also tends to be of longer duration in Europe than in the US (Ayala et al, op cit). Countries in which wage inequality increased the most have tended to have lower unemployment (and less persistent unemployment) (Storer and Van Audenrode, op cit). For instance, it is argued that falls in wages at the bottom of the wage distribution (with an associated increase in wage dispersion) meant that unemployment did not rise more than it did in the US during the 1980s.

Gottschalk and Smeeding (op cit) summarise the 'stylised facts' emerging from the literature on the relationship between labour markets and inequality as follows. Firstly,

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<sup>2</sup> See for instance Storer and Van Audenrode (1998), Ayala et al (2001), Gottschalk and Smeeding (1997), and Martínez et al (2002).

countries with centralised bargaining systems (such as Germany or Sweden) have greater equality of earnings than do countries with less centralised bargaining systems (such as the US or Canada). Secondly, earnings inequality increased in most industrial countries during 1980s, but most in the US and UK and least in the Nordic countries. Thirdly, increases in demand for skilled labour and differences across countries in growth of supply of skilled workers explain a large part of the differences in trends in returns to education and experience. And fourthly, institutional constraints on wages limited the increases in inequality, more so in countries with stronger constraints.

There is however less clarity or consensus in the literature concerning the causal factors behind these observed empirical regularities. It has been suggested that high unionisation in Europe and to a lesser extent Canada, compared to the US, mitigates wage adjustment downwards and hence adjustment manifests less in increases in wage inequality but more in increases in unemployment. Similarly with aspects of the welfare system, such as unemployment insurance. For instance, relatively generous unemployment insurance might reduce the speed and scale with which workers adjust their wage expectations downwards.

Other relevant aspects of the labour market that might be expected to affect inequality and unemployment include the degree of centralisation of the pay-setting system, the minimum wage, recruitment and dismissal modalities, and social protection (Ayala et al). The more centralised is the pay-setting system and the greater the coverage thereof, the lower earnings differentials are likely to be. However, it is argued in the literature that centralised pay-setting may raise unemployment.

As a stylised fact, the adjustment at the top end of the income spectrum tends to be in price whereas at the bottom end it tends to be relatively in quantity. The differential rates of unemployment amongst (potential) low- and high-income earners are both a cause and effect of these disparate adjustment patterns.

For example, a technological shock or a shift in the structure of trade in which imports of labour-intensive and specifically low- or unskilled-labour-intensive goods, would be expected to shift the structure of labour demand away from low- or unskilled-labour, resulting in a mixture of higher unemployment and lower wages amongst such workers in the home country.

An adverse trade or technology shock may lead to some combination of the following effects:

- ☐ lower wages in existing jobs;
- ☐ loss of some existing jobs and re-employment in lower-wage jobs (in lower paid industries/occupations, or in the informal sector);
- ☐ loss of some existing jobs without replacement (either because no substitute demand is available even in lower-paid jobs, or because people are unwilling to accept lower-paid jobs).



Insofar as the jobs affected are disproportionately low-wage jobs, as is most likely to be the case empirically, any of these outcomes will tend to increase inequality. The particular combination of these three outcomes that an economy experiences in response to an adverse shock depends on various institutional features. For instance, extensive downward wage flexibility is likely to encourage a reduction in wages in existing jobs in response to an adverse shock. This is particularly likely under conditions of weak unionisation, short or flexible wage agreements, etc. Conversely, when there is wage rigidity, little flexibility in terms of a 'second economy' of poorly paid jobs, and where there is a system of unemployment benefits or basic welfare available, the adverse shock is likely to manifest especially strongly in the loss of existing jobs without replacement.

In this type of thinking in the literature, unemployment and inequality are essentially viewed as alternative equilibrating mechanisms to technological, trade, or other shocks that affect the relative demand for different types of labour.

However, this apparent trade-off between increases in unemployment and inequality is not unidimensional or linear. There are also important exceptions, such as the UK in which wage inequality widened yet unemployment remained high. On the other hand Germany has had relatively low wage inequality and unemployment.

Furthermore, to the extent that unemployment is a structural macroeconomic problem, and particularly to the extent that it is a product of problems in macroeconomic management, it cannot be considered in narrow labour market terms or as a result of excessive wages.

In addition to the fact that the solutions to unemployment are not necessarily to be found in the labour market, attempting to deal with unemployment purely in this realm is likely to heighten inequality. As Glyn (1995) puts it,

If substitutability [between skilled and unskilled labour] is not high then it is clear that the distributional implications of relying on wage flexibility are highly inegalitarian - the worse-paid sections of the population have to bear the cost of reducing unemployment via substantial cuts in their wages while the better-off sections of society benefit from the cheaper services.

The nature and extent of the perceived 'trade-off' between changes in unemployment and in inequality are also subject to policy interventions. No 'exogenous shock' is ever completely delinked from policy choices. The vulnerability of a country to such a shock is affected by previous policy choices (for example, around financial and capital account liberalisation). In addition, the way in which a shock affects an economy is subject to policy mediation. The distributional impact of any exogenous shock is not predetermined. Even if the shock would have primarily or disproportionately affected low income earners, some of these costs can be redistributed (through fiscal and other measures) such that the net impact on inequality is mitigated.

For instance, the effects of an adverse trade shock (in particular one that results in a reduction of demand for less skilled labour) on employment and distribution are subject to policy intervention in various ways. Firstly, even given lower costs of production of

labour-intensive goods in other countries, the degree of import penetration of such goods in the home market is contingent on the trade regime and specifically on tariff and non-tariff barriers. Secondly, industrial and other policies mediate the degree and nature of the impact of increased or potentially increased import penetration on domestic industry. Thirdly, skills levels are not static, especially in the medium- to long-term and changing the skills profile of the labour force would influence the results of the shock. Policies to upgrade skills and make them more relevant can affect the industrial and distributional affects of a trade shock.<sup>3</sup> Fourthly, the extent to which changes in relative labour demand actually translate into adverse distributional consequences is dependent on the distributional regime and subject to fiscal and other interventions. The fact that low-skilled labour may be directly affected by an adverse shock need not mean that this group actually bears the costs, although they are likely to do so unless there is specific intervention to the contrary.

However, in the absence of specific measures to counteract this, a change in relative labour demand in which the demand for unskilled or low-skilled labour falls and is indeed likely to result either in higher rates of unemployment or in increased wage inequality, or more likely in a combination of these. The actual mix of increased unemployment and wage dispersion is likely to be mediated by institutional factors. These factors relates to labour market structure in particular, such as the bargaining system, the duration of contracts and of wage agreements, the system of unemployment benefits, a minimum wage, and so on.

When introducing this critical review of the international literature, we identified the second main area as being the causal relationships between inequality and unemployment, and noted that this literature focuses overwhelmingly on causality from unemployment to inequality. The international literature consistently finds a negative causal relationship between unemployment and inequality. Time-series analysis of the effects of unemployment on inequality within countries generally finds that increases in unemployment worsen income inequality.

In their seminal paper, Blinder and Esaki (1978) study the effects of unemployment and of inflation on income distribution in the US from 1947-1974. They find very clearly that unemployment has disequalising effects on income distribution. The lowest 60% of families lose most when unemployment increases, and within this the lowest 40% and especially the lowest 20% lose proportionately most. The top quintile gains in its share of income. They estimate that every percentage increase in the rate of unemployment takes away 0.26%-0.30% of the national income from the bottom 40% of the population and redistributes this to the richest 20%.

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<sup>3</sup> Although note that Acemoglu (1999) argues that an increase in the relative supply of skills might actually increase inequality, contrary to conventional wisdom, particularly over the long-term as capital and jobs composition adjust. He suggests that 'when the supply of skills reaches a critical threshold, it becomes more profitable to create jobs designed for skilled workers, and the composition of jobs undergoes a qualitative change, altering the structure of wages and unemployment. In other words, an increase in the supply of skills can create more than its own demand and increase inequality.'

Similar analysis has since been undertaken using more recent data for a range of countries, and while there is variation in the size of the relationship between changes in unemployment and in distribution there is a common finding of a negative relationship, even when controlling for other factors.<sup>4</sup>

Reviewing the literature on the relationship between macroeconomic conditions and income distribution, Mocan (op cit) concludes that 'the consensus has been that income inequality is countercyclical in behaviour, i.e., increases in unemployment worsen the position of low-income groups.' Mocan's econometric analysis of US data over the period 1949-1994 indicates that an increase in structural unemployment reduces the income shares of the bottom three quintiles, and may do so even for the second highest quintile as well. However, an increase in structural unemployment is associated with an increase in the income share of the top quintile.

Björklund (op cit) studies the effects of the level of unemployment on the income shares of income quartiles for Sweden over the period 1958-1988. He finds that higher unemployment raises the income share of the top quartile between 1960 and 1973 (with the economic effects of this being quite large - a one percentage point increase in unemployment raises the income share of the top quartile by 1.3-1.4%). During the later period 1975-1988, however, there were no statistically significant effects of unemployment on disposable income distribution. Björklund attributes this to the efficacy of the Swedish state in reducing the negative distributional consequences of unemployment through means tested social assistance.

In one of the few studies concerning developing countries, González and Menendez (op cit) look at the effects of unemployment on labour income inequality in Argentina over the period 1991-1998. They estimate individual earnings functions for employed people conditional on a working status polychotomous model, and assign hypothetical wages to unemployed people. González and Menendez find that 43% of the total increase in inequality (measured using the Gini coefficient) can be explained by the increase in unemployment.

Glyn (op cit) finds that in the OECD during the 1980s and early 1990s, an increase in total unemployment was associated with an absolute deterioration in the position of the least-educated.

In an innovative argument, Galbraith and Garcilazo (2004) argue that wage inequality should be viewed on the supply side of the labour market, and that wage inequality raises unemployment by increasing the time that an individual searches for unemployment. In their empirical work they find pay inequality to be a strong determinant of cross-sectional variation in European unemployment. They conclude that 'measures to reduce the inequality of European wages at the regional level - for example, industrial development policies in poor regions - would help reduce chronic unemployment on average among

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<sup>4</sup> See for instance Blank and Blinder (1986), Jäntti (1994), Björklund (1991), Mocan (1999), González and Menendez (2000), and Glyn (1995).

Europeans'. They also note that 'there is no support in our data for the idea that European unemployment is due to excessive solidarity in the European wage structure.'

We might surmise that these types of effects of wage inequality on unemployment are less relevant to 'desperate unemployment' where an individual needs a job in order to meet basic needs, and more relevant to a scenario in which someone can act on preferences over what type of job they would like. We could even hypothesise that factors such as perceptions of high mobility in South Africa and the visibility of the black middle class perhaps make for a conducive environment for the types of dynamics that Galbraith and Garcilazo identify. People might overestimate the type of job which they realistically have access to, and the incentive of significantly higher income associated with these 'aspirational' jobs - given the high level of wage dispersion - might raise unemployment by prolonging the search process and discouraging people from accepting available jobs. However, we should hasten to add that this explanation is only likely to account for a very small proportion of unemployment.

### 3. INEQUALITY IN SOUTH AFRICA

#### 3.1. Findings from the existing literature

There is a broad consensus in the literature that income and earnings inequality worsened after 1994, through to the early 2000s. This conclusion has been drawn in various studies, using several different datasets and alternative measures of inequality. Studies that have specifically found an increase in inequality in South Africa include UNDP (2003), Simkins (2004), Hoogeveen and Özler (2005), Leibbrandt et al (2004), Van der Berg et al (2005), Pauw and Mncube (2007), Statistics South Africa (2008b). Table 1 below summarises some of the results from the literature, in terms of the levels found for various measures of inequality. Note that these figures are not directly comparable across studies, given the different methods used by the authors (for example in terms of adjustments made to the data).

Table 1: Summary of literature on level/trend of inequality

Source	Measure	Data	Value
Central Statistics <sup>5</sup> (1997)	Gini of income	1995 IES	0.59
Whiteford and Van Seventer (2000)	Gini of household income	1996 Census	0.69
	Theil of household income		0.40
Bhorat et al (2000)	Gini of household per capita income <sup>6</sup>	1995 IES	0.60
	Theil <sup>7</sup> of household per capita income		0.802
	GE(0) of household per capita income		0.706
Statistics South Africa (2002)	Gini of household income per capita	1995 IES	0.642
		2000 IES	0.681
UNDP (2003)	Gini	1995	0.596
		2002	0.635
Statistics South Africa (2003)	Gini	1995	0.596
		2002	0.635
Simkins (2004)	Gini of household income	1995 IES	0.608
Leibbrandt et al (2004)	Gini of household per capita income <sup>8</sup>	1996 Census	0.679
		2001 Census	0.730
Ardington et al (2005)	Gini of household per capita income	1996 Census	0.744
		2001 Census	0.822
Hoogeveen and Özler (2005)	Gini of household per capita income	1995 IES	0.565
		2000 IES	0.577
	Theil of household per capita income	1995 IES	0.608
		2000 IES	0.617
Mean log deviation of household per capita income	1995 IES	0.563	
	2000 IES	0.607	
Leite et al (2006)	Gini of household income <sup>9</sup>	1995 IES	0.648
		2000 IES	0.673
	Gini of earnings GE(0) of earnings <sup>10</sup>	2004 LFS (March)	0.598 0.704
Pauw and Mncube (2007)	Gini of per capita expenditure	1995 IES	0.622
		2000 IES	0.664
Statistics South Africa (2008b)	Gini of household per capita income	2005 IES	0.80
	Gini of household per capita disposable income		0.72
	Gini of household per capita expenditure incl. taxes		0.69
	Gini of household per capita expenditure excl. taxes		0.67

<sup>5</sup> Now Stats SA.

<sup>6</sup> All three measures from this study are calculated using equivalence scaling within households.

<sup>7</sup> The authors refer to this index as the Theil-T and to the GE(O) index as the Theil-L, but the terms used here for consistency with notation elsewhere in this report.

<sup>8</sup> The figures reported here are the authors' preferred estimates, which exclude zero incomes and are constrained according to various adjustments described in the paper. Without excluding zero incomes, they report the 1996 Gini as 0.740 and the 2001 Gini as 0.791. Without the 'constraints' which they apply, the 2001 Gini is reported as 0.818 when zero incomes are excluded and 0.765 when zero incomes are included.

<sup>9</sup> Excludes zero incomes.

<sup>10</sup> Excludes zero earnings.

### 3.2. The state of inequality

Before analysing the relationship between inequality and labour markets, we take stock of the extent of inequality in South Africa at present. Poverty is not dealt at this point; the relationship between distribution and poverty is covered in section 7. In this section we show various measures of inequality in terms of income, expenditure, and earnings amongst the employed. See Box 1 below for an explanation of what is included in each of income and expenditure.

The empirical analysis was undertaken using the fourteen full datasets of the Labour Force Survey (LFS), February 2001-September 2007 and the various datasets of the 2005/6 Income and Expenditure Survey (IES).<sup>11</sup> Other data used in the analysis, such as macroeconomic data, is as referenced in the report. Appendix 1 sets out the various steps taken to clean the data and ensure comparability across time.

This is the first publically available analysis (other than the Stats SA statistical release) using the 2005/6 IES and the September 2007 LFS, and can thus be considered the most recent available.

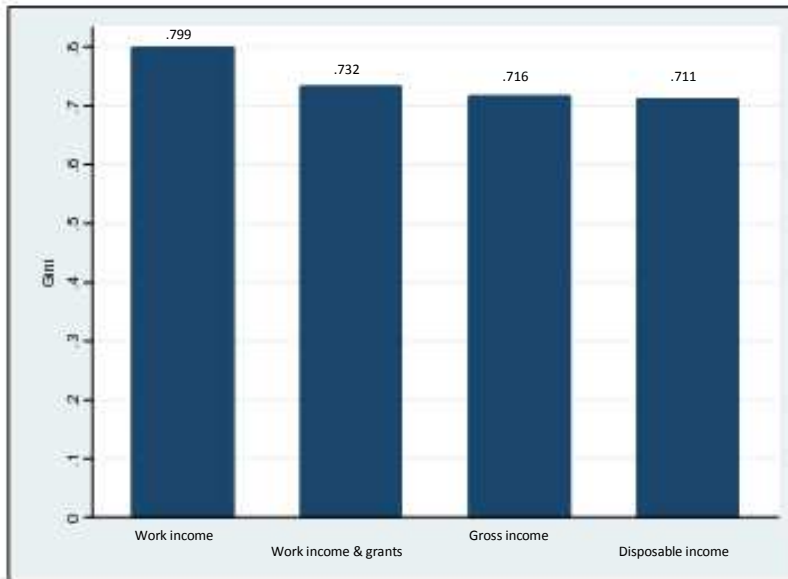
The concept of income that we work with in this study is gross income. This includes earnings from work, social grants, and other forms of monetary income; but is before the deduction of taxes. We begin by comparing inequality in income from work (salaries and wages), income from work and social grants, gross income (including income from work, social grants, and other monetary income) and disposable income (gross income minus taxes).

The Gini coefficients of each of these categories of income are shown in Figure 1 below. This shows the important equalising impact of social grants: once they are added to work income, the Gini falls from almost 0.8 to 0.73. Social grants are actually over-reported in the IES by about 10% whereas work income is slightly underreported (Statistics SA (2008)), and this probably leads to a very small overstating of the equalising impact of social grants, but it is certainly significant. Once other components of gross income are added in (see Box 1) the Gini falls a bit further to 0.72. Taxes also have an equalising impact, as would be expected given the progressivity of the overall tax structure, and thus the Gini of disposable income falls further to 0.71. Taxes are actually underreported by about half in the IES (ibid), and so the real Gini of disposable income is probably actually a bit lower than this.

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<sup>11</sup> All of these datasets were accessed through the South African Data Archive (SADA).

Figure 1: Inequality of different income aggregates

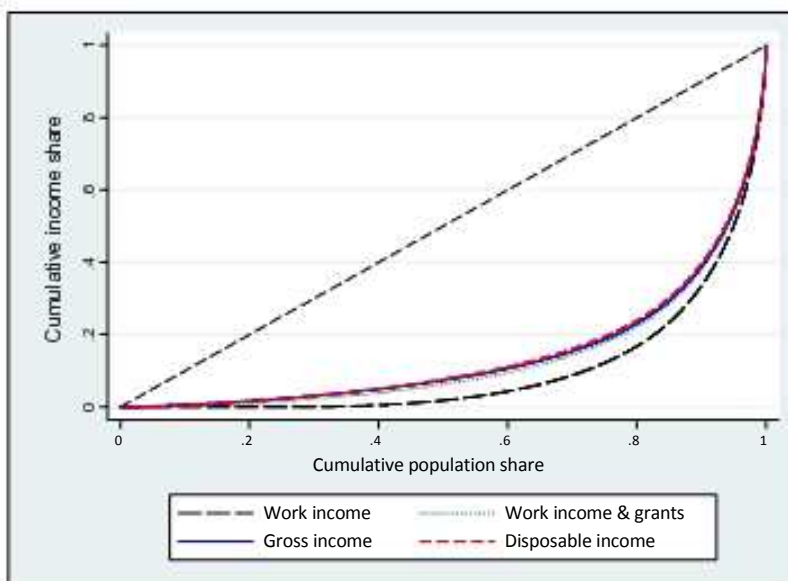


Notes:

All derived from 2005/6 IES. Calculated on a household per capita basis.

The same comparison between different income categories is shown in Figure 2, which compares the Lorenz curves of income from work, income from work and social grants, gross income, and disposable income. Each point on the Lorenz curve plots the proportion of the population against the proportion of total earnings received by those people. The dashed diagonal line is the benchmark for a completely equal distribution. It is actually difficult to distinguish between the latter three given their proximity. However, it is clear that the major difference comes when social grants are added in to income from work, bringing the curve significantly closer to the diagonal line of complete equality.

Figure 2: Lorenz curves of different income aggregates





The contribution of the various sources of total income to inequality is analysed more rigorously in section 5.3. In the rest of the empirical analysis the category of income that we work with is gross income, henceforth referred to as income. We also rely extensively on expenditure/consumption, for which the issues discussed above do not directly apply.

Box 1: What do income and expenditure measure?

Throughout this report, the measures of income and expenditure are derived from the 2005/06 IES, normalised to March 2006. This Box indicates what we have included in each of income and expenditure, as well as in-kind income and expenditure.

Expenditure (sometimes referred to as consumption) has been calculated to include the following categories of expenditure: food and non-alcoholic beverages; alcoholic beverages, tobacco and narcotics; clothing and footwear; housing, water, electricity, gas and other fuels; furnishings, household equipment and routine maintenance of the house; health; transport; communication; recreation and culture; education; restaurants and hotels; miscellaneous goods and services (which includes personal care; personal effects; social protection services; insurance; financial services n.e.c; and other services n.e.c); and other services n.e.c.

It does not include in-kind consumption, which incorporates items such as free basic services, library services, textbooks and stationary received, grants for education received in both public and private institutions (i.e. not paid for by the household); and medical aid contributions made by the employer.

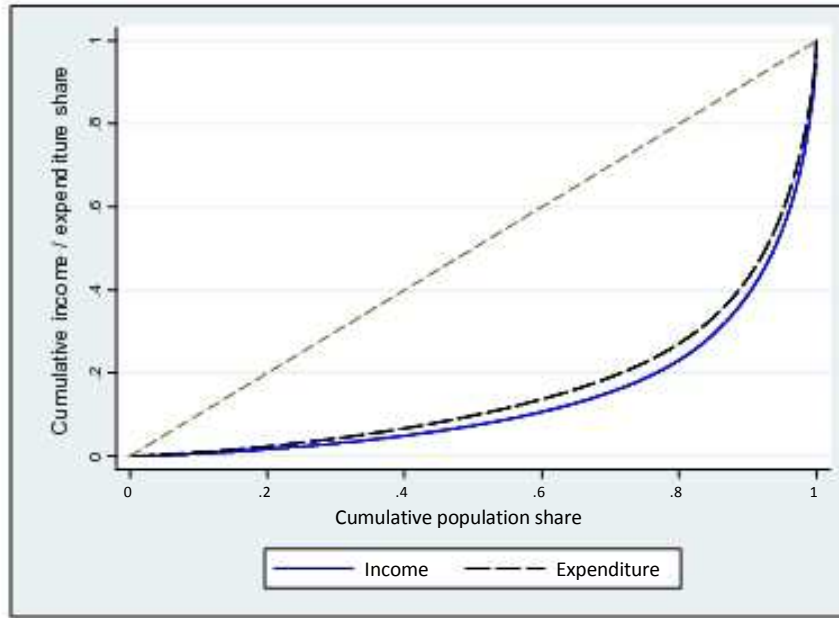
Income has been calculated to include the following broad categories: income from work; income from capital; pensions, social insurance, family allowances; income from other individuals; other income; and income from imputed rent on owned dwelling. In more detail, the items included under income are as follows: household salaries and wages; income from household self-employment and business; income from letting of fixed property; royalties; interest received; dividends of listed companies; dividends of unlisted companies; other dividends; pension from previous employment; annuities from own investment; old age pensions; disability grants; family and other allowances; workmen's compensation funds; alimony, palimony and other allowances; other income from individuals; hobbies; side lines and part time activities; sale of vehicles, property etc; payments received from boarders and other non members; claims; stokvel; benefits, donations and gifts; cash; value of food received; value of clothing; value of other benefits, donations, gifts etc; lobola or dowry received; income from gambling; tax refunds received; income not elsewhere specified; gratuities and other lump sum payments; and imputed rent on owned dwelling (calculated as 7% of the value of the dwelling per annum).

Income in-kind is a separate category, and includes the following: free water, sanitation, and electricity; private use of company vehicle; use of textbooks and stationary (by grant); education not paid for (i.e. for which a grant is received), in either public or private institutions); and medical aid contributions by the employer.

Not included in either income or consumption are savings, debts, taxes, transfers made to others (such as maintenance or remittances to family members and dependents, gifts to non-household members, tribal levies); loss incurred in obtaining income; and other products not consumption (such as interest on mortgage bonds; non-refundable bursaries; and the imputed costs of home production).

Figure 3 below compares the Lorenz curves of income and expenditure. As expected, expenditure is more equally distributed than is income (as can be seen from the fact that the expenditure curve lies closer to the diagonal equality line than does the income curve.) The Gini coefficient is 0.72 for income and 0.67 for expenditure.<sup>12</sup>

Figure 3: Lorenz curves of income and expenditure



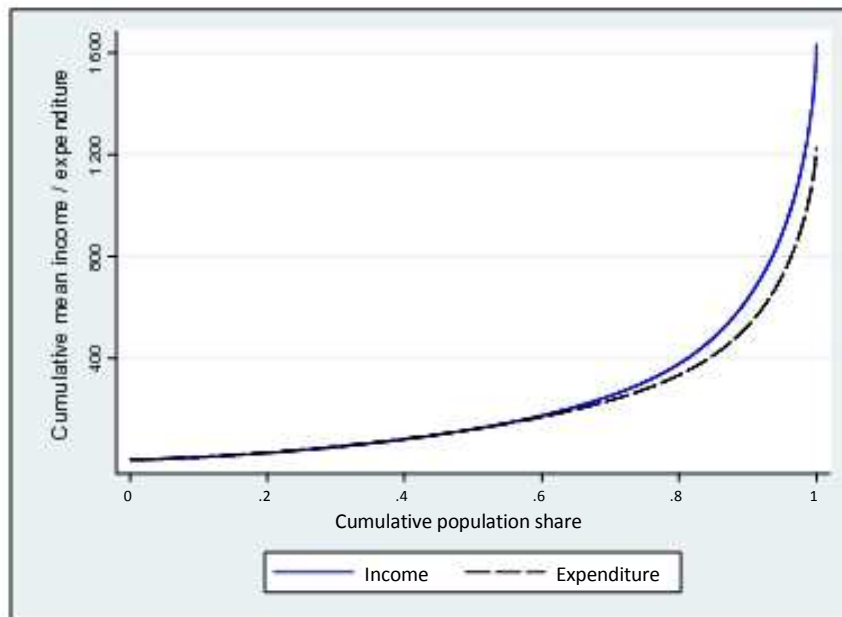
Note:

Lorenz curves of household per capita income and expenditure (using simple per capita scaling), March 2006.

The Generalised Lorenz curve is the Lorenz curve scaled up at each point by the overall mean income or expenditure respectively. For example, the average income or expenditure of the poorest 40% of the population (read up from 0.4 on the x-axis in Figure 4 below) is just over R80 per month. The average income across the whole population is R1634 per month, and the average expenditure comes in at R1230 per month (these can be seen from the highest points of the two curves, which indicate the average across the entire population).

<sup>12</sup> More detailed measures of inequality in income and expenditure, using various measures of expenditure and a range of indicators of inequality, are shown later in this section.

Figure 4: Generalised Lorenz curves of income and expenditure



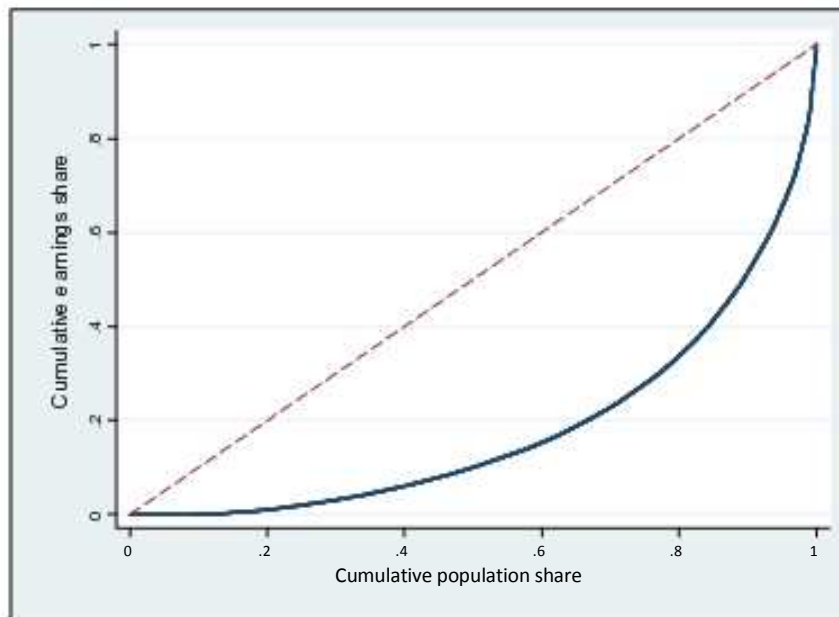
Note:

Generalised Lorenz curves of household per capita income and expenditure (using simple per capita scaling), March 2006. Derived from 2005/06 IES.

Figures 5 and 6 below show the Lorenz and Generalised Lorenz curves, as explained above, but now specifically for earnings amongst the employed. The Gini for earnings amongst the employed is 0.63.<sup>13</sup>

<sup>13</sup> Note that this is not really comparable with the Gini coefficients for income and expenditure depicted above, as earnings is measured on a per capita basis amongst the employed while income is measured on a household per capita basis i.e. sharing income or expenditure amongst all members of the household.

Figure 5: Lorenz curve of earnings

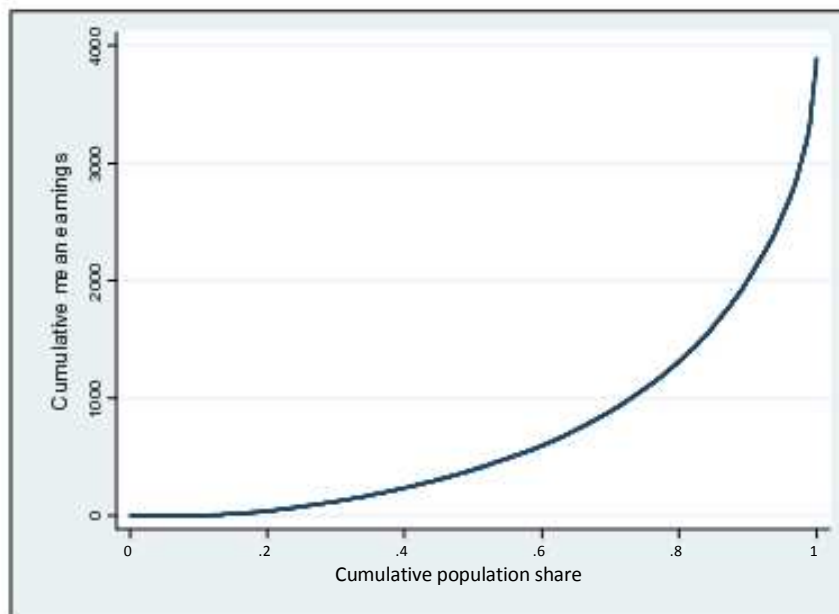


Note:

Lorenz curve of earnings amongst employed, September 2007. Derived from LFS.

From the Generalised Lorenz curve of earnings below, we can see that the average earnings of for example the lowest 40% of the employed are about R400 per month, and the average income across the whole population is about R3900 per month.

Figure 6: Generalised Lorenz curve of earnings



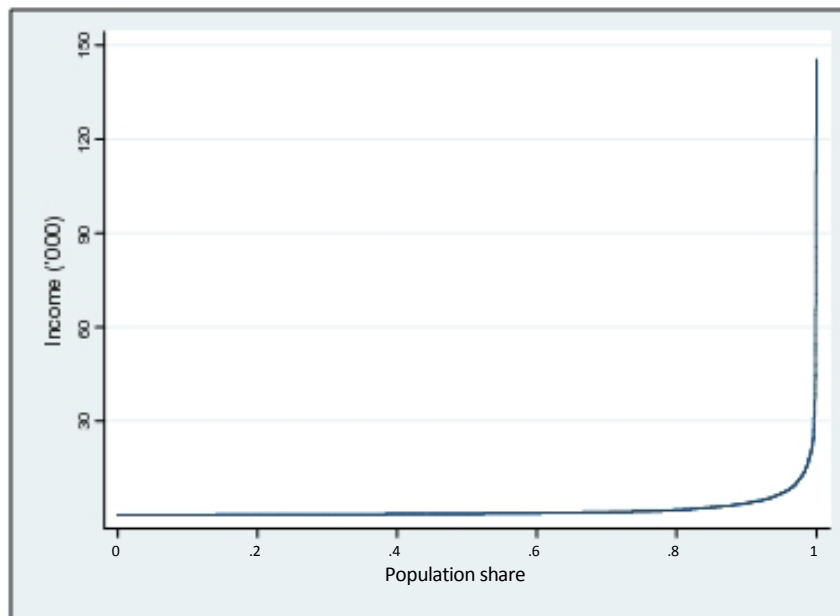
Note:

Generalised Lorenz curve of earnings amongst employed, September 2007. Derived from LFS.

'Pen's Parade' is another way of representing income distribution, and is shown in Figure 7 below. It is based on the idea of a 'parade of dwarfs and giants'. The height of each person denotes their income, and distribution is then represented by a 'parade' of people walking past in order from shortest to tallest (i.e. poorest to richest), shown on the x-axis of the proportion of the population from 0 to 1. The actual income (household per capita income) of a person at any point of the income distribution can be read directly off the y-axis.

Even knowing how unequally South Africa's income is distributed, the curvature of the plot is astonishing. It appears flat for most of the distribution and rises extremely steeply at the top end.

Figure 7: Pen's Parade of Income



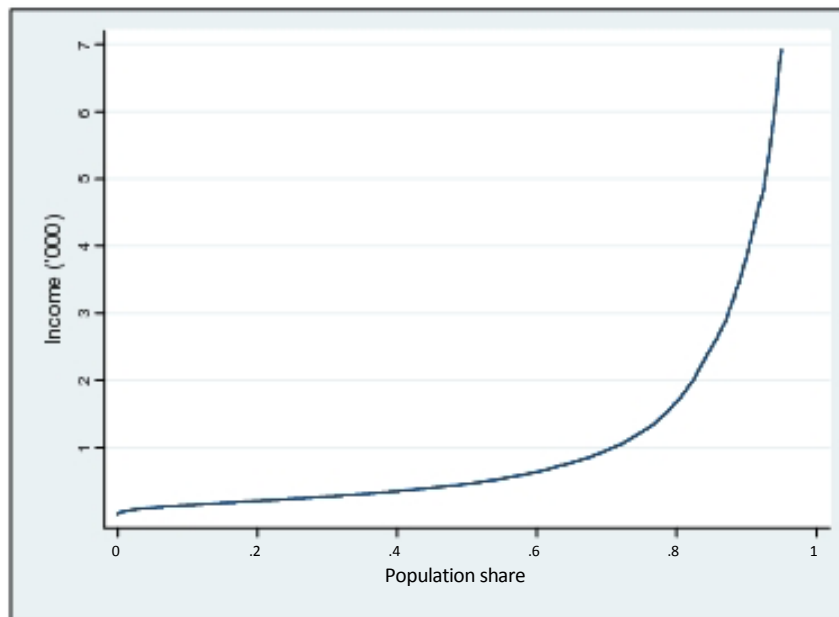
Note:

This and the following two figures show Pen's Parade of household per capita monthly income (using simple per capita scaling), 2006.

The extreme convexity of Pen's Parade of South African income distribution makes it difficult to observe the distributional pattern for all but the top end. We thus break the distribution up and show in Figure 8 below the Pen Parade for the 'bottom' 95% and thereafter the same for the top 5% of the distribution.

The convexity of the distribution is clear (although it is not as sharp when the top 5% is excluded). As we go up the distribution, income increases at an increasing rate. For instance, the ratio between the income of the 80<sup>th</sup> and 40<sup>th</sup> percentiles far exceeds the ratio between the income of the 40<sup>th</sup> and 20<sup>th</sup> percentiles.

Figure 8: Pen's Parade of Income excluding top 5%

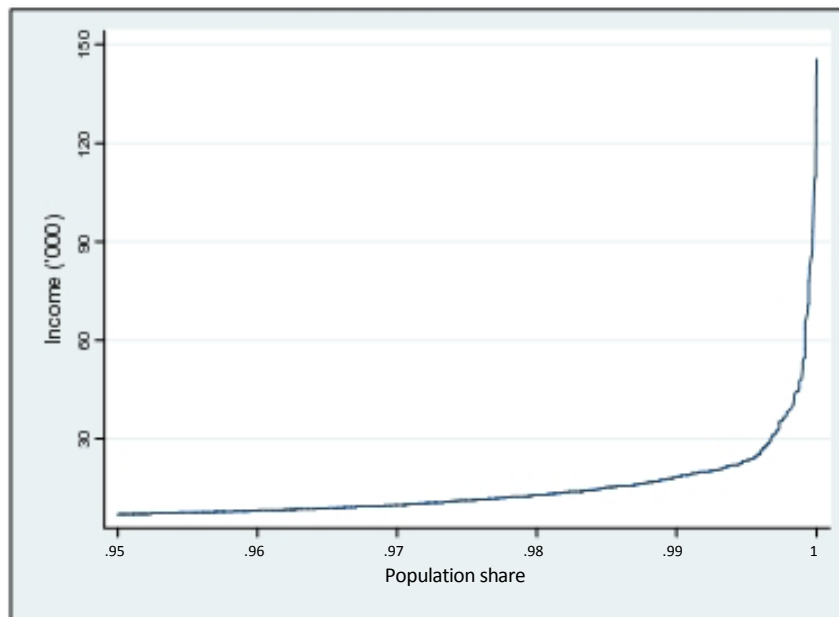


Even amongst the richest 5%, the distribution of income is extremely convex. It is amongst the highest 1% that the distribution is most steeply distorted. Household per capita income is above about R18 000 per month.

It should be borne in mind that incomes at the top end are almost certainly underestimated in IES, even more so than for the rest of the distribution. The response rate is typically lower amongst the wealthy. Furthermore, there is a greater likelihood of incomes being underreported. Indeed, the highest incomes reflected in the IES data are well below the high-end salaries that are routinely reported in the media and in company information such as annual reports.

Even so, we can clearly see the presence of a small group of super-rich in South Africa, whose incomes depart radically from those of even the rest of the extremely wealthy.

Figure 9: Pen's Parade of Income of top 5%



Fourteen different measures of inequality are summarised in Table 2 below, using each of income and expenditure from the IES. In the more detailed analysis that follows later we focus on a few of these measures. The meaning of the various measures is summarised in Appendix 2. The measures are shown for both income and expenditure; see Box 1 for an explanation of what is included in each of income and expenditure. For each of income and expenditure we also show a total including in-kind income or expenditure respectively. In-kind income or expenditure are items not received or paid for in monetary form by the household.<sup>14</sup> Three equivalence scales are used to convert household income into household per capita income; these are explained in Box 2 and are referred to here as  $E_1$ ,  $E_2$ , and  $E_3$ .

<sup>14</sup> In most cases income including income in-kind is identical to income, and consumption including consumption in-kind is equal to consumption, meaning that no additional in-kind income or consumption was reported. (In-kind consumption is identical to consumption for 68.5% of households, while in-kind income is identical to income for 62.5% of households). Some of the values listed for the various types of in-kind income are obviously unrealistic, and these do call the accuracy of the entire category into question. Examples of these are values of R57 612 of in-kind income/consumption for free water (to a household of four people) and R159 000 in in-kind income/consumption for textbooks (for a two-person household). Also odd is the cases in which income including in-kind income is lower than income, since no elements of the additional in-kind income should be negative. A few extreme values of in-kind income or consumption were eliminated. However, these variables appear to be highly unreliable and any interpretation in this regard should be cautious.

## Box 2: Household equivalence scaling

Households have varying size, and also different composition. This means that some type of adjustment or normalisation is necessary in order to analyse the distribution of income or expenditure, rather than simply comparing household totals. The standard approach is to analyse distribution in terms of household per capita income (i.e. converting household incomes/expenditures into some form of per capita measures), although there are different methods as to how household totals should be converted into per capita equivalents.

The simplest method of adjusting household to per capita income/expenditure is simply to divide the household total by the number of members of the household. This is the method using by Stats SA, and also appears to be the method likely to be used for the poverty line currently being developed. In this equivalence scaling,

$E_1 = \frac{E}{s}$  where  $s$  is the number of members of the household.

One limitation of this method is that it assumes there are no economies of scale in household costs (e.g. that a household of four members is as well off as a one-person household with a quarter of their income). Another limitation is that it takes no account of the varying costs for different types of household members, implicitly assuming that an infant and an adult require or consume the same resources.

Given these important shortcomings of the simple per capita scaling method, we also employ two other equivalence scales in the analysis of the distribution of income and expenditure. The first of these takes account of both economies of scale and of the difference in costs between children and adults. The household scaling factor is calculated as follows:

$E_2 = \frac{E}{(s_A + \alpha s_K)^\beta}$  where:

$s_A$  is the number of adults in the household and  $s_K$  is the number of children;

$\alpha$  is the adult equivalent of a child; and

$\beta$  is the scaling factor for household economies of scale.

Thus  $E_1 = E_2$  for  $\alpha = 1$  and  $\beta = 1$

The parameters which we use are  $\alpha = 0.5$  and  $\beta = 0.9$ . These are in line with those used in the international literature, as well as those used in the South African context by for example Woolard and Leibbrandt (2006) in their background research for the National Treasury on a poverty line in South Africa.

The third equivalence scaling that we use, the McClements equivalence scale, takes account not only of how many adults and children there are in the household, but also the ages of the children. This takes into account that the resource needs of an infant differ from those of a teenager. The parameters of the scaling we used are adapted from Lambert (2001) and in line with those used internationally. A limitation in this regard is that they are not based on empirical evidence of the costs faced by different age categories in the specific South African context, as there is no suitable existing evidence in this regard.



Box 2 (continued)

The household scaling factor is calculated under this scale as follows:

$E_3 = \sum_{i=1}^s w_i$  for all  $s$  members of the household, where:

- $w_i = 0.61$  for the first adult (where 'adult' is aged 20 years or over);
- $w_i = 0.39$  for the second adult;
- $w_i = 0.46$  for the third adult;
- $w_i = 0.36$  for subsequent adults;
- $w_i = 0.135$  for each member aged 0-4 years;
- $w_i = 0.22$  for each member aged 5-9 years;
- $w_i = 0.25$  for each member aged 10-14 years;
- $w_i = 0.35$  for each member aged 15-19 years; and
- $w_i = 0.3858$  for each member that did not report their age.

The use of these three alternative equivalence scales (or any others of those used in the literature) would yield differing indicators of distribution as well as the extent of poverty. In particular, the simple per capita scaling ( $E_3$ ) obviously gives the most weight to children, and households with relatively high numbers of children will be deemed relatively worse off than when either of the other two equivalence scales are used. The actual values of any indicator are not directly equivalent across the scales, although trends would be.

We use all three scales in the measurement of inequality that follows, but later use mainly the simple per capita scaling ( $E_3$ ) for comparison purposes and to synergise with the methods being developed by government concerning the poverty targets.

The Gini coefficient of income (using simple per capita scaling) is 0.72, while for expenditure it is 0.67. As would be expected, income inequality is consistently higher than expenditure inequality.

Surprisingly, total (including in-kind) income or consumption is generally higher than that straight income or consumption respectively. We would expect in-kind income or expenditure to be relatively progressively distributed and to have an equalising impact. The converse finding might be primarily explained by the poor quality of this data.

Table 2: Inequality measures for income and expenditure ( $E_1$  scaling)

	Income	Income including in-kind	Consumption	Consumption including in-kind
Gini coefficient	0.716	0.717	0.670	0.673
Theil index	1.139	1.138	0.957	0.963
Mean Log Deviation	1.037	1.043	0.846	0.857
Entropy index	2.327	2.353	1.433	1.468
Half $CV^2$	3.510	3.447	2.418	2.402
Relative mean deviation	0.569	0.571	0.529	0.533
Coefficient of variation	2.649	2.626	2.199	2.192
Standard deviation of logs	1.297	1.303	1.152	1.161
Atkinson ( $e = .5$ )	0.428	0.429	0.370	0.374
Atkinson ( $e = 1$ )	0.646	0.648	0.571	0.576
Atkinson ( $e = 1.5$ )	0.755	0.757	0.678	0.683
Atkinson ( $e = 2$ )	0.823	0.825	0.741	0.746
Atkinson ( $e = 2.5$ )	0.890	0.891	0.785	0.789
Atkinson ( $e = 3$ )	0.960	0.961	0.818	0.822

Inequality appears quite significantly lower when household income or expenditure is scaled to a per capita level using the second or third equivalence scaling methods set out earlier, i.e. instead of simply dividing household income or expenditure by the number of members of the household (as in  $E_1$  scaling above), a measure is constructed for each household based on the age or age group of each member. The reason why the use of these equivalence scales lowers the inequality measures is that poorer households generally have a higher proportion of children, and using an equivalence scale in which children count for less than an adult improves the relative position of those households when measuring overall inequality.

Table 3: Inequality measures for income and expenditure ( $E_2$  scaling)

	Income	Income including in-kind	Consumption	Consumption including in-kind
Gini coefficient	0.688	0.689	0.638	0.642
Theil index	1.037	1.036	0.855	0.862
Mean Log Deviation	0.920	0.926	0.741	0.753
Entropy index	1.874	1.893	1.138	1.166
Half $CV^2$	3.046	2.992	1.989	1.978
Relative mean deviation	0.544	0.546	0.502	0.506
Coefficient of variation	2.468	2.446	1.994	1.989
Standard deviation of logs	1.218	1.223	1.074	1.084
Atkinson ( $e = .5$ )	0.394	0.395	0.335	0.339
Atkinson ( $e = 1$ )	0.601	0.604	0.524	0.529
Atkinson ( $e = 1.5$ )	0.714	0.716	0.629	0.635
Atkinson ( $e = 2$ )	0.789	0.791	0.695	0.700
Atkinson ( $e = 2.5$ )	0.871	0.872	0.741	0.746
Atkinson ( $e = 3$ )	0.953	0.954	0.779	0.782

Table 4: Inequality measures for income and expenditure (E<sub>3</sub> scaling)

	Income	Income including in-kind	Consumption	Consumption including in-kind
Gini coefficient	0.690	0.691	0.640	0.643
Theil index	1.042	1.042	0.860	0.866
Mean Log Deviation	0.927	0.933	0.745	0.757
Entropy index	1.913	1.933	1.148	1.177
Half CV <sup>2</sup>	3.046	2.992	2.009	1.998
Relative mean deviation	0.545	0.547	0.503	0.508
Coefficient of variation	2.468	2.446	2.005	1.999
Standard deviation of logs	1.223	1.228	1.077	1.087
Atkinson (e = .5)	0.396	0.397	0.337	0.340
Atkinson (e = 1)	0.604	0.607	0.525	0.531
Atkinson (e = 1.5)	0.717	0.719	0.631	0.637
Atkinson (e = 2)	0.793	0.794	0.697	0.702
Atkinson (e = 2.5)	0.876	0.877	0.743	0.748
Atkinson (e = 3)	0.956	0.957	0.781	0.785

Tables 5-7 below show the distribution of income and expenditure in terms of percentile ratios. These measures of income include both earnings and non-earnings income, as explained in Box 1. p<sub>90</sub>/p<sub>10</sub> is the ratio between the income (or expenditure) of the person at the 90<sup>th</sup> percentile of the income distribution (i.e. at the bottom of the top decile) and that of the person at the 10<sup>th</sup> percentile (i.e. the top of the bottom decile). Similarly for the measures p<sub>90</sub>/p<sub>50</sub>, p<sub>10</sub>/p<sub>50</sub>, p<sub>75</sub>/p<sub>25</sub>, p<sub>75</sub>/p<sub>50</sub>, and p<sub>25</sub>/p<sub>50</sub>. These are shown for each of income and expenditure, and with and without in-kind income or expenditure respectively.

The person at the 90<sup>th</sup> percentile receives income more than 27 times and consumes about twenty times that of the person at the 10<sup>th</sup> percentile (using simple per capita scaling). As with the other measures of inequality discussed above, the percentile ratios fall somewhat when we use equivalence scales other than household per capita scaling (E<sub>2</sub> and E<sub>3</sub> scaling).

Table 5: Percentile ratios for income and expenditure (E<sub>1</sub> scaling)

	Income	Income including in-kind	Consumption	Consumption including in-kind
p <sub>90</sub> /p <sub>10</sub>	27.632	28.36	19.508	20.193
p <sub>90</sub> /p <sub>50</sub>	8.396	8.6	6.809	7.049
p <sub>10</sub> /p <sub>50</sub>	0.304	0.303	0.349	0.349
p <sub>75</sub> /p <sub>25</sub>	5.272	5.304	4.149	4.204
p <sub>75</sub> /p <sub>50</sub>	2.704	2.714	2.318	2.334
p <sub>25</sub> /p <sub>50</sub>	0.513	0.512	0.559	0.555

Table 6: Percentile ratios for income and expenditure ( $E_2$  scaling)

	Income	Income including in-kind	Consumption	Consumption including in-kind
p90/p10	22.354	23.262	15.684	16.539
p90/p50	7.457	7.732	5.992	6.331
p10/p50	0.334	0.332	0.382	0.383
p75/p25	4.472	4.522	3.613	3.658
p75/p50	2.47	2.484	2.11	2.137
p25/p50	0.552	0.549	0.584	0.584

Table 7: Percentile ratios for income and expenditure ( $E_3$  scaling)

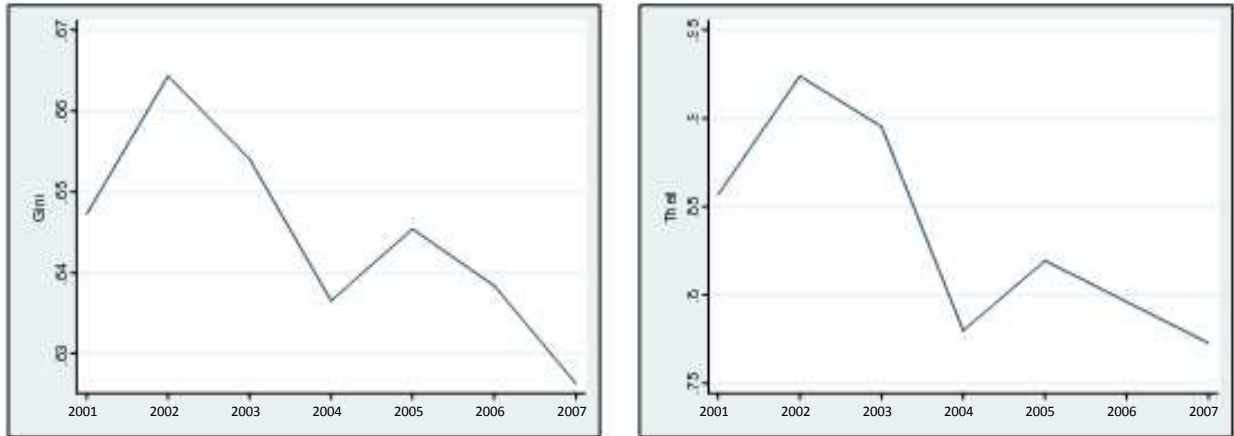
	Income	Income including in-kind	Consumption	Consumption including in-kind
p90/p10	22.85	23.598	15.761	16.779
p90/p50	7.483	7.75	5.993	6.356
p10/p50	0.327	0.328	0.38	0.379
p75/p25	4.583	4.602	3.603	3.621
p75/p50	2.511	2.51	2.099	2.107
p25/p50	0.548	0.546	0.583	0.582

### 3.3. Trends in earnings inequality

The lack of comparable data on income over time unfortunately makes it difficult to assess the trends in income or expenditure inequality. The problems with earlier IES rounds, notably with the 2000 IES, make it difficult to draw conclusions around changes in income or expenditure inequality with an acceptable degree of certainty that any observed changes are actual changes in the variables as opposed to changes in sampling, weighting, survey methodology, or erroneous reported observations. With further attention to making these datasets comparable and cleaning the data, this could become possible. However, at this point we focus on the trends in earnings inequality (using the fourteen LFS datasets from 2001-2007).

Firstly, Figure 10 below shows the trends in earning inequality, measured with the Gini (left-hand plot) and Theil (right-hand plot) coefficients. Earnings inequality clearly declines from 2002 onwards (actually after September 2002), although there is a spike in 2005.

Figure 10: Earnings inequality amongst employed, 2001-2007

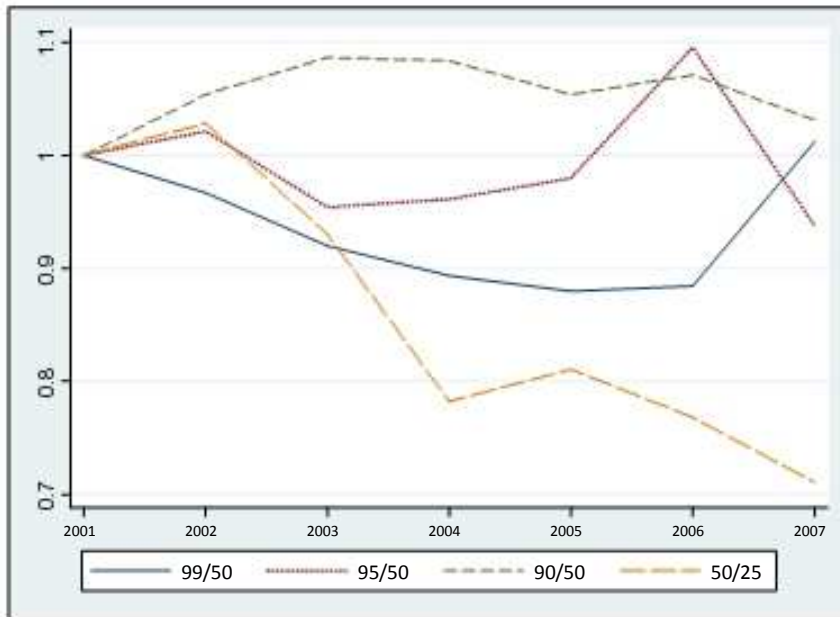


Note:  
Annual averages calculated from the biannual LFS data.

We can also look at the trends in earnings inequality amongst the employed in terms of the ratios between earnings at various percentiles of the earnings distribution. Figure 11 below shows four such ratios. The line 99/50 shows ratio between the earnings of the person at the 99<sup>th</sup> percentile (i.e. only 1% of the employed earn more than that person) and the median earner; similarly for the ratios 95/50, 90/50, and 50/25. The ratios are indexed to 1 in 2001 so that the trends can be more clearly seen.

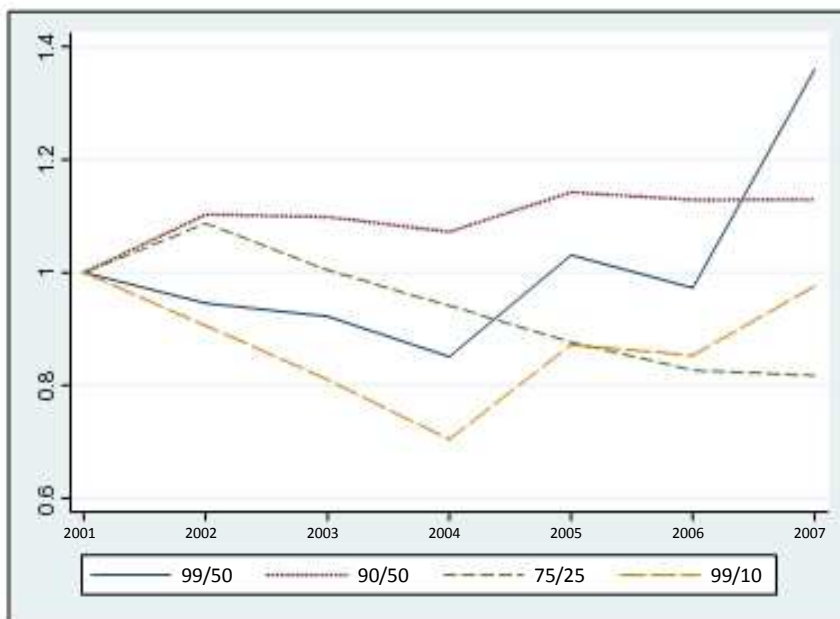
The most striking change is the decline in the ratio of the median earnings to the 25<sup>th</sup> percentile. That is, earnings at the 25<sup>th</sup> percentile (falling above a quarter of the employed) improved significantly relative to the median. Median earnings also declined relative to those at the 90<sup>th</sup> percentile (note that the short-dashed line of 90/50 is above the 1 index line throughout).

Figure 11: Selected percentile ratios of earnings, 2001-2007



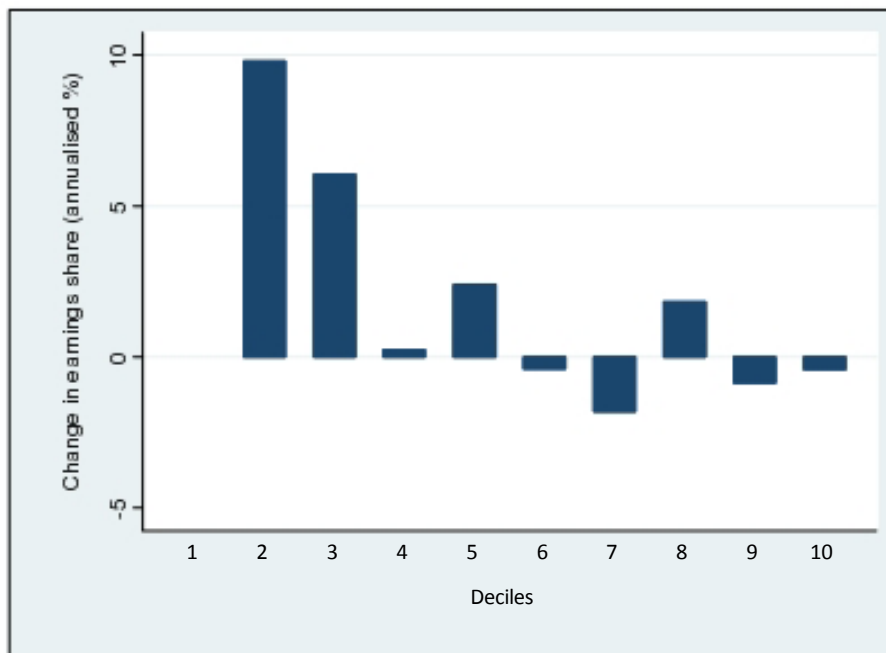
The picture changes a bit when people who are employed but earning nothing are excluded (as shown in Figure 12 below). This brings out more strongly the increase in earnings at the top relative to the middle of the distribution - note the rises in the solid line showing the 99/50 ratio and the dotted line showing the 90/50 ratio. The earnings of the 75<sup>th</sup> percentile decline relative to the 25<sup>th</sup> percentile; while perhaps surprising, this is consistent with the recent decline in earnings inequality as shown earlier in Figure 10.

Figure 12: Selected percentile ratios of earnings, 2001-2007 (excl. zero-earners)



In Figure 13 the change in earnings share between 2001 and 2007 is shown for each decile of the employed, and Figure 14 below that shows the same but excluding zero-earners amongst the employed. The bar for each decile shows the change in that group's<sup>15</sup> share of total earnings, i.e. the deciles with bars above the zero line increased their share of total earnings between 2001 and 2007, while the share of those with negative bars fell. What is striking is that the highest relative gains accrued to the second and third deciles (that is, those falling above the lowest 10% of earners).<sup>16</sup> When zero-earners are excluded, the ninth decile (i.e. second richest) also significantly increased its share of total earnings.

Figure 13: Change in earnings share by decile 2001-2007



Notes:

Decile 1 is the 10% of the employed with the lowest earnings, decile 10 is the 10% of highest earners amongst the employed. The membership of each decile changes over time.

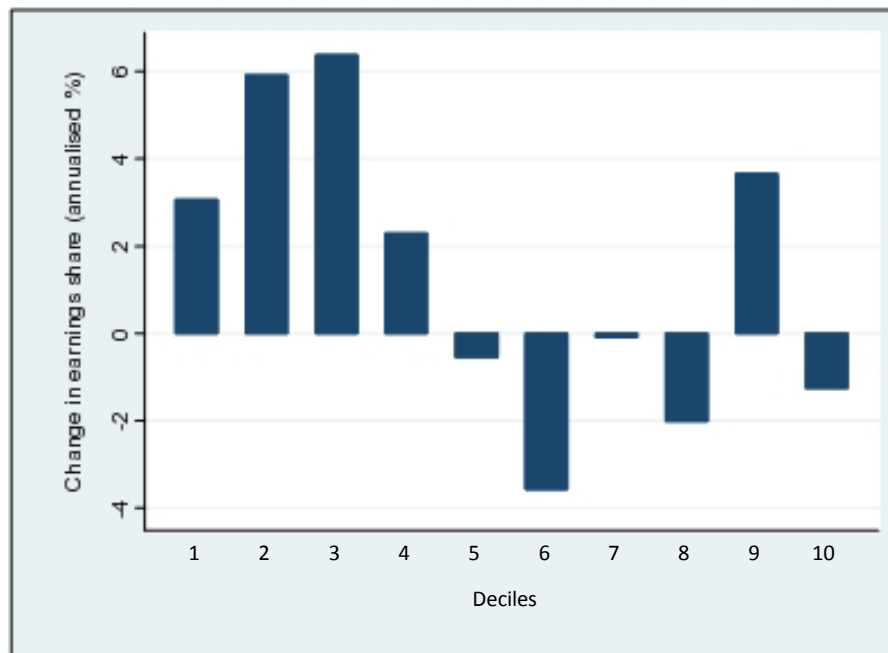
Each bar represents the (annualised) change in the earnings share of that decile between September 2001 and September 2007.

No bar is shown for decile 1 since no members of this group received earnings in each period.

<sup>15</sup> Note that the membership of each decile changes over time.

<sup>16</sup> The highest absolute increases in earnings of course went to the top decile, here we are looking at the changes in the share of each decile in total earnings.

Figure 14: Change in earnings share by decile 2001-2007, excl. zero-earners



Notes:

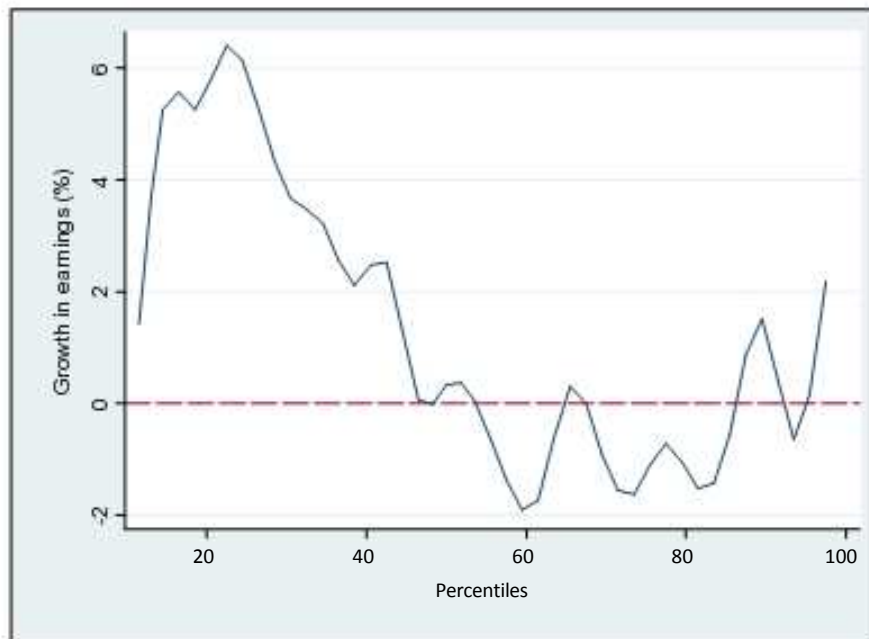
As in Figure 13 above, except that zero earners are excluded in this plot.

Another way of analysing how earnings grew for different parts of the earnings distribution is a growth incidence curve, as in Figures 15 and 16 below. This shows the growth rates experienced by people at each percentile of the earnings distribution, from the first to the hundredth percentile, over the period September 2001- September 2007. (Figure 16 shows the same growth incidence curve but excluding those who are employed but earning nothing). Earnings grew the most for those in about the lower third of the distribution but excluding the very bottom. Earnings appear to have fallen in real terms for much of the top half of the distribution, although this is difficult to believe. The top end of the distribution benefited from earnings growth above that of the rest of the top half of the distribution.

The trends shown in percentile ratios, decile shares, and growth incidence curves suggest that, to the extent that there has been some 'redistribution' towards the lowest earners, the relative losers have been not the high income earners but the middle and upper-middle.



Figure 15: Growth incidence curve of earnings, 2001-2007



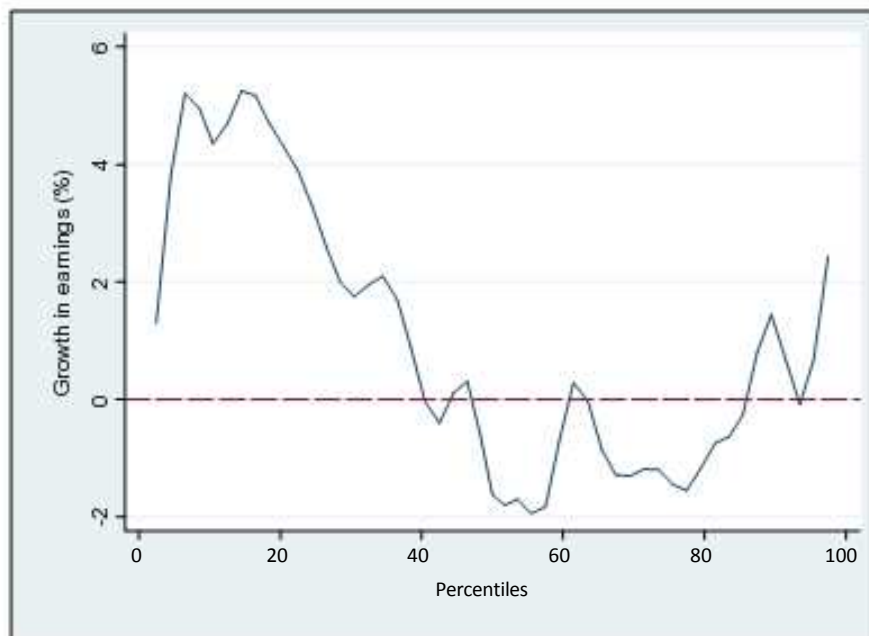
Notes:

The curve shows the average annualised average growth rate of earnings amongst the employed, from September 2001 to September 2007.

2001 data inflated to 2007 prices using CPI.

Curve smoothed into 25 bands.

Figure 16: Growth incidence curve of earnings excl. zero-earners, 2001-2007



Notes:

As for Figure 15 above.

### 3.4. International comparisons

Finally, we contextualise the level of inequality in South Africa by international standards. Kuznets predicted an 'inverted-U' relationship between income per capita and GDP. That is, inequality would be expected to fall in the early stages of industrialisation but to fall thereafter. There is however mixed evidence as to the validity of this today,<sup>17</sup> and analysis is fraught with problems regarding the comparability of data internationally.

Figure 17 below shows countries by their level of income per capita (in natural logs) and Gini coefficient. Each of the 127 points in the scatterplot represents a country. The observations are not from the same year for each country (as suitable surveys are generally not conducted annually and there is a lag in reporting results) but those shown here are the most recent for each country, restricted to those after 1995. The observations for each country are not derived from uniform sources or measure the same concepts (given the different ways that countries measure and report distribution). We have therefore depicted separate series for gross earnings, gross income, disposable income and consumption or expenditure respectively, with observations not being directly comparable across these series (for instance, it can be seen that the coefficients for disposable income are typically below those for gross income, given that taxes tend to have an equalising impact).

Overall we find a weak negative relationship between income per capita and the Gini coefficient internationally, but there is considerable variation around this.<sup>18</sup>

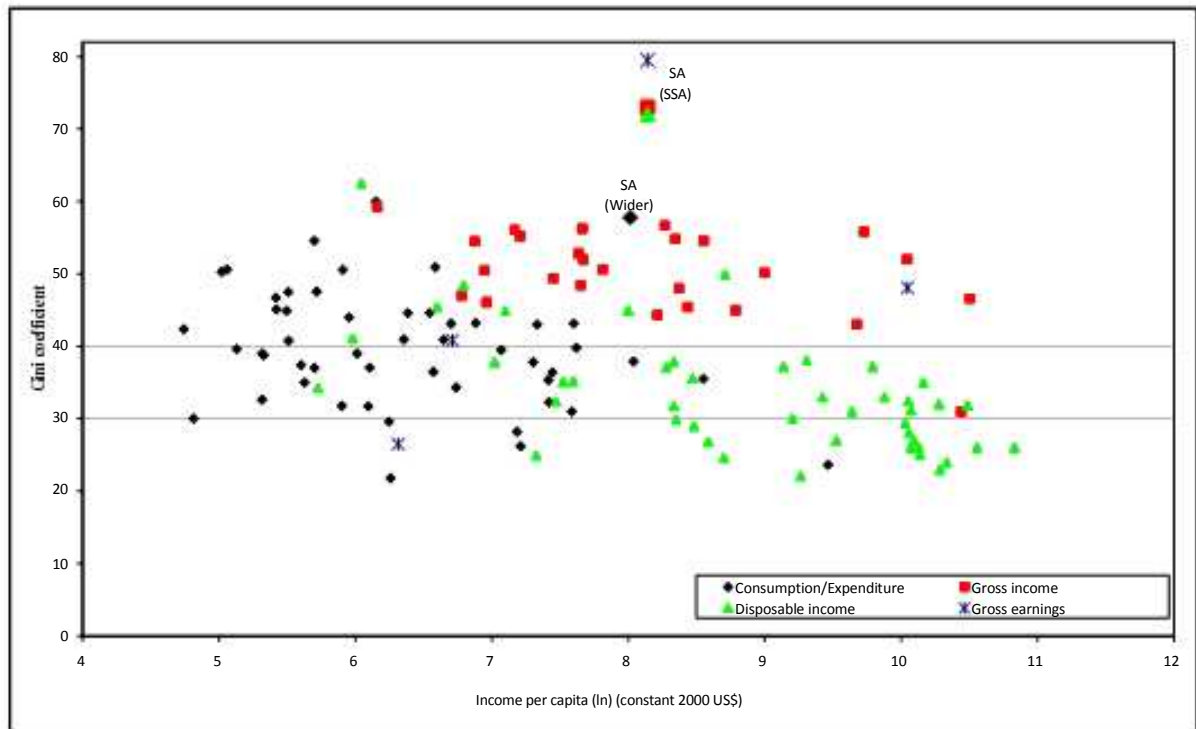
Notwithstanding the limitations of international comparisons of this sort, it is clear that South Africa has extremely high levels of inequality by international standards. Other countries with extremely high levels of inequality are either Latin American (Colombia, Paraguay, Brazil, and Haiti) or African (Lesotho, Kenya, and Zambia).

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<sup>17</sup> For instance, Deininger and Squire (1998) find no evidence to support the Kuznets hypothesis. Galbraith and Garcilazo, on the other hand, find a downward-sloping relationship between income levels and inequality.

<sup>18</sup> In separate OLS regressions for each series income per capita generally explains no more than 30% of the variation in the Gini coefficient.

Figure 17: International comparison of inequality by income per capita



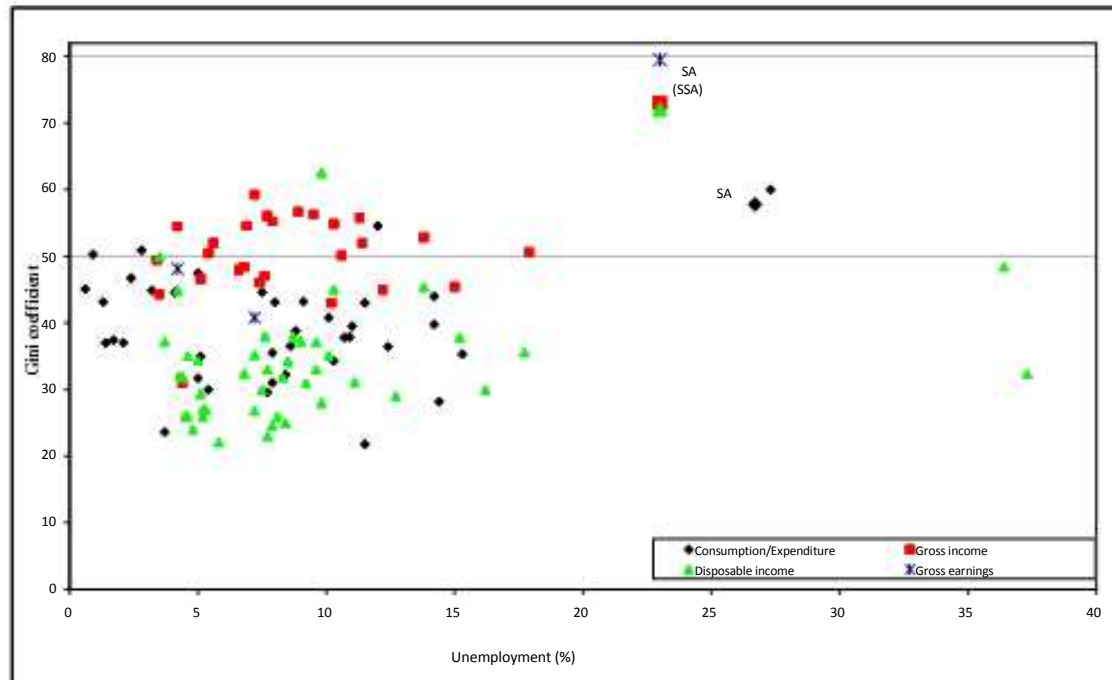
Notes:

The lower point for South Africa (marked 'SA (Wider)') is for 2000 and is the most recent available in the WIDER database. We have also included the Gini coefficients reported by Statistics South Africa from the 2005/6 Income and Expenditure Survey (the top three points labelled 'SA (SSA)' in the relevant series), which are extreme outliers.

Data derived from WIDER World Income Inequality Database 2; Statistics South Africa (2008g).

Given the focus on unemployment and inequality in this study, we also compare levels of inequality and unemployment internationally. Figure 18 below shows the same inequality data as above, but now plotted against each country's rate of unemployment. South Africa stands out even more clearly as an outlier, both in terms of inequality and unemployment. Other countries with extremely high levels of unemployment include Iraq, Armenia, Namibia, some small islands such as Reunion and the Marshall Islands, and the West Bank. However, all of these countries or territories have lower levels of inequality than does South Africa. South Africa and Lesotho are the only countries with extremely high levels of both inequality and unemployment. Notwithstanding the problems of data and comparability of these variables internationally, it is clear that there is something particular and wrong in the case of South Africa.

Figure 18: International comparison of inequality and unemployment



Notes:

The points labelled 'SA (SSA)' use the most recent national data published by Stats SA, for both unemployment and three measures on inequality. The lower point for South Africa (marked 'SA') is based on the same international data sources as for the rest of the countries.

Data derived from WIDER World Income Inequality Database 2; ILO Key Indicators of the Labour Market; Statistics South Africa (2008b); and Statistics South Africa (2008g).

Distribution in South Africa can also be contextualised internationally by comparing the income or consumption levels of the poor or rich in South Africa with those of the poor or rich internationally. The poorest decile in South Africa has levels of consumption below those of the poorest decile in countries such as China, Peru, Morocco, and Indonesia.<sup>19</sup> Meanwhile at the other end of the spectrum, the richest decile receives income at levels well above those in other countries at a similar or higher level of development and which are considered to be highly unequal (such as Brazil, Mexico, and Argentina) and above that of new members of the EU such as the Czech Republic or Poland. The income levels of the richest decile in South Africa is actually not that far below that of some European countries such as the Netherlands, since although these countries have much higher levels of income per capita it is far more equitably distributed than in South Africa.

<sup>19</sup> All figures in this paragraph are authors' calculations derived from the World Bank World Development Indicators (for PPP GDP per capita in international \$), the WIDER World Income Inequality Database (for income and expenditure shares of the top and bottom deciles), and the 2005/06 IES (for the decile shares of South Africa). We compare consumption in the case of the bottom decile since this is more uniformly reported in developing countries which are the comparator countries in this case, whereas income is more uniformly reported in developed countries which are the relevant comparators for the top decile. There are various limitations in international comparisons of this sort, including in the way that GDP PPP is calculated, and hence these comparisons are intended as primarily indicative.

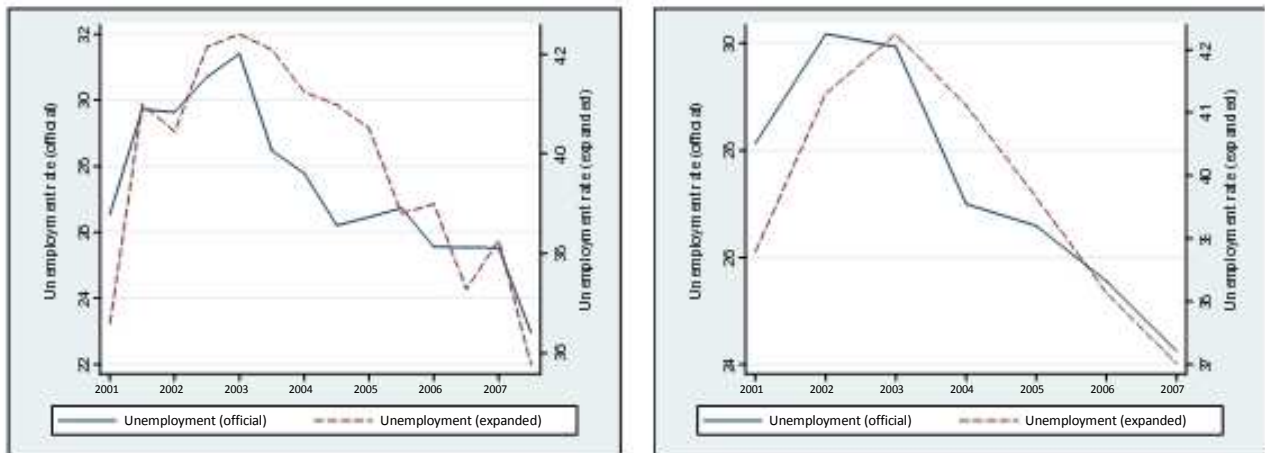
#### 4. UNEMPLOYMENT IN SOUTH AFRICA

Before analysing the relationship between unemployment and inequality in South Africa, we provide a brief empirical overview of the state of unemployment. Firstly, we show the trends in unemployment over time. Secondly, we profile the unemployed in South Africa in terms of some important demographic indicators.

##### 4.1. Trends in unemployment

Figure 19 below shows the trends in unemployment over time, using both the official and expanded definitions of unemployment (see Box 3 below for an explanation of each of these rates and the relevance of looking at both). Unemployment peaked in the first half of 2003, and has since been steadily declining. The expanded rate of unemployment took longer to come down.<sup>20</sup> Notwithstanding the recent decline in unemployment, it remains shockingly high by international standards as well as in terms of long-term trends in South Africa. Unemployment is still higher now than it was in the mid-1990s.

Figure 19: Unemployment rates, 2001-2007



Note:

The chart of the left shows the biannual values of unemployment, while the right-hand chart shows the annual averages.

<sup>20</sup> This could indicate that part of the initial drop in the official rate of unemployment was due to some of the unemployed ceasing to actively seek work and hence being reclassified as 'discouraged job-seekers' and therefore out of the labour force. It could also indicate that the rate of gaining jobs was relatively higher amongst the officially unemployed, and that there was a delay before previously 'discouraged' jobseekers began to actively seek unemployment.

### Box 3: The official and expanded definitions of unemployment

The official definition of unemployment used by Stats SA includes people who meet all of the following criteria:

- (i) between the ages of 15 and 65 (inclusive);
- (ii) did not have a job or business in the seven days prior to the survey interview;
- (iii) available to take up work within two weeks of the interview ; and
- (iv) had looked for work or taken steps to start a business in the four weeks prior to the interview.

The expanded definition of unemployment includes people who meet only the first three criteria above. That is, it includes all those who meet the official definition of unemployment, as well as the 'discouraged work-seekers' who have not actively sought employment in the four weeks preceding the interview.

While we take the official definition of unemployment as the starting point in this report, where relevant we report both rates and use both in the empirical analysis. The reason for this is that each of the official and expanded rates bring particular insights to the analysis. Given the scale and nature of unemployment in South Africa, a significant number of people without jobs but who would like to work and are available to do so have given up from actively seeking jobs given the low probability of success and/or because of the costs involved in the search process. While these people are not included in the official definition of unemployment, trends in this category remain directly relevant to understanding developments in the labour market and in distribution.

## 4.2. The incidence of unemployment

In order to understand the impact of changes in unemployment on inequality, we need to look at profile of different categories of employment status. Although one would intuitively expect a rise in unemployment to increase inequality and vice versa, this is contingent on the relative income of the 'newly unemployed' under a rise in unemployment or the 'newly employed' in the case of a decline in unemployment.

In Figures 20-23 and Tables 8-11 below we summarise some salient aspects of unemployment in South Africa, using the latest data available which is the September 2007 LFS. We compare the unemployed with the employed in terms of race, gender, age, and education level. The charts show the unemployment rates across the various categories. The tables show the composition of each of the employed, the officially unemployed, and the expanded unemployed in terms of the categories.

Figures 20-21 and Tables 8-9 confirm what is already known about the incidence of unemployment in South Africa, in that it is disproportionately high amongst Africans (and to a lesser extent among Coloureds), and that women have higher rates of unemployment than do men.

Figure 20: Unemployment rates by race

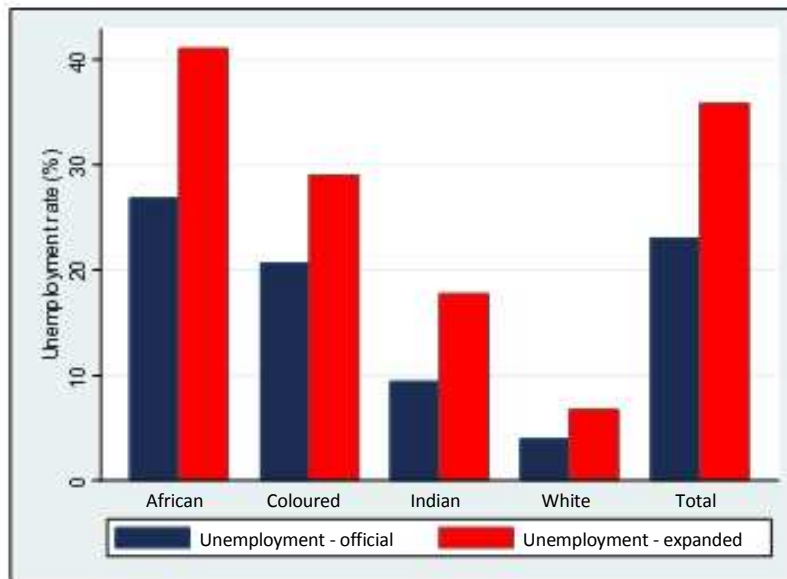


Table 8: Composition of the unemployed and employed in terms of race (%)

	Unemployed [official]	Unemployed [broad]	Employed
African	87.7	89.2	71.5
Coloured	9.1	7.6	10.4
Indian	1.1	1.2	3.2
White	2.0	1.9	14.6
Total	100	100	100

Note:

Tables 8-11 show the data for ages 15-65 inclusive since we are focusing here on the labour force.

Figure 21: Unemployment rates by sex

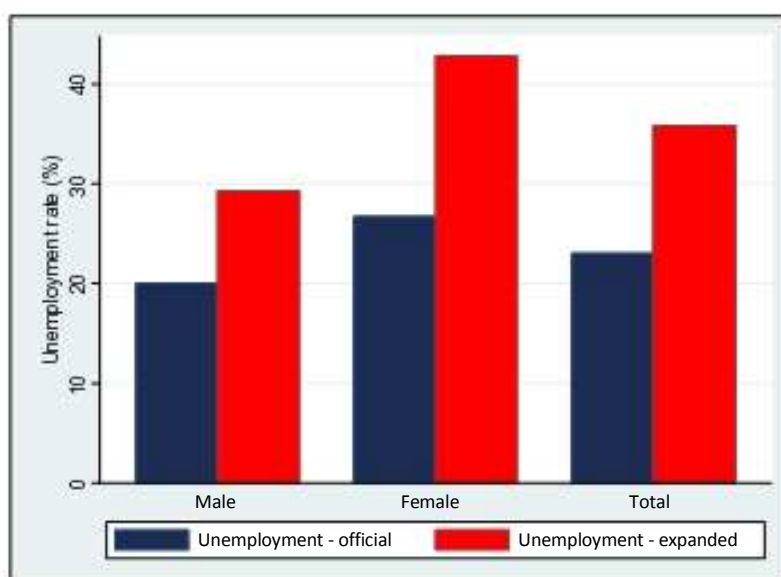


Table 9: Composition of the unemployed and employed by sex (%)

	Unemployed [official]	Unemployed [broad]	Employed
Male	47.7	42.5	57.1
Female	52.2	57.5	42.8
Total	100	100	100

Unemployment rates are highest amongst the young, as can be seen from Figure 22 below. People in their early twenties have an official unemployment rate of 45% and a rate of expanded unemployment at 60%. Half of the unemployed are in their twenties, and 84% of the unemployment are below 40 years of age. Not only is this a terrible waste of human resources, but it does not bode well for future productivity or for social stability.

Figure 22: Unemployment rates by age group

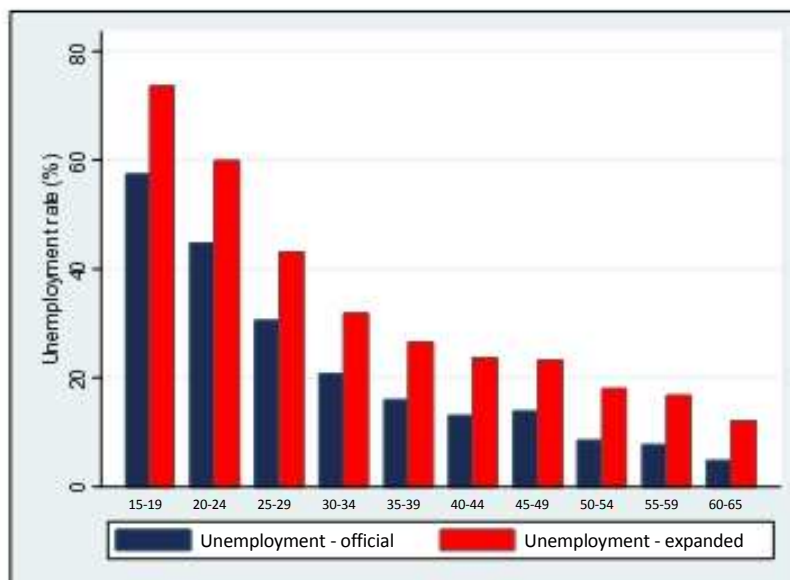


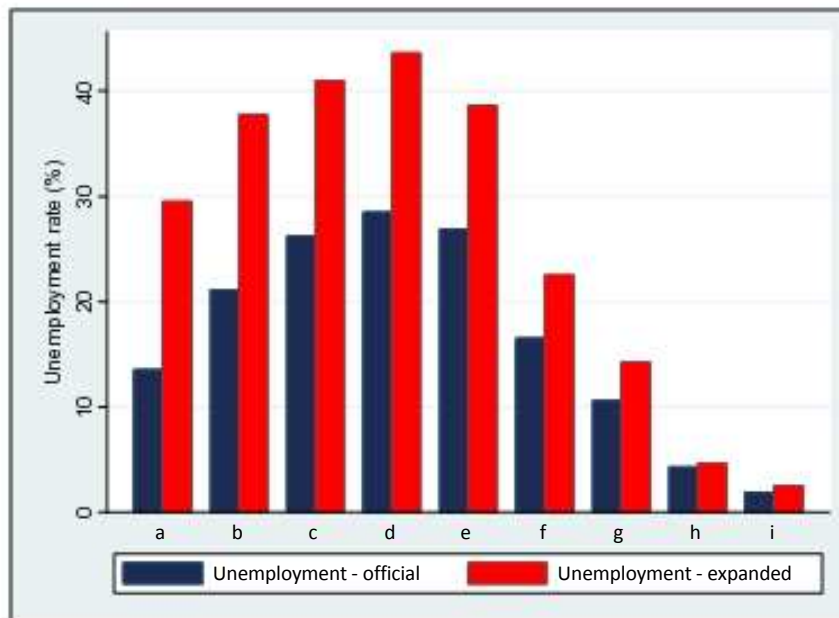
Table 10: Composition of the unemployed and employed by age (%)

	Unemployed [official]	Unemployed [broad]	Employed
15-19 years	7.0	7.8	1.5
20-24 years	27.4	26.9	10.1
25-29 years	24.2	22.4	16.5
30-34 years	15.7	15.0	17.9
35-39 years	9.5	9.6	14.9
40-44 years	5.9	6.5	11.7
45-49 years	5.6	5.7	10.5
50-54 years	2.6	3.3	8.4
55-59 years	1.5	2.0	5.4
60-65 years	0.5	0.8	3.1
Total	100	100	100



The incidence of unemployment in terms of highest level of education reached is explained to a large extent by the age structure of unemployment shown above. The fact that unemployment is lower amongst those with no education than amongst those with Matric is due to the fact that the youth are relatively better educated yet have the highest incidence of unemployment. Unemployment rates are highest amongst those who have completed Grade 10 but no further, closely followed by those with Matric. Almost half of the unemployed have a Matric or higher qualification. The unemployed in South Africa are thus by no means the least educated. Their job-related skills are however generally likely to be fairly low, particularly given the minimal work experience of most of the employed.

Figure 23: Unemployment rates by education



Note:

Refer to Table 11 below for the key of which education levels labels a-i refer to.

Table 11: Composition of the unemployed and employed by education (%)

Key	Unemployed [official]	Unemployed [broad]	Employed
a No schooling	2.7	3.9	5.1
b Grade 6	11.8	14.3	13.2
c Grade 7 (Primary school completion)	7.2	7.5	6.1
d Grade 10	29.4	30.5	22.0
e Grade 12 (Secondary school completion)	43.0	39.3	34.8
f NTC (i/ii/iii)	0.5	0.4	0.8
g Diploma/certificate	4.4	3.3	11.1
h Undergraduate degree	0.5	0.3	3.1
i Postgraduate qualification	0.2	0.1	3.2
Total	100	100	100

Note:

Education refers to the highest education level reached.

'Bachelor's degree and diploma' was counted as Postgraduate (just 0.5% of people).

## 5. RELATIONSHIP BETWEEN EMPLOYMENT STRUCTURE AND INEQUALITY IN SOUTH AFRICA

We now get to the meat of the empirical analysis. In this section we explore several aspects of the relationship between labour market structure and inequality. We begin by reviewing some key findings from the literature concerning inequality in relation to unemployment and other labour market issues in South Africa. Then in the first part of our empirical investigation of the relationship between inequality and unemployment, we examine the trends in unemployment and earnings inequality over time. Secondly, we analyse total income in terms of the contribution of the various income sources to overall inequality, to find out how much of total income inequality can be traced to earnings specifically. Thirdly, we analyse inequality in terms of labour market structure, in order to understand the extent to which inequality can be explained in terms of the proportions of people employed and unemployed, the composition of those employed, and earnings patterns amongst the employed.

### 5.1. Insights from the existing literature

Before proceeding to the empirical analysis, we review some findings that have emerged from the South African literature, specifically on the relationship between unemployment and other labour market issues, and inequality.<sup>21</sup>

According to Whiteford and Van Seventer (2000), increasing unemployment between 1991 and 1996 contributed to increasing inequality. Trade liberalisation shifted the skills composition of the economy in favour of higher skills, which they suggest also increased inequality through several channels. These channels are identified as an increase in the small number of highly-paid highly-skilled people employed; a decrease in the formal employment of the less-skilled; and an increase in the number of people who lost their formal sector jobs and were forced into informal income-generating activities or dependence on other people. Affirmative action, in the context of a skills shortage amongst professionals, is also identified as pushing up earnings at top. More broadly, they conclude that the changes in the distribution of income in South Africa between 1991 and 1996 are explained primarily by trends in the labour market. Looking to the future, they warn that 'unless there is a fundamental shift in the path along which the South African economy is moving, there is little hope for a reduction in inequality and income poverty.'

Leibbrandt et al (1996) use data derived from a 1993 Living Standards Measurement Study Survey (as part of the Project for Statistics on Living Standards and Development) to decompose the Gini coefficient by income source. They find that wage and salary income is not only the most important income component but is also the component that contributes most to overall income inequality amongst African households.

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<sup>21</sup> See section 2.2 for a critical review of the international literature on the relationship between inequality and various labour market issues, and section 3.1 for a summary of some findings from the South African literature on inequality in general.

This is confirmed by Borat et al (1999), who apply the same technique to the 1995 IES for all households. They conclude that

access to wage income is central to determining which households are able to avoid poverty and, even, the depth to which poor households sink below the poverty line. This reasserts the importance of the labour market in understanding poverty: that the formal earnings capacity of households will either reinforce or shed their poverty status.

They caution however that these results do not necessarily provide support for an insider/outside model of the labour market. By examining the labour market status of the various members of households, they find that most households with no unemployed members are concentrated at the very bottom of the income distribution below the poverty line, while it is income inequality within households with no unemployed members that is central to overall income dynamics, noting that:

most of the household-level inequality in South Africa is driven by income dynamics within households with no unemployed members. Thus labour market earnings rather than unemployment need to be highlighted when looking at labour market factors driving household income inequality. However, this does not imply that unemployment is unimportant. Indeed, one of the major reasons for this finding is that households with unemployed members are uniformly bunched in the low-income sections of the household income distribution.

Leibbrandt and Woolard (2001) have emphasised that 'labour market factors are influential drivers of household inequality in South Africa' and that 'household income inequality is tightly linked to labour market access and the marked wage variation evident in South Africa.' By decomposing Gini coefficients (using 1993, 1995, and 1998 data) they find that wage income is the primary source of income inequality, with at least half of the inequality in wage income attributable to households with no wage income.

Leibbrandt and Woolard find a fairly high degree of income mobility among African households in KZN. Labour market activities are significant contributors to households' movements into and out of poverty. In an econometric analysis of the determinants of change in adult equivalent income more broadly, labour market characteristics (number of persons in the household with jobs, and number of unemployed persons in the household) were found to be very important. The coefficients of these regressors exceeded those of any of the human capital variables (such as age of the household head, number of children in household, and total years of education of those not in school) included in the specification.

Leite et al (2006) study post-Apartheid earnings inequality in South Africa and find several results germane to the relationship between labour markets and inequality. They suggest that skills-bias in the South African economy, related in part to trade liberalisation and conservative macroeconomic policies, have increased earnings inequality in South Africa by affecting the relative demand for different types of workers. They decompose total income inequality by income source using the IES for 1995 and 2000, and find that earnings are both the most important component of total income and the most important element in income inequality. This confirms the findings of

Leibbrandt et al (1996) and Borat et al (1999), although the magnitudes of the results vary somewhat.

Leite et al also decompose earnings inequality along various lines, including whether the person is an employee, self-employed, or both. They find that between-group inequality according to these categories accounted for about 8.6% of inequality in 1997/1998, but this declines to zero or close to zero by 2004. This means that in 2004 the inequality within each of the categories accounted for almost all of total earnings inequality (when decomposed in terms of this particular category). This might be because employee/self-employee/both is not a very meaningful categorisation, given that the 'self-employed' includes everything from an owner of a large business to a hawker working for herself.

They also undertake the same decomposition in terms of occupation, finding about 40% of earnings inequality to be accounted for by inequality between occupations (and the remaining 60% by inequality within occupations). Further, they find that increasing inequality within occupations contributed to the rise in earnings inequality between 1995 and 2004. The authors regard occupation as an important influence on earnings inequality. Their study also finds a positive and significant correlation between the Gini coefficient and unemployment between 1994 and 2004. They conclude that rising unemployment has been the main determinant of the rise in earnings inequality up to the early 2000s.

Of the studies that consider the relationships between labour markets and inequality, a strong relationship is found. Gelb (2003) concludes on the basis of the existing empirical literature that 'inequality and poverty depend heavily on employment status'. There are a number of other studies, including some of those cited in section 3.1 earlier, that look at various aspects and determinants of inequality but not specifically labour market determinants. Studies that find a strong relationship between labour markets or unemployment and inequality go up to the mid-2000s, but do not generally include the period of declining earnings inequality studied here (nor the 2005/6 IES).

## 5.2. Trends in inequality and unemployment

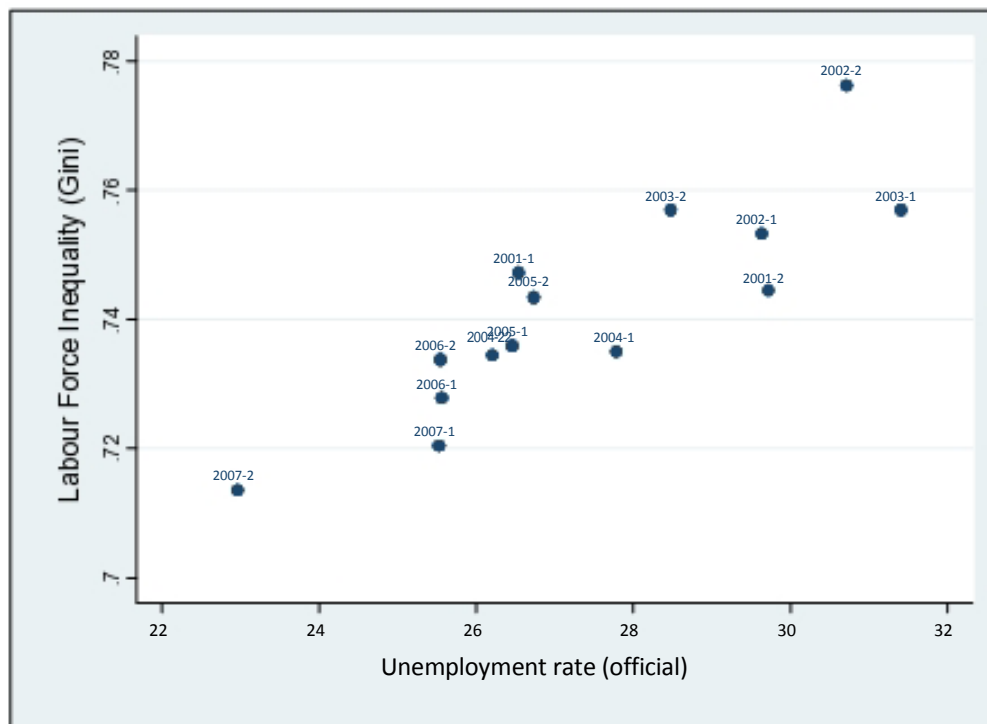
As a first take, we look at how unemployment and earnings inequality have moved over time. Trends in inequality and in unemployment were shown in earlier parts of this report, but here we are interested in how these trends relate with one another.

Figures 24- below depict the relationship between inequality and unemployment between 2001 and 2007, in various ways.<sup>22</sup> In the scatterplot below, each point represents shows the levels of inequality and of unemployment at that point in time. A very close positive relationship between unemployment and labour force inequality is clearly evident.

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<sup>22</sup> The period of analysis, 2001-2007, is determined by the availability of comparable data, as discussed in section 3.3. Furthermore, data limitations unfortunately preclude a similar analysis of the trends in unemployment and overall income inequality (given that the LFS only quantifies earnings, and there is not comparable data from the IES or other sources for income over time).

Figure 24: Scatterplot of unemployment and earnings inequality, 2001-2007



Note:

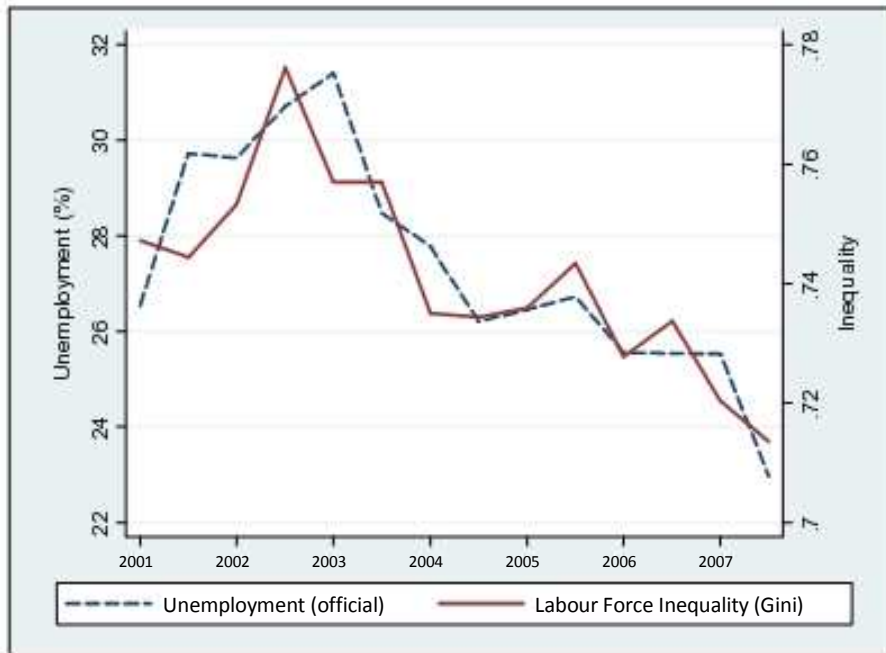
Each of the fourteen plots is from a round of the LFS. The label '2007-1' denotes the March 2007 LFS and the label '2007-2' the September 2007 LFS, similarly for other years.

Inequality is amongst the entire labour force (including the unemployed), using the official definition, aged between 15 and 65 inclusive.

The relationship between earnings inequality and unemployment is also depicted in Figures 25-28 below. We use both the official and expanded measures of unemployment, as each of these bring insights into the nature and scale of unemployment. While the plots below show inequality measured using the Gini, in Appendix 3 we show similar plots using other measures of inequality (Theil, mean log deviation, and relative mean deviation).

It is astonishing just how closely unemployment and earnings inequality move together over time. The data has not been smoothed or indexed in any way. These charts strongly suggest a very close relationship between unemployment and earnings inequality in South Africa, both for the labour force and for the population as a whole. As will be shown in section 5.3 later in this report, there is a very strong relationship between earnings inequality and overall income inequality. The period for which data is available is unfortunately too short to draw definitive conclusions, or to separate out cyclical factors from longer-term trends. Nevertheless, the evidence is thus strongly suggestive of a very close relationship between unemployment and inequality.

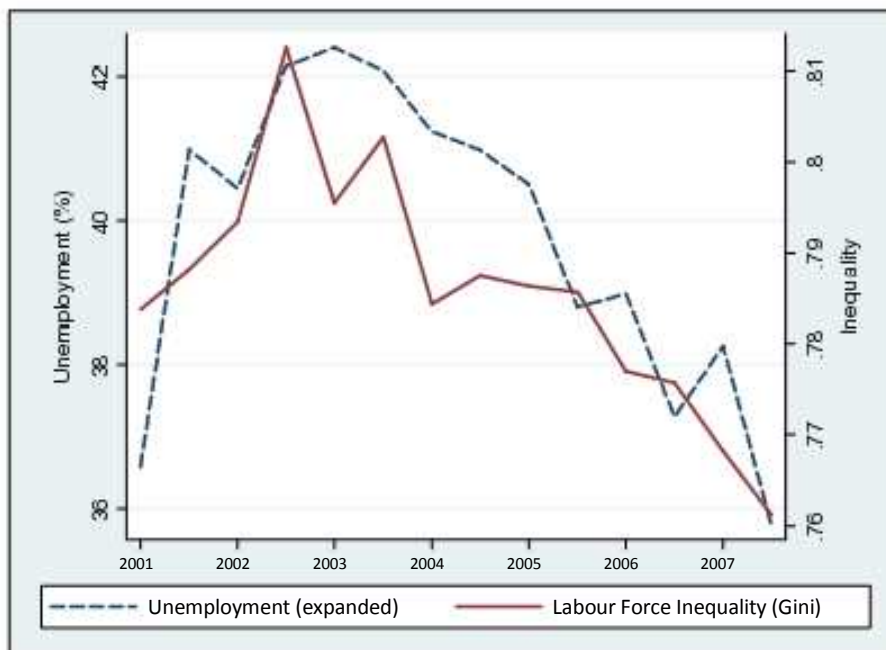
Figure 25: Unemployment [official] and earnings inequality among labour force



Note:

Labour force inequality refers to the inequality in earnings amongst all members of the labour force (employed and unemployed, using the official definition of unemployment) aged between 15 and 65 (inclusive).

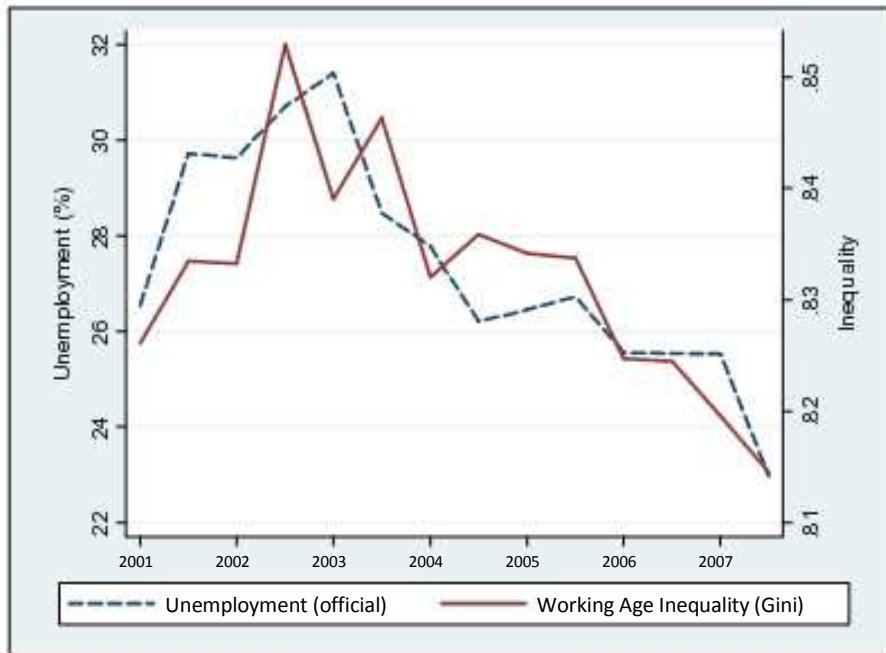
Figure 26: Unemployment [expanded] and earnings inequality among labour force



Note:

Labour force inequality as specified in Figure 25 above.

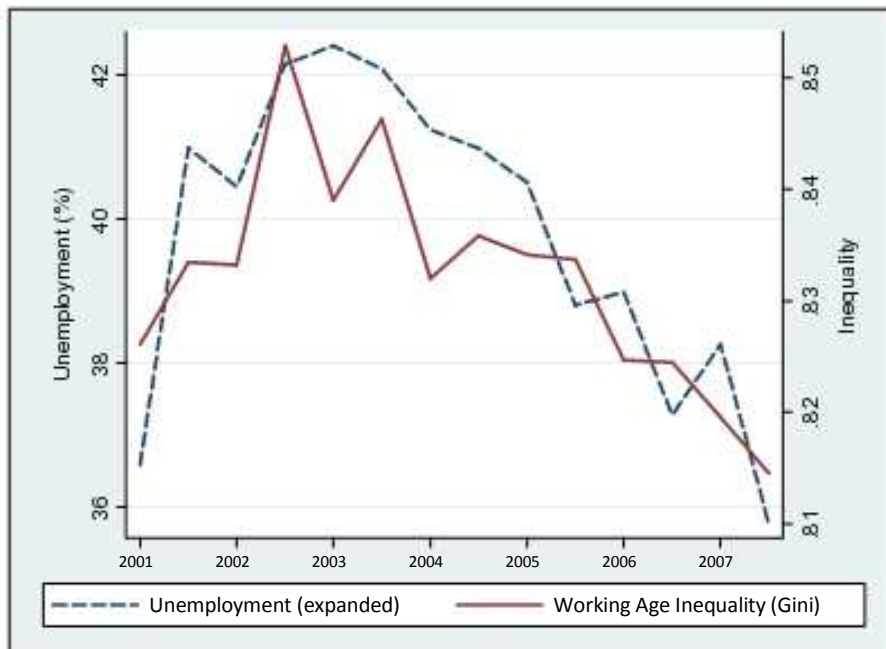
Figure 27: Unemployment [official] and earnings inequality among working age population



Note:

Working age inequality refers to inequality in earnings among the 'working age' population which we define here as those people aged between 19 and 65 (inclusive).

Figure 28: Unemployment [expanded] and earnings inequality among working age population



Note:

Working age inequality as specified in Figure 27 above.



These charts are strongly suggestive of a close relationship between unemployment and labour force earnings inequality, as well as between unemployment and earnings inequality among all 'working age' adults. However, they do not shed light on the causal relationship between unemployment and inequality. Some of the apparent relationship would be explained by the fact that higher unemployment means that a lower proportion of the labour force and of the working age adult population receive earnings and hence inequality would be higher in a straightforward 'compositional' sense.

We therefore plot similar charts but looking at the relationship between unemployment and earnings inequality amongst the employed (unlike the charts about which included the unemployed and other working age adults). These exclude the direct or compositional effect of unemployment on labour force or adult earnings inequality as discussed above, namely that unemployment raises the proportion of the labour force or adult population receiving no earnings. We are now looking at the relationship between unemployment on the one hand, and on the other hand earnings inequality amongst those who are employed, which is a more complex relationship. This is plotted in Figures 29 and 30 below, using the official and expanded definitions of unemployment respectively.

There still appears to be a clear positive relationship between unemployment and earnings inequality amongst the employed, particularly with unemployment as officially defined. As would be expected, the relationship is not as strong as with earnings inequality for the entire labour force or adult population. Nonetheless, the close positive relationship between unemployment and earnings inequality suggests that there is a relationship beyond the 'compositional' channel alluded to earlier.

Figure 29: Unemployment [official] and earnings inequality among employed

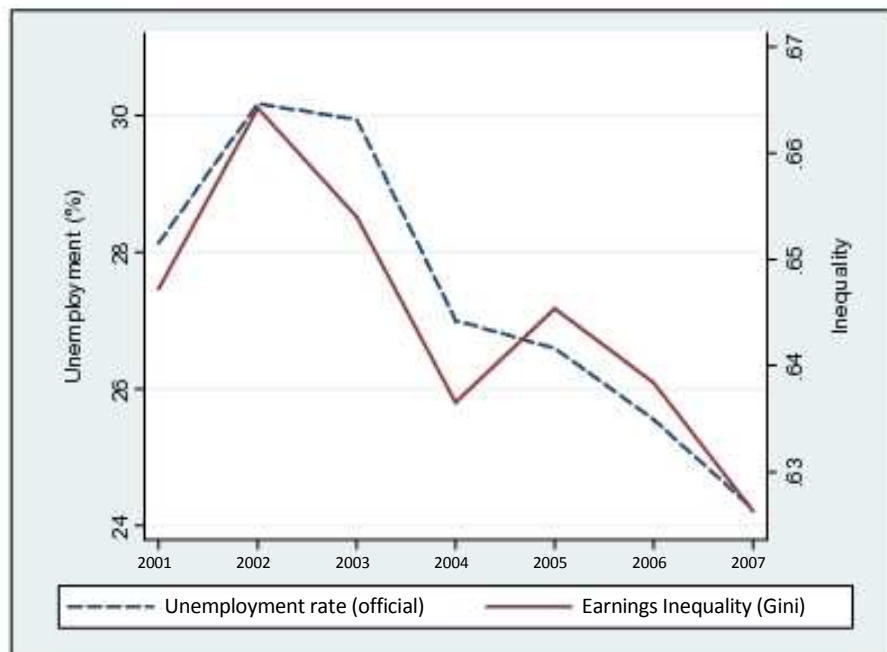
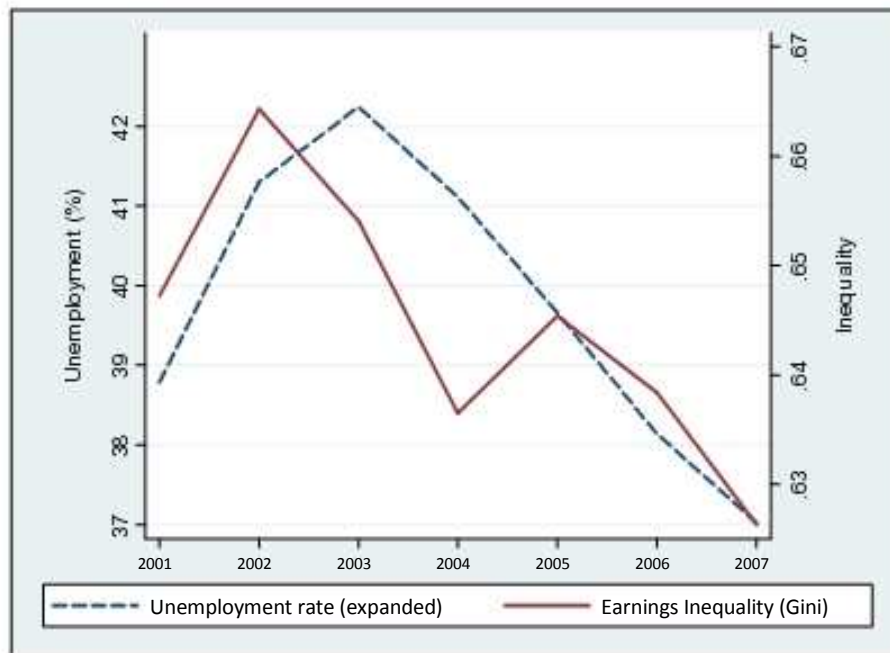


Figure 30: Unemployment [expanded] and earnings inequality among employed



These charts do not explain the causal relationship between unemployment and earnings inequality. Visual inspection of the trends might even suggest that inequality leads unemployment. For instance, inequality peaks in September 2002 before falling, while unemployment peaks in March 2003. However, this observation is not sufficient basis for any conclusions about causality. The number of data points is insufficient for more formal testing of causality (for example through econometric testing for Granger causality). In any event this would not necessarily show evidence of a causal relationship between these two series as it could as just as well be indicative of both series responding to an underlying impulse at different response rates.

We hypothesise three possible explanations of the apparent relationship between unemployment and earnings inequality. Firstly, a direct causal relationship running from the rate of unemployment to the level of earnings inequality operating through the effects of changes in unemployment on the composition of the employed. For instance, a fall in the rate of unemployment would have an equalising effect on earnings inequality if those gaining net new jobs resulted in a 'thickening out' of the middle section of the income distribution (in the case of the Gini coefficient, this would vary for other measures of inequality). This is probably part of the explanation, although it would imply that the trend in unemployment would lead the trends in earnings inequality.

A second possible explanation is an indirect causal relationship from the rate of unemployment to earnings inequality, through 'reserve army' type effects. The rate of unemployment may affect earnings inequality through the wage distribution of the employed. The higher the rate of unemployment among the less-skilled, the lower the bargaining power of the less-skilled who are employed, and the lower their wages are likely to be relative to the higher-skilled in the middle and upper parts of the earnings

distribution. Conversely, with a fall in unemployment - and specifically a fall in the rate of the unemployment among the less-skilled - that segment of the labour market would become tighter which would improve the bargaining position of those in employment in the lower range of the earnings distribution, reducing earnings inequality. This channel would also predict that changes in unemployment would lead changes in earnings inequality.

A third hypothesis for the observed relationship between unemployment and earnings distribution is that both are driven by a common underlying causal factor or set of factors. Pinning down these factors is beyond the scope of this research, although it is an issue that is undoubtedly worth investigating further. Broadly, we believe that trends in both unemployment and earnings inequality are affected by the changing distributional character of the growth path. This might include differential changes in demand for different types of labour. For example, a relative and absolute increase in the demand for unskilled labour could reduce both unemployment and earnings inequality. It would be surprising if this is currently the case in South Africa. Evidence actually shows that the demand for unskilled labour has fallen in South Africa, due to factors such as increasing import penetration of labour-intensive low-wage goods. However, the earnings share of the lower deciles has increased between 2001 and 2007, as was shown in Figures 13 and 14. Should these trends continue, this would bode well for reducing both inequality and unemployment. The pace at which earnings inequality and unemployment have been falling since about 2002/2003 is slow, given the depth of each of these problems.

In our view, the apparent relationship between unemployment and earnings inequality over the past several years in South Africa is related to all three of these explanations. The evidence available at this point does not allow us to definitively quantify the relative importance of any of them, although the empirical analysis that follows does shed some further light on the relationship. Further research would be needed to understand the causalities of this relationship more fully.

In terms of the broader political economy of distribution, the close positive relationship between unemployment and earnings inequality suggests that there is not a direct tradeoff between employment generation and reducing inequality. In an alternative scenario, more akin to what has been observed in some European countries, inequality and unemployment could have moved in opposite directions, perhaps in response to an external shock of shift in relative labour demand.<sup>23</sup>

One may speculate that there could have been a more dramatic reduction in unemployment had earnings inequality stayed constant or worsened (for example with complete downward flexibility of wages and a proliferation of very low-wage jobs), or alternatively that earnings inequality could have fallen more than it did with unemployment remaining stagnant (for instance with a smaller number of reasonably well-paid semi-skilled and skilled jobs instead of a larger number of poorly paid unskilled jobs). This would however be pure speculation as these trade-offs need not

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<sup>23</sup> The theoretical relationship between unemployment and inequality, and the international evidence in this regard, was reviewed in section 2.1 of this report.

materialise in practice and the available evidence for the last six years in South Africa does not provide support in this regard.

### 5.3. How much do earnings from work explain of overall inequality?

Work income is very important to households' economic status. About a quarter of households receive no income from work (see Table 12 below), and the overall income per capita in these households is far lower than that of households that do receive some work income. When we consider that the category of households receiving no income from work also includes wealthy white households whose occupants are retired, the low relative income of households receiving no work income is even starker. 63% of households receiving no income from work are female-headed and in 92% the household head is African - both figures are much higher than for households that do receive some income from work.

Table 12: Comparison between households receiving any and no income from work

	Household receives income from work	Household receives no income from work
% of households	73%	26%
% of individuals	72.5%	27.5%
Mean income per capita	R5 836.31	R2 861.88
Median income per capita	R24 820.13	R7 863.67
Head of household African (%)	74.8%	91.7%
Head of household female (%)	35.9%	63.3%

Note:

Derived from 2005/6 IES.

We analyse the importance of earnings inequality to total income inequality by breaking down income into earnings and its other components, and quantifying the contribution of each to overall income inequality. What is counted as income includes earnings from work as well as other sources such as income from capital and social grants. The way in which each of these income sources is distributed affects overall income inequality. In this part of the analysis we use the method of inequality decomposition by factor source to quantify how much each income source contributes to total income inequality. The technical details of this method are summarised in Appendix 4. The analysis uses data from the 2005/6 IES.

We group the various income sources into the major categories shown in Table 13 below. The first column of this table shows how important each source is as a share of total income. About three-quarters of all income comes from work (including salaries and wages and income from self-employment). The share of income from work in total monetary income is even higher (82%) if we exclude imputed rent, which is the next largest item and which is not really a source of monetary income.

The contribution of each factor to overall income inequality is shown in the second column of the table. This contribution depends on the share of the factor in total income, on how unequally the factor is distributed, and on the covariance between the distribution of that factor and of total income (which we can think of as how closely the distribution of the factor matches that of total income - do the same people get a lot of each, or do the people who get little income overall get a lot of that source). The contributions from all of the income sources sum to 100%. Were a factor to be equally distributed, it would have a zero contribution to total inequality.

The key finding is the importance of income from work as the major determinant of overall income inequality. Income from work accounts for 79% of total income inequality. This is not surprising, given the dominance of significance of income from work as an income source. However, due to the particular distribution of income from work, it accounts for an even higher proportion of total income inequality than its share in total income.

The only income source which has an equalising impact on total income inequality is social grants. However, their mitigating impact on total inequality is marginal at just -0.004%.<sup>24</sup>

The positive signs of all other income sources indicate that they each have a disequalising impact on total income inequality. Income from capital contributes to total income inequality in significantly greater proportion than its share of total income, which is not surprising given the extreme concentration of capital ownership (amongst households) and the correlation between this ownership and other dimensions of income inequality. In fact, income from capital is by far the most unequally distributed of all the income sources. However, this contribution is quite small in absolute terms since income from capital is a very small component of total income.

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<sup>24</sup> Using the other two equivalence scales, the equalising impact of social grants on total income inequality comes out somewhat higher, but still well below 1%. With the McClements equivalence scale ( $E_3$ ), social grants have a contribution of -0.16% to total income inequality. A similar result of -0.17% is obtained when using the  $E_2$  equivalence scale. The full results using these alternative scales are shown in Appendix 4. The equalising effects of grants on inequality is lower than would be expected, especially given the results shown in section 3.2 as to how much the Gini of income inequality falls once grants are included. The small magnitude of the negative contribution of grants to total income inequality shown here is a result of the way in which income inequality is decomposed and the distribution of grant income. Grants are received even at medium-upper levels of the income distribution, and grant income is not very high amongst the very poorest. Since the correlation between grant income inequality and overall income inequality is part of the calculation of the contribution of grants to overall income inequality (see Appendix 4), the equalising contribution of grants in total income inequality appears lower than would be expected.

Table 13: Decomposition of income inequality by source, (IES 2005/6)

	Share of income (%)	Contribution to total income inequality (%)
Income from work	74.34	78.99
Income from capital	1.16	2.84
Pension from previous employment and annuities from own investment	2.62	1.23
Welfare grants	6.11	-0.00
Other income	6.27	8.95
Imputed rent on own dwelling	9.49	7.99
Total	100	100

Notes:

Inequality is measured in terms of GE(2), half of the squared coefficient of variation.

Income from work includes salaries, wages, and income from self-employment.

Income from capital includes income from letting of fixed property; royalties; interest; and dividends.

Welfare grants include old age pensions; disability grants; family and other allowances; and worker compensation funds.

Other income includes a range of income sources such as alimony, hobbies, stokvels, food and clothing received, vehicle and property sales, gambling, lobola, and tax refunds.

Imputed rent on own dwelling is calculated as 7% of the value of the dwelling per annum.

These results were calculated using income on a household per capita basis. In Appendix 5 we show the results from the same analysis using the two other equivalences scales discussed earlier; the results are close to those shown here.

These results highlight the importance of income from work in total income inequality. This finding is consistent with earlier studies using different datasets (such as Leibbrandt et al (1996)).

The importance of earnings in accounting for overall income inequality in South Africa is also consistent with international evidence. Galbraith (forthcoming 2009) notes that data on earnings inequality are very closely related with overall income inequality internationally. On the basis of this relationship, the University of Texas Inequality Project - a major centre for the study of inequality - uses earnings inequality data as an instrument for overall income inequality data internationally, given the paucity of comparable international data on income inequality and the relatively high availability of comparable data on earnings inequality. In the next section we analyse income from work in much more detail.

#### 5.4. How does labour market structure affect earnings inequality?

A key issue that this report investigates is the relationship between labour market structure and inequality. How much of inequality can be explained by unemployment? How much is due to wage dispersion amongst earners? Does it mostly matter how many people are employed, or the quality of their jobs?

This analysis deals with on earnings inequality. The results from the previous section - which highlighted the importance of earnings inequality in contributing about 80% of overall income inequality - in part motivates this focus.

This is also necessitated by data availability. The analysis requires detailed information on each person's income as well as labour market status. While the IES provides detailed information on income, there are no questions dealing with labour market status.<sup>25</sup> On the other hand, there is virtually no information in the LFS as to non-earnings sources of income.<sup>26</sup> For this analysis we need data on both labour market status and income, for each respondent. This would have been ideal as it would have enabled us to say how much of overall income inequality can be attributed to factors such as unemployment, wage dispersion, and so on. While respondents in the 2000 IES could be matched to the relevant LFS, this is unfortunately not possible for the 2005/6 IES given the way that Stats SA undertook the survey and recorded the data. This limits us to analysing only earnings inequality (rather than overall income inequality) in terms of unemployment and other labour market factors. This is regrettable, but our findings on the importance of earnings inequality in accounting for overall income inequality do suggest that understanding the way in which labour market factors account for earnings inequality are germane to overall income inequality as well.

#### 5.4.1. Overview of the methodology

We use the method of decomposition analysis by subgroups to try and answer these types of questions. The technical details and mathematical formulae are set out in Appendix 6, here we simply give a feel of the method and explain what the various components represent.

Decomposition analysis by subgroups has been used in the study of various types of inequality internationally. For instance, it has been used to study inequality by race (decomposing inequality to the components within and between racial groups); by region; between rural and urban areas; and so on. In our analysis the subgroups are categories of the labour market, such as the employed and the unemployed.

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<sup>25</sup> The only way of gleaning employment status from the IES is from whether or not any positive income from work is received. However, according to the LFS a significant portion of the employed receive zero earnings. While some of the reported zeros are no doubt incorrect, the expansive definition of employment does mean that many people receiving no earnings would be classified as employed. Were we to use the receipt of positive work income in the IES data as a proxy for employment status, this would effectively treat all employed people receiving zero earnings as unemployed or out of the labour market. Another important limitation of the IES data is that, since no information is available on labour force status, no distinction could be made between the unemployed and those outside of the labour force. Amongst those whom we could assume to be employed, there is no information as to whether they are in the formal or informal sectors, a differentiation used in the analysis that follows. These limitations preclude the use of IES data for deducing labour market status, which could have allowed for the decomposition of overall income inequality in terms of unemployment and other labour market factors.

<sup>26</sup> While the LFS does question respondents about receipt of grants, no detailed information or figures are solicited for this or other non-earnings forms of income.

The intuition behind the decomposition of inequality by subgroups is to divide a population into discrete subgroups, with the partitioning on the basis of distinct and mutually exclusive personal or group characteristics (such as race, gender, region, or employment status). We then compute the inequality within each of these subgroups as well as the inequality between the subgroups.

The ‘between-groups’ component is calculated across the entire population and shows the differences in the mean of income (or whichever variable is being calculated) between the groups. This basically indicates how much inequality there would be, were there no inequality within each subgroup, i.e. if every member of that group received the mean income of the group, such that inequalities between groups were the only source of inequality. The ‘within-groups’ inequality is a weighted sum of the inequality within each of the subgroups, and shows how much inequality there would be if there was no inequality between the groups. These two components sum to total inequality (in the case of the additively decomposable indices).<sup>27</sup>

#### 5.4.2. Static decomposition of earnings inequality

In the first take we divide people into two subgroups: the employed and the unemployed. The basic question to be answered is: how much of earnings inequality can be accounted for by the fact that the employed receive earnings and the unemployed do not, and how much can be accounted for by inequality in earnings amongst the employed?

Given the way that we have set up the decompositions and the nature of the subgroup partitioning, the within-groups component essentially measures the relative importance of inequality amongst the employed. The between-groups component basically measures how much of earnings inequality is explained by the difference between the mean earnings of those employed with the zero earnings<sup>28</sup> of those not working.

We undertake this decomposition using four different measures of inequality<sup>29</sup>, in order to get a sense of how robust the results are across measures. Note that the actual measures of inequality are not comparable as they are calculated differently. It is however of interest to compare each measure across labour market categories.

The results are shown in Tables 14 (for the official definition of unemployment) and Table 15 (for the expanded definition). The between- and within-groups components of inequality are converted to a percentage basis for ease of interpretation. That is, the between-groups figure shows how much of earnings inequality is explained by inequality between the employed and the unemployed, while the within-groups figure shows how

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<sup>27</sup> Of course if only one group is defined, encompassing the entire population, then there is no variation in incomes across groups and the between-groups component is zero with all inequality if accounted for by within inequality. Conversely, if every individual is a separate group then there is no within-groups inequality and all inequality if accounted for by between inequality.

<sup>28</sup> Actually, the imputed earnings of R0.01 per month since an actual zero causes computational problems. <sup>29</sup> These are the Theil (GE[1]), mean log deviation (GE[0]), Atkinson (with A(0.5)), and the Gini. Only the first two are additively decomposable in general.



much of total inequality is explained by inequality amongst the employed; these components sum to 100%.<sup>30</sup>

Table 14: Static decomposition of current earnings inequality by employment status, for full labour force [official definition] (%)

	Between	Within	Total
Mean log deviation	67.59	32.41	100
Theil	24.82	75.18	100
Atkinson	39.33	60.67	100
Gini	32.18	67.82	100

Note:

All static decompositions of inequality are based on the September 2007 LFS. In all cases the Atkinson measure here is for A(0.5).

The groups are the employed and the unemployed (official definition).

Table 15: Static decomposition of current earnings inequality by labour market status, for full labour force [expanded definition] (%)

	Between	Within	Total
Mean log deviation	79.44	20.56	100
Theil	35.91	64.09	100
Atkinson	50.24	49.76	100
Gini	47.00	53.00	100

Note:

The groups are the employed and the unemployed (expanded definition).

We also undertook the same analysis among all 'working age adults' between the ages of 19 and 65 inclusive. In this case the two groups are those working and those not working (i.e. including both the unemployed and those outside of the labour force). The results are shown in Table 16 below.

Table 16: Static decomposition of current earnings inequality by employment status, for all working age adults (%)

	Between	Within	Total
Mean log deviation	87.62	12.38	100
Theil	47.11	52.89	100
Atkinson	58.86	41.14	100
Gini	61.79	38.21	100

Note:

The groups are the employed and those not working.

<sup>30</sup> The Gini index is generally not additively decomposable and its decomposition yields a residual interaction term (which is related to the degree of overlapping of the income distributions among the subgroups). However, in these decompositions the Gini has no residual term as would usually be the case. This is because the subgroup partitions used here are non-overlapping since those in the non-working subgroup have zero earnings. The Atkinson measure is not additively decomposable, as it includes a residual term which is the product of the between- and within-groups effects, but the percentages shown here are of the total i.e. of the Atkinson measure on inequality.

It is difficult to draw definitive conclusions from these results about the relative importance of within- and between-groups inequality in accounting for overall earnings inequality, given the variation in the results when comparing across inequality measures. Had we used just one measure on inequality such as the Theil, as is common practice, we could have used those results as the basis for conclusions about the relative importance of the rate of unemployment and of wage dispersion in accounting for earnings inequality amongst the labour force or working age adults. But having tested this using four different measures of inequality, the results are just not consistent enough to draw conclusions about the relative importance of each of these components. All that we can say with certainty at this point is that both the rate of unemployment and earnings dispersion amongst the employed are very important in explaining overall earnings inequality, with neither being overwhelmingly dominant over the other.

The above decompositions partitioned people into those working and those not working, without regard to the types of jobs. We now subdivide those working into two categories: those employed in the formal sector, and those employed in the informal sector or as domestic workers (which we will refer to here for the sake of brevity as the informal sector). See Box 4 for an explanation of how people are classified into the formal and informal sectors in the LFS.

**Box 4: Classification of the formal and informal sectors**

The categorisation of the formal and informal sectors used in this analysis is based on the definitions used by Stats SA. The allocation of LFS respondents to the formal or informal sector is based on their own perception of whether their employer is in the formal or informal sector. The explanation/prompting provided in the LFS questionnaire specifies that 'formal sector employment is where the employer (institution, business or private individual) is registered to perform the activity. Informal sector employment is where the employer is not registered.' (Statistics South Africa, 2008b). Although the LFS does ask various questions around a range of aspects of formality/informality, these are not utilised in the official classification of formal/informal.

There is likely to be considerable inaccuracy in the allocation of workers by sector. Many respondents would not necessarily be aware as to whether or not their employer is 'registered' or not. Any analysis utilising the formal/informal categorisation thus needs to be interpreted with caution.

Table 17 below compares the distribution of earnings in the formal and informal sectors as well as the unemployed. 90% of earnings go to people employed in the formal sector. Inequality of earnings is roughly similar between the formal and informal sectors, depending on the measure of inequality used.

Table 17: Descriptive statistics of current earnings inequality by labour market status

	Formally employed	Informally employed	Unemployed
Population share	56.3%	20.6%	23.1%
Earnings share	90.9%	9.1%	0%
Mean log deviation	1.49	1.56	0
Theil	0.68	0.72	0
Atkinson	0.31	0.31	0
Gini	0.59	0.57	0

We now decompose earnings inequality according to labour market status, with the groups being the formally employed, the informally employed, and the unemployed. In the results shown below, within-group inequality thus refers to the degree of inequality within each of these groups. If all formally employed people earned the same, and all informally employed people earned the same, then within-group inequality would be zero. Between-group inequality refers to the extent of inequality between the mean wages of the formally employed, the informally employed, and the unemployed. If the average earnings of each of these groups were the same, then this component would be zero. The sum of within-group inequality and between-group inequality is total inequality (except in the case of the Gini decomposition where there is also a small overlap term). In simple terms, this exercise is intended to shed light on how much of earnings inequality is because of unequal distribution within each group, and how much is because of the size of the gaps in earnings when comparing across the groups.

The between-groups component seems to be more important here in accounting for overall earnings inequality than in the previous decompositions (where all the employed were treated as a single group). This is probably because the levels of inequality are similar within each of the formal and informal sectors, but average earnings are significantly higher in the formal sector than the informal.

Table 18: Static decomposition of earnings inequality by labour market status, for full labour force [official definition] (%)

	Between	Within	Overlap	Total
Mean log deviation	70.77	29.23		100
Theil	34.53	65.47		100
Atkinson	46.79	53.21		100
Gini	51.57	43.77	4.66	100

Note:

The groups are the formally employed, informally employed, and the unemployed (official definition).

Table 19: Static decomposition of earnings inequality by labour market status, for full labour force [expanded definition] (%)

	Between	Within	Overlap	Total
Mean log deviation	81.66	18.34		100
Theil	44.36	55.64		100
Atkinson	55.93	44.07		100
Gini	62.27	34.11	3.62	100

Note:

The groups are the formally employed, informally employed, and the unemployed (expanded definition).

Table 20 below shows the results of the same decomposition, but amongst the entire working age adult population (aged between 19 and 65 inclusive) rather than amongst the labour force. The groups here are thus the formally employed, the informally employed, and those not working (which includes the unemployed and the economically inactive). The between-groups component again accounts for the bulk of overall earnings inequality.

Table 20: Static decomposition of earnings inequality by labour market status, for all working age adults (%)

	Between	Within	Overlap	Total
Mean log deviation	88.89	11.11		100
Theil	53.96	46.05		100
Atkinson	63.07	36.93		100
Gini	72.69	24.69	2.63	100

Note:

The groups are the formally employed, informally employed, and those not working.

It is difficult to draw clear conclusions from this part of the analysis, because of how sensitive the results are to which measure of inequality is used. It is clear that the level of wage dispersion within each of the formal and informal sectors is important in explaining the overall level of earnings inequality. But perhaps of somewhat greater importance are the gaps between the average earnings of the formal and informal sectors and between these are the zero earnings received by the unemployed. These findings suggest that reducing the rate of unemployment, moving people from the informal to formal sectors, closing the wage gap between the formal and informal sectors, and reducing earnings dispersion within each of the formal and informal sectors are all important to bringing down overall earnings inequality.

#### 5.4.3. Dynamic decomposition of earnings inequality

The analysis presented above looked at current earnings inequality and how much of this can be explained by various features of the labour market, notably in terms of labour force structure and earnings distribution. We are also interested in understanding how labour market structure has affected the changes in inequality over time. We thus apply a dynamic decomposition methodology to the LFS to look at the changes in earnings inequality between 2001 and 2007, in order to explain how much of these changes can be

accounted for by changes in the various aspects of labour market structure. That is, we seek to identify how much of the changes in earnings inequality between years can be accounted for by changes in factors such as unemployment, earnings dispersion amongst the employed, and differences in average earnings between categories of the employed such as those working in the formal and informal sectors respectively.

In the dynamic decomposition we follow the method pioneered by Mookherjee and Shorrocks (1982) for the analysis of trends in income inequality in the UK, and since applied in a number of empirical studies internationally. The measure of inequality used is the mean log deviation (GE[0]), as it is suitable for this more complex analysis. The technical details are set out in Appendix 7.

As with the static decompositions of inequality for 2007 set out in the previous section, we begin with a simple decomposition of inequality into just two groups: the employed and the unemployed. At this point we are thus not distinguishing between those working in the formal and informal sectors, as we want to get an overall view of the effects of the fundamental division in the labour market between those with and without jobs.

The results are shown in Tables 21 and 22 below (using the official and expanded definitions of unemployment respectively), in percentage form. That is, the percentage of the change in inequality in the relevant period that is accounted for by that factor. The components sum to 100% in the first period and -100% in the second period, since inequality rose in the first period and fell in the second.

The most important result arising from this analysis is the importance of changes in the proportions of people employed and unemployed in explaining changes in earnings inequality within the labour force. During the first period, in which both unemployment and inequality rose, increases in the proportion of the labour force that was unemployed accounted for just over 72% of the increase in earnings inequality within the labour force. Both unemployment and inequality fell during the second period, and the decrease in unemployment similarly explained just under 72% of the decrease in inequality. This finding highlights the huge importance of the unemployment rate in explaining earnings inequality.

However, a caveat to be noted is that the dynamic decomposition is undertaken only for one measure of inequality, because of the technical requirements of this procedure. Given the sensitivity of the static decomposition to the measure of inequality used, these results from the dynamic decomposition should be interpreted with caution.

Inequality amongst earners contributed to the increase in inequality amongst the entire labour force in the first period, and to the decrease in inequality in the second. It is interesting that inequality amongst earners moved in the same direction as trends in overall labour force inequality as well as in the unemployment rate, in both periods.

The third component of the decomposition is changes in between-group inequality, that is, the effect of the change in relative mean earnings of the employed and unemployed on

overall earnings inequality of the labour force. This is the only component with the same sign in the two periods, meaning that it contributed to the rise in inequality in the first period and mitigated the fall in inequality in the second period. Given that the earnings of the unemployed are essentially zero in this particular decomposition, this component basically relates to the mean level of earnings of the employed.

Table 21: Periodised results from dynamic decomposition of earnings inequality by employment/unemployment [official definition] (%)

	Period 1 (2001-1 - 2002-2)	Period 2 (2002-2 - 2007-2)
Effect of changes in earnings inequality	14.6	-35.8
Effect of changes in proportions employed / unemployed	72.1	-71.8
Effect of changes in between-group inequality	13.2	7.7
Total	100	-100

Table 22: Periodised results from dynamic decomposition of earnings inequality by employment/unemployment [expanded definition] (%)

	Period 1 (2001-1 - 2002-2)	Period 2 (2002-2 - 2007-2)
Effect of changes in earnings inequality	11.0	-40.0
Effect of changes in proportions employed / unemployed	72.6	-74.9
Effect of changes in between-group inequality	16.4	14.9
Total	100	-100

We extend this analysis by splitting the employed into those working in the formal sector and those working in the informal sector. We decompose the changes in labour force earnings inequality between 2001 and 2007 by three subgroups: the formally employed, the informally employed (including domestic workers), and the unemployed.

These results, summarised in Tables 23 and 24, reinforce those from the decomposition into employed and unemployed discussed above. The most important factor explaining both the increase in inequality in the first period and the fall in inequality in the second, is changes in labour force structure in terms of the proportions of the labour force that are employed in the formal sector, employed in the informal sector, and unemployed respectively.

Table 23: Periodised results from dynamic decomposition of earnings inequality by formal employment/informal employment/unemployment [official definition]

	Period 1 (2001-1 - 2002-2)	Period 2 (2002-2 - 2007-2)
Effect of changes in earnings inequality	21.5	-31.7
Effect of changes in proportions formally employed / informally employed / unemployed	62.5	-71.1
Effect of changes in between-group inequality	15.9	2.8
Total	100	-100

Table 24: Periodised results from dynamic decomposition of earnings inequality by formal employment/informal employment/unemployment [expanded definition]

	Period 1 (2001-1 - 2002-2)	Period 2 (2002-2 - 2007-2)
Effect of changes in earnings inequality	16.3	-35.3
Effect of changes in proportions formally employed / informally employed / unemployed	67.5	-73.6
Effect of changes in between-group inequality	16.2	8.9
Total	100	-100

## 6. HOW MUCH MIGHT A MINIMUM WAGE OR EXPANDED LOW WAGE EMPLOYMENT REDUCE INEQUALITY?

We now explore the effects of each of a national minimum wage and an expansion of low-wage employment on earnings inequality. These are not being set up as alternatives, and we are not comparing their effects on inequality. They are two examples of interventions that could reduce inequality through labour market channels.

### 6.1. Effects of a minimum wage on earnings inequality

We investigate the effects of a statutory minimum wage on earnings inequality. The LFS shows that many South Africans currently earn extremely low wages, even though they work a full week. While there are sectoral minimum wages, some via centralised bargaining and others statutory in nature, there is no national minimum wage. In many countries, by contrast, there is a minimum wage below which no-one can be legally paid, and while sectoral minima are still set the minimum wage stipulates the absolute floor below which no wages can fall. The experience of comparable middle-income countries that have introduced a minimum wage in recent years, such as Chile, shows that this has had a significant impact in reducing poverty and mitigating inequality<sup>31</sup>.

This part of the analysis is basically extended back-of-the-envelope calculations. While we have the benefit of being able to project the effects of various minimum wage scenarios on the distribution of earnings using detailed labour force data, a full analysis of this issue would require further information to parameterise the simulations (for instance around the possible negative employment effects of a minimum wage). In the absence of this we rely on 'best guesses' in some cases, as explained further below. This analysis should thus be regarded as exploratory rather than conclusive.

We use a minimum wage level of R1000 per month, although this should not be construed as a recommendation or endorsement of this as an appropriate level for a minimum wage. A minimum wage of R1000 would be only slightly above the current value of the state old age pension or disability grant (which are currently set at R940 per month). It would be in a similar region to wages paid in public works programmes. About 3.9 million people, which is almost 30% of all those employed, currently report earnings of below R1000 per month.

The type of minimum wage being analysed here would not replace current sectoral minimums, but would serve as a legal absolute floor below which wages cannot fall. R1000 per month is very low, it would still constitute a poverty wage and would be inadequate to keep a family above the poverty line. However it could be a starting point, and even now would constitute a significant improvement for a significant proportion of all workers. There is however a danger of legitimising poverty wages.

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<sup>31</sup> See for instance Infante et al (2003). The introduction of a minimum wage in Chile has been found to have resulted in significant reductions in poverty, and to have contributed to its being the first country to fulfil its Millennium Development Goals around the halving of poverty and extreme poverty.



Table 25 below summarises the percentage and number of workers falling below a R1000 minimum wage line as well as the average gap between current earnings and such a minimum, for all employed workers as well as separately for the formal and informal sectors.

Table 25: People in employment earning below R1000 per month

	All employed	Formally employed	Informally employed
Number earning <R1000	3 885 053	1 800 244	2 020 723
% earning <R1000	29.4%	18.8%	57.4%
Average gap between actual earnings and R1000	R593.07	R615.07	R565.83

Notes:

Restricted to people aged between 15 and 65 inclusive.

Informally employed includes domestic workers.

'Formally employed' and 'informally employed' do not exactly sum to 'all employed' as the latter also includes a small number of people whose sector was unspecified.

Over half of those earning below R1000 per month are located in the informal sector (including domestic workers). Of the about 2 million people earning below R1000 in the informal sector, about half are employed by someone else (either a business or a private household). Of the about 1.8 million who are in the formal sector and earning under R1000 per month, about 91% are employed by someone else.

Note that both the typical number of hours worked per week of people employed and earning below R1 000 per month is about 40 hours<sup>32</sup>, and so these low wages are not accounted for by people only working a few hours a week. Amongst those earning below R1 000 a month, those working low hours are 'balanced' by those working well over 40 hours per week.

We simulate the following scenarios for the implementation of a minimum wage:

- ☐ Scenario 1: Everyone currently earning below R1000 a month is lifted to a minimum wage of R1000.
- ☐ Scenario 2: Only people earning below R1000 and employed by someone else are lifted to the minimum wage.
- ☐ Scenario 3: Only people earning below R1000 and employed by someone else in the formal sector are lifted to the minimum wage.
- ☐ Scenario 4: As in Scenario 3, but all formal sector employees initially earning below R500 a month lose their jobs.
- ☐ Scenario 5: As in Scenario 4, and also the wages of all formal sector employees initially earning between R1000 and R1200 a month increase by 10%.

The job losses assumed in Scenarios 4 and 5 are to take account of the fact that an increase in wages at the bottom end of the earnings distribution would probably reduce the demand for these categories of labour. This is especially likely where increases are of

<sup>32</sup> The median number of hours worked is 40 hours exactly while the mean is 40.96 hours.

a very significant magnitude, as in the raising of wages to a minimum floor of R1000 from extremely low levels in some cases. However, the extent of these increases make it very difficult to accurately estimate the effects on employment; see Box 5 for a discussion of this. For the simulations shown here in which we factor in job losses (i.e. Scenarios 4 and 5, where the minimum wage is implemented for all employees in the formal sector), we thus simply assumed that anyone whose wages should increase to R1000 but who is currently earning below R500 would lose their job altogether. Raising these employees to the minimum wage would mean that their current wages would need to more than double. The assumption of job losses for all those currently earning below R500 means that, of those who should have benefited from the minimum wage, 47% would have their wages raised to R1000 (those currently earning R500 and above) while the remaining 53% (those currently earning below R500) would receive zero earnings. In fact, three-quarters of the formal sector employees receiving below R500 are currently receiving no earnings, so the assumed loss of jobs would not make a huge difference in this respect.<sup>33</sup>

The 10% increase in wages of formal sector employees included in Scenario 5 is to take (rudimentary) account of the ripple effects of a minimum wage on those earning above but close to the minimum wage level. International evidence suggests that the introduction of a minimum wage pushes up the wages of people already earning somewhat above the new minimum (see for example Wicks-Lim (2006)). While these ripple effects would tend to decrease the greater the distance from the minimum, here we have assumed a very simplistic increase of 10% in the earnings of formal sector employees already receiving between R1000 and R1200 per month. Needless to say, a proper analysis of the likely effects of a minimum wage would require comprehensive modelling of the possible ripple effects rather than the simple assumptions used here.

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<sup>33</sup> The problem of zero earnings in the LFS, discussed in Appendix 1, is particularly problematic for this investigation of the effects of a minimum wage on inequality. Some of the zero earnings reported are undoubtedly incorrect (e.g. where the respondent refuses to disclose their earnings and this is mistakenly recorded as zero instead of in the 'don't know' or 'refuse' categories). The overreporting of zero earnings leads to an overestimation of the number of people currently falling below a minimum wage floor and of the costs of bringing everyone up to a minimum wage, as well as of the equalising effects of a minimum wage. In a study focussed specifically on the effects of introducing a minimum wage, we would need to differentiate reported zero earnings that are likely to be genuine from those that are not (for instance using information regarding occupation, industry, education level and so on for each respondent) and exclude those deemed to be incorrectly reported from the application of a minimum wage.

#### Box 5: Estimating the employment losses from a minimum wage

A full analysis of the effects of raising all workers to the minimum wage would also have to factor in the effects of increasing wages on employment. We would expect an increase in wages at the bottom end of the earnings distribution to reduce the demand for these categories of labour, especially where the increase is as significant as would be entailed in a uniform minimum wage of R1 000. However, it is difficult to hypothesise the extent to which employment might be expected to fall. The elasticity of employment with respect to (skill-adjusted) labour costs in South Africa has recently been estimated by Rodrik (2006) as being around -0.6 which he describes as being 'very tightly estimated'. This is in a similar region to previous estimates (see for example the widely cited study of Fallon and Lucas (1998), which found a wage elasticity of demand of -0.71 for black formal sector employees). Wage-employment elasticities pertain specifically to the points at which they are actually calculated, and their accuracy diminishes the further one moves from the points at which they are estimated. That is, while they may shed some light on the effects on employment of a marginal change in wages, this relationship is not constant for large changes in wages. At an extreme, a wage increase of 166% would be associated with a 100% fall in employment (i.e. a disappearance of all jobs in the category of interest) which is not very meaningful.

The scale of the increase in earnings that would be brought by a floor of a R1 000 minimum wage is substantial. It would mean about a 150% increase in average wages (from approximately R400 to R1 000 per month). Simply plugging in a wage-employment elasticity of -0.6 would imply a 90% fall in employment for those currently earning below R1 000 per month, which is clearly unrealistic.

Somewhat arbitrarily, we have thus simply assumed that all those who should benefit from a minimum wage but who are currently earning below R500 per month (i.e. a minimum wage would more than double their wages) would lose their jobs in the event of a minimum wage being properly implemented. In the case of people employed by someone else in the formal sector, this would mean that about 53% of people currently earning below R1000 would lose their jobs while the other 47% would have their wages raised to R1000.

The effects of a minimum wage would in practice be much more complex than this, as noted in the text. We would not really expect over half of people currently earning below R1000 to lose their jobs, and wages below the minimum would probably persist at least for some time. The precise effects of a minimum wage on inequality would need to be analysed in a dedicated study.

The effects of each of the five minimum wage scenarios on inequality are summarised in Table 26 below. In each case we show the Gini coefficient amongst the employed and amongst the entire labour force that would result. These can be compared with the current Gini coefficients of 0.628 amongst the employed and 0.714 for the full labour force. We also show how many people would have their wages raised to a R1000 minimum; how many people would lose their jobs or benefit from ripple effects (in the scenarios where those dynamics are factored in); and what the total increase in the wage bill would be.

A minimum wage of R1000 applied across the board (Scenario 1) would benefit close to 4 million people and reduce the Gini amongst the employed from 0.63 to 0.57. However, this scenario is rather unrealistic, in the first instance as minimum wages would really only apply to those employed by someone else and not to those running their own business but making less than R1000 per month.

In Scenario 2, the minimum wage is therefore only applied to those working for someone else. This is more realistic as it excludes people self-employed, in subsistence agriculture, as well as people classified as employed but working in the types of activities which would be outside of a typical employment relationship, such as those assisting in a family business or doing major repairs on their own property, which would generally be unpaid or lowly paid and would in most cases not be subject to a minimum wage in any event. Just over two-and-a-half million people would benefit from higher wages in this scenario, and the Gini amongst the employed would still be significantly lower than it currently is. Applying a minimum wage to everyone employed by someone else, irrespective of whether they are in the formal or informal sectors, and without any jobs losses or ripple effects would only increase the entire current wage bill by 2.2%.

Scenario 3 limits a minimum wage to only those employed by someone else in the formal sector, on the assumption that it would be difficult to enforce a minimum wage in the informal sector,<sup>34</sup> and thus gives a more realistic of who would actually be likely to be affected by a minimum wage. The number of people benefiting from the minimum wage is concomitantly smaller, as is the reduction in the Gini coefficient and the increase in the total wage bill.

The equalising effects of a minimum wage are mitigated in Scenario 4 by the assumed job losses amongst the lowest paid formal sector employees. The Gini coefficients for the employed and for the entire labour force are barely lower than the current levels, since the worsening of the position of some of the worse off cancels out the benefit to those slightly better off.<sup>35</sup> The number of people assumed to lose their jobs actually exceeds those whose wages are raised to the minimum floor, although most of the jobs lost are jobs with zero earnings.<sup>36</sup> The total wage bill under this scenario of a minimum wage for formal sector employees with job losses is only marginally higher than at present.

Finally, in Scenario 5 inequality is reduced slightly more than in the previous one due to the ripple effects of a wage increase for formal sector employees earning between R1000

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<sup>34</sup> In practice we would be likely to see partial implementation in the informal sector and far from complete implementation in the formal sector. The partitioning of the effects according to sector as in these scenarios is just an approximation.

<sup>35</sup> The Gini coefficients shown for the employed in Scenarios 4 and 5 includes those formal sector employees assumed to lose their jobs due to the minimum wage. This is to avoid an 'artificial' reduction in the measured inequality due to formal sector employees earning below R500 per month being cut out of the distribution. Excluding those assumed to lose their jobs, the Gini for the employed would be 0.600 in Scenario 4 and 0.599 in Scenario 5.

<sup>36</sup> This scenario thus somehow also takes account of people who are incorrectly recorded as having zero earnings. The assumed loss of employment for all zero-earners is equivalent to leaving them in as zero-earners, i.e. not imputing any minimum wage to them.

and R1200 per month. The total wage bill is only 0.3% higher than the current level. However, inequality is hardly lower than at present, because of the assumed job losses amongst the worst paid.

Table 26: Effects of a minimum wage

	Number raised to min. wage	Number indirectly affected	Gini coefficient		% increase in wage bill
			employed	labour force	
Scenario 1	3 885 053		0.567	0.666	4.5
Scenario 2	2 659 759		0.600	0.692	2.2
Scenario 3	1 639 782		0.604	0.695	1.9
Scenario 4	772 537	867 245 lose jobs	0.626	0.712	0.2
Scenario 5	772 537	867 245 lose jobs, 616 416 gain from ripple	0.625	0.711	0.3

Notes:

'Number raised to minimum wage' indicates the number of people whose earnings would increase to the minimum wage of R1000 under each scenario.

'Number indirectly affected' is the number of people affected by assumed job losses (in Scenario 4 and 5) and by ripple effects of higher wages for those earning between R1000 and R1200 (in Scenario 5).

The two Gini coefficients shown for each scenario are the Gini's for the distribution of earnings amongst the employed and amongst the full labour force (using the official definition). As benchmarks, the Gini is currently 0.628 amongst the employed and 0.714 for the full labour force.

'% increase in wage bill' is the percentage increase in the total current wage and salary bill associated with each scenario.

All scenarios are limited to people of working age.

In Scenarios 4 and 5 the Gini shown for the employed includes the zero earnings of those assumed to lose their jobs even though they are no longer employed, for comparison purposes.

A proper assessment of the effects of the introduction of a minimum wage in earnings inequality calls for a study dedicated specifically to that important question. That is not the focus of this report, and the analysis presented above is only exploratory in nature. Job losses and ripple effects that might result from the introduction of a minimum wage would need to be carefully analysed, as opposed to the assumptions that we have used here. The broader effects of raising wages at the bottom to a minimum floor - such as the stimulation in domestic demand - would also need to be factored in.

The ultimate effects of a minimum wage would be contingent on the nature of these direct and indirect effects. A minimum wage would itself have an equalising impact on the distribution of earnings, as demonstrated here. However, the full effects require further study. Furthermore, it should be noted that these effects are not necessarily cast in stone, but are also to some extent subject to policy interventions, which could for example mitigate any negative employment effects of a minimum wage.

## 6.2. Effects of expanded low-wage employment on inequality

Here we simulate an expansion of low-wage employment on earnings inequality. This could be a deliberate strategy to create low-wage jobs, or a by-product of a growth path which increases demand for jobs at the bottom end of the earnings distribution.

As a benchmark we use current informal sector wages. The median earnings of informal sector workers of working age are currently R800 per month (this also holds when domestic workers are combined into the informal sector). An expansion of employment at wages/earnings at these wages amounts to an expansion of 'bad jobs'. This level of earnings is below current sectoral minimum wages (such as those for domestic or farm workers). It is less than the state old age pension or disability grant (which currently stand at R940 per month). A job in which someone works full-time yet earns just 85% of the state old age pension is without doubt a bad job. These wages would be insufficient to maintain a typical family above poverty with only one income at this level. We have also carried out these simulations using average informal sector earnings, but these are heavily distorted by a handful of extremely high reported earnings (up to R200 000 per month), yielding a mean of R1 461. Even at this level, it would be impossible to keep a family out of poverty on a single such wage.

We thus look at the effects on earnings inequality of shifting various segments of those currently unemployed (using the official definition of unemployment and restricted to people of working age) into low-wage jobs benchmarked at each of the median and mean informal sector wage.

Table 27 below summarises the effects of these six simulations on earnings inequality amongst the full labour force. We also show in each case the increase in earnings as a percentage of total earnings, to get a sense of the scale of the additional wages and other earnings that we are dealing with. For instance, the additional employment of half of the people currently employed at wages at the median level currently earned in the informal sector, would cost about 3% of total earnings.

Table 27: Effects of expanding low-wage employment on inequality

	Gini	% increase in total earnings
Benchmark: current levels	0.71	-
Employing N of unemployed at median informal wage	0.69	2.0
Employing N of unemployed at average informal wage	0.68	3.7
Employing ½ of unemployed at median informal wage	0.68	3.1
Employing ½ of unemployed at average informal wage	0.66	5.6
Employing O of unemployed at median informal wage	0.67	4.1
Employing O of unemployed at average informal wage	0.64	7.5

Notes:

Calculations restricted to people in the labour force (official definition) aged between 15 and 65 inclusive. Median informal wage is R800 per month and average informal wage is R1461 per month.

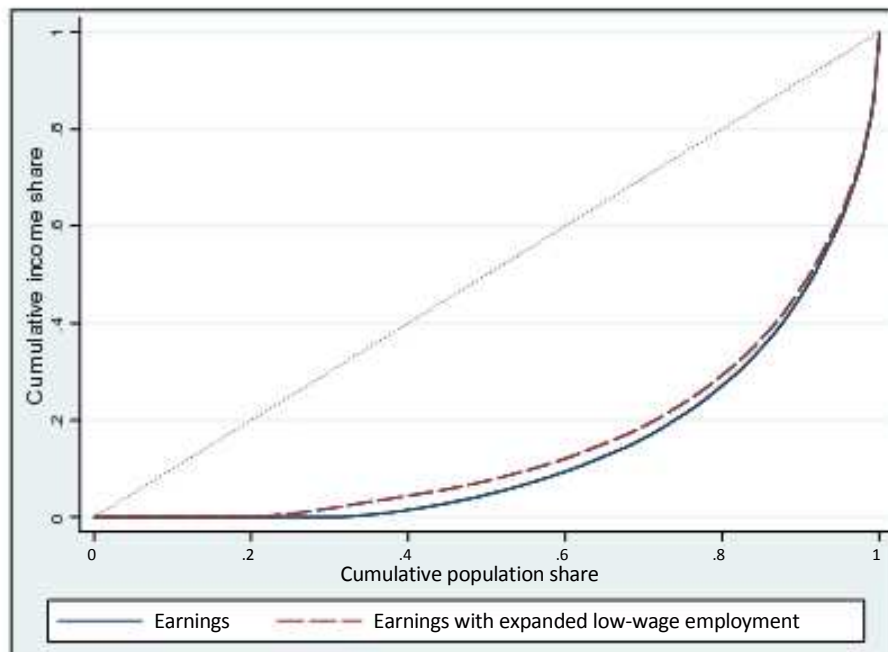
We can see that an expansion of low-wage employment would bring down earnings inequality amongst the labour force. As would be expected, inequality falls more the greater the proportion of the unemployed brought into low-wage employment, and the higher the wage which they are employed at. The expansion of employment at these low wages (the median informal wage in particular) does not make as much of an impact on inequality as could be the case if wages were not as low. For instance, a scenario in

which half of the unemployed were to gain employment would mean a huge change in the labour market and almost 2 million new jobs; were these jobs to be only at the median informal wage the reduction in the Gini coefficient from 0.71 to 0.68 is significant but is mitigated by the low wage.

When half of the unemployed are employed at the current median level of earnings in the informal sector, the percentage of people in the labour force earning nothing falls from 30% to 18.4%. This includes both the unemployed and those employed (or self-employed) but earning nothing.

The effects of the simulated increase in low-wage employment on the distribution of earnings can be seen in the Figure 31 below. This plots the Lorenz curve of the actual distribution of earnings for the entire labour force in 2007, and compares this with the Lorenz curve that would result from one of the simulated expansions in low-wage employment analysed, namely a scenario in which half of the unemployed move into employment and earn at the median level currently received in the informal sector. We can see that both curves are flat for the bottom end of the distribution, which are the zero-income-earners (including both the unemployed and those employed but receiving no earnings). However, the dashed curve (showing the effects of the simulated increase in low-wage employment) takes off earlier, from the almost 2 million people moved from unemployment into low-wage employment.

Figure 31: Lorenz curves of earnings, simulated earnings with expanded low-wage employment



Notes:

'Earnings with expanded low-wage employment' refers to an earnings distribution in which half the unemployed gain employment at the current median earning level of the informal sector; see text for further details. Lorenz curves calculated over full labour force (official definition).

## 7. INEQUALITY, POVERTY, AND GROWTH

### 7.1. What does 'halving poverty' mean?

#### AsgiSA targets and a poverty line

AsgiSA sets targets of halving the rates of unemployment and of poverty by 2014. A reduction in inequality is not explicitly targeted, and it is not clear to what extent this is a specific public policy goal in its own right.

In addition to the AsgiSA poverty target, which forms the basis for the analysis that follows, South Africa also committed through the United Nations Millennium Declaration to halve extreme poverty between 2000 and 2015. This commitment refers to the proportion of people living below \$1 per day (as well as the number suffering from hunger).

AsgiSA does not define precisely what is meant by 'poverty' and hence what a 'halving of poverty' would actually mean<sup>37</sup>. The Minister of Finance announced in his 2005 Budget Speech that a poverty line would be developed for South Africa. A process has since been underway, led by National Treasury and Statistics South Africa, to develop a national poverty line for South Africa. This has also involved a consultation process through Nedlac and other fora.

This line was to have been finalised already, but the process has apparently been delayed and according to Stats SA it is now (as of August 2008) only expected to come out in November/December 2008. It is understood that the AsgiSA targets will then be framed in terms of that poverty line. This delay in finalising an official poverty line has complicated this research project, as some measure of the poverty line is essential in order to undertake any empirical analysis of the relationship between growth, distribution, and the halving of poverty.

#### Setting a poverty line

In the light of this constraint, we use the proposals contained in the 2007 Statistics SA/National Treasury Discussion Document on a national poverty line for South Africa, in conjunction with discussions in this regard with Stats SA and Treasury officials dealing with this issue. Statistics South Africa and National Treasury (2007) discuss various options for a poverty line.

Stats SA calculates a food poverty line at R211 per person per month (in 2000 prices). This is intended to represent the minimum amount required to purchase enough food to

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<sup>37</sup> Although AsgiSA does refer to 'the halving the poverty rate to less than one-sixth of households' it is not clear what poverty line this refers to. The key issue is the halving of poverty, as the proportion of households or individuals living below the poverty line is entirely contingent on the choice of poverty line.



meet an average person's basic daily food-energy requirements over a month.<sup>38</sup> Stats SA then estimates the non-food component of a poverty line as R111 per person per month.<sup>39</sup> This yields a total poverty line of R322 per person per month in 2000 prices. Stats SA converts this to R431 per person per month in 2006 prices, although the CPI factor which they use in their conversion is the CPI for metropolitan areas only. Stats SA also calculates an upper threshold of the poverty line, at R593 per person per month (2000 prices).<sup>40</sup>

Woolard and Leibbrandt (2006) in their background note on the poverty line prepared for National Treasury also refer to the \$US2 a day measure of poverty. They note that this translates to R162 per person per month in 2000 prices. This is about half of the minimum poverty line which Stats SA calculates, and is significantly below even the essential food component of the poverty line, necessary to meet minimum daily energy requirements. The US\$2 poverty line, which originates from the World Bank, has been widely criticised (see for example Reddy and Pogge (2008)<sup>41</sup>).

Stats SA bases the household poverty threshold on a pooling of resources within households, with equal weighting given to all members of the household (i.e. without using any adult equivalence conversions, economies of scale, or other scaling). In other words, the poverty threshold for a household of five people would simply be [5 x R322 = R1610 per month].

Drawing on the Statistics SA/National Treasury Discussion Document as well as discussions on the issue with Stats SA officials involved in the process, we have decided to use as a basis the lower poverty line suggested in the Discussion Document (R322 per capita per month in 2000 prices), inflated as explained below. We are not necessarily of the view that this is the most appropriate measure for a poverty line, but defining a poverty line is not the focus of this study.<sup>42</sup> Furthermore, the intention is to connect this

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<sup>38</sup> This measure is based on the daily energy requirement of 2261 kilocalories per person, as recommended by the South African Medical Research Council. Stats SA then calculated the cost of meeting this in the light of the types of foods commonly available to low-income South Africans, using the 2000 IES.

<sup>39</sup> This calculation is based on the assumption that the non-food items that are typically purchased by a household that spends about R211 per person per month on food can be treated as essential, as such households are effectively forgoing food consumption in order to purchase these non-food items.

<sup>40</sup> This is calculated using a similar method as above, and is also based on minimum food expenditure of R211 per capita per month. However, the non-food component is calculated using survey evidence of the average spending on non-food items of households with food expenditure in the region of R211 per person per month, which yields a figure of R382 (in 2000 prices) for the non-food component. The sum of the food and non-food components thus yields the upper threshold of R593 per person per month.

<sup>41</sup> Reddy and Pogge describe the World Bank measure as misleading, inaccurate, and arbitrary. Specific criticisms include the use of inappropriate PPP conversion factors; commodity irrelevance in the equivalence measures (resulting in an underestimation of the cost of the goods needed in poor countries to escape poverty); country irrelevance (the inclusion of third country consumption patterns); and excessive sensitivity to the base year chosen.

<sup>42</sup> The definition of poverty lines is an inherently political exercise, and the quantification of a monetary line will inevitably be fraught with problems. However, one simple issue which government could consider in finalising the poverty line is that, given that the poverty line has taken longer than expected to finalise, and that the 2005/06 IES has become available in the meantime, it would seem to make sense to recalculate the line using the 2005/06 IES data rather than to inflate the line calculated from the 2000 IES (particularly

analysis with the targets identified in government policy, so as to maximise the usefulness of the research in this respect.

Using the R322 line as a baseline, it needs to be inflated from 2000 prices to March 2005/6 levels for use with the 2005/6 IES data in the analysis that follows. Stats SA inflates the 2000 figures using the CPI index for metropolitan areas only. This is clearly problematic, given the rural bias of poverty in South Africa. Further, given that CPI rates for the lower income quintiles tend to exceed those for the higher quintiles, the use of an overall CPI measure is inappropriate for inflating a measure which is relevant to people living in poverty, if the intention is to cost the same basic basket of goods deemed necessary in 2000.

In order to construct an appropriate inflator index, we thus use the CPI rates for the lowest two quintiles for all areas (metropolitan, other urban, and rural). We take the mean of the rates for the lowest and second-lowest quintiles<sup>43</sup>.

The use of this inflator indices results in the poverty line of R322 in 2000 prices being converted to a line of R450.48 in March 2006 prices (as opposed to R422.46 when the overall CPI for urban areas is used)<sup>44</sup>. We use March 2006 as this is the month to which the 2005/06 figures are calibrated. The baseline poverty line used in the analysis which follows is thus R450 per capita per month (or R5 400 per capita per annum) in March 2006 prices.

In some parts of the analysis we also look at the effects of using the 'food poverty line' as calculated by Stats SA. This includes only the food items needed to meet minimum energy requirements, and excludes the costs of clothing, shelter, transport, and so on. This was calculated by Stats SA at R211 per person per month (in 2000 prices) which translates to R295 per month in March 2006, for use with the IES data.

We follow the method which it appears will be used in the official poverty line in terms of the allocation of income or expenditure within families, which is to divide income equally without any scaling.<sup>45</sup> While the merits of this approach are debatable, we have opted for consistency with the method which will be used in the measurement of the official poverty line, so as to maximise the usefulness of the projections for policy purposes.

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when the inflation indices used are problematic for the task at hand, as in the use of the CPI measure for metropolitan areas only). It would be odd to use data on consumption patterns eight years ago and inflate them to set a line today and for future use, when more recent and probably superior data is now available.

<sup>43</sup> That is, the average of series VSA11001 and VSA11002 (Stats SA (2008d) and (2008e)).

<sup>44</sup> The line would convert to R555.15 in 2008 prices (utilising the inflation rates up to and including June).

<sup>45</sup> See section 3.2 for a discussion of alternative equivalence scaling methods, and measures of inequality calculated with household per capita income and expenditure scaled with these different methods.

Should the poverty headcount ratio or poverty gap be used?

Setting the level of a monetary poverty line answers only part of how to gauge poverty, and how to define what halving poverty would mean. One way of measuring poverty is what proportion of the population falls below the poverty line.<sup>46</sup> This is the poverty headcount ratio, and is the measure which government seems inclined to use to measure poverty.<sup>47</sup>

The poverty headcount ratio is one way of measuring poverty, but it has significant limitations. It measures the incidence of poverty. This is an important aspect of measuring poverty. The proportions of the population falling above and below a given income or expenditure threshold is certainly relevant to assessing the state of poverty and changes therein. In addition, the simplicity of the poverty headcount ratio makes it intuitively appealing from a policy perspective. As a single number representing the number of people falling below a line, it is easily understood and communicated in the public sphere.

However, the poverty headcount ratio tells nothing of the intensity of poverty. It tells nothing of how far below the poverty line people fall. The actual incomes of all the people falling below the poverty line do not enter into the poverty headcount ratio in any way. Whether people fall just below the poverty line or are in absolute destitution makes no difference to the calculation of the poverty headcount ratio.

The intensity of poverty can appropriately be measured not by the poverty headcount ratio but by the poverty gap.<sup>48</sup> The poverty gap essentially measures the sum of the gaps between the poverty line and the income or expenditure (whichever is being used in the analysis) of everyone falling below the poverty line. It can be thought of as the amount required to bring everyone falling below the poverty line up to the level of the poverty line. The poverty gap will be very small for someone falling just below the poverty line, while for someone with no income or expenditure the poverty gap would be the value of

<sup>46</sup> This could also be measured simply as a poverty headcount (i.e. the actual number of people falling below the poverty line, rather than as a proportion of the population). However this is less desirable than a ratio since it gives a less meaningful sense of the extent of poverty, and population changes can also obscure the interpretation of changes over time.

<sup>47</sup> The poverty headcount ratio  $H$  can be formally expressed as  $H = \frac{1}{n} \sum_{i=1}^n g(y_i | y_p)$  where there are  $n$

individuals with expenditures or incomes  $y_i$  arranged in ascending order such that  $0 \leq y_1 \leq y_2 \leq \dots \leq y_n$ . The poverty line is denoted by  $y_p$  and let  $g(y_i | y_p) = 1$  if  $y_i \leq y_p$ ;  $g(y_i | y_p) = 0$  if  $y_i > y_p$ . The poverty headcount ratio is typically expressed in percentage form,  $100H$ , showing the percentage of the population falling below the poverty line.

<sup>48</sup> Using the same notation as in the expression of the poverty headcount ratio (see footnote above), the poverty gap  $G$  can be formally expressed as  $G = \sum_{i=1}^n g$  where  $g = \max\{y - y_p, 0\}$

the poverty line. Adding these gaps up for everyone falling below the poverty line gives an indication of the intensity of poverty.<sup>49</sup>

The poverty headcount ratio could be halved without a concomitant reduction in the poverty gap. Conversely, the poverty gap could hypothetically be halved without any reduction in the poverty headcount ratio, if only the income or expenditure of the poorest was raised. For a given distribution and with a given amount of resources available to reduce poverty, the goal of minimising the poverty headcount ratio would point to a different type of distribution of those resources than would the goal of minimising the poverty gap. Neither measure necessarily 'easier' to reduce in a general sense, this depends on the nature of the existing distribution and distributional changes.

The choice of which measure of poverty to use has strong policy implications, particularly specific targets for the reduction of poverty are part of government policy. The idea of a 'target' is not only to evaluate outcomes but to actually inform policy-making (and implementation). Insofar as it is specifically the poverty headcount ratio that guides policy, this has the danger of focusing policy on those people to be lifted above the policy line. The poorest people are highly unlikely to be lifted above the poverty line in the near future and any increase in their incomes will have no impact on the poverty headcount ratio. To the extent that success in poverty reduction is measured exclusively in terms of the poverty headcount ratio, this would de-emphasise raising the incomes of the poorest people and focussing on the better-off amongst the poor.

This is particularly important when, as will be seen below, about half of South Africans can be classified as poor depending on which poverty line is used. Measuring the halving of poverty only in terms of the poverty headcount ratio and using such a poverty line would mean a focus on the second quartile of the population (i.e. the top half of the bottom half of the population) and not the poorest quarter of the population.

Given the important shortcomings of the poverty headcount ratio, we strongly recommend that the AsgiSA target of halving poverty be framed not only in terms of halving the poverty headcount ratio (as seems to be the current thinking) but also in terms of halving the poverty gap. While this formulation may lose some of the appealing simplicity of using only the poverty headcount ratio, it seems to be a case in which this is justified by a superior standard of measure. Framing the AsgiSA target in terms of both the poverty gap and headcount ratio does not necessarily make it more difficult to achieve - in fact, in the scenarios shown below, the poverty gap turns out to be easier to half than the poverty headcount ratio, although this would not always be the case. In the analysis

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<sup>49</sup> The sum of the squared poverty gaps is also used as a measure of poverty. The strength of this measure is that it places greater weight on units that are further from the poverty line (e.g. a household that is a given distance below the poverty line 'counts' for more than two households that are each half that distance below the poverty line). However, this measure is slightly more difficult to communicate and has less intuitive appeal in terms of framing a poverty target in a way that can be popularly understood. Versions of these three measures (the poverty headcount ratio, poverty gap, and squared poverty gap - are referred to as the Foster Greer Thorbecke class of poverty measures. The first of these, FGT(0) is the poverty headcount ratio; FGT(1) is the average normalised poverty gap (i.e. the sum of the poverty gaps normalised in terms of the poverty line); and FGT(2) is the average squared normalised poverty gap.

that follows we use this dual measure of the halving of poverty, in terms of each of the poverty headcount ratio and the poverty gap.

#### Framing the AsgiSA target of halving poverty

The halving of poverty by 2014 requires the specification of a starting point. It is not entirely clear as to when the beginning point of the AsgiSA targets stands. AsgiSA originally referred to a halving of poverty and unemployment between 2004 and 2014. AsgiSA was formally launched by the Deputy-President in February 2006<sup>50</sup>, although the targets originated from the ANC's 2004 election campaign. If it is intended that the 'halving of poverty' spans the period 2004-2014, one of the difficulties in analysing the path towards meeting the targets is that there is no appropriate income and expenditure data available for 2004. The closest available is the 2005/06 IES. We thus use the 2005/06 IES data as the baseline (regarding poverty) and conduct the analysis as to the meeting of the poverty target from there. Apart from the fact that this is necessitated by data availability, it is also appropriate given that AsgiSA was actually launched in February 2006, and the 2005/05 IES data is indexed to March 2006.

Using a baseline poverty line of R450 per person per month (as discussed earlier) yields a poverty headcount ratio (percentage of people falling below the poverty line) of 52.45% (using consumption) and 49.56% (using income) in 2006<sup>51</sup>. In other words, roughly half of South Africans fall below this poverty line. The aggregate poverty gap comes out at just under R60 billion (R59.65b using income, and R59.82 using expenditure). This is only about 3% of GDP.

Given that both the income and consumption poverty headcount ratios are in the region of 50%, we can approximate the 'halving of poverty' target as involving the following two components:

- ☐ Cutting the percentage of people falling below the poverty line to 25% by 2014; ☐
- Reducing the poverty gap to R30 billion by 2014.<sup>52</sup>

The analysis of the relationship between distribution, growth, and poverty that follows is based on how these targets can be achieved. The actual policies that could be implemented to address poverty or change distribution fall outside of the scope of this report. Rather, the focus is on what the commitment in AsgiSA to halving poverty means in terms of growth and distribution, and under what growth/distributional scenarios these targets can be achieved.

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<sup>50</sup> See [http://www.thepresidency.gov.za/main.asp?include=deputy/special\\_projects/asgisa.html](http://www.thepresidency.gov.za/main.asp?include=deputy/special_projects/asgisa.html) and <http://www.info.gov.za/asgisa/>.

<sup>51</sup> All figures in this section are derived from the 2005/5 IES, with figures standardised to March 2006, and amounts specified in March 2006 Rands, unless otherwise indicated.

<sup>52</sup> A full analysis of poverty would, of course, need to take into account the various monetary and nonmonetary dimensions of poverty. These include not only the absolute level of income or consumption, but also relative poverty, the meeting of basic needs, human dignity, and capabilities. The use of a monetary poverty line in the analysis that follows is not intended to undermine the importance of these aspects. However, the use of a specific line is necessary for the type of empirical analysis of the relationship between growth, distribution, and employment undertaken here.

## 7.2. Can we halve poverty through growth?

We begin by looking at whether we can meet the AsgiSA target of halving poverty through growth alone, without any redistribution.

Since the poverty line is a monetary poverty line based on the cost of a basket of goods, it remains constant in real terms<sup>53</sup>. This means that, with any positive growth, there will be a reduction in the proportion of people falling below the poverty line, so long as there is not a worsening of income/expenditure distribution at the relevant parts of the distribution spectrum.

AsgiSA sets GDP growth targets of at least 4.5% between 2005 and 2009, and at least 6% between 2010 and 2014. However, these are targets and not projections or forecasts. We have thus also used government's growth forecasts as contained in the 2008 Budget Review (National Treasury (2008)) for the years 2008-2010 (and the actual growth rate for 2007). Forecasts for 2011 onwards are not available from either the Treasury or the Reserve Bank. In any case, the confidence intervals of such projections would be increasingly large, given the increasing uncertainty concerning both the assumptions inputted into a model and even the structural parameters of the model itself, the further into the future the forecasts extend. For the years 2011-2014 inclusive, we thus utilise the mean of Treasury's growth forecasts for the period 2008-2010, i.e. a real GDP growth rate of 4.27% per annum. It should be noted that the growth forecasts contained in the 2008 Budget Review are if anything optimistic, and these may well be revised downwards in the 2008 Medium Term Budget Policy Statement (MTBPS). Nevertheless, we utilise them here, as the most recently available official growth forecasts. Should growth materialise at levels below these, it would of course be more difficult to attain the poverty targets than is shown here.

In addition to the growth forecasts published by Treasury, we use the growth forecasts put out by the big private banks in South Africa. We average on an annual basis the most recent forecasts put out by ABSA, FNB, Nedbank, and Standard Bank for the period 2008-2010, and use the average of this measure for subsequent years.<sup>54</sup>

For the simulations between 2008 and 2014 we are working in real terms. This effectively assumes that the poverty line and incomes/expenditure of the poor are to be inflated by a constant factor. The annualised growth rates derived from these three sources - the AsgiSA targets, the National Treasury forecasts, and the forecasts by the private banks - are summarised in Table 28 below.<sup>55</sup>

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<sup>53</sup> Unlike a relative poverty line, such as one set at the per capita expenditure levels of the 40<sup>th</sup> percentile. <sup>54</sup> See ABSA (2008), Bruggemans (2008), Nedbank (2008), and Standard Bank (2008).

<sup>55</sup> We later look a wider range of growth scenarios ranging between 3% and 7% per annum.

Table 28: Growth forecasts 2006-2014

	Total growth	Average annualised growth
AsgiSA	52.71	5.43
National Treasury	40.67	4.36
Banks	33.58	3.69

We apply these three different growth rates uniformly across the distribution, and see what happens to the proportion of people falling below the poverty line. Note that this only means that people gain uniformly in proportionate terms; in absolute terms the wealthy gain many times more than the poor with a uniform growth rate. Each of income and expenditure are used in the simulations. The results are similar, although as expected expenditure is somewhat more equally distributed than is income. The results are shown with both income and expenditure.

Tables 29 and 30 below show what the halving of poverty would mean in terms of the poverty headcount ratio and poverty gap, for each of expenditure and income. Tables 31 and 32 thereafter show the same but using the food poverty line rather than the poverty line, as discussed earlier. In each case we look at what the poverty gap and headcount ratio would be in 2014 under three growth scenarios (using AsgiSA targets, Treasury forecasts, and the banks' forecasts) given the current distribution of income or expenditure. In other words, this shows how far growth alone would take us towards meeting the targets of halving poverty, without any distributional change.

Even with the growth rates targeted in AsgiSA, neither the poverty gap nor the poverty headcount ratio can be halved with the current distribution of income or expenditure. Growth at the AsgiSA targeted rates would make significant inroads into poverty - cutting the poverty headcount ratio by about a third and the poverty gap by around 45%. Even if we use the food poverty line, growth at the rates targeted in AsgiSA would result in halving the poverty gap but not the poverty headcount ratio. If actual growth between now and 2014 is closer to the rates forecast by Treasury and by the banks, the proportion of people living under either poverty line is cut considerably but by far less than half.

Table 29: Poverty projections under alternative growth scenarios - Expenditure

	Poverty headcount ratio (%)	Poverty gap (R billion)
2006 actual	52.46	59.82
Target: halving poverty	26.23	29.91
Growth scenarios to 2014:		
AsgiSA targets	34.33	32.00
Treasury projections	38.00	36.77
Banks projections	40.14	39.95

## Notes:

The poverty headcount ratio is the percentage of people falling below the poverty line (measured on a household per capita basis).

The poverty gap is the aggregated difference between the poverty line and the actual expenditure levels of people falling below the poverty line (measured on a household per capita basis).

The 'poverty line' is set at R450 per capita per month, as discussed in the text.

Table 30: Poverty projections under alternative growth scenarios - Income

	Poverty headcount ratio (%)	Poverty gap (R billion)
2006 actual	49.57	59.65
Target: halving poverty	24.79	29.83
Growth scenarios to 2014:		
AsgiSA targets	33.75	33.98
Treasury projections	36.99	38.44
Banks projections	39.06	41.41

Table 31: Poverty projections [using food poverty line] under alternative growth scenarios - Expenditure

	Poverty headcount ratio	Poverty gap
2006 actual	34.36	21.02
Target: halving poverty	17.18	10.51
Growth scenarios to 2014:		
AsgiSA targets	17.52	8.76
Treasury projections	20.46	10.58
Banks projections	22.51	11.87

Notes:

The 'food poverty line' is set at R295 per person per month, as discussed in the text.

Table 32: Poverty projections [using food poverty line] under alternative growth scenarios - Income

	Poverty headcount ratio	Poverty gap
2006 actual	33.86	22.31
Target: halving poverty	16.93	11.16
Growth scenarios to 2014:		
AsgiSA targets	18.57	10.57
Treasury projections	21.45	12.37
Banks projections	23.19	13.63

Note that the above figures show the effect on poverty if distribution is unchanged; if distribution were to worsen we would expect fewer people to be lifted out of poverty at any of these growth rates.

We can safely conclude that it is highly unlikely that poverty can be halved through growth alone (unless there is a dramatic shift to a higher growth trajectory which is not currently foreseen by either government or the private sector). This means that we cannot expect to reach the target of halving poverty without some form of redistribution. It also means that we cannot afford any further worsening of the income distribution. Should distribution become more unequal than it currently is - especially in the lower half of the distribution - then even with the hoped for growth rates poverty will not be halved.



### 7.3. Growth and distributional scenarios for halving poverty

Having established that growth alone is highly unlikely to lead to the halving of poverty by 2014, given the current distribution of income and expenditure, we thus move on to look at what growth-distribution scenarios could produce the result of halving poverty by 2014.

There is an almost infinite variety of hypothetical redistributions that could result in a halving of poverty. For instance, what is directly relevant to the halving of the poverty headcount ratio is the top half of people who currently fall below the poverty line, as this is the subset of people who can most easily be 'lifted' above the poverty line in order for the poverty headcount ratio to be halved. When we frame the question narrowly in terms of a halving of people falling below the poverty line, then what happens to the rest of the population other than this subset is immaterial (so long as the redistribution does not pull anyone who was previously not in poverty below the poverty line). For instance, if there is a redistribution upwards from the very poorest people (who are unlikely to be lifted above the poverty line anyway) to the less-poor in a way that lifts the latter above the poverty line, this would show up as a reduction in the proportion of people falling below the poverty line. However, we would be hard pressed to describe such an outcome as a reduction in poverty in any meaningful sense. Furthermore, since we are also framing the halving of poverty in terms of the halving of not only the poverty headcount ratio but also the poverty gap, what happens to all of those falling below the poverty line is relevant.

We thus consider distributional changes across the population in the scenarios that follow. Of course, this is not how distributional change occurs in practice, and it would be very difficult to design policies to effect these outcomes with any degree of precision. What we are interested in is not so much a direct redistribution of income through social transfers but more fundamentally a shift in the growth path towards more 'pro-poor growth'. The distributional changes simulated here should thus not be understood as a narrow redistribution in the form of a transfer, but rather as the type of 'redistribution' of incomes that would result from a more pro-poor growth path. For instance, one in which returns to unskilled labour rose more rapidly than returns to skilled labour, and/or a relative expansion in employment opportunities. We are not suggesting that such a shift would result in the exact redistributions of income simulated here. Rather, these projections are indicative in nature and are suggestive as to what combinations of growth and a more egalitarian distribution could result in a halving of poverty.

The distributional changes simulated here thus proxy as the distributional outcomes of changes in the growth path. We essentially analyse the scale of distributional change that would be required to halve poverty, under various growth rates.

The technical details and algorithms used in the computation of the various redistribution scenarios are set out in Appendix 7. Here we merely give a brief sense of the intuition behind the redistributions that we simulate. This is explained with reference to income, but these redistributions were simulated using each of income and expenditure. We begin by ranking the entire South African population (using appropriate weights) from highest

to lowest in terms of their household income per capita. We then choose a point in the distribution around which income is to be redistributed. In the simplest case, this is the median income earner, but we have also undertaken these redistributions using the person at the 66.6<sup>th</sup> percentile (i.e. a third of people have higher incomes) and the 75<sup>th</sup> percentile. At the point chose, this is the only person whose income is unaffected by the redistribution.<sup>56</sup> Everyone with a higher income than this person loses from the redistribution and everyone below that person gains. The extent to which someone loses or gains depends on how far they are from the unaffected person: the highest income earner loses most and the lowest gains most.

In the simplest case in which we redistribute around the median income earner, the redistribution is symmetrical around that person. The loss of the highest income earner is the gain of the lowest; the loss of the second highest income earner is the gain of the second lowest; and so on. In this case the redistribution is both mean- and medianpreserving (it does not affect either the mean or median income).

In a slightly more complex variation, the point around which the redistribution revolves is not the median income-earner (i.e. the 50<sup>th</sup> percentile), but the person at for example the 66.6<sup>th</sup> or 75<sup>th</sup> percentile. We might prefer such a redistribution if the burden of the redistribution is not to be borne by the entire upper half of the income spectrum, for example by the top quarter only. This might also be considered more appropriate given that around half of the population fall below the poverty line, and so perhaps people whose incomes are just above the poverty line should also be gainers rather than losers from the redistribution. The distributional changes simulated are mean-preserving (i.e. we are redistributing a given pool of income, to separate this out from the growth processes with which the redistribution will be combined). This means that if income is to be redistributed from the top quarter to the other three-quarters of the distribution, the gain of the bottom three income earners must be matched by the loss of the top income earner, the gain of the next three income earners must be matched by the loss of the second highest income earner, and so on.<sup>57</sup>

One parameter of these transformations is thus what we might term the intensity of the transformation - how much income is redistributed? The simplest way to think about this is to decide by how much the income or expenditure of the lowest income earner should grow through the redistribution. For instance, we have run simulations in which the income or expenditure of the bottom income earner grows by amounts ranging between R50 and R300 per month. While this would constitute a very significant increase in income or expenditure for someone at the lowest end of the income distribution, the necessary redistribution from the top is but a miniscule fraction of the income or expenditure of the highest earners.

For example, in the case of a distributional change in which the income of the poorest person rises by R50 and the redistribution is around the median, the income of the richest

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<sup>56</sup> Since we are using weights this is not necessarily an actual individual, but the principle is the same.

<sup>57</sup> Note that this transformation is mean-preserving but it is not median preserving (as it revolves around a point above the median).

person would decline by R50. The income of the second poorest person would rise by just under R50 and that of the second richest by fall by just under R50 and so on, with the amounts falling uniformly from both sides until reaching zero at the median. In the case of a distributional change of a maximum R50 but revolving around the 75<sup>th</sup> percentile, the income of the poorest person rises by R50 and the redistribution is around the median while the income of the richest person would decline by R150, with the amounts declining from both sides (but in larger increments for the top quarter of the distribution) until reaching zero at the 75<sup>th</sup> percentile.

Note that the 'losers' from the redistribution, at the upper end of the income spectrum, do not actually suffer a net loss of income since in the scenarios set out below, as we combine these redistributions with various growth projections. The income of the top income earner still grows considerably in every scenario (and far more than other people in absolute terms), but slightly less than it would in the absence of the redistribution.

An alternative way of modelling distributional changes would have been simply to apply different growth rates to different parts of the distribution spectrum - for instance, that the income or expenditure of the bottom decile grows at 7%, that of the next decile at 6.5%, and so on. However, such a method is much cruder than the one we have used. Our method avoids an outcome where the income/expenditure of the person at the top end of the bottom decile grows significantly more than that of the person just above them at the bottom of the next decile. In our method the growth rates vary not by income category (e.g. deciles) but by individual, resulting in a much more continuous redistribution.

In terms of growth, we consider growth rates averaging between 3% and 7% per annum through to 2014.<sup>58</sup> While the upper growth scenarios are not at all likely to materialise, they are included here for the purposes of comparing various growth/distribution combinations.<sup>59</sup>

We thus simulate the effects on the poverty gap and headcount ratio of sixty different combinations of growth and distributional change, for each of income and expenditure. These scenarios combine five alternative growth rates (3%, 4%, 5%, 6%, and 7% annual average growth rates through to 2014) with four different 'intensities' of pro-poor distributional change (in which the income of the poorest person rises by R50, R100, R200, or R300) and in which distributional change revolves around each of the median, the 66.6<sup>th</sup> percentile, and the 75<sup>th</sup> percentile.

Table 33 below shows what inequality of (household per capita) expenditure would look like under some of these growth/distributional scenarios. The figures shown here for the effects of distributional change are for 'redistribution' around the 66.6<sup>th</sup> percentile as

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<sup>58</sup> We do not report here as to whether redistribution alone could deliver a halving of poverty, as we did with growth. It would be unrealistic to make projections based on zero growth between 2006 and 2014 (particularly as there has already been growth between 2006 and 2008). Suffice it to say that extensive redistribution would be required to halve poverty in the absence of growth.

<sup>59</sup> Further, it is our view that there is scope for considerably raising growth were there to be significant shifts in various aspects of economic policy; but this is beyond the scope of this report.)

discussed above, i.e. relative gains to the bottom two thirds of the distribution and relative losses to the upper third; these would differ somewhat if we use for example the median or the 75<sup>th</sup> percentile. The Gini coefficient of the current distribution of expenditure is 0.67, and without any distributional change this would of course remain the same irrespective of the growth rate.<sup>60</sup>

Before considering growth, the last row of the table shows how much the Gini would be brought down to under each of the distributional scenarios. Distributional change in which the poorest person gains an additional R50 per month, with decreasing gains for each person as we move up the distribution, would already cut the Gini to 0.65. The most intensive distributional change which we model here, in which the poorest person gains an additional R300 per month, would bring the Gini down to 0.56. This level of inequality would still be very high by international standards, but a significant improvement on current levels.

Table 33: Inequality under alternative growth/distribution scenarios

Growth	Distribution				
	R300	R200	R100	R50	None
7%	0.61	0.63	0.65	0.66	0.67
6%	0.60	0.62	0.65	0.66	0.67
5%	0.60	0.62	0.65	0.66	0.67
4%	0.59	0.62	0.64	0.66	0.67
3%	0.58	0.61	0.64	0.66	0.67
-	0.56	0.60	0.63	0.65	0.67

Note:

Inequality measured with Gini coefficient.

The implications of these scenarios for poverty are shown below using TIP curves, which are the best device for looking at both the intensity and incidence of poverty under various distributions. TIP curves are explained more fully in Box 6 below. Basically they plot the cumulative population share (from 0 to 1) against the cumulative sum of poverty gaps. A TIP curve indicates the incidence of poverty, in terms of the poverty headcount ratio, which is the point at which the curve flattens out. Everyone to the right of this point is above the poverty line, and thus makes no further contribution to the aggregate poverty gap. The intensity of poverty is shown by the height of the curve, which indicates the poverty gap averaged over the entire population. Thus if we are comparing two TIP curves, the higher one shows a distribution with a greater poverty gap. The curve which flattens out to the right of the other one has a higher poverty headcount ratio. The TIP

<sup>60</sup> The only reason why the Gini varies across growth rates under a given distributional scenario is that we implemented the distributional changes after applying the growth rates, so that the value of a distributional change differs relative to the post-growth income or expenditure values. Had we applied the distributional changes prior to the respective growth rates, the Gini would be constant for any given distributional scenario, irrespective of the growth rate. However, this would mean that the scale of the distributional change would not be identical for any given distributional scenario, as the growth would also affect the size of the effective distributional change, e.g. the poorest person would gain not just R300 under the 'R300' distributional scenario, but R300 inflated by a growth rate, cumulative over the eight year period.

curve is thus useful in showing both of the dimensions of poverty relevant to the target of halving poverty - the poverty gap and poverty headcount ratio - under the various scenarios.

Box 6: TIP curves

We use TIP curves to show the relationship between distribution, poverty, and growth; and specifically to see what combinations of growth and distributional change would allow for the halving of the poverty gap and poverty headcount ratio.

A 'TIP' curve (derived from Jenkins and Lambert (1997)) is helpful in showing the nature of poverty and especially of poverty gaps. 'TIP' refers to the 'Three I's of Poverty', which are the incidence, intensity, and inequality of poverty. Essentially we rank people from poorest to richest and show their cumulative poverty gaps. In other words, we plot the cumulative sum of the poverty gaps per capita (y-axis) against the cumulative population share (x-axis).

Formally the TIP curve can be denoted (following Jenkins and Lambert (1997)) as  $TIP(g; p)$  where  $p$  is the cumulative population share with  $0 \leq p \leq 1$  and  $p$  on the x-axis is plotted

against  $\sum_{i=1}^k \frac{g_i}{n}$ . Thus  $TIP(g; p) = \sum_{i=1}^k \frac{g_i}{n} p_i$  for  $p_i = \frac{i}{n}$  (with intermediate points derived through linear interpolation).

The slope of the TIP curve at any given percentile equals the poverty gap for that percentile. For the subset of the population falling below the poverty line, the TIP curve is an increasing concave function of  $p$ , while for people above the poverty line the curve is horizontal (since their poverty gaps are zero). Insofar as the curve flattens as it approaches the poverty line, this shows the decline in the poverty gap as income increase towards the threshold.

The extent of poverty incidence, in terms of the poverty headcount ratio (the proportion of the population falling below the poverty line), is shown by the value of  $p$  at the point where the curve becomes horizontal. This is shown by the length of the non-horizontal part of the TIP curve, and can be read directly off the x-axis at the point where the curve becomes flat.

What can be termed poverty intensity is shown by the overall height of the TIP curve, since the height of the curve (at  $p=1$ ) is the aggregate poverty gap averaged over the entire population. The average poverty gap amongst the population falling below the poverty line is given by the slope of a ray from the origin to  $(h, TIP(g; h))$ .

The degree of inequality amongst the poor is shown by the curvature (specifically the degree of concavity) of the non-horizontal section of the TIP curve. If all of the poor had equal incomes (i.e. poverty gaps were constant across the poor) the non-horizontal section of the curve would be a diagonal straight line (with a gradient equalling the difference between the poverty line and the average income of the poor).

If the poverty line were defined such that no person fell below it, then the TIP curve would coincide with the x-axis. On the other extreme, if everyone had zero income, the entire TIP curve would be a straight diagonal line from the origin with vertical intercept at  $p=1$  and slope equal to the value of the poverty line.

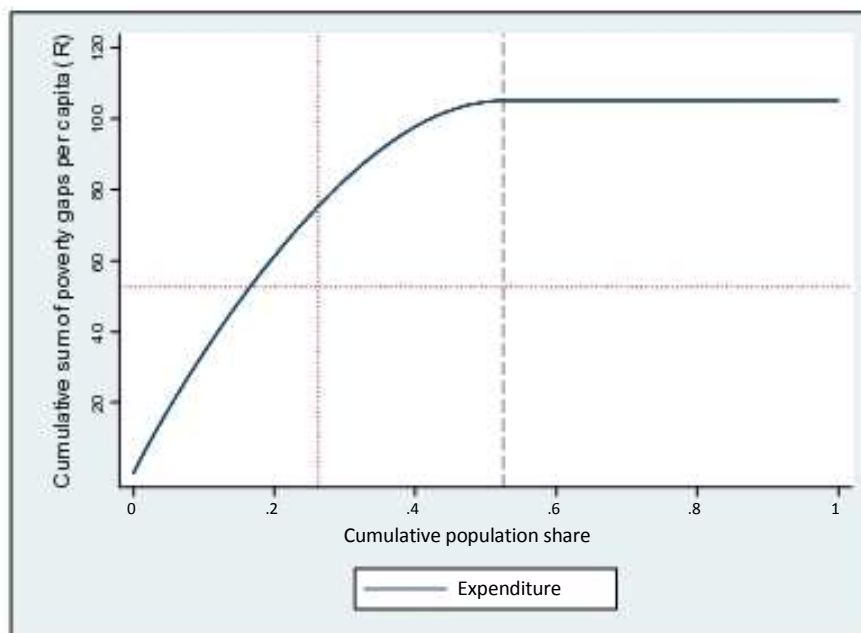
Figure 32 below shows the TIP curve for current expenditure (on a household per capita basis, per month). The picture is similar in the case of income, but we focus on expenditure here (as the extent of poverty is usually measured in terms of consumption/expenditure rather than income). About half of the population currently falls under the poverty line of R450 per person per month, i.e. the poverty headcount ratio is 0.5 or 50%. This can be seen on the plot as the point at which the TIP curve becomes flat (marked here with the dashed vertical line), which falls at just over 0.5 on the x-axis.

Halving the poverty headcount ratio would mean cutting it to about a quarter. This target for the headcount ratio is shown by the dotted vertical line at around 0.26. For the poverty headcount ratio to be halved, the curve thus needs to flatten out to the left of the dotted vertical line.

The poverty gap per person over the whole population (i.e. the average poverty gap per person and not just amongst the poor) can be read off the y-axis at the point where the TIP curve becomes flat: here it is about R105 per person per month. Halving the poverty gap would mean bringing it down to about R53 per person, and this target is shown by the horizontal dashed line.

To sum up, meeting the targets of halving both the poverty gap and the poverty headcount ratio would mean bringing the point of the TIP curve at which it becomes flat below the horizontal dotted line (for the poverty gap) as well as to the left of the vertical dotted line (for the poverty headcount ratio).

Figure 32: TIP curve of expenditure



Note:

All TIP curves derived using household per capita expenditure, per month.

All TIP curves are based on the 2005/5 IES, with data standardised to March 2006.

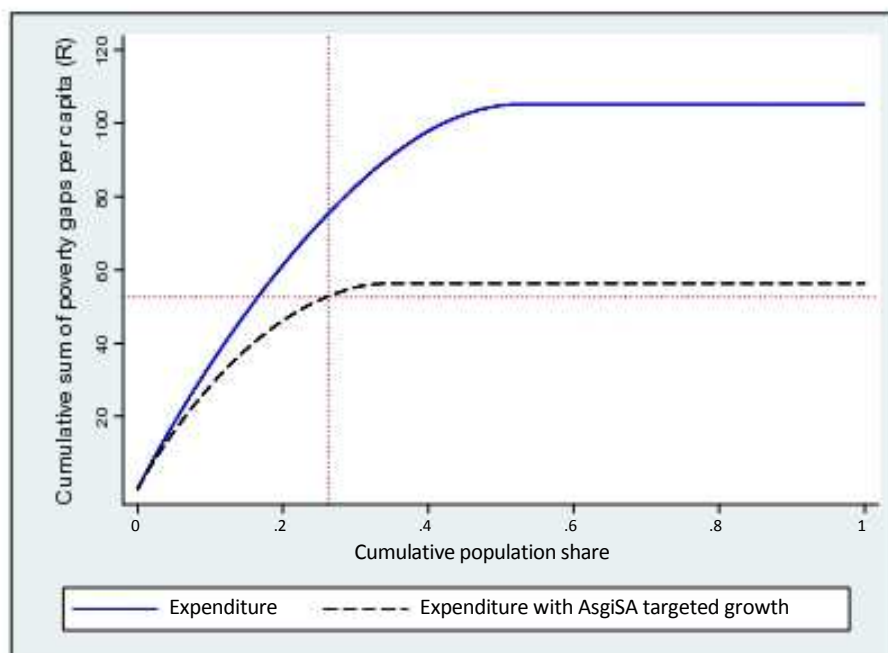
Poverty line set at R450, as discussed in the text.

We now consider the effects of some growth and distributional scenarios, to see what the impact on poverty would be and specifically as to whether the targets of halving poverty is reached. The scales are kept constant with the base plot above in subsequent plots, for ease of comparison. In all cases the horizontal dotted line is the target in terms of halving the poverty gap: the TIP curve needs to lie below this for the poverty gap to be halved. The vertical dotted line is the target in terms of halving the poverty headcount ratio: the TIP curve needs to flatten out to the left of this if the poverty headcount ratio is to be halved.

We begin by looking at the effects of growth alone on poverty, without any change in the distribution. (This was discussed earlier, but here we show this scenario using TIP curves for comparison to subsequent growth/distributional scenarios.) In Figure 33 below the original TIP curve for expenditure is compared with that which would result if the growth rates targeted in AsgiSA were to materialise through to 2014. The pattern of expenditure that would derive from that is shown as a dashed curve below. Using the Treasury or banks' forecasts would yield TIP curves in between these two curves, but closer to the AsgiSA curve.

With the growth rates as hoped for in AsgiSA, the poverty gap is reduced drastically (the curve falls) and the poverty headcount ratio also falls significantly (it flattens out to the left of the original expenditure curve). Despite this, neither the poverty gap nor the poverty headcount ratio is actually halved. (This can be seen from the fact that the AsgiSA TIP curve lies above the dotted horizontal line representing a halving of the poverty gap, and it flattens out to the right of the dotted vertical line denoting a halving of the poverty headcount ratio). Even if we were to reach the AsgiSA growth rates, this would not be enough to halve poverty without some pro-poor distributional change.

Figure 33: TIP curve of expenditure and expenditure with AsgiSA targeted growth rate



This leads us to look at the effects on poverty of combining growth with change in distribution that benefits the poor. We analysed various such scenarios, two of which are shown in Figure 34 below. The solid line shows the expenditure pattern that would result from 6% GDP average growth per annum through to 2014, combined with a progressive distributional change in which the poorest South African is just R50 better off than they would otherwise have been. The dashed line shows a scenario in which growth is fairly low at 3% per annum but there is a more intensive distributional change, with the poorest person gaining an additional R200 per month (with decreasing amounts thereafter, as explained earlier). The poverty gap is halved in both of these scenarios (as can be seen by the fact that both curves lie below the horizontal dotted line). However, while the poverty headcount ratio is reduced in both cases, this is by less than half (both curves flatten out a bit to the right of the vertical dotted line). Neither of these particular growth/distribution combinations is quite enough to halve the proportion of people living below the poverty line.

Figure 34: TIP curve of expenditure under alternative growth/distribution scenarios

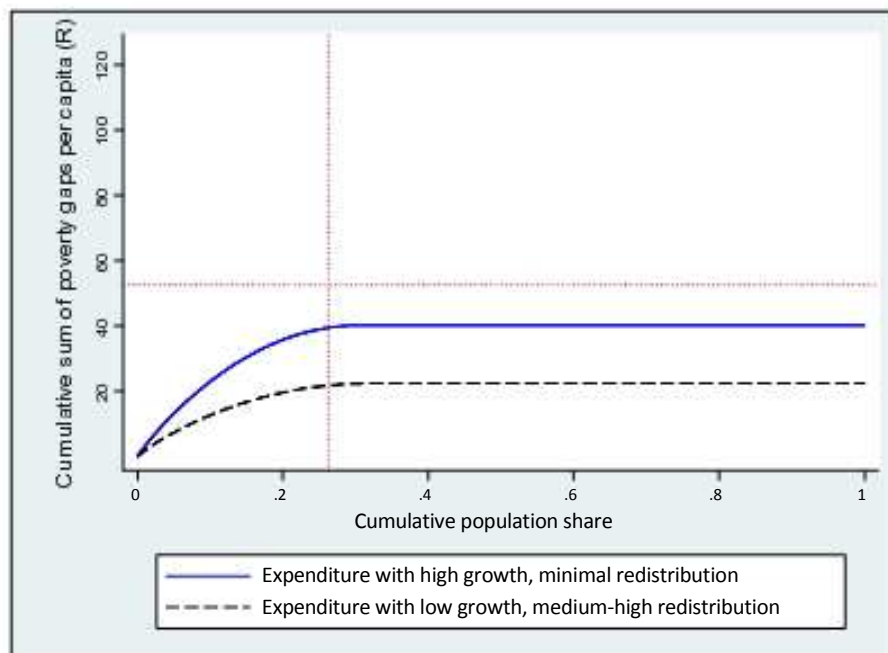
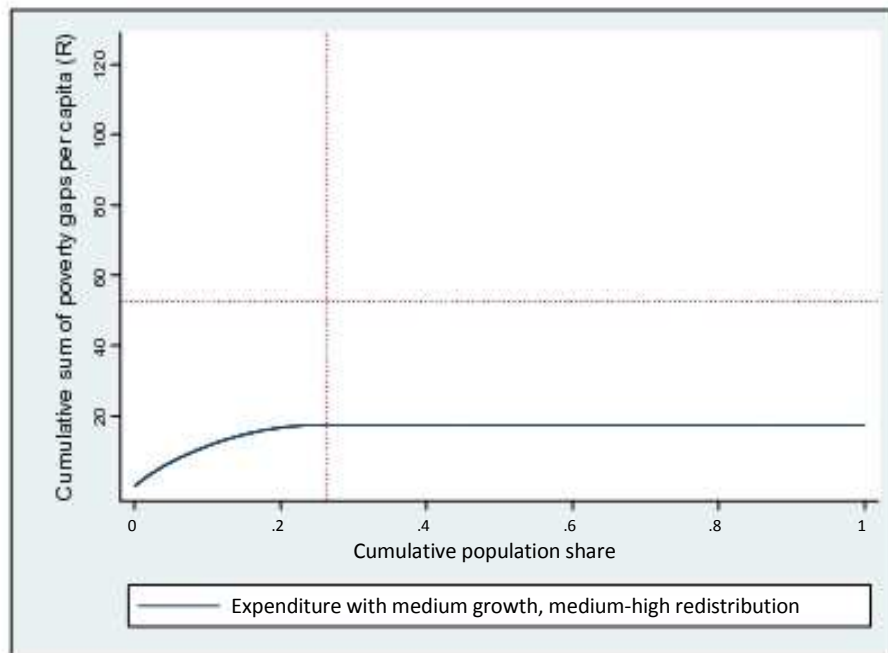


Figure 35 shows a scenario in which both the poverty gap and the poverty headcount ratio are indeed halved. In this simulation GDP grows at 4% per annum, while in terms of distribution the poorest person benefits from an additional R200 per month. The TIP curve for this scenario falls well below the horizontal dotted line, indicating that the poverty gap is actually cut by much more than half. It flattens out to the left of the vertical dotted line, showing that the poverty headcount ratio is cut by at least half. This growth/distribution scenario is one in which the AsgiSA target of halving poverty is achieved. Furthermore, it is in the realm of scenarios which seem to be feasible.

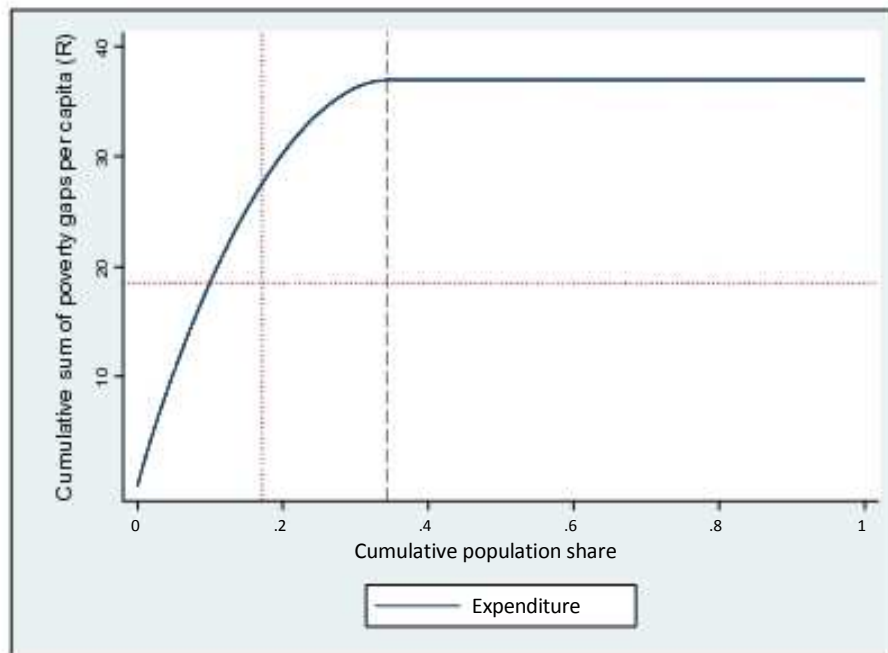


Figure 35: TIP curve of expenditure scenario halving poverty gap and headcount ratio



Finally, we also show the TIP curve using a lower poverty line: the food poverty line discussed earlier, which comes out to just R295 per person per month. Using this lower line means that the poverty headcount ratio is significantly lower - around 34% of the population, as can be read off the x-axis at the point where the curve flattens out (marked here with a dashed vertical line). Furthermore, the poverty gap (seen in the height of the curve) is significantly lower, just about R36 per person per month when averaged over the entire population. The dotted horizontal and vertical lines show what the targets for halving the poverty gap and headcount ratio respectively if the food poverty line is used.

Figure 36: TIP curve of expenditure, using food poverty line



Notes:

Food poverty line set at R295, as discussed previously.

Note that a different scale is used in this case as from the other TIP curves.

Table 34 below summarises whether the targets of halving the poverty headcount ratio and the poverty gap could be met under a range of growth/distribution scenarios.<sup>61</sup> On the growth side, we consider the effects of GDP growth through to 2014 at averages of 3%, 4%, 5%, 6%, and 7% per annum. These growth rates are shown here combined with four different pro-poor distributional scenarios. Following the method described earlier, in the most 'intensive' distributional change the maximum gain is R300 per month, which benefits the very poorest person, with the gains decreasing from there. In the least 'intensive' distribution scenario shown here, the poorest person gains by only R50 per month; in-between scenarios of R100 and R200 are also shown. The results shown here are for distributional changes revolving around the 66.6<sup>th</sup> percentile.

For each scenario (in a cell of Table 34) we summarise whether or not the target of halving poverty is met. Since we are considering the halving of poverty in terms of halving both the poverty headcount ratio and the poverty gap, in each scenario an 'H' indicates that the poverty headcount ratio is (at least) halved while a 'G' indicates that the poverty gap is (at least) halved, a dash indicating that the target is not met. The ten scenarios in which both aspects of poverty are halved are shaded in.

<sup>61</sup> Table 34 summarises the results in terms of expenditure; in terms of income the only difference is that under the scenario of 4% growth with a maximum distributional gain of R200 per month it is only the poverty gap that is halved, not the poverty gap and headcount ratio as shown in the table for the case of expenditure.

Needless to say, the higher the growth rate, the less of a distributional change is required to meet the target of halving poverty, and vice versa. However, even under a highly optimistic (in all probability highly over-optimistic) scenario of 7% annual growth through to 2014, the poverty headcount ratio cannot be halved without some distributional change.

Table 34: Meeting of poverty targets under alternative growth/distribution scenarios

Growth	Distribution				
	R300	R200	R100	R50	None
7%	H, G	H, G	H, G	-, G	-, G
6%	H, G	H, G	-, G	-, G	-, G
5%	H, G	H, G	-, G	-, G	-, -
4%	H, G	H, G	-, G	-, -	-, -
3%	H, G	-, G	-, G	-, -	-, -

Notes:

Growth refers to the average annualised growth rate between 2006 and 2014 under the various scenarios. Distribution refers to the distribution scenarios as set out in the text. R300 means that the expenditure of the poorest person is R300 per month higher than it would otherwise have been (with amounts decreasing from there as income rises); similarly for R200, R100, and R50.

For each scenario (growth/distribution combination), H means that the poverty headcount ratio is at least halved and G indicates that the poverty gap is at least halved; - means that those measures are not halved.

Some important conclusions can be drawn from these scenarios concerning the meeting of the AsgiSA poverty target.

Firstly, the AsgiSA target of halving poverty by 2014 can be achieved. It should certainly not be given up upon or treated as some distant goal or rhetorical aspiration.

Secondly, it is highly improbable that the AsgiSA poverty reduction targets will be met without a pro-poor shift in the growth trajectory. Growth alone will not allow us to halve poverty. Furthermore, it is unlikely that the growth path would endogenously evolve in a sufficiently pro-poor way, without active policy interventions designed to achieve this.

Thirdly, these scenarios warn that any worsening of inequality will make the meeting of the AsgiSA poverty targets virtually impossible. Specifically, should distribution worsen for the bottom half of the population, improbably high growth rates would be needed to halve poverty. Growth which failed to carry along those in the lower part of the distribution would not even have the poverty-reducing effects shown earlier for growth alone. South Africa thus cannot afford any worsening of inequality if we are to halve poverty by 2014.

Fourthly, the temptation to set the poverty line too low should be avoided. It currently appears that, notwithstanding the background research by Stats SA into the minimum amount which could be used for a poverty line, government is considering setting it even lower than this level. This might be motivated at least in part by the realisation of just how many people would fall under such a line, and perhaps a concern that it would be

difficult to halve that number of people within a reasonable timeframe. One insight that emerges from this analysis is that even middling growth with no distributional change takes us a long way towards halving of poverty by 2014, and with some pro-poor distributional change the halving of poverty is eminently feasible. While a poverty line in the region of R450 per person per month means that a very large number of South Africans would currently be classified as poor, this should not necessarily motivate the choice of a lower poverty line given the feasibility of dramatically cutting poverty over the next few years.

With the poverty line as defined here, the poverty gap is only about 3% of GDP. This is the total amount it would take to lift every South African above the poverty line. This suggests that poverty in South Africa should not be viewed as an insurmountable problem.

Box 7: Specific recommendations to Stats SA

We take this opportunity to make the following suggestions for consideration by Stats SA:

- ☐ In future rounds of the IES and LFS, to cross-identify households (as was done with the 2000 IES but not with the 2005/06 IES), which would allow for research utilising data from both surveys.
- ☐ To recalculate the poverty line using the 2005/06 IES, rather than inflating the values derived from the 2000 IES (since the poverty line was expected to be finalised earlier, but the 2005/06 IES has since become available).
- ☐ Publish both the expanded as well as the official rates of unemployment (with appropriate explanation).
- ☐ We also draw Stats SA's attention to problems in some earlier LFS datasets, where for instance the actual coding of employment status is inconsistent with the documentation, leading to small errors in the classification of people by employment status and in unemployment rates. It would be appropriate to correct these errors or at least to draw user attention to them.

## 8. CONCLUSIONS

Our empirical investigation points to the critical importance of addressing the crisis of unemployment if South Africa's scandalously high levels of inequality are to be brought down. Earnings from work account for most of total income, and the inequality in households' receipt of earnings from work account for almost 80% of overall income inequality. We found a surprisingly close relationship between the trends in unemployment and in earnings inequality over time. This suggests that rather than there being a trade-off between employment generation and reducing inequality, similar policies might address both of these issues. A shift in the growth path in which the relative and absolute demand for unskilled and semi-skilled labour increased could bring down both unemployment and inequality.

The relevance of unemployment to inequality is underscored by the results from the static and dynamic decomposition analyses of earnings inequality. The rate of unemployment was found to account for a significant part of earnings inequality. Further, changes in unemployment account for most of the changes in inequality, both during the rise in inequality up to late 2002 and during the subsequent decline.

However, earnings dispersion amongst the employed as well as the proportions of people in the formal and informal sectors, are also important contributors to inequality amongst the labour force as a whole. Wage gaps in South Africa are ridiculously high by international standards. Having established the centrality of addressing unemployment in order to address inequality, we also cannot say that just 'any jobs' would really bring down inequality even if these jobs are very badly paid. An increase in the dispersion of earnings amongst the employed, or a shifting from the formal to the informal sectors, would tend to worsen inequality.

This conclusion from the decomposition analysis is reinforced by the simulations of the effects of expanded low-wage employment on inequality. Whilst the generation of millions of very low-wage jobs would reduce inequality, these reductions might not be as much as one might hope (relative to the scale of such employment creation) if the wages are too low.

On the other hand, whereas the introduction of a statutory national minimum wage would generally tend to reduce inequality, its overall effect would depend on the extent of any associated job losses. In our view, a minimum wage could be an important instrument for addressing poverty, inequality, and exploitation. However, its design and implementation would need to be carefully managed so as to maximise the positive effects and minimise job losses. Further research on this issue could be useful.

These findings highlight the importance of decent work: employment creation at a much higher rate than has been the case is absolutely imperative, and these jobs need to be decently paid. A massive expansion of decent employment opportunities, particularly for the low-skilled and semi-skilled, could be the most important means of bringing down overall inequality in South Africa. However, an expansion of the 'working poor', poorly

remunerated and excluded from the mainstream of the economy, is not a solution to the problem of inequality in South Africa. Furthermore, an approach which emphasises the mass creation of very low-wage jobs risks of institutionalising and legitimising a distorted and inegalitarian earnings distribution.

A continuation of an inappropriately capital-intensive and skills-intensive growth path is unlikely to fundamentally address either unemployment or inequality. While decent rates of growth could make some inroads into unemployment and inequality, given the scale of these problems growth alone will fall far short. The sustainability of the current growth path is also questionable even in its own terms, but that is another matter.

South Africa needs economic policies targeted far more strongly at employment creation than has been the case thus far. Policies also need to be targeted specifically at the absorption of labour categories which the economy has up until now been least successful in absorbing. This is not necessarily the lowest educated, as shown earlier, but rather young people with little or no work experience and reasonable levels of education (relative to the labour force as a whole). There are currently about three million South Africans below the age of 35 who are (officially) unemployed and another about two-and-a-half million discouraged jobs-seekers. Close to two-thirds of these unemployed young people have never done work of any sort. While South Africa's overall rate of unemployment is anomalous by international standards, the rate of youth unemployment is even more so. Whereas in most countries the norm is for young people to be in some form of productive employment (even if underemployment), in South Africa less than half of young people are doing work of any kind.

One of the devastating legacies of the growth path followed in the first decade or so after democratisation is this huge and unprecedented number of unemployed young people, whose human capital and future employment prospects have deteriorated with every year of being out of work. Their employability is far lower now than if they had gained employment soon after leaving school, and will continue to worsen the longer from now it takes to create jobs.

Although this observation does not directly derive from the empirical findings of this particular study, it is our view that South Africa will be unable to really turn the tide of the problems of HIV/AIDS and of crime unless the problem of ultra-high youth unemployment is dealt with.

Specific policies will be needed to effect the changes in the economy necessary for the absorption of these millions of unemployed people, particularly young people with very limited employment experience. The scale of unemployment demands measures that go far beyond 'active labour market policies'. Rather, a shift in the growth path is needed. This is highly unlikely to materialise without aggressive industrial policies and a supportive macroeconomic environment.

Given South Africa's levels of income per capita and status as an upper-middle income country, the scale of poverty that we are faced with is associated more with distributional

patterns than with the total amount of resources available. With our levels of national income, poverty would be far lower than it is if we had anything approaching a 'normal' level of inequality by international standards. But as shown in section 3.4, inequality in South Africa is extreme by international standards. Higher growth would lift people out of poverty (unless that growth is actually immiserising, for instance if we were to move to an even more capital-intensive and exclusive growth path). However, when we look at South Africa in a global context the real explanation for our high levels of poverty lies in our distributional structure.

We recommend that the AsgiSA target of 'halving poverty' be framed in terms of both the halving of the poverty headcount ratio and of the poverty gap. This would take account of both the incidence and intensity of poverty. Our simulations of the effects of various growth/distributional scenarios suggest that the AsgiSA target of halving poverty by 2014 can be achieved. However, this will not happen through growth alone. Halving poverty requires a 'pro-poor' shift in the growth trajectory, such that distribution becomes less unequal. Conversely, any worsening of inequality will put the AsgiSA poverty targets out of reach.

Dramatic improvements in distribution rarely come about without active measures targeted specifically at lessening inequality. Moderate decreases in inequality may well come about as a by-product of other dynamics. However, the magnitude of the reduction in inequality that would be required to bring South Africa anywhere in line with international norms is not going to happen without policies dedicated to that end.

Distributional changes would not in practice unfold in the way we have modelled them here, but these simulations are indicative of the scale of distributional changes needed to halve poverty. The most important dynamic underlying actual distributional changes is likely to be through the labour market, in terms of both employment creation (or losses) and the distribution of earnings amongst the employed. Social spending certainly has a role to play in ameliorating inequality and poverty, particularly in the short-medium term. However, South Africa's inequality can not feasibly be brought down to 'decent' levels - at least to 'normal' standards of inequality internationally - through social spending, but rather through increased demand for low- and semi-skilled labour and through a closing of wage gaps.

A stylised fact of distributional changes internationally, at least in recent decades, is what we might term a 'downward stickiness' of inequality. Increases in inequality are much less reversible than are decreases. For instance, in countries where a government has come into power which instituted conservative economic policies that worsened income distribution, followed by the election of a government that switched to more 'progressive' policies, the distribution of income typically hardly comes down and certainly not down to the initial levels. Even where the intention is genuinely to improve income distribution, this often turns out to be far more difficult than anticipated. This is not surprising, as the wealthy are generally far better able to protect their income than are the poor. This asymmetry in distributional changes underlines the point that a significant improvement in income distribution is highly unlikely to materialise without strong

policy interventions geared towards that goal. Improving income distribution is possible, but it takes effort.

In this vein we would suggest that the reduction of inequality be placed as a more central and explicit goal of government policy than is currently the case. Objectives such as employment creation and poverty reduction do overlap with the reduction of inequality, but these should not be conflated. This is obviously a political issue: whether the reduction of inequality is a desirable goal in its own right. If it is, this calls for measures targeted specifically at that end. An associated consideration, if indeed the reduction of inequality is accepted as an objective, how strongly and in what ways this is to be pursued insofar as there are tensions between this and other public policy goals. International comparisons reveal how well of elites in South Africa are doing, even relative to countries with higher levels of income per capita and even compared to countries such as Brazil where the elites are notoriously successful in capturing a large share of national income. There is abundant scope for progressive distributional change in South Africa. Even mild distributional change in which the incomes of the well-off fell slightly, could mean dramatic increases in the incomes of the poorest. With the poverty line used in this research (R450 per person per month), the entire poverty gap comes out to only about 3% of GDP. The resources are available to decisively deal with poverty and reduce inequality. Policies would, of course, have to be well defined and carefully implemented in order to do so, but whether this happens is ultimately a question of political will.



## APPENDIX 1: PROCESSING OF LFS DATA

Below we describe the various aspects of the checking and cleaning of the original LFS datasets that was implemented in advance of the quantitative analysis.

### Recoding of employment status

The measures of employment status (employed; unemployed official definition; unemployed broad definition; and out of the labour force) were recoded for all LFS datasets before 2004, using the current criteria of unemployment. Beginning from the March 2004 LFS, the reference period in which someone needs to be able to take up a job in order to meet the criteria for being unemployed (as opposed to being out of the labour force) was increased from 1 to 2 weeks. For purposes of comparability and continuity, the labour market status of respondents in previous surveys was thus recoded in line with the current criteria (this had the effect of slightly raising the rates of unemployment for earlier years above those reported using the old definition). Further, various errors and inconsistencies in the Stats SA coding of employment status in previous years were corrected (including erroneous changes in coding between years, and inconsistencies between the stated coding rule and the actual coding applied, such as where people unavailable to start work within the reference period are nevertheless classified as unemployed). The actual changes to the resultant indicators are small in magnitude, but these corrections were important for the sake of rigour and accuracy (although they were painstaking to undertake).

### Screening of high incomes

Analyses of income distribution are sensitive to very high incomes. A few very high incomes can inflate the means and other statistics, and measures such as the Gini coefficient are particularly sensitive to the top end of the income distribution. However, it is well known that incomes at the top end of the distribution tend to be disproportionately underreported in surveys<sup>62</sup>, and hence it is likely that high-end incomes are actually underestimated.

Nevertheless, high earnings were screened for observations which seemed clearly erroneous. 15 original observations, which would have been weighted to 7 438 cases, were excluded on the grounds of their unrealistically high reported earnings. All of these cases reported earning exceeding R1 million per month (and note that this excludes other sources of income such as dividends). 12 of these cases were from the September 2002 LFS. The next highest earnings reported was R500 000 per month (i.e. there were no cases between R500 000 and R1m). The 15 observations reporting earnings exceeding R1 million per month were examined individually and the reported incomes were adjudged unrealistic on the basis of the personal characteristics of the respondents, particularly in terms of their occupations. These were no doubt not the only inaccurate observations, but

<sup>62</sup> Reasons for this include particular difficulties in accessing high-income households (e.g. because of security measures) as well as a greater likelihood of underreporting income due to concerns about the sharing of information with the revenue authorities.

we were cautious in excluding other high-earnings observations without also screening for unrealistically low-earnings observations and introducing biases into the data.

#### Treatment of zero incomes

At the other end of the distribution spectrum, a significant proportion of respondents who are classified as employed report zero earnings. These are not people who declined to report their earnings (which is also an option in the questionnaire) but people who specifically reported zero earnings. As a percentage of those employed, those reported zero earnings in the LFS ranged from 9.3% to 14.8%. It is questionable whether such a significant proportion of people really did earn nothing in the relevant period, and this raises an issue of how to treat these observations.

To some extent this is likely to derive from the expansive definition of employment used by Stats SA. A person need only have 'worked' for an hour in the previous week to be classified as employed. Further, this 'work' includes activities such as helping unpaid in a household business of any kind; doing any work on the household's land or looking after animals; doing any construction or major repair work on their home, plot, cattle post or business; or catching animals for household food. If such activities are counted as employment, then clearly some people who are classified as employed will have zero earnings. Further, there is a significant proportion of people earning very low incomes.

There are still likely to be a number of earnings that are erroneously reported as zero. However, there is no reliable way to discern which these would be. To simply delete everyone reporting zero earnings, as some studies on distribution in South Africa have done, would be to introduce a huge bias into the distribution by essentially not only cutting out some of the noise but also by cutting off the bottom end of the distribution.

We have thus left all reported zero earnings in the sample. The only treatment in this regard is that some of the measures and decompositions of inequality used cannot be computed with zero incomes, and for those purposes we imputed nominal earnings of R0.01 per month where zero earnings were reported. This does not affect the measures of distribution at the decimal places reported here.

Finally, in order to check for the robustness of key results and trends and to confirm that these were not being driven simply by changes in the proportion of the employed reporting zero earnings, these were computed with and without the inclusion of those employed but receiving no earnings.

#### Treatment of earnings reported in brackets

Another aspect of the data processing was in respect of earnings brackets. While respondents were asked to state their actual income (from their main source of income), those unwilling or unable to do so were also given the option of indicating which of fourteen brackets their income falls within. This poses a problem for empirical analysis that required income as a continuous variable.

In a number of South African studies this was addressed through imputing the mean point of the bracket to those in that bracket. However, a limitation of this approach is that the mean is an inaccurate indicator of incomes in any given bracket, and for high brackets in particular is likely to underestimate the incomes of the bracket. Incomes in the highest bracket (R30 000 upwards per month) have in other studies been simply assigned the bottom floor of the bracket (R30 000), which clearly leads to an underestimation of those incomes. We took an alternative approach to the imputation of incomes to bracket respondents. We calculated the mean and median incomes of people who reported actual incomes, by bracket, for each year. These were then assigned to the people in the same bracket who simply identified a bracket.

This yielded two alternative measures (one using means and the other using medians). In the measure utilising mean incomes, the addition of the bracket-reporters with their imputed income obviously does not affect the mean income within each bracket, but it does affect the number and distribution of people within each bracket (and overall income distribution measures). In the measure utilising median incomes, the bracket median does not change but the mean does change somewhat, once those respondents who reported their incomes in brackets are added in. Neither measure could be considered inherently correct or superior, and the empirical analysis was undertaken using both, to ensure the robustness of the results. The measure using the mean bracket incomes generally yields slightly indicators of inequality than does the measure using medians. The method used here of imputing incomes to those who reported their incomes in brackets is superior to those used in some previous analyses of distribution in South Africa.

### APPENDIX 3: RELATIONSHIP BETWEEN UNEMPLOYMENT AND INEQUALITY OVER TIME

In section 5.2 we discussed the trends in unemployment and inequality between 2001 and 2007 in South Africa, using evidence from fourteen LFS datasets. Various measures of inequality were used, together with both the official and expanded measures of unemployment, and a sample of plots were shown. A fuller set of plots of the relationship between unemployment and inequality are shown below. The various measures of inequality are calculated in different ways and emphasise different characteristics of distribution and different parts of the distribution spectrum. Figures A1-A16 show the relationships between unemployment and inequality of earnings for the full labour force and for the full working age adult population (aged between 19 and 65 inclusive), i.e. including people who are not working. In Figures A17-A24 unemployment is plotted against inequality of earnings amongst the employed. In all of these charts, a close positive relationship between unemployment and inequality is evident.

Figure A1: Official unemployment and labour force inequality (Gini)

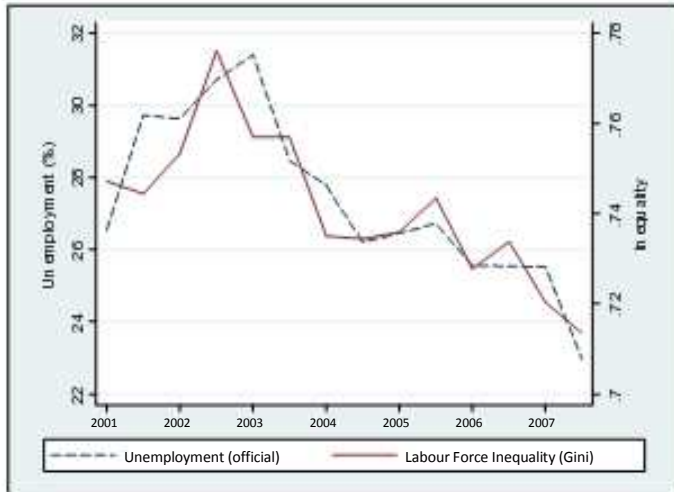


Figure A2: Expanded unemployment and labour force inequality (Gini)

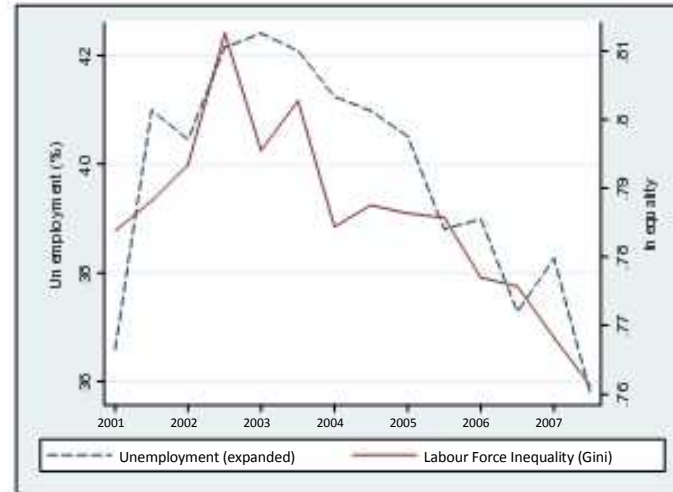


Figure A3: Official unemployment and working age inequality (Gini)

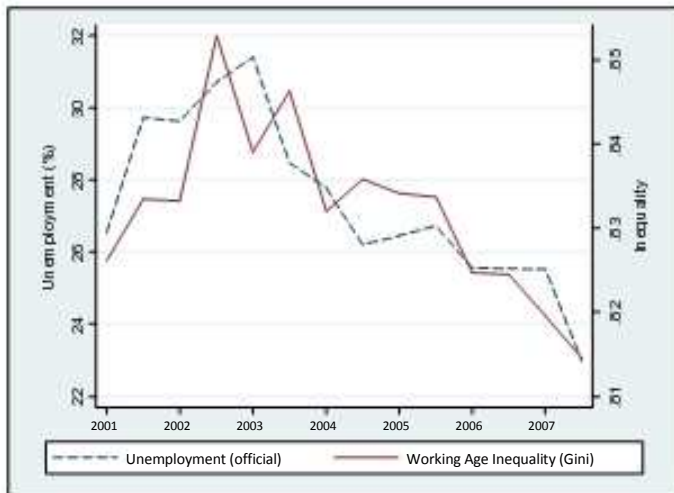


Figure A4: Expanded unemployment and working age inequality (Gini)

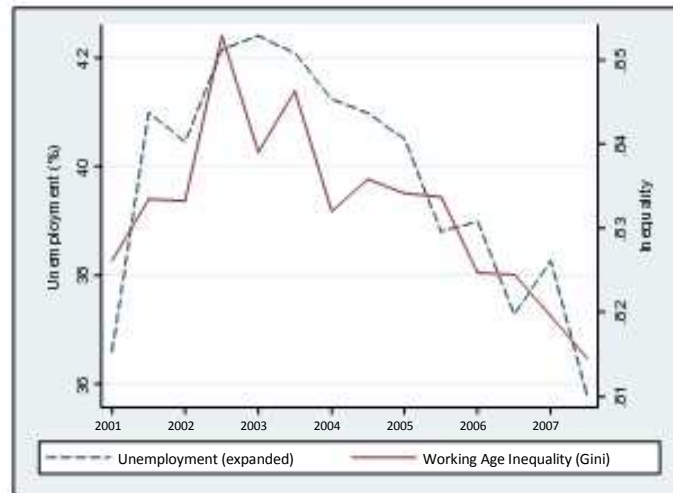


Figure A5: Official unemployment and labour force inequality (Theil)

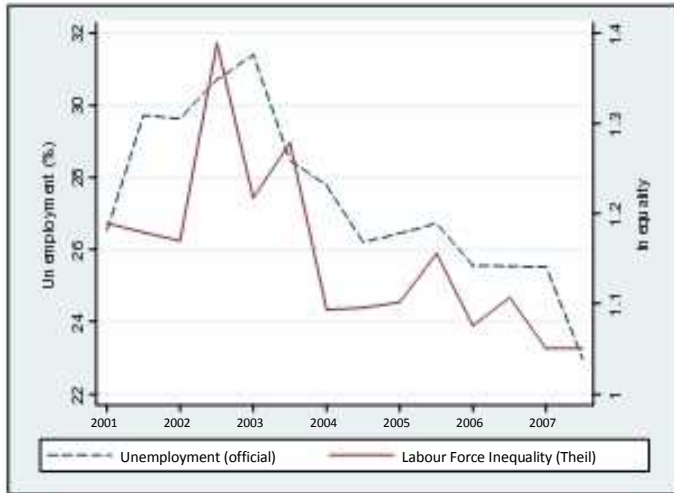


Figure A6: Expanded unemployment and labour force inequality (Theil)

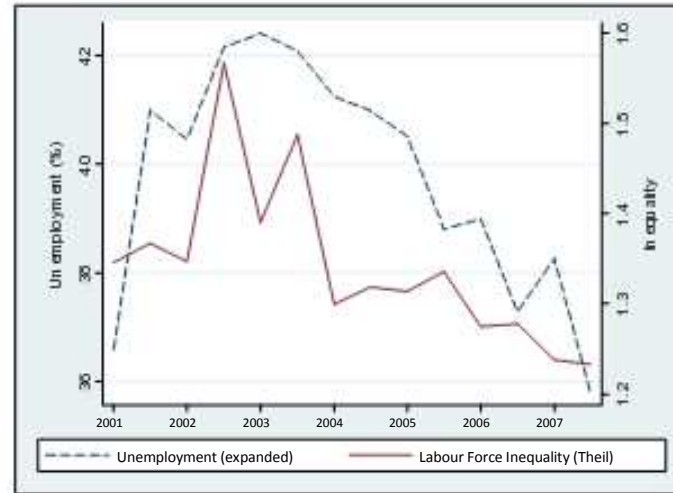


Figure A7: Official unemployment and working age inequality (Theil)

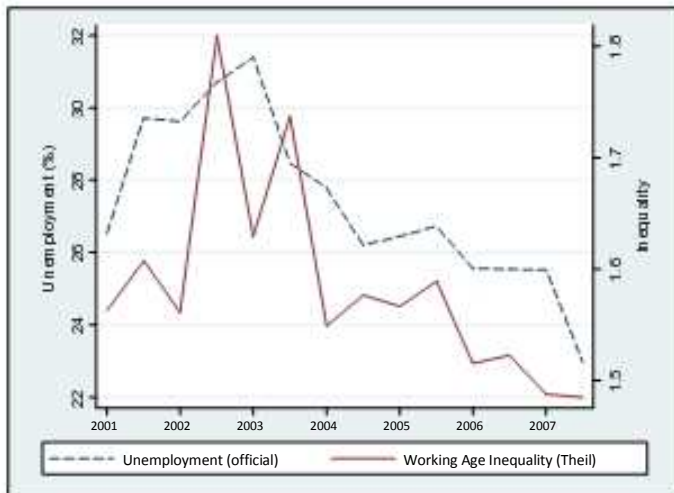


Figure A8: Expanded unemployment and working age inequality (Theil)

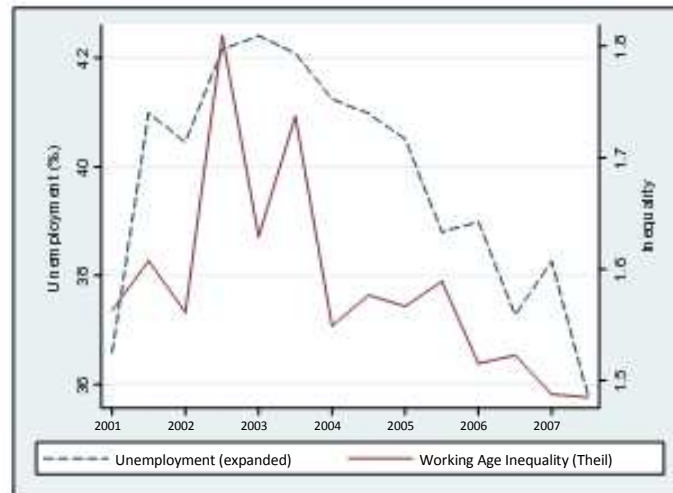


Figure A9: Official unemployment and labour force inequality (Mean log deviation)

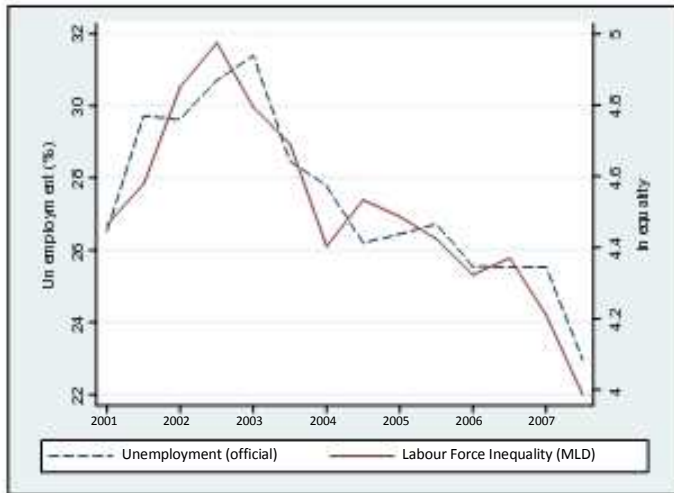


Figure A10: Expanded unemployment and labour force inequality (Mean log deviation)

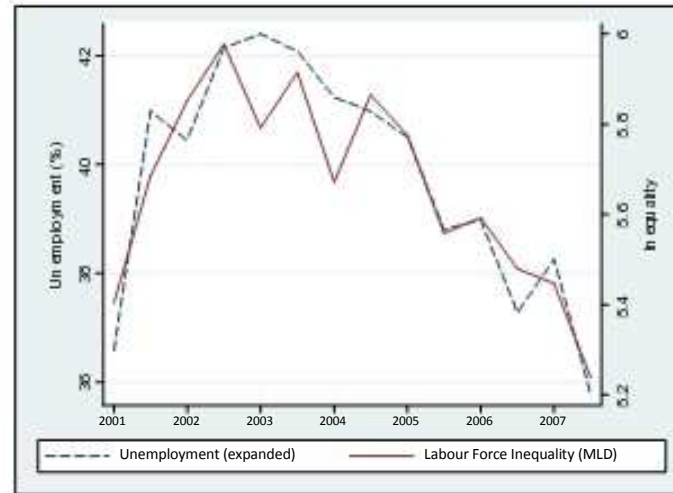


Figure A11: Official unemployment and working age inequality (Mean log deviation)

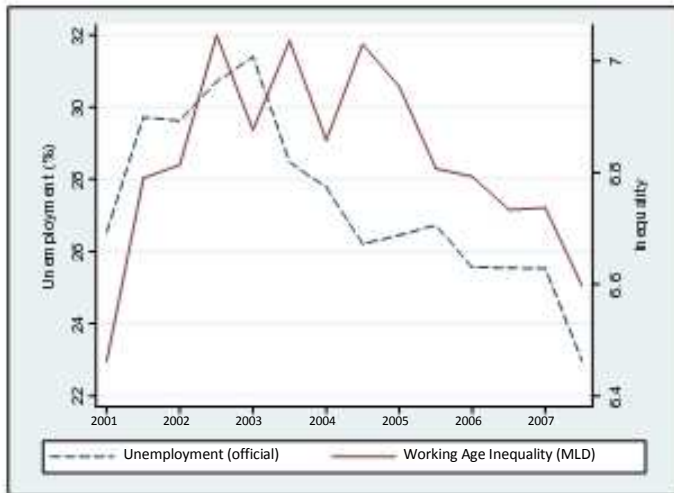


Figure A12: Expanded unemployment and working age inequality (Mean log deviation)

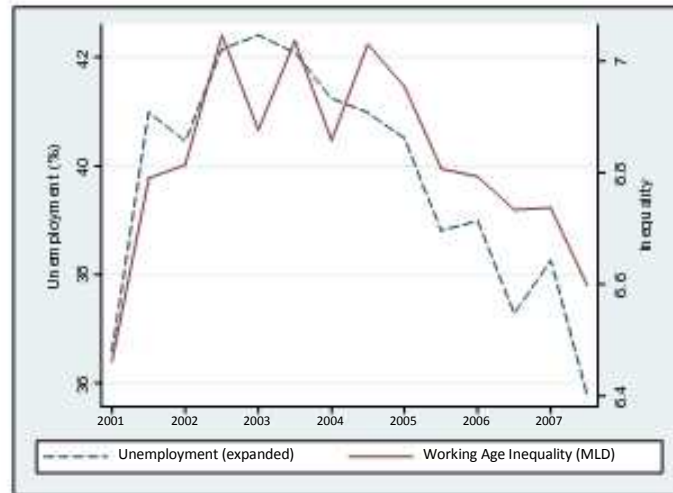


Figure A13: Official unemployment and labour force inequality (Relative mean deviation)

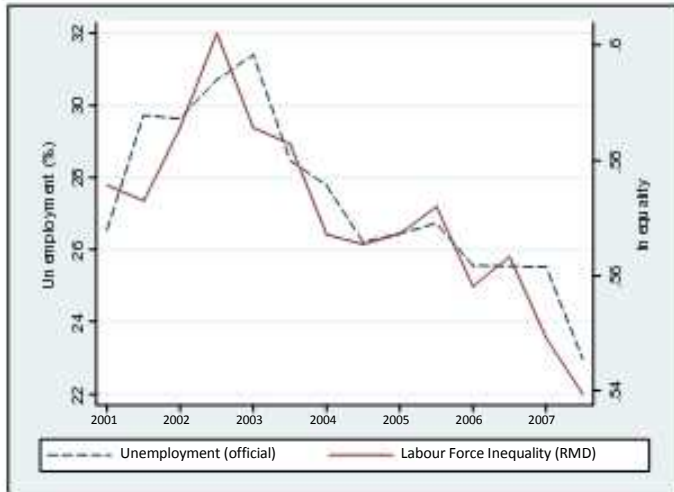


Figure A14: Expanded unemployment and labour force inequality (Relative mean deviation)

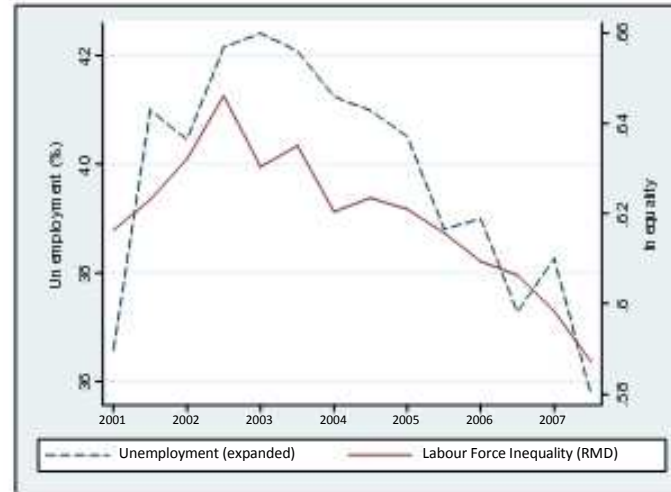


Figure A15: Official unemployment and working age inequality (Relative mean deviation)

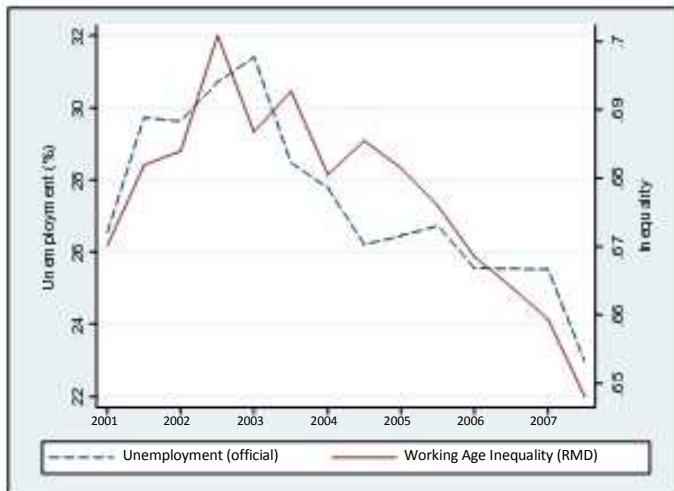


Figure A16: Expanded unemployment and working age inequality (Relative mean deviation)

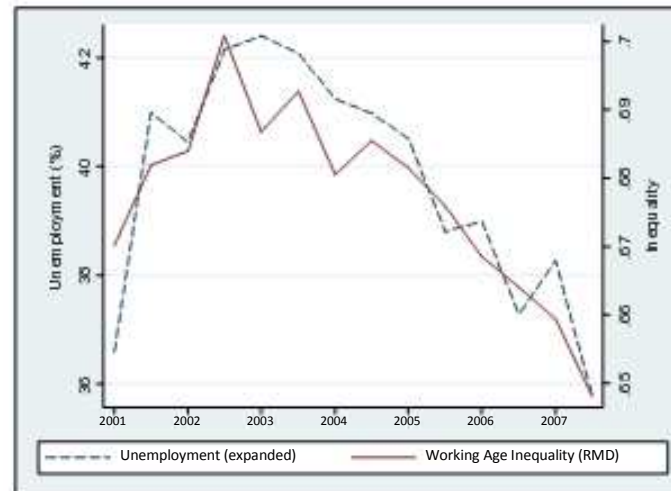




Figure A17: Official unemployment and earnings inequality (Gini)

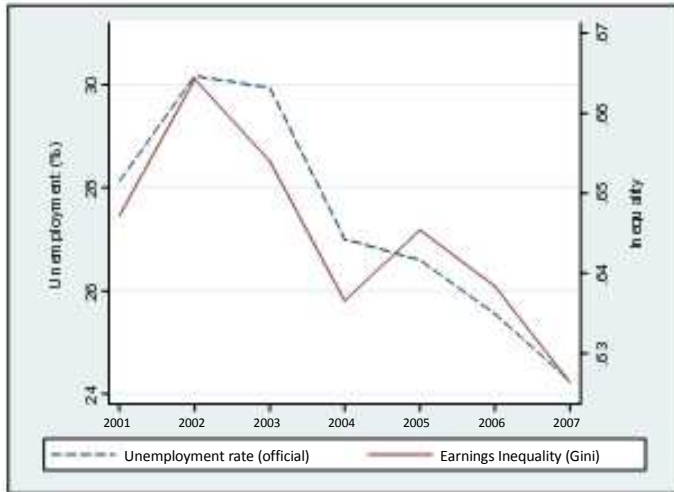


Figure A18: Expanded unemployment and earnings inequality (Gini)

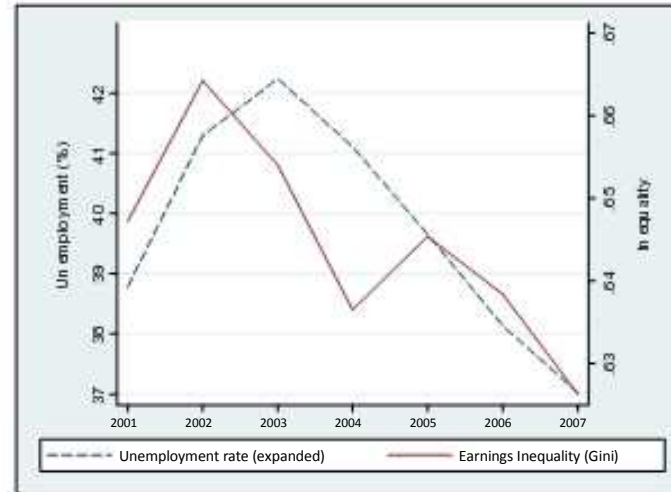


Figure A19: Official unemployment and earnings inequality (Theil)

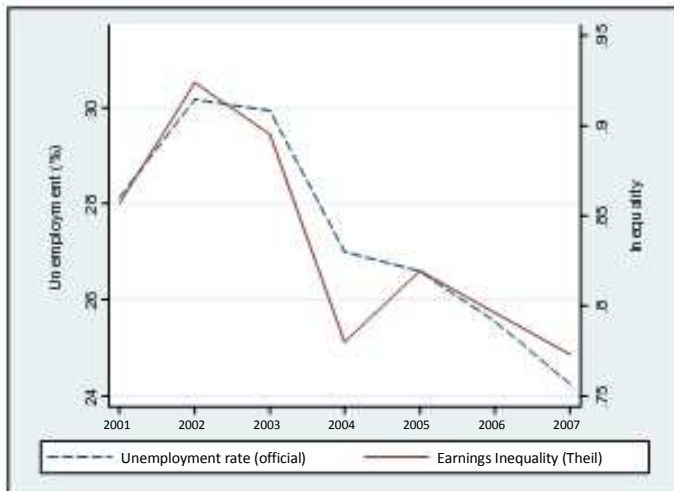


Figure A20: Expanded unemployment and earnings inequality (Theil)

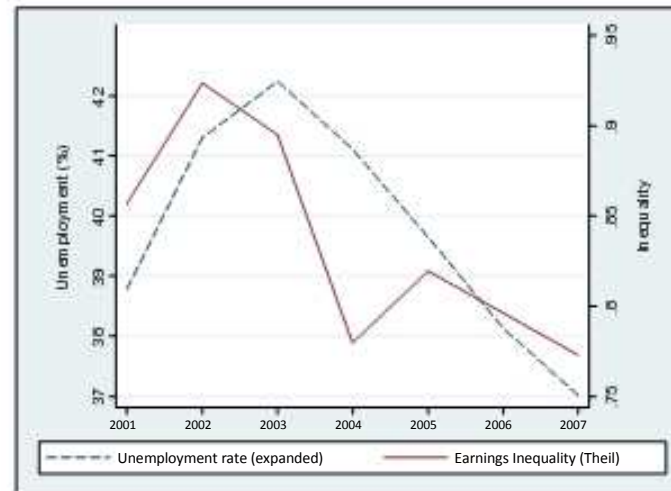


Figure A21: Official unemployment and earnings inequality (Mean log deviation)

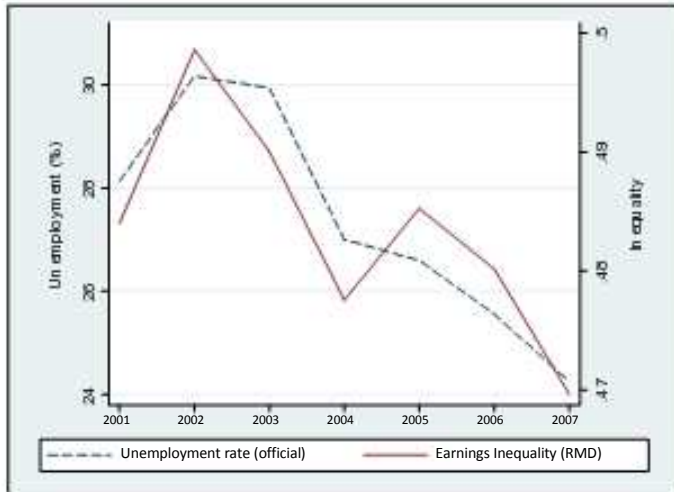


Figure A22: Expanded unemployment and earnings inequality (Mean log deviation)

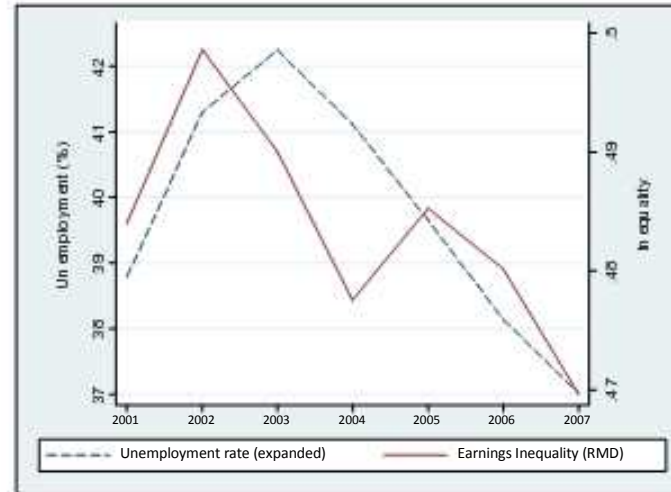


Figure A23: Official unemployment and earnings inequality (Relative mean deviation)

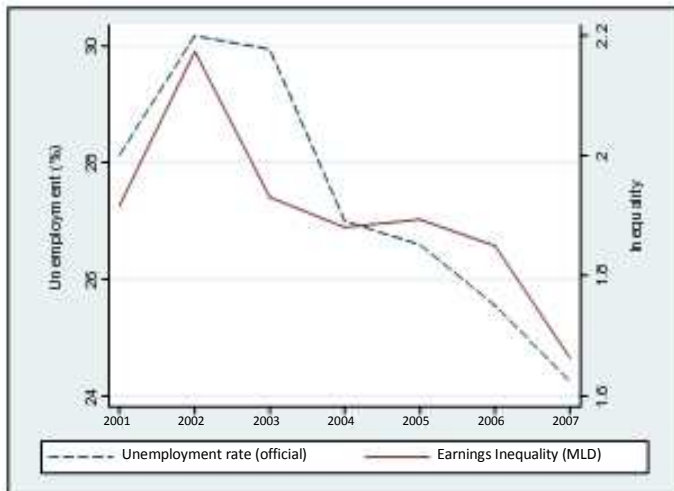
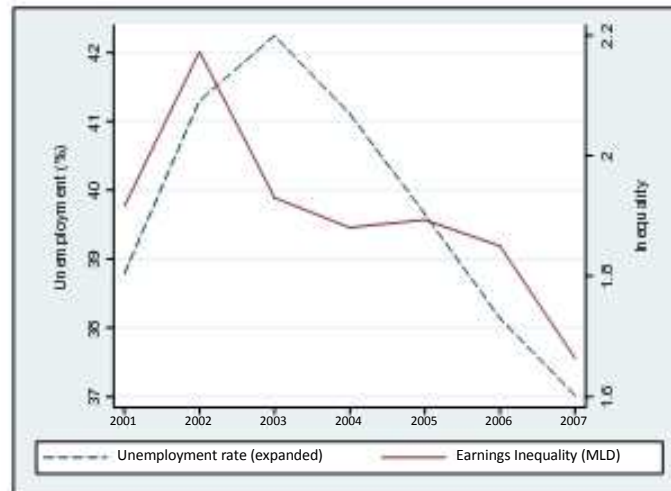


Figure A24: Expanded unemployment and earnings inequality (Relative mean deviation)



## APPENDIX 5: FURTHER RESULTS FROM DECOMPOSITION OF INEQUALITY BY INCOME SOURCE

In section 5.3 we decomposed total income by factor source, showing how much of total income inequality is accounted for by each of the sources of income. Results were shown using household income per capita calculated by treating adults and children in the same way, i.e. calculating household income per capita by dividing household income by household size. As discussed in section 3.2, we also calculated household income per capita using two alternative equivalence scales which we labelled  $E_2$  and  $E_3$  (see Box 2 for details). The results of the decomposition of income inequality by factor source are shown below using each of these alternative incomes. The results are not significantly different from those derived using the straightforward household income per capita.

Table A1: Decomposition of income inequality by source, using  $E_2$  equivalence scale

	Share of income (%)	Contribution to total income inequality (%)
Income from work	73.61	77.72
Income from capital	1.10	2.69
Pension from previous employment and annuities from own investment	2.37	1.05
Welfare grants	6.87	-0.17
Other income	6.65	11.08
Imputed rent on own dwelling	9.41	7.65
<b>Total</b>	<b>100</b>	<b>100</b>

**Notes:**

Inequality is measured in terms of  $GE(2)$ , half of the squared coefficient of variation.

Income from work includes salaries, wages, and income from self-employment.

Income from capital includes income from letting of fixed property; royalties; interest received; and dividends.

Welfare grants include old age pensions; disability grants; family and other allowances; and worker compensation funds.

Other income includes a range of income sources such as alimony, hobbies, stokvels, food and clothing received, vehicle and property sales, gambling, lobola, and tax refunds.

Table A2: Decomposition of income inequality by source, using  $E_3$  equivalence scale

	Share of income (%)	Contribution to total income inequality (%)
Income from work	73.73	77.56
Income from capital	1.10	2.74
Pension from previous employment and annuities from own investment	2.37	1.06
Welfare grants	6.84	-0.16
Other income	6.54	11.06
Imputed rent on own dwelling	9.42	7.75
<b>Total</b>	<b>100</b>	<b>100</b>

Notes: as in Table A1 above.

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