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New patterns of structural change and effects on inclusive development

A case study of South Africa and Brazil

Joshua Greenstein*

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Abstract: This study explores the question of structural change and inclusive development in South Africa and Brazil. Using Census data from the two countries, the analysis combines a household level multidimensional indicator of well-being with the applications of growth incidence curves and a sectoral decomposition of change to provide insight into the relationship between the place of households in the economy as reflected by employment sector and geographical location, and the extent to which the residents of those households are sharing in the benefits from growth. The results here suggest that current patterns are in some ways contradictory to received models of development and distribution, and, further, that redistribution alone is insufficient in creating inclusive development if the patterns of structural change do not sufficiently involve people in the processes of growth, particularly through accessible and remunerative employment.

Keywords: structural change, inclusive development, productivity, employment and development, South Africa, Brazil
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*New School for Social Research; greej586@newschool.edu

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1   Introduction

This study explores the question of structural change and inclusive development in South Africa and Brazil, using a household level indicator measuring multiple dimensions of well-being, based on variables such as access to public services and health and education outcomes. The emphasis is on the impact of structural economic and employment changes within these economies, drawing on the ideas of classic and more recent structuralist models of development and distribution, as well as recent empirical studies of structural change and well-being. Recent industrializers have not been following the previously observed patterns in terms of sectoral change and employment (Palma 2005; Timmer and Akkus 2008; UNRISD 2010; van der Hoeven 2010, 2012; McMillan and Rodrik 2012; Rodrik 2013a, 2013b; Subramanian 2014), and the effect of these changing structural patterns on well-being has not yet been systematically examined. The results here suggest that current patterns are in some ways contradictory to received models of development and distribution, and, further, that redistribution alone is insufficient in creating inclusive development if the patterns of structural change do not sufficiently involve people in the processes of growth, particularly through accessible and remunerative employment.

The approach of this study draws on Rodrik's (2003) volume which used 'analytical narratives' to examine an array of growth experiences, particularly Pritchett's (2003) study of Vietnam and the Philippines. Focused country case studies, using qualitative and quantitative analysis, and linking the macro, meso, and micro phenomena, may shed light on this question in a manner that a cross-country study could not. The analysis combines the household level multidimensional indicator of well-being with the applications of the non-income growth incidence curve (NIGIC) techniques of Klasen (2008) and Peragine et al. (2013), as well as the techniques for decomposition of change by sector first introduced by Ravallion and Huppi (1991), with modifications based on van Ark and Timmer (2003). The combination of these techniques gives insight into the relationship between the insertion of households into the economy via employment and geographical location and the extent to which the residents of those households are sharing in the benefits from growth in these countries. As a first step in a larger project, this study examines patterns of structural change and their distributional impacts in South Africa and Brazil in the hopes that this analysis may yield insights into which current patterns of growth tend to create more widely inclusive development.

2   Changing patterns of structural change and inclusive development

2.1   Structural change

Early seminal works studying growth and distribution prominently featured structural change, including changing patterns of employment and urban to rural, or 'traditional' to 'modern', sector migration (Lewis 1954; Kuznets 1955; Ranis and Fei 1961). The progeny of these early models, the modern structuralist explanation of growth involves a shift to economic activities with higher productivity, from agriculture to manufacturing or other 'modern' industry. In countries that have achieved rapid growth, the pattern is for manufacturing to serve as the engine of productivity growth, but not employment creation (Ocampo et al. 2009). In high-income countries, services can account for more than 70 per cent of employment, while in low-income countries, the average is 20-30 per cent, while industrial employment, on average, has been thought to increase with income per capita up to about 30 per cent of total employment, before it begins to decline (UNRISD 2010).

2.2 Changing global patterns of structural change

Current developing countries may have difficulty, without specific policy guidance, following this 'classic' pattern of structural change, from agriculture, to industry, to services, with a simultaneous shift from self-employment to wage employment, due to forces such as increasing productivity and a globalization related decoupling of domestic agricultural industrial production (UNRISD 2010). Evidence suggests changing patterns of structural transitions, and the associated employment patterns, globally. In the 1960s a one per cent increase in the rate of productivity growth reduced employment growth by a small fraction of a percentage point (0.07), but for the decade 2000-10, by more than half a percentage point (0.54) (UNRISD 2010). The potential 'trap' in the structuralist story has always been productivity increases without the needed increase in demand to create employment in the modern sector (Taylor 2009). A high rate of productivity growth within a particular industry can have ambiguous effects even for overall economic growth, if that industry's share of employment falls (McMillan and Rodrik 2012). This pattern could result in a higher portion of employment in agriculture or low-level services. The evidence suggests that this is in fact what is happening.

Most currently advanced economies experienced a peak in manufacturing employment at about 30 per cent of employment, but, with the prime exception of East Asian countries, later industrializers do not seem to follow this pattern (Rodrik 2013a, 2013b). There is a global shift towards both lower employment in industry at all levels of income per capita (Subramanian 2014), and de-industrialization, the shift from manufacturing to service economies, taking place at significantly lower levels of income (Rodrik 2013a, 2013b). While there is evidence that some labour is remaining in agriculture rather than transitioning to manufacturing (Timmer and Akkus 2008), employment is also shifting to the low-productivity or informal service sector (McMillan and Rodrik 2012). In many countries, growth in industrial employment has grown less quickly than the very high rate of urban population growth (UNRISD 2010), contravening the traditional, Lewisian idea that it was labour demand in modern industries that was supposed to stimulate urban in-migration. The percentage of employment in service industry has substantially increased in recent decades, partially reflecting an increase in informal activities (van der Hoeven 2012). When labour moves from agriculture into 'low-value' services and the informal sector, this may not create the same opportunities for stable and growing incomes or other improvements in living standards. Van der Hoeven (2012) identified global trends that he termed the 'precarization' of labour, which included a declining employment population ratio, an increase in service employment, a high share of workers in informal economy, and declining wage share and greater income inequality (van der Hoeven 2012).

While these global patterns are certainly important, they have played out differently in different countries and regions. The UNRISD (2010) identifies several distinct, currently observable development paths, including the classic transition to manufacturing (which these authors claim benefits a majority of people), industrialization with dualist labour markets (many Latin American countries, with a large urban labour force of self-employed, domestic labour, and small enterprises), service-led growth, made more possible by increasing tradability of services (India), agricultural dominance (low-income, de-industrialized, large informal sector), and mineral rich economies (high productivity, low employment extractive industry dominates output).

In Latin America and sub-Saharan Africa (SSA), labour has moved in the 'wrong direction', from more productive to less productive work (McMillan and Rodrik 2012). This phenomenon could be related to a specialization and dependence on high-productivity extraction industries with limited opportunity for employment expansion, exacerbated by globalization (McMillan and Rodrik 2012). In Latin America, manufacturing productivity increases could have resulted in growth reducing structural change by allocating labour to less productive activity (McMillan and

Rodrik 2012), evidenced by a dropping share in employment in both agriculture and manufacturing, and an increase in services (McMillan and Harttgen 2014), along with an increase in informal sector employment over the last several decades (van der Hoeven 2012). In SSA, the share of the labour force employed in agriculture fell by about ten percentage points between 2000 and 2010. Over the same period, the share in manufacturing increased by about 2.5 percentage points, and services increased by eight percentage points, on average (McMillan and Harttgen 2014). In the early structural change models, there is an implicit assumption of a connection between increased production and increased incomes. If rising productivity leads to non-employment generating growth, this assumption becomes increasingly problematic.

2.3   Structural change and inclusive development

Given these new global patterns, it is not certain which paths will be the best at creating inclusive development. Some have argued that patterns of structural change that allow more people to become directly involved in the processes of growth, especially through creation of accessible and remunerative employment, will also be more successfully inclusive in terms of outcomes than those that do not, even when followed by redistribution (Amsden 2010, 2012; Barros et al. 2011; Reddy 2013). The generation of quality employment opportunities is insufficient; those who need work must be aware of the opportunities, have the proper education or skills to take advantage of the opportunities, and be free of physical or societal barriers to taking advantage of the opportunities (Barros et al. 2011). In this sense, it also necessary to consider factors such as membership in ethnic or racial minority groups, and, especially, geographical location, and the interactive effects of these factors with structural economic change, to determine to what extent the benefits of economic growth will be equitably distributed.

Khan's (2007) survey of country case studies identifies three distinct patterns of structural employment change that have resulted in poverty reduction in recent decades; a rapid increase in industrial and modern employment, with an absolute fall in employment in agriculture (the East Asian Tigers), a reduction in agricultural employment accompanied by a rapid expansion in rural non-farm (RNF) activities (Bangladesh, Vietnam, India), and an increase in agricultural employment, when modern sectors fail to absorb labour (some Central Asian countries); an outcome that Khan labels as 'perverse' from a development perspective, but may actually help reduction of poverty. This last type of case seems to be the exception; in a review of dozens of case studies of growth episodes since the 1980s, Melamed et al. (2011) found that in the episodes in which poverty fell, the majority saw a rise in employment in services, about half saw a rise in industrial employment, and only a third saw a rise in agricultural employment. None of them had employment growth in all three sectors simultaneously. In situations in which productivity growth slows down demand for labour in the manufacturing sector, productivity growth, or employment growth, or both, in agriculture, or in low-level services, may improve more lives than further industrial expansion (Suryahadi et al. 2009; Melamed et al. 2011; UNRISD 2010). How and whether current patterns of structural change will improve well-being, and which patterns have proven most inclusive, has not yet been systematically analysed. These case studies are an initial step in a larger project to do so.

3   Methodology

3.1   Data

The main data source used is the Integrated Public Use Microdata Series (IPUMS) International (Minnesota Population Center 2013); the original source is the South Africa Population Census 1996 and Community Survey 2007; and for Brazil the 1991 General Census X and 2010 General

Census XII. These are national censuses; the IPUMS data is a randomly selected sample of ten per cent of these total censuses.

The complementary macro-level data comes from the World Bank's World Development Indicators (World Bank 2013), the International Labour Organization's Key Indicators in the Labour Market (ILO 2014), the United Nations Statistics Division's National Accounts Main Aggregates Database (UNSTATS 2013), and the countries' individual national statistical offices (South African Reserve Bank 2010).

Using the census data, households were assigned 'types', defined by employment categories, as well as by urban/rural location, in line with the above discussion. The ability to break the population into groups such as these is one of the benefits of using census data, which allows such detailed subdivisions while still leaving a large enough sample in each group for analysis. Larger employment categories such as primary, secondary, and tertiary, may conceal more than they reveal. For example, in South Africa one would expect to find a large difference in outcomes for those working in the mining sector and those working in agriculture (Seekings and Nattrass 2002), though both would be considered primary sector employment. The service industry is especially far from uniform, and includes activities ranging 'from hawking and peddling in the street to sophisticated financial services' (van der Hoeven 2010). For these reasons, the groups will be subdivided into categories such as agriculture, rural non-farm work, urban low-productivity services, urban high-productivity services, and urban high-productivity secondary.

3.2 Measuring multidimensional well-being

In addition to offering a broader definition of well-being than only looking at income, a multidimensional measure is appropriate for this question in that not only income is affected by the manner in which a household is included in the economy; for example, moving to a job in an urban area may increase well-being beyond the increased income through better access to clean water or to schooling for one's children. Alternately, improvements in these areas in rural regions may make being 'stuck' in agricultural work a 'less bad' option than implied by the income level. The multidimensional household measure of well-being closely resembles the UNDP's Multidimensional Poverty Index (MPI) in terms of the indicators and weighting schemes used, with the major exception that the MPI is framed as a 'negative' indicator, a measure of deprivation, and this indicator is meant to measure positive achievement, a more suitable frame for analyzing gains from growth. Household level multidimensional indicators are for some purposes, such as measuring within or between group inequality, for example, as well as allowing for a comparison for differences in overall well-being between groups with different household-specific traits (Harttgen and Klasen 2010), conceptually superior to using separate, country-level measures of different variables.

The list of and weighting of variables used to create the household index is illustrated in Table 1. All variables are at the household level. Child survival rate is calculated by total children ever born to household that have not died divided by total children ever born per household. Phone is a dummy for availability of telephone in the home. The toilet and water supply are ordinal variables based on levels of quality of each; households are given a score of '0' if the household did not contain a toilet, '1' if it had a non-flush toilet such as a latrine, and '2' for a flush toilet. For water supply, households are given a score of '0' for no access to piped water, '1' for access to public piped water, '2' for piped water in building or on land, and '3' for piped water in dwelling. In both cases, the scores are then normalized to a 0-1 scale. Electricity is a dummy for

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electricity in home, and cooking fuel a dummy for dirty fuel or clean fuel. Rooms per person is self-explanatory, capped at 10 and normalized to 0-1.[1]

Table 1: Multidimensional index of well-being

Category	Variables	Weighting	Weighting by category
Health index	Child survival rate	1/3	1/3
Material conditions index	Phone	1/18	1/3
	Water supply (ordinal normalized to 0-1)	1/18	
	Toilet (ordinal normalized to 0-1)	1/18	
	Rooms per person (normalized to 0-1)	1/18	
	Electricity	1/18	
	Cooking fuel	1/18	
Education index	School age enrollment rate	1/6	1/3
	Ratio of adults primary completed	1/12	
	Ratio of adults higher secondary completed	1/12	

Source: Created by the author.

School age enrollment is the total number of children of school age attending school per household, divided by the total number of school age children. Adult primary completion is the ratio of adults (above age of secondary completion for that country) that have completed primary education to the total adults in the household of that age. Adult secondary completion is the same calculation completed for secondary education. The final index assigns each household a score from 0 to 100, for health, education, and material well-being, as well as an overall index, according to the weights illustrated below.[2]

The equal weighting scheme for the components of the index may also require some explanation. As the designers of the MPI argue, if capabilities have intrinsic value, then the relative weights used on different indicators of those capabilities in forming a measure of achievement are in fact value judgments, representing the relative importance of that capability compared to the others (Alkire and Santos 2010). Weighting each dimension equally is then a defensible judgment that all of these dimensions of well-being are equally important.[3] Rather than use of perhaps unnecessarily complicated mathematical weighting technique, such as principle components analysis, which produces nearly identical yet less easily comprehended results, complicates comparisons between years, and may involve using the appearance of mathematical rigor to avoid value judgments, I have opted for the simpler, equal weighting approach.

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[1] Listed options for South Africa and for Brazil, toilet and cooking fuel are dis-included due to lack of data. For this reason, one should be careful comparing scores across countries. The intended comparison is between groups within countries and years, and their relative changes within the same country over time.

[2] The larger sample has thus been reduced to a smaller sample of only those households which have data for all variables available. The sample size is still quite large, but one potential problem is that the reduction is non-random. However, the trade-off in this study was that the limited number of variables available in the census data was a worthwhile sacrifice due to the extremely high number of observations. Reducing this already admittedly small number of indicators of well-being even further in order to maintain a more obviously random sample did not make sense, especially since the number of households that do have all variables were still, in all cases, quite large.

[3] There are of course concerns about the trade-offs implied by equal weighting. It is implicitly argued by an equal weighted indicator that some proportional increase in one variable 'cancels out' the negative impact on well-being of an increase in another. However, any composite indicator implies similar trade-offs.

3.3 Non-income growth incidence curves

Non-income growth incidence curves (NIGICs) plot the growth rates, or absolute changes, in a particular indicator by percentile of the initial distribution (See Ravallion and Chen 2003; McKay 2007; Klasen 2008). The NIGIC used here is that defined as 'unconditional' by Klasen (2008), which means that the change in the indicator in question is plotted against the initial distribution of said indicator.[4]

The focus on structural economic change and productive inclusion leads to the question of what types of employment have been the most beneficial, what geographic areas have done better or worse, over the growth cycle. Therefore, I will adapt the method of Peragine et al. (2013) in taking into account 'type' when calculating the NIGICs. Instead of the population of households being ordered by individual households and then divided into centiles, they will first be divided into 'types'—in this case, by, the groups described above. Next, the mean of each type is calculated, and then the types are ordered by these means. Then the growth rate of the mean of each type is calculated, forming the curve. In more exact detail:

$\mu_{i(t-1)}$ = the mean score for type i and time t-1, calculated for all types m. The types are put in ascending order according to their means in time t-1. The new means of each type at time t are then calculated, and placed in the same original order, regardless of any positional changes that may have altered the order. To obtain the NIGIC, the growth of each type is then calculated as follows:

$$g^T\left(\frac{i}{m}\right) = \frac{\mu_{it} - \mu_{i(t-1)}}{\mu_{i(t-1)}}, \forall i \in \{1 \dots m\} \tag{1}$$

The type NIGICs can give some insight into whether certain lower performing groups have been left behind, caught up, or kept pace. This information may be important, as even if a group is decreasing in number or as a per cent of the population, it will still be important that those who remain in that group see some gains from societal improvement.[5]

3.4 Decomposition of change

The type-NIGICs give some insight into how particular groups have performed, but cannot account for changing proportional representation of the group. A next question of interest is to what extent overall improvement can be attributed to movements to or from specific groups, and to improvement within specific groups. In this regard, the overall change for a given country will be decomposed to within group improvements and movement between groups in the manner initially proposed by Ravallion and Huppi (1991), adapted using a shift-share technique used by van Ark and Timmer (2003). This technique illustrates changes from shifts in population between types by assigning all shift effects to expanding groups. Types representing a falling portion of the population are assigned a within group effect only, and types representing an expanding portion of the population are assigned a within group effect and a shift effect of movement to that group. The shift effect is positive when an expanding sector has a higher

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[4] A 'conditional' NGIC would plot improvement in a particular indicator against the percentile distribution of income.

[5] One potential issue with the use of NIGICs is that the multidimensional measure of well-being is upper-bounded. As a household (or the average of a group of households) approaches the upper-bound, there are fewer absolute gains to be had. The result should be a bias towards what would be described as a 'pro-poor' shape to the NIGIC, meaning that the biggest gains are at the lowest centiles of the distribution, and then get progressively smaller.

average score than the average of the shrinking sectors, and negative if the expanding sector's average score is lower than the average of the shrinking sectors.

In the following formula, ΔWBI represents the change in the overall index score for the country over the time in question. ΔWBI^{within} represents the portion of overall improvement attributed to improvement within groups, and ΔWBI^{shift} represents the portion of overall improvement attributed to the changing portion of population between groups:

$$\Delta WBI = \Delta WBI^{within} + \Delta WBI^{shift} \qquad (2)$$

The within effect is calculated for all groups, as follows:

$$\Delta WBI^{within,i} = \left(WBI_t^i - WBI_{(t-1)}^i\right) * \left(\frac{P_t^i + P_{(t-1)}^i}{2}\right), \forall i\{1\dots m\} \qquad (3)$$

WBI_t^i represents the mean score on the index for time t and type i. P_t^i is the portion of the sample assigned to type i at time t. For each type, the change in score is multiplied by the average portion of the population for both periods. This calculation is done for all types m, and the sum of all types is the first term in Equation 2.

The shift effect is determined by the following calculation, for each type that is expanding as portion of the population:

$$\Delta WBI^{shift,i} = (P_t^i - P_{(t-1)}^i) * \left(\left(\frac{\left(WBI_t^i + WBI_{(t-1)}^i\right)}{2}\right) - WBI^{shrinking}\right), \forall i\{1\dots k\} \qquad (4)$$

Where k is the set of expanding types. For each expanding type, the change in population portion is multiplied by the difference between the average index score for both periods for that type, and $WBI^{shrinking}$, the average score for all types that are shrinking, calculated by:

$$WBI^{shrinking} = \frac{\sum_{i=1}^n \left(P_t^i - P_{(t-1)}^i\right) * \left(\frac{\left(WBI_t^i + WBI_{(t-1)}^i\right)}{2}\right)}{\sum_{i=1}^n \left(P_t^i - P_{(t-1)}^i\right)} \qquad (5)$$

Where n is the group of shrinking types.

The average scores for each group were calculated using all households in that group for which data was available to construct the index. The portion of the population in each type was calculated using the entire census sample (including households with incomplete data). In other words, these calculations represent the entire population of households in the sample, assigning the calculated scores to the entire portion of the population for that type. The average scores for types were calculated using appropriate weights and all were found to be highly significant estimates (significant at 1 per cent or greater).

4   Case studies

Brazil and South Africa are both countries that have been included in narratives about global convergence and the 'emerging South'; both are included in the 'BRICS' (Brazil, Russia, India and China) group of countries, have one of the highest GDPs per capita in their respective regions, and are classified as upper middle-income countries by the World Bank. These are countries with some superficial similarities; they have roughly similar levels of GDP per capita,

ranging from roughly US$9000 to US$13000 during the period in question, (purchasing power parity (PPP) [constant 2011 international US$]) (World Bank 2013), and experienced, as a whole, positive GDP per capita growth during the periods studied. Both countries have to some extent followed the pattern described above of 'premature' industrialization. Both countries also have a long history of urban/rural and racial inequality.

4.1 South Africa, 1996-2007

Policy

In the post-apartheid years, South Africa put forward a combination of policies geared towards the goals of redistribution and basic needs fulfillment with neoliberal macroeconomic policies such as trade and financial liberalization (Padayachee 2005). The African National Congress's initial policy platform had the stated goal of poverty reduction, especially through access to public services such as clean water, land redistribution, jobs, and education and healthcare, and in practice mainly focused on infrastructure investment (Aliber 2003). After a currency crisis in 1996, there was a switch to a more orthodox macroeconomic approach including a commitment to low inflation and interest rates, a reduced fiscal deficit, and relaxed capital controls on foreign exchange flows (Aliber 2003; Padayachee 2005). The growth and employment goals largely hinged on the ability of these measures to attract foreign direct investment, but in the succeeding year's capital outflows actually exceeded foreign direct investment (FDI) (Aliber 2003) and there were reductions in public investment and tariff protection (Padayachee 2005).

However, there was enough public investment to make progress in access to some public services such as water and sanitation, and electricity, as well as healthcare and housing (Aliber 2003; Padayachee 2005). While there have been major gains in access to sanitation and clean water, a large disparity remains between urban and rural areas. For example, 99 per cent of urban residents had access to improved water sources by 2007, compared to only 81 per cent of rural residents (World Bank 2013). Inequality in access to basic services and ownership of private assets has increased within racial groups, despite decreasing overall (Bhorat et al. 2009).

Structural change and employment

South Africa exhibits the 'premature de-industrializing' trend, as discussed above. The primary sector accounted for about 13 per cent of GDP, 9 per cent of which was mining, compared to about 25 per cent in secondary industries and 65 per cent in tertiary in 1990 (South Africa Reserve Bank 2010). In the decades since, the primary and secondary sectors have shrunk as a percentage of the economy. The tertiary sector, on the other hand, steadily increased in importance. Of particular note is the stagnation of manufacturing, as well as labour-intensive primary sectors such as mining. Meanwhile, the so-called 'FIRE' sector (finance, insurance, real estate) accounted for a larger percentage of GDP than the entire secondary sector or primary sector in 2009 (South Africa Reserve Bank 2010). South Africa has also been steadily urbanizing; after crossing the threshold of 50 per cent urban in the late 1980s, the per cent of the population living in urban areas has increased by almost ten percentage points since the end of apartheid and stood at about 60 per cent by the late 2000s (World Bank 2013).

South Africa's labour force participation has remained low, while increasing only incrementally in the most recent decade to still less than 60 per cent (ages 15-64) (ILO 2014). Employment in agriculture has declined from 16 to 9 per cent from 2000 to 2007 alone. The portion of employment in mining declined from 5 to 3 per cent over the same period, and manufacturing employment was only slightly larger, moving from 13 to 14 per cent. Wholesale and retail trade employment meanwhile grew from 20 to 22 per cent over the same period (ILO 2014). Despite

the fact that a large number of people in South Africa remain in rural areas, they are not, for the most part, actually involved in an agrarian economy. Seekings and Nattrass (2005) explain this situation as partially traced back to the forced resettlement of Africans into rural areas during the apartheid regime. These resettlements took place at a time of falling employment in the rural areas, particularly in mining. Despite the large rural population, there was not a great deal of agricultural production. The unemployed did not have a subsistence sector to fall back to in the event that they were unable to find formal employment in urban areas (Seekings and Nattrass 2005).

Distribution and the labour market

At the end of apartheid, there were massive differences in poverty by race and geographical location in South Africa; as measured by the national poverty line more than 60 per cent of Africans were poor, compared to 1 per cent of whites, and more than 70 per cent of those living below the poverty line were in rural areas (Aliber 2003). In the post-apartheid period, overall income inequality actually rose, but while large differences between the races remained, inequality within each racial group was a bigger contributor to overall inequality than inequality between the racial groups, a phenomenon attributed to wage inequality, specifically, by the very high percentage of households that have zero wage income (27 per cent in 2008), and by high wage inequality among wage earners (Leibbrandt et al. 2012).

One proposed explanation for the increased income inequality is the 'distorted character' of the labour market. Bhorat et al. (2009) have argued that there is a skills mismatch in the supply and demand of labour; that there is an increasing demand for skilled labour, and a large amount of unemployed unskilled labour. The shift towards services and away from the manufacturing and primary goods sectors has been a factor in driving the increased demand for skilled labour. As a result of this increased demand, and the relatively small number of skilled or highly-educated South Africans, the wage gap grew, particularly between those at the top of and the middle of the income distribution. The shift to an economy less dependent on unskilled labour was especially due to a decline in labour-intensive mining work and to decreased employment in the agricultural sector (Seekings and Nattrass 2002).

4.2   Brazil

Policy

The period studied for Brazil encompasses what are sometimes referred to as Brazil's 'lost decades' of low growth from the mid-1980s to the mid-2000s, as well as its more recent economic success, including an increased growth rate and massive reduction in poverty beginning in the mid- to early 2000s (Weisbrot et al. 2014). Following a currency crisis and the replacement of a military government with a more democratic regime, a series of policy packages implemented through the late 1980s to the mid-1990s attempted to address inflation and current account issues in what could be termed a 'heterodox' fashion, focusing, for example, on price controls and currency reforms (Burlamaqui et al. 2006). The 1990s were marked by more neoliberal policies, including the introduction of the Brazilian Real, which stemmed inflation, a series of liberalizing and privatization reforms, and the introduction of inflation targets and strict fiscal guidelines (Burlamaqui et al. 2006). Beginning in the late 1980s there was also an increase in spending on health, education, and on the social safety net (Burlamaqui et al. 2006). After Lula's election, fiscal consolidation and high interest rates initially continued, leading to an inflow of capital, and a depreciation of the exchange rate and a slowing of inflation (Burlamaqui et al. 2006). Since 2004, Brazil has pursued a macroeconomic strategy focused on inflation targeting,

flexible exchange rates, and fiscal restraint, along with increased efforts at social and economic inclusion, such as investments in infrastructure and education (Salazar-Xirinachs et al. 2014).

After the 1980s Brazil had abandoned its former Import Substitution Industrialization (ISI) approach, due largely to the effects of the debt and inflation crises as well as to political and ideological forces (Kupfer et al. 2013). The policy set since Lula's election has included an attempt to re-emphasize industrial policy, focusing on sectors such as electronics, software, and capital goods, and setting up institutions intended to increase investment or induce innovation and to promote industrial exports (Kupfer et al. 2013; Salazar-Xirinachs et al. 2014). One confounding factor to these policies was the rise in commodity exports in the latter part of the last decade, which influenced the exchange rate (Kupfer et al. 2013). Some analysts have argued that the focus on reactions to short-term circumstances have been a weakness of these polices, and hindered their ability to spur long-run industrial development (Kupfer et al. 2013). Since 2001, the government has also increased spending on transfer payments, including the *Bolsa Família* programme (Lustig et al. 2011), which increased its coverage from 16 to more than 50 million people during the first decade of the 2000s (Weisbrot et al. 2014). Brazil has also used social spending to directly boost local production or spur employment; for example, through a programme in which schools purchased their meals from local farmers (Barros et al. 2011).

Structural change

The shift to a service-based economy over this period is evident. Manufacturing declined as a per cent of GDP during this period, from almost 25 per cent in 1991, to 17 per cent by 2000 and remained near that percentage for the rest of the period studied. Meanwhile, agriculture as a per cent of value added declined from 10 to 5 per cent over the 1990s, and then remained there through the 2000s (UNSTATS 2013). Wholesale, retail trade, and restaurants, meanwhile, grew from about 7 per cent of GDP in 1991 to 20 per cent in 2010 (UNSTATS 2013). In the late 1990s and early 2000s, exports such as oil and agricultural production also increased in importance (Burlamaqui et al. 2006).

In addition to the decline in manufacturing as a per cent of GDP discussed above, Brazil's 'premature' de-industrialization is evidenced by the trend in manufacturing employment, which peaked at 15 per cent, and then began to decline after the late 1980s (Rodrik 2013a), to about 14 per cent of the labour force in the 2000s (ILO 2014). Trade accounted for more than 20 per cent of the labour force, and agricultural employment, which had already fallen from almost 40 per cent of total employment in 1980 (de Vries et al. 2011), declined further as a portion of the total labour force, from about 20 to 17 per cent over the 2000s (ILO 2014). The most rapidly expanding sectors of employment were relatively unproductive; low-productivity services such as wholesale and retail trade (McMillan and Rodrik 2012; de Vries et al. 2011), and there was also a shift towards business services, education, and public sector services (de Vries et al. 2011). In the 1980s and early 1990s, overall productivity growth in Brazil was actually negative, despite the movement of workers from agriculture towards relatively higher productivity services (de Vries et al. 2011). After 1995, productivity growth in all sectors became positive, particularly in commodities related industries, but also in some types of manufacturing and services (de Vries et al. 2011). Informal employment increased during the 1990s, but then decreased in the 2000s (de Vries et al. 2011).

Distribution and wages

Brazil has historically been one of the world's most unequal countries, but after experiencing decades of increased income inequality and stagnation in the 1990s, there have been positive improvements in income inequality in the 2000s (Lustig et al. 2011, Weisbrot et al. 2014). From

2002-09, the income of the bottom 10 per cent of the distribution grew at close to three times the national average (Lustig et al. 2011). Lustig et al. (2011) attribute the decline in inequality to three main factors; (i) a decrease in the gaps between wages by education level, (ii) increased integration of urban and non-urban labour markets, and (iii) more and better-targeted government transfers. A big part of the poverty reduction in the 2000s is also due to better targeted and more generous transfer programmes, such as *Bolsa Família*, as well as a decline in fertility rates (Barros et al. 2011). However, increased income from work has reduced poverty by as much as these two factors combined (Barros et al. 2011). Weisbrot et al. (2014) give credit to the social spending programmes for part of the decline in inequality, but also stress the importance of increases in real wages and the minimum wage, and decreased unemployment and informality. The average schooling of the population has been increasing, (Burlamaqui et al. 2006), and inequality in level of education has also declined over the last several decades (Lustig et al. 2011).

5 Results

5.1 Descriptive statistics

For South Africa, the index for the total sample rose from 65 to 73, at an annual rate of a little over 1 per cent per year (Table 2). There was a large gap between black and white households in 1996 which had significantly narrowed by 2007, with black-headed households making substantial gains and white-headed households stagnating. Similarly, there was a large gap in well-being between rural and urban households, which also significantly narrowed over this period.

Table 2: Average index scores for South Africa

	South Africa 1996 average score	South Africa 2007 average score	Annual rate of change over period
All households (with data available)	65.63	73.61	1.04%
Black	60.38	70.88	1.46%
White	88.20	88.87	0.07%
Coloured	75.07	79.70	0.54%
Rural	54.08	64.90	1.66%
Urban	76.26	79.34	0.36%

Source: Author's construction using data from Minnesota Population Center (2013).

In Brazil, there were also large racial disparities, and large disparities between urban and rural households. The racial gap closed over the period with bigger gains for black, brown, and indigenous-headed households. The urban and rural gap closed more slowly than in South Africa in a relative sense, although the initial gap was not as wide. There were large gains for both urban and rural households (Table 3).

Table 3: Average index scores for Brazil

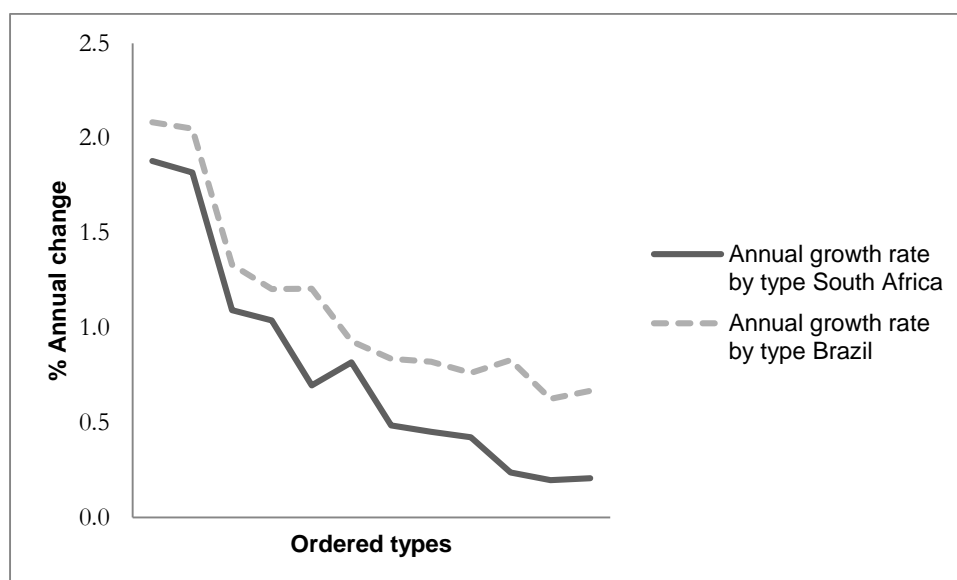|	Brazil 1991 average score	Brazil 2010 average score	Annual rate of change over period
All households (with data available)	63.36	77.71	1.07%
White	68.35	80.18	0.84%
Black	57.79	76.25	1.46%
Indigenous	47.20	69.75	2.06%
Asian	78.75	78.98	0.02%
Brown	58.14	75.56	1.38%
Rural	48.27	68.48	1.84%
Urban	67.91	79.35	0.82%

Source: Author's construction using data from Minnesota Population Center (2013).

In Brazil, there were also large racial disparities, and large disparities between urban and rural households. The racial gap closed over the period with bigger gains for black, brown and indigenous-headed households. The urban and rural gap closed more slowly than in South Africa in a relative sense, although the initial gap was not as wide. There were large gains for both urban and rural households.

5.2   Type-NIGICs

The Type-NIGICs, Figure 1, show that the initially poorest performing types have, in both cases, had greater relative annual growth than the initially better performing types. The growth rates and means for both periods of all types are given in Tables 4 and 5 (The NIGIC for the entire population can be seen in Appendix Figure A1).

Figure 1: Type-NIGICs for South Africa and Brazil

Source: Author's construction using data from Minnesota Population Center (2013).

The initially lowest performing types in Brazil (rural not-in-labour market, and rural agricultural workers) and the lowest performing types in South Africa (rural not-in-labour market and rural unemployed) have greater rates of growth than all other types. There is a more severe drop-off in

the lower mid-level groups for South Africa, such as the agricultural workers, rural non-farm workers, and the urban unemployed, where Brazil has higher relative rates of growth for the mid-level and higher performing types. In both Brazil and South Africa, all rural types still perform worse than all urban types, despite the catch-up.

In South Africa, agricultural workers experienced smaller relative gains than the rural unemployed and rural not-in-labour market, though they had begun at a slightly higher level. Households classified as headed by rural unemployed actually slightly outperformed those classified as headed by agricultural workers in 2007. Agricultural workers saw smaller relative gains than rural not in the labour force in Brazil as well.

In South Africa, the lower performing urban groups (agricultural workers in urban areas, and the urban unemployed) did not gain relative to the initially higher performing groups. For example, urban not-in-labour market, urban low-productivity services and secondary, and urban mid-level productivity services all improved at about the same rate, only marginally faster than the initially better performing urban high-productivity services. This pace of progress was not enough to even the performance (in fact, virtually every other group was still performing worse, on average, in 2007 than urban high productivity services were in 1996) (Table 4).

Table 4: Average scores by type for South Africa

Geographic/employment groups	South Africa 1996		South Africa 2007		Annual rate of change over period
	Average score	% Pop.	Average score	% Pop.	
Agriculture rural	57.03	5%	64.31	3%	1.09%
Agriculture urban	70.52	1%	77.16	1%	0.82%
Rural non-farm	62.15	8%	69.68	9%	1.04%
Urban high-productivity secondary and mining	79.58	8%	81.69	9%	0.24%
Urban low productivity services and secondary	75.32	12%	79.15	14%	0.45%
Urban mid-level productivity services	79.47	3%	83.25	2%	0.42%
Urban high-productivity services	84.8	3%	86.75	2%	0.21%
Urban public employment	83.76	6%	85.59	5%	0.20%
Rural unemployed	53	9%	64.74	6%	1.82%
Urban unemployed	69.39	8%	74.91	10%	0.70%
Rural not-in-labour market	50.38	17%	61.95	8%	1.88%
Urban not-in-labour market	71.75	13%	75.68	9%	0.48%
Rural unclassified	58.75	2%	62.84	9%	0.61%
Urban unclassified	78.61	5%	78.93	13%	0.04%

Source: Author's construction using data from Minnesota Population Center (2013).

In Brazil, there was also not much catch-up among urban types, as all urban employment categories gained by about the same amount (and were close in their average scores at the beginning of the period). There were big gains for agricultural workers and rural non-farm workers. By the end of the period, rural types were doing about as well as the worst performing urban types at the beginning of the period. At the beginning of the period, rural unemployed and not-in-labour market actually performed better than households headed by agricultural workers, but this was no longer the case by 2010 (Table 5).

Table 5: Average scores by type for Brazil

Geographic/ Employment groups	Brazil 1991		Brazil 2010		Annual rate of change over period
	Average score	% Pop.	Average score	% Pop.	
Agriculture rural	46.33	15%	68.38	5%	2.05%
Agriculture urban	59	5%	74.19	3%	1.21%
Rural non-farm	57.75	4%	72.59	3%	1.20%
Urban high-productivity secondary and mining	69.48	12%	80.31	9%	0.76%
Urban low-productivity services and secondary	67.3	24%	78.67	23%	0.82%
Urban mid-level productivity services	69.85	5%	81.77	4%	0.83%
Urban high-productivity services	74.27	5%	83.64	5%	0.63%
Urban public employment	74.36	8%	84.42	9%	0.67%
Rural unemployed	50.79	0%	65.42	2%	1.33%
Urban unemployed	64.85	1%	76.03	4%	0.84%
Rural not-in-labour market	44.91	3%	66.71	4%	2.08%
Urban not-in-labour market	64.43	17%	76.86	26%	0.93%
Rural unclassified	50.32	0%	70.79	0%	1.80%
Urban unclassified	65.19	1%	81.06	3%	1.15%

Source: Author's construction using data from Minnesota Population Center (2013).

5.3   Decompositions of change

The decomposition of change illustrates the extent that changing portions of the population in these types due to structural changes in these economies has affected well-being. Figures 2 and 3 depict the portion of total improvement due to within group improvement and shifts between groups, and Tables 6 and 7 show the numerical results. In South Africa, the majority of the improvement in the index (79 per cent) was attributed to improvement within the categories, rather than shifts between. The biggest portion by far was improvement in rural unemployed and not-in-labour market.[6] To the extent that positive changes due to shifts did take place, the biggest source of improvement was a shift towards low-level urban employment. There was also an effect from a shift towards high-productivity secondary work, but shifts towards other high-productivity work (mid-or high-level services, public employment) was non-existent.
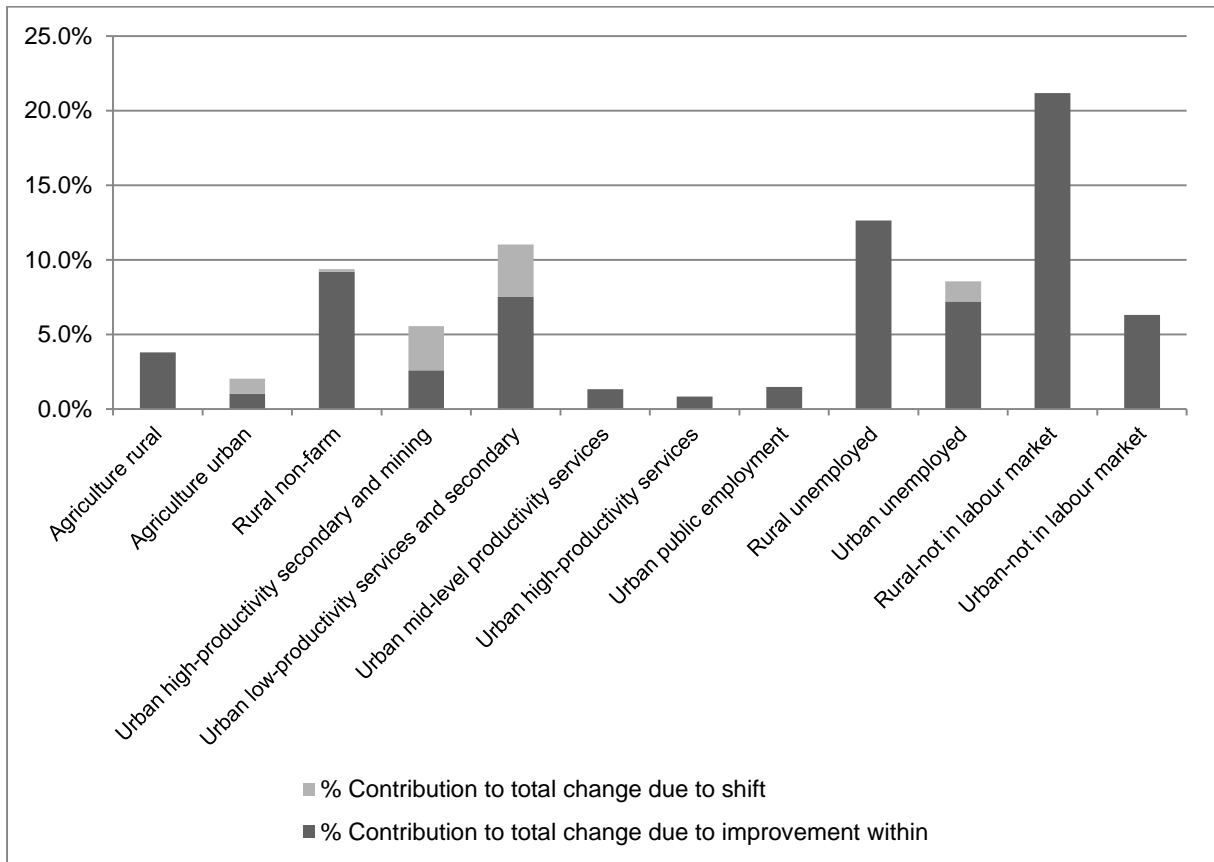
In Brazil, the improvement is due almost entirely to improvement within groups. In fact, the groups that grew in population during this period where in some cases the lower performing groups (rural unemployed and not-in-labour market), resulting in a negative effect from structural change.

The largest portions of improvement involved agriculture worker headed households and urban households with heads that were non-working or were in low-productivity employment. The categories that may include informal workers, such as urban unemployed, urban not-in-labour market, and, likely, urban unclassified, slightly grew (and made a positive contribution while doing so) and urban not-in-labour market and urban low-productivity services both experienced

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[6] A disclaimer may be necessary for the 'urban unclassified' which grew as a group and was a big contributor to improvement. It is difficult to know whether there are similarities between households with missing employment data.
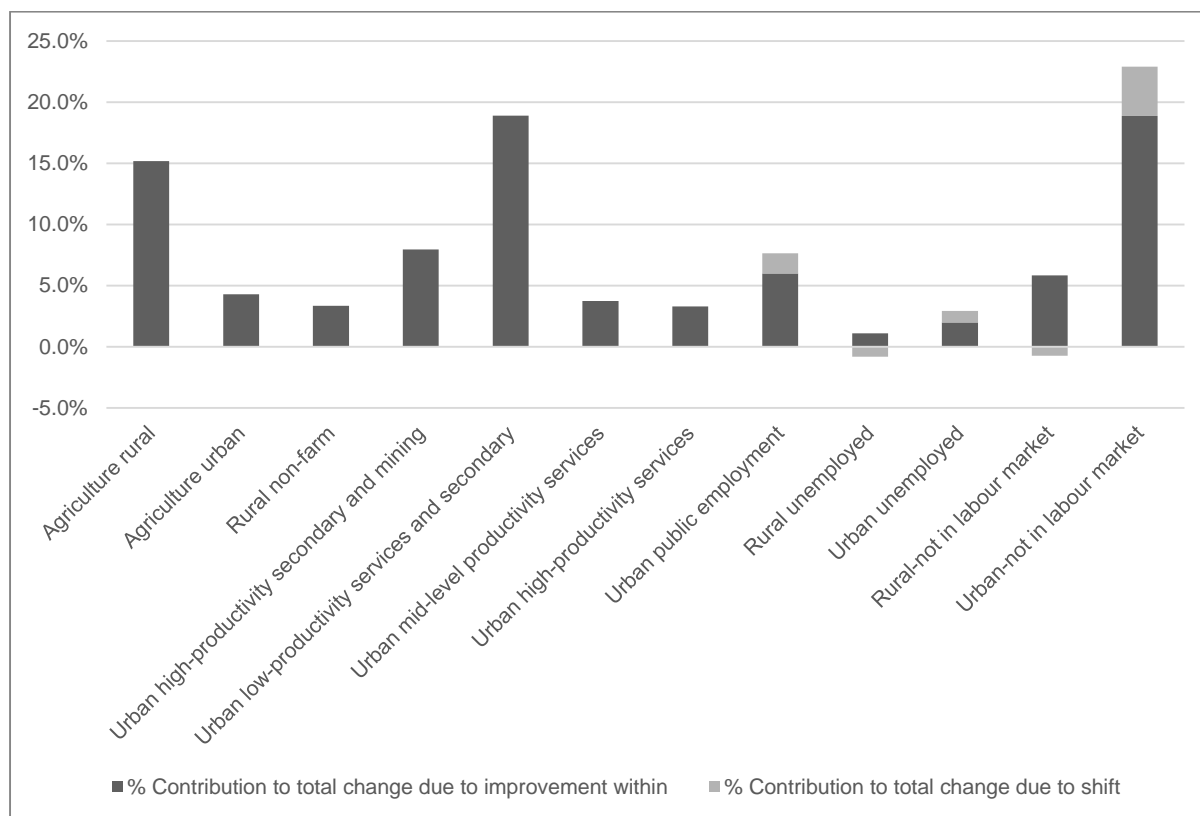
big within group improvements. Agriculture workers shrink as a portion of the sample, but still accounted for a large portion of the improvement through within type improvement.

Figure 2: Decomposition of improvement South Africa

Source: Author's construction using data from Minnesota Population Center (2013).

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Figure 3: Decomposition of improvement Brazil

Source: Author's construction using data from Minnesota Population Center (2013).

Table 6: Decomposition of improvement for South Africa 1996-2007

	% contribution to total change due to improvement within	% contribution to total change due to shift
Agriculture rural	3.8%	.
Agriculture urban	1.0%	1.0%
Rural non-farm	9.2%	0.2%
Urban high-productivity secondary and mining	2.6%	3.0%
Urban low-productivity services and secondary	7.5%	3.5%
Urban mid-level productivity services	1.3%	.
Urban high-productivity services	0.8%	.
Urban public employment	1.5%	.
Rural unemployed	12.6%	.
Urban unemployed	7.2%	1.3%
Rural not-in-labour market	21.2%	.
Urban not-in-labour market	6.3%	.
Rural unclassified	3.4%	-3.8%
Urban unclassified	0.4%	15.9%
Total	78.9%	21.1%

Source: Author's construction using data from Minnesota Population Center (2013).

Table 7: Decomposition of improvement for Brazil 1991-2010

	% contribution to total change due to improvement within	% contribution to total change due to shift
Agriculture rural	15.2%	.
Agriculture urban	4.3%	.
Rural non-farm	3.4%	.
Urban high-productivity secondary and mining	8.0%	.
Urban low-productivity services and secondary	18.9%	.
Urban mid-level productivity services	3.7%	.
Urban high-productivity services	3.3%	.
Urban public employment	6.0%	1.6%
Rural unemployed	1.1%	-0.8%
Urban unemployed	2.0%	1.0%
Rural not-in-labour market	5.8%	-0.7%
Urban not-in-labour market	18.9%	4.0%
Rural unclassified	0.2%	-0.1%
Urban unclassified	2.2%	1.9%
Total	93.1%	6.9%

Source: Author's construction using data from Minnesota Population Center (2013).

6   Analysis

In South Africa, the initially poorer performing households and groups have gained more in these measurements of well-being, both in a relative and absolute sense. This outcome is surely positive. However, it is also the case that while there have been gains in initially poorer performing groups, large gaps still remain, and the 'catch-up' has been insufficient to the extent that some groups were still performing worse in 2007 than even mid-level groups were in 1996.

The answer to why may be related to the necessity of inclusion in the productive processes of growth as describe above. The results clearly illustrate the importance of location and employment category. The decomposition of change also illustrates that the majority of the improvement came from improvement within the lower performing groups, and much less of the improvement came from movement from lower to higher groups. The gaps between these groups also remain large. The biggest positive change from structural shift was towards low-productivity urban services, along with a shift towards high-productivity secondary jobs. The effect of this shift was positive, since the shrinking sectors were low performing types such as rural unemployed. Still, low-productivity urban services are worse performers than urban high-productivity work and households headed by those in public employment. In fact, these low-productivity urban worker-headed households are also still scoring slightly lower on average than these higher performing groups were in 1996.

South Africa's policies during this period involved big public investment in infrastructure, public services, health, education, and it certainly makes sense to attribute a great deal of the positive change in the lower performing categories to these programmes. However, there was insufficient job creation during this period, and stagnation in labour-intensive sectors. South Africa's policy choices seem to be improving the well-being of its potential workers, but have not been able to create economic opportunities for those workers. While there is no doubt that improved education and health among the unemployed is a positive achievement, it is also important to notice that despite these achievements, unemployed-headed households were still doing worse

overall in 2007 than virtually all secondary and tertiary occupation-headed household groups were in 1996.

In Brazil, there was very little improvement from structural change. While in South Africa we see a shift effect from movement towards low level urban work, in Brazil, there is a large portion of the population already in such work, and the major source of improvement is within that type. There was also a big portion of improvement explained by the improvement of urban not-in-labour market. Brazil increased its spending on transfer programmes and on health and education throughout this period, and this undoubtedly helps explain these improvements.

One important difference from South Africa is that a higher portion of the population remained in agricultural work, and a substantial portion of the improvement also came from within that type. Agricultural workers, though, still were underperforming all groups except rural unemployed and not-in-labour market, and were still doing worse than most urban groups were in 1991.

Improvement in households headed by urban low-productivity workers account for a large part of improvement because they were a substantial portion of the population. However, households in this type improved at the same pace as other urban groups despite being the lowest performing initially, and the absolute gap was essentially unchanged. There was very low positive effect from structural change in Brazil, as the higher performing groups did not expand. In fact, some of the expanding groups were actually lower performing. As in South Africa, the social programmes, and, likely, rising wages for these lower level workers have led to improvement, but these groups still lag behind the better performers.

Both countries have raised the floor on living standards for the worst performing groups, certainly, but have not succeeded in truly allowing members of those groups to catch up. This result can be illustrated by the large remaining gaps between the lower and higher performing groups, and by the small to non-existent shift towards inclusion in higher performing groups. It is reasonable to suggest that despite the improvements for households in the lowest performing types, these households would be better off still if their household heads had the opportunity and ability to more productively participate in their country's economy.

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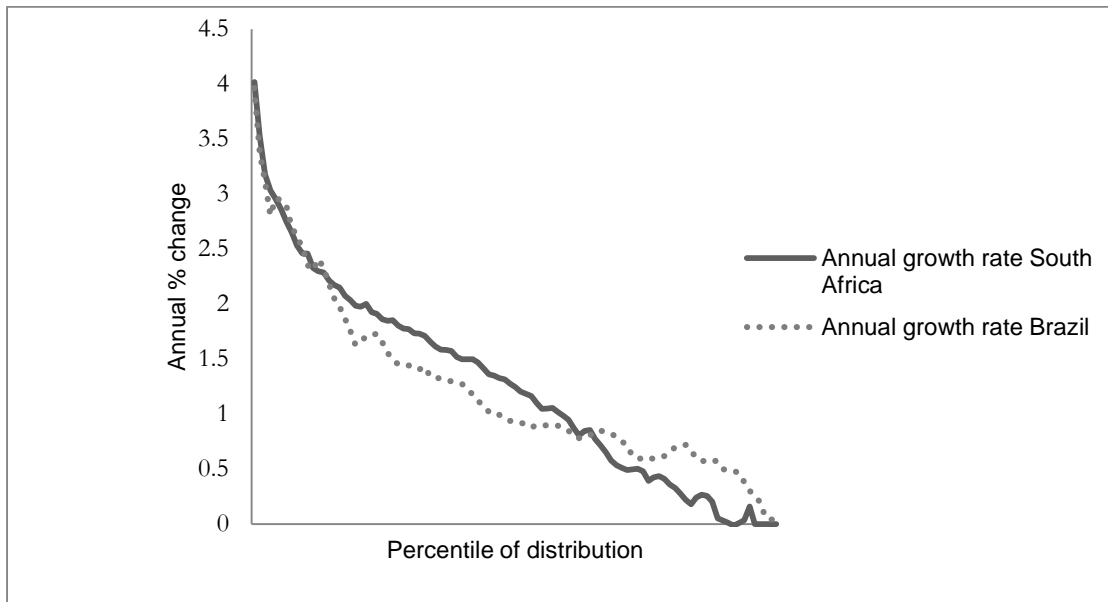
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Appendix

Figure A1: NIGICs for all households (with data available)

Source: Author's construction using data from Minnesota Population Center (2013).