

# **Inequality and Happiness: Evidence from a Natural Experiment in South Africa**

Erasmus University Rotterdam  
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Master Thesis

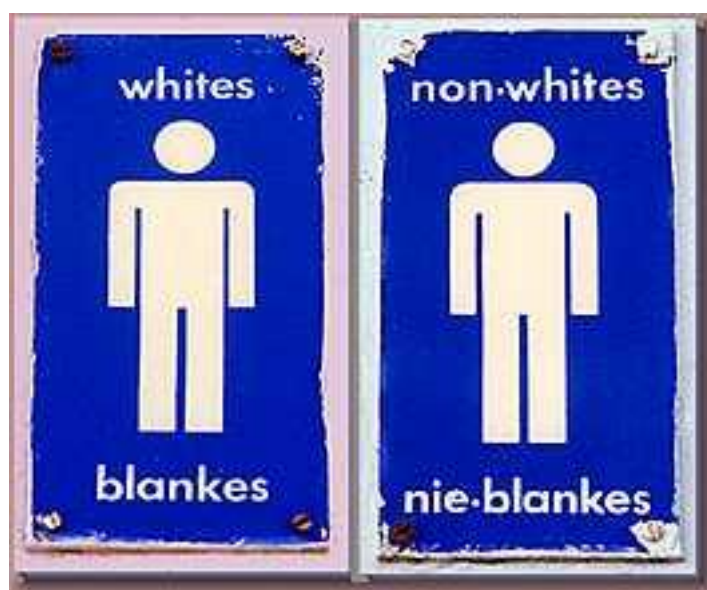
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# Inequality and Happiness: Evidence from a Natural Experiment in South Africa

## Abstract

Using South African Happiness survey data from The World Value Series for the years 1990, 1996 and 2001, we attempt to identify what effect a change in social mobility has on happiness and inequality. We use the abolishment of Apartheid, the legal system of racial segregation, as a natural experiment for the study. We find that the average happiness of the poor increases post apartheid and their averseness to inequality increases directly after the abrogation of apartheid and then in 2001 shows no significant change. The rich also experience higher happiness levels post apartheid but in smaller amounts than the poor. Their aversion to inequality raises slightly post apartheid but shows no significant change in the long run.



## Introduction

*An earthquake achieves what the law promises but does not in practice maintain - the equality of all men*

- Ignazio Silone (Pescina, 1<sup>o</sup> maggio 1900 – Ginevra, 22 agosto 1978)

The end of Apartheid in South Africa was no earthquake, but it certainly shook the foundations of a lawfully racially stratified country. The question of whether it was shaken enough to achieve equality of all can be readily answered with a glance at the pertinent statistic. The Gini index, while not capturing all aspects of group inequality<sup>1</sup>, allow us to identify the income gap between the rich and the poor<sup>2</sup>, and with the racial Gini's we use in this paper we can even do this by ethnic group<sup>3</sup>. Currently, South Africa's national Gini index is 0.57, one of the top 10 highest gini coefficients in the world today. According to Valerie Moller (2001), South Africa's Gini index has been among the highest in the world for many years.

Under Apartheid, a high Gini was to be expected, by law Blacks, Asians and Coloureds (from now on referred to as Darks for brevity) were stifled in all areas of growth, especially in the realms of education and the labour market. In 1939, fewer than 30% of black Africans were receiving any formal education and white people were earning five times as much as black people.<sup>4</sup>

Vast disparities of opportunity existed between the Whites and the Darks for decades to come, in an era where blatant racism was supported by government and chances of escape for those discriminated against were slim<sup>5</sup>. The following table provides an indication of the disproportionalities at the time<sup>6</sup>.

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<sup>1</sup> This paper searches to understand more about inequality per se, as defined by Graham C. and Felton A. (2005) "Does Inequality matter to individual welfare? An initial exploration based on Happiness Surveys from Latin America". That is inequality pertaining to race, status and access to opportunities.

<sup>2</sup> On a scale from zero to one, zero being perfect equality and one being complete inequality.

<sup>3</sup> Providing some insight into racial discrimination, another aspect of inequality

<sup>4</sup> United nations cyber schoolbus – Apartheid Timeline

<sup>5</sup> United nations cyber schoolbus – Apartheid Timeline

<sup>6</sup> <http://www-cs-students.stanford.edu/~cale/cs201/apartheid.hist.html>

<b>Apartheid and the People of South Africa</b>		
	<i>Blacks</i>	<i>Whites</i>
Population	19 million	4.5 million
Land Allocation	13 percent	87 percent
Share of National Income	< 20 percent	75 percent
Ratio of average earnings	1	14
Minimum taxable income	360 rands	750 rands
Doctors/population	1/44,000	1/400
Infant mortality rate	20% (urban) 40% (rural)	2.7%
Annual expenditure on education per pupil	\$45	\$696
Teacher/pupil ratio	1/60	1/22

Figure 1: Disproportionate Treatment circa 1978. Source: [Leo80]

Even 12 years later, in 1990 reported unemployment lay at 50% of the labour force<sup>7</sup>, most of which were still black. Lack of social mobility was not only visible in the workforce, black people were physically forced into designated ‘homelands’ in which there was not enough land to feed the number of people living on it (approximately 7% of the land went to 80% of the population). These ‘homelands’ were then declared foreign lands and the people stuck inside needed a passport to ‘enter’ South Africa, which could only be obtained if one worked for a white man<sup>8</sup>.

Obviously the situation reported above did not sit well with the Darks, so after many protests for freedom and equality, and as a result of a tiresome and costly black empowerment movement, in 1994 South Africa held it’s first democratic elections and Nelson Mandela, a black man (and former political prisoner for 27 years), came into presidency.

The people were euphoric, and the promises of reconciliation and solidarity in a ‘Rainbow Nation’ lifted wellbeing levels in South Africa to an all-time high . According to the World Database of Happiness, self reported happiness aggregates for the time of change were

<sup>7</sup> CIA Wold Factbook South Africa 1990

<sup>8</sup> United Nations CyberSchoolBus – Apartheid Timeline

increasing, with 1994 through to 1996 seeing high reported happiness levels. On a scale of 1 to 5 (5 being happiest), 1994 boasted a 4.14 average reported happiness, the highest this developing country had ever seen.

However, despite the attempt for political change and the new policies that were put into motion to combat social immobility, happiness levels (which, in this paper, i use interchangeably with wellbeing levels) started to decline again, ending in an average level of 3.05 in 2002.

This situation just described (apartheid and it's abolishment) provides for a unique natural experiment in social mobility. Benabou (2000) states that unequal distributions can lead to a steady state of inequality because political rights as well as economic goods are unequally distributed. Apartheid created this for the Darks and hence stunted their growth by law, a first democratic election in which everyone is given the opportunity to vote acts as an almost instantaneous introduction of equal rights, obviously with the hopes of increasing the wellbeing and growth of a developing nation. Indeed South Africa started running out of options and had no choice but to break down the barriers between white and black, international boycotting and company protests meant an already failing economy was falling even further and continuous internal conflict was not going to be of any help. It was time to provide every man the opportunity to work and live where he wanted, regardless of his colour.

So is born the *natural* experiment of social mobility in South Africa and the research question: "*Does a change in social mobility affect the relationship between inequality and happiness?*"

Alesina, Di Tella and MacCulloch, ("*Inequality and Happiness: are Europeans and Americans different?*" 2003) use European and American happiness surveys to analyse the relationship between inequality and happiness, and find that rich Americans and poor Europeans are strongly averse to inequality. They believe that it is the higher levels of social mobility in America when compared to Europe that explain this difference, meaning the American rich could lose their money easier than the European poor could earn it.

Translating these results into a hypothesis, we say that an attempted introduction (or large increase) of social mobility, as happened in South Africa when Apartheid was abrogated, should result in the poor dark community becoming happier and the rich, white community experiencing the contrary, but is this what we observe in our data?

Using the subjective happiness data from The World Value Surveys, we run regressions on certain determinants of happiness, for the rich and the poor and for the individual years of our study (1990, 1996 and 2001).

The general findings for this study are that the average happiness of the poor increases slightly, in both 1996 and then again in 2001. Their averseness to inequality increases directly after the introduction of equal rights and then in 2001 shows no significant change.

The rich also experience slightly increasing happiness levels over the three years of study but in smaller amounts than the poor. Their aversion to inequality raises slightly post apartheid but does not change significantly in the long run.

The next section describes some pertinent current research on happiness and inequality, as well as how this study intends to contribute to further to what is already known. This will be followed by a description of the methodology and data in Section 3. Results and interpretations are presented in Section 4 and Section 5 concludes.

## Related Literature

Motivations to study happiness are abundant. The idea that individual happiness matters is so widespread it could be considered a common human goal, “an ‘unalienable right’ comparable to life and liberty” according to Frey and Stutzer (2001: 1).

In further argument of their research question “What can Economists learn from Happiness research?” Frey and Stutzer (2001) present the concept that measures of subjective well being (such as a survey) can serve as proxies for utility because people assess their situation “with regards to circumstances, situations, comparisons with other people, past experience and expectations of the future”<sup>9</sup>, rendering them valuable in empirical analyses such as this one<sup>10</sup>.

This current view on subjective well being as proclaimed individual utility allows us to better understand motivations for human behavior and the formation of this self stated wellbeing, perhaps allowing for manipulation of the variables involved in order to achieve a happier population, to maximize a ‘social utility function’ if you will. For example we now know that non monetary variables have a large influence on happiness, suggesting that even though economic variables (such as income, employment etc.) remain important, recent concerns about good governance and social capital<sup>11</sup> are very pertinent as the South African case shall illustrate.

Frey and Stutzer (2001) mention the validity these *subjective* analyses in wellbeing, stating that the decision utility of standard economic theory lacks experienced and procedural utility, which placed altogether can more accurately capture human wellbeing because the revealed preferences approach provides few insights into an individuals’ preference about inequality.

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<sup>9</sup> Frey and Stutzer (2001: 5)

<sup>10</sup> Useful because that is what we are trying to capture, inequality not only as an economic indicator of uneven income distribution but inequality as it is perceived by the people

<sup>11</sup> Social capital has often been linked to the success of a democracy and is a necessary precondition for development (Wikipedia - social capital). The relationship between inequality and social capital is inverse according to Caramuta D. (2005)

It is this preference for inequality that Alesina, Di Tella and MacCulloch claims affects individual wellbeing, becoming increasingly important as societies grow richer. Another reason mentioned by these authors as to why inequality may affect individual wellbeing is the point of this study, that is that income inequality today may be an indication of future income tomorrow, and hence a social mobility indicator. Furthermore, inequality has negative effects on the growth of developing countries<sup>12</sup>.

Directing the argument back to happiness, Frey and Stutzer (2001) discuss the importance of happiness studies in economic policy, and conclude that information drawn from empirical studies should provide an indication of favourable economic and institutional conditions.

The natural experiment in this paper offers information on both, assessing the happiness of a population of people under an institutional change that was intended to improve on economic conditions such as growth, unemployment and of special interest to this paper, inequality.

Happiness, particularly in South Africa, has already long since been studied, especially given the unique peak in wellbeing around the time apartheid was abolished. Valerie Moller (1998) identifies a crossover of happiness exactly at this time, where Dark happiness rises above that of the whites for the first time in history, confirming the hypothesis that an increase in social mobility does make the poor (darks) happier and the rich (whites) sadder. The issue is whether this holds over time and Moller (2001) recognized unsettling trends in wellbeing levels after post election euphoria, in particular a renewal of the happy gap between the Whites and the Darks. She claims that the 'liveability factor'<sup>13</sup> (Veenhoven 1996) explains the remaining differences in satisfaction.

Another potential explanation could be time. The Hedonic Treadmill (Brickman and Campbell 1971) is the theory that people respond briefly to positive and negative

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<sup>12</sup> See Graham and Felton (2005) on Nancy Birdsall (1995, 1997)

<sup>13</sup> It assumed that people feel better the more living conditions fit their needs and capacities (Veenhoven 1996)



disturbances but eventually return to a neutral state of wellbeing. This can be tested here, including more years in the data will give us a better idea as to whether or not this is indeed the trend that is unfolding, a cause for alarm if that is in fact the case because it means long term happiness is not exactly manipulable.

Kingdon and Knight (2004) attempt to isolate inequality *per se* in South Africa by seeing whether feelings of relative depravity within the same race and locality are increased when including socially more distant groups (national level) in the happiness regressions. They find that there is indeed a negative coefficient on the African dummy variable and that South Africans tend to stick to race based comparator groups. It is their opinion that citizens did not feel part of a common society, and this is the reason for delayed political change. These findings come from a 1993 dataset however, and thus lay the path for our post apartheid study.

In their paper "Does Inequality matter to Individual Welfare?" Carol Graham and Andrew Falton (2005) use happiness studies to gauge the effects of the more broadly defined inequality *per se* for Latin America by using both the national Gini values and Theil education inequality values in their regressions. Also useful for studying inequality beyond income were the subjective variables they used such as the economic ladder question and prospects for upward mobility for respondents and their children. They find very strong effects of inequality both on the poor and the rich, and believe it to represent very low social mobility and a persistent disadvantage (advantage) for the poor (rich) rather than a signal of future opportunities.

The study presented in this paper uses a combination of factors from the above three papers. Microeconomic happiness equations are reproduced almost exactly, albeit with some additions. We follow more the model presented in the Graham et al. paper, which includes the Gini indices of inequality for better understanding of income inequality's weight on happiness and does not use social distance as a means of identifying the effects of inequality on happiness (as do Kingdon and Knight 2004).

We do this however for South Africa, like Moller (1998, 2001), Kingdon and Knight (2004) except we include extra post apartheid years, useful for identifying trends. We also make use of the World Value Survey Data as opposed to SALDRU data which is more uniform across countries and internationally renowned.

Similarly, Alesina, Di Tella and MacCulloch, ("Inequality and Happiness: are Europeans and Americans different?" 2003) attempt to understand how Europeans and Americans differ in their happiness and aversion to inequality. They find that the poor, politically left orientated Europeans and the rich, politically right orientated Americans possess a strong distaste for inequality, the two remaining groups showing no statistically significant feelings either way. As an explanation these authors pose differing perceptions of social mobility in the two countries, namely that in America, social mobility is high and it is the rich who are scared of (easily) falling to poverty.

In Europe however, where social mobility seems lower, it is the poor who are affected negatively, objecting to inequality as for them, it signifies a poverty trap.

It is mainly this paper we build our social mobility experiment on, except instead of Europe and America, we have before and after Apartheid, and instead of left and right political orientation, we now have high and low income groups. Furthermore, this study involves a natural trial for the introduction of social mobility, and is hence a better test for it. Microeconomic happiness equations are structurally similar to those in all the above papers, and will be explained in more detail in the next section.

## Methodology and Data

We analyze the experiment by running ordinary least squares<sup>14</sup> regressions using happiness data from the World Value Survey series for South Africa for the years 1990, 1996 and 2001. The actual question relating to happiness reads as follows “Taking all things together, would you say you are very happy, quite happy, not very happy or not at all happy?” and is exactly the same for all three years in our data (this is inverted to be on an increasing scale as are the other variables). A similar question is also asked, namely “All things considered, how satisfied are you with your life as a whole these days?” with a 1 to 10 range of responses, 10 being very satisfied and 1 being not satisfied at all. Life satisfaction and happiness are highly correlated and here we use happiness, however leaving out the undersized categories of ‘no answer’ and ‘don’t know’, as does most of the related literature. We follow microeconomic equations similar to those in Alesina, Di Tella and MacCulloch (2003) but leaving out most macro variables (GDP per capita, Gini index by country, unemployment rate)<sup>15</sup> as they are unchanging when examining one year at a time and vary little even over the three different years of study.

In total, we run three different regressions with this general form:

$$Happy_{irt}^g = \beta_1^g MACRO_{rt} + \beta_2^g MICRO_{irt} + \beta_3^g Inequality_{rt} + \alpha_r^g + \gamma_t^g$$

Where *Happy* is the dependant variable and regressors are macro variables (which in this case are not presented despite their statistical significance and their presence in original regressions), micro variables such as employment status, age, sex, marital status etc., *Inequality* which comprises of the subjective questions regarding income and financial life and race-based gini indices, and lastly dummies for race (called dark) and year. The dark dummy is equal to one for any non white people (asian, black or coloured) and zero for white people and is present in all regressions.

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<sup>14</sup> See Ferrer-i-Carbonell & Frijters (2004), despite the equation being the perfect form for ordered logit or probit, quantitatively similar results are obtained using ordinary least squares.

<sup>15</sup> despite having proven effects on happiness, see Di Tella R., MacCulloch R., Oswald A., (2002) “Macroeconomics of Happiness”

Post script  $g$  refers to the income divisions, namely those above and below the median income of the corresponding year.

The *Inequality* variable also includes two subjective questions for further insight into people's perceptions on inequality, especially economic. The first of these questions is on income inequality and reads "Incomes should be more equal" (1) to "Greater incentives should be provided for individual effort" (10). Another question, also a 1 to 10 satisfaction scale regarding the financial situation of the household is also included to judge whether a persons' financial satisfaction increased after apartheid, a crude measure of availability of economic opportunity. We focus mostly on race based gini indices as these measures of income inequality by race are more indicative of unequal distributions in income between black and white, and intuitively is notably high for the black race.

Individually the regressions are as follows:

#### *Set One*

First we run all variables separately for each year, that is for 1990, 1996 and 2001. We do this for high and low income groups, using the mean income of that year as a cutoff line<sup>16</sup>.

$$Happy_i^g = \beta_1^g MICRO_i + \beta_2^g Inequality_i + \alpha_r^g + \varepsilon_i^g$$

#### *Set Two*

In this set we run the regression for all three years, including a year dummy to isolate post apartheid effect (called *dumpost*), as well as an interaction term for the treatment effect (this term is simply the year dummy\*gini index).

$$Happy_i^g = \beta_1^g MICRO_i + \beta_2^g Inequality_i + \beta_3^g Dumpost_i^g + (Dumpost * Gini race)_i^g + \varepsilon_i^g$$

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<sup>16</sup> After using the yearly inflation rate to deflate incomes all back to 1990 value.

*Set Three*

This set is identical to set two, the only difference being that now we include individual year dummies (dum1996 and dum2001) in order to isolate the different effects of the two post apartheid years in our data and get the year specific effect.

Two year dummies are included to do this and hence two interaction terms as well (these are dum1996\*gini index and dum2001\*gini index).

$$\begin{aligned} Happy_i^g = & \beta_1^g MICRO_i + \beta_2^g Inequality_i + \beta_3^g Dum1996_i^g \\ & + \beta_4^g (Dum1996 * Gini\ race)_i^g + \beta_5^g Dum2001_i^g \\ & + \beta_6^g (Dum2001 * Gini\ race)_i^g + \varepsilon_i^g \end{aligned}$$

Race based gini indices<sup>17</sup> for the years 1991, 1995 and 2000 by black, coloured, white and asian are used given availability of data. Provincial gini indices would have been somewhat more useful but due to large gaps in the data this is not so. We also do not run regressions by race as would have been preferable because this there would be no variations in the race based gini.

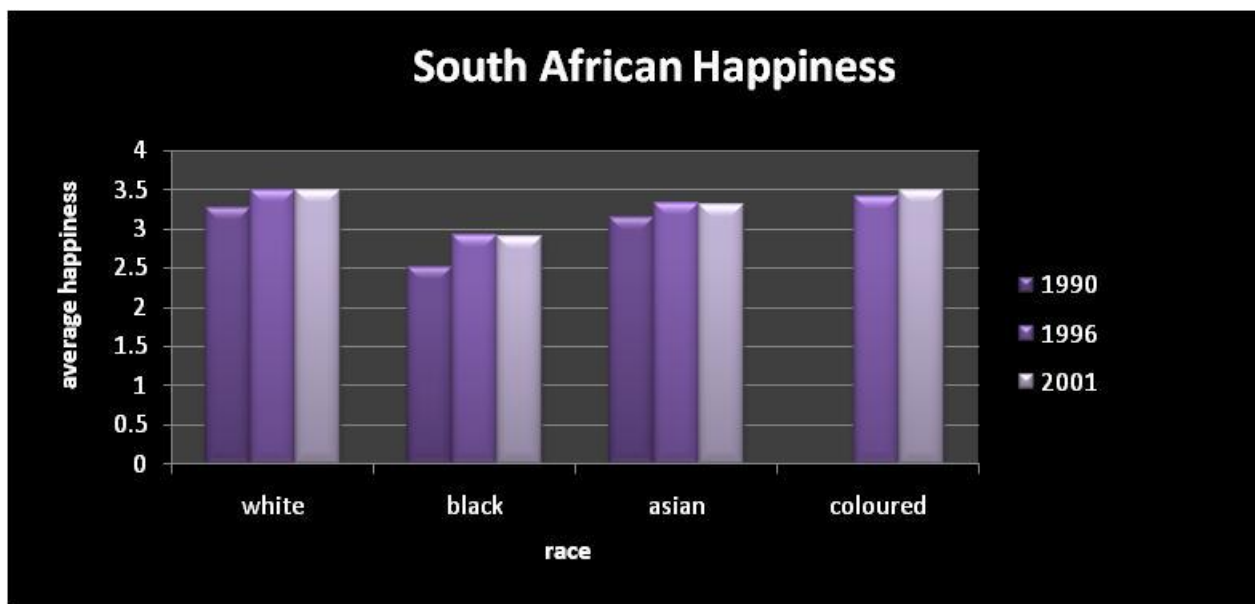
In total there are 8673 observations of which there are 2864 white people, 4021 black people, 891 coloured people and 895 asian people. It must be noted that in 1990 there were no coloured people and a biased sample of white people (even though there are 1236 white and 1100 black, this is not representative of the population).

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<sup>17</sup> Taken from report by Gelb S. (2003)

### Results

In this racially divided country the introduction of a fair and democratic vote had a unique affect on happiness levels especially for black people in most studies. The data from this World Values survey tells a similar story, there was a marked increase in the happiness of the races studied here, particularly with regards to the previously politically oppressed black people. The following graph visualizes this.



In general, white people are the happiest, with pre and post apartheid happiness levels at 3.3 and 3.5 respectively, compared to black people whose levels lie at 2.5 and 2.9 respectively. Asians were classified under the 'mixed race' category along with coloured people (for whom there is no pre apartheid data) and both display higher levels of happiness than black people but for Asians this is still less than whites, indicating that certain determinants of happiness still weigh heavier on the darkest race (and on its own in its previous racial political category 'native-african black')

Focusing on inequality, South Africa's Gini index for the pertinent years was 0.68 in 1990, 0.56 in 1996 and 0.57 in 2001 resulting in a 0.59 average, a global 'best' in the world today. Average Gini by race over these same years is presented below.

Race	White	Black	Coloured	Asian
Mean	0.45	0.54	0.48	0.45

General summary statistics of the variables used here are presented below, divided by white and dark. Dummy variables are included to be interpreted as percentages.

**WHITE**

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>
HAPPY	3.421842	3	0.625126
FEMALE	0.543977	1	0.498166
HEALTH STATUS	1.690288	2	0.757747
AGE GROUP	2.165902	2	0.713848
UNEMPLOYED	0.038766	0	0.193077
STUDENT	0.044185	0	0.205549
RETIRED	0.141309	0	0.348413
HOUSEWIFE	0.155481	0	0.362439
HIGH SCHOOL	0.67278	1	0.469296
POST HIGH SCHOOL	0.320967	0	0.466945
NUMBER OF CHILDREN	2.084619	2	1.382275
MARRIED	0.724885	1	0.446665
DIVORCED	0.047103	0	0.211903
SEPERATED	0.006669	0	0.081411
SINGLE	0.192163	0	0.394083
INCOME1990	3771.838	3501.893	2528.11
INCOME INEQUALITY	7.146311	8	2.506509
SATISFATION WITH FINANCIAL LIFE	6.659441	7	2.325365
GINI RACE	0.450467	0.45	0.007969
Observations	2399		

**DARK**

	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>
HAPPY	3.004442	3	0.899949
FEMALE	0.508884	1	0.499969
HEALTH STATUS	2.029741	2	0.9952
AGE GROUP	1.853611	2	0.717215
UNEMPLOYED	0.272885	0	0.445485
STUDENT	0.099266	0	0.299048
RETIRED	0.082271	0	0.274804
HOUSEWIFE	0.094824	0	0.293
HIGH SCHOOL	0.953843	1	0.209845
POST HIGH SCHOOL	0.046157	0	0.209845
NUMBER OF CHILDREN	2.279645	2	1.930764
MARRIED	0.475087	0	0.499427
DIVORCED	0.021437	0	0.144849
SEPERATED	0.014871	0	0.121047
SINGLE	0.403244	0	0.490596
INCOME1990	1230.586	583.6488	1510.833
INCOME INEQUALITY	4.576091	4	3.360812
SATISFATION WITH FINANCIAL LIFE	4.32136	4	2.916362
GINI RACE	0.502721	0.49	0.053145
Observations	5178		

Actual regression results follow and come in the three sets as specified above<sup>18</sup>.

### Results Set One

Note that in these regressions I discuss the main variables with regards to this paper, general changes in micro variables are not referred unless there is noteworthy occurrence.

### High and Low Income 1990

	<u>LOW INCOME</u>	<u>HIGH INCOME</u>
AGE	-0.000587 <b>0.002676</b>	-0.002397 <b>0.002271</b>
FEMALE	0.077766 <b>0.059999</b>	0.043222 <b>0.047248</b>
HEALTH STATUS	-0.204075*** <b>0.027578</b>	-0.181773*** <b>0.028812</b>
UNEMPLOYED	-0.201134*** <b>0.072241</b>	0.254534* <b>0.133296</b>
STUDENT	0.369129* <b>0.190905</b>	-0.955579*** <b>0.328919</b>
RETIRED	0.126865 <b>0.096458</b>	0.056381 <b>0.099116</b>
HOUSEWIFE	0.059018 <b>0.080812</b>	-0.013953 <b>0.062443</b>
POST HIGH SCHOOL	0.047293 <b>0.120882</b>	-0.04986 <b>0.045854</b>
NUMBER OF CHILDREN	-0.011605 <b>0.019601</b>	0.024179 <b>0.018699</b>
MARRIED	0.119047 <b>0.12634</b>	0.025668 <b>0.130953</b>
DIVORCED	0.040019 <b>0.178941</b>	0.015423 <b>0.183</b>
SINGLE	0.041539 <b>0.131943</b>	-0.112131 <b>0.152963</b>
SEPERATED	0.046482 <b>0.228075</b>	-0.077045 <b>0.385458</b>
INCOME1990	0.000072 <b>0.0000502</b>	-0.0000175 <b>0.0000186</b>
INCOME INEQUALITY	-0.005816 <b>0.007813</b>	0.006933 <b>0.008249</b>
SATISFATION WITH FINANCIAL LIFE	0.095519*** <b>0.0096</b>	0.065773*** <b>0.008589</b>
DARK	0.246525*	0.174506*

<sup>18</sup> Each variable is presented for its high and low income group, the standard deviation lies in bold beneath the coefficient of the variable. One star next to the coefficient indicates confidence at a 10% level, two stars mean 5% confidence and lastly 3 stars indicate a 1% confidence level.



	<b>0.12723</b>	<b>0.104493</b>
GINI RACE	-3.305496***	-3.191926***
	<b>0.752164</b>	<b>0.830438</b>
C	4.337734***	4.665305***
	<b>0.442128</b>	<b>0.444392</b>
Happy Mean	2.689066	3.199143

### *Low Income 1990*

Pre apartheid, low income regressions have the highest R squared of any regression presented here (0.364803), meaning that our variables best describe apartheid happiness levels of the poor with the higher gini coefficients, namely the black and coloured peoples (although coloured people are not in the 1990 sample, they too have high gini coefficients for this period). The variable dark is small, positive and significant, telling us that having a low income and being dark affected happiness slightly but positively. This could be the case when comparator groups are those most similar to oneself, a united group of oppressed people are happier when comparing themselves to one another than when comparing oneself to the oppressor<sup>19</sup>. Another possibility is miscommunication or errors in human evaluation of one's own happiness (my two is your three). The significant coefficient on unemployment is the highest negative of this variable telling us this was the group most negatively affected by unemployment. The coefficient of inequality is -3.3 and is significant at 1% level.

### *High Income 1990*

Health status has a negative significant effect on happiness, however it is slightly smaller than that of the poor for the corresponding time (the poor probably feel the financial aspect of illness more severely). Satisfaction with financial life has a very small significant effect. Dark has a slightly larger positive effect of which most is due to the Asians who seemed to have suffered somewhat less under apartheid<sup>20</sup> due to consistently higher reported happiness than the black people<sup>21</sup>.

<sup>19</sup> see Kingdon and Knight (2004) on Roberts (1971)

<sup>20</sup> Remembering the data for coloured people was not available for 1990, also asians respond to the financial satisfaction question with a mean of 6.18, white people with a mean of 6.65 and black people with a mean of 3.81. White and asian people

<sup>21</sup> Average asian happiness both pre and post apartheid is above three whereas black happiness never reaches a 3 average, even post apartheid.

The Gini coefficient has a slightly smaller yet still significant negative effect on happiness for the high income earners<sup>22</sup>, possibly an indication of the country's turmoil at the time (protests, riots and the beginning of a governmental turnaround).

### High and Low Income 1996<sup>23</sup>

	<u>LOW INCOME</u>	<u>HIGH INCOME</u>
AGE	0.004719 <b>0.003317</b>	-0.000538 <b>0.002088</b>
FEMALE	0.079681 <b>0.058648</b>	0.036574 <b>0.039343</b>
HEALTH STATUS	-0.239777*** <b>0.027437</b>	-0.197174*** <b>0.021004</b>
UNEMPLOYED	-0.062007 <b>0.068686</b>	-0.006359 <b>0.062404</b>
STUDENT	0.101044 <b>0.113572</b>	0.21986*** <b>0.074114</b>
RETIRED	0.2044* <b>0.113032</b>	0.168419** <b>0.075883</b>
HOUSEWIFE	-0.076842 <b>0.131215</b>	0.131578** <b>0.064923</b>
POST HIGH SCHOOL	-0.057176 <b>0.265663</b>	-0.017356 <b>0.047131</b>
NUMBER OF CHILDREN	-0.028975 <b>0.018468</b>	-0.005024 <b>0.013572</b>
MARRIED	0.15797* <b>0.09373</b>	0.13615 <b>0.089851</b>
DIVORCED	0.232549 <b>0.23363</b>	-0.085046 <b>0.137434</b>
SINGLE	0.074517 <b>0.093814</b>	-0.023842 <b>0.092732</b>
SEPERATED	-0.285113 <b>0.191602</b>	0.390584** <b>0.199039</b>
INCOME1990		-0.0000202 <b>0.0000107</b>
INCOME INEQUALITY	-0.011121 <b>0.008389</b>	0.002915 <b>0.005853</b>
SATISFACTION WITH FINANCIAL LIFE	0.113047*** <b>0.01082</b>	0.061361*** <b>0.007057</b>

<sup>22</sup> Still slightly lower than the poor of the corresponding year, high income 1990 has gini coefficient -3.191926 and low income 1990 has -3.305496.

<sup>23</sup> No income1990 variable as the average low income of 1996 is the same for everyone in that specification

DARK	0.141269	-0.029884
	<b>0.275815</b>	<b>0.057126</b>
GINI RACE	-5.747657***	-3.247883***
	<b>1.869602</b>	<b>0.896057</b>
C	5.546199***	4.756812***
	<b>0.888742</b>	<b>0.435536</b>
Happy Mean	2.88242	2.88242

### *Low Income 1996*

Directly after apartheid the mean happiness of the poor increased by approximately 0.2 to 2.88 a very slight increase pre to post apartheid<sup>24</sup>.

The effects of unemployment, while still negative, lost their significance, only health status still has a negative significant effect. Satisfaction with financial life increased very slightly which could indicate new economic opportunities were introduced.

Despite intuition, the coefficient on inequality increased substantially resulting in a larger negative effect of racial inequality on happiness post apartheid than before!

### *High Income 1996*

For high income earners, average happiness barely changed at the end of apartheid<sup>25</sup> but remained always above that of the poor. Being a housewife has a positive and significant effect for the first time and is probably due to the fact that being a housewife with money is easier than doing so without (hired help, better/safer products etc.).

Satisfaction with financial life decreases ever so slightly and could be due to the introduction of equal opportunity and hence a greater risk to ones own income simply because there are more people in the workforce and supply and demand implies that wages will go down.

The inequality coefficient, however, increased by a small amount to a higher (negative) number, indicating an increased distaste for inequality by the rich, nonetheless still not as great as that of the poor.

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<sup>24</sup> see numbers at the end of the respective regressions

<sup>25</sup> see numbers at the end of the respective regressions

### High and Low Income 2001

	<u>LOW INCOME</u>	<u>HIGH INCOME</u>
AGE	0.001855	-0.001936
	<b>0.00271</b>	<b>0.001986</b>
FEMALE	0.212605***	0.091854**
	<b>0.050428</b>	<b>0.037797</b>
HEALTH STATUS	-0.240807***	-0.214588***
	<b>0.028523</b>	<b>0.023976</b>
UNEMPLOYED	-0.09594*	-0.097672*
	<b>0.058147</b>	<b>0.052109</b>
STUDENT	0.217819**	0.01653
	<b>0.099442</b>	<b>0.071717</b>
RETIRED	0.180933*	0.137332
	<b>0.107843</b>	<b>0.082027</b>
HOUSEWIFE	0.054384	0.041463
	<b>0.103081</b>	<b>0.066942</b>
POST HIGH SCHOOL	-0.449264	-0.084616
	<b>0.362183</b>	<b>0.067188</b>
NUMBER OF CHILDREN	0.01266	0.007566
	<b>0.016285</b>	<b>0.016336</b>
MARRIED	0.096442	0.071176
	<b>0.079558</b>	<b>0.090371</b>
DIVORCED	-0.105428	-0.157245
	<b>0.169401</b>	<b>0.123143</b>
SINGLE	0.076734	-0.082444
	<b>0.076676</b>	<b>0.092162</b>
SEPERATED	-0.008495	-0.146141
	<b>0.192857</b>	<b>0.230831</b>
INCOME1990	0.000259**	-0.00000778
	<b>0.000117</b>	<b>0.0000101</b>
INCOME INEQUALITY	-0.001569	0.007408
	<b>0.007737</b>	<b>0.005875</b>
SATISFATION WITH FINANCIAL LIFE	0.091599***	0.072871***
	<b>0.010463</b>	<b>0.007262</b>
DARK	0.105642	-0.059626
	<b>0.144194</b>	<b>0.046083</b>
GINI RACE	-2.03802	-0.384688
	<b>1.658273</b>	<b>0.737638</b>
C	3.605099***	3.519499***
	<b>0.807684</b>	<b>0.371546</b>
Happy Mean	2.971204	3.39821

### *Low Income 2001*

Happiness increased further in 2001 for the low income groups by almost 0.1 and the coefficient on inequality remains negative but is no longer significant. This is true for both high and low income groups and could be due to the solidarity of the end of apartheid wearing off as time goes by. Income has a significant positive effect when compared to 1990 but is still extremely small. Satisfaction with financial life decreased to slightly below its 1990 level but still has a positive significant effect on happiness.

### *High Income 2001*

Average happiness for the rich increased in 2001 from 3.32 to 3.39 as did the coefficient on satisfaction with financial life from 0.06 to 0.07.

Even for high earners, the negative effect of unemployment is now significant despite being small. Gini race, however, is now insignificant, most likely due to fading feelings of solidarity as stated above. The standard deviation of this variable is also very high, telling us there was probably not enough variation in it and hence we must be cautious when interpreting results. Given this constraint, we pool the data in the following regressions to provide for more variation.

*Results Set Two*

**High and Low income lumped dummy**

	<u>LOW INCOME</u>	<u>HIGH INCOME</u>
AGE	0.001638	-0.001579
	<b>0.001637</b>	<b>0.001193</b>
FEMALE	0.133743***	0.058164**
	<b>0.031884</b>	<b>0.023482</b>
HEALTH STATUS	-0.229111***	-0.198972***
	<b>0.015793</b>	<b>0.013723</b>
UNEMPLOYED	-0.115197***	-0.044337
	<b>0.037277</b>	<b>0.037684</b>
STUDENT	0.166365**	0.104359**
	<b>0.066477</b>	<b>0.049491</b>
RETIRED	0.175241***	0.138199***
	<b>0.060672</b>	<b>0.04804</b>
HOUSEWIFE	0.038882	0.06428*
	<b>0.056223</b>	<b>0.037345</b>
POST HIGH SCHOOL	-0.0252	-0.035382
	<b>0.107594</b>	<b>0.028158</b>
NUMBER OF CHILDREN	-0.003886	0.006058
	<b>0.010182</b>	<b>0.008943</b>
MARRIED	0.132022**	0.092925
	<b>0.05284</b>	<b>0.057024</b>
DIVORCED	0.038518	-0.085751
	<b>0.103568</b>	<b>0.081648</b>
SINGLE	0.069375	0.155873
	<b>0.052901</b>	<b>0.138392</b>
SEPERATED	-0.092825	-0.060602
	<b>0.114475</b>	<b>0.05952</b>
INCOME1990	0.000106**	-0.00000411
	<b>0.0000458</b>	<b>0.00000653</b>
INCOME INEQUALITY	-0.006892	0.005218
	<b>0.004568</b>	<b>0.00367</b>
SATISFATION WITH FINANCIAL LIFE	0.100692***	0.067001***
	<b>0.005904</b>	<b>0.004318</b>
DARK	0.208091**	-1.439682
	<b>0.089908</b>	<b>0.454085</b>
GINI RACE	-2.870054***	-0.043191***
	<b>0.63621</b>	<b>0.032625</b>
DUMPOST	0.74679	0.434666
	<b>0.585812</b>	<b>0.303919</b>
DUMPOST*GINI	-1.350095	-0.493069
	<b>1.140657</b>	<b>0.64424</b>

C	3.948458***	3.756902***
	<b>0.365497</b>	<b>0.236102</b>
Happy Mean	2.858966	3.317616

In a first attempt to pool the data we use the dummy dumpost which is equal to 0 for 1990 and one for 1996 and 2001. This dummy turns out to be insignificant as does the interaction term we include (dumpost\*gini race). In order to correct for this, we rerun the regressions with two dummies, one for 1996 (dum1996) and one for 2001 (dum2001) as well as their respective interactive terms with the Gini index. Results follow.

### Results Set Three

#### High and Low Income separate post apartheid dummies

	<u>LOW INCOME</u>	<u>HIGH INCOME</u>
AGE	0.001743	-0.001496
	<b>0.001639</b>	<b>0.001194</b>
FEMALE	0.1335***	0.057413**
	<b>0.031883</b>	<b>0.023468</b>
HEALTH STATUS	-0.22911***	-0.198615***
	<b>0.015981</b>	<b>0.013773</b>
UNEMPLOYED	-0.112672***	-0.037875
	<b>0.037393</b>	<b>0.037856</b>
STUDENT	0.167541**	0.112625**
	<b>0.066473</b>	<b>0.04955</b>
RETIRED	0.167966***	0.137198***
	<b>0.0608</b>	<b>0.048008</b>
HOUSEWIFE	0.039465	0.061407
	<b>0.056239</b>	<b>0.037342</b>
POST HIGH SCHOOL	-0.037714	-0.042984
	<b>0.10779</b>	<b>0.029027</b>
NUMBER OF CHILDREN	-0.004654	0.005848
	<b>0.010194</b>	<b>0.008966</b>
MARRIED	0.136717***	0.088634
	<b>0.052975</b>	<b>0.057006</b>
DIVORCED	0.038537	-0.087592
	<b>0.103544</b>	<b>0.081618</b>
SINGLE	0.072625	0.153826
	<b>0.052945</b>	<b>0.138296</b>
SEPERATED	-0.085654	-0.067111
	<b>0.114611</b>	<b>0.059531</b>
INCOME1990	0.000107**	-0.00000359

	<b>0.0000466</b>	<b>0.0000066</b>
INCOME		
INEQUALITY	-0.006407	0.005152
	<b>0.004577</b>	<b>0.003669</b>
SATISFATION WITH		
FINANCIAL LIFE	0.100569***	0.066213***
	<b>0.005905</b>	<b>0.004328</b>
GINI RACE	-2.816822***	-1.548078***
	<b>0.639045</b>	<b>0.455635</b>
DARK	0.196617***	-0.032205
	<b>0.090189</b>	<b>0.032854</b>
DUM1996	1.892113***	0.937919***
	<b>0.860433</b>	<b>0.356089</b>
DUM1996*GINI	-3.638666***	-1.584041***
	<b>1.700078</b>	<b>0.760228</b>
DUM2001	0.013222	-0.22456
	<b>0.746015</b>	<b>0.390439</b>
DUM2001*GINI	0.162331	0.914304
	<b>1.503646</b>	<b>0.833107</b>
C	3.919422***	3.814467***
	<b>0.368151</b>	<b>0.236903</b>
Happy Mean	2.858966	3.317616

### *High Income Post Apartheid Seperate Dummies*

Here we can see that our general findings are more or less in line with the literature, being female has a small and positive significant effect on happiness levels as does being a student or being retired. Being in bad health has a significant and larger negative effect on happiness for possibly obvious reasons such as pain or financial issues resulting from being sick or impaired. Moving on to the variables in question in this paper, income inequality is insignificant whereas satisfaction with financial life is very significant (in a 5% confidence interval), with a small positive coefficient (0.066) indicating intuitively that for those with a high income, increased satisfaction with financial life has a positive effect on happiness. If one has a high income and is dark there is a negative effect, albeit not significant probably due to the low number of darks in the high income sample. What is important to note is the negative and highly significant coefficient of gini race, implying the higher the gini coefficient is for your race, the more negatively it weighs on your happiness. This is especially so for 1996 (as the negative and significant interactive term clearly shows) which means for high income people in 1996, racial inequality had a large affect on happiness levels, the same not being true for 2001 given the insignificant coefficients.



*Low Income Post Apartheid Seperate Dummies*

Being female has a slightly larger positive effect on happiness among the poor. Health status for the poor weighs heavier on happiness than for the rich, probably related to the financial perils associated with illness. Intuitively unemployment now plays a significant role in decreasing happiness, and suddenly income becomes a significant and positive determinant of happiness, obviously for the poor a small increase in income would do more than for the rich. Being a student and being retired still has a positive effect on happiness, however for the poor, so does being married.

Income inequality remains insignificant, satisfaction with financial life is still significant and is even larger for the poor, another indication that more money would do the poor better than the rich.

Also important is the larger negative effect of Gini race on the low income group, showing us the higher the inequality coefficient for your race, the unhappier you are, particularly so if you are poor. This effect is again significant for 1996 and not 2001 however in this case, for the low income group, it is more than twice as large as for the high income group, a perfect sign that income inequality affects the poor twice as much as the rich. This greater aversion to inequality by the poor could be a result of high social immobility, it makes sense that, if you are rich income inequality doesn't scare you as your money is not at risk (when social mobility is low). Likewise for the poor, escaping poverty seems impossible due to social immobility and therefore their distaste for inequality is greater.

Finally the R squared of the regression for low income is higher than that of the high income which means that our variables better describe the determinants of happiness for the poor than they do for the rich.

## Conclusion and Discussion

After decades of discrimination and struggle, South Africa abolished Apartheid, the legal system of racial separation. In this act of granting equal rights to Darks (black, coloured/mixed or asian descent) a natural experiment in social mobility arose, providing us with the opportunity to evaluate the effects an introduction of this kind can have on the wellbeing of a nation. We do not look only at individual wellbeing or happiness but also at an income inequality coefficient, in the hopes of identifying a relationship between happiness and inequality under a change in social mobility as done in South Africa.

Social mobility, a concept used by Alesina A., Di Tella R. and MacCulloch R. (2003) when studying happiness and inequality in America and Europe, describes the opportunity for the poor to move up the income ladder or for the rich to move down, a higher social mobility implies these movements happen with greater ease. As a solution to differing effects of inequality on happiness in these two continents, they pose the idea that social mobility is higher in the States and lower in Europe, hence the American rich and the European poor are affected more negatively.

In South Africa, Apartheid instilled a system of social immobility for the Darks, and lower happiness levels accompany this. From this we build the hypothesis that an introduction of social mobility should make the rich unhappy and the poor happy (given their increased opportunity for higher income)<sup>26</sup>.

Before concluding results, a moment must be taken to discuss the reverse causality effect of happiness studies, that is in this case whether high inequality causes lower happiness levels or whether people who are generally unhappier feel the negative effects of inequality more. In South Africa I assume the first is true as it has already been proven that that the politically oppressed report lower happiness levels than those not under oppression<sup>27</sup> and take that to be the case here.

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<sup>26</sup> Note for South Africa, given the racial stratification by law (and concurring numbers), the poorest people during apartheid were the blacks, followed by the mixed race category, then asians, and lastly the whites were the richest. This continued post apartheid as descriptive statistics show, indicating the importance of racial inequality.

<sup>27</sup> See Moller (1998) on Veenhoven (1984) "Utility of Happiness"

In the end, we find that the average happiness of the poor does indeed increase slightly, in both 1996 and then again in 2001, which is in line with Alesina et al. Their averseness to inequality increases directly after the introduction of social mobility and then in 2001 shows no significant effect, contrary to our hypothesis that the abolition of apartheid should decrease aversion of inequality for the poor (as for them increased social mobility should mean an introduction of opportunities, and a decreased aversion to inequality).

The rich also experience slightly increasing happiness levels (probably due to feelings of solidarity) over the three years but in smaller amounts than the poor, going against Alesina et al. Their aversion to inequality raises slightly post apartheid but doesn't result in any significant change in the long run.

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