

# Southern Africa Labour and Development Research Unit

What difference does a year make? The cumulative effect  
of missing cash transfers on schooling attainment

*by*

*Katherine Eyal and Lindokuhle Njozela*



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Number 186



**N.i.D.S.**  
NATIONAL INCOME DYNAMICS STUDY

NIDS Discussion Paper  
2016/13

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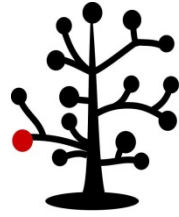
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### Abstract

South Africa's largest poverty alleviation tool, the child support grant, has benefited more than 12 million children, with many positive outcomes. However the implementation was not perfect - the means test threshold was left unadjusted for ten years, requiring a more than one hundred percent adjustment when the government finally saw fit to change the threshold in 2008. In the interim, very many children missed out on the benefits of the grant. Using exogenous changes to the age and income threshold values, this paper estimates the cumulative impact of missing grant receipt. We find that a South African child born in 1994 missed out on a year's worth of schooling compared to those born just one year later. The costs were not limited only to schooling attainment; increasing the means test threshold and rates of receipt appears to have improved maternal mental health.

**Keywords:** cash transfers, cumulative effect, human capital, maternal mental health

# 1 Introduction

The South African Child Support Grant (CSG) is a cash transfer programme initiated in 1998 as one of the State's social security and poverty alleviation measures. The grant targets age and income eligible children, where income eligibility is determined using a means test of the primary care giver's income. Since its roll-out, the programme has progressively increased the age limit and grant amount, as well as the income threshold for eligibility. In 2010, 82.2 percent of the poorest fifth of households received a child support grant (Woolard, Buthelezi & Bertsher 2012), and the income from CSGs comprised fifty nine percent of household income.

The means test income eligibility threshold has also increased since 1998 and has moved from a two-tiered rural versus urban settlement demarcation to a single threshold value for all recipients. There is one important exception to this standard: the means test remained constant for the ten years between 1998 and 2008 and then doubled in October 2008<sup>1</sup>. There were no adjustments made for inflation for the entire period, despite increases of some forty percent in the Consumer Price Index between 1998 and 2004 (Aguero, Carter & Woolard 2006). Though the grant itself has increased with inflation, increasing numbers of individuals were not covered, due to the shrinking value of the real means test threshold value.

Our calculations show that to correct the means test value adequately for inflation would have necessitated an upward adjustment of fifty two percent in 2007. Even this is not high enough, however. This figure is calculated using changes in the base CPI. Food price inflation is usually higher than inflation calculated from the base CPI, and is felt disproportionately by the poor. Individuals in the lower income quintiles allocate a larger portion of household budgets to food than those in higher income brackets. Thus even a fifty two percent adjustment to the means test would not have adequately compensated the very poorest households - the grant's intended recipients.

After the means test threshold was re-set in 2008, the amount continued to not keep pace with inflation, resulting in a difference of nearly R250 between actual and correctly inflation adjusted amounts by 2015. The erosion of the real amount of the threshold - although the CSG amount was changing - had implications for those earning an inflation adjusted income. These people fell out of the eligible range, although no real changes had

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<sup>1</sup>The amount almost tripled for those in rural areas, rising from R800 to R2,300.

occurred to their income. In addition, children at either end of the age spectrum were affected. For example, children born in late year 2007 with caregiver income just above the means test threshold lost an entire year's worth of grant receipt compared to those born in late 2008. Ten year olds in 2008 who had been age eligible since birth, but not income eligible, lost out on a potential R11,085 in receipt, compared to those just below the threshold, and may have continued to lose out if their parents did not apply for the grant even after the threshold had changed.

What difference does this year make? Or more broadly, what difference does cumulative grant income make on child outcomes, and the family in general? Using the South African National Income Dynamics Survey (NIDS), this paper seeks to answer a sub-set of these questions by looking at the effect of cumulative CSG grant income on years of schooling attained, and the mechanisms behind the effects found. One of the key mechanisms found is through the channel of maternal mental health, widely recognised as one of the key contributors to childhood welfare and well-being (Ensminger, Hanson, Riley & Juon 2003).

Section 2 provides details of the CSG roll-out, and its attendant amounts and threshold values. Section 3 discusses the literature surrounding the immediate and cumulative effects of grants on educational attainment. Section 4 describes the methodology used in this paper, including a description of the data, the means test calculation and verification, and the identification strategies used. Section 5 reports the results of our estimates of cumulative grant impact, in a number of specifications and samples. In Section 6, we discuss one of the potential mechanisms through which grants act to improve educational outcomes, namely through the channel of maternal mental health. Section 7 summarises our findings, and discusses a number of scenarios which help to quantify the impact of having missed grant receipt due to means test invariance, and arbitrary changes in age threshold values. Section 8 concludes.

## 2 Programme Details

The grant amounts, means test threshold values and age limits since programme inception, are reported in Table 1. The age limit was initially seven years old in 1998, and has increased steadily since to eighteen years of age in 2015. The amount received is modest

at R330 per month<sup>2</sup> in 2015, and has increased steadily since its inception.

Table 1: Child Support Grant: Dates and Amounts

The South African Child Support Grant			
Dates and Amounts of Receipt and Eligibility			
Date	Amount	Age Limit	Means Test
October 1998	R 100	7	R800 in
July 1999	R 100	7	Rural Areas
July 2000	R 100	7	R1,100 in
July 2001	R 110	7	Urban Areas
April 2002	R 130	7	
October 2002	R 140	7	No change in
April 2003	R 160	9	Means Test
April 2004	R 170	11	Until 2008
April 2005	R 180	14	
April 2006	R 190	14	
April 2007	R 200	14	
April 2008	R 210	14	
October 2008	R 230	14	R 2,300
January 2009	R 240	15	R 2,400
April 2010	R 250	16	R 2,500
April 2011	R 260	17	R 2,600
January 2012	R 280	18	R 2,800
April 2013	R 290	18	R 2,900
April 2014	R 310	18	R 3,100
October 2014	R 320	18	R 3,200
April 2015	R 330	18	R 3,300
April 2016	R 350	18	R 3,500

Source: National Treasury Reports. The Age Limit referred to is the upper age limit, e.g. in 2011, those aged 16 and under received the grant. In 2008, the means test was changed to 10 times the grant amount, i.e. in 2009 when the monthly grant amount was R240, the means test was R2400. For married couples, the means test amount is exactly double, i.e. R4800 per month.

Inflation, CPI, and the nominal and adjusted for inflation CSG amounts and threshold values can be seen in Table 2. The last column shows that had it been adjusted to account for inflation, the threshold value would have been R1,673, rather than R1,100. This correction would have necessitated an upwards adjustment of some fifty two percent.

<sup>2</sup>R330 was approximately twenty five dollars in July 2015.

Table 2: Consumer Price Inflation and Inflation Adjusted CSG Amounts

Year	Inflation Adjusted CSG Amounts											
	Inflation		CPI				CSG Amount				Means Test Threshold	
	Annual Average	Month on Month	Nominal		Real		Nominal		Real		Correctly Inflation Adjusted	
1998	6.86	8.95	42.3	R 100	R 41	R 1,100	R 465	R 1,100	R 465	R 1,100	R 1,100	
1999	5.27	2.24	43.3	R 100	R 44	R 1,100	R 476	R 1,100	R 476	R 1,100	R 1,198	
2000	5.33	6.99	46.3	R 100	R 46	R 1,100	R 509	R 1,100	R 509	R 1,100	R 1,225	
2001	5.73	4.59	48.4	R 110	R 53	R 1,100	R 533	R 1,100	R 533	R 1,100	R 1,311	
2002	9.47	13.51	55.0	R 130	R 69	R 1,100	R 605	R 1,100	R 605	R 1,100	R 1,371	
2003	5.84	-1.63	54.1	R 160	R 90	R 1,100	R 595	R 1,100	R 595	R 1,100	R 1,556	
2004	-0.68	2.2	55.2	R 170	R 95	R 1,100	R 608	R 1,100	R 608	R 1,100	R 1,531	
2005	2.06	2.02	56.4	R 180	R 103	R 1,100	R 620	R 1,100	R 620	R 1,100	R 1,565	
2006	3.24	4.82	59.1	R 190	R 112	R 1,100	R 650	R 1,100	R 650	R 1,100	R 1,596	
2007	6.17	7.57	63.6	R 200	R 125	R 1,100	R 699	R 1,100	R 699	R 1,100	R 1,673	
2008	10.04	9.35	69.5	R 210	R 144	R 2,300	R 1,598	R 2,300	R 1,598	R 2,300	R 2,300	
2009	7.26	6.04	73.7	R 240	R 177	R 2,400	R 1,769	R 2,400	R 1,769	R 2,400	R 2,515	
2010	4.1	3.37	76.2	R 250	R 192	R 2,500	R 1,904	R 2,500	R 1,904	R 2,500	R 2,667	
2011	5.01	6.41	81.1	R 260	R 210	R 2,600	R 2,108	R 2,600	R 2,108	R 2,600	R 2,757	
2012	5.75	5.71	85.7	R 280	R 239	R 2,800	R 2,399	R 2,800	R 2,399	R 2,800	R 2,934	
2013	5.77	5.3	90.2	R 290	R 261	R 2,900	R 2,617	R 2,900	R 2,617	R 2,900	R 3,101	
2014	6.13	5.32	95.0	R 310	R 297	R 3,100	R 2,946	R 3,100	R 2,946	R 3,100	R 3,265	
2015	4.51	5.23	100.0	R 330	R 330	R 3,200	R 3,200	R 3,200	R 3,200	R 3,200	R 3,439	

The Consumer Price Index (CPI) is calculated from the month on month (December to December) figures. However, the results are similar whether using annual average inflation, or month on month inflation. Real figures are reported in 2015 rands. The last column of the table shows what the means test amount should have been, had it risen with inflation, beginning with the initial amount of R1,100 in 1998, and then following the new threshold amount of R2,300 in 2008. For example, the means test amount was R1,100 in 2004, but should have been set at R1,531, had it been correctly adjusted for inflation. After the means test change in 2008, the 2015 inflation adjusted figure is R3,439, but the 2015 means test amount is only R3,200. Data source: Statistics South Africa

Using the inflation adjusted amounts in Table 2, we calculate the potential cumulative amount (in 2015 rands) that children born between 1991 and 2014 could have accumulated by each wave of the NIDS. This is shown in Table 3. A child born in 1991 would have been consistently above the age eligibility limit during their entire childhood, and therefore would not have accumulated any grant income. The effect of the differences in the apparently arbitrary increase of age limits and means thresholds can be seen starkly in the accumulated income for those born in 1994 versus those born in 1995 - a difference of more than R13,000 by 2014.



Table 3: Cumulative Amounts Potentially Received for the Child Support Grant

Cumulative Amounts Received – 2015 Rands					
Birth Year	Wave 1	Wave 2	Wave 3	Wave 4	Wave 4
	2008	2010	2012	2014	Age
	Amount	Amount	Amount	Amount	
2014				R 3,535	0
2013				R 6,675	1
2012			R 2,879	R 9,554	2
2011			R 5,408	R 12,083	3
2010		R 2,285	R 7,693	R 14,369	4
2009		R 4,408	R 9,816	R 16,491	5
2008	R 1,751	R 6,159	R 11,567	R 18,242	6
2007	R 3,277	R 7,684	R 13,092	R 19,768	7
2006	R 4,624	R 9,031	R 14,439	R 21,115	8
2005	R 5,841	R 10,249	R 15,657	R 22,332	9
2004	R 6,968	R 11,376	R 16,784	R 23,459	10
2003	R 8,006	R 12,414	R 17,822	R 24,497	11
2002	R 8,863	R 13,271	R 18,679	R 25,354	12
2001	R 9,502	R 13,910	R 19,318	R 25,993	13
2000	R 10,058	R 14,466	R 19,874	R 26,549	14
1999	R 10,577	R 14,985	R 20,393	R 27,068	15
1998	R 11,085	R 15,493	R 20,901	R 27,576	16
1997	R 11,085	R 15,493	R 20,901	R 27,576	17
1996	R 11,085	R 15,493	R 20,901	R 24,041	18
1995	R 10,228	R 14,635	R 20,043	R 20,043	19
1994	R 6,799	R 6,799	R 6,799	R 6,799	20
1993	R 3,592	R 3,592	R 3,592	R 3,592	21
1992	R 1,725	R 1,725	R 1,725	R 1,725	22
1991	R 0	R 0	R 0	R 0	23

This table represents the cumulative amount of child support grant income potentially received by individuals born between 1991 and 2014. We make the simplifying assumption that an individual has obtained a full year of coverage in the year that they are aged “zero” - i.e. between birth and 12 months of age. Anyone born in 1991 or before did not receive any grant income. These figures represent 2015 rands. Amounts are adjusted using CPI data supplied by StatsSA. The CPI rate used is December on December inflation, which yields quantitatively similar results to those obtained when annual average CPI is used instead.

Section 3 discusses the literature on cumulative grant receipt and human capital attainment.

### 3 Literature Review

Social assistance programmes are now common in many developing countries (Baird, Ferreira, Özler & Woolcock 2014). Their implementation comes in many different forms, whether conditional or unconditional, targeted to mothers or children, or pensioners, and subjected to means tests in the form of an income threshold. Research has been conducted on the cumulative impacts of transfers on educational attainment (measured in grade progression and repetition), and positive cash transfer effects found. However, this literature has mostly focussed on younger children (Baez & Camacho 2011). Because of the heavy prevalence of randomised controlled trials in this literature, often only short term evaluations are performed. By necessity, these are often limited to smaller communities, and thus the results are less generalisable. A heavy focus has been placed on immediate impacts such as attendance and enrolment<sup>3</sup>, leaving long term impacts of grant receipt largely unexamined (Saavedra & Garcia 2013, Barham, Macours & Maluccio 2013).

There is a need for research which evaluates the longer term impacts of these programmes, and in particular the human capital impact (Behrman, Parker & Todd 2011), a gap this paper seeks to fill. Many programmes, like the South African child support grant, only began in the late 1990s, and thus the long term impacts are only beginning to be evaluated in the past few years (Barham et al. 2013). Saavedra & Garcia (2013) perform a meta analysis<sup>4</sup> of the impact of cash transfers on educational outcomes. However the measures studied are only enrolment, attendance and drop-out. The last measure could possibly be argued to be a cumulative measure in comparison to the first two, but none of them are true cumulative measures of educational success. In addition, enrolment may not necessarily imply higher achievement - actual attendance is far more key to achievement (Woolard et al. 2012).

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<sup>3</sup>In a meta-study, Baird, Ferreira, Özler & Woolcock (2014) find that children in any type of cash transfer programme are 36 percent more likely to be enrolled at school.

<sup>4</sup>Of 42 studies in 15 developing countries.

Many positive impacts of grant receipt on child outcomes<sup>5</sup> have been found, in South Africa and in other developing countries. Enrolment gains for younger children in South Africa are unlikely to be found, as enrolment is practically one hundred percent up until the compulsory school leaving age of fifteen (Eyal, Woolard & Burns 2015). Gains have been found in older teen enrolment on CSG receipt. Transfers may be more valuable for education attainment when provided at the ages when drop-out begins (Barham et al. 2013).

The choice to invest in human capital is determined by many factors. Similar to any investment, the individual chooses between current consumption or investment for future gains. The return on investment is one of the key decision variables, as are the costs of investment, whether direct or indirect (Becker 1964). In South Africa, the returns to a completed secondary school education are high (Lam, Ardington & Leibbrandt 2011). The education production literature frames the human capital acquisition process as one of education demand, where education is a consumption good, yielding current and future benefits (Schultz 1961). Schooling costs (including books, uniforms, transport to school, and school fees) form an important part of the decision to continue with schooling, especially when the opportunity cost (wages, work in the home) may be high relative to household income (De Janvry, Finan, Sadoulet & Vakis 2006, Baird, Ferreira, Özler & Woolcock 2014). Grants which directly lower these costs may improve educational outcomes.

Only with time can a true assessment be made as to whether the gains in enrolment have led to true gains in human capital achievement (Baez & Camacho 2011). If no other inputs to the education production function change, an increase in enrolment may have only negative effects if it results in over-crowding, or simply an influx of lower ability students who would have been less likely to complete their schooling before the transfer was introduced (Baez & Camacho 2011). Some studies measure test scores (a more cumulative measure), but these are less common than those measuring attendance or enrolment (Baird, Ferreira, Özler & Woolcock 2014, Baez & Camacho 2011), and few of them find large effects.

In a programme evaluation ten years after an initial 3 years of programme receipt in Nicaragua, the authors find a large, significant, and persistent positive impact of cash

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<sup>5</sup>Such as education, health, household income level and nutrition (Baird, Chirwa, De Hoop & Özler 2014, Adato, de la Briere, Mindek & Quisumbing 2000, Attanasio & Lechene 2002, Adato & Bassett 2009)

transfer receipt on both years of schooling attained<sup>6</sup>, and achievement scores. Other studies such as the Mexican Oportunidades, have seen an increase in grades of a fifth of a year (Barham et al. 2013, Baez & Camacho 2011). Fernald, Gertler & Neufeld (2009) perform a ten year evaluation of the Oportunidades programme, however, using only a sample of 8 to 10 year olds. They use a measure of cumulative grant receipt to estimate programme impact, and find higher values associated with higher cognitive scores, lower levels of behavioural problems, and higher height for age Z scores.

Baez & Camacho (2011) use cohort analysis on a sample of older children from a conditional cash transfer programme in Colombia. Using exogenous variation in programme receipt duration, the authors find persistent positive effects of receipt on school completion, in particular for girls and recipients in rural areas, but no significant impact on test scores.

Whether continued receipt in a transfer programme has conditions attached to it or not matters for outcomes (Baird, Ferreira, Özler & Woolcock 2014). Unconditional cash transfer programmes are more common in African countries (Baird, Ferreira, Özler & Woolcock 2014). Often receipt is conditioned on proof of school enrolment. In addition, conditions apply as to who gets the grant, in the form of a means test. The administrative cost of administering a means test can be high (Budlender, Rosa & Hall 2005), or of checking conditions such as school enrolment. There is a paucity of data measuring these costs (Baird, Ferreira, Özler & Woolcock 2014). However Hall & Monson (2006) calculate this cost to be approximately 170 million rand in 2005 to the Department of Social Development, and a minimum of 24 million rand to the South African police services. No estimate is made of the administrative costs of fraud detection. The time costs for applicants are also high. Conditional programmes with very strict conditions and effective monitoring have shown much larger effects in school enrolment and attendance (De Janvry et al. 2006, Baird, Ferreira, Özler & Woolcock 2014), but very little effect on test scores and years of schooling attained. Means tests which take into account an array of household characteristics are far more likely to target the recipients who are most vulnerable<sup>7</sup> (Baez & Camacho 2011). In South Africa, not only does household size not get taken into account, misclassification of potential recipients as ineligible also

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<sup>6</sup>Recipients attain half a year of education more than non-recipients.

<sup>7</sup>In Colombia, a household survey instrument (*Sisben*) was used to determine the most in need, through the creation of an index incorporating an array of household characteristics, and this index was then used to determine programme receipt (Baez & Camacho 2011).

occurs thanks to additional (illegal) requirements for documentation, such as clinic cards, photos, or letters from a child's school (Hall & Monson 2006).

Section 4 introduces the data and methodology used in all further analysis.

## 4 Methodology

### 4.1 Data and Descriptive Statistics

We use all four waves of the South African National Income Dynamics Survey (NIDS), a nationally representative panel survey conducted in approximately two year intervals (waves) since 2008 (SALDRU 2014). The survey includes detailed information about health, welfare, education, labour force, fertility, and naturally, income (Chinhema, Brophy, Brown, Leibbrandt, Mlatsheni & Woolard 2016). Of particular interest for our analysis are the detailed education, government grant, and emotional health sections.

Table 4 contains descriptive statistics for a sample for individuals born between 1992 and 1998. It is in this sample that the greatest variation in potential duration and amount of receipt is present, and thus where the main focus of our discussion takes place. Average age is approximately 12 years in Wave 1, and increases as expected over the four waves. A similar pattern is seen for years of education, with an average value in Wave 1 of 5.5 years, and ten years in Wave 4. As expected, maternal and paternal education remain fairly consistent across the waves. Approximately eighty percent of mothers, and fifty percent of fathers are resident in the household. Turning to emotional health, we see that average rates of depression are approximately nineteen percent, with an increase in depression over the waves (in accordance with a recognised pattern in South African samples that depression levels increase with age). Other variables such as race, household size, number of grant recipients in the household, all display patterns consistent with the South African literature.

Almost half of the sample is a CSG beneficiary in Wave 1. This decreases over time as children surpass the age limit for eligibility. Means test eligibility displays a sharp increase between Wave 1 (seventy two percent) and Wave 2 (eighty percent), but then slowly falls as time passes. This decrease could be related to relative increases in caregiver income, or to the impact of the non inflation adjusted means test threshold value on income eligibility.

Table 4: Descriptive Statistics by Wave: Older Sample

Individual Descriptive Statistics by Wave				
Variables	Wave 1	Wave 2	Wave 3	Wave 4
Age	12.3	14.7	16.5	19.1
Female	0.50	0.50	0.49	0.49
Years of Education	5.47	7.19	8.65	10.1
Mother's Education	8.42	8.47	8.51	8.70
Mother is Resident in the HH	0.78	0.83	0.80	0.71
Father's Education	8.51	8.51	8.58	9.06
Father is Resident in the HH	0.49	0.54	0.54	0.49
Depressed	0.21	0.15	0.18	0.21
Mother is Depressed (CES-D 10 > 10)	0.39	0.24	0.25	0.30
Mother's CES-D 10 Score*	8.64	7.03	6.98	7.43
Father is Depressed (CES-D 10 > 10)	0.27	0.15	0.26	0.27
Father's CES-D 10 Score*	7.54	6.00	6.53	6.97
In Poor Health (Subjective)	0.05	0.02	0.02	0.03
Happier than Ten Years Ago	0.52	0.49	0.57	0.64
Satisfaction Score (1-10)	6.09	4.89	4.94	5.54
African	0.84	0.82	0.82	0.83
Coloured	0.08	0.09	0.09	0.09
Indian/Asian	0.02	0.02	0.03	0.02
White	0.05	0.07	0.06	0.07
CSG Beneficiary	0.49	0.35	0.35	0.25
Means Test Eligible	0.72	0.80	0.78	0.76
Potential Duration of Receipt	8.14	9.39	10.6	11.1
Potential Cumulative CSG Income Received	7,982	10,682	13,704	16,239
Household Size	5.50	5.80	5.44	5.03
Rural	0.49	0.49	0.46	0.42
Number of Pensioners in the Household	0.25	0.29	0.26	0.24
Number of CSG Recipients in the Household	0.61	0.68	0.82	0.72
Household Income	6,211	7,339	8,701	10,085
Household Grant Income	884	1,221	1,401	1,431
Household Expenditure	5,267	5,964	5,730	6,997
Poorest Household (Self-Perceived)	0.20	0.22	0.17	0.21
<i>Number of Observations</i>	4,535	4,535	4,512	4,498

Descriptive Statistics from the four waves of the National Income Dynamics Survey Data, weighted using the sample weights from each wave. The sample consists of individuals born between 1992 and 1998. \*The CES-D 10 is a scale used to measure depression. It ranges from zero to thirty, where zero is a complete lack of depressive symptoms, and thirty indicates the highest level of depression. A cut-off score of ten is used, where ten and above indicates the presence of mild to significant depression.

Figure 1

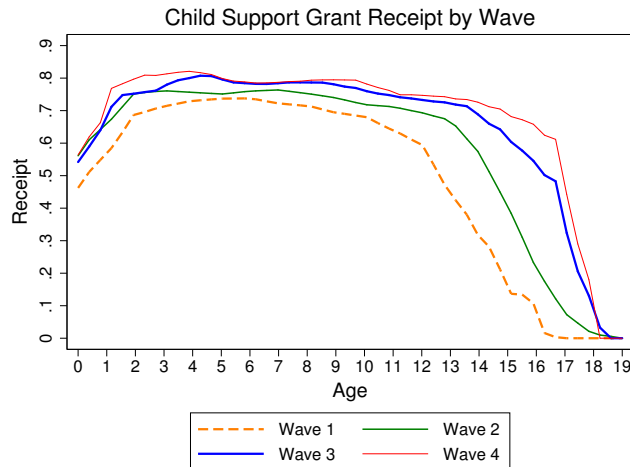


Figure 1 shows CSG receipt by Wave.

Beneficiary status is illustrated in Figure 1 by wave. The age limit increases from Wave 1 to Wave 4 are evident in the rightward shifts of the curves, and increased income eligibility and knowledge of the programme are seen in an increase in receipt from wave to wave, over the entire age distribution. In Section 6, these changes in the patterns of receipt are investigated further.

## 4.2 Means Test Verification

### 4.2.1 Calculation

We make use of the income sources reported in the NIDS to calculate both an adult and child level means test variable, which indicates either whether the person themselves qualifies for the grant according to the means test, or whether the person’s caregiver<sup>8</sup> qualifies for the grant. NIDS collects and reports many income sources, including from formal and casual wage labour, self employed labour, remittance income, all government grants, private pensions, lobola (bride price), gifts, rental or profit, and the repayment of loans (Chinhema et al. 2016). Our income measure sums these sources of income,

<sup>8</sup>The caregiver is assumed to be the mother (for younger children this is very likely), and if she is not present, the caregiver is determined through a process of considering grandparents, household heads and fathers. If mothers are absent, and if none of the above are present, the oldest woman is designated as the caregiver. This process follows that in Budlender et al. (2005) and Woolard et al. (2012), and is also modified using the NIDS data for caregiver identity.

*excluding* any government grant sources, as these are not included when the means test threshold is applied to any applicant. We create a dual income variable which reflects the joint income of all women who are formally married. Only income from officially married spouses, and not common law spouses, is supposed to be taken into account during the application process. In order to establish whether any one person qualifies for the grant from an income perspective, we calculate a "per person" joint income variable. Even if a man is earning comparatively little, if his wife has high income which raises the per person income in their marriage to above the threshold, he will not qualify. This variable is used to establish means test eligibility.

#### **4.2.2 Verification**

The difference between the intended targeting and implementation of the child support grant conducted by the South African Social Security Agency (SASSA), and the actual execution and take-up can be large (Hall & Monson 2006). With any programme, there will always be recipients who do not qualify (errors of inclusion) or non-recipients who do qualify (errors of exclusion). Woolard et al. (2012) find that a full twenty six percent of age and income eligible children in 2010 are not receiving the grant. Figure 2 shows that while the calculated measure does very well at classifying individuals, there is still non-zero CSG receipt recorded<sup>9</sup> for those who do not qualify, according to the data, as means test eligible<sup>10</sup>. However rates of receipt, and absolute numbers in the means test eligible sample are much higher than those we classify as income ineligible. For example, seventy percent of thirteen year olds classified as eligible are grant recipients, and only twenty five percent of ineligible individuals. Those not reporting any income, or those who became unemployed in the past three years, are required to submit an affidavit to that effect, including details of who is supporting them (Hall & Monson 2006). It is probable that individuals may understate their actual income in order to qualify for the grant, which would result in the non-zero rates of receipt seen in Figure 2. In certain areas, customary marriages are recognised, and dual income calculated using the income of the common-law spouse. This may be another explanation for the non-zero rates of

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<sup>9</sup>Figure 11 in Appendix Item A.1 shows that these differences are significant at the ninety five percent confidence level. Similar patterns are seen in Appendix Items A.3 and A.4, where receipt is graphed for eligible and ineligible individuals in each wave.

<sup>10</sup>In Wave 2, an estimated 300,000 beneficiaries are found to be receiving the grant despite not being means test eligible (Woolard et al. 2012).



Figure 2

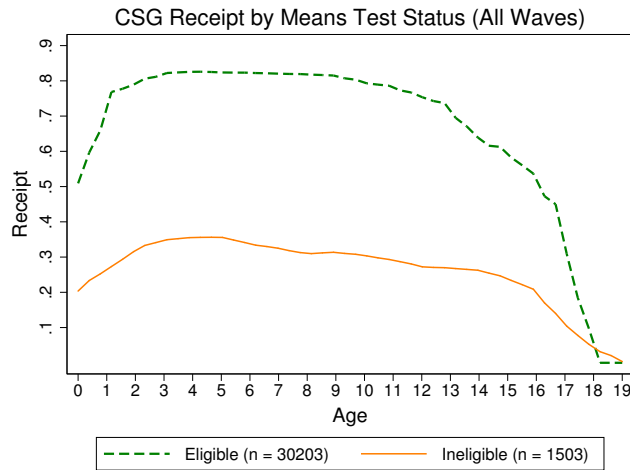


Figure 2 shows CSG receipt by Means Test Eligibility Status.

receipt seen in Figure 2, as we do not account for customary marriages in our calculation (in the vast majority of grant applications it is not recognised).

In Figure 3, child support grant receipt is graphed by “per person” caregiver income, in each wave, for a sample of caregivers aged twenty to seventy. CSG receipt is expected to fall with income, and should fall fairly substantially at the means test threshold value, if our calculated means test eligibility variable is correct. Rates of receipt do fall after the threshold value, but do not diminish to zero, for the reasons discussed above<sup>11</sup>. Given the caveats of misreported income, the shape of the graph is possibly more important than its absolute position, and the shape does correspond to the pattern expected if the means test value is being adhered to when applications are considered.

A similar graphical analysis is conducted for a sample of very young children, aged two and below. Child receipt is graphed against caregiver income in Wave 4, and similar results are found. The sample is selected because the application for the child would have occurred recently, and thus the patterns of receipt should be as expected, with a fairly large drop-off at the means test threshold. This can be seen in Figure 4. Receipt declines, as expected, with caregiver income, and has a fairly sharp drop-off at the threshold value. Non-zero rates of receipt are recorded after the threshold, again indicating inclusion errors, or misreporting of income on application. We would expect to see a similar,

<sup>11</sup>Appendix Item A.6 shows these graphs for all four waves, and the same patterns are evident.

Figure 3

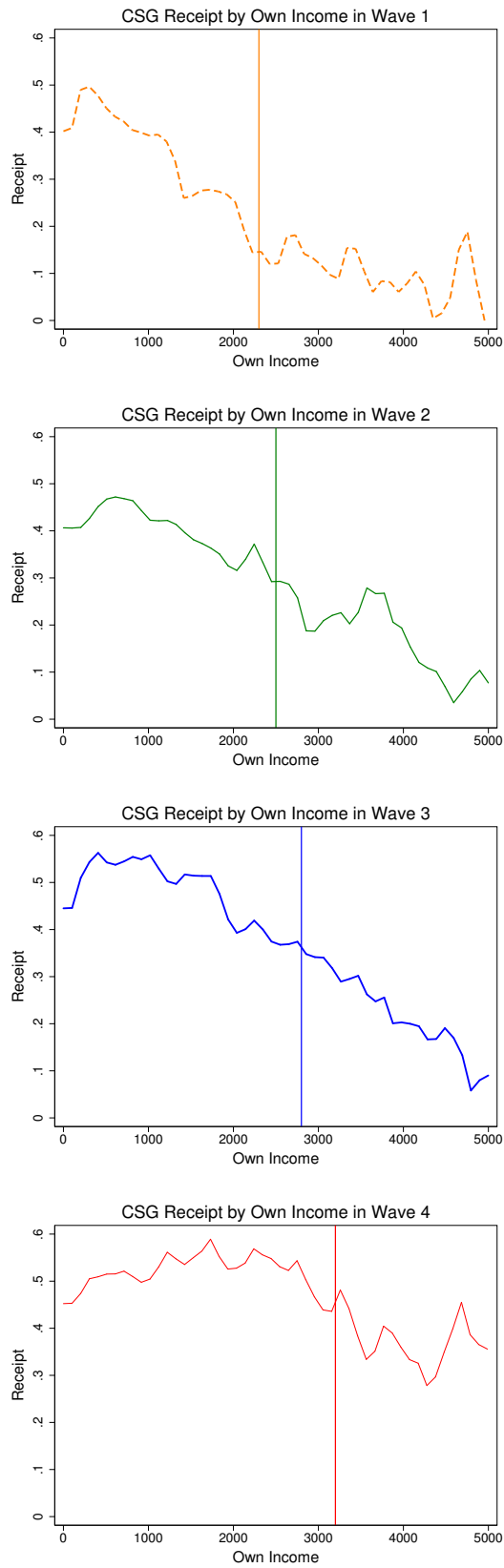


Figure 3 shows CSG receipt by own income for female caregivers aged 20 to 70 years old, by wave.

Figure 4

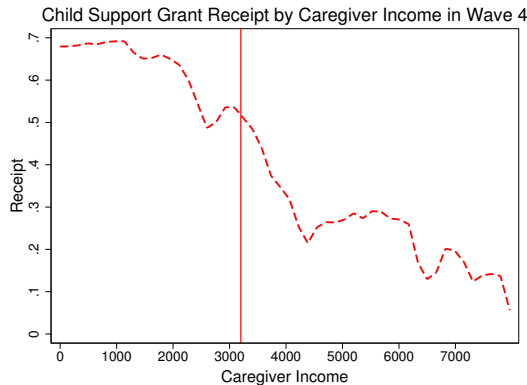


Figure 4 shows CSG receipt by caregiver income in Wave 4: 0 to 2 year olds.

although not as distinct, relationship between receipt and caregiver income for a sample of older children, as many of the older children would not have had their means eligibility checked recently. Further checks replicating this analysis are performed for a sample of children aged from birth to eighteen years of age yield and the results are as expected<sup>12</sup>. Receipt declines with caregiver income, but there is no sharp drop-off in receipt at the threshold.

The discrepancy between income reported when applying for the grant, and the income sources reported in the NIDS necessitates the inclusion of controls for household income in any estimates of grant impact, to mitigate the potential impact of misclassification. In addition, estimates are performed both on the means test eligible sample and the entire sample under discussion, and the differences compared for signs of sample selection.

### 4.3 Identification

Identification of non-RCT programme effects can be complicated, and has often been performed through evaluating randomness generated by programme implementation errors (Baird, Ferreira, Özler & Woolcock 2014) or gradual programme roll-out and expansion of an age threshold. The manner in which the CSG is made accessible to beneficiaries lends itself to the same type of quasi-experimental analysis. The unexpected pattern of age threshold increases from 1998 to 2012, and the sudden doubling in means test threshold

<sup>12</sup>In Appendix Item A.5, Figures 16 and 17 combine these graphs for all 4 waves, and the much sharper drop-off can again be seen in the sample of younger children aged 0 to 2.

value in 2008, both create exogenous variation in receipt, which can be used to identify grant impact. In addition, the similarity between individuals just on either side of the income threshold, who differ only by recipient status, can also be exploited.

To identify the samples for analysis, balancing tests are performed across band eligibility brackets in the pooled dataset. That is, all four waves are pooled together and means are tested for statistically significant differences by whether the individual is below or above the means test threshold at a specific cut off point. From Table 5, the bands are restricted to R100, R300, R700 and R1 000 monthly income above and below the threshold. Age differs significantly, but only slightly across the means test threshold, with those reporting income below the threshold on average older than those above, except in Wave 4. The difference is not large, but does indicate any estimates must control for age. Those just under the threshold do report significantly more waves of CSG receipt, which is to be expected. Those above the band would not be expected to record zero numbers of waves, as an individual above the threshold in one wave could definitely be below it in another wave, especially in the smaller bands. The number of CSG recipients is significantly higher (but only at the ten percent level) in the R100 band. These are the only statistically significant differences in characteristics between the R100 and R300 bands. The economic difference between these characteristics is marginal. This suggest that the two groups are most similar in characteristics as far as R300 above and below the means test threshold.

Moving the band to R700 and R1,000 leads to a greater number of differences, as expected. One reason is that for the threshold of, for instance R1,100, being at either end of the R1,000 band is either almost a doubling of income or an income of zero, which implies the comparison of two groups very different socio-economically. In addition, the amount received from the CSG at its largest (R330) is only a sixth of the income received by the top earners in the bands. That is, a grant recipient would earn around R1,400, at best, while the top earners would have an income of R2,200 without the grant. At low levels of income, this is a large difference.

The differences, although statistically significant, are generally small in economic terms with the noteworthy exceptions of depression rates (twenty three percent R1,000 below the band and sixteen percent R1,000 above the band, mother's years of schooling attained (ten years and eleven years respectively)and poor health (eighty three percent

Table 5: Balancing Tests of Mean Characteristics by Band Size

<i>Characteristics</i>	Balancing Tests											
	R 100			R 300			R 700			R 1,000		
	Below	Above	Sig.	Below	Above	Sig.	Below	Above	Sig.	Below	Above	Sig.
Age	9.12	7.53	**	8.97	8.28	**	8.83	8.72	**	8.73	8.98	**
Female	0.46	0.55		0.49	0.55		0.50	0.51		0.51	0.51	
Years of Schooling	3.67	2.70		3.51	3.11		3.36	3.44		3.30	3.62	
Rural	0.24	0.17		0.29	0.29		0.32	0.28		0.33	0.25	***
Mother's Education	10.8	11.3		10.7	11.0	**	10.2	10.9	**	10.0	11.1	***
Mother is Resident in the HH	0.86	0.89		0.86	0.87		0.85	0.86		0.84	0.87	
Father is Resident in the HH	0.42	0.50		0.40	0.44		0.39	0.45		0.38	0.45	**
Father's Education	10.4	11.5		9.9	10.7		9.9	10.6		9.94	10.7	**
Depressed	0.29	0.24		0.20	0.23		0.25	0.20		0.23	0.16	*
Mother is Depressed (CES-D 10 > 10)	0.26	0.40		0.22	0.37		0.26	0.28		0.28	0.28	
Father is Depressed (CES-D 10 > 10)	0.27	0.08		0.22	0.15		0.19	0.14		0.19	0.17	
In Poor Health (Subjective)	0.05	0.08		0.05	0.05		0.05	0.04		0.05	0.05	
African	0.77	0.82		0.78	0.85		0.82	0.76		0.83	0.76	**
Coloured	0.09	0.09		0.10	0.10		0.10	0.16	**	0.10	0.13	**
Indian/Asian	0.04	0.01		0.03	0.00		0.02	0.02		0.02	0.02	
White	0.09	0.08		0.10	0.05		0.07	0.06		0.05	0.08	
CSG Beneficiary	0.47	0.39		0.50	0.49		0.54	0.43	***	0.56	0.43	***
Potential Duration of Receipt	7.86	7.63		7.89	7.66		7.75	7.86		7.64	7.99	**
Potential Cumulative CSG Income Received	11,900	11,755		12,287	12,063		11,959	12,056		11,759	12,486	**
Caregiver Income	2,889	2,793		2,677	2,801		2,319	3,118	***	2,128	3,435	***
Number of Waves Received	0.74	0.48	**	0.85	0.78	**	0.90	0.70	***	0.91	0.77	*
Household Size	4.97	4.87		5.02	5.06		5.20	5.30		5.14	5.21	
Number of Pensioners in the Household	0.19	0.19		0.17	0.21		0.19	0.22		0.18	0.20	
Number of CSG Recipients in Household	0.71	0.49	*	0.75	0.62		0.77	0.61	***	0.78	0.59	***
Household Income	6,648	6,688		6,387	7,338		6,096	8,040	***	5,686	8,426	***
Household Grant Income	912	939		881	986		922	1,025		928	995	
Poorest Household (Self-Perceived)	0.21	0.15		0.16	0.13		0.16	0.11	**	0.17	0.11	***
<i>Number of Observations</i>	447	202		1,256	684		2,859	1,337		4,476	1,745	

Notes: This table tests for significant differences in mean characteristics by income band size. Four samples are used – those of individuals either R100, R300, R700 and R1,000 above and below the means test threshold. The data comprises all four waves of the National Income Dynamics Survey Data, weighted using the sample weights from each wave. The sample consists of individuals born between 1992 and 2015, who were in the R1,000 band in the first wave of the NIDS. \*The CES-D 10 is a scale used to measure depression. It ranges from zero to thirty, where zero is a complete lack of depressive symptoms, and thirty indicates the highest level of depression. A cut-off score of ten is used, where ten and above indicates the presence of mild to significant depression. Significance levels: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

and seventy six percent). All of these differences, and other more predictable ones such as household income, are considered and controlled for in all subsequent analysis. The sample is favourable due to its size and will be the band under examination for the remainder of this paper.

Due to the age eligibility changes, potential exposure to the grant differs dramatically across certain ages. Figure 5 maps the potential duration of CSG receipt in Wave 4 by birth year. We can see that, for example, children born in 1994 could have been exposed to approximately five years of CSG receipt. The differences in duration reflect either changes made to the age limits for grant eligibility or, in cases where children are below the age limit, the age of the child in Wave 4. The largest gap is between children born in 1994 and 1996.

This gap in duration is reflected in cumulative grant receipt where children born in 1998 accumulate approximately R10 000 in CSG receipts over their eligible life, while children born in 1996 accumulate approximately R20 000. Figure 6, cumulative amount by birth year in Wave 4, mirrors Figure 5, as expected.

Figure 5

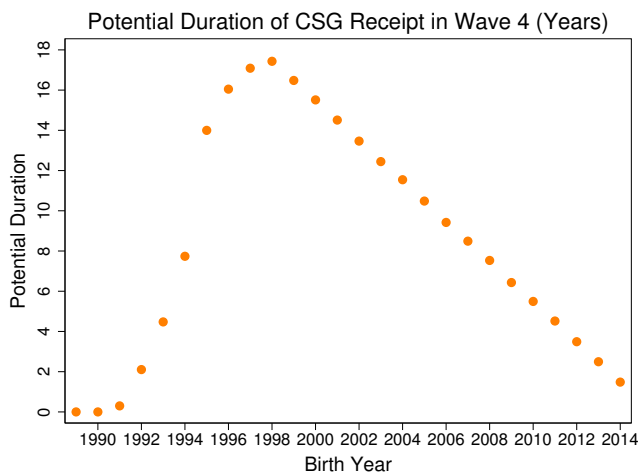


Figure 5 shows potential duration of receipt in Wave 4, by birth year.

Figure 6

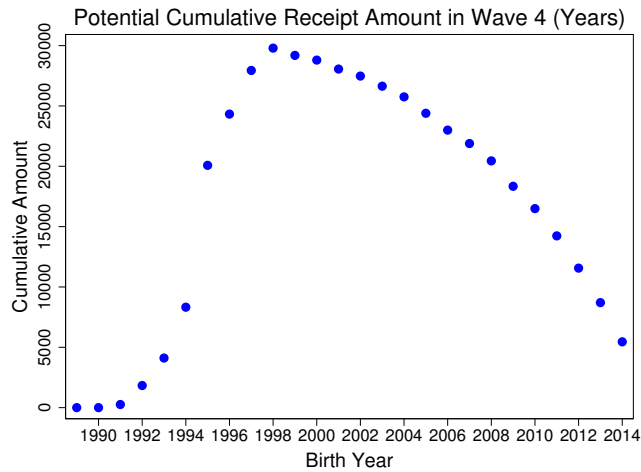


Figure 6 shows potential cumulative income received by Wave 4, by birth year.

As expected, cumulative income increases by wave as potential duration, CSG income amount, and age limit increase. This is shown in Figure 7.

Figure 7

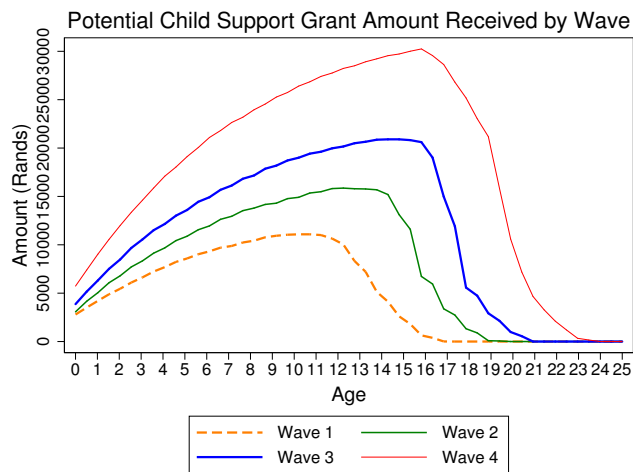


Figure 7 shows potential cumulative income received in all four waves.

Section 5 presents the results of estimates of the cumulative effect of grant receipts in a number of samples.

## 5 The Forgotten In-Betweeners

We estimate the impact of potential CSG income received for the sample of individuals born between 1992 and 1998, using the following specification:

$$Y_{iht} = \beta_0 + \beta_1 CSGInc_{iht} + \beta_2 X_{iht} + \beta_3 HH_{ht} + \beta_4 G_{ht} + \beta_4 T_t + e_{iht} \quad (1)$$

$Y_{iht}$  represents years of schooling for an individual  $i$ , in household  $h$ , and time  $t$ , where  $t = 1, 2, 3, 4$ .  $CSGInc_{iht}$  is a measure for potential CSG income received by individual  $i$ , the  $X_{iht}$  are a set of individual characteristics, including gender, age, maternal education, employment status and depression, a race variable, and other key characteristics.  $HH_{ht}$  includes household level variables such as household size, household income, and the gender of the household head.  $G_{ht}$  is a vector of indicators for rural or urban status, and province,  $T_t$  is a set of controls for wave.  $e_{iht}$  is an idiosyncratic error term. Income variables are included in the inverse hyperbolic sine transformation, a measure which both allows for ease of interpretation<sup>13</sup>, and preserves sample size.

Table 6 presents the results of the estimation of (1) using ordinary least squares, using the pooled data set for all four waves of the NIDS. In addition to the birth year restriction, the sample is limited to Black African and Coloured children, who are means test eligible for the grant. This sample selection is motivated by the fact that incomes are the lowest in these two population groups, and rates of receipt the highest (Woolard et al. 2012). Column (1) presents the results of an estimation of equation 1, excluding all individual and household controls. The coefficient on CSG Income is negative, which is to be expected in a model which does not control for age. In this sample, the more CSG income an individual has potentially received, the younger they are, and thus the lower we expect their years of schooling to be. Controlling for age is crucial, and when this is done, from Column (2) onwards, CSG income is seen to have a positive and significant<sup>14</sup> effect on years of schooling. Adding age, gender, and race controls in Column (2) immediately raises the R-squared value, to 0.61, a phenomenon we would expect to see for the inclusion of these crucial determinants of education.

The coefficient suggests that a one percent increase in cumulative CSG amount re-

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<sup>13</sup>Coefficients on CSGInc (IHS form) can be interpreted as the change in years of schooling, when CSGInc is increased by one percent (Burbidge, Magee & Robb 1988).

<sup>14</sup>At the one percent level.



Table 6: Years of Schooling Estimates

Determinants of Years of Schooling				
	(1)	(2)	(3)	(4)
Potential Cumulative CSG Income Received (IHS) <sup>+</sup>	-0.71*** (0.02)	0.20*** (0.02)	0.30*** (0.03)	0.30*** (0.04)
Age in Years		0.67*** (0.00)	0.71*** (0.01)	0.72*** (0.02)
Female		0.58*** (0.03)	0.58*** (0.03)	0.58*** (0.04)
African		-0.01 (0.06)	0.00 (0.06)	0.05 (0.07)
Mother's Education				0.10*** (0.01)
Mother is Depressed				-0.09** (0.04)
Mother's Age				0.02*** (0.00)
Mother is Employed				0.11*** (0.04)
Household has a Female Head				-0.08** (0.04)
Household Size				-0.01* (0.01)
Household Income (IHS) <sup>+</sup>				0.05* (0.03)
Rural				0.02 (0.05)
Province		X	X	X
Wave			X	X
Constant	14.75*** (0.21)	-5.24*** (0.21)	-6.70*** (0.45)	-8.77*** (0.64)
Observations	16,115	16,107	16,107	8,891
R-squared	0.06	0.61	0.61	0.63
F-Stat	1137	2077	1837	772.2

This table presents estimates of the determinants of years of schooling, in a number of different specifications, using Waves 1 to 4 of the National Income Dynamics Survey. The sample consists of African and Coloured individuals born between 1992 and 1998, and thus aged between sixteen and twenty two in 2014 (Wave 4 of NIDS). <sup>+</sup>All income variables are included in the inverse hyperbolic sine transform. Robust standard errors are reported in parentheses. Significance levels: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

ceived leads to third of a year increase in years of schooling attained. This is a large effect. To verify this coefficient, these estimates are replicated using a log-log model, resulting in a coefficient which can be interpreted as an elasticity. The coefficient on cumulative CSG income (in log format) is 0.1, significant at the one percent level, and stable across the different samples. This implies that a one percent increase in cumulative CSG income raises years of schooling by 0.1 percent. This does not seem like a large amount until we consider that CSG income changes by large percentages over the years, due to the age-threshold changes. In 2014, for individuals born between 1994 and 1995, cumulative CSG income differs by R13,244, which is a 194 percent increase on the 1994 amount of R6,799. The difference in schooling across individuals born in both years would be predicted to be nineteen percent. The coefficient is robust to inclusion of a range of determinants including mother and household characteristics. Female students achieve a little more than half a year of education than their male counterparts.

An additional year of schooling for mothers increases child schooling by one tenth of a year, as does having an employed mother. Having a depressed mother decreases schooling by almost the same amount (0.9). As mothers age by a year, child's schooling increases by 0.02 years<sup>15</sup>. Average schooling is lower in households with female heads (nearly a tenth of a year). No difference in years of schooling attained is seen between African and Coloured students.

The specification in Column (4) is used to estimate the CSG income effect in a number of sub-samples (see Table 7). The use of these sub-samples is motivated by the patterns discussed in Section 4.3. The first sample in Column (1) is the means test eligible sample - those individuals in each of the four waves who are income eligible in that wave to obtain the grant<sup>16</sup>. This is the sample used in Column (4) of Table 6. The second sample is those who are means test eligible in Wave 1, and the third those in the R1,000 band around the means test threshold value in Wave 1. The coefficient of interest on cumulative CSG income is significant at the one percent level in all samples, and stable at approximately a quarter of a year in all samples. Limiting the sample to the ages we select, and these respective sub-samples, yields an near random measure of CSG receipt, conditional on individual characteristics.

Section 6 explores one potential mechanism through which CSG receipt may be work-

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<sup>15</sup>These effects are significant at the one, one, five and one percent levels respectively.

<sup>16</sup>Means test eligibility is positively correlated in each wave - a correlation of approximately 0.60.

Table 7: Years of Schooling Estimates: Selected Sub-Samples

Years of Schooling Estimates: Selected Sub-Samples				
	Means Test Eligible	Means Test Eligible Wave 1	Eligibility Band Wave 1	All
	(1)	(2)	(3)	(4)
Potential Cumulative CSG Income Received (IHS) <sup>+</sup>	0.30*** (0.04)	0.26*** (0.05)	0.25*** (0.07)	0.26*** (0.04)
Age in Years	0.72*** (0.02)	0.72*** (0.02)	0.75*** (0.03)	0.73*** (0.01)
Female	0.58*** (0.04)	0.59*** (0.04)	0.40*** (0.06)	0.52*** (0.03)
African	0.05 (0.07)	0.07 (0.09)	-0.06 (0.10)	-0.00 (0.06)
Mother's Education	0.10*** (0.01)	0.10*** (0.01)	0.12*** (0.01)	0.10*** (0.00)
Mother is Depressed	-0.09** (0.04)	-0.12*** (0.04)	-0.09 (0.07)	-0.10*** (0.04)
Mother's Age	0.02*** (0.00)	0.03*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Mother is Employed	0.11*** (0.04)	0.12*** (0.04)	-0.01 (0.06)	0.13*** (0.03)
Household has a Female Head	-0.08** (0.04)	-0.09** (0.04)	0.05 (0.07)	-0.06* (0.03)
Rural	0.02 (0.05)	-0.00 (0.05)	0.07 (0.07)	0.01 (0.04)
Household Size	-0.01* (0.01)	-0.01 (0.01)	-0.04*** (0.01)	-0.01*** (0.01)
Household Income (IHS) <sup>+</sup>	0.05* (0.03)	0.03 (0.03)	0.10** (0.04)	0.08*** (0.02)
Constant	-8.77*** (0.64)	-8.33*** (0.72)	-8.65*** (1.10)	-8.61*** (0.56)
Observations	8,891	7,069	2,502	10,692
R-squared	0.63	0.64	0.71	0.65
F-Stat	772.2	638.7	323.7	1034

This table makes use of the National Income Dynamics Survey, Waves 1 through 4, to estimate the impact of the cumulative potential child support income on years of schooling in the older sample. The sample consists of African and Coloured individuals born between 1992 and 1998. Column (3) contains a sub-sample of individuals whose caregivers reported an income within either a thousand rand above or below the means test threshold in Wave 1. Robust standard errors are reported in parentheses. Variables for province and wave are included in all four specifications but are not reported here. <sup>+</sup>Both income variables are included in the inverse hyperbolic sine transformation, and thus can be interpreted as the impact of a one percent change in the variable in question. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

ing to improve child education.

## 6 At The Mother's Knee

*Education commences at the mother's knee, and every word spoken within hearsay of little children tends toward the formation of character<sup>17</sup>.*

Section 5 has shown that the cumulative impact of grant receipt on education is large and significant. Understanding the causal chain through which grants impact on educational attainment is important. Children do not receive the grant directly, rather their primary caregivers receive the money and decide how to allocate it. The vast majority of caregivers are women, and the vast majority of CSG recipients are the mothers of the beneficiaries<sup>18</sup>. Decisions that mothers make about how the CSG is spent are key to whether or not positive impacts are seen in child outcomes.

A large body of literature exists on the differential consumption patterns of men and women (Bourguignon, Browning, Chiappori & Lechene 1993). Men tend to spend extra income on personal consumption, while women direct additional income to spending on nutrition and education, particularly for children (Thomas 1990, Duflo 2000). The younger the child when grant receipt begins, the more powerful and long lasting the impacts may be.

Programme evaluation has tended to focus on tangible outcomes such as schooling, poverty, health, or labour force participation, with very little attention being paid to non-tangible elements such as mental health and well-being (Samuels & Stavropoulou 2016). Child outcomes are often the sole focus of programme evaluation, leaving the all important mother child transmission element out of the analysis.

Two questions are pertinent. Do grants, or positive socio-economic status changes in general, improve mental health, and does improved mental health lead to bettered education outcomes? Many studies have shown improvements in mental health on receipt of cash transfers, for example in Latin American countries, (Samuels & Stavropoulou 2016), in South Africa (Case 2004, Eyal & Burns 2015), in Kenya and in Malawi (Baird, De Hoop & Özler 2013). In more general terms, lower income has been tied to worse

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<sup>17</sup>Hosea Ballou

<sup>18</sup>In Wave 2 of the NIDS, Woolard et al. (2012) find that 98.3 percent of recipients are women

mental health (Patel & Kleinman 2003, Lund, Breen, Flisher, Kakuma, Corrigan, Joska, Swartz & Patel 2010) and in particular caregivers' mental health (Chhagan, Mellins, Kauchali, Craib, Taylor, Kvalsvig & Davidson 2014).

Extensive literature exists tying maternal<sup>19</sup> characteristics such as education to key child outcomes, for example infant health and mortality (Cleland & Van Ginneken 1988), education (Burns & Keswell 2012) and others. Maternal mental health is also associated strongly with child outcomes<sup>20</sup>, such as years of schooling, child mental health (Ensminger et al. 2003), and birth weight (Tomita, Labys & Burns 2015).

A key channel through which cash transfers improve mental health is through the alleviation of financial stress (Samuels & Stavropoulou 2016, Fernald et al. 2009). An improved financial position also increases female bargaining power (Doss 2013). This is seen in CSG recipients in South Africa, who are slowly becoming the main decision makers regarding where children go to school (Eyal 2016).

The NIDS contains a detailed set of questions on physical health and income, and an emotional health section<sup>21</sup> (Chinhema et al. 2016). Depression is calculated from the CES-D 10 scale<sup>22</sup> (Radloff 1977). The scale has been validated for use in the South African population in a number of studies (including the NIDS) (Eyal & Burns 2015) and is internally consistent.

Identifying overall causal<sup>23</sup> pathways between receipt and mental health (whether mother's or child's) is difficult (Samuels & Stavropoulou 2016). The large unexpected variation in the means test threshold between Waves 1 and 2 helps with identification. Duflo (2000) estimates the impact of differential exposure to the old age pension in South

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<sup>19</sup>Paternal mental illness does also impact on children (Eyal & Burns 2015). However, (see Table 11), fathers are resident in only forty percent of households on average, compared to mothers, who are resident in eighty percent of households. Examining the impact of paternal mental health thus limits the sample significantly. In addition, fathers are very rarely grant recipients (Woolard et al. 2012).

<sup>20</sup>Whether through genetic or environmental linkages.

<sup>21</sup>NIDS is a valuable resource given that the last nationally representative survey (the South African Stress and Health Study) on the mental health of South Africans took place in 2001/2. In addition, datasets containing mental health data often have very little information about the socio-economic status of sufferers of mental illness, and those containing information about socio-economic status rarely capture information about mental health (Ardington & Case 2010).

<sup>22</sup>This self-reported scale is calculated using ten questions about different aspects of mental health, including quality of sleep, ability to function, physical functioning, and measures of sadness and hopelessness (Radloff 1977). The highest possible score is thirty, and the lowest zero, where zero indicates a complete lack of depressive symptoms. From this scale, a depression measure is calculated. A cut-off score of ten is used, where ten and above indicates the presence of mild to significant depression (Radloff 1977).

<sup>23</sup>Causality may run both ways between income and mental health (Lund et al. 2010).

Africa on child height, using non-parametric estimates to allow the child health/exposure relationship to take on the least restrictive format possible. This approach allows the visualisation, and significance testing of differences in outcomes between two states.

We make use of this approach to show the impact of the exogenous expansion in child support grant receipt between Wave 1 and 2 on rates of receipt, and on maternal depression.

These functions are estimated<sup>24</sup> separately for each of the wave pairs, showing the change in predicted receipt and maternal depression from Wave 1 to 2, 2 to 3, and 3 to 4. The results are shown in Figures 8, 9 and 10.

Two major positive changes in receipt are evident. The first increase is due to the increase in the age limit over the waves<sup>25</sup>, and the second is that which can be attributed to the Wave 2 means test change. In the top figure of Figure 8, we see the increase in CSG receipt for nearly the entire age distribution from Wave 1 to 2, which we attribute to the means test amount more than doubling for those in urban areas, and almost tripling for those in rural areas. Infants are recorded with rates of receipt ten percentage points higher in Wave 2 than in Wave 1. These differences are also apparent in the summary statistics in Appendix Table 11, where rates of CSG receipt<sup>26</sup> jump from fifty six percent to sixty eight percent from Wave 1 to 2, and then level off at approximately seventy percent in Waves 3 and 4. The differences in distribution are very dis-similar when we compare Waves 1 to 2 to 2 to 3 and 3 to 4. CSG receipt does increase overall from Wave 1 to Wave 4, but only from Wave 1 to 2 is there a large and significant difference over so much of the age distribution, and in particular for children aged three and under<sup>27</sup>.

We now move to examine changes in maternal depression. They are the inverse of the receipt patterns seen above. In Appendix Table 11, average maternal depression drops significantly from a Wave 1 figure of thirty six percent to twenty four percent in Wave 2,

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<sup>24</sup>The estimation equation is:  $Z_i = f(Age_i) + \delta_i$ , where  $i$  denotes an individual,  $Z_i$  denotes either receipt or maternal depression, and  $Age_i$  is the age of individual  $i$ .  $\delta_i$  is an error term, where  $\delta_i \sim i.i.d.[0, \sigma_\delta^2]$ , and  $f()$  is the un-specified regression function (Cameron & Trivedi 2009). The local polynomial regression results are reported.

<sup>25</sup>The bottom two figures of Figure 8 show the impact of the increase in age limit on receipt, as evidenced by the the significant differences in receipt for thirteen to eighteen year olds in from Wave 2 to 3, and 3 to 4.

<sup>26</sup>These rates of receipt in Table 11 are for those aged from birth to five years of age, and thus the increase cannot be attributed to the upwards increase in the age limit. Table 11 in Appendix Item A.10 examines descriptive statistics for the sample of African and Coloured children aged from birth to five years of age in Wave 1. As in the older sample, this sample contains the highest rates of receipt, and lowest average household income. For a full discussion of these summary statistics, see A.10

<sup>27</sup>Where expansion in the age limit can be ruled out as a confounding factor.

Figure 8

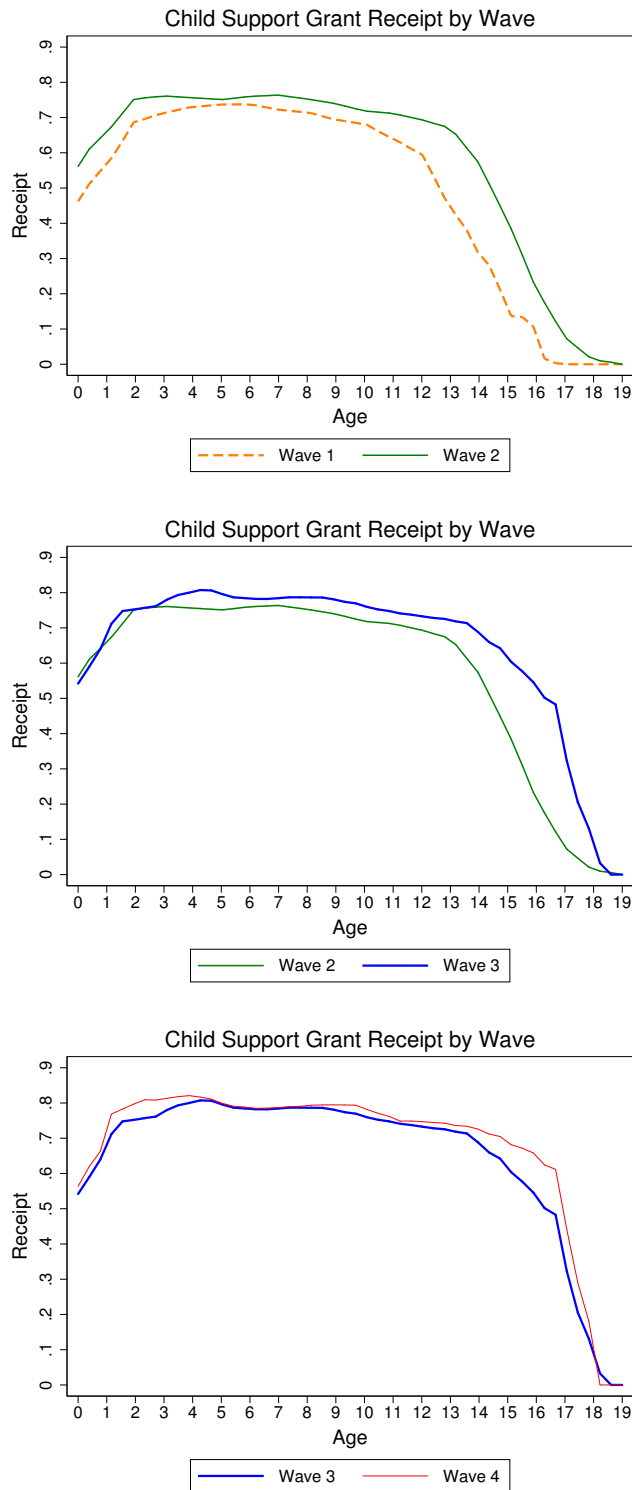


Figure 8 shows CSG receipt changes between waves.

Figure 9

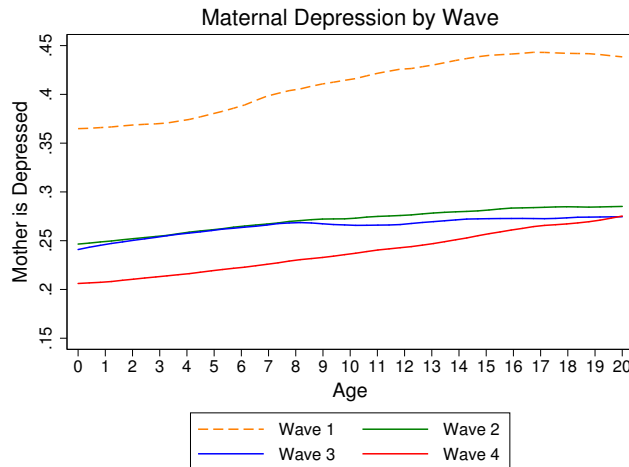


Figure 9 shows maternal depression by Wave.

a significant reduction of thirty three percent. Maternal depression levels then stabilise from Wave 2 onwards at approximately twenty five percent. Figures 9 and 10 graph these differences across the child age distribution. Maternal depression drops significantly for mothers of children across the entire age distribution, between Waves 1 and 2. Maximum depression in Wave 1 is forty five percent, and in Wave 4 is twenty five percent, a large difference by any metric.

These results are now verified in parametric estimates of the determinants of maternal depression in Table 8, using a sample of mothers with youngest child aged three or below<sup>28</sup>. CSG receipt is shown to significantly decrease depression in mothers by between seven and fourteen percentage points, with larger effects the more children the mother has.

Endogeneity of grant receipt may well be a concern - mothers who are pro-active<sup>29</sup>, and get the grant earlier than other mothers, may also have better mental health. Thus CSG receipt may positively correlate with mother "quality", especially for younger children. In this case, the CSG coefficient would be biased negatively, and thus may be smaller than it

<sup>28</sup>It is usually the age of the youngest child which forms the most binding constraint on a woman's ability to work or look for work. Older children are in school, for which the costs are much lower, especially if the child attends a no fees school, which many CSG beneficiaries do. Younger children require day care, which the mother must be able to fund from any income earned. Having an older child who is receiving the CSG is less important to a mother's decision making than the youngest child reporting receipt.

<sup>29</sup>Agüero et al. (2006) create a measure of the "eagerness" of the mother and find that this does positively impact on the outcomes of the children of those mothers.



Figure 10

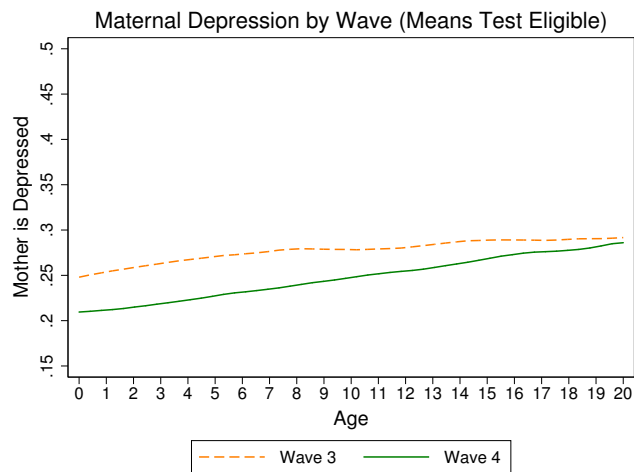
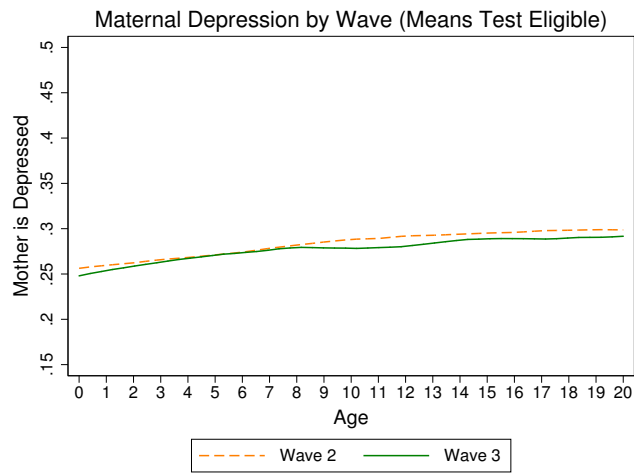
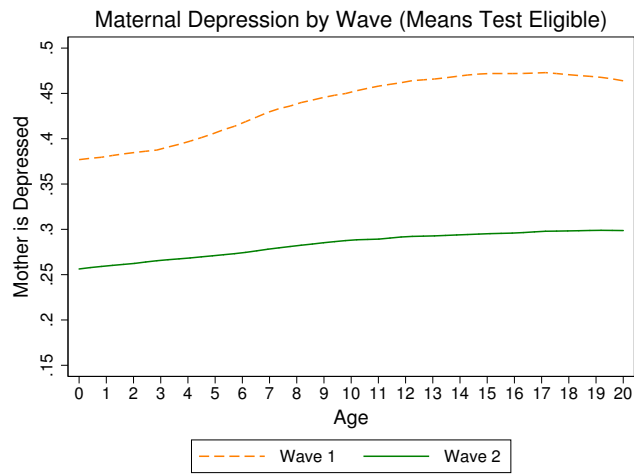


Figure 10 shows the changes in maternal depression by wave, in the means test eligible sample.

Table 8: Maternal Depression Estimates

Determinants of Maternal Depression: Wave 4					
	All	Means Test Eligible	1 Child	2 Children	3 or more Children
	(1)	(2)	(3)	(4)	(5)
CSG Recipient	-0.07*** (0.02)	-0.09*** (0.02)	-0.05* (0.03)	-0.11** (0.05)	-0.14*** (0.05)
In Poor Health (Subjective)	0.14*** (0.05)	0.13** (0.05)	-0.00 (0.08)	0.33*** (0.11)	0.10 (0.08)
Age of Youngest Child	-0.00 (0.01)	0.01 (0.01)	-0.01 (0.02)	0.03 (0.02)	0.01 (0.02)
Number of Children	0.00 (0.01)	0.01 (0.01)			0.03 (0.02)
Age in Years	0.00 (0.01)	0.01 (0.01)	0.03 (0.03)	-0.01 (0.03)	-0.05* (0.03)
Age in Years Squared	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00* (0.00)
Years of Schooling	-0.01 (0.00)	-0.00 (0.00)	-0.02** (0.01)	-0.01 (0.01)	0.01 (0.01)
African	0.17*** (0.04)	0.21*** (0.04)	0.31*** (0.06)	0.18** (0.08)	0.11 (0.07)
Economically Active	-0.03 (0.02)	-0.02 (0.02)	0.03 (0.03)	-0.07* (0.04)	-0.04 (0.03)
Pensioner Household	-0.01 (0.02)	-0.01 (0.02)	0.02 (0.03)	-0.07** (0.04)	-0.02 (0.04)
Household Income (IHS) <sup>+</sup>	0.00 (0.01)	0.01 (0.01)	0.01 (0.02)	0.01 (0.03)	0.03 (0.03)
Household Size	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.00)
HH Perception of Domestic Violence	0.06** (0.03)	0.06** (0.03)	0.02 (0.04)	0.08 (0.05)	0.08* (0.05)
Constant	0.27 (0.17)	0.10 (0.19)	-0.00 (0.36)	0.49 (0.48)	0.62 (0.56)
R-squared	0.04	0.05	0.07	0.10	0.08
F stat	2.89	3.50	2.54	3.31	2.26
Mean	0.20	0.20	0.20	0.21	0.21
Percentage Change	-32%	-43%	-25%	-54%	-69%
New Depression Risk	0.14	0.12	0.15	0.10	0.06
Depression Reduction Factor	0.68	0.57	0.750	0.46	0.31
Observations	2,194	1,954	807	544	603

This table uses a sample of African and Coloured mothers in Wave 4 of the National Income Dynamics Survey to investigate the determinants of maternal depression. Columns 2 to 5 are estimated using the means test eligible sample, with a breakdown into sub-samples in Columns 3 to 5. The mean depression levels are reported, as well as the percentage change in depression levels attributed to CSG receipt. The new depression risk after including the CSG coefficient is reported, as well as the depression reduction factor. For example, in Column 4, mean depression levels are twenty one percent. The coefficient on CSG receipt is -0.11, thus the percentage change in mean depression is minus fifty four percent. The new depression risk accounting for CSG receipt is ten percent, and the depression reduction factor shows that CSG receipt lowers the risk of depression by more than half. Robust standard errors are reported in parentheses. Significance levels are indicated as follows: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All estimates include binary controls for each province (excluding the Western Cape).

really is, implying the CSG may not have the beneficial impact on maternal mental health that these results suggest. We control for maternal age, education, and self-perceived health, key criteria strongly associated with the quality of a mother’s parenting (Aguero et al. 2006). Given increasing knowledge of the programme, and the high rates of receipt in the younger ages<sup>30</sup>, the effect/presence of “eagerness” in mothers may be less of a phenomenon in 2014 than in previous years.

We interrogate these estimates for robustness in a number of ways. Extension of the sample to mothers whose youngest child is aged five or below<sup>31</sup>, or sample restriction to those mothers with children aged below 2, yields similar results (in both size and significance) to those seen in Table 8. Uncontrolled estimates which exclude all controls<sup>32</sup>, especially the key variables of maternal age or number of children, still reveal the same strong, negative and significant coefficients. Logit estimates reveal significant odds ratios between 0.43 and 0.66. of the CSG impact on depression. This robustness to specification and sample changes implies that the assumption of conditional random assignment of grant receipt may be a reasonable one.

It appears to be a reasonable assumption that grant receipt lowers maternal depression. Does this positive change in mothers’ mental health translate to improved human capital? Answering this question using data analysis is beyond the scope of this paper, and thus only a discussion of the literary evidence in South Africa and elsewhere is presented here. In South Africa, higher levels of maternal depression have been found to be associated with lower levels of human capital attainment<sup>33</sup> among older teens (Eyal 2016). Teens who have a depressed mother have attained as much of a third of a year less education than those with healthy mothers, a fairly large effect. The impact of a growing up with a persistently depressed mother<sup>34</sup>, with all its negative associations, is likely to be cumulative, and to be reflected in cumulative measures such as educational attainment. In other countries, poor maternal mental health is associated strongly with lowered

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<sup>30</sup>It can be seen in Figure 8 in Section 4 that just under eighty percent of children aged 2 in Wave 4 are receiving the grant.

<sup>31</sup>These results are not reported here.

<sup>32</sup>Except for province dummies.

<sup>33</sup>However enrolment rates are not significantly different among teens who do and do not have a depressed mother, or are or are not depressed themselves. Child depression, which tends to manifest as children enter into adolescence, would have a smaller cumulative effect.

<sup>34</sup>This is likely if depression rates remain constant among mothers, and without medical intervention, this is likely to be the case. Maternal depression is seen to be persistent across the age distribution of teenagers.

human capital achievement<sup>35</sup> (Currie & Stabile 2007, Victora, Adair, Fall, Hallal, Martorell, Richter & Sachdev 2008, Ensminger et al. 2003, Currie & Almond 2011, Frank & Meara 2009), as is own mental health <sup>36</sup>.

Section 7 summarises and contextualises these results, using a number of possible scenarios.

## 7 Discussion

The effects reported in Section 5 indicate that cumulative CSG income has a significant impact on years of schooling attained. We calculate years of schooling lost in a number of different scenarios, to show the full extent of non-receipt on educational attainment. Table 7 is replicated<sup>37</sup> using cumulative CSG income received<sup>38</sup> as opposed to the variable in inverse hyperbolic sine format. These coefficients are used to evaluate the impact on schooling of year on year changes in the rand amount of CSG income received. The results can be seen in Table 9.

The change in cumulative income for children born in 2004 versus 2005 is R1,127. That is, being means test eligible and age eligible for the grant in 2004 adds R1,127 to your potential cumulative income compared to an individual born in 2005. The largest of these differences is for people born in 1994 versus those born in 1995, of R13,244. The additional cumulative receipt that those born in 1995 obtain compared to those born in 1994 results in a difference in schooling of nearly three-quarters of a year in the means test eligible sample<sup>39</sup>. The effect is lower for people within the R1,000 income band from the CSG means threshold (0.68) and the sample in its entirety (0.67). This a non-trivial result. The mean number of years of schooling for the means test eligible sample born in 1995 is 8.37 and 7.76 for those born in 1994. The impact of this timing of birth leads those

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<sup>35</sup>Often through the pathway of insufficient nutrition among children of mothers with poor mental health.

<sup>36</sup>Especially early manifestation of poor mental health. The high correlation (Eyal & Burns 2015) between maternal and child mental health predicts this result.

<sup>37</sup>The results are not reported here for brevity. All coefficients emerge similar in size and significance, and the CSG income coefficients are now in a format which although not aesthetically pleasing, can be used for calculation purposes in Tables 9 and 10.

<sup>38</sup>Again, these variables are significant at the one percent level in all three samples.

<sup>39</sup>See Column (4), fourth row from the bottom. The coefficient reported is the year on year difference for that individual, multiplied by the coefficient on the coefficient of cumulative amount in the years of schooling estimates.

Table 9: Estimated Year on Year Schooling Differences

Birth Year	Amount (2015 Rands)			Years of Schooling per Change		
	Age in Wave 4 (1)	Cumulative Amount (2)	Year on Year Amount Difference (3)	Means Test Eligible (4)	Means Test Eligible R1000 Band Wave 2 (5)	All (6)
2005	9	R 22,332	R 1,217	0.07	0.06	0.06
2004	10	R 23,459	R 1,127	0.06	0.06	0.06
2003	11	R 24,497	R 1,038	0.06	0.05	0.05
2002	12	R 25,354	R 857	0.05	0.04	0.04
2001	13	R 25,993	R 639	0.03	0.03	0.03
2000	14	R 26,549	R 555	0.03	0.03	0.03
1999	15	R 27,068	R 519	0.03	0.03	0.03
1998	16	R 27,576	R 508	0.03	0.03	0.03
1997	17	R 27,576	R 0	0.00	0.00	0.00
1996	18	R 24,041	R 3,535	0.19	0.18	0.18
1995	19	R 20,043	R 3,997	0.22	0.20	0.20
1994	20	R 6,799	R 13,244	0.72	0.68	0.67
1993	21	R 3,592	R 3,208	0.17	0.16	0.16
1992	22	R 1,725	R 1,866	0.10	0.10	0.09
1991	23	R 0	R 1,725	0.09	0.09	0.09

This table presents the year on year differences in cumulative amount, and the impact of these differences on years of schooling, in the 3 samples: means test eligible, in the R1,000 band in Wave 2, and the whole sample (African and Coloured Individuals). The coefficient reported is the year on year difference for that individual, multiplied by the coefficient on the coefficient of cumulative amount in the years of schooling estimates. For example, we expect the difference in cumulative amount and years of schooling between two means test individuals born in 2004 and 2005 to be R1,127, and 0.06 of a year, and this can be seen in columns (3) and (4). Notes: the coefficients on cumulative amount are not reported here for ease of reading. Each coefficient is significant at the one percent level.

Table 10: Estimated Year on Year Schooling Differences

Cumulative Years of Schooling Differences and Proportions: Selected Sub-Samples									
Sample	Birth Year	Wave 4 Age	Cumulative Amount	Year on Year Difference	Difference Relative to 1998	Years of Schooling Differences	Average Years of Schooling	Difference Relative to Years of Schooling Mean	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Means Test Eligible	1998	16	R 27,576	R 508					
	1997	17	R 27,576	R 0					
	1996	18	R 24,041	R 3,535	R 3,535	0.19	7.60	-3%	
	1995	19	R 20,043	R 3,997	R 7,532	0.41		-5%	
	1994	20	R 6,799	R 13,244	R 20,777	1.12		-15%	
	1993	21	R 3,592	R 3,208	R 23,984	1.30		-17%	
	1992	22	R 1,725	R 1,866	R 25,851	1.40		-18%	
	1991	23	R 0	R 1,725	R 27,576	1.49		-20%	
	1998	16	R 27,576	R 508					
	1997	17	R 27,576	R 0					
1996	18	R 24,041	R 3,535	R 3,535	0.18	7.63		-2%	
1995	19	R 20,043	R 3,997	R 7,532	0.39			-5%	
1994	20	R 6,799	R 13,244	R 20,777	1.07		-14%		
1993	21	R 3,592	R 3,208	R 23,984	1.23		-16%		
1992	22	R 1,725	R 1,866	R 25,851	1.33		-17%		
1991	23	R 0	R 1,725	R 27,576	1.41		-19%		
1998	16	R 27,576	R 508						
1997	17	R 27,576	R 0						
1996	18	R 24,041	R 3,535	R 3,535	0.18		7.69	-2%	
1995	19	R 20,043	R 3,997	R 7,532	0.38			-5%	
1994	20	R 6,799	R 13,244	R 20,777	1.06	-14%			
1993	21	R 3,592	R 3,208	R 23,984	1.22	-16%			
1992	22	R 1,725	R 1,866	R 25,851	1.32	-17%			
1991	23	R 0	R 1,725	R 27,576	1.40	-18%			
All	1998	16	R 27,576	R 508					
	1997	17	R 27,576	R 0					
	1996	18	R 24,041	R 3,535	R 3,535	0.18		7.69	-2%
	1995	19	R 20,043	R 3,997	R 7,532	0.38			-5%
	1994	20	R 6,799	R 13,244	R 20,777	1.06	-14%		
	1993	21	R 3,592	R 3,208	R 23,984	1.22	-16%		
	1992	22	R 1,725	R 1,866	R 25,851	1.32	-17%		
	1991	23	R 0	R 1,725	R 27,576	1.40	-18%		

This table presents the differences in potential cumulative CSG income, and the cumulative impact of these differences on years of schooling, in 3 samples: means test eligible, in the R1,000 band in Wave 2, and the entire sample (African and Coloured Individuals born between 1992 and 1998). Column (3) reports the potential cumulative amount an individual of that age could have received by 2014. Column (4) contains the year-on-year difference between the cumulative amounts in Column (3). Column (5) contains the difference between the cumulative amount that person could have earned by 2014, and the amount that a person born in 1998 would have earned. Column (6) reports the cumulative years of schooling difference between individuals in each birth year, and those born in 1998. Column (8) reports the percentage difference the cumulative years difference in Column (6) represents proportional to the mean years of schooling reported in Column (7). The coefficient reported is the cumulative amount difference for that individual, multiplied by the coefficient on cumulative amount in the years of schooling estimates. For example, we expect the difference in cumulative amount and years of schooling between 2 means test individuals born in 1991 and 1998 to be R 27,576 and 1.49 years of schooling, respectively, which is a 20% fall relative to means years of schooling. The coefficients on cumulative amount are not reported here for ease of reading. Each coefficient is significant at the 1% level. All rand figures reported are in 2015 rands, adjusted using CPI.

born in 1995 to attain 8.5 percent more schooling than their “born free”<sup>40</sup> counterparts just a few months younger than them.

The cumulative effect is made even starker when one considers a difference of more than just a year. Table 10 details the cumulative differences in CSG income for those born as early as 1991, and thus age ineligible at every point of the CSG roll-out, to those born in 1998, and thus eligible from birth to eighteen years old. This represents the cost of missing the CSG grant completely versus receiving it in its entirety. In the means eligible sample the difference is 1.49 years of school, 1.41 years in the R1 000 band in Wave 2 and 1.40 in the whole sample. These “lost years” translate to twenty percent, nineteen percent and eighteen percent of mean years of schooling.

The exercise is repeated for people born in 1992 up until 1996. Each birth year is compared to the lifetime recipients - those born in 1998. As the difference in CSG income decreases, so do the lost years of schooling and their proportion of average schooling. The smallest of these difference is for those born in 1996. This cohort was two years old in 1998 when the grant began, therefore missing out on the initial grants that their counterparts born in 1997 and 1998 received. This amounts to a mean difference in schooling of two percent.

These years of schooling are not only lost by those who did not qualify simply on the basis of age. Children born in 1992 and who were consistently below the means test threshold of R1,100 between 1998 and 2008 have potentially lost a year of receipt. The number of years a child is precluded from the grant by the inflation invariant means test threshold grows until 1998, until a maximum of ten years. That amounts to between seventeen percent and eighteen percent of average schooling years lost, or between 1.33 and 1.4 years.

The impacts of differential access to the CSG may also occur as a result of school drop-out due to lack of receipt. Eyal et al. (2015) and others find positive and large impacts of CSG receipt on enrolment in older teens. Individuals between sixteen and twenty in Wave 4 had just over a one in four chance of returning to school if they were not enrolled two years prior, thus the impact of lost CSG income is ever more keenly felt for those who just missed receipt, or only received negligible income compared to those born immediately after them. There may well be a window of opportunity immediately

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<sup>40</sup>The born free generation in South Africa refers to a person born after 1994, the year Apartheid ended.

after the compulsory age threshold of fifteen is reached, at which a decision to continue with schooling takes place. Those who have already attained higher levels of education due to extended CSG receipt, and who are currently CSG recipients, are less likely to drop-out of school. If recipients are enrolled in school for longer, and achieve higher levels of education, this may have a follow-on impact on labour force participation for those individuals in their late teens (Barham et al. 2013). This is worth investigating in the South African context.

From the results in Section 6, it can be seen that CSG receipt improves the mental health of mothers. This undoubtedly has an impact on her children<sup>41</sup>, which would be expected to be largest for co-resident mother child pairs, as well as younger children. The effect of the means test eligibility change is made evident in the non-parametric estimation in Figure 10. Mother's depression drops remarkably in Wave 2 and remains consistently lower in Waves 2, 3 and 4. The direction of causality between a mother's mental health and the health of her youngest child is indeterminate, but the existence of a relationship is widely evident. Grants have positive benefits both for mothers' mental health, and for their children.

Besides the damage caused by an artificially low threshold, the means test also does not take into account the number of dependants in the household, further exacerbating the extent of the exclusion problem (Hall & Monson 2006). Another issue compounding unnecessary exclusion prior to 2008 was misclassification of urban areas as rural (Hall & Monson 2006), which again resulted in many eligible recipients being denied the grant. This can be seen in Figure 12 in Appendix Item A.2<sup>42</sup>. In 2005, many areas were misclassified as rural, such as informal settlements, and farms, resulting in automatic exclusion for many in these populations (Hall & Monson 2006). Grant rejections are rare (Hall & Monson 2006), but many people may never apply if they have the perception that they will not classify on income grounds, or that they will not be able to provide the required documents. Based on Wave 2 data, Woolard et al. (2012) calculate that seventeen percent of caregivers who *are* means test eligible believe that their incomes are too high to qualify for the grant. The document requirements are also not consistently applied in all SASSA offices (Hall & Monson 2006), further complicating the application process, and

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<sup>41</sup>Cummings & Davies (1994).

<sup>42</sup>See also Figure 13 in Appendix Item A.2. Our means test calculation works less well in rural areas, with higher rates of receipt recorded in the ineligible sample, implying that under-reporting of income occurs in these areas to a greater extent.



potentially reducing the number of applicants.

The number of people adversely affected by the constant means test threshold cannot be ascertained using the NIDS, as it is only conducted from 2008 onwards. The non-verifiability of applicants incomes and the discrepancies between eligibility and receipt pose problems even in survey data from years prior to 2008. However, the number is likely to be large given estimates of eligible non-recipients by other studies.

## 8 Conclusion

The South African constitution guarantees the right to social assistance, and lays down a number of conditions under which the government is bound to implement any social security programme. One of the key conditions is that the programme “may not exclude a significant segment of society” (Hall & Monson 2006). By arbitrarily changing age limits and leaving the means test threshold unchanged for a decade, it can be argued that the South African government has infringed on the constitutional rights of a group of marginalised individuals, namely those living on incomes just above the artificially low threshold value.

This paper contributes to the scarce literature (within South Africa and externally) about the long term cumulative impacts of cash transfer programmes (Behrman et al. 2011). Positive effects of cumulative CSG receipt for younger children’s nutrition, and this improvement is associated with higher human capital achievement (Aguero et al. 2006). By 2014 we are better placed to examine the cumulative impact of improved nutritional status on children who have received the CSG from birth to adulthood.

The impact of cumulative receipt on years of schooling attained is predictably positive. The magnitude, although not large on a year-by-year basis, is important when compared over a large enough time frame. The selection of the time frame in this paper is intentional. The “born frees” have a year less schooling than those born in 1995, but the effects are even larger when comparing those who have never received the grant (born in 1991), to the first cohort who received the CSG for their entire lives (born in 1998). Perpetual non-recipients have average schooling which is 1.4 years lower than those always covered by the grant. This is a twenty percent drop relative to the mean.

Not only does receipt improve nutritional outcomes, it also reduces maternal depres-

sion significantly, with knock on positive effects for child education. Mothers with mental illness are unlikely to be receiving very much other support, whether financial or emotional. The CSG plays an important role in the improvement of the mental health of these women, and thus child outcomes. The provision of psychiatric services in South Africa is notoriously poor (Lund & Flisher 2006), with the psychiatrist per 100,000 people ratio in 2006 as low as 0.1 in many areas. The proportion of mothers who suffer from mental illness is very high in relation to other countries (Ardington & Case 2010), and high relative to other groups in South Africa - our data shows thirty six percent of mothers in 2008 suffered from depression. The children of mothers who suffer from depression have significantly worse outcomes (Cummings & Davies 1994).

By failing to increase the means test threshold, and failing to provide adequate health care services for those suffering from mental illness, the government has failed a particularly vulnerable group, with predictably long lasting and large negative effects. Other studies have shown that programme effects are higher for more vulnerable<sup>43</sup> recipient groups (Fernald et al. 2009), implying yet again that a failure to adjust the means test resulted in discrimination against the very poorest of the poor. Conflicting government policies also resulted in large consequences for the most poor. In 2005 the means test threshold in rural areas was R800, while the minimum wage for farm workers was R850, thus precluding the vast majority of farm workers from accessing the grant (Hall & Monson 2006).

Although CSG uptake is indeed remarkable in absolute numbers, exclusion - despite income eligibility - is still high. Woolard et al. (2012) estimate that 3.2 million eligible children did not receive the grant in 2010. Add to this number children made ineligible for the untenable reasons of the decade long inflation invariant means threshold and/or the arbitrary age limit changes, and the number of people left out of the programme becomes concerning even by conservative estimates.

We believe this paper provides compelling evidence for considered and deliberate evaluation of CSG eligibility, both by age and means, in order to avoid social losses in education and health similar to those caused by the means test invariance. In addition, evaluation of the interaction between government policies is vital. The combination of policies may be disastrous, as in the farmworkers' minimum wage ineligibility, or pro-

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<sup>43</sup>Such as households with very low maternal education.

ductive<sup>44</sup>. This analysis is pertinent as discussions begin<sup>45</sup> about raising the age limit to include young adults in their early twenties.

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<sup>44</sup>Programmes may be more effective when combined with supply side transfers such as school textbooks or direct transfers to schools (Barham et al. 2013, Hall & Monson 2006), implying the South African government may increase CSG impacts by improving the efficiency of its textbook delivery.

<sup>45</sup>Beukes, Jansen, Moses & Yu (2015).

# Appendix A

## A.1 Means Test Verification

Figure 11

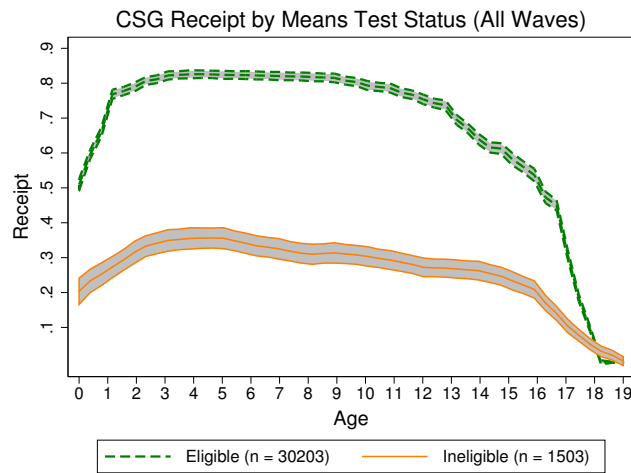


Figure 11 shows CSG receipt by Means Test Eligibility Status (95% Confidence Intervals).

## A.2 Means Test Verification in Urban and Rural Areas

Figure 12

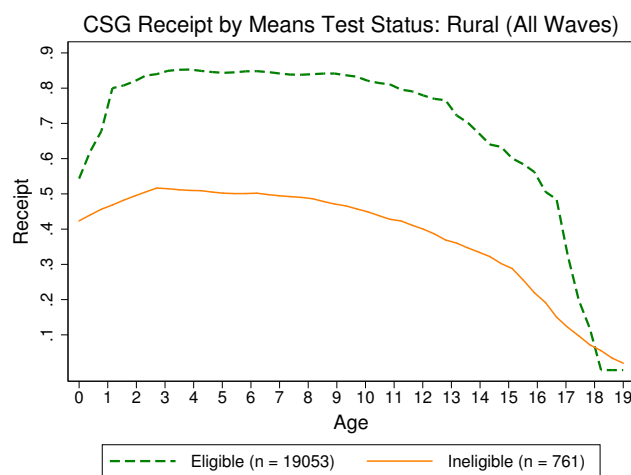


Figure 12 shows CSG receipt by Means Test Eligibility Status in Rural Areas.

Figure 13

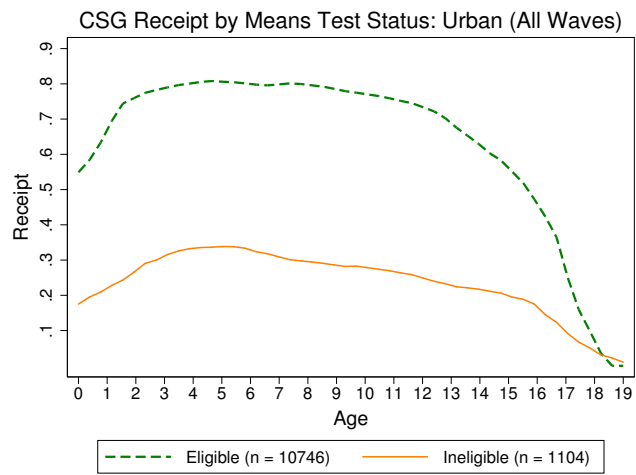
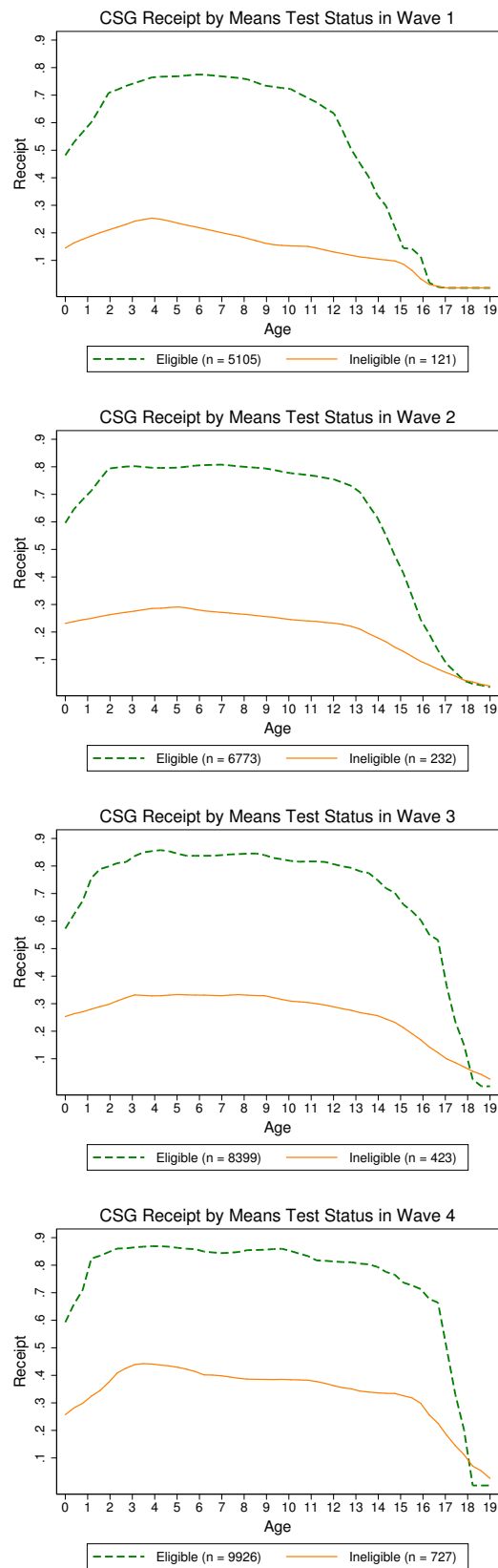


Figure 13 shows CSG receipt by Means Test Eligibility Status in Urban Areas.

### A.3 Means Test Verification by Wave

Figure 14



*CSG receipt by Means Test Eligibility Status in Each Wave.*

## A.4 Means Test Verification (95% Confidence Intervals)

Figure 15

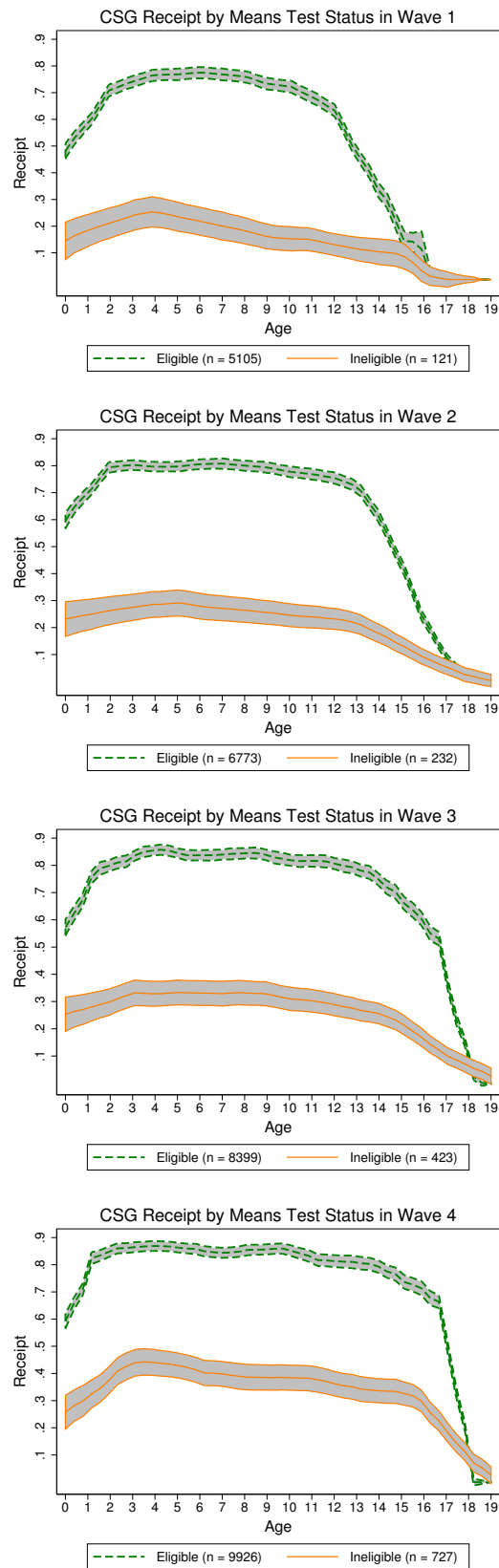


Table 15 contains means test verification. CSG receipt is shown by Means Test Eligibility Status and Wave (95% Confidence Intervals).

## A.5 CSG Receipt by Caregiver Income (all waves)

Figure 16

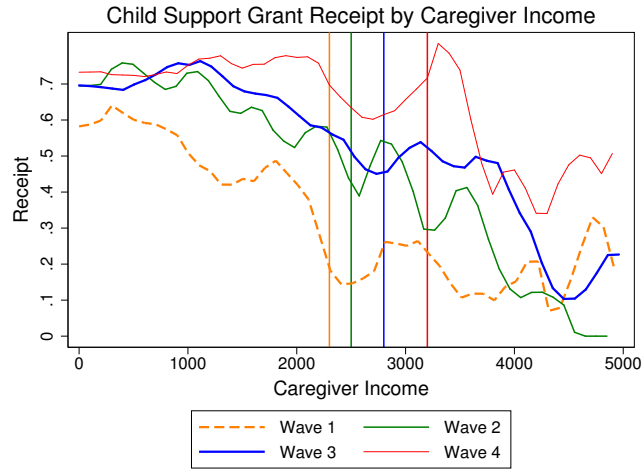


Figure 16 shows CSG receipt by caregiver income for children aged 0 to 2 (by wave).

Figure 17

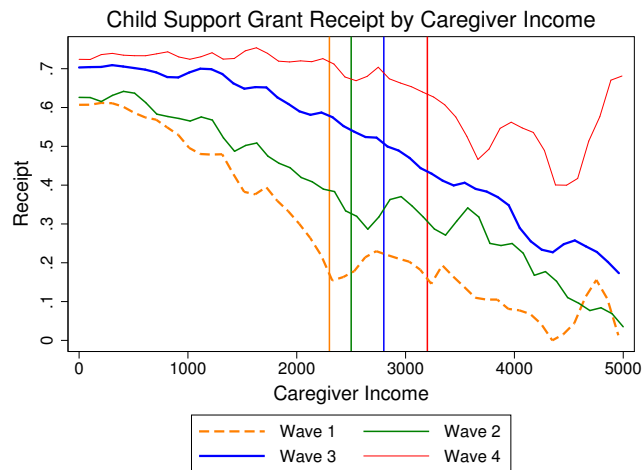


Figure 17 shows CSG receipt by caregiver income for children aged 18 and under, by wave.



## A.6 CSG Receipt by Own Income (per Wave)

Figure 18

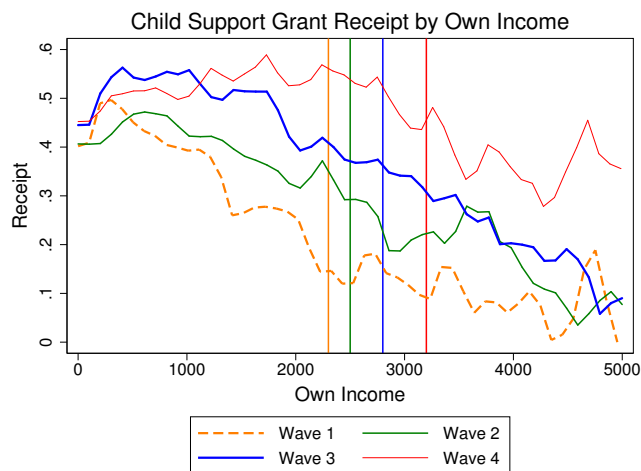


Figure 18 shows CSG receipt by own income for female caregivers aged 20 to 70 years old in all 4 waves.

Figure 19

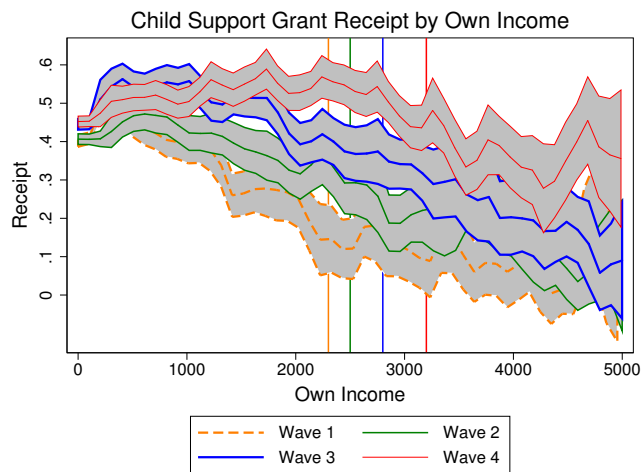
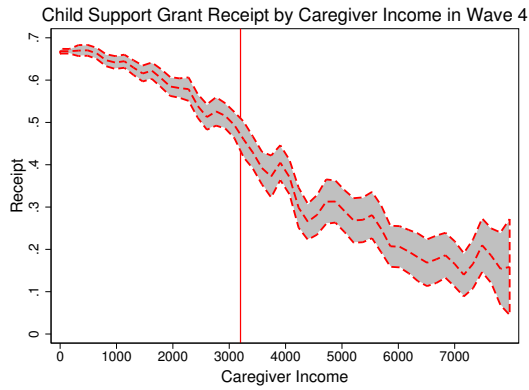


Figure 19 shows CSG receipt by own income for female caregivers aged 20 to 70 years old, in all 4 waves., with 95% Confidence Intervals.

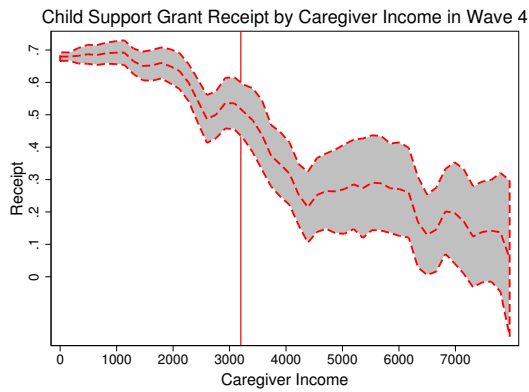
Figure 20



*CSG receipt by caregiver income in Wave 4: 0 - 18 year olds (95% Confidence Intervals).*

## A.7 CSG Receipt by Caregiver Income: 0 - 2 year olds

Figure 21



*CSG receipt by caregiver income in Wave 4: 0 - 2 year olds (95% Confidence Intervals).*

## A.8 Potential and Reported CSG Duration of Receipt

Figure 22

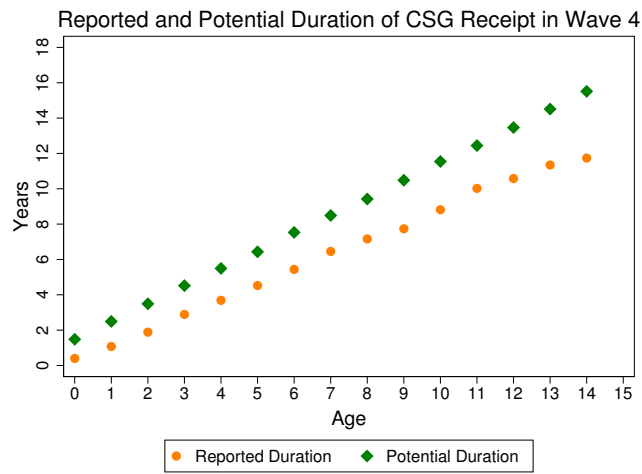


Figure 22 shows potential and reported duration of receipt in Wave 4. Duration data is only collected for children aged below 15.

## A.9 Potential and Reported CSG Duration of Receipt

Figure 23

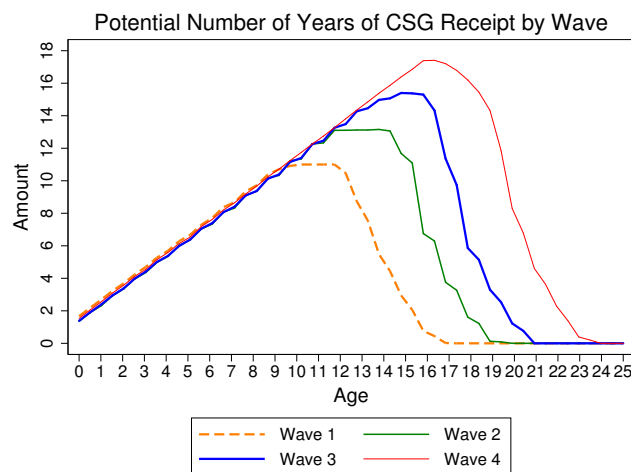


Figure 23 shows the potential number of years of CSG receipt by wave.

## A.10 Descriptive Statistics: Younger Sample

Table 11 examines descriptive statistics for a sample of African and Coloured children aged from birth to five years of age in Wave one. As in the older sample, this sample contains the highest rates of receipt, and lowest average household income.

The sample is split evenly by gender, as expected. The mean ages of mothers, children and fathers grows, predictably, by two years between the waves. Mothers' mean years of schooling is fairly constant at approximately ten years. Mothers are resident in the household at higher rates the younger the child, although the lowest rate of maternal residence seen in Wave four is still high, at eighty percent. Father's have similar average years of schooling but are only residents in forty percent of households. Over one third of mothers suffer from depression as opposed to twenty seven percent of fathers. A large drop in depression levels is seen for both genders between waves one and two.

CSG receipt increases by twenty one percent between waves one and two, from fifty six percent in Wave one to sixty eight percent in Wave two. Thereafter, the proportion remains fairly consistent at approximately seventy percent. Monthly caregiver income<sup>46</sup> increases between R500 and R1 000 between the four waves with the largest increase occurring in wave four. Means test eligibility increases by nine percent between waves one and two, from seventy five percent to eighty two percent in Wave two. Income eligibility over the remaining waves decreases. This could be related to the relative increase in caregiver income, or to a means test threshold value which has again failed to rise with inflation.

The average household has approximately 5.5 residents. This number is fairly high, and is possibly explained by the the presence of three generation households, and the likelihood that multiple children may be present in a household. Just under three fifths of households live in urban areas, and this proportion changes very little over the waves. Approximately twenty percent of the households perceive themselves as the poorest in society.

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<sup>46</sup>Excludes all other grant income.

Table 11: Descriptive Statistics by Wave: Younger Sample

Individual Descriptive Statistics by Wave				
	Wave 1	Wave 2	Wave 3	Wave 4
<i>Characteristics</i>				
Age	2.45	4.87	6.61	9.23
Female	0.49	0.50	0.50	0.48
In Poor Health (Subjective)	0.06	0.02	0.02	0.03
<i>Parental Characteristics</i>				
Mother's Education	9.83	9.97	9.95	10.1
Mother is Resident in the HH	0.85	0.87	0.83	0.80
Mother is Depressed* (CES-D 10 > 10)	0.36	0.24	0.26	0.25
Mother's Age	29.6	32.3	34.0	36.8
Mother is Economically Active	0.69	0.59	0.70	0.7
Father's Education	9.83	9.85	9.76	9.87
Father is Resident in the HH	0.41	0.44	0.43	0.40
Father is Depressed (CES-D 10 > 10)	0.27	0.15	0.19	0.24
Father's Age	36.6	39.1	40.6	43.7
Father is Economically Active	0.93	0.85	0.90	0.86
<i>Child Support Grant Variables</i>				
CSG Beneficiary	0.56	0.68	0.71	0.70
Duration of CSG Receipt	2.37	4.00	5.50	8.23
Number of CSG Recipients in Household	0.68	0.76	0.87	0.86
Caregiver Income	1,546	2,042	2,428	3,549
Means Test Eligible	0.75	0.82	0.79	0.75
Number of Waves Received	0.54	1.21	1.86	2.54
Potential Duration of Receipt	4.15	6.22	8.05	10.70
Potential Cumulative CSG Income Received	5,859	10,503	15,538	24,519
<i>Household Characteristics</i>				
Household Size	5.53	5.80	5.57	5.61
Number of Pensioners in the Household	0.22	0.26	0.25	0.27
Rural	0.42	0.41	0.41	0.41
Household Income	5,272	6,723	7,924	9,977
Household Grant Income	827	1,089	1,309	1,455
Household Expenditure	4,829	5,533	5,143	6,756
Poorest Household (Self-Perceived)	0.23	0.24	0.17	0.19
<i>Number of Observations</i>	3,877	3,877	3,839	3,827

Descriptive Statistics from the four waves of the National Income Dynamics Survey Data, weighted using the sample weights from each wave. The sample consists of African and Coloured children aged zero to five. \*The CES-D 10 is a scale used to measure depression. It ranges from zero to thirty, where zero is a complete lack of depressive symptoms, and thirty indicates the highest level of depression. A cut-off score of ten is used, where ten and above indicates the presence of mild to significant depression.

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# southern africa labour and development research unit

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The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.



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