

## **Cash transfers and children's living arrangements in South Africa.**

Habiba Djebbari\*

Hélène Mayrand\*\*

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### Abstract

We investigate the impact of cash transfers on child fostering in South Africa. One in four non-orphaned children in KwaZulu-Natal (South Africa) lives away from both parents. In the absence of well-functioning labor markets, children may be fostered out to work for kin. Alternatively, parents may seek out to send their children to better opportunities at a kin household. In 1998, the government of South Africa introduced the Child Support Grant (CSG) as a means-tested subsidy targeted to poor children. Parents can claim the benefit unless another person is the primary caregiver for their child. Our outcome of interest is the child's living arrangement. We find that children are more likely to live with their parents as a result of the grant. This suggests that the child labor motive may be prevalent in the decision to foster out a child.

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\* Laval University, IZA and CIRPÉE.

\*\* Laval University and IDRC.

## Introduction

Child fostering is a common social institution in Africa. One in four non-orphaned children in KwaZulu-Natal (South Africa) lives away from both parents. Fostering has implications for current and future welfare of children (*e.g.*, Serra 2009, Kana and Dessy 2010). Some evidence suggests that fostering hinders child development (Ainsworth 1996, Anderson 2003). Other studies find that fostering increases nutritional status and schooling attainment (Zimmerman 2003, Akresh 2007, 2009). Assessing the impact of the South African Child Support Grant (CSG) may help us understand the prime motives for fostering children, as well as the resulting changes in children's welfare (Agüero, Carter and Woolard, 2007, UNICEF, 2008).

We investigate the effect of a social program in South Africa introduced as a means-tested subsidy targeted to the child's primary caregiver. The CSG program is the largest South African social assistance program in terms of recipients, with 8.2 million beneficiaries in 2008 (SASSA Annual Report, 2008). The grant amount in 2009 is R240 (about US\$32) per child. Child grants represent two-third of the income of the bottom quintile (McEwen *et al.*, 2009). Parents can claim the benefit unless another person is the primary caregiver for their child. Unlike the other cash transfers that aim to alleviate poverty (*e.g.* PROGRESA, Bolsa Escola, Familias in Accion), the South African cash transfer benefit is child-linked by design. This makes it particularly interesting to investigate motives for child fostering.

The introduction of the Child Support Grant (CSG) may affect children's living arrangements in different ways depending on the motivation for fostering. Kinship care and informal fostering occur for different reasons. When parents cannot bear the cost of raising their child, poverty may be a determinant of child fostering.<sup>1</sup> This may occur in a context where financial markets and labor markets are failing. In the absence of formal child labor markets, some households may have an excess supply for child labor while

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<sup>1</sup> Credit market imperfections may cause child labor, see *e.g.*, Jacoby and Skoufias (1997), Ranjan (1999) and Baland and Robinson (2000).

others may have an excess demand for child labor. A parent weights the disutility cost of sending the child away with the benefit from having him eat better or go to a better school when fostered in exchange for work. The CSG subsidy is expected to lower the cost of raising a child for the primary care giver. As a result, the demand for fostering may increase. But, if child leisure is a normal good, parents may be more likely to raise their own children than to send them away to a kin household. When the child labor motive is prevalent, we should thus find that the CSG results in a decrease in child fostering.

When the child labor motive is not binding, parents may still look to send a child away in order for the child to benefit from a better environment in the foster family. For instance, if school quality is better in urban regions than in rural regions, then children who are fostered out to cities may learn more than what they would have learnt had they stayed with their parents. Similarly, a child who is raised away may benefit from the better social connections that the foster family offers. Increasing children's human and social capital may then be a motivation for fostering out children. On the receiving end, families may be more likely to foster in a child when designated by parents as primary caregiver for their child, making them eligible to claim CSG benefits. As a result, we expect CSG to increase the willingness to foster in children, making children more likely to be fostered. Clearly, both the child labor motive and the human and social capital investment motive for fostering can be at play. Whether the CSG increases or decreases fostering is then an empirical question.

We study the effects of the grant on children's arrangements using pre- and post-program data from KwaZulu-Natal Income Dynamics Survey (KIDS). One advantage of this data source is that the province of KwaZulu-Natal accounts for the largest share (26%) of CSG recipients. Another advantage is that for each child, some information on the father and mother is collected. This information is more limited if the parents do not reside in the same household as the child than if they do. But, it is sufficient to construct our main variable of interest, *i.e.* an indicator for whether the child lives with at least one of his biological parents.

To identify the effect of the CSG on children's living arrangements, we exploit information on the eligibility of children. One important screening requirement for eligibility is the age of the child. In the post-program period (KIDS 2004), children are eligible up to their 9<sup>th</sup> birthday. Thus, the "treatment" group consists of all children aged 8 and below. Children age 9 and above in 2004 may be considered as a valid comparison group. However, older children are also more likely to be fostered than younger ones. Thus, a simple difference between the proportion of fostered children among those aged 8 and below and that among those age 9 and above in 2004 may overestimate the magnitude of the effect of CSG on child's fostering. We use the first round of data (KIDS 1998) as a baseline without programme.<sup>2</sup> If young and old children's fostering patterns follow similar trends between 1998 and 2004, then taking a double difference in child fostering rates between 2004 and 1998 and between young and old children may provide an unbiased estimate. Yet, this method may fail if time trends in young and old children fostering are different. We thus also exploit the break in the policy at age 9 which provides a natural setting for using a regression discontinuity approach. This design allows estimating the effect of CSG on child fostering for children at the margin of eligibility. With this design, observables and unobservables are equally distributed on both sides of the age discontinuity. In this sense, regression discontinuity is similar to randomized experiment (e.g., Lemieux and Milligan, 2007), although the change in policy at age 9 can be fully anticipated.

We find that child fostering is reduced by about 4-5% as a result of the program. This effect is robust to the approach adopted. This result suggests that a program that lowers the cost of raising a child may induce parents to care for their own children. Although the human and social capital investment motive may still be at play, poverty appears to be the main determinant of child fostering in the South African context.

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<sup>2</sup> The program is introduced in April 1998, but the actual coverage remains low during the first years of the program. By January 1999, i.e., three months before requirements for eligibility were greatly simplified, only 18,200 grants had been distributed (Lund, 2008). By December 2005, this number increased to 6.9 million. In April 2007, 8 million children benefitted from the grant. The data collection for KIDS 1998 started in April 1998 and can thus safely be considered as a baseline without programme.

## 1. The CSG program and policy context

### a. Program basics

In 1995, the government of South Africa appointed the Lund Committee to assess the existing social protection system and to investigate alternative policy options for protecting children and families. The report of the Committee recommended providing safety nets to these targeted groups to cope with the changing macroeconomic environment (Lund, 2008). The Child Support Grant program is an important part of this new policy agenda. The CSG is the country's largest cash transfer program in terms of number of recipients.<sup>3</sup> This social benefit is designed as a means-tested cash transfer targeted to children under a certain age<sup>4</sup> and which recipient is the child's primary care giver (biological parent or other care giver). To be eligible, the primary care giver should not earn more than 10 times the grant amount if single, twice that if married. Detailed eligibility rules for 2009 are provided in Appendix A.

The cash transfer amount was initially R100 per month and per child. In April 2009 the grant is R240, which is equivalent to US\$37 (market exchange rate) or PPP US\$62. Compared to the grants for elderly people and people with disabilities, the CSG is much smaller. But their significance with respect to household resources is high given that each family can claim as many CSG grants as there are age-eligible children.

By channelling the grant through the primary care giver, the CSG was meant to adapt to the specific nature of the South African society, i.e. the absence of biological parents, in particular fathers who migrate to mines or other towns for work; the high incidence of non-marital birth and customary marriage law; the consequences of AIDS; the role of the extended family and kinship (grand-mothers, aunts) in caring for children; and, more generally the mobile and fluid household structure (Lund, 2008). Linking the grant to the child by targeting his primary care giver was initially criticized by conservative groups as a way to further "undermine family life" (Lund, 2008).

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<sup>3</sup> There are more than 9 million CSG beneficiaries in 2009. The second largest cash transfer program is the Old Age Pension program with almost 2.5 million recipients in 2009.

<sup>4</sup> All children aged 6 and below were eligible at the introduction of the program in April 1998. The program was first extended in 2003 to include 7 and 8 years old children, and in April 2004 to include 9 to 11 years old children. In April 2005, the age limit was raised to 14 years old.

## **b. History of support for children in South Africa**

Prior to the Child Support Grant, a State Maintenance Grant was the main form of social assistance targeted to children. It was specifically targeted to children living with a lone parent. As a result, the coverage of this grant was in general very limited (Case *et al.*, 2005) and the budget for this grant was only a fourth of the budget for the CSG. Very few African children benefitted from the grant: they accounted for only 0.2% of recipients in 1990. This low coverage is partly related to the requirements that households had to fulfill for their children to benefit from the grant. In particular, these conditions precluded the participation of children born outside marriage, required that children be enrolled in schools and that the applicant proved that the other parent was unwilling to pay a private maintenance. The low coverage of African children was likely a reflection of the discriminatory policies during the apartheid which made these requirements more difficult to fulfill for black South African.

In contrast to the State Maintenance Grant, the Child Grant Support is a child-linked form of social assistance which is aimed to have a larger coverage, *i.e.* 30% South African children from the poorest background. Although introduced in April 1998, the application rules had to be changed (a lower income threshold was later used to determine eligibility) and simplified (applicants were initially expected to participate in “development programmes” and to have proof that children were immunised; this requirement was subsequently dropped) in June 1999 to ensure that the target coverage be attained. Case, Hosegood and Lund (2005) noted a dramatic increase in CSG receipt between 1999 and 2001. Until June 1999, requirements in terms of documents for applying to the grant varied across the country. In 1999, a mere 18,200 grants were delivered. These figures jumped to 6.9 million grants in December 2005 and 8 million grants in April 2007. The coverage rate attained a plateau in 2002 (Lund, 2008).

## **2. A discussion of the child fostering institution**

### **a. Definition and extent in Sub-Saharan Africa**

Child fostering entails a sharing of rights and obligations with the biological

parents, when at least one of them is alive, and the arrangement may be either legally sanctioned or informal (Goody, 1982).<sup>5</sup> In this sense, foster carers are not a child's legal parents but may be designed as his primary care givers.

Child fostering is a common social institution in Africa, although it is not restricted to the region. Demographic surveys collected in Sub-Saharan Africa reveal a high proportion of households fostering children, ranging 15 percent in Ghana and 37 percent in Namibia (Vandermeersch 1997, cited in Akresh 2009). Given the prevalence of this institution, there is only a dearth of empirical studies on child fostering by economists, *e.g.* Akresh (2007, 2009) for Burkina Faso, Zimmerman (2003) and Cichello (2003) for South Africa, Ainsworth (1996) for Côte d'Ivoire. Other social scientists have documented the child fostering institution throughout Sub-Saharan Africa, *e.g.*, Anderson (2003) for South Africa, Vandermeersch (1997) for Senegal, Notermans (1999) for Cameroon, Isiugo-Abanihe (1985) for West Africa, Wusu and Isiugo-Abanihe (2006) and Fapohunda and Todaro (1988) for Nigeria; and other regions of the world, *e.g.*, Silk (1987) for Papua New Guinea and Oceania.

#### **b. Economic literature on child fostering**

The economic literature is globally segmented in two parts: studies that document the determinants of child fostering, and work that investigates the impact of fostering on child's welfare. Researchers have identified several factors that may influence the decisions to foster in (out) children. Some of them also relate fostering to children's schooling and nutrition.

When credit-constraints compel parents to make their children work in order to contribute to family income and when child labor markets are quasi-inexistent, some households may foster out the "excess" children, while other foster them in. Akresh (2009) focuses on child demographic gender imbalances and finds that having more

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<sup>5</sup> In contrast, adoption is a legal transfer of the totality of rights and obligations to the new parent. Adoption is legally sanctioned and this transfer is permanent.

biological girls than boys increases the probability of fostering out a girl. Ainsworth's findings in the context of Côte d'Ivoire (1996) are also consistent with a child labour explanation. In Jamaica, a country where the practice of informal child fostering is also common, Gibbison and Paul (2006) show that the demand for foster children comes primarily from rural households, farm households and elderly householders. This finding is also consistent with the use of foster children to adjust the household's labour supply to the desired level.

Serra (2009) proposes a theoretical model that allows for both the child labor motive and a human capital motive. Fostering out a child may allow him to benefit from better schooling facilities and access a larger social network than the one at home. One implication of this model is that the same household may be fostering in and fostering out at the same time. More importantly, another implication is that fostering is expected to improve child's welfare: a child may eat better or have access to more education and connections when fostered than in the absence of fostering. Recent empirical evidence seems to confirm that parents foster out as a way of offering their children better or more opportunities, *e.g.* Zimmerman (2003), Akresh (2009). In Burkina Faso, Akresh (2007) finds evidence that foster children are 18 percent more likely to be enrolled than their siblings. Using data from South Africa, Zimmerman (2003) finds that fostering increases school attendance by 22 percent. His focus is on two types of effects: a "Cinderella" effect, whereas foster children may have worst outcomes compared to biological children, and a "migration" effect that highlights the fact that foster children may be better off than their biological sibling who are not fostered. He finds that the "Cinderella" effect is particularly weak except when the child is fostered to distant relatives, but that the "migration" effect is strong. This evidence suggests that fostering is a "good" institution from the point of view of children's welfare.<sup>6</sup> However, these studies cannot identify the strength of the child labor motive *vs.* that of the human capital motive, as both theoretical explanations imply that, when used, fostering is expected to improve children's welfare.

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<sup>6</sup> Revisiting the data and exploiting the panel dimension, Cichello (2003) finds that fostering in South Africa is not likely to improve children's welfare in the long term.

Evaluating the impact of the CSG program on fostering give us a means to assess the relative strengths of the two explanations for fostering. A positive effect of CSG on fostering rates would indicate that the human capital motive dominates the child labor motive, and vice-versa. If child labor were the main motive for fostering and child leisure is a normal good, we expect that the CSG to reduce fostering. If fostering is indeed a way to improve children's welfare by investing in their human capital, we expect the introduction of the CSG program to increase fostering as more resources are made available to receiving households who are designated as primary care givers and recipients of the CSG. Given the two main factors identified in the literature, the resulting effect of the CSG subsidy on child fostering may be positive or negative.

Finally, child fostering can also be viewed as a risk-coping strategy of the last resort (Akresh 2009, Eloundou-Enyegue and Shapiro, 2004). In this view, sending and receiving households are linked through a long-term risk-sharing arrangement, and either may in turn be at the sending and receiving end. More importantly, fostering may improve the welfare of the sending family but not necessarily improve that of the child. Using primary data collection that involved tracking and interviewing the sending and receiving households participating in each fostering exchange, Akresh (2009) finds that households that experience exogenous idiosyncratic negative income shocks are more likely to send a child to live with another family. How would the CSG subsidy impact fostering if risk-coping were the main motive? As the grant is a regular source of income, it may reduce household vulnerability to adverse shocks and would also reduce the use of fostering as a risk-coping mechanism.

### **c. History and culture**

Some important insights regarding traditional fostering are summarized by the cultural anthropologist Joan Silk:

“First, in each of these societies, natural parents who give up primary responsibility for raising their children typically delegate care of their offspring to close consanguine kin. Second, natural parents are uniformly reluctant to

give up their children to others permanently, and often express regret at the necessity of doing so. Third, parental investment is not necessarily terminated when adoption and fosterage arrangements have been completed. Even after their children have left their households, natural parents may maintain contact with them, continue to contribute some resources to their care, and retain their rights to retrieve their offspring if they are mistreated. Fourth, natural parents are often very selective in their choice of prospective foster and adoptive parents; they typically prefer adults who can offer their children better economic prospects than they can themselves” (Silk, 1987, p. 46).

Notermans (1999) also notes that, in contrast to the perception in developed countries, women who delegate child rearing tasks to other relatives are considered as “good mothers”, working in the interest of their child. Fostering is also found to be a way for natural parents to seek to share the costs of childrearing among a wider set of relatives (Isiugo-Abanihe, 1985). This literature also highlights the political function of fostering as a strategy to consolidate kinship relations: by circulating their children, families create relationships and solid kinship ties (Pennington, 1991).

Child caring arrangements in South Africa are considered to be the result of both cultural traditions<sup>7</sup> and socio-economic factors (Anderson 2003, Cichello 2003). Childrearing practices in South Africa usually take place within the context of an extended family. Nuclear families are the exception rather than the rule in South Africa. One striking aspect of family structure in South Africa that has implications for the care of children is the high level of father absence (up to 52 percent) (Desmonds and Desmonds, 2006: 229). This means that most children grow up without a father in their home or in their lives. History may explain this fact. Apartheid legislation has had long-term effects on family structure, particularly for black South Africans. By being circumscribed to live in certain restricted areas, homelands or townships, black South African fathers were separated from their families (Anderson, 2003). Restricted housing options and labour migration patterns often meant that one or both of a child’s parents were not present most of the year (Case and Deaton, 1998 and Anderson, 2003).

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<sup>7</sup> The Zulu is the largest South African ethnic group and represent 80% of KwaZulu-Natal population. This paper mostly refers to the practices of this particular ethnic group.

Non-marital births also increased greatly during the Apartheid (Burman, 1996 and Anderson, 2000). Mothers rely increasingly on other family members for support and with raising children (Niehaus, 1994), in particular grandparents. More specifically, customary law practices in South Africa dictates that the transfer of a child from the mother's family to the father's family is usually governed by the payment of bride wealth: if no *lobola* was paid to the bride's father by the groom at the time of marriage, then the child remains with his mother. Since bride wealth is only paid when there is a marriage, an illegitimate child generally remains legally with the mother's family. Moreover, when the mother marries a man who is not the biological father, the child does not usually accompany her to her new married home. Her new husband has no obligation in either civil or customary law to support the child (Burman, 1996: 592). Thus, when a woman remarries, it is likely that her child stays with the maternal family, usually under his grandmother's care.

Another important factor affecting children's living arrangements is HIV/AIDS high prevalence. As the father is likely to be absent, when a mother is affected by HIV/AIDS, children are often fostered in by relatives. Among children whose mother is not alive and whose father is absent, Desmond and Desmond (2006) found that 68 percent were living with his or her grandparents and 26 percent with other relatives. Therefore, a father's absence from the household is a bigger concern in the context of HIV/AIDS. Following a mother's death, since father often live away from their families, children end up taken care of by female relatives even when their father is still alive.

### **3. The data**

This study uses the second (1998) and third (2004) waves of KIDS, obtained through the University of KwaZulu-Natal. The 1993 wave is mainly used to help look at time trends in child fostering.

#### **a. The sample**

In 2004, 1426 households are interviewed. Among the 11,813 household members, 4,068 are children who are less than 18 years old. Of these, 3804 children live

at least 15 days in the last month in these households. We first restrict the sample to these children. This sample comprises 3720 children who have at least one parent alive, and 84 who are orphans. We exclude the orphan children.

In 1998, the original sample comprises 1075 households, 10,406 individuals, among them 3900 less than 18 years old. We first restrict the sample to the 3109 children who live at least 15 days in the last month in the sample households. Of these, 3083 have at least one parent alive, and 26 are orphans. The working sample for 1998 only comprises 3083 children with at least one parent alive.

#### **d. Children's living arrangements**

For each child in the resulting samples, we retrieve information on biological parents (whether they are alive or dead, whether or not they reside 15 days in the last month in the household). We consider a child to be fostered when neither parent reside at least 15 days in the last month under the same roof as the child. The child is not fostered if at least one biological parent spends this amount of time with the child. The other parent may be deceased or living elsewhere.

According to Table 1 below, about one quarter of all children do not live with either biological parent. In most cases, both parents are alive and not living under the same roof as the child. Non-fostered children are more likely to be living with only their mothers than with both parents. In both years, only a minority live with only their father.

We find that 432 children have a deceased father; 127 children have a deceased mother; 1259 children live with at least their father; and, 2560 children live with at least their mother in 2004. By comparison, in 1998, among the 3083 children in our working sample, 236 children have a deceased father; 43 children have a deceased mother; 1108 children live with at least their father; and, 2200 children live with at least their mother.

Comparing 1998 to 2004, we find that the fraction of children fostered has grown. The increase comes essentially from a growth in the fraction of foster children with one parent deceased. There is actually a reduction in the fraction of foster children with both parents alive.

Table 1: Children's living arrangements (KIDS 1998, 2004).

	1998 survey	2004 survey	Rate of growth
Total Foster child			
Number	721	937	
% of non-orphaned children	23.3%	25.2%	+8.2%
mother deceased, non-resident father			
Number	29	90	
% of foster children	4%	9.6%	+140%
father deceased, non-resident mother			
Number	69	158	
% of foster children	9.5%	16.9%	+77.9%
mother and father alive but both are non-resident			
Number	623	689	
% of foster children	86.4%	73.5%	-15%
Total Non-foster			
Number	2,362	2,783	
% of non-orphaned children	76.7%	74.8%	-2.5%
Both mother and father are resident in child's household			
Number	946	1,036	
% of non-foster children	40%	37.2%	-7%
Mother resides with child, father resides elsewhere			
Number	1,087	1,250	
% of non-foster children	46%	44.9%	-2.4%
Father resides with child, mother resides elsewhere			
Number	148	186	
% of non-foster children	6.2%	6.7%	+7.5%
Mother resides but father is deceased			
Number	167	274	
% of non-foster children	7%	9.8%	+40%
Father resides but mother is deceased			
Number	14	37	
% of non-foster children	0.6%	1.3%	+116%
Total number of non-orphaned children	3083	3807	+23.5%

We also find that more children lost one or two parents in 2004 than in 1998 (Table 2).

Table 2: Children with deceased parents (KIDS 1998, 2004).

	1998 survey	2004 survey	Rate of growth
Mother deceased	43	127	+195%
Father deceased	246	432	+75.6%
Both parents deceased	26	84	+223%
At least one parent deceased	315	643	+104%

#### **e. Age-eligibility and CSG receipt**

In 2004 (resp. 1998), 45.1% (resp. 46.7%) of children are age-eligible to the grant. Receipt of the grant is recorded in the 2004 data. We find that 22.15% of children are CSG recipients in 2004. They represent 45% of all age-eligible children. More than 95% of CSG recipients are age-eligible (error of inclusion is less than 5%). About one third of non-recipients are age-eligible, and thus twice as many are not eligible by age.

## **4. Empirical modelling**

### **a. Identification**

To identify the effect of the CSG on child fostering, we exploit information on the eligibility of children. One important screening requirement for eligibility is the age of the child. In 2004, *i.e.* six years after the introduction of the program, children are eligible up to their 9<sup>th</sup> birthday. We first consider all children aged 8 and below as our “treatment” group and those age 9 and above in 2004 as a “comparison” group. Since older children are also more likely to be fostered than younger ones, a simple difference between the proportion of fostered children among those aged 8 and below and that among those age 9 and above in 2004 may overestimate the reduction in fostering rates that are due to the program. We compare the difference in fostering rates between eligible and non-eligible children before and after the policy implementation. To do so, we use the 1998 wave of

data as a baseline without program.<sup>8</sup> If young and old children's fostering patterns follow similar trends between 1998 and 2004, then taking a double difference in child fostering rates between 2004 and 1998 and between young and old children may provide an unbiased estimate of the impact of the program on child fostering. More specifically, it is the effect of age-eligibility to the program or "the intent to treat" which is identified.<sup>9</sup> The main identifying assumptions are: (1) older children can act as a valid comparison group; (2) time trends in the rates of fostering are similar for young and old children. In particular, older children cannot be indirectly affected by the program through substitution effects within the household.

The difference-in-difference approach may fail if time trends in young and old children fostering are different or if fostering of old children substitutes for that of young children once the program is introduced. Furthermore, the difference-in-difference estimator identifies at best the intent to treat.

Our second approach consists in exploiting the break in the policy at age 9 which provides a natural setting for considering a regression discontinuity design. The regression discontinuity design allows estimating the common effect of CSG receipt on child fostering if children right above and right below the age discontinuity can be considered as similar conditional on observable characteristics. For this feature to hold true, average potential outcomes when receiving and not receiving the program benefits must be similar for children close to the age threshold. This assumption is formalized by Hahn, Todd and van der Klaauw (2001) and known as the local continuity assumption. This local continuity assumption rules out other discontinuities in the age-fostering relationship. Under this assumption, the regression discontinuity design is much alike a randomized experiment near the discontinuity in the sense that it helps balancing the selection bias just above and below the discontinuity point (e.g., Lemieux and Milligan

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<sup>8</sup> The program is introduced in April 1998, but the actual coverage remains low during the first years of the program. The data collection for KIDS 1998 started in April and can thus safely be considered as a baseline without programme.

<sup>9</sup> This is because not all age-eligible children receive the program benefits. This intent to treat parameter is likely to be an under-estimate of the effect of the receipt of program on beneficiaries.

2008, Card and Shore-Sheppard 2004), although the change in policy at age 9 can be fully anticipated.

Since program eligibility is not solely determined by age, the regression discontinuity design is fuzzy. If the impact of the program is heterogeneous, the average impact of CSG on child fostering is not identified. Instead, the impact for children close to the discontinuity point can be identified under a local conditional independence assumption. This local conditional independence assumption requires that children do not self-select into the program on the basis of expected gains. Hahn, Todd and van der Klaauw (2001) shows that this strong assumption can be replaced by a weaker local monotonicity assumption. This assumption is similar to the one by Imbens and Angrist (1994). It only allows the identification of a local average impact for the compliers, *i.e.* for the subgroup of children whose benefit status changes discontinuously at the cut-off age.

## **b. Estimation**

Let  $Y_{it}$  denote the outcome for the  $i^{\text{th}}$  child observed at time  $t = 0, 1$  (pre- and post-program). We denote by  $T_i$  an indicator for being age-eligible to the program. The difference-in difference estimator identifies the program impact assuming that conditional on some observable  $X$ , the selection bias is time-invariant. The estimator can be written as follows:

$$\beta = [E(Y_{i1} | T_i = 1, X) - E(Y_{i1} | T_i = 0, X)] - [E(Y_{i0} | T_i = 1, X) - E(Y_{i0} | T_i = 0, X)].$$

In a regression framework, the difference-in-difference estimator of the impact can be retrieved from estimating the following equation:

$$Y_{it} = \alpha + \beta T_i t + \gamma T_i + \delta t + \varepsilon_i.$$

A regression discontinuity design may also be useful for solving the selection bias problem (Hahn, Todd and van der Klaauw, 2001). Let  $A_i$  be the age of the child and  $a_{\max}$

the cut-off age for eligibility.<sup>10</sup> Let  $CSG_i = 1$  if the child is a CSG recipient, 0 otherwise. Since the assignment to the program depends on age in a stochastic manner, the probability of treatment  $\Pr(CSG_i|A_i)$  jumps by less than one around the discontinuity point and the design is considered fuzzy. This occurs because, in addition to the child's age, assignment to the program is based on the primary caregiver's income at the time of the application for the grant, which was observed by the administrator of the program but which is not observed by the econometrician.

Under the local continuity assumption and if the effect of the program is the same for all beneficiaries, the program impact estimator is identified by:

$$\frac{E(Y_{i1}|A_i=a_{\max}-\varepsilon, X)-E(Y_{i1}|A_i=a_{\max}+\varepsilon, X)}{E(CSG_i|A_i=a_{\max}-\varepsilon, X)-E(CSG_i|A_i=a_{\max}+\varepsilon, X)} \text{ for } \varepsilon>0 \text{ arbitrarily small.}$$

In case of heterogeneous effects, under the local continuity assumption and a local monotonicity assumption, this estimator allows the identification of a local average impact for the compliers, *i.e.* for the subgroup of children for whom treatment changes discontinuously at the cut-off age.

To estimate the average treatment effect defined above, we use a two-stage procedure as in van der Klauuw (2002). In the first stage, we estimate:

$$CSG_i = E(CSG_i|A_i) + v_i = f(A_i) + \pi 1\{A_i < a_{\max}\} + v_i,$$

where  $f(\cdot)$  is a continuous function of  $A_i$  and  $\pi$  measures the discontinuity at  $a_{\max}$ . In the second-stage, we estimate:

$$Y_i = m(A_i) + \rho p(A_i) + e_i,$$

where  $m(\cdot)$  is a continuous function of  $A_i$ ,  $p(A_i)$  is the first-stage estimate of  $E(CSG_i|A_i)$ , and  $\rho$  is the treatment effect of interest.

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<sup>10</sup> The value for  $a_{\max}$  in 2004 is 9.

Both  $f(\cdot)$  and  $m(\cdot)$  functions act as control functions (Heckman and Robb, 1985) and must be specified to be flexible. We use polynomials in  $A_i$ .<sup>11</sup> We also use the semi-parametric local linear regression estimator. This estimator only exploits data in a neighbourhood close to the cut-off point. More specifically, we fit linear regression functions to the observations at a distance  $h$  or smaller at each side of the point of discontinuity. We use a triangular kernel<sup>12</sup> and use several bandwidths.<sup>13</sup> Table 3 below provides some information on the number of observations around the discontinuity.

Table 3: Number of observations around the discontinuity

Number of 7-11 years old	2004	1998
Fostered children	700	525
Non-fostered children	863	1552
Total	1563	2077
% of all children	42%	67%

## 5. Results

### a. Difference-in-difference estimates

Looking first at a simple comparison of means across waves and groups, we find that fostering has decreased by 4.71 percentage points as a result of the program (Table 4). It is interesting to note that the bias from considering only a simple difference in mean outcomes instead as a double difference is as expected. Looking at the first line of Table 1, if we had only compared young and old children fostering rates, we would have over-estimated the reduction in fostering rate due to the program. This is because older children are more likely to be fostered than young children, even in the absence of the

<sup>11</sup> Note that if  $f(\cdot)$  and  $m(\cdot)$  have the same functional form, then this two-stage estimation is equivalent to a two-stage least squares. In this sense, the regression discontinuity design approach is similar to an instrumental variable approach with  $1\{A_i < a_{\max}\}$  used as a restriction exclusion.

<sup>12</sup> Fan and Gijbels (1996) show that a triangular kernel is optimal for estimating local linear regressions at the boundary.

<sup>13</sup> Our preferred results are with a bandwidth of  $\pm 3$  years.

program (see line 2). Looking now at the before-after comparison for eligible children (first column), we note that the program impact would have been under-estimated because fostering rates have risen between 1998 and 2004 (see column 2).

Table 4: Difference-in-difference estimate

	Treatment group	Control group	difference
Post-program 2004	19.39%	30.27%	-10.88
Pre-program 1998	20%	26.17%	-6.17
difference	-0.61	4.1	-4.71

Least squares regression estimates confirm the results from the comparison in means. The estimate for the impact of the program (line 3) is very similar in all specifications and found to be significant at 5%. In specification (2), we control for observable characteristics of the child. In specification (3), we also change the way we define eligibility to include children who become eligible after 2004 due to the changes in eligibility rules. In the fourth column, we find that there is no differential impact for girls compared to boys.

Table 5: Least squares regression estimates.

	(1)	(2)	(3)	(4)
Treatment group ( $T_i$ )	-.061*** (.015)	-.020 (.020)	-.010 (.018)	-.020 (.020)
Time (t)	.041*** (.014)	.042*** (.015)	.057*** (.020)	.042*** (.015)
$T_i * t$	-.0471** (.020)	-.0479** (.021)	-.053** (.023)	-.057** (.023)
$T_i * t * \text{female}$	-	-	-	.019 (.022)

Robust standard errors in parenthesis. \*\*\* significant at 1%, \*\* significant at 5%.

(1) basic specification; (2) controlling for whether child is between 6 and 12 years old, whether child is more than 12 years old, the child's gender, whether the child has no schooling, whether the child has more than primary school education; (3) age threshold changed to  $a_{\max} = 13$  and controlling for the child's gender, whether the child has no schooling, whether the child has more than primary school education; (4) controlling for the same observables as in specification (2).

## **b. Regression discontinuity estimates**

We estimate the impact of CSG receipt from the 2004 wave of data only following the two-stage procedure explained above. We first fit a polynomial regression

in age, choosing the order based on the outcome equation (Imbens and Lemieux, 2008) and applying the same order to the treatment equation. The order of the polynomial function is 4.<sup>14</sup> We then fit a local linear regression with a triangular kernel and a bandwidth of  $\pm 3$  years.<sup>15</sup> We obtain standard errors from the bootstrap (100 replications).

We find that fostering rates have decreased as a result of program receipt (Table 6). This effect is significant. As expected, its magnitude is larger in absolute value than the magnitude of the “intent to treat” effect estimated using difference-in-difference. The effect is larger using local linear regression than with a polynomial specification. In the former, we find that program receipt decreases fostering rates by 15 percentage points for children at the margin of participation.

Table 6: Regression discontinuity estimates of program effects.

	Estimate of the impact of CSG receipt
Polynomial fit	-0.076* (.041)
Local linear regression	-0.152*** (0.053)

Standard errors in parenthesis. \*\*\* significant at 1%, \* significant at 10%

Fuzzy regression design provides at best estimates of the average effect of the program for the subpopulation of children aged 9 who take-up the benefit if they became eligible. Unless the effect is homogenous, this approach does not allow the extrapolation of results beyond this group.

Graphical analyses are also useful to illustrate the design. Figure 1 represents the scatterplot of the fraction receiving CSG at each age. Figure 2 is a scatterplot showing the fraction of children fostered at each age. On both figures, I add a line at the cutoff age of 9. The fraction receiving CSG jumps at age 9 by an amount less than 1, consistent with a fuzzy design.

<sup>14</sup> More results avail upon request.

<sup>15</sup> More results avail upon request.

Figure 1: Fraction receiving CSG by age.

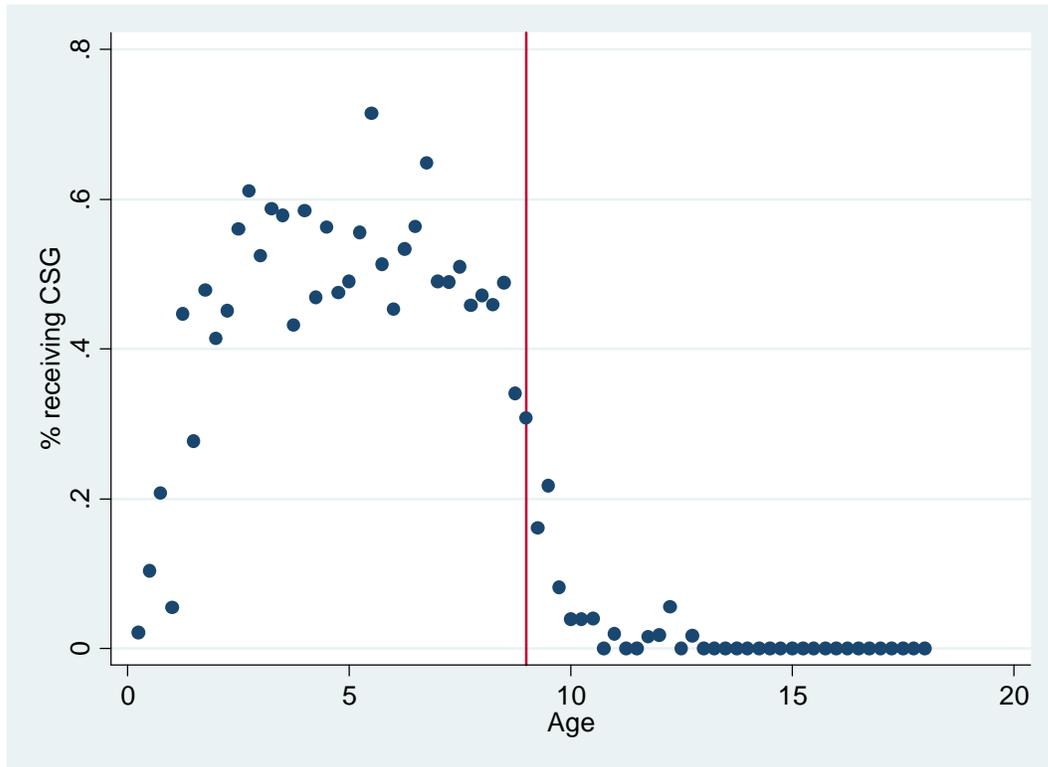
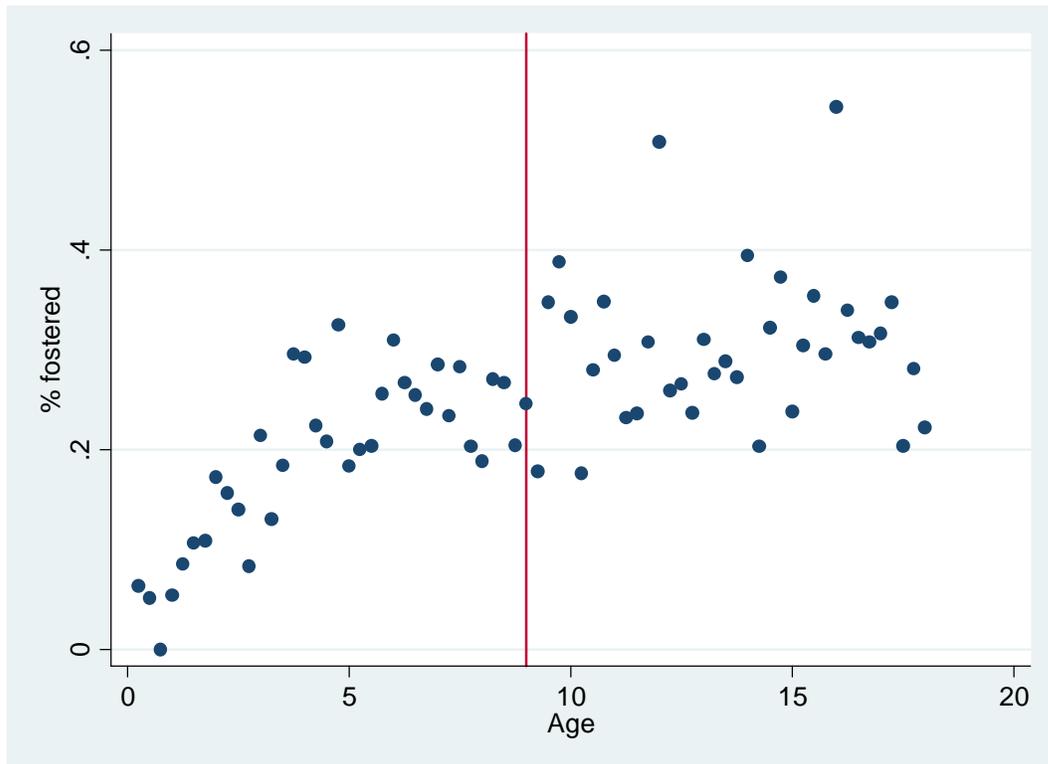


Figure 2: Fraction fostered by age

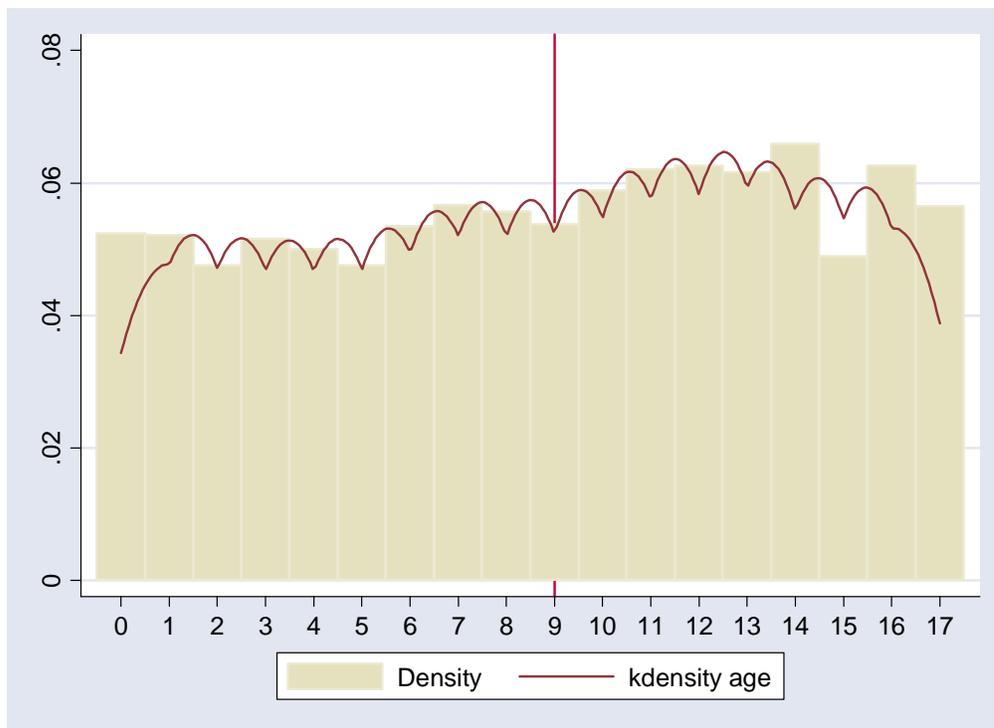


## 6. Sensitivity and robustness

Looking at time trends in child fostering before the introduction of the program can help assessing the validity of the identification assumption underlying the difference-in-difference approach. Pre-program data include the 1993 and 1998 waves.

To assess the credibility of the regression discontinuity approach, it is useful to inspect the density of the forcing variable (*i.e.*, age). If there is self-selection into the program, we would expect to find the distribution of age discontinuous at the cut-off point for eligibility. We do not find evidence of a discontinuity in the density of age at age 9 (Figure 4).

Figure 4: Density of age (2004)



## 7. Concluding remarks

In many societies in Africa, including the Zulu, kinship care is an accepted means of raising children. For a broad range of reasons children are looked after on an ongoing or indefinite basis by relatives, friends or others. Two main (and non-exclusive)

explanations are put forward by economists: a child labor motive, when parents are poor, and a human capital motive, when they aspire for a better environment for their child. Evaluating the impact of the CSG program on fostering give us a means to assess the relative strengths of the two explanations for fostering. A positive effect of CSG on fostering rates would indicate that the human capital motive dominates the child labor motive, and vice-versa.

Using a difference-in difference approach, which compares fostering rates before and after the policy implementation, we find that children who are age-eligible are five to six percentage points more likely to be living with at least one of their parents (that is a 15 to 20 percent reduction in fostering). Exploiting the discontinuity in age-eligibility and semi-parametric estimation methods, we find that program receipt decreases fostering rates between 7 and 15 percentage points (that is a 25 and 50 percent reduction in fostering). This impact is identified for the subpopulation of children at the age cut-off whose outcome would be changed if they became eligible, and cannot be extrapolated to other population unless the impact is homogenous. This specific average effect is of interest as it informs policy-makers of the expected impact from changing the age-threshold.

The evidence on the impact of the Child Support Grant on fostering complements existing evidence of the impact of this program on child's welfare (Agüero, Carter and Woolard, 2007, UNICEF, 2008). However, it leaves one question unanswered: are children better off when parents do not foster them out? If foster children fare better than what they would fare had they not been fostered (as found by Zimmerman, 2003 and Akresh 2008a), then it may well be that the reduction in fostering due to the program hinders the improvements in terms of children's welfare. This question however is beyond the scope of this paper and left for further research.

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## Appendix A: Child Support Grant Program Description

(From the South Africa government official website, as November 2009)

If you are needy, you can get a grant to help you raise the child you look after.

*How do you know if you qualify?*

You must:

- be the child's primary caregiver (e.g. parent, grandparent or a child over 16 heading a family). Note: If you are not the child's parent, proof that you are the child's primary caregiver through an affidavit from a police official, a social worker's report, and an affidavit from the biological parent or a letter from the school principal from the school attended by the child.
- be a South African citizen or permanent resident
- not earn more than R28 800 per year if you are single. If you are married, your combined income should not be above R57 600 per year.

The child must:

- be younger than 15 years
- not be cared for in a state institution
- reside with the primary caregiver who is not paid to look after the child. [...]

*How much will you get?*

The amount that you will get from April 2009 is R240 per month per child. [...]

*When may the child's grant be suspended?*

The following may result in the suspension of the child's grant:

- when your circumstances change
- the outcome of a review
- if you fail to co-operate when the child's grant is reviewed
- when you commit fraud or misrepresent the child
- if there was a mistake when the child's grant was approved
- if the child is no longer in your care. [...]

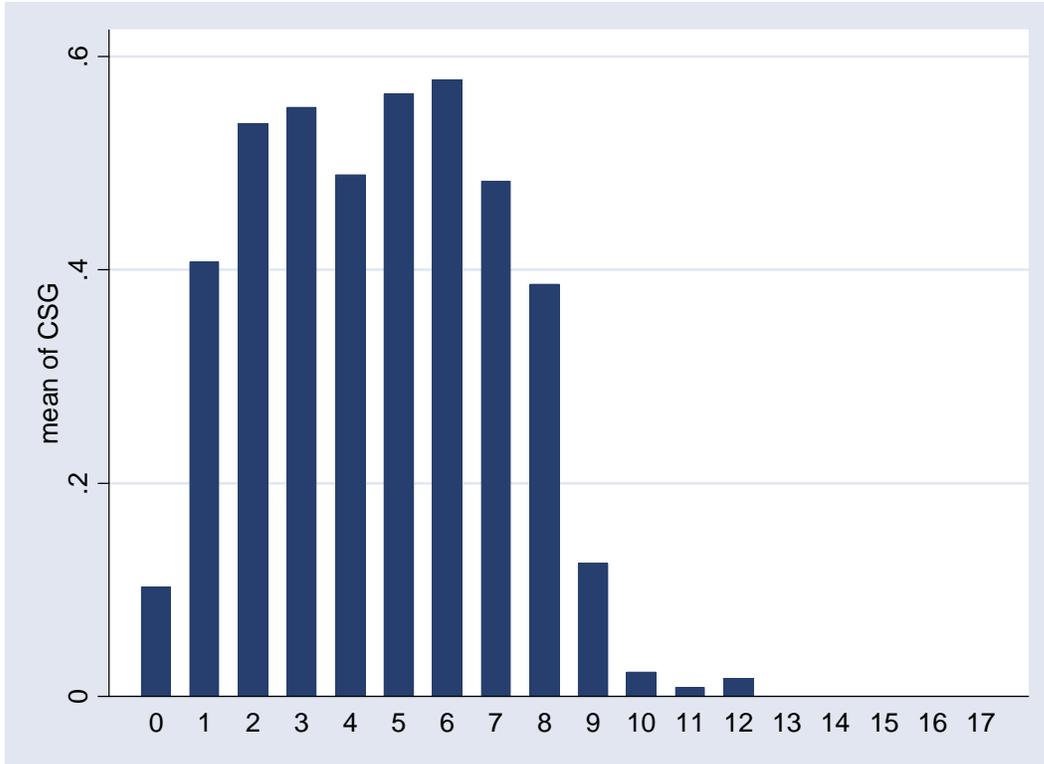
*What you should do*

- Go to the [South African Social Security Agency \(SASSA\)](#) office nearest to where you live and bring the following:
- Your 13 digit-bar-coded identity document (ID) and the child's birth certificate. [...]
- Complete the application form in the presence of the SASSA officer. [...]

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**Appendix B: Percentage of CSG beneficiaries by age (2004)**

Percentage of CSG beneficiaries by age (2004)



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