Bargaining to work:

the effect of female autonomy on female labour supply[*]

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Abstract

Female labour supply is an important outcome for measuring gender equality and is therefore regarded as one of the key indicators for women's empowerment. The empowerment of women through greater labour force participation is well documented in the literature. We argue, however, that the relationship between female labour force participation and empowerment is endogenous. We instead turn our attention to understanding whether greater female household autonomy causes participation in the labour market in the first place. Using the roll out of banking cards associated with the South African government cash transfers as an exogenous shock, we show that financial inclusion improves women's decision making power in the household. In response to this redistribution of bargaining power in the household, we provide evidence of increased female labour force participation. Our results show that becoming a primary decision maker leads to a 92 percentage point increase in the probability that women participate in the labour market.

JEL classification: C36, C78, D13, J16, J22.

Keywords: Female labour force participation, SASSA cards, female autonomy, non-cooperative household bargaining model, South Africa, NIDS

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1 Introduction

A large body of evidence studies women's internal (within-household) bargaining power, and its relationship with household level outcomes. It considers the factors that enhance women's position in the home: foremost, her contribution to household income - whether obtained through labour force participation (Anderson and Eswaran, 2009; Atkin, 2009; Luke and Munshi, 2011) or a cash transfer receipt (Duflo, 2003; de Brauw et al., 2014; Doepke and Tertilt, 2014) - which raises her internal autonomy in contexts where traditional, religious or cultural norms otherwise limit female bargaining power. Furthermore, women who gain within-household autonomy tend to leverage it to improve socio-economic outcomes of other members, including a re-prioritisation of expenditure patterns, and acting in the interest of her child(ren), towards better health and education outcomes (see Doss (2013) for a review). Internal female bargaining power is therefore correlated in many ways to important developmental outcomes *within* the home.

Existing studies have, however, largely failed to focus on the role that internal bargaining power can exert on the *external* empowerment of women (in the market place). In particular, most studies work with the assumption that increased female labour supply precedes changes in internal autonomy (bargaining power within the household is a consequence of a women's position in the labour market). However, this relationship is fundamentally endogenous; in circumstances where gender-specific norms initially restrict women to work, shifts in *internal* bargaining power that favour women may also raise their ability to negotiate their right to work (women's participation in the market-place is determined by their internal bargaining power). This study examines this particular relationship and proposes a solution to the reverse causality problem. By exploiting an external shock to financial inclusion, we model the causal effect of women's within-household autonomy on their likelihood to access the labour market. We argue that financial inclusion determines a women's autonomy, which in turn opens up her access to the labour market. Importantly, this particular channel is not contingent on women contributing labour market income to the household pool (as many studies argue), as autonomy was attained by obtaining a bank account connected to a relatively small cash transfer.

In particular, we study a shock that affected women who are not typically employed or work in low-earning jobs, but who nonetheless contributed small amounts of non-labour incomes to their households - South African government cash transfer recipients. As per the design, the recipients

of the child support grant in South Africa are always the primary care giver of the child, which in majority of the cases is the mother. Although the cash grant is a small amount, it is nonetheless a financial gain to the woman. This independent sum of money translates to improvements in women's internal bargaining power, which in turn increases their participation in the market. In 2012, the South African Social Security Agency (SASSA) rolled out bank cards to all its cash transfer recipients - the majority of whom are women [1]. Using a difference-in-difference analysis, we show that recipients experienced higher rates of financial inclusion and internal bargaining power after the roll out. Our control group consists of women who fall just beyond the margin of eligibility criteria to receive cash transfers (and therefore for SASSA bank cards). We rely on these findings to control for the reverse causality between autonomy and female labour force participation, using an instrumental variable (IV) approach. Results are further investigated using marginal treatment effect (MTE) methods developed by Bjorklund and Moffitt (1987) and Heckman and Vytlacil (1999) and extended by Heckman (2010) and Kowalski (2016). The early methods could only be applied to questions with continuous instruments but recent extensions have made it possible to identify the MTE in situations with discrete and binary instruments (Kowalski, 2016).

As evidenced within the non-cooperative bargaining model, our results suggest that by providing child support grant (CSG) recipients with bank cards, they gain greater control over their own (non-labour) incomes. Women with greater autonomy in one dimension (non-labour income) also gain autonomy in managing their own potential labour incomes better. Incentives for job search therefore improve. As a result, the newly acquired internal autonomy is also augmented with external autonomy through job search and/or employment.

We find that women who are the main decision makers in their households have a 92 percentage point higher probability of being in the labour market compared to women who are not. We conduct multiple robustness checks and find that our results function through women who were unbanked before the financial inclusion shock, emphasising that the channel operates through their inclusion. Men do not exhibit similar changes in autonomy with financial inclusion, suggesting that gender norms operate within these households. Men are not reliant on financial inclusion to gain in autonomy, they tend to have more bargaining power to start with. While women who live in households whose composition is dominated by men do not gain bank accounts as rapidly as women who live in households dominated by women, gains in autonomy

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[1]12 million of the 17.3 million cash transfers are Child Support Grants where the recipients are largely the mothers and female care takers of the children

are largest for the former. Therefore, modest improvements in financial inclusion translate to more pronounced expansions in autonomy when women live with more men, emphasising the gender power relations that prevail in these households. Furthermore, the causal effect is also strongest for women who live in male-dominated homes, where these modest gains in autonomy incentivise labour market entry of this group.

The next section will discuss the empirical literature and theoretical models revolving around womens autonomy and female labour force participation, and the impact that cash grants in general have been found to have in the South African context. This sets up the stage for the empirical methodology and the analysis, which are respectively the next two sections. Finally, we will discuss the implication of the results before concluding our paper.

2 Empirical and theoretical background

2.1 Empirical observations on female labour supply

The feminization of the labour force, in both developed and developing countries, over the past five decades, has been well-documented (Mehra and Gammage, 1999; Ozler, 2000; Standing, 1989). In South Africa, an increase in female labour supply can be seen in the data from as early as 1960. Standing et al. (1996) find that women accounted for only 23 percent of the labour force in 1960 but that this proportion increased to 36 percent by 1985 and to 41 percent by 1991. Their results are confirmed by those of Posel and Todes (1995). Since 1991, the increase in female labour supply has continued (Casale and Posel, 2002; Klasen and Woolard, 2000) with more recent data indicating that in 2014 women made up 45 percent of the labour force (own calculations using national income dynamics study (NIDS) wave 4).

The literature concerning the determinants of female labour supply has centred around three main topics: cultural norms (Fernández et al., 2004), the demand for female labour (Jensen, 2012) and the opportunity costs to working faced by women (Connelly, 1992). In particular, a large literature exists on the relationship between fertility and female labour supply (Bloom et al., 2009; Goldin and Katz, 2002). Casale and Posel (2002) specifically consider the possible causes of the feminization of the South African labour market. They find that women are being "forced" into the labour market mainly due to the loss of male financial support (Casale and

Posel, 2002, p. 18). While there is evidence that male financial support to women has decreased over the same period that female labour supply increased, they fail to isolate this as the causal channel by neglecting other possible reasons. However, several other channels are mentioned and treated within the related literature. Decreasing fertility (Goldin and Katz, 2002), changing social norms (Fernández et al., 2004) and increased female autonomy (Heath and Tan, 2014) could all be confounding factors. Our paper focusses on the intersection of social norms and autonomy. However, the literature on the role of bargaining power in accessing the labour market is limited. Rather, many studies focus on the opposite relationship.

2.1.1   From labour and non-labour income to autonomy

Several studies find that women's household bargaining power is contingent on their labour force participation (Anderson and Eswaran, 2009; Atkin, 2009; Luke and Munshi, 2011). Entering the labour market improves women's empowerment and gender equality across various economic settings, as their contribution to the income pool improves their power to make decisions over household resources (Amoateng et al., 2004). Women's labour supply has been linked to improvements in overall economic productivity (Bloom et al., 2009), as well as child health and education outcomes (Thomas, 1990; Haddad and Hoddinott, 1994; Duflo, 2012). Based on an abundance of literature, it is clear that women's within-household socio-economic outcomes are influenced by the increase in their *external* bargaining power after they start working.

In a similar vein, empirical analyses commonly show that resources such as income and assets empower women within their households (Agarwal, 1994; Kabeer, 1999; Quisumbing and Maluccio, 2003). Sivakami (2003) shows how income has a positive impact on the autonomy of women in urban areas in Tamil Nadu, although this is not found in the case of rural women. Another more recent study on India by Luke and Munshi (2011) reinforces the role of female income in increasing women's bargaining power and thereby her autonomy in the household. Several other studies (Hakim et al., 2003; Anker et al., 1982; Jeejeebhoy, 1991; Kishor, 2000) have elaborated on the positive and crucial influence of women's participation in the labour force, and her financial empowerment, on her autonomy.

Female autonomy does not only result from access to labour market income. Cash transfer programmes in developing countries target the "empowerment of women", broadly defined, as

a key objective. By design, resources are placed primarily in the hands of women with the aim of increasing their autonomy. Various studies show that cash transfers in the hands on women are related to gains in human capital and other child-specific benefits (Duflo, 2003; de Brauw et al., 2014; Doepke and Tertilt, 2014). Effectively, better developmental outcomes arise at the household level when cash transfers are targeted at women.

This result has been affirmed for cash transfer recipients in Latin America (the forerunner in monetary transfers to women) but also in several African countries. Bonilla et al. (2017) use a mixed methods study to show that cash transfers to Zambian women boost their autonomy in several dimensions of decision-making. On average, they made more solo or joint decisions compared to when they had no access to cash transfers. There was, however, limited impact on the number of overall decision making domains that women were allowed to be involved in. Van den Bold et al. (2013) also find qualitative evidence on conditional cash transfer (CCT) programmes that points to a positive impact on women's empowerment.[2] Peterman et al. (2015) show that there are only cash transfer (as opposed to food transfer) effects amongst women in northern Uganda.

There are also other studies with mixed results on women's social and economic empowerment. The Kenya Hunger safety net programme was reviewed by Oxford Policy Management (Otulana et al., 2016). They find that the proportion of women making primary household budget decisions increased following the intervention; further, women's overall contribution to household income increased due to their greater involvement in small businesses. Nevertheless, tension between spouses also rose. This strain in spousal relations, often leading to physical and emotional abuse has also been found in the parallel microfinance literature. Counter evidence to this effect exists in more econometrically robust studies. These studies find no such increase in abuse towards women, at least in the long run (Bobonis and Castro, 2010; Bajracharya and Amin, 2013).

Particular to the case of South Africa, Patel and Hochfeld (2011) and Patel et al. (2015) demonstrate the ability of Child Support Grants (CSGs) to improve control and allocation of resources, and increasing financial decision-making power among women. There is sufficient evidence to conclude that cash transfers lead to better economic and social outcomes for women, due to an increase in their autonomy and household bargaining power.

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[2]Quantitative research findings are, however, inconclusive. Their findings on unconditional cash transfers are even more mixed, although this is largely due to the very limited number of studies they included in their review.

2.1.2 From autonomy and financial inclusion to labour force participation

Evidence on the role of autonomy and financial inclusion in driving female labour supply is more scarce. Existing studies do show that increased bargaining power and autonomy lead to an increase in female labour force participation. With additional access to resources, females have more autonomy to determine their own labour force participation (Feigenberg et al., 2013). Women with greater bargaining power within the household also have greater incentive to use this position to access labour incomes, which they will be free to manage once being paid. Gray (1998) analyses a change in the divorce law in various states in the US and finds an increase in both female autonomy and labour supply (conditional on marital property rights), as well as a positive relationship between the two. Heath and Tan (2014) use the Hindu Secession Act as an exogenous shock to show that female labour force participation outcomes improve as a result of the change in inheritance laws, which for the first time allowed women to inherit property. Increased control over resources also results in an increase in bargaining power under the non-cooperative bargaining model. Our study is modelled along the same lines, although the idea we exploit is financial independence that women might not have previously enjoyed, that brings about an increase in her household bargaining power. However, Rangel (2006) finds an opposite effect for Brazil. He exploits a change in the law by which alimony rights and obligations for married couples is also extended to consensual unions. In comparison to married couples, women in consensual unions were found to be working less (with an increase in leisure time), which was explained by the redistribution of bargaining power in the favour of women.

There is mixed evidence on short-run evaluations of credit and microfinance on women's ability to enter the labour market. Banerjee et al. (2015) and Crépon et al. (2015) have not found significant economic benefits. Practitioners argue that changes in empowerment and job creation only occur in the longer run. Pitt and Khandker (1998), on the other hand, show increased labour supply when improved microcredit opportunities are provided to women. They find no such effects for men. In the paper, however, they do not speculate or describe the channel through which this might have occurred. Field et al. (2016) find that an increase in loans to women results in an improvement in female labour force participation by around 3 to 7%. The effect remains persistent over time. The increase in women's labour supply caused a rise in household business activity, which is exactly where women's participation burgeoned.

2.2 Theoretical framework

Gary Becker initiated the literature on household bargaining models where he proposed three 'unitary' household models, which incorporate preference heterogeneity and the bargaining process that exist in households. Economists were, for a long time, content with the Beckerian model of unitary households with benevolent patriarchs who consider the preferences of all members when making allocation decisions. It was much later, in the 1980's, that Manser and Brown (1980) and McElroy and Horney (1981) introduced cooperative bargaining models, which were then closely followed by non-cooperative bargaining models literature (Woolley, 1988; Lundberg and Pollak, 1993). These models introduced members of the households who have collective or individual utility functions, respectively, that are affected by particular resource constraints. These were able to thereby elaborate the substantial differences in the welfare levels of the individuals of the same household, as a result of the difference in the amount of power an individual wields within the household (Behrman, 1988; Thomas, 1990; Kanbur and Haddad, 1994; Pitt et al., 1990).

The literature itself is vast and provides many outcomes that affect women's autonomy, many of them touching upon their labour force participation and the consequent income and earnings shock in this model. In some studies, women's absolute level of earnings has no impact on bargaining power at all, while a lower gender wage gap in the local labour market does appear to significantly lower women's unpaid work load (MacPhail and Dong, 2007) and reduces domestic violence (Aizer, 2007). In itself the standard collective model predicts that an increase in female autonomy decreases female labour supply (McElroy and Horney, 1981), whereas the non-cooperative model predicts that an increase in female autonomy increases female labour supply.

Under the collective model household members maximize the weighted sum of member's utility. The members have a unit of time, which they must divide between work and leisure and both members contribute some of their income to the public good (McElroy and Horney, 1981). In this model, as a women's autonomy increases, her utility becomes more important for the optimization of resources. This results in the woman being able to work less and consume more. Therefore under the collective model a woman is less likely to work as her autonomy increases (Heath and Tan, 2014; McElroy and Horney, 1981).

Under the non-cooperative model the household allocation of resources happens in two stages.

In the first stage, income is shared between all members. In the second stage each member maximizes her own utility function subject to her income share. Therefore, there is a part of her income that a woman is able to control and as a result, affects her own utility. This increase in her "wage" increases her autonomy and also her inclination to work (Heath and Tan, 2014).[3] Several studies also examine the changes in women's bargaining power based on their access to resources. Positive shocks in income and assets (Agarwal, 1994; Kabeer, 1999; Quisumbing and Maluccio, 2003), increased ownership of land and housing jointly with men, in comparison to all male property rights (Datta, 2006; Panda and Agarwal, 2005), and women's wage earning and education have positive impacts on their bargaining power (Koolwal, 2005; Negrusa and Oreffice, 2010). These studies served to show that individual access to and control over resources and household level variables have a big impact on bargaining power of women. Other external community level variables, such as market wage and opportunity of employment also affect women's bargaining position. Simultaneously, there are number of other papers which find that women's work, assets, earnings and education have no significant impact on their decision-making power and well-being in households.

3 Identification strategy and Data

3.1 Cash transfers and financial inclusion in South Africa

We adopt a similar approach to Heath and Tan (2014) in our paper. Within the non-cooperative household, female autonomy is a measure of how much control a woman has over her own income. We use the roll out of the South African Social Security Agency (SASSA) bank cards as an exogenous shock to the control women have over their income.

Approximately 17.3 million beneficiaries fell within South Africa's social safety net by the end of 2017 (more than 12 million of these are Child Support Grants) (SASSA, 2017). Grants have impacted other development outcomes, with both poverty and inequality declining over time (Leibbrandt and Levinsohn, 2011; Bhorat and Westhuizen, 2012; Woolard and Leibbrandt,

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[3]The direction of the predicted effect on labour supply depends on exactly which further assumptions are made. Under a common set of assumptions an increase in autonomy will cause women's labour supply to either stay constant or increase (but not decrease). Under alternative assumptions the direction of the effect on labour supply is ambiguous (including the possibility that it could decrease or increase). See Heath and Tan (2014) for details.

2010).

Woolard and Leibbrandt (2010) and Agüero et al. (2006) examine the impact of cash grants on household poverty and other household outcomes. They find a positive impact on all of the development outcomes examined, especially over the long term. These effects relate to, *inter alia*, lower levels of poverty, improved child health outcomes, better enrolment and schooling. **?** also examine the impact of cash grants on labour supply and especially female labour supply. They find ambiguous results, wherein, depending on income level, decisions to work were affected differently by the receipt of grants. Woolard and Leibbrandt (2010), on the other hand, find that there exists a positive relation between grant income and labour supply. Posel et al. (2006) find that *old-age pensions* facilitate women's attachment to the labour force in two ways. Firstly, the cash injection alleviates job search costs of younger women who migrate to urban areas to enter the labour market. Secondly, transfer money that accrues to older women can be utilised towards child care. Their results contrast with earlier findings of Bertrand et al. (2003), who do not account for migrant household members' labour force participation.

Before the creation of SASSA in 2005, the task of cash transfer payments was decentralised to provincial social welfare departments. Each used different sub-contractors and was able to choose its mode of payment. Up until 2003, payments were made in cash only across the entire country. In that year, however, three provinces' (Eastern Cape, North-West and Gauteng) providers offered the option of opening bank accounts for recipients, enabling electronic transfers for the first time (Berg, 2014). Take-up was low, and the policy was targeted mainly at younger Child Support Grant recipients. In March 2012, however, SASSA introduced bank cards for all cash transfer recipients. Between March 2012 and August 2013, 10 million SASSA Debit MasterCard cards with biometric functionality were distributed to South African households, of which 2.5 million were handed out between March and June 2012. The measure is now considered to have largely contributed to the 4% increase in the banked population between 2011 and 2012.[4] The SASSA card was linked to a bank account with Grindrod Bank, where cash transfers were deposited monthly. The card gives recipients access to conventional banking services, such as cash withdrawals and electronic payments, and are also an accepted method of payment for point-of-sale transactions (Cash Paymaster Services (Pty) Limited, 2012). The main aim of the new system was to decrease fraudulent benefactors (Department of Social Development, 2012).

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[4]See http://newsroom.mastercard.com/press-releases/ten-million-sassa-mastercard-cards-issued-to-south-african-social-grant and http://www.biztechafrica.com/article/sassa-mastercard-debit-card-grows-financial-inclus/7236/.VPRagPmUeSp.

Before the introduction of the SASSA bank card, individuals would receive their grants in cash. Previous research has shown that this income was often pooled with other household income (Case and Deaton, 1998). We hypothesize that - compared to the situation where individuals bring cash into the household and other household members may make claims on the cash - the bank cards increase the control individuals have over their grant income.[5] In addition the recipients - many of whom were initially financially excluded - gained access to a bank account. As a result many more women were included within the financial system and gained greater control of their finances. As our results below highlight, effects are largest among recipients who were initially unbanked before the card roll out. We find that this was a significant positive shock to the autonomy of many women and underpins the channel we exploit in our study.

Our identification comes from the universal introduction of the SASSA bank cards in 2012. This resulted in an exogenous increase in autonomy for grant recipients by giving women more financial control than they previously had, when grants were paid out in cash.

Using two stage least squares the following equation is estimated:

$$LFP_{ij} = \beta(PDM)_{ij} + \theta Income_{ij} + \gamma(Age_{ij}) + \delta Educ_{ij} + \alpha X_{ij} + \eta_{ij} \tag{1}$$

Where $\widehat{PDM}_{ij}$ is predicted using:

$$PDM_{ij} = \rho Post_{ij} + \lambda Treat_{ij} + \phi(Post_{ij} * Treat_{ij}) + \alpha Y_{ij} + \tau_{ij} \tag{2}$$

where $\widehat{LFP}_{ij}$ denotes whether person i at time j participated in the labour market,

$\widehat{PDM}_{ij}$ denotes whether person i at time j was the primary decision maker in their household,

$\widehat{Income}_{ij}$ is the log household monthly income from labour market activities,

$\gamma(\widehat{Age}_{ij})$ is a second degree polynomial for the age of individual i at time j and and

$\widehat{Educ}_{ij}$ is the number of years of education completed by individual i at time j.

Further controls (X_{ij}) include an indicator for whether or not individual i receives a CSG at time j $(\widehat{Treat}_{ij})$, a variable indicating whether the period of enumeration falls before or after the introduction of the SASSA bank card $(\widehat{Post}_{ij})$, the number of children residing in the household, which province individual i resides in, an indicator for whether individual i lives in an urban

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[5]To withdraw cash at a SASSA pay point or a participating store (Pick n Pay, Boxer, Shoprite, USAVE and SPAR) individuals need to verify their identity using their fingerprints. When withdrawing cash at an ATM or non-participating merchant individuals need to enter a pin code. Only the grant recipient may use the bank card and they may not authorize other individuals to use their card Cash Paymaster Services (Pty) Limited (2012)

or rural area, education and a quadratic in age. Because there was a partial roll out of this policy in the early 2000s, before universal implementation in 2012 (Berg, 2014), our results are understated. Our strategy therefore amounts to using the intention to be treated with a bank account as an instrumental variable for autonomy; while we have information on being banked, it is not certain from the data who received a SASSA card as a result of the intervention. Therefore, our first stage instrumental variables estimates will have lower explanatory power, and instrument relevance is more conservative than would otherwise be the case. We, however, conduct robustness checks by limiting our samples to the previously unbanked and banked to establish whether this strategy is credible. We also exclude the provinces in which initial roll outs were conducted.

3.2 Data

We use four longitudinal waves from the nationally representative National Income Dynamics Study (NIDS), which were enumerated bi-anually from 2008 to 2014/5. This rich data source contains information on an array of individual and household characteristics over time, including labour force participation, financial inclusion and perceptions on household decision-making. Our outcome follows the broad definition of the labour force, as it is considered the most appropriate reflection of market participation (Kingdon and Knight, 2004); employed, searching unemployed and discouraged workers (who have not undertaken job search in the last four weeks, but are willing to accept a job if presented to them) are recorded as participants. The variable of interest is an indicator of who makes the main household decisions with regards to daily household expenditures. This measure of autonomy is based on the consensus opinion of all enumerated adults in the household. Individual participants are also asked whether they have an active bank account.

We define the treatment group as those individuals who indicate that they receive a Child Support Grant (CSG), regardless of whether they meet the eligibility criteria or not. *De jure* recipients are the caregivers of children who qualify for the cash transfer according to two criteria: firstly, caregivers must pass a means test with regards to their and their spouse's incomes (and not the total household income)[6]; secondly, the targeted child must be aged below a maxi-

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[6]The threshold amounts to 10 times the grant amount for single caregivers' incomes, or 20 times the grant amount for combined spousal income if married

mum threshold (Eyal and Njozela, 2016). Adjustments to the age criteria over time have led to large expansions in the receipt of CSGs in the broader population.[7] We construct the control group to contain non-recipient adults who qualify for the CSG by the means test, but who do not obtain it because all children in their household fall beyond the age-qualifying range. This approach resembles a regression discontinuity design with children's age as a running variable, though we use this logic in the context of a difference-in-difference analysis. We limit ourselves to households where the oldest child is 5 years older than the threshold. The age composition of the children (and also adults) in our control group changes over time, due to the evolution of the age criteria. As a result of these adjustments to the qualifying criteria, treatment and control groups constitute different populations in each of the waves. To remedy the potential sample selection effect, we choose to follow individuals who appear in the panel in at least 3 of the 4 waves, instead of treating entire waves as representative cross sections. This strategy is also motivated by the design of the NIDS: enumerators follow individuals who move away from their original households; other members of the newly "split" households are enumerated in addition to respondents who were recorded in the prior wave. New entrants into the panel are therefore not randomly selected, and may bias our results. We also limit ourselves to a sample that is of working age in all waves of the panel.[8] After imposing these restrictions, we find that we capture very few individuals who recently switched from being CSG non-recipients to recipients, despite the large expansion in the programme documented for the population as a whole. We therefore omit new recipients and our analysis is limited to expansions in banking and autonomy among existing recipients, rather than newly-eligible recipients. As a result, our results are likely to be conservative. Furthermore, we only study black individuals, as this group constitutes the majority of the population, the financially excluded and grant recipients.

3.3 Identification

We now turn to validating our choice of identification strategy with data from the NIDS. Figure 1 explores the relevance of the first stage, and whether the necessary proposed intention to treat instruments can be used appropriately. It shows the probability of having a bank ac-

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[7]In 2008, at the beginning of the sample, the cut-off was set at children below the age of 14. The criteria was progressively adjusted until 2012, when children below the age of 18 qualified for a CSG.

[8]In practices this means working with a sample aged 15 to 58 in 2008 and 21 to 65 in 2014.

count (after conditioning on age and education) over time for CSG grant recipients (treatment) and non-recipients (control) in poor households. The prevalence of bank accounts grew among female grant recipients who were previously unbanked, but also within the control group of poor non-recipients. Gradual, progressive financial inclusion occurred among all poor households; however, the process was more pronounced among female grant recipients. Matching this pattern, previously unbanked women's likelihood of being the main decision maker increased rapidly for the treatment group, but remained constant for untreated women. We do not observe the same patterns among women who were previously banked. Many women in treatment and control groups lost their bank accounts between 2010 and 2012, a phenomenon which is also reported by FinScope (2014). While the reasons for this move are unclear, it is possible that continued job loss following the 2009 recession may have played a role. Regardless, treatment and control groups show similar patterns among the previously banked, so that expansions in financial inclusion were primarily the result of *new* bank accounts issued to grant recipients. Similarly, trends in autonomy are indistinguishable among all women who were already banked. As a result, we conclude that there is a shift in autonomy among the previously unbanked which matches an increase in banking among grant recipients.

Table 1 shows changes in autonomy over time for the various sub-groups. Difference-in-difference estimates are also included that condition on age and education. For both initially banked and unbanked women, there are only statistical significant increases in autonomy for the treated group. However, difference-in-difference estimates show that the positive effect is only significant for the previously unbanked. Further, the effect is strongest when previously unbanked women live in households where the adult household composition is dominated by men. This suggests that traditional norms regarding gender roles influence financial inclusion and autonomy among women; the card roll out was particularly successful at facilitating female autonomy when more men were present in the home. This mechanism is further supported by the observation that male autonomy was generally unresponsive to the card roll out; men are more likely to attain autonomy independently from being financially included. We therefore argue that increases in autonomy resulted from the card roll out within the context of traditional gender norms.

Table 2 verifies that our treatment and control groups really are associated with increases in being banked. While we cannot know that the banking patterns are directly attributable to the SASSA intervention, this is the closest measure of the direct impact of the policy on financial

Figure 1: Changes in prevalence of being banked and being the main decision maker by treatment status and pre-intervention banking status
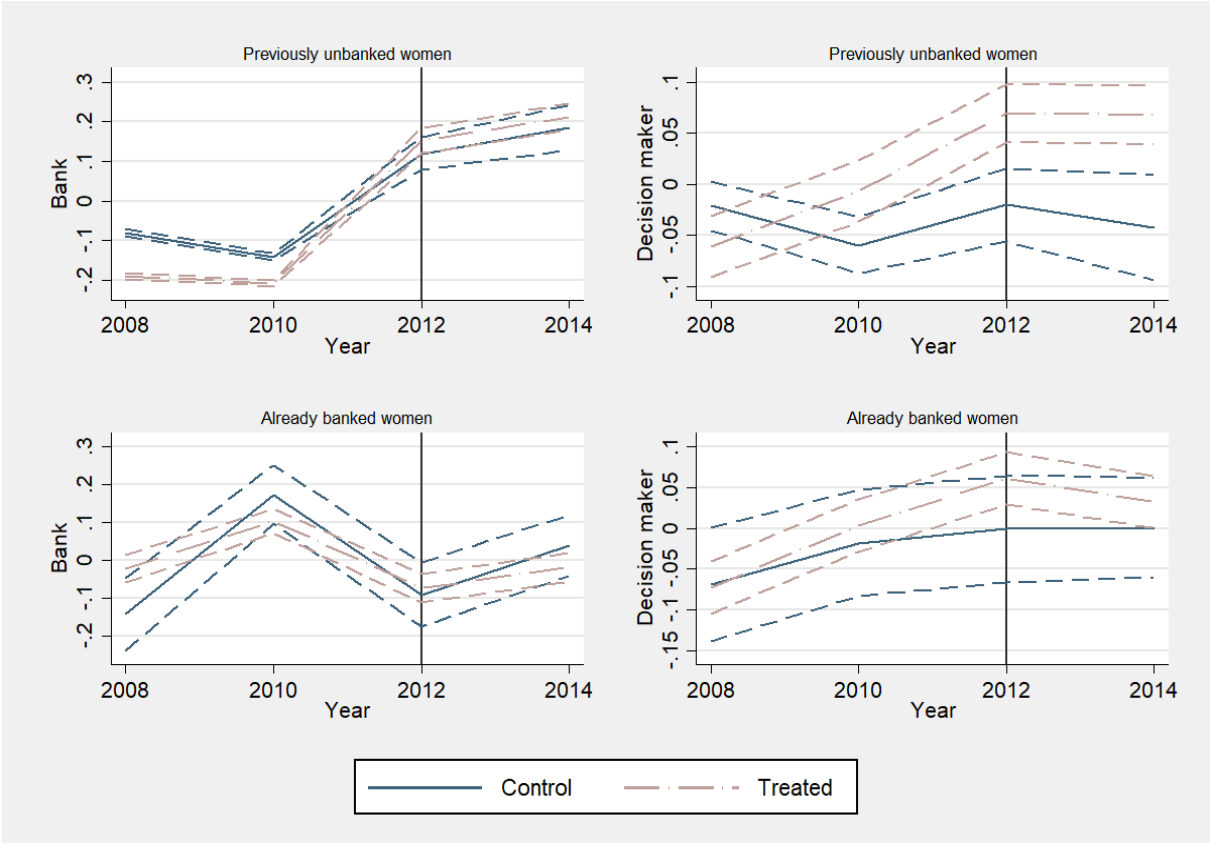
inclusion. Previously unbanked women experience a large increase in financial inclusion (8.7 percentage points). As with the increases in autonomy, this effect is stronger among women who live in households whose composition is dominated by men (11.5 percentage points). There are no significant changes for women who were previously banked. Again, men show no changes in their probability of being banked. As Berg (2014) emphasised, CSG recipients are largely women, and take-up was targeted at this group. Importantly, however, the gendered patterns in financial inclusion (among the previously unbanked who were affected by the card roll out) mirror increases in autonomy. We are therefore confident that the shock operates through the channels we propose.

Table 1: Difference in the conditional probability of being the main decision maker: by treatment status, gender and pre-treatment banking status

		Women					Men		
		All	Banked	Unbanked	Unbanked: Male HH	Unbanked: Female HH	All	Banked	Unbanked
Control	Pre	-0.044	-0.041	-0.043	-0.017	-0.069	-0.033	-0.039	-0.032
		(0.009)	(0.024)	(0.009)	(0.010)	(0.017)	(0.006)	(0.018)	(0.006)
	Post	-0.020	-0.000	-0.028	-0.052	0.006	0.039	0.039	0.041
		(0.013)	(0.023)	(0.015)	(0.018)	(0.027)	(0.011)	(0.026)	(0.012)
	Difference	0.023	0.041	0.015	-0.034	0.075	0.073	0.077	0.073
	p-value	0.128	0.223	0.398	0.101	0.019**	0.000***	0.014**	0.000***
Treated	Pre	-0.038	-0.035	-0.035	-0.028	-0.045	0.219	0.302	0.180
		(0.008)	(0.012)	(0.011)	(0.012)	(0.034)	(0.049)	(0.078)	(0.059)
	Post	0.062	0.048	0.068	0.054	0.125	0.218	0.123	0.262
		(0.008)	(0.012)	(0.010)	(0.011)	(0.029)	(0.089)	(0.176)	(0.079)
	Difference	0.101	0.083	0.103	0.082	0.169	-0.001	-0.180	0.082
	p-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.993	0.382	0.425
Diff-in-diff		0.078	0.041	0.089	0.116	0.098	-0.073	-0.257	0.009
p-value		0.000***	0.320	0.000***	0.000***	0.063*	0.511	0.190	0.949

Notes: own calculations from NIDS wave 1-4. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Figures are conditional means. Controls include a quadratic in age and education.

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Table 2: Difference in the conditional probability of being banked: by treatment status, gender and pre-treatment banking status

		Women					Men		
		All	Banked	Unbanked	Unbanked: Male HH	Unbanked: Female HH	All	Banked	Unbanked
Control	Pre	-0.098	0.025	-0.110	-0.086	-0.127	-0.063	0.048	-0.107
		(0.010)	(0.033)	(0.004)	(0.004)	(0.007)	(0.008)	(0.025)	(0.003)
	Post	0.070	-0.027	0.144	0.143	0.130	0.086	-0.057	0.148
		(0.015)	(0.030)	(0.017)	(0.021)	(0.029)	(0.013)	(0.029)	(0.015)
	Difference	0.168	-0.052	0.254	0.230	0.257	0.150	-0.105	0.255
	p-value	0.000***	0.241	0.000***	0.000***	0.000***	0.000***	0.006***	0.000***
Treated	Pre	-0.060	0.042	-0.198	-0.182	-0.246	-0.124	-0.050	-0.184
		(0.008)	(0.013)	(0.003)	(0.003)	(0.012)	(0.076)	(0.148)	(0.045)
	Post	0.072	-0.048	0.182	0.176	0.207	-0.032	-0.112	-0.060
		(0.009)	(0.014)	(0.012)	(0.013)	(0.034)	(0.155)	(0.223)	(0.198)
	Difference	0.131	-0.090	0.380	0.358	0.452	0.092	-0.063	0.124
	p-value	0.000***	0.000***	0.000***	0.000***	0.000***	0.600	0.820	0.567
	Diff-in-diff	-0.036	-0.036	0.126	0.128	0.196	-0.057	0.042	-0.131
	p-value	0.114	0.439	0.000***	0.000***	0.000***	0.670	0.861	0.370

Notes: own calculations from NIDS wave 1-4. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Figures are conditional means. Controls include a quadratic in age and education.

4 Results

4.1 Instrumental Variables Estimates

We proceed with two-stage least-squares estimates. Tables 3 and 4 show baseline estimates for women and men separately. Magnitudes of difference-in-difference interaction coefficients (for unbanked women) in table 4 are similar for the probability of being banked (10.2 percentage points) and being the chief decision maker in the household (8.4 percentage points). It emphasises that, for women, the intention to treat is closely linked to actual changes in financial inclusion following the roll out of the bank cards. The instrumental variable effect of autonomy is large, raising the probability of labour force participation by 92 percentage points for women who are decision makers, relative to those who are not. Diagnostics suggest that the instrument is highly relevant. The first stage F statistic is 45.9, which is comfortably above the acceptable threshold of 10. We additionally focus on a more limited first stage F statistic that tests for the importance of only the difference-in-difference interaction term. This more conservative statistic remains satisfactorily large at 12.7. The Hausmann test suggests that the estimates differ substantially from OLS coefficients.

Given that the programme was unintentionally piloted in three provinces in the early 2000s (Berg, 2014), we test the robustness of our results to excluding them from the analysis. The second panel shows that the core of our results remain in tact, though the magnitude of the impact drops slightly to 86.3 percentage points. In addition, we include results for women who were banked prior to the intervention, to serve as a placebo analysis. Neither financial inclusion nor autonomy changes significantly among the previously banked in response to the card roll out. This reflects in a low first stage F statistic of 1.4 for the interaction term. While the 2SLS coefficient is significant, its magnitude halves relative to the banked population. Given that this group was already compliant with our instrument, the small magnitude is unsurprising. However, we do not emphasise the impact for previously banked women, due to a weak instrument problem. Overall, our results therefore support the proposed channel from an increase in autonomy of the newly banked to a large impact on labour force participation for this group.

In contrast to women, table 4 shows that previously unbanked and banked men did not experience a change in being banked or in their autonomy. While the measured impact of autonomy on participation is implausibly large, this is reflective of a weak instrument problem that is

emphasised by the very small F statistics on the first stage difference-in-difference term. Consequently, we qualify the channels through which our results operate: male autonomy does not depend on becoming financially included by external impetus; rather, male autonomy is already supported by existing social norms. Financial inclusion only benefits women's autonomy, and in turn influences their participation in the labour market. Gender norms are therefore a key determinant of internal household autonomy, and external shocks help women to reduce these constraints and enter the labour market. Their financial inclusions through receiving non-labour market income improves their position to make decisions about all funds, so that they have a greater incentive to enter the labour market.

Table 5 presents results only for previously unbanked women, but specifications are limited based on their household composition. Firstly, we consider women who live in households where more than half of adults are men and secondly we consider the complement, by limiting estimations to women who live in households that are dominated in composition by women. The latter group experienced a more rapid expansion in banking compared to the former (15.6 percentage points vs 9.4 percentage points)[9]; however, the opposite is true with respect to autonomy. While women *did* experience greater decision making power when living in female-dominated households (6.7 percentage points), the effect is much stronger in male-dominated households (15.5 percentage points). Our results highlight that financial inclusion raises women's autonomy in all circumstances. However, despite smaller expansions in banking in male-dominated households, the return in terms of increased autonomy was much greater in these living circumstances. This result emphasises that financial inclusion is a route to improving the decision-making power of women in households where traditional roles may hinder their autonomy. Finally, the 2SLS results show that autonomy has the largest impact on labour force participation for women who live in male-headed households. We place no emphasis on the impact for women in female-dominated households, as the first stage F statistic on the difference-in-difference term is only 1.845. Similar to the effects of financial inclusion on autonomy, we therefore conclude that results are empirically the clearest in the context where women are a minority. External financial inclusion assists women to overcome internal bargaining barriers.

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[9]While we cannot be certain what the channels are, it does suggest that women generally and women in female-dominated networks more specifically, were better targeted by the roll out of the bank cards.

Table 3: 2SLS results for women: by pre-treatment banking status

Provinces in sample	Women: unbanked before intervention						Women: banked before intervention		
	All			Exclude pilot provinces			All		
	OLS P(Bank=1)	IV first P(Decision maker = 1)	IV second P(LFP = 1)	OLS P(Bank=1)	IV first P(Decision maker = 1)	IV second P(LFP = 1)	OLS P(Bank=1)	IV first P(Decision maker = 1)	IV second P(LFP = 1)
Decision maker			0.924 (0.121)***			0.863 (0.142)***			0.492 (0.177)***
Post	0.292 (0.017)***	0.023 (0.020)		0.275 (0.021)***	0.003 (0.024)		-0.057 (0.043)	0.041 (0.036)	
Treat	-0.024 (0.017)	0.089 (0.019)***		-0.035 (0.019)*	0.064 (0.022)***		0.044 (0.036)	0.065 (0.030)**	
Treat x Post	0.102 (0.021)***	0.084 (0.024)***		0.099 (0.025)***	0.112 (0.029)***		-0.048 (0.046)	0.046 (0.039)	
Constant	-0.361 (0.063)***	-0.659 (0.071)***	-0.248 (0.146)*	-0.376 (0.071)***	-0.742 (0.081)***	-0.215 (0.176)	-0.024 (0.117)	-0.752 (0.098)***	-0.313 (0.193)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	4709	4816	4816	3264	3334	3334	3055	3107	3107
R-squared	0.294	0.419		0.279	0.432		0.055	0.321	0.090
F	108.292	192.260		83.690	168.313		9.842	81.021	
F: first stage			45.915			31.354			14.882
F: interaction only			12.693			15.490			1.413
Hausman p-value			0.000			0.000			0.013

Notes: own calculations from NIDS wave 1-4. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Controls include a quadratic in age, education, number of children in household, household income from labour, province fixed effects and an urban-rural dummy.

Table 4: 2SLS results for men: by pre-treatment banking status

Provinces in sample	Men: unbanked before intervention			Men: banked before intervention		
	All			All		
	OLS $P(Bank=1)$	IV first $P(Decision\ maker = 1)$	IV second $P(LFP = 1)$	OLS $P(Bank=1)$	IV first $P(Decision\ maker = 1)$	IV second $P(LFP = 1)$
Decision maker			2.100 (0.339)***			1.335 (0.526)**
Post	0.308 (0.014)***	0.083 (0.014)***		-0.114 (0.041)***	0.066 (0.031)**	
Treat	-0.034 (0.071)	0.222 (0.069)***		-0.114 (0.156)	0.315 (0.121)***	
Treat x Post	-0.131 (0.143)	-0.010 (0.141)		-0.015 (0.248)	-0.281 (0.193)	
Constant	-0.227 (0.077)***	-0.063 (0.073)	-0.865 (0.175)***	-0.399 (0.286)	-0.232 (0.221)	-1.130 (0.391)***
Controls	Y	Y	Y	Y	Y	Y
N	2347.000	2473.000	2473.000	600.000	624.000	624.000
R-squared	0.296	0.398		0.102	0.439	
F	54.340	90.112		3.678	26.302	
F: first stage			15.879			3.339
F: interaction only			0.005			2.108
Hausman p-value			0.000			0.002

Notes: own calculations from NIDS wave 1-4. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Controls include a quadratic in age, education, number of children in household, household income from labour, province fixed effects and an urban-rural dummy.

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Table 5: 2SLS results for previously unbanked women: by gender composition of household

	Women: male-dominated household			Women: female-dominated household		
	OLS	IV first	IV second	OLS	IV first	IV second
	P(Bank=1)	P(Decision maker = 1)	P(LFP = 1)	P(Bank=1)	P(Decision maker = 1)	P(LFP = 1)
Decision maker			1.010 (0.196)***			0.929 (0.235)***
Post	0.272 (0.025)***	-0.066 (0.030)**		0.297 (0.031)***	0.077 (0.033)**	
Treat	-0.036 (0.022)	0.020 (0.025)		-0.043 (0.039)	0.088 (0.040)**	
Treat x Post	0.094 (0.029)***	0.155 (0.033)***		0.156 (0.048)***	0.067 (0.049)	
Constant	-0.413 (0.087)***	-0.682 (0.100)***	-0.016 (0.220)	-0.401 (0.130)***	-0.574 (0.133)***	-0.621 (0.265)**
Additional controls	Y	Y	Y	Y	Y	Y
N	2983	3044	3044	890	921	921
R-squared	0.280	0.402		0.334	0.493	
F	64.105	113.014		24.234	48.642	
F: first stage			19.476			11.429
F: interaction only			21.622			1.845
Hausman p-value			0.000			0.000

Notes: own calculations from NIDS wave 1-4. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Standard errors in parentheses. Controls include a quadratic in age, education, number of children in household, household income from labour, province fixed effects and an urban-rural dummy. Only women who were unbanked in the pre-treatment period are included.

4.2 Marginal Treatment Effects

The LATE estimated in section 4.1 is the treatment effect (TE) for the group of compliers. Given that TE heterogeneity may be present, gaining understanding of how the TE varies across different groups will help us understand how autonomy affects labour force participation more generally. Applying MTE methods allows us to estimate TE for various groups, such as always-takers, never-takers and a randomized intervention sample (Heckman, 2010).

Under the same assumptions needed to identify LATE, TE heterogeneity and selection can be separated. Understanding of selection is gained from the differences in the average untreated outcomes of never takers and compliers. If a difference is observed in the average treated outcomes of always takers and compliers this provides evidence of selection, TE heterogeneity or both (Heckman, 2010).

We estimate MTEs on all women (both banked and unbanked before treatment). Table 6 outlines the main groups for which TE's are estimated. In the top left quadrant, the baseline untreated group combines women who are never autonomous (regardless of receiving a shock

		Instrument	
		Post = 0 or (Post = 1 & Treat = 0)	Post = 1; Treat = 1
Endogenous Variable	**Decision maker = 0**	**Baseline untreated - BU** Untreated Compliers *Without autonomy only before* PLUS never-takers *Always without autonomy* $P(\overline{banked}) = 0.32$	**Intervention untreated - IU** Never-takers *Always without autonomy* $P(\overline{banked}) = 0.40$
	Decision maker = 1	**Baseline treated - BT** Always-taker *Always with autonomy* $P(\overline{banked}) = 0.43$	**Intervention treated - IT** Treated compliers *With autonomy only after* PLUS Always takers *Always with autonomy* $P(\overline{banked}) = 0.44$

Table 6: Outline of groups for which MTE is estimated, with all women's probability of being banked

to financial inclusion) with those who eventually become decision makers after the intervention, but observed before they receive the shock. The bottom right quadrant, representing the intervention treated, also contains the latter group of compliers but who are now observed in their treated status. Because we have panel data, we therefore observe some compliers in both of these states, as they move from the top left to bottom right over time after receiving a SASSA card. MTE effects are estimated from the perspectives of all quadrants. Given the overlap in the compliers in the aforementioned quadrants, one might expect similar results from these estimates. However, the top left quadrant is confounded by women who are never autonomous and the bottom right by the always autonomous. Results estimated from the two perspectives may therefore differ. Both non-complier groups have a higher probability of being banked (above 40%), compared to the compliers in their untreated state. However, compliers' transition to being treated leads to convergence in financial inclusion, with the probability of having an account increasing from 32% to 44%. The top left quadrant is therefore most closely associated with being an unbanked women before the intervention. Hence, estimates for this group are also most comparable to the LATE estimated in section 4.1.

Table 7 shows the treated outcome, untreated outcome and treatment effect for various groups. After removing the selection effects, always-takers (column 1) experience a larger TE than compliers (column 7). Such women experience a 54 percentage point increase in the probability of participating in the labour force when becoming the primary decision makers within their households. It is intuitive that the group which has more to gain from treatment always selects

into treatment. However, this effect is not statistically significant.

Never takers (column 4) experience a smaller TE, namely a 42 percentage point increase in the probability of participating in the labour force when becoming the primary decision maker. Never takers are women who with or without a SASSA bank card would not be the primary decision makers within their households. Similar to before, it is intuitive that the group who have less to gain from treatment never select into treatment.

The results in section 4.1 indicate that an increase in autonomy of the *newly* banked had a large impact their labour force participation. In order to contextualize the results in this section with this finding we considered the probability of being unbanked before the SASSA bank card roll out for each compliance type. Never-takers and untreated compliers have the highest probability of being unbanked.[10] Individuals in this classification have the largest treatment effect and are also the only compliance type for which a significant treatment effect is observed at the 5% level. The results therefore suggest that the effect of female autonomy on labour force participation is most pronounced for those that that were unbanked prior to the SASSA bank card roll out. This finding along with those in section 4.1 confirm that the instrumental variable is working through the intended channel of increasing the financial inclusion of women and thereby their autonomy.

The randomized intervention sample treated (RIST) includes all women who are primary decision makers, all baseline and intervention treated. Similarly, the randomized intervention sample untreated (RISU) include all women who are *not* primary decision makers, all baseline and intervention untreated. We observe a large and significant effect for the RISU (column 6), the women who do not have autonomy before the SASSA bank card roll out and who still do not have autonomy after. This is a group of very dis-empowered women who would see huge gains (in their probability of participating in the labour force) if they were empowered. The fact that they see larger gains than other women is likely because becoming the major decision maker would constitute a larger shift in their bargaining power compared to the shift required for other women who are closer to the threshold. Hence, means other than financial inclusion to promote autonomy would lead to a large increase in market participation.

Understanding how TEs differ for individuals based on observable characteristics is helpful in understanding the large effects seen in section 4.1. By imposing additive separability between observables and unobservables (as is commonly done in the literature) general MTE functions

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[10]Never-takers/untreated compliers have a 68% probability of being unbanked while always-takers, never-takers and treated compliers/always-takers have a 57%, 60% and 56% probability of being unbanked respectively.

Table 7: Treated Outcomes, Untreated Outcomes, and Treatment Effects

	1	2	3	4	5	6	7	8
Group	Baseline Treated (Always Takers)	Baseline Untreated (Never Takers and Untreated Compliers)	Intervention Treated (Always Takers and Treated Compliers)	Intervention Untreated (Never Takers)	Randomized Intervention Sample Treated	Randomized Intervention Sample Untreated	Randomized Local Average (Treated and Untreated Compliers)	Average
	BT	BU	IT	IU	RIST	RISU	LA	A
Treated Outcome TO	0.479	0.852	0.607	1.006	0.537	0.889	0.800	0.684
Untreated Outcome UO	0.222	0.339	0.404	0.585	0.305	0.396	0.411	0.343
Treatment Effect TE = TO - UO	0.257	0.513**	0.203	0.421*	0.232	0.492**	0.389*	0.341*
Selection UO/TO	0.464	0.398	0.666	0.581	0.567	0.446	0.514	0.501
Treatment Effect TE/TO	0.536	0.602	0.334	0.419	0.433	0.554	0.486	0.499

can be estimated to show how TEs differ for individuals with various characteristics (Kowalski, 2016).

Using the approach developed by Kowalski (2016), the extent to which observables account for differences in TE heterogeneity can be measured. The sample marginal treatment effect (SMTE) shows how the TE varies after all observable covariates have been taken into account. The SMTE therefore shows how TEs vary with unobserved heterogeneity. To understand how the TE varies with observed heterogeneity we calculate the MTE with the largest observable component, maxMTE(x,p), and compare this with the MTE with the smallest observable component, minMTE(x,p), as shown in figure 2. The difference in the two functions gives the maximum amount of variation in the TE that can be explained by observed heterogeneity (Kowalski, 2016).

Figure 2: Marginal treatment effects on LFP
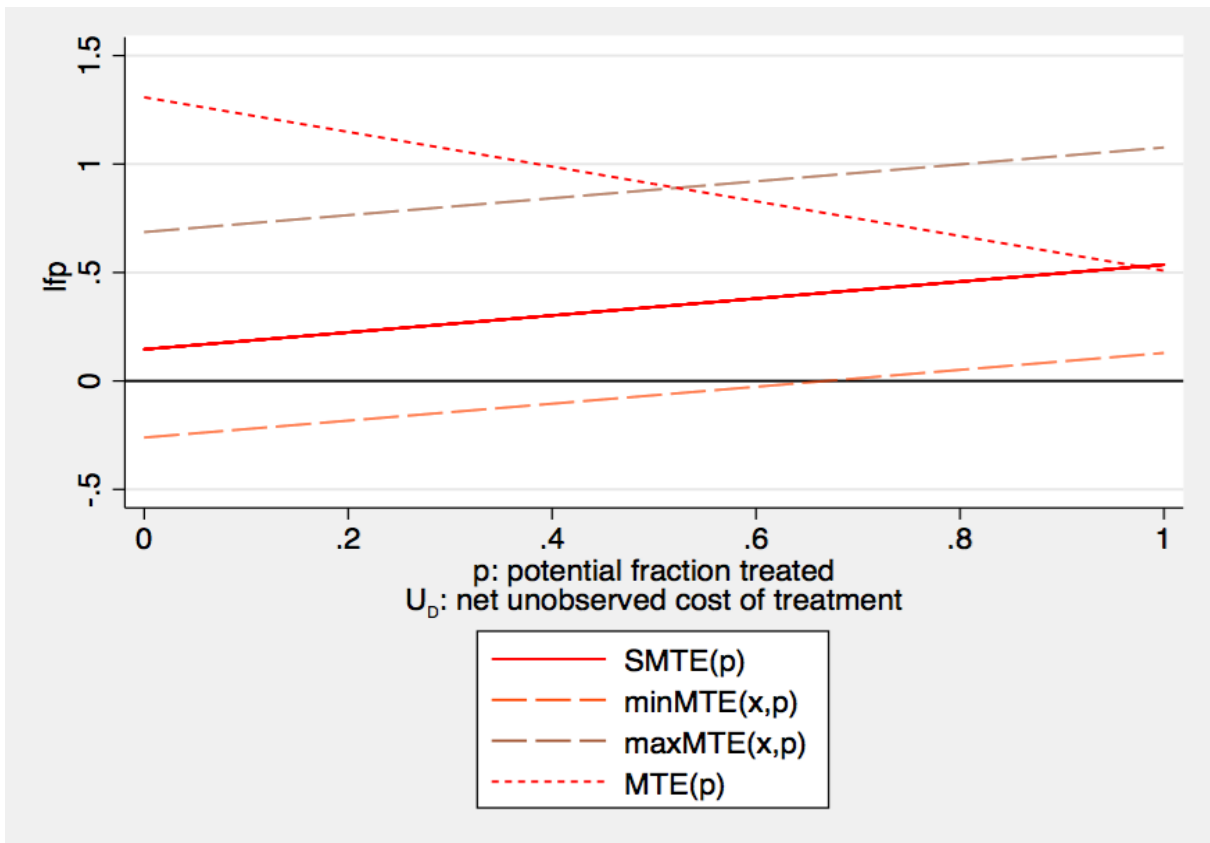
Figure 2 shows the TE on LFP on the y-axis and the potential fraction treated which is equal to the unobserved cost of treatment on the x-axis. The downward sloping MTE function indicates that individuals with the highest TE select into treatment first. In the current context

that means that women who have the greatest probability of entering the labour market with increased household bargaining power, also chose to use the increase in autonomy given to them by the SASSA bank card in order to become the primary household decision maker.

Covariates play a role in explaining why the TE varies with the proportion of the sample that selects into treatment, as can be seen by the fact that the SMTE is less steep than the MTE. The SMTE has a very flat slope indicating that very little unobserved heterogeneity is left unexplained. The largest source of TE heterogeneity is differences in observed covariates. This can be seen by the large difference in the maxMTE and the minMTE compared to the small difference experienced within each group across the cost of treatment distribution.

The MTE functions aid our understanding of the large effects seen in section 4.1 by illustrating how the TEs vary with observable characteristics. Only women with certain characteristics experience the large effects seen in table 7 while others experience only moderate gains.

While some groups of women gain more than others from being treated, the TEs are positive across the majority of covariate vectors x and all values of p. This result indicates that increased autonomy is beneficial for almost all women. The lowest expected effect is a 12-percentage point increase in the probability of participating in the labour force, which remains a substantial increase.

5 Conclusion

This paper investigated the effect of autonomy on labour supply of women. Theoretical predictions of the relationship vary based on the model chosen. We discussed the standard collective model, which predicts that an increase in female autonomy decreases female labour supply, and the non-cooperative model, which predicts that an increase in female autonomy increases female labour supply. In our own analysis, we find an increase in female autonomy causes a large and significant increase in the probability of participating in the labour force. Our results therefore provide support against the standard collective model.

Our models exploit the exogenous financial autonomy that was presented to women after the roll out of SASSA bank cards to cash transfer recipients in South Africa. This is an example of an external action that led to an increase in the overall autonomy that women experienced. The second stage of our analysis then uses the exogenous variation in autonomy as a determinant

of female labour force participation. Previous studies similarly illustrate the strong relation between norms, culture and other institutions that have been shown to be detrimental to female agency. It is this exact setup that leads one to think that the decision of women to participate in the labour market in itself is a function of her autonomy in the household, given the resource constraints of the internal household bargaining model.

Our analysis set out to examine this relationship. We estimate the local average treatment effect of becoming the primary household decision maker on the probability of participating in the labour force to be 92 percentage points. We show that the effect is driven by women who were initially unbanked, so that we are confident that our results are not diminished by using an intention to treat as an instrument. Men, on the other hand do not gain in autonomy: our results suggest that their decision-making power does not depend on financial inclusion, but is already upheld by existing cultural norms. Women benefited from *external* shocks to their bargaining power (financial inclusion offered by social protection) to increase *internal* household bargaining power; in turn, the additional control they have over financial resources motivates them to enter the labour market - wages that are securely banked remain in tighter control of women, and do not automatically enter the general household pool in the manner that visible cash would.

Therefore, in the context of traditional social norms, financial inclusion has broader benefits than improving womens' financial decision-making ability. Rather, women leverage this autonomy to overcome social obstacles that prevent them from accessing the labour market. Our results are strengthened by the observation that women who live in households that are dominated in composition by men experience a larger increase in autonomy; this occurs despite the fact that the growth in their financial inclusion is slower than for women who live in households with more women. In addition, our measured impact on labour force participation is largest for women who live in male-dominated households. We continue to use a sample of banked and unbanked women to estimate marginal treatment effects. We show that women who never become autonomous could potentially reap large benefits from gaining decision-making power. It is, however, unlikely that financial inclusion would improve the internal household position of these extremely disempowered women. Cultural norms are therefore still strongly binding in some circumstances. Our MTE results also show that women who stand to benefit most from their autonomy are also the first to enter the labour market. While *all* women can potentially experience external empowerment through within household autonomy, the chances are slimmer

for some.

Overall, our results emphasise that there are additional indirect benefits from financial inclusion, apart from facilitating transactions. Financial inclusion assists women to overcome intra-household gender norms and leverage bargaining power within the home to also become externally empowered by entering the labour force. Improved bargaining power does not only lead to changes in internal socio-economic outcomes, but is also augmented by the external empowerment of women in the market place.

References

Agarwal, B. (1994). Gender and command over property: A critical gap in economic analysis and policy in South Asia. *World Development*, 22(10):1455–1478.

Agüero, J. M., Carter, M. R., and Woolard, I. (2006). The impact of unconditional cash transfers on nutrition: the South African child support grant. Working Paper series 06/08, Southern Africa Labour and Development Research Unit, University of Cape Town, Cape Town.

Aizer, A. (2007). Wages, Violence and Health in the Household. NBER Working Papers 13494.

Amoateng, A., Kalule-Sabiti, I., and Lucas, D. (2004). South Africa's human capital in the 1990s. *Applied Population and Policy*, 1(2):121–31.

Anderson, S. and Eswaran, M. (2009). What determines female autonomy? Evidence from Bangladesh. *Journal of Development Economics*, 90(2):179–191.

Anker, R., Buvinic, M., and Youssef, N. H. (1982). *Womens' Roles and Population Trends in the Third World*. Routledge, London, England, Crook Helm.

Atkin, D. (2009). Working for the Future: Female Factory Work and Child Health in Mexico. Technical report, Department of Economics, Princeton University.

Bajracharya, A. and Amin, S. (2013). Microcredit and Domestic Violence in Bangladesh: An Exploration of Selection Bias Influences. *Demography*, 50(5):1819–1843.

Banerjee, A., Duflo, E., Glennerster, R., and Kinnan, C. (2015). The Miracle of Microfinance? Evidence from a Randomized Evaluation. *American Economic Journal: Applied Economics*, 7(1):22–53.

Behrman, J. (1988). Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favored? Do Parents Exhibit Inequality Aversion? *Oxford Economic Papers*, 40(1):32–54.

Berg, E. (2014). Does payment into bank accounts encourage saving? Retrieved from http://www.erlendberg.info/savesa.pdf.

Bertrand, M., Mullainathan, S., and Miller, D. (2003). Public policy and extended families: Evidence from pensions in south africa. *The World Bank Economic Review*, 17(1):27–50.

Bhorat, H. and Westhuizen, C. V. D. (2012). Poverty, Inequality and the Nature of Economic Growth in South Africa. Technical Report 12151, University of Cape Town, Development Policy Research Unit.

Bjorklund, A. and Moffitt, R. (1987). The Estimation of Wage Gains and Welfare Gains in Self-selection. *The Review of Economics and Statistics*, 69(1):42–49.

Bloom, D. E., Canning, D., Fink, G., and Finlay, J. E. (2009). Fertility, female labor force participation, and the demographic dividend. *Journal of Economic Growth*, 14(2):79–101.

Bobonis, G. and Castro, R. (2010). The role of conditional cash transfers in reducing spousal abuse in Mexico: short-term vs. long term effects.

Bonilla, J., Zarzur, R. C., Handa, S., Nowlin, C., Peterman, A., Ring, H., and Seidenfeld, D. (2017). Cash for Womens Empowerment? A Mixed-Methods Evaluation of the Government of Zambias Child Grant Program. *World Development*, 95:55–72.

Casale, D. and Posel, D. (2002). The Continued Feminisation of the Labour Force in South Africa. *South African Journal of Economics*, 70(1):156–184.

Case, A. and Deaton, A. (1998). Large Cash Transfers to the Elderly in South Africa. *The Economic Journal*, 108(450):1330–1361.

Cash Paymaster Services (Pty) Limited (2012). Net1 [Financial Technology]. Retrieved from: http://www.net1.com/legal/terms-and-conditions-for-the-use-of-the-sassa-card-and-account/.

Connelly, R. (1992). The Effect of Child Care Costs on Married Women's Labor Force Participation. *The Review of Economics and Statistics*, 74(1):83–90.

Crépon, B., Devoto, F., Duflo, E., and William, P. (2015). Estimating the Impact of Microcredit on Those Who Take It Up: Evidence from a Randomized Experiment in Morocco. *American Economic Journal: Applied Economics*, 7(1):123–150.

Datta, N. (2006). Joint Titling a Win-Win Policy? Gender and Property Rights in Urban Informal Settlements in Chandigarh, India. *Feminist Economics*, 12(1-2):271–298.

de Brauw, A., Gilligan, D. O., Hoddinott, J., and Roy, S. (2014). The Impact of Bolsa Famlia on Womens Decision-Making Power. *World Development*, 59:487–504.

Department of Social Development (2012). Statement By The Minister Of Social Development, Ms Bathabile Dlamini, On The Introduction Of The New Biometric-Based Payment Solutions For Social Grants, Pretoria.

Doepke, M. and Tertilt, M. (2014). Does Female Empowerment Promote Economic Development? DOI: 10.3386/w19888.

Doss, C. (2013). Intrahousehold Bargaining and Resource Allocation in Developing Countries. *The World Bank Research Observer*, 28(1):52–78.

Duflo, E. (2003). Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa. *The World Bank Economic Review*, 17(1):1–25.

Duflo, E. (2012). Women Empowerment and Economic Development. *Journal of Economic Literature*, 50(4):1051–1079.

Eyal, K. and Njozela, L. (2016). What Difference Does A Year Make? The Cumulative Effect of Missing Cash Transfers on Schooling Attainment. Technical Report 186, Southern Africa Labour and Development Research Unit, University of Cape Town.

Feigenberg, B., Field, E., and Pande, R. (2013). The Economic Returns to Social Interaction: Experimental Evidence from Microfinance. *Review of Economic Studies*, 80(4):1459–1483.

Fernández, R., Fogli, A., and Olivetti, C. (2004). Mothers and Sons: Preference Formation and Female Labor Force Dynamics. *The Quarterly Journal of Economics*, 119(4):1249–1299.

Field, E. M., Martinez, J., and Pande, R. P. (2016). Does women's banking matter for women? Evidence from urban India. Technical Report S-35306-INC-1.

FinScope (2014). FinScope South Africa 2014. http://www.sassa.gov.za/phocadownload/december%202017.pdf.

Goldin, C. and Katz, L. F. (2002). The Power of the Pill: Oral Contraceptives and Womens Career and Marriage Decisions. *Journal of Political Economy*, 110(4):730–770.

Gray, J. S. (1998). Divorce-Law Changes, Household Bargaining, and Married Women's Labor Supply. *The American Economic Review*, 88(3):628–642.

Haddad, L. and Hoddinott, J. (1994). Women's income and boy-girl anthropometric status in the Cote d'Ivoire. *World Development*, 22(4):543–553.

Hakim, A., Salway, S., and Mumtaz, Z. (2003). Women's Autonomy and Uptake of Contraception in Pakistan. *Asia-Pacific Population Journal*, 18(1):63–82.

Heath, R. and Tan, X. (2014). Intrahousehold bargaining, female autonomy, and labor supply: Theory and evidence from india. Technical report.

Heckman, J. J. (2010). Building Bridges between Structural and Program Evaluation Approaches to Evaluating Policy. *Journal of Economic Literature*, 48(2):356–398.

Heckman, J. J. and Vytlacil, E. J. (1999). Local instrumental variables and latent variable models for identifying and bounding treatment effects. *Proceedings of the National Academy of Sciences*, 96(8):4730–4734.

Jejeebhoy, S. J. (1991). Women's status and fertility: successive cross-sectional evidence from Tamil Nadu, India, 1970-80. *Studies in Family Planning*, 22(4):217–230.

Jensen, R. (2012). Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India. *The Quarterly Journal of Economics*, 127(2):753–792.

Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and change*, 30(3):435–464.

Kanbur, R. and Haddad, L. (1994). Are Better Off Households More Unequal or Less Unequal? *Oxford Economic Papers*, 46(3):445–58.

Kingdon, G. G. and Knight, J. (2004). Unemployment in South Africa: The Nature of the Beast. *World Development*, 32(3):391–408.

Kishor, S. (2000). Empowerment of Women in Egypt and Links to the Survival and Health of Their Infants. In *Women's empowerment and Demographic Processes: Moving Beyond Cairo*. Oxford University Press, New York/Oxford.

Klasen, S. and Woolard, I. (2000). Surviving Unemployment without State Support: Unemployment and Household Formation in South Africa. Technical Report 237, Institute for the Study of Labor (IZA).

Koolwal, G. B. (2005). *Gender inequalities in development: the impact of networks and labor markets*. PhD thesis, Cornell University.

Kowalski, A. E. (2016). Doing More When You're Running LATE: Applying Marginal Treatment Effect Methods to Examine Treatment Effect Heterogeneity in Experiments. Working Paper 22363, National Bureau of Economic Research.

Leibbrandt, M. and Levinsohn, J. (2011). Fifteen Years On: Household Incomes in South Africa. NBER Working Paper 16661, National Bureau of Economic Research.

Luke, N. and Munshi, K. (2011). Women as agents of change: Female income and mobility in India. *Journal of Development Economics*, 94(1):1–17.

Lundberg, S. and Pollak, R. A. (1993). Separate spheres bargaining and the marriage market. *Journal of Political Economy*, 101(6):988–1010.

MacPhail, F. and Dong, X.-y. (2007). Women's market work and household status in rural China: Evidence from Jiangsu and Shandong in the late 1990s. *Feminist Economics*, 13(3-4):93–124.

Manser, M. and Brown, M. (1980). Marriage and Household Decision-Making: A Bargaining Analysis. *International Economic Review*, 21(1):31–44.

McElroy, M. B. and Horney, M. J. (1981). Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand. *International Economic Review*, 22(2):333–49.

Mehra, R. and Gammage, S. (1999). Trends, Countertrends, and Gaps in Women's Employment. *World Development*, 27(3):533–550.

Negrusa, B. and Oreffice, S. (2010). Quality of Available Mates, Education, and Household Labor Supply. *Economic Inquiry*, 48(3):558–574.

Otulana, S., Hearle, C., Ramlatu, A., Merttens, F., and Wallin, J. (2016). Evaluation of the Kenya Hunger Safety Net Programme Phase 2: Qualitative Research Study- Round 1. Technical report, Oxford Policy Management.

Ozler, S. (2000). Export Orientation and Female Share of Employment: Evidence from Turkey. *World Development*, 28(7):1239–1248.

Panda, P. and Agarwal, B. (2005). Marital violence, human development and women's property status in India. *World Development*, 33(5):823–850.

Patel, L. and Hochfeld, T. (2011). It buys food but does it change gender relations? Child Support Grants in Soweto, South Africa. *Gender & Development*, 19(2):229–240.

Patel, L., Knijn, T., and Wel, F. V. (2015). Child Support Grants in South Africa: A Pathway to Women's Empowerment and Child Well-being? *Journal of Social Policy*, 44(2):377–397.

Peterman, A., Schwab, B., Roy, S., Hidrobo, M., and Gilligan, D. (2015). Measuring womens decisionmaking: Indicator choice and survey design experiments from cash and food transfer evaluations in Ecuador, Uganda, and Yemen. IFPRI Discussion Papers 1453.

Pitt, M. and Khandker, S. (1998). The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter? *Journal of Political Economy*, 106(5):958–996.

Pitt, M., Rosenzweig, M., and Hassan, M. N. (1990). Productivity, Health, and Inequality in the Intrahousehold Distribution of Food in Low-Income Countries. *American Economic Review*, 80(5):1139–56.

Posel, D., Fairburn, J. A., and Lund, F. (2006). Labour migration and households: A reconsideration of the effects of the social pension on labour supply in south africa. *Economic Modelling*, 23(5):836 – 853.

Posel, D. R. and Todes, A. (1995). The Shift to Female Labour in Kwazulu/Natal. *South African Journal of Economics*, 63(2):125–136.

Quisumbing, A. R. and Maluccio, J. A. (2003). Resources at Marriage and Intrahousehold Allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa*. *Oxford Bulletin of Economics and Statistics*, 65(3):283–327.

Rangel, M. A. (2006). Alimony Rights and Intrahousehold Allocation of Resources: Evidence from Brazil. *The Economic Journal*, 116(513):627–658.

SASSA (2017). A statistical summary of social grants in South Africa. Retrieved from: http://www.banking.org.za/docs/default-source/financial-inclusion/finscope/finscope-sa-2014.pdf.

Sivakami, M. (2003). *Does labour force participation enhance autonomy of poor women? evidence from Tamil Nadu, India.* Number 130 in Working paper. Institute for Social and Economic Change, Bangalore.

Standing, G. (1989). Global feminization through flexible labor. *World Development*, 17(7):1077–1095.

Standing, G., Sender, J., Weeks, J., and Office, I. L. (1996). *Restructuring the labour market : the South African challenge.* Geneva : International Labour Office.

Thomas, D. (1990). Intra-Household Resource Allocation: An Inferential Approach. *Journal of Human Resources*, 25(4):635–664.

van den Bold, M., Quisumbing, A. R., and Gillespie, S. (2013). Women's Empowerment and Nutrition: An Evidence Review. IFPRI Discussion Paper 1294, International Food Policy Research Institute (IFPRI), Washington, D.C.

Woolard, I. and Leibbrandt, M. (2010). The Evolution and Impact of Unconditional Cash Transfers in South Africa. Technical Report 51, Southern Africa Labour and Development Research Unit, University of Cape Town.

Woolley, F. (1988). A Non-cooperative Model of Family Decision Making. Technical Report Discussion paper TIDI/125, London School of Economics.