Co-resident and absent mothers: Motherhood and labour force participation in South Africa

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Abstract

The effects of motherhood on women's labour force participation are estimated usually for mothers who are co-resident with their children. This paper, however, shows that a co-residency requirement upwardly biases the negative effects of motherhood in a country where labour force participation includes (temporary) migration to places of employment. In contrast to co-resident mothers in South Africa, not co-resident mothers are significantly more likely to be labour force participants. The selection on co-residency, which excludes mothers who are labour migrants, therefore overestimates the negative relationship between motherhood and labour force participation. We find also that women who are not biological mothers are significantly less likely to be labour force participants if they live in households with children, consistent with the fosterage of children in extended households.

1. Introduction

Empirical studies which investigate the labour market consequences of motherhood generally find a negative and significant relationship between fertility and women's labour force participation (cf. Angrist and Evans 1998; Chapman et al 2001; Cruces and Galiani 2007; Boushey 2008). Because of endogeneity in fertility, however, it is difficult to identify the strength and causality of this relationship: the decision to have children may itself be a consequence of labour force participation; and unobservable characteristics may be correlated with both fertility and labour market activity.

In this study, we investigate motherhood and labour force participation among African women in South Africa. We consider the implications of two distinctive characteristics of our sample of women. First, more than 45 percent of mothers, and almost seventy percent of non-mothers, are resident in households with children who are not their own. We use this more complex household structure as an opportunity to investigate and compare the relationship between "own" (biological) and "other" children, and women's labour force participation. We show that mothers who are living with their own children, particularly very young children, are significantly less likely to be labour force participants. The presence of other children in the household does not strengthen this negative relationship. However, among non-mothers, living with other children lowers the probability of labour force participation, although the size of this child effect is considerably smaller than the effect of own children among co-resident mothers.

Second, about 15 percent of African mothers in our sample are not co-resident with their own children. A key reason for the "absence" of mothers from households is labour migration, where women leave their children in the household of origin, and migrate to other areas to work or to find work. The effects of motherhood typically are estimated for women who are living with their children because there is little reason to expect children to inhibit the labour force participation of not co-resident mothers. In South Africa, however, restricting the analysis to co-resident mothers exacerbates sources of endogeneity in the regression model, and biases the negative effect of motherhood upwards. Mothers who are not living with their children are

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significantly more likely than co-resident mothers to be labour force participants. When the sample of mothers is not restricted on co-residency, then the child effect remains negative but it is substantially smaller and no longer statistically significant.

In the next section, we briefly review the empirical literature on motherhood and labour force participation and we discuss the particular context within which labour force participation, particularly among rural women, has occurred in South Africa. In section 3, we outline the data and definitions used in the study and we present descriptive statistics for the samples of mothers and non-mothers. We estimate the relationship between female labour force participation and motherhood in section 4, where we distinguish between mothers (co-resident or absent) and children (own or other).The last section summarises the key findings of the study.

2. Background and context

2.1. Empirical evidence on motherhood and labour force participation

There is a large literature on the effects of motherhood on women's labour force participation in both developed and developing countries (cf. Bronars and Grogger 1994; Leibowitz and Klerman 1995; Gormick et al 1996; Tiefenthaler 1997; Angrist and Evans 1998; Bianchi 2000; Aguero and Marks 2008; Boushey 2008).

In these studies, mothers are identified in one of two ways. Either fertility information is used if this is available, or motherhood is derived from household relationship questions which match women to their children living in the same household. Where birth information is collected, only biological mothers are identified, and motherhood usually is further restricted to women living with their children under the age of 18 (cf. Bronars and Grogger 1994; Gormick et al 1996; Aguero and Marks 2008). In the second case, mothers may include non-biological mothers, but co-residency with children is a necessary requirement to identify motherhood through relationship codes (cf. Angrist and Evans 1998; Piras and Ripani 2005; Boushey 2008).

Empirical studies in developed countries find that mothers are significantly less likely to participate in the labour market, controlling for a range of observable characteristics of women (Bronars and Grogger 1994; Angrist and Evans 1998; Chapman et al 2001; Boushey 2008). The negative relationship between motherhood and labour force participation is influenced by the age of children and is strongest among women with young children (Chapman et al 2001; Boushey 2008).

In developing countries, there is less consistent evidence of a negative child effect (Mason and Palan 1981; Desai and Jain 1994; Tiefenhalter 1997; Cruces and Galiani 2007). One possible explanation is that the physical separation between market-related work and household labour is not as rigid in developing countries, making it easier for women to combine market and childcare activities (Mason and Palan 1981; Brewster and Rindfuss 2000). Household living arrangements also tend to be more complex, and parental surrogates are more likely to be available in extended families (Mason and Palan 1981; Wong and Levine 1992; Tiefenthalter 1997).

Estimations of a causal relationship between motherhood and female labour force participation, however, are complicated by the endogeneity of motherhood status. Women who become mothers may be different in unobservable ways to other women, and these unobservable characteristics (such as ambition and ability) may be correlated with both fertility decisions and labour force participation. Furthermore, the decision to have children may itself be influenced by labour force participation.

Many studies control for endogeneity in fertility decisions using instrumental variable (IV) estimation. To identify an exogenous source of variation in the number of children, studies have used twins at first birth (Rosenzweig and Wolpin 1980; Bronars and Grogger 1994) and the sex composition of the first two children (Angrist and Evans 1998; Cruces and Galiani 2007) as instruments. Twinning represents an unplanned birth; and couples with same-sex children may be more likely to have a third child. These IV estimates continue to provide evidence of a significant negative relationship between childbearing and labour force participation, but the size of the effect is considerably smaller.

The use of twins or the sex composition of children as instruments limits the analysis of motherhood, however, to the effects of further childbearing among mothers with at least one or two children. More recently, Aguero and Marks (2008) have used information on infertility status to investigate differential labour force participation between mothers and non-mothers, and they find that the negative child effect is eliminated with the infertility instrument.

In this study of motherhood and labour force participation in South Africa, we do not control directly for endogeneity in fertility decisions. Rather, we show how the definition of motherhood itself can exacerbate sources of endogeneity bias in the labour force participation estimations.

2.2. Motherhood and labour force participation in South Africa

Living arrangements in South Africa tend to be more diverse than in many developed countries (Amoateng and Richter 2003; Maluccio et al 2003; Amoateng et al 2007). The co-residence of extended families, evident particularly in rural areas, has been attributed to economic considerations and to cultural preferences (Amoateng et al 2007). More complex household structures also reflect the legacy of apartheid, which placed restrictions on where Africans could live, and with whom.

The permanent settlement of African families in urban areas was prohibited under Influx Control, leading to patterns of "temporary" or "circular" labour migration. Individuals would migrate temporarily, from areas with few work opportunities, to places of employment, retaining a base in their household of origin to which they would return at some point in the future. This resulted in the relative absence of the conjugal unit in households with children, and particularly in rural areas.

The fosterage of children by other family members therefore has been common in South African households (McDaniel and Zulu 1996; Anderson and Heston 2006). In recent years, the extent of this fosterage has increased following rising AIDS-related deaths or ill-health among mothers (Anderson and Heston 2006; see also Noumbissi et al 2005 and Denis and Ntsimane 2006).

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In this paper, we explore the implications of two characteristics of African households for estimating the child effect. First, a significant proportion of African women of reproductive age are living with children (18 years or younger) who are not their own. In 2002, for example, approximately 46 percent of mothers and 68 percent of non-mothers aged 20 to 49 years were living in households with "other" children. We investigate whether living with other children in the household affects the labour force participation of both mothers and non-mothers, and therefore whether there is evidence consistent with surrogate motherhood and the fostering of children in households.

Second, a significant proportion of mothers are not co-resident with their own children. In 2002, approximately 15 percent of African mothers of reproductive age were not living with at least one of their own children.[1] A larger proportion of households from which mothers are "absent" are located in rural areas: in 2002, 31 percent of all children in rural households were living without their mothers, compared to 22 percent of children in urban households. A likely explanation for these statistics is that women are moving out of the household to find employment elsewhere, leaving their children in the care of others.

Restrictions on urbanisation no longer exist in post-apartheid South Africa, but patterns of temporary and individual labour migration persist (Posel and Casale 2003; Collinson, Kok and Ganenne 2006; Posel and Casale 2006). Posel and Casale's (2003, 2006) analysis of nationally representative household survey data suggests that between 1993 and 2002, an increasing proportion of African rural households reported at least one household member as a labour migrant (someone who was away from the household for at least a month in the year for employment reasons). Historically, most labour migrants in South Africa have been male, but this increase in labour migration has been driven by female migration specifically. Similar trends are reported more locally, for the Demographic Surveillance Site of Agincourt in South Africa (Collinson et al 2006).

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[1] In contrast, only 4.5 percent of mothers of all other race groups are not living with at least one of their children. The larger proportion of African mothers not living with their children compared to other race groups is expected given far higher levels of labour migration among African women.

Although mothers can now move permanently with their families to places of employment, there are a number of reasons why they may be choosing to migrate without their children. The precarious nature of employment, a higher cost of living, and the accessibility and quality of accommodation at places of employment would discourage migration with children (Bank 2001; James 2001; Casale and Posel 2006). At the same time, extended family structures in households of origin may provide care and support of children, making it possible for women to leave their children "behind" (Posel et al 2006).

The effects of motherhood on labour force participation typically are estimated for mothers who are co-resident with their children. This seems an obvious restriction given that we would expect the rearing of children, rather than (simply) the bearing of children, to constrain labour market activity. However, we show that in a country where labour force participation includes labour migration, and where maternal surrogates may be available in extended family structures, not co-resident mothers are a sizeable sample of mothers who are significantly more likely than all other women to be labour force participants. Consequently, the motherhood effect estimated only for co-resident mothers overestimates the negative relationship between motherhood and female labour force participation.

3. Identifying mothers in South Africa

3.1 Data and definitions

To explore the relationship between motherhood and female labour force participation[2] we use the nationally representative General Household Survey (GHS) 2002, which surveyed approximately 30,000 households. This is the most recent household survey in South Africa that simultaneously captures information on birth

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[2] Labour force participants include the employed and the unemployed who actively searched for work in the four weeks prior to the survey.

histories and the socio-economic characteristics of individuals and the households in which they live.

The birth module, asked of all female household members between the ages of 12 and 50, collected information on the number of births ever had and whether these children were still alive. We define a woman as a mother if she has at least one biological child 18 years and younger. Excluded from the group of mothers, therefore, are women whose children have died since birth.[3]

To distinguish between mothers who are co-resident with at least one of their children and mothers who are not co-resident, we use information collected in the birth module, on whether a mother's child is living in the same household. This information is augmented using a question in the household roster which asked all individuals to identify their mothers if they were household members. A mother is identified as being co-resident with her biological child if she reported that her child was living in the same household *and* she was matched to an individual who reported her as his or her mother.

We restrict our sample to African women aged 20 to 49 who are not currently in schooling. Although the motherhood status of women younger than 20 can be identified, we raised the minimum age to retain a more comparable sample of mothers and non-mothers. A larger proportion of non-mothers than mothers are younger, concentrated in ages below 20, and in schooling.

3.2. Summary statistics

Table 1 describes motherhood status among African women in our sample. In the first four columns, we distinguish between mothers and non-mothers according to co-residency with children. Among African women, 61 percent are biological mothers living with at least one of their children aged 18 years or younger; a further 11 percent are biological mothers who are not living with any of their children; 19 percent are

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[3] Among women who had reported a live birth, 123 women reported that their child had subsequently died, and because these women also reported no other living children, they were not classified as mothers.

non-mothers who are living in households with children[4]; and the remaining nine percent are non-mothers who are not co-resident with any children in the household. Among co-resident mothers specifically, 46 percent are living also with children who are not their own (column 5).

Table 1. Motherhood and co-residency with children, African women and children 2002

	Among all women				Among co-resident mothers	Among all children
	Mother, co-resident with own children	Mother, not co-resident with own children	Not mother, co-resident with other children	Not mother, not co-resident with other children	Co-resident with own and not own children	Not co-resident with mother
Proportion	0.613	0.108	0.191	0.089	0.463	0.279
	(0.005)	(0.003)	(0.004)	(0.003)	(0.007)	(0.005)
N	10,015	1,998	3,348	1,674	4,634	10,085
Rural						
Proportion	0.654	0.097	0.189	0.060	0.519	0.313
	(0.007)	(0.005)	(0.005)	(0.003)	(0.010)	(0.006)
N	4,963	862	1,565	569	2,538	6,636
Urban						
Proportion	0.573	0.118	0.191	0.117	0.403	0.224
	(0.007)	(0.005)	(0.005)	(0.005)	(0.011)	(0.006)
N	5,052	1,136	1,783	1,105	2,096	3,449

Source: GHS 2002.
Notes to table: The data are weighted. Standard errors are in parentheses. The data for mothers and non-mothers are for all women aged 20-49. Children are aged 0-18 years.

The data in Table 1 further describe an urban/rural dimension to motherhood status and living arrangements in South Africa. Women in rural areas are significantly more likely to be co-resident mothers than women in urban areas (65 percent compared to 57 percent of urban women); and among co-resident mothers, a significantly larger proportion lives also with other children in rural households (52 percent compared to forty percent of co-resident mothers in urban areas). Mothers who are not co-resident with their children are more likely to be living in urban areas (57 percent or 1,136 of 1,998 not co-resident mothers in the unweighted sample); and a significantly larger

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[4] Among non-mothers living with children in the household, more than twenty percent are the head of household or the spouse of the head; seven percent are siblings of the head; 13 percent are other relatives of the head; and almost 58 percent are children or grandchildren of the head of household.

proportion of children in rural areas live without their mother. More than thirty percent of all children in rural areas are not co-resident with their mother, compared to approximately 22 percent of children in urban areas (Column 6).[5] These data would be consistent with patterns of female labour migration, particularly from rural areas to urban areas, and the fosterage of children, particularly in rural households.

In Table 2, we compare the average characteristics of non-mothers and mothers, where we distinguish also among mothers according to co-residency with children. Mothers in our sample are slightly older than non-mothers and they are significantly more likely to be married. Mothers also have lower levels of educational attainment than non-mothers, with a significantly smaller proportion having completed secondary or post-secondary education.

Among mothers, women who are co-resident with at least one of their children are older than not co-resident mothers, but they have comparable levels of education. Co-resident mothers are significantly more likely to be married, or to have been married than not co-resident mothers, and a larger proportion lives in rural areas in significantly bigger households which include children who are not their own.

Table 2 also shows that differences in average labour force participation rates are greater *among* mothers than between mothers and non-mothers: 77 percent of not co-resident mothers are labour force participants, compared to 61 percent of co-resident mothers and 68 percent of non-mothers. Among all women in our sample, labour force participation rates are therefore highest among mothers who are not co-resident with any of their children.

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[5] Among children not living with their mothers in 2002, almost twenty percent had mothers who were reported as having died.

Table 2. Characteristics of African mothers and non-mothers, 2002

	Non-mothers	Mothers: Co-resident with at least one (own) child	Mothers: not co-resident with at least one (own) child
Age	31.092	33.224	31.745
	(0.153)	(0.099)	(0.204)
Years of schooling	9.495	8.363	8.588
	(0.087)	(0.061)	(0.110)
No schooling	0.071	0.085	0.072
	(0.004)	(0.004)	(0.007)
Primary	0.186	0.270	0.250
	(0.006)	(0.006)	(0.013)
Incomplete secondary	0.309	0.395	0.420
	(0.008)	(0.007)	(0.013)
Matric (secondary)	0.305	0.181	0.198
	(0.009)	(0.005)	(0.011)
Post-matric	0.130	0.069	0.059
	(0.010)	(0.004)	(0.006)
Married	0.303	0.525	0.394
	(0.009)	(0.007)	(0.015)
Divorced/widowed	0.062	0.077	0.060
	(0.004)	(0.003)	(0.006)
Never married	0.635	0.398	0.546
	(0.009)	(0.007)	(0.015)
Rural	0.336	0.523	0.433
	(0.009)	(0.009)	(0.017)
Household size	4.907	6.331	3.878
	(0.071)	(0.059)	(0.107)
Connected to mains electricity	0.791	0.713	0.673
	(0.009)	(0.010)	(0.018)
Access to piped water	0.700	0.535	0.581
	(0.010)	(0.010)	(0.017)
Number co-resident in households:			
Own children		2.088	
		(0.017)	
Other children	1.488	1.176	0.981
	(0.040)	(0.032)	(0.054)
Economically inactive women	0.515	0.381	0.259
	(0.017)	(0.012)	(0.021)
Economically inactive men	0.763	0.696	0.637
	(0.017)	(0.013)	(0.023)
Male pensioners	0.170	0.192	0.113
	(0.007)	(0.007)	(0.010)
Female pensioners	0.075	0.066	0.048
	(0.005)	(0.004)	(0.006)
Labour force participant	0.683	0.605	0.765
	(0.008)	(0.007)	(0.012)
N	4,061	9,488	1,876

Source: GHS 2002.
Notes to table: The data are not weighted. Standard deviations are in parentheses. The data are for women aged 20 -49 who are not currently enrolled in an educational institution. Children are defined as 18 years and younger.

4. Estimation

We explore the relationship between motherhood and labour force participation by estimating a probit model:

$$\Pr (y_i = 1 \mid M_i, X_i) = \Phi (\alpha, M_i, X_i)$$

where M_i represents motherhood status, X_i is a vector of observed individual and households characteristics, and the dependent variable is a binary variable equal to 1 if the woman is a labour force participant and 0 if she is not economically active and not currently in school. The covariates in the estimation model include the age, educational attainment and marital status of women, the composition of the household in which women live, whether the household has access to piped water and to electricity, and dummy variables for area and province of residence.

We estimate two sets of probit regressions, distinguished by how mothers are identified. In the first set, we define a mother as a woman who has at least one child aged 18 years or younger and who co-resides with at least one of her children. We consider three specifications here. In the first regression, we include a dummy variable for whether a woman is a mother (and co-resident with at least one own child). We then test whether the relationship between labour force participation and motherhood varies by the age of children. Four dummy variables capture the age-ranges for children, with the omitted category being women who are not co-resident mothers of children. The third regression tests whether there is a relationship also between other children in the household and female labour force participation. For this specification, we include two binary variables for "own child" and "other child" living in the household, as well as the interaction term. When other child equals 1 and own child equals 0, we identify women who are not mothers but who are living with other children in the household. When both variables equal 1, we identify mothers who are also co-resident with other children.

In the second set of regressions, the co-residency requirement defining motherhood is removed. We estimate two regressions for the national sample. First, we include two

dummy variables which distinguish among all mothers according to whether or not mothers are co-resident with at least one of their children. We then conflate all mothers into a single variable which equals 1 if a woman has at least one child aged 18 years or younger. Finally, we compare these results for the national sample to the estimations for the rural sample of African women, where we would expect the "absent mother" bias deriving from labour migration to be stronger.

4.1. Labour force participation among mothers co-resident with children

Table 3 reports the coefficients from the probit regressions where women are classified as mothers only if they co-reside with at least one of their children. The estimations show that the probability of female labour force participation increases non-linearly with age and education, and is significantly higher in households with access to piped water and electricity.[6] However, women who are married and who live in rural areas are significantly less likely to be labour force participants. The first estimation (I) also identifies a sizeable negative and significant relationship between motherhood (at least one child at home) and labour force participation.

The second regression (II) reveals that the negative relationship between labour force participation and motherhood derives particularly from children aged 3 years and younger. The child effect of children aged 4 to 6 is considerably smaller and only weakly significant. When children reach school-going age, we find no evidence of a child effect for mothers in our sample.

In the third estimation (regression III), we recognise that women may be living with children who are not their own biological offspring. We distinguish between own (O) and other children (N) living at home, and the interaction term (O*N) identifies mothers who are also co-resident with other children. For women who are not mothers, the presence of other children in the household is negatively and significantly related to labour force participation. However, the child effect is considerably smaller than for mothers who live only with their own children (-0.234

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[6] Access to water and electricity would reduce women's time spent on household work, facilitating their labour force participation. However, it is also possible that households with female labour force participants are more able to afford these services.

compared to -0.375). The positive and significant interaction term indicates that among mothers, the effect of other children at home does not strengthen the negative relationship between motherhood and labour force participation.

Table 3. Co-resident mothers and labour force participation, African women 2002

	I	II	III
Mother	-0.188***		
	(0.029)		
Children 0-3		-0.338***	
		(0.032)	
Children 4-6		-0.080*	
		(0.045)	
Children 7-12		-0.013	
		(0.041)	
Children 13-18		-0.008	
		(0.062)	
Own children 0-18 (O)			-0.375***
			(0.043)
Not own children 0-18 (N)			-0.234***
			(0.051)
O*N			0.330***
			(0.058)
Age	0.137***	0.133***	0.136***
	(0.014)	(0.014)	(0.014)
$Age^2/100$	-0.169***	-0.171***	-0.168***
	(0.021)	(0.021)	(0.021)
Primary	0.335***	0.327***	0.333***
	(0.052)	(0.052)	(0.052)
Incomplete secondary	0.452***	0.440***	0.447***
	(0.054)	(0.054)	(0.054)
Matric	0.708***	0.699***	0.711***
	(0.059)	(0.059)	(0.059)
Diploma/degree	1.144***	1.134***	1.153***
	(0.077)	(0.077)	(0.077)
Married	-0.389***	-0.366***	-0.382***
	(0.036)	(0.036)	(0.036)
Divorced/widowed	0.024	0.015	0.028
	(0.057)	(0.057)	(0.042)
Rural	-0.230***	-0.221***	-0.227***
	(0.042)	(0.042)	(0.042)
Piped water	0.103***	0.100***	0.105***
	(0.039)	(0.039)	(0.038)
Electricity	0.137***	0.104***	0.113***
	(0.037)	(0.037)	(0.037)
F	53.20	49.87	50.58
N	15,425	15,425	15,425

Source: GHS 2002.
Notes: The sample is all women aged 20-49 who are not currently enrolled in an educational institution. Mothers exclude all biological mothers who are not co-resident with at least one of their own children. The data are weighted. The regressions control for stratification and clustering in sample design. Standard errors are in parentheses. The omitted categories are no schooling and never married. The regressions also include 9 dummy variables for province of residence and 4 controls for household composition (the number of not economically active men and women; and the number of male and female pensioners). *** Significant at the 1% level; * Significant at the 5% level; * Significant at the 10% level.

4.2 Labour force participation among all mothers

In the second set of estimations, we expand the definition of motherhood by no longer requiring mothers to be co-resident with at least one of their children. In regression IV, we distinguish between co-resident mothers and absent mothers (women who have children aged 18 or younger but who are not living with any of their children). The estimated coefficients for both binary variables are significant, but they have the opposite signs. In contrast to co-resident mothers, not co-resident mothers have a significantly higher probability of labour force participation than non-mothers.

In regression V, we do not distinguish mothers by co-residency and rather capture all mothers in a single binary variable. In this case, the motherhood effect remains negative but it is very small and no longer significant.

Mothers who are not co-residing with their children do not face (these) childcare constraints, and therefore would have more opportunity to participate in the labour market. In South Africa, however, the causation may run in the other direction: because women want, or need, to participate in the labour market, they do not live with their children. An important part of labour force participation, particularly from rural areas in the country, is migration to places of employment. In this case, women leave their children in the care of others in the household, and move (temporarily) to other areas to work or to look for work.

The sample of African mothers who remain co-resident with their children therefore represents a non-random sample of mothers, those who are less likely to participate in the labour force. When mothers who are labour migrants are included in the sample of mothers, then the evidence of a negative child effect is substantially weakened.

Table 4. All mothers and labour force participation, African women 2002

	IV	V
Co-resident mother	-0.106**	
	(0.032)	
Not co-resident mother	0.258***	
	(0.050)	
All mothers		-0.051
		(0.031)
Age	0.127***	0.126***
	(0.014)	(0.014)
$Age^2/100$	-0.154***	-0.154***
	(0.021)	(0.021)
Primary	0.329***	0.326***
	(0.052)	(0.052)
Incomplete secondary	0.442***	0.438***
	(0.054)	(0.054)
Matric	0.711***	0.703***
	(0.059)	(0.059)
Diploma/degree	1.146***	1.136***
	(0.076)	(0.076)
Married	-0.397***	-0.419***
	(0.035)	(0.035)
Divorced/widowed	0.019	0.002
	(0.057)	(0.057)
Rural	-0.230***	-0.236***
	(0.042)	(0.042)
Piped water	0.105***	0.108***
	(0.039)	(0.039)
Electricity	0.113***	0.102***
	(0.037)	(0.037)
F	52.79	50.93
N	15,425	15,425

Source: GHS 2002.
Notes: The sample is all women aged 20-49 who are not currently enrolled in an educational institution. The data are weighted. The regressions control for stratification and clustering in sample design. Standard errors are in parentheses. The omitted categories are no schooling and never married. The regressions also include 9 dummy variables for province of residence and 4 controls for household composition including the number of not economically active women aged 19 to 59, the number of not economically active men aged 19 to 64, the number of male pensioners (over 64 years) and the number of female pensioners (over 59 years). *** Significant at the 1% level; * Significant at the 5% level; * Significant at the 10% level.

Most labour migration originates from rural areas in South Africa. We would therefore expect the negative relationship between labour force participation and motherhood to be particularly strong (and particularly endogenous) among mothers who live with their children in rural areas. To test this hypothesis, we re-estimate the regressions for the sample of rural women specifically (Table 5).

Table 5. Motherhood and labour force participation, *rural* African women, 2002

	I	II	III	IV	V
Mother (co-resident)	-0.257***				
	(0.040)				
Children 0-3		-0.379***			
		(0.047)			
Children 4-6		-0.148**			
		(0.059)			
Children 7-12		-0.115**			
		(0.055)			
Children 13-18		-0.098			
		(0.089)			
Own children 0-18 (O)			-0.541***		
			(0.066)		
Not own children 0-18 (N)			-0.317***		
			(0.075)		
O*N			0.434***		
			(0.082)		
Mother (co-resident)				-0.151***	
				(0.046)	
Mother (not co-resident)				0.336***	
				(0.070)	
Mother (no residency requirement)					-0.086*
					(0.045)

Source: GHS 2002.

Notes: The sample is all women aged 20-49 who are not currently enrolled in an educational institution. The data are weighted. Standard errors are in parentheses. The same set of other independent variables in Table 3 and 4 are included in these regressions.

*** Significant at the 1% level; ** Significant at the 5% level.

For co-resident mothers (regression I in Table 5), the estimated effect of at least one own child at home is negative and significant, and larger than the coefficient obtained for the national sample (regression I in Table 3). The negative relationship between labour force participation and children at home is strongest when children are very young (Regression II). However, in contrast to the national sample, the coefficients for children aged 4 to 6 and 7 to 12 are sizeable and both are significant. Women who are not biological mothers are also significantly less likely to be in the labour force if there are other children living in the household (Regression III). This relationship is stronger among rural women than in the national sample, which is consistent with there being greater fosterage of children in rural areas.

Women who are biological mothers but who are not living with any of their children are significantly more likely to be labour force participants than non-mothers

(Regression IV). The estimated coefficient is also larger among rural women suggesting that among women (remaining) in rural areas, a key reason for not living with children is to work or to find work. Our interpretation implies that labour migration is occurring not only between rural and urban areas but also within rural areas. This would be consistent with other qualitative and empirical research which identifies increased labour migration over shorter distances in South Africa, to the rural perimeters of urban areas and between rural villages (Cross et al 1998; Wilkinson et al 1998; Collinson and Wittenberg 2001; Posel and Casale 2003).

Among all rural women, mothers on average are significantly less likely to be engaging in labour market activity, but restricting the sample to co-resident mothers would considerably over-estimate the extent of this relationship. When mothers include not co-resident mothers (Regression V), the estimated coefficient is -0.086; in contrast, the motherhood effect for co-resident mothers only is -0.257.

Conclusion

Empirical studies which investigate the effects of fertility on women's labour force participation examine the labour force behaviour of mothers who are co-resident with their children. In the absence of co-residency, there is no reason to expect that children would directly inhibit women's labour market activity. However, in this paper we have shown that not co-resident mothers can be a sizeable sample of all mothers of children 18 years and younger, and that in this case, the co-residency requirement exacerbates endogeneity bias in the participation estimations.

In South Africa, data from the GHS 2002 reveal that 15 percent of biological African mothers aged 20 to 49 were not co-resident with at least one of their children. In comparison to non-mothers, not co-resident mothers are significantly more likely to be labour force participants. A likely explanation for maternal absence from the household is that mothers, more than half of whom are not married, leave their children in the care of others in the household, and migrate temporarily to work or to find work. The estimated effect of motherhood for co-resident mothers only,

therefore, overestimates the negative relationship between motherhood and female labour force participation in South Africa. We also find evidence of a child effect for women who are co-resident with children but who are not biological mothers. This result is consistent with the fosterage of children in African households, and suggests that the "effects" of motherhood are not borne by mothers alone.

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