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The nexus between maternal employment and child health: Evidence from South Africa

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Gender Wage Discrimination in South Africa within the Affirmative Action Framework

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Abstract

This paper aims to empirically investigate the link between maternal employment and child health in South Africa. Understanding the nexus between maternal employment and child health is imperative, given the importance of parental influence on a child's overall development, which in the long run, could negatively impact human capital development. The methodology used involves a two-step process. First, it entails exploring the association between maternal employment and child health. To this end, a two-step Generalized Method of Moments (GMM) is employed using the lagged values of education and employment as instruments. Second, it examines the effect of maternal employment on the likelihood of childhood obesity using the Probit model. The findings suggest an association between maternal employment and child health. In addition, the results suggest evidence of maternal employment's impact on the likelihood of child obesity.

Keywords: Maternal employment, Child health, South Africa

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1. Introduction

While child health is multi-dimensional, the role of nutrition as a key determinant of the overall physical health and well-being, has been emphasized by the World Health Organisation due to its long-term impact on human socioeconomic development (WHO, 2003). Generally, the nutritional status of children is measured by anthropometric measures based on weight and height (O'Donnell and Doorslaer, 2008).

Statistics from the South Africa Demographic and Health Survey (SADHS) 2016 report indicate stunting, and overweight was 27% and 13% respectively for children under five years. Scholarship in the South African context show evidence of the prevalence of underweight and stunting in South African children, with levels of stunting at 23.9% in 2008 (Casale et al., 2014). Furthermore, in a study among children aged between six and nine years, overall obesity increased significantly over a three -year period from 4% to 12.5% (Sartorius et al., 2015). The

prevalence of underweight/stunting and overweight/obesity is considered as a significant public health issue because of the significant short and long-run consequences.

The increasing participation of women in the labour force has been identified as a key factor affecting children's health (Courtemanche et al; 2017). In South Africa, despite the high level of unemployment, labour force participation rate for women has increased from 41.60 % to 48.8% for the period 1990 to 2017 (The World Bank, 2017).In fact, South Africa is experiencing increasing feminisation of labour with important implications on the household structure, where the main role of mothers has been shifted from primary caregivers and/or housewives (Casale, 2004; Roncolato, 2016).The absence of working mothers in the house, could lead to poor nutrition choices and sedentary lifestyle of children (television, internet and other technological distractions) due to lack of supervision (Cawley and Liu, 2008). However, increased income from mothers' employment could lead to increased purchase of processed foods, which are often less nutritious (Datar et al., 2010).

Understanding the nexus between maternal employment and child health is imperative, given the importance of parental influence for a child's overall development, which in the long run, could impact negatively on human capital development (Cunha and Heckman, 2008; Almond and Currie, 2011). In addition, the findings from this study could provide evidence to develop appropriate intervention strategies, and/or evaluate the effectiveness of the existing policies regarding children's nutritional needs.

Against this background, the main objective of this study is to empirically investigate the link between maternal employment and child health in South Africa. To this end, use is made of a dynamic survey dataset and various anthropometric child health proxies including a composite child health index; thereby accounting for a multi-dimensional rather than unidimensional child health.

2. Literature Review

The association between maternal employment and children's cognitive and social development has been widely studied (Waldfogel et al., 2002; Ruhm, 2004; Hill et al., 2005; Bernal and Keane, 2011). In the U.S.A, Bernal and Keane (2011) find evidence of reduced cognitive achievement of children aged between 3-6 years whose single mothers made use of full-time day care. However, they recognise that these findings could vary depending on disparities among children, mothers and childcare facilities. Conversely, Lombardi and Coley (2014) use a representative sample of children born in the U.S.A in 2001 and find no association between maternal employment and children's school readiness.

In developing countries, Victora et al., (2008) report evidence of low educational attainment of children from five developing counties.A key finding from these studies is that the effect of maternal employment on cognitive and social development could be temporary or persist to adolescence with long-term effects on children's education, and their future productivity. These long-term effects have been confirmed in selected studies including (Waldfogel et al., 2002; Yeung, Linver et al., 2002); although some studies find no long-term effects (see for example, Harvey (1999) and Aughinbaugh and Gittleman, (2003)). This inconsistency may be attributed to differences in socioeconomic status. In fact, children from lower socioeconomic households tend to be less affected in the long term by the employment status of their mothers (Ruhm, 2004); the income effect outweighing the absence effect.

Evidence supporting the nutritional effects of the nexus between maternal employment and child health are inconclusive with results ranging from positive, negative and no effects (Rodgers, 2011). In high-income countries, childhood obesity is rife and has often been attributed to increased employment of mothers (Anderson et al., 2003; Fertig et al., 2009; Ruhm, 2009). For instance, in a study in the U.S.A, Fertig et al., 2009 found that increased maternal working hours was associated with an increase in Body Mass Index (BMI).
Unlike developed countries, the link between maternal employment and child health appears to have received less attention in developing countries, with few studies in South Africa. Inherited from the apartheid era, South Africa is characterised by substantial inequality with possible intergenerational consequences.

3. Methodology

Data used is sourced from five waves of the National income Dynamic Study (NIDS).
The methodology involves a two- step process. First, it entails exploring the association between maternal employment and child health in terms of maternal employment status and time spent at work. To this end, a two-step Generalized Method of Moments (GMM) is employed using the lagged values of education and employment as instruments. Second, it examines the effect of maternal employment on the likelihood of childhood obesity using the probit model.

3.1 The model

The panel child health outcome model is specified thus:

$$CHit = \alpha + \beta MEit + \nu Xit + \lambda i + \mu it \qquad i = 1, \ldots, N; t = 1, \ldots, T \qquad (1)$$

where $CHit$ is the child health indicator, $MEit$indicates maternal employment and Xit a vector of maternal (education, age, marital status), child (birthweight, gender), and socioeconomic (household size, race, area) characteristics; for child i at time t, λi the unobserved heterogeneity and μit is the error term.

Equation (1) assumes linearity of the relationship between maternal employment and child health. However, we consider the non-linear version of equation (1) by introducing the square term of mothers' employment, hence the following equation:

$$\mathrm{CHit} = \zeta + \text{1MEit} + \Upsilon_2\,\mathrm{SMEit} + \omega \mathrm{Zit} + \lambda \mathrm{i} + \varepsilon \mathrm{it} \qquad \mathrm{i} = 1, \ldots, \mathrm{N};\ \mathrm{t} = 1, \ldots, \mathrm{T} \quad (2)$$

where $CHit$ is the child health indicator, $SMEit$ denotes the square of maternal employment; and Zit a vector of maternal (education, age, marital status), child (birthweight, gender), and socioeconomic (household size, race, area) characteristics; for child i at time t, λi the unobserved heterogeneity and εit is the error term.

3.2 Estimation techniques

Estimating Equations (1) and (2) using OLS will produce consistent parameter estimates only if maternal employment ME_{it} and SME_{it} are uncorrelated with the error term μ_{it}. However, since it is likely that maternal employment could be correlated with unobserved confounding

variables, the results may be biased and unreliable. Hence, both the two-step Generalized Method of Moments (GMM) is applied (Arellano and Bond, 1991; Blundell and Bond, 1998).

The first step of the GMM involves using first differences to transform equations (1) and (2) into equations (3) and (4) respectively.

$$\Delta CHit1 = \beta \Delta \text{MEit} + \nu \Delta \text{X}it + \Delta \mu it, \quad \text{i} = 1,\ldots,\text{N}; \text{t} = 1,\ldots,\text{T} \qquad (3)$$

$$\Delta CHit1 = \text{⍰}1\Delta MEit + \text{⍰}_2\Delta SMEit + \omega \Delta \text{Z}it + \Delta \varepsilon it, \ \text{i} = 1,\ldots,\text{N}; \text{t} = 1,\ldots,\text{T} \quad (4)$$

In equation (3) and (4), this transformation of the regressors by first differencing which removes the fixed effects which are time-invariant. It, however, does not eliminate correlation of the regressors. Following this, step two involves instrumenting the variables. Given that the GMM is a type of Instrumental (IV) estimator, it consists of two groups of instruments which are internal and external, finding truly exogenous instruments is often quite tedious and therefore, this study follows the approach of some studies (Yakovlev, 2007; Biyase and Zwane, 2016) in using "internal" instruments understood as historical values of the endogenous variables. Hence, the lagged values of the maternal employment and education is employed, as they are uncorrelated with the present error term $Cov\,(zi,\ ui,\ ) = 0$.

As stated earlier, that maternal employment may affect the likelihood of child obesity status. While the participation of mothers in labour force contributes to household income, their absence can result in poor nutritional choices for the children. Hence the probit model is specified below:

$$Pr(obese) = 1|BMIZ = \Phi(\alpha + \beta MEit + \gamma Xit)$$

Where Pr is the conditional probability that BMIZ=1 (BMIZ obese//BMIZ not obese) Φ is the cumulative distribution function X is a vector of regressors, and β and γ are the parameters.
The probit model, Equation (7) is estimated by the Maximum Likelihood Estimation (MLE) (Greene, 2003b).

$$\Phi(\hat{\alpha} + \hat{\beta} ME_{it} + \hat{\gamma} X_{it}) \qquad (6)$$

where Φ is the cumulative distribution function of the standard normal distribution, and $\hat{\alpha}$, $\hat{\beta}$ and $\hat{\gamma}$ are the estimates of the parameters.

4. Empirical Results

Maternal employment status and child health

Table 1 depicts the GMM regression results of maternal employment status on child health for the different child health proxies. Overall, all the models performed relatively well with theoretically expected signs. Specifically, maternal employment is positive in relation to child health outcomes in all the models. These positive associations are consistent with results from some previous studies (Chatterji et al., 2013; Abarca-Gómez et al., 2017).

Table 1. Dynamic GMM regression results of child health measures on maternal employment (binary)

VARIABLES	(1) CHI	(2) BMIZ	(3) HAZ	(4) WHZ	(5) WAZ
Employment-m	0.157**	0.170***	0.011	0.179**	0.104**
	(0.079)	(0.043)	(0.042)	(0.072)	(0.046)
Education-m	0.020	0.011*	0.035***	0.003	0.0407***
	(0.015)	(0.006)	(0.006)	(0.013)	(0.007)
Age-m	-0.0129**	-0.024***	0.006**	-0.014**	-0.009***
	(0.006)	(0.002)	(0.002)	(0.005)	(0.003)
Marital status-m	0.0248	0.046	0.002	0.014	0.0747
	(0.088)	(0.0449)	(0.042)	(0.079)	(0.048)
Birthweight-c	0.481***	0.245***	0.316***	0.324***	0.391***
	(0.059)	(0.034)	(0.032)	(0.051)	(0.038)
Gender-c(boy)	-0.005	-0.040	-0.129***	0.025	-0.103**
	(0.074)	(0.041)	(0.039)	(0.068)	(0.042)
Household size	-0.014	-0.022***	-0.021***	-0.008	-0.028***
	(0.012)	(0.006)	(0.006)	(0.010)	(0.006)
African	-0.382***	-0.380***	0.014	-0.415***	-0.284***
	(0.104)	(0.059)	(0.056)	(0.095)	(0.062)
Coloured	-0.838**	-0.770***	0.696***	-0.971**	-0.0812
	(0.393)	(0.238)	(0.222)	(0.398)	(0.224)
Asian/Indian	-0.133	0.285*	0.618***	-0.522	0.348**
	(0.429)	(0.167)	(0.156)	(0.425)	(0.171)
Traditional	0.0154	-0.048	-0.080*	0.0379	-0.051
	(0.088)	(0.047)	(0.046)	(0.080)	(0.050)
Farms	0.264*	0.097	0.0161	0.208	0.132
	(0.149)	(0.084)	(0.085)	(0.134)	(0.094)
Constant	-1.260***	0.380**	-2.276***	-0.047	-1.363***
	(0.341)	(0.184)	(0.176)	(0.303)	(0.195)
Observations	**1,608**	**4,624**	**4,689**	**1,638**	**3,502**
R^2	**0.057**	**0.044**	**0.043**	**0.043**	**0.068**
Hansen Test (p-value)	**1.977(0.372)**	**2.529(0.282)**	**1.531(0.465)**	**0.766(0.682)**	**2.841(0.241)**

Notes: ***, **and * indicate that p-value is significant at 1%, 5% and 10% levels, respectively**.** Robust standard errors in parentheses. Education is measured as years of schooling. Abbreviations: m mothers, c child. Dummy variables employment status, marital status, gender. Reference categories for race and area are whites and Urban respectively.

However, the strongest impact of mother's employment status occurs on the child health is the BMIZ, being strongly significant at the 1% level; while the HAZ model is not significantly different from zero at all levels. Particularly, the results show that children with employed mothers have about 0.170 health advantage in terms of BMIZ scores compared to children whose mothers are unemployed. This might imply that mother's labour force participation has a positive effect on child nutritional health measured by anthropometric methods. Since the relationship between maternal employment and child health involves a trade-off, with a positive income effect and a negative 'time-away' effect, these findings possibly imply a greater effect of the income effect over the unavailability of the mother. This is consistent with evidence in low-income countries, indicating the positive effect of increased household

income. With respect to the covariates, maternal education is positive and generally significant in most of the models. In terms of race, the African/Black group have a 0.382 health disadvantage when compared to the White racial group. Finally, there is a negative and significant association between household size and three of the child health variables -BMIZ, WHZ and WAZ.

Maternal Employment: absolute working time

Table 2 presents the GMM results of maternal employment in absolute working time. An increase in working hours could imply increasingly less time spent with the child, and possibly an increase in relative income. Similar to the binary employment models, the results all depict a positive relationship and some relative level of significance with all the child health indicators. Several factors could account for this. A key factor could perhaps be the consequence of the income effect resulting from increased working hours and possibly higher wage income. This can translate to the ability to provide high quality care. In particular, absolute working hours is significant with respect to the BMI and WHZ measures at the 10% level.

Table 2. GMM regression results of child health measures on maternal employment (absolute time)

VARIABLES	(1) CHI	(2) BMIZ	(3) HAZ	(4) WHZ	(5) WAZ
Time-m	0.029**	0.021***	0.005	0.027**	0.014*
	(0.013)	(0.007)	(0.007)	(0.013)	(0.008)
Time-squared-m	-0.036**	-0.027***	-0.007	-0.041**	-0.018*
	(0.015)	(0.08)	(0.008)	(0.016)	(0.008)
Education-_m	0.070***	0.00464	0.037***	0.043*	0.052***
	(0.027)	(0.011)	(0.009)	(0.025)	(0.012)
Age-m	-0.021*	-0.013***	0.008*	-0.017*	5.76e
	(0.011)	(0.004)	(0.004)	(0.010)	(0.005)
Marital status-_m	0.033	0.007	-0.114*	0.0371	-0.128*
	(0.138)	(0.071)	(0.069)	(0.127)	(0.075)
Birthweight-c	0.427***	0.200***	0.269***	0.249***	0.369***
	(0.100)	(0.058)	(0.054)	(0.092)	(0.066)
Gender-c (boy)	-0.120	0.065	-0.193***	-0.0610	-0.171**
	(0.128)	(0.067)	(0.064)	(0.120)	(0.070)
Household size	0.011	-0.018	-0.0158	0.007	-0.025**
	(0.025)	(0.012)	(0.012)	(0.022)	(0.012)
African	-0.491***	-0.512***	-0.002	-0.534***	-0.331***
	(0.151)	(0.083)	(0.081)	(0.146)	(0.085)
Coloured	-2.135*	-0.650	1.334***	-2.432*	0.159
	(1.276)	(0.441)	(0.319)	(1.414)	(0.354)
Asian/Indian	-0.373	0.374*	0.528***	-0.741	0.362*
	(0.548)	(0.217)	(0.196)	(0.549)	(0.213)

Trad	-0.040	-0.0413	-0.120	-0.019	0.0290
	(0.160)	(0.081)	(0.081)	(0.149)	(0.092)
Farm	0.423*	0.215*	0.175	0.362*	0.396***
	(0.227)	(0.124)	(0.117)	(0.212)	(0.127)
Constant	-1.769***	-0.043	-2.295***	-0.453	-1.812***
	(0.661)	(0.323)	(0.317)	(0.616)	(0.343)
Observations	**495**	**1,717**	**1,742**	**506**	**1,231**
R^2	**0.087**	**0.047**	**0.053**	**0.065**	**0.081**
Hansen test (P- value)	**1.940(0.379)**	**1.273(0.529)**	**2.774(0.249)**	**2.431(0.296)**	**5.472(0.065)**

Notes: ***, **and * indicate that p-value is significant at 1%, 5% and 10% levels, respectively**.** Robust standard errors in parentheses. Education is measured as years of schooling. Abbreviations: m mothers, c child, trad traditional. Dummy variables employment status, marital status, gender. Reference categories for race and area are whites and Urban respectively.

Across all the models, the covariates like maternal education, household size, and birthweight showed expected signs. While maternal education is positively associated with child health in all the models, it is highly significant at the 1% level in respect of HAZ and WAZ measures. For example, Table 2 Column 1, a child' health will be affected by about 0.070 S.D scores with a one-year increase in the mother's education. The results of the other covariates are similar to that of the binary measure of maternal employment on all child health indicators. Birthweight is positive and highly significant at the 1% level. Furthermore, household size is also negative and significant indicating, perhaps the effect of per capita income in the household. The age of mothers is also negative and significant.

Maternal Employment: relative time

The results are displayed in Table 3 and seem to indicate that child health does not respond to maternal employment with less than 40 hours a week on different quantiles. Similar to the results of the binary maternal employment, all the measures show a positive association with the variable of interest and are significantly different from zero except the HAZ model. On average, the BMIZ of 0.71 S.D. is associated with maternal employment, while the HAZ results in 0.002 S.D. Overall, the results suggest a positive and statistically significant association between maternal employment and most of the child health indicators.

Table 3. GMM regression results of child health measures on maternal employment (relative time)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	CHI	BMIZ	HAZ	WHZ	WAZ
Time-relative-m	4.927**	3.517***	0.885	4.494**	2.365*
	(2.267)	(1.148)	(1.249)	(2.139)	(1.361)
Time squared –m	-5.000**	-2.936***	-0.796	-3.969**	-1.174*
	(2.761)	(1.653)	(1.913)	(1.385)	(1.045)
Education-_m	0.070***	0.004	0.037***	0.043*	0.052***
	(0.0267)	(0.0109)	(0.009)	(0.025)	(0.012)

Age-m	-0.021*	-0.0134***	0.007*	-0.017*	5.76e-06
	(0.011)	(0.004)	(0.004)	(0.010)	(0.005)
Marital status-m	0.0334	0.0071	-0.114*	0.037	-0.128*
	(0.138)	(0.071)	(0.069)	(0.127)	(0.075)
Birthweight-c	0.427***	0.200***	0.269***	0.249***	0.369***
	(0.100)	(0.058)	(0.054)	(0.092)	(0.066)
Gender (Boy	-0.120	0.065	-0.193***	-0.061	-0.171**
	(0.128)	(0.067)	(0.064)	(0.120)	(0.070)
Household size	0.0113	-0.018	-0.016	0.007	-0.025**
	(0.0256)	(0.012)	(0.012)	(0.022)	(0.011)
African	-0.491***	-0.512***	-0.002	-0.534***	-0.331***
	(0.151)	(0.083)	(0.081)	(0.146)	(0.085)
Coloured	-2.135*	-0.650	1.334***	-2.432*	0.159
	(1.276)	(0.441)	(0.319)	(1.414)	(0.354)
Asian	-0.373	0.374*	0.528***	-0.741	0.362*
	(0.548)	(0.217)	(0.196)	(0.549)	(0.213)
Trad	-0.0400	-0.041	-0.120	-0.019	0.029
	(0.160)	(0.081)	(0.081)	(0.149)	(0.092)
Farm	0.423*	0.215*	0.175	0.362*	0.396***
	(0.227)	(0.124)	(0.117)	(0.212)	(0.127)
Constant	-1.769***	-0.043	-2.295***	-0.453	-1.812***
	(0.661)	(0.323)	(0.317)	(0.616)	(0.343)
Observations	**495**	**1,717**	**1,742**	**506**	**1,231**
R^2	**0.087**	**0.047**	**0.053**	**0.065**	**0.081**
Hansen test(P-	**1.940(0.379)**	**1.273(0.529)**	**2.774(0.249)**	**2.431(0.296)**	**5.472(0.065)**

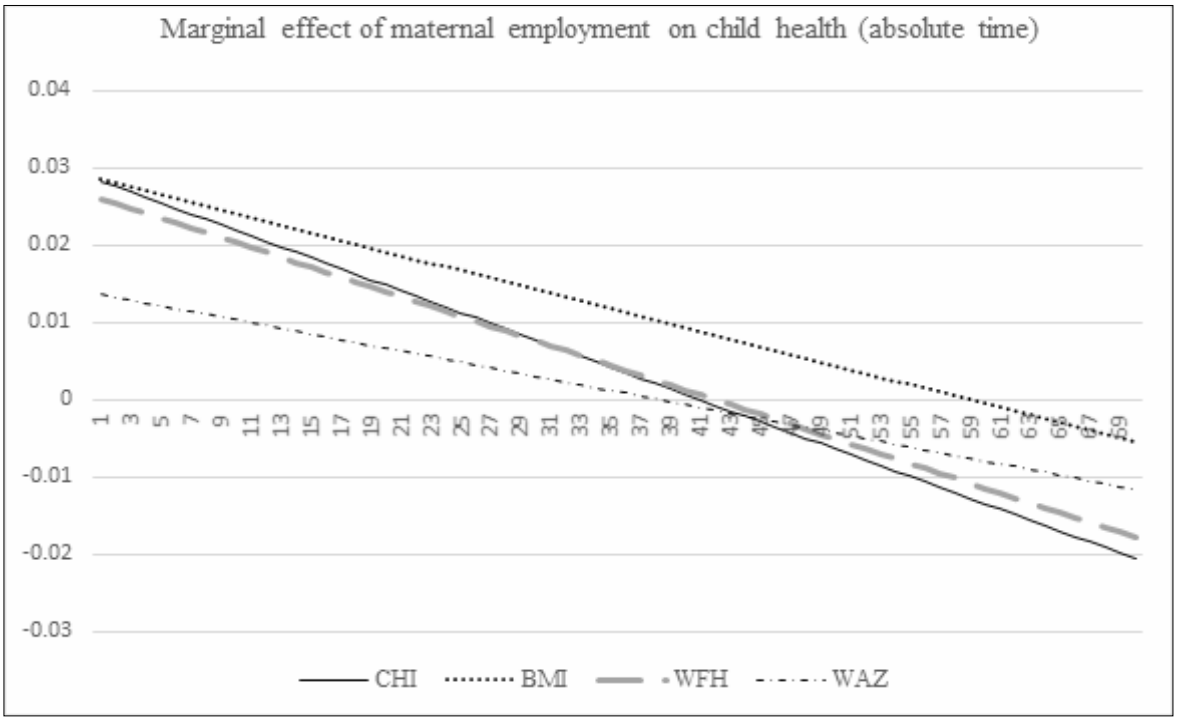
Notes: ***, **and * indicate that p-value is significant at 1%, 5% and 10% levels, respectively. Education is measured as years of schooling. Abbreviations: m mothers, c child, trad traditional. Dummy variables employment status, marital status, gender. Reference categories for race and area are whites and Urban respectively.

From this finding arises the question whether maternal employment affects the likelihood of child obesity. This question is answered within a probit framework which distinguishes between the normal weight children from obese children using the cut-off of BMIZ > +2.

Maternal working time effect

To infer the possible effect of time taken away from child, we use the nonlinear model to simulate the effects at different time allocated to the labour market by the mother. The results are shown in Figure 1. The HAZ was not significant in the GMM estimations and so was not included. The incidence of time allocated to the labour market on CHI, WHZ and WAZ generally tend to be negative after 43 hours. This is the point at which income effects and depriving the child of the mother's presence phases out. Beyond 43 hours therefore, any additional time to the labour market results in a negative effect on child health.
The implication is that a 40 working hour week is generally good for the child, but beyond this, the health of the child is sacrificed for work. Overtime for a mother is therefore costly to the child in terms of health outcomes.

Figure 1. Marginal effect on maternal employment on child health (absolute time)



Source: Authors

Maternal employment and child obesity

The marginal effects of maternal employment and child obesity are presented in Table 4. Consistent with the former output, it appears that on average, there is a significant likelihood that mothers' employment causes child obesity. After controlling for heterogeneity, it emerges that mother's education and birthweight are important drivers of the child obesity likelihood. As indicated earlier, this confirms the importance of other factors (biological for instance) in determining child health in South Africa. Overall, the results provide substantial evidence that maternal employment matters for child health measured by nutritional status.

Table 4. Marginal effects of maternal employment on child obesity

Employment status		Time(Absolute)			Time (Relative)	
Panel Probit VARIABLES	(1)	Panel probit (2)	IV (3)	Probit	Panel Probit (4)	I V Probit (5)
Employment status	0.006 (0.007)					
Time (Absolute)		0.001* 0(0.003)	0.006* (0.000)			
Time (Relative)					0.127* (0.061)	0.969* (0.547)
Education(m)	0.003** (0.001)	0.004* (0.002)	0.021 (0.015)		0.004* (0.002)	0.021 (0.015)

Age(m)	-0.003***	-0.001*	-0.009	-0.001*	0.130***
	(0.000)	(0.001)	(0.006)	(0.001)	(0.010)
Marital status(m)	0.013*	0.013	0.069	0.013	0.069
	(0.007)	(0.011)	(0.090)	(0.011)	(0.090)
Birthweight(c)	0.034***	0.030***	0.130*	0.030***	0.130*
	(0.005)	(0.008)	(0.069)	(0.008)	(0.069)
Gender(boy)	-0.001	-0.012	0.051	-0.012	0.051
	(0.006)	(0.010)	(0.083)	(0.010)	(0.083)
Household size	-0.002*	-0.001	0.002	-0.001	0.002
	(0.055)	(0.002)	(0.016)	(0.002)	(0.016)
African	-0.0.267***	-0.057***	-0.430***	-0.057***	-0.430***
	(0.055))	(0.015)	(0.121)	(0.015)	(0.121)
Coloured	0.173*	0.003	0.247	0.003	0.473**
	(0.205)	(0.046)	(0.371)	(0.046)	(0.182)
Asian/Indian	0.173*	0.067**	0.473**	0.067**	-0.181
	(0.103)	(0.311)	(0.182)	(0.024)	(0.196)
Trade areas	-0.042	0.002	-0.034	0.002	-0.033
	(0.077)	(0.012)	(0.101)	(0.012)	(0.101)
Farms	0.034	-0.030	0.111	-0.031	0.111
	(0.052)	(0.022)	(0.171)	(0.022)	(0.171)
Observations			**4096**		

Notes: Coefficients are in parentheses. *** , ** and * indicate that p-value is significant at 1%, 5% and 10% levels.

Overall, the empirical results suggest that maternal employment is positively associated with child health in South Africa. This finding concurs with previous empirical studies (Victora et al., 2008; Shuhaimi and Muniandy, 2012; Datar et al., 2014; Meyer, 2016), thus signifying the importance of the income effect over the time effect. This is especially important in South Africa given that many households are female headed. Therefore, a working mother could increase the household income thereby possibly improving the nutritional choices of her children. A key finding from this study is the possibility that maternal employment could increase the likelihood of child obesity. This is crucial given the adverse short and long-term effects of obesity. Furthermore, this study provides substantial evidence suggesting that relatively long maternal working time can impact negatively on child health. In summary the results suggest that maternal employment plays a key role through the nutritional channel to impact on child health.

5. Conclusion

This study investigates the relationship between maternal employment and child health in South Africa using five waves of the NIDS dataset. In the first stage analysis, there is a strong association between employment status of mothers and the health of their children. Further analysis of maternal relative time also confirms this link. This is consistent with previous studies (Chia, 2008; Gwozdz et al., 2013; Meyer, 2016).

At least three main substantive findings arise from this study. Firstly, the results indicate that there is an association between maternal employment and child health. Secondly, there is evidence of a time threshold where increased work time by mothers produces detrimental health effects on the child. The threshold number was determined to be just about 40 working hours a week, implying that overtime for a mother is bad for child's health. Thirdly, the results

suggest evidence of impact of maternal employment having an impact on the likelihood of child obesity.

Firstly, in line with Benson and Mokhtari (2011) and Hill et al., (2001), national policies supporting flexible working schedules could assist mothers balance work and child- caring time. For instance, it might be efficient for mothers to take up part-time jobs and/or remote work, which could reduce the time away from their children, while still providing the needed financial support.

Secondly, these findings suggest that policies designed to improve child health might benefit from nutritional programmes that assist employed mothers. These include school feeding schemes and promotion of healthy eating habits (Tandon et al., 2010; Courtemanche et al; 2017). Accordingly, in South Africa, policy decisions on child health and labour conditions should be jointly taken. This implies that child health policies should go beyond enhancing nutritional programs to promoting flexible working hours for mothers.

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