

UNIVERSITY OF ZULULAND

THE MOTHERHOOD WAGE PENALTY IN SOUTH AFRICA

By Thamsanqa Reginald Mtshengu

Abstract

In most African Countries including South Africa, wage differences between men and women are widely researched, while disparities between the earnings of mothers and that of other women who are not mothers lack academic attention. The study looks at wage disparities between mothers and non-mothers, and between caregivers of children and non-caregivers in South Africa. A national probability sample of prime-aged working women within the working age group aged between 25 and 54 years who bear and/or rear children aged between birth and 14 years in South Africa is used. The sample is drawn from the NIDS Household Survey data made up of five waves collected between 2008 and 2017. The first model estimates wage disparities between mothers and non-mothers, where motherhood is biological. The second model explores whether there is a difference in wages between women who are primary caregivers of children and those who are not. Caregivers in this study refer to women in the sample who rear children regardless whether they are biological mothers or not. Using the fixed effects model, after controlling for human capital, job characteristics and demographic characteristics, biological mothers experience a five percent wage penalty. When caregivers are used as a proxy for mothers, they experience a four percent wage penalty. Furthermore, the study found that for South African women, the motherhood wage penalty to be more biological than based on childcare.

Introduction

Women in general earn lower wages than men. This is confirmed by the status characteristics theory that employers tend to categorically distinguish between men and women in the labour market. Employers attach greater status and value to men at the expense of woman. This results in biased attitudes towards women in regard to earnings and even placements (Berger et al., 1978). This is a penalty that women pay for being females. Another status characteristic is the role of motherhood which women assume after giving birth. Mothers are perceived as being less competent than non-mothers in the labour market, even when having the same level of human capital as non-mothers; as a result, they receive the minimum wage (Blau & Kahn, 2007). Therefore, mothers pay double penalty. The first penalty that mothers pay is being categorised as females and the second is the one of motherhood. Hence, this study seeks to investigate the penalty that women are subject to as a result of motherhood.

The process of becoming a parent has far-reaching implications for the wages of both men and women. Motherhood affects the wages of mothers differently from the way in which fatherhood affects the wages of men. Unlike fathers, and men and women without children, mothers spend more time outside the labour market when engaged in child bearing and child rearing activities (Waldfogel, 1997). Even after giving birth some mothers do not return to the labour market and a great portion of those who do return to the labour market opt for low-paying mother-friendly jobs or part-time employment. The mothers who do return to their old jobs become less productive, because of the responsibilities associated with raising children (Budig & England, 2001; Agüero et al., 2011; Correll et al., 2007).

The motherhood wage penalty surfaces when women leave employment to give birth. During this period mothers forfeit work experience and/or training, thus their expected future income declines. After child birth there are three possible routes that mothers may take which cause an increase in the impact of the motherhood wage penalty. Some mothers after giving birth may not return to the labour market, instead they may trade their wages entirely for motherhood responsibilities. Some mothers, after giving birth go back to their old jobs, while many would take on part-time employment which is regarded as mother-friendly employment (Budig & England, 2001).

Literature Review

In 1776 Adam Smith suggested that workers with the same and equivalent human capital should be paid wages gauged by the difficulty of the job they are doing (Duncan & Holmlund, 1983). Workers working in conditions with risks of accidents, long hours, or difficult jobs should be paid a higher wage than their counterparts having the same skill, but working in lighter jobs in safe environments and doing part-time work. This idea was later formalised by Rosen (1974) as a hedonic theory of wages.

In the United States and in Britain many mothers after giving birth choose part-time employment. These mothers sacrifice higher wages associated with working full-time and they settle for lower wages offered in in part-time employment, with the aim of creating time to engage with their motherhood responsibilities. Mothers who opt for part-time employment experience a higher motherhood wage penalty compared to mothers who return to their old jobs after birth (Budig & England, 2001; Correll et al., 2007; Waldfogel, 1997).

In sociological research, working part-time and opting for lighter jobs in less hazardous conditions has solely been seen as a female voluntary phenomenon, aimed at balancing employment with parenthood responsibilities (Budig & England, 2001). On the contrary, later research finds working part-time by women to be involuntary and promoted by policies that hinder maternal employment. Involuntary part-time employment of women is significantly explained by job characteristics rather than individual and family conditions, such as maternal conditions (Kjeldstad & Nymoen, 2009). Countries engaging in policy changes that promote maternal full-time employment are perceived by employers as promoting low productivity. Northern Europe countries where household and child rearing responsibilities are shared mutually between both parents, mothers after giving birth tend to go back to their full-time jobs and not settle for part-time employment. (Hallden et al., 2016).

The motherhood wage penalty for mothers who return to their full-time job after giving birth is said to still persist even though it is an even less favourable position than the motherhood

wage penalty incurred by those who submit to a low-paying motherhood-friendly employment. Mothers are said to be less productive than their non-mother counterparts, because instead of going home to rest after work, they will be going home to perform their motherhood responsibilities, thus having less energy to work the next day (Aguero et al., 2011). What also reduces the productivity of mothers is that during working hours they may be calling home to check up on their children and may go as far as taking some time off work if they feel that their children are not well. All these motherhood characteristics may negatively affect the productivity of mothers and contribute to decreased wages (Gallen, 2016).

Employers may practise statistical discrimination, which refers to discriminating among individuals with the same level of productive skills and level of human capital just because they belong to a different group of people (Becker, 1965). Statistical discrimination is a penalty that is left unexplained after accounting for legitimate factors such as decreased hours of work by mother (Nizalova et al., 2016). Discrimination against mothers by employers may occur bearing in mind the number of children the mother has because of the positive relationship between the number of children cared for and the extent of distraction and exhaustion among mothers in paid work (Budig & England, 2001). Discrimination against mothers by employers may also spill over to women who are non-mothers, but who are at a child-bearing age. This is because employers perceive women as a risky investment, because they may cause additional costs should they become mothers amid the course of their employment (Anderson et al., 2003; Budig & England, 2001; Waldfogel, 1997). Grimshaw and Rubery (2015) argue that mothers receive lower wages than non-mothers due to either a legitimate reason such as decreased productivity or due to discrimination by employers and not both. However, studies separating discrimination from other legitimate reasons for differences in wages yield inconclusive results, due to the inability to measure productivity (Nizalova et al., 2015).

The human capital theory, as founded by Becker (1964), states that more education, experience and seniority lead to higher human capital which receives more wages in the labour market. According to the human capital theory earnings are a function of education

and work experience (Becker, 1965). The more skilled the people become through education and training, the higher the wages they earn. Furthermore, increased work experience increases wages accumulated through the period of time the person stays employed. Therefore, mothers may forfeit part of the wages accumulated through the period of time the person stays employed, due to maternal work breaks (Budig & England, 2001).

Motherhood and Childcare in South Africa

Family formation, incidence of motherhood and patterns in childcare are events that the presence and extent of the motherhood wage penalty may depend upon in a particular country. Social studies suggest that these events are clouded by health, socio-economic and political issues, which worsen income, gender and maternal based inequalities, especially in developing and low income countries (Budlender & Lund, 2011; Daly et al., 2015; Roman, 2011; Herzberg-Druker, 2014; Ntshongwana, 2010).

Budlender and Lund (2011) state that only about 35 percent of the children in South Africa reside with both parents, while about the same percentage reside with single mothers. For both the colonial and the democratic South Africa, there have been factors such as apartheid, HIV/AIDS and other social ills, which have shaped the domestic household structure and family formation. This has led to the decrease in the number of nuclear family households in South Africa.

The Apartheid-era legislation forced population groups to live separately. The objective was to reserve cities, commercial farmland and the Central Business Districts (CBDs) for the White population, while the African population was forced to live in the rural areas where very little economic activity took place (Posel & Rudwick, 2012). African labourers could reside temporarily in the areas that they worked, but had to leave their families in their household of origin, dismantling nuclear families. Children would reside with a single parent, grandparents or any other relative (Roman, 2011; Makusha & Richter, 2015). Fathers living apart from their families for the majority of the year engaged in extra-marital relationships

and childbirth, exposing themselves and wives back home to HIV/AIDS (Budlender & Lund, 2011; Makusha & Richter, 2015).

Another factor that still is and has been shaping the South African family structures and family formations is the HIV/AIDS pandemic. HIV/AIDS infections were very high and those infected had no access to antiretroviral drugs (ARVs). This has resulted in an increase in HIV/AIDS and other related diseases, increased the death toll, and has triggered the notable increase of children being reared by single parents or neither of their parents, but by relatives, siblings or caregivers (Meintjies et al., 2009; Morobadi & Webber, 2014). The legacy of apartheid and the scourge of the HIV/AIDS pandemic have left the South African family structure fractured with women as the primary caregivers to carry the entire household burden, including burying HIV/AIDS victims with borrowed money (Holborn & Eddy, 2011). Despite efforts made by the government, since the dawn of the democratic era in addressing gender income inequalities, the income inequality gap still persists between men and women (Ardington et al., 2014).

Sub-Saharan Africa countries lack government-led parenting support, child-rearing and child development initiatives. Despite each country varying from another in the form of support provided, Central and Eastern European countries and few countries in Africa do have comprehensive child-rearing and parenting support initiatives (Daly et al., 2015). Hallden et al. (2016) used European Household Panel (EHP) data for ten European countries and found government-funded (ECD) services and lengthy paid maternity to lead a decrease in the motherhood wage penalty, regardless of the mothers' level of skills.

The South African government through the Department of Social Development, subsidises some crèches, day care centres, nurseries and non-profit organisations (NPOs) to offer ECD services (Giese et al., 2011). The ECD services include looking after and taking care of nutritional and other maternal needs of young children from birth to nine years, while their mothers participate in the labour force at a minimised motherhood wage penalty. Budlender and Lund (2011) add that upon the implementation of the ECD framework, the number of children between the ages of two-to-six years using these facilities only increased by a steady

10% between 2002 and 2007. However, these ECD services still lack comprehensive policies, infrastructure development, adequate financial and human resources (South African Early Childhood Review, 2017). Viviers et al. (2013) add that South African policies including the National Development Plan emphasise the need for a comprehensive provision of ECD services, however, there is still a significant gap between policy and implementation.

Ardington et al., (2009) using longitudinal data collected by Africa Centre for Health and Population Studies from approximately 11000 households in the UMkhanyakude District of KwaZulu-Natal (KZN), found the presence of a pensioner in a household to be positively related to employment and labour migration. Immediately after pension receipt commences in a household, prime-aged adults are more likely to labour migrate and/or find employment. On the other hand, in a household where the pensioner loses pension income, prime-aged adults are less likely to labour migrate. Posel et al. (2006) using Project for Statistics on Living Standards and Development (PSLSD) surveyed data collected by the South African Development Research Unit (SALDRU) from a random sample of 9000 households, which is the first national representative data, and they arrived at similar results where prime-aged adults are significantly more likely to migrate to seek labour.

Because of the scarcity of employment opportunities in rural areas, upon receipt of pension by the old aged household, prime-aged adults migrate to cities where there are employment opportunities (Posel et al., 2006). The old age pension should be enough to cover the basic needs of the household and the basic needs of the potential labour migrant until they find employment at the place of migration. Moreover, if the potential labour migrant has a child less than six years of age, the pensioner or whomever in the household must be available to look after the child or children so that the childcare constraint is eliminated. (Blau & Kahn, 2007; Eissa & Hoynes, 2004; Budlender & Lund, 2011).

Bertrand et al. (2003) found that where when individuals arrived at the pension eligibility age and started earning state pension, the prime-aged members living in the household sharply decreased their working hours. The study argues that the age of the pensioner might also

have an influence, because a very old pensioner might have a deteriorating health as a result the prime-aged adults living with the pensioner might be even required to reduce their labour force participation to take care of the pensioner. Furthermore, the pensioner might not be able to offer childcare support to the children of the early-aged members of the household.

The child support grant was introduced in 1998 for children between birth and seven years of age, which in 2014 was extended to children up to 14 years of age (Lund, 2014). The child support grant was introduced by the South African government to compensate for income loss associated with child bearing and the costs associated with raising a child. Eligibility was tailored to assist single mothers from low income families (Dupper et al., 2000). Eyal and Woolard (2010) estimating the effect of the child support grant on the labour supply of mothers, view the child support grant receipt to be associated with up to 15 percent high probability of mothers being in the labour force and to negatively relate to unemployment and hours worked.

International Empirical Findings

Most studies show that the motherhood wage penalty still persists, even after controlling for other variables influencing the earnings of mothers. Two American studies propose that for mothers the motherhood wage penalty increases by 5 percent on average per child, when taking into consideration occupational and human capital factors that affect earnings (Budig & England, 2001; Anderson et al., 2003). The bigger the household the higher the motherhood wage penalty. Therefore, the motherhood wage penalty may increase the family size penalty. After creating a dummy variable for the age of a child, Anderson et al. (2003) using National Longitudinal Survey of Young Women (NLSYW) data for the United States between 1968 and 1988 discovered that the motherhood wage penalty decreases as children grow older, at least for female children. Even though Aguero et al. (2011) found in their study that the motherhood wage penalty increases with the number of children the mother has or with the size of the household for developing countries. The study also reveals that the findings depend on the ages of the children in the household. The child's age needs to be taken into account because as the girl child grows she becomes an asset in the household that relieves

the mother of some household duties as a result the mother is able to be productive at work/or increase working hours, thus increasing work experience and future expected income.

Budig and England (2001) using National Longitudinal Survey of Youth data between 1982 and 1993, after controlling for marriage found married and divorced mothers have a larger motherhood wage penalty than mothers who never married. On the contrary, Waldfogel (1995) using the same data as Anderson et al. (2003) found in his research that young mothers have a high motherhood wage penalty.

Most studies (Waldfogel, 1997; Budig & England, 2001; Agüero et al., 2011; Grimshaw & Rubery, 2015) find the gap between mothers and non-mothers to be persistent, although shrinking over time after controlling for various characteristics. In 21 developing countries including South Africa, after conditioning for age, marital status, and education, the average motherhood wage gap declines from 22% to 7% on average between 1994 and 1999 (Agüero et al, 2011). On the contrary for British young women, Waldfogel (1995) finds no significant reduction of motherhood wage penalties after controlling for unobserved heterogeneity, meaning that differences in motivation or other unobserved characteristics cannot account for the wage gap between mothers and non-mothers.

Other researchers hypothesise that the unexplained motherhood wage gap between mothers and non-mothers account for the fact that work productivity and motherhood activities conflict or for discrimination against mothers by employers (Waldfogel, 1997; Budig & England, 2001). Discrimination is a characteristic that is associated with measurement problems. For example if a mother and a non-mother at work have equal productivity levels and the employer promotes a non-mother without promoting a mother, when they have equal productivity levels, the employer is found to discriminate against the mother. However, productivity cannot be measured, then, therefore discrimination becomes unobservable as well. Correll et al. (2007) however, detected discrimination in getting a job between mothers and non-mothers by employers and indeed discover that employers do discriminate against

mothers when hiring. The study found discrimination on various grounds, including starting salary recommendations and feedback given to mothers over their counterparts who are non-mothers.

Most studies on the motherhood wage penalty focus on mothers from Western countries because of data deficiency in Sub-Saharan African countries (Herzberg-Druker, 2014; Anderson et al., 2003; Budig & England, 2001). In Sub-Saharan African countries including South Africa, wage differences between men and women are widely researched, while disparities between the earnings of mothers and the earnings of other women who are not mothers lack academic attention (Aguero et al., 2017). However, the motherhood wage penalty is very much related to broader gender labour issues. Young women may be discriminated against at work by not being promoted to higher positions due to the possibility that they may become pregnant (Grimshaw & Rubery, 2015). The limited studies available on developing countries, especially Sub-Saharan African countries group more than one country in one study or use data from more than one country, not giving close results per country (Aguero et al., 2011; Herzberg-Druker, 2014; Grimshaw & Rubery, 2015; Aguero et al., 2017).

Herzberg-Druker (2014) compares the motherhood wage penalty in labour markets across twelve countries, including South Africa. The study uses the Luxemburg Income Study (LIS) data collected from a range of countries in 2010. The study proposes that the wage ratio between mothers and women without children in South Africa is 0.98%, which means that mothers earn 2% less than their counterparts without children. According to the study mothers and women without children have the same average weekly working hours, meaning that the 2% motherhood wage penalty is not as a result of decreased working hours, but is as a result of other factors such as wage discrimination. Furthermore, these findings entail that mothers and women without children have the same average weekly working hours which implies that motherhood does not hinder the labour force participation of mothers.

Aguero et.al (2011) use the Demographic Health Surveys (DHS) data on earnings for approximately 130 000 women from 21 developing countries including South Africa. The study discovered a 22% motherhood wage penalty average in the 21 developing countries,

which decreases to 7% per additional child after controlling for age, education, marital status, and size of the current location. According to the study, less than the daily earnings are 48 cents less than the daily earnings of other childless women per child. After researching the influence of age, education, current location and the daily earnings, motherhood wage penalty decreases to 7%. The study also holds that South African mothers, on average, have 1.57 children, which is the lowest average when compared to the other 20 developing countries. Therefore, given the average number of children per mother South Africa has the lowest motherhood wage penalty when compared to the other 20 developing countries. This is also substantiated by a report by Samman et al. (2016).

Methodology

This study observed the motherhood wage gap from two perspectives. There will be two models measuring the motherhood wage penalty. The first model will estimate wage disparities between mothers and non-mothers as in the literature reviewed in this study, where motherhood is biological and refers to both child bearing and rearing. The second model which is an alternate model will estimate the motherhood wage penalty using caregivers as a proxy for mothers. Caregivers in this study refer to women in the sample who rear children regardless whether they are biological mothers or not. This therefore, means that the difference between being a mother and being a caregiver is that the motherhood variable is comprised of biological mothers who bear and rear children as well as those who only bear children and do not rear them. The caregiver variable is comprised of mothers who bear and rear children, and women who do not bear children but only rear them. Thus the caregiver variable excludes mothers who only bear children and do not rear them. Statistics on children in South Africa by Children's count, between 2002 and 2014 more than 20% of children between the ages of birth and 17 years are reared by neither of the biological parents.

This study performs an econometric analysis on the effect of motherhood on wages while also controlling for other factors that may influence the wages of the observed sample using

statistical software called STATA. In the second analysis the caregiver serves as a proxy for motherhood. The three broad categories of factors to be controlled for in the main models are human capital, demographic factors and job characteristics. The human capital variable comprises education, enrolment status and experience. A dummy variable for education is formulated as basic education, matriculated and tertiary education, with no education as a reference category. Enrolment status is a dummy for variable coded 1 currently registered for a particular course while employed. Experience was measured in years.

Demographic factors were measured using race, gender of child and marital status. Race is a categorical variable including African, White, Coloured and Indian/Asiatic. Marital status has dummy variables including married and divorced, with 'never married' as a reference category. 'Divorce' recorded those divorced, widowed and those separated. Job characteristics include union status. If the respondent's wages were set through collective bargaining, the union status dummy variable was coded 1. The main estimating models to answer the two research questions are given by ordinary least squares (OLS) equations (1) and (2) below:

$$\ln Y_{it} = b_0 + Mh_{kit} + \sum_{b_k} X_{kit} + \varepsilon_{it} \quad (1)$$

$$\ln Y_{1it} = b_{10} + Cg_{1kit} + \sum_{b_k} X_{1kit} + \varepsilon_{1it} \quad (2)$$

Equation (1) measures the effects of motherhood (Mh_{kit}). Y is the dependent variable representing the logarithm of hourly earnings; Mh is the motherhood variable; Cg is the caregiver variable; the independent variables are denoted by X ; b denotes the regression coefficients; k indexes measured independent variables; i indexes individuals; t indexes time; ε is the error term; and b_0 is the intercept. 1 indexes all the variables in equation (2). Equation (1) measures the effect of motherhood (Mh_{kit}) on the logarithm of wages ($\ln Y_{it}$) while controlling for the $\sum_{b_k} X_{kit}$ variables. Equation (2) measures the effect of caregiving (Cg_{1kit})

as a proxy for motherhood, on the logarithm of wages ($\ln Y_{1it}$), while controlling for the $\sum_{b_k} X_{1kit}$ variables.

There is possible unobserved heterogeneity bias in models (1) and (2), which is the presence of individual specific unobserved characteristics. This may lead to the study yielding spurious results. Furthermore, if these unobserved person specific characteristics correlate with the explanatory variables, they lead to endogeneity bias. Moreover, some women may have a low self-esteem and decide to have children at a younger age, compared to their goal-orientated counterparts who may decide on accumulating human capital instead of early pregnancy. A low self-esteem and goal orientation vary among individuals and are both difficult to measure, and over and above, correlate with human capital. This nullifies the possible causal relationship that may exist between motherhood and earnings (Budig & England, 2001).

To deal with possible unobserved heterogeneity and endogeneity bias, this study made use of one of the differencing models, viz.: the fixed effects models. The fixed effects model differences out the unobserved variables and eliminate them. However, one of the major problems with fixed effects models is that any explanatory variable that may be constant over time may be eliminated as well. To prevent explanatory variables that are constant over time from being eliminated by the fixed effects models, an interaction term between each of those explanatory variables and the relevant continuous variables is constructed (Baltagi, 2008).

Fixed effects help difference these person specific attributes out of the estimated model. The unobservable time effect variable accounts for unobservable shocks such as government policies that may affect earning during the observed periods. However, in equation (1) and (2), motherhood and caregiver variables may be eliminated due to many women having their motherhood or caregiver status fixed across periods observed.

$$\varepsilon_{it} = u_i + v_t + w_{it} \tag{3}$$

In the above-mentioned, u_i is the unobservable individual effect of error; v_t is the unobservable time effect of error; w_{it} is the purely random component of error. The unobservable effect of error measures ability, motivation, self-esteem and other innate attributes that are person specific which cause unobserved heterogeneity bias.

Results and Analysis

Table 1, including (a), (b) and (c) below, shows the complete regression results from three sets of different models. The first three panels on (a) show results from pooled OLS, while the three panels on (b) show the results from the random effects regressions. The last set on (c) show regression results from the random effects models. In Table 1(a) the difference between panel 1 and 2 is that panel 2 is a complete model, because it consists of the human capital variables, demographic factors and job characteristics, while panel 1 is missing demographic characteristics.

Table 1: Regressions of Log Hourly Earnings on Motherhood and Other Explanatory Variables

(a) Pooled OLS

VARIABLES	(1) Pooled-OLS	(2) Pooled-OLS	(3) Pooled-OLS
Motherhood	-0.116*** (0.0183)	-0.0794*** (0.0153)	0.0655*** (0.0157)
<i>Human Capital Variables</i>			
Basic education	0.302*** (0.0499)	0.0605 (0.0482)	0.0805* (0.0434)
Matriculated	0.801*** (0.0566)	0.298*** (0.0525)	0.272*** (0.0472)
Tertiary	1.428*** (0.0571)	0.615*** (0.0535)	0.520*** (0.0481)

Work experience	0.0306*** (0.00413)	0.0215*** (0.00321)	0.0154*** (0.00299)
Work experience squared	-0.000673*** (8.99e-05)	-0.000584*** (7.20e-05)	-0.000386*** (6.76e-05)
Enrolment status	0.215*** (0.0515)	0.108*** (0.0386)	0.0827** (0.0379)
<i>Job Characteristics</i>			
Union membership	0.568*** (0.0224)	0.317*** (0.0174)	0.309*** (0.0167)
<i>Demographic Characteristics</i>			
Married		-0.0729*** (0.0159)	-0.154*** (0.0152)
Divorced		0.147*** (0.0240)	0.0645*** (0.0221)
Log of household Income		0.531*** (0.0115)	0.611*** (0.0131)
Child support grant		-0.299*** (0.0158)	-0.246*** (0.0151)
Coloured			-0.0727*** (0.0189)
Indian/Asian			0.00279 (0.0747)
White			0.144*** (0.0386)
Household size			-0.0675*** (0.00289)
Constant	1.293*** (0.0630)	-2.476*** (0.101)	-2.858*** (0.107)
Observations	10,157	10,142	10,142
R-squared	0.458	0.646	0.679

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(b) Random effects

VARIABLES	(1) Random Effects	(2) Random Effects	(3) Random Effects
Motherhood	-0.0876*** (0.0142)	-0.0798*** (0.0143)	0.0526*** (0.0146)
<i>Human Capital Variables</i>			
Basic education	0.118*** (0.0451)	0.0978** (0.0454)	0.106** (0.0429)
Matriculated	0.406*** (0.0500)	0.383*** (0.0503)	0.334*** (0.0473)
Tertiary	0.678*** (0.0510)	0.655*** (0.0514)	0.557*** (0.0483)
Work experience	0.0221*** (0.00315)	0.0229*** (0.00315)	0.0159*** (0.00296)
Work experience squared	-0.000554*** (7.04e-05)	-0.000585*** (7.03e-05)	- (6.66e-05)
Enrolment status	0.0689* (0.0367)	0.0664* (0.0365)	0.0505 (0.0359)
<i>Job Characteristics</i>			
Union membership	0.254*** (0.0170)	0.250*** (0.0171)	0.255*** (0.0165)
<i>Demographic Characteristics</i>			
Married		-0.0609*** (0.0155)	-0.136*** (0.0148)
Divorced		0.122*** (0.0230)	0.0522** (0.0215)
Log of household Income	0.514*** (0.0116)	0.522*** (0.0120)	0.594*** (0.0135)
Child support grant	-0.257*** (0.0153)	-0.261*** (0.0154)	-0.221*** (0.0147)
Coloured			-0.0685*** (0.0198)
Indian/Asian			0.0322 (0.0667)
White			0.179*** (0.0401)

Household size			-0.0667*** (0.00277)
Constant	-2.472*** (0.0999)	-2.509*** (0.102)	-2.788*** (0.107)
Observations	10,157	10,142	10,142
Number of pid	5,323	5,319	5,319

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(c) Fixed effects

VARIABLES	(1) Fixed Effects	(2) Fixed Effects	(3) Fixed Effects
Motherhood	-0.0487** (0.0211)	-0.0477** (0.0211)	0.0109 (0.0213)
<i>Human Capital Variables</i>			
Basic education	-0.185 (0.123)	-0.184 (0.124)	-0.215* (0.126)
Matriculated	-0.0897 (0.146)	-0.0887 (0.146)	-0.127 (0.147)
Tertiary	-0.0640 (0.151)	-0.0593 (0.152)	-0.107 (0.153)
Work experience	0.0457*** (0.0122)	0.0500*** (0.0123)	0.0404*** (0.0121)
Work experience squared	-0.000721*** (0.000132)	-0.000785*** (0.000131)	-0.000634*** (0.000129)
Enrolment status		2.84e-05 (0.0457)	0.000362 (0.0452)
<i>Job Characteristics</i>			
Union membership	0.0685*** (0.0240)	0.0684*** (0.0240)	0.0726*** (0.0238)
<i>Demographic Characteristics</i>			
Married		-0.0915*** (0.0283)	-0.115*** (0.0277)

Divorced		0.0266 (0.0381)	0.00619 (0.0375)
Log of household Income	0.420*** (0.0214)	0.425*** (0.0217)	0.470*** (0.0231)
Child support grant	-0.0901*** (0.0233)	-0.0879*** (0.0236)	-0.0857*** (0.0231)
Household size			-0.0471*** (0.00489)
Constant	-1.657*** (0.316)	-1.718*** (0.319)	-1.755*** (0.316)
Observations	10,170	10,142	10,142
R-squared	0.417	0.419	0.432
Number of pid	5,325	5,319	5,319

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In all pooled OLS and random effects models, the motherhood dummy variable is significant at 1%. The motherhood explanatory variable is significant at 5% on the first and second fixed effects models, and is insignificant on the third panel. The motherhood wage penalty is almost 12% when regressing only human capital variables and job characteristics in Pooled OLS, panel 1. Pooled OLS, Panel 2 the motherhood wage penalty decreases to approximately 8% when controlling for human capital variables, job characteristics and most of the demographic factors. In Table 1(b), random effects models in panel 1 and 2 show that mothers earn approximately 9% and 8%, respectively. Panel 1 and 2 of the fixed effects models show that mothers earn approximately 5% less than other women who are non-mothers. The inclusion of the household size variable in the pooled OLS and random effects models in panel 3 gives a motherhood premium, while when the household size variable is included in the fixed effects model in panel 3 the motherhood variable becomes insignificant.

These highly significant results from the pooled OLS, random effects and fixed effects models reveal the existence of the motherhood wage penalty between 2008 and 2017 in South Africa.

These results further confirm the empirical literature studied earlier. Agüero et al. (2011) find the motherhood wage penalty to be 22% between year 1994 and 1999 in 21 developing African countries on average, including South Africa.

Given the South African motherhood wage penalty findings from this study, the South African motherhood wage penalty is approximately 10% to 17% lower than the motherhood wage penalty average for African developing countries. Firstly, a report by Samman et al. (2016), state that since South Africa has one of the smallest children averages (1.57 children per mother) when compared to the child averages of mothers from across African developing countries, South Africa ought to have one of the smallest motherhood wage penalties. Secondly, one of the possible reasons why the South African motherhood wage penalty may be lower than the African countries' average is the presence of relatives. The motherhood wage penalty for South African mothers may be reduced by the presence of grandmothers, aunts or neighbours who may bear most of the childcare responsibilities (Anderson et al., 2003). Thirdly, Sub-Saharan Africa countries lack government-led parenting support, child-rearing and child development initiatives. Hallden et al. (2016) using European Household Panel (EHP) data for ten European countries, find government funded (ECD) services and lengthy paid maternity to lead a decrease in the motherhood wage penalty. Hence, the South African government through the Department of Social Development, subsidises some crèches, day care centres, nurseries and non-profit organisations (NPOs) to offer ECD services (Giese et al., 2011). The ECD services include looking after and taking care of nutritional and other maternal needs of young children from age zero to nine years, while their mothers participate in the labour force at a minimised motherhood wage penalty that may be.

However, Western developed countries such as Britain and the United States experience motherhood wage penalties lower than 10% as found in this study by the random and fixed effects models. Budig and England (2001) using the fixed effects model find the motherhood wage penalty to be 7% and 8% when using OLS, in the United States. In Britain, Waldfogel (1997) using data from the 1968-1988 National Longitudinal Survey of Young Women found the motherhood wage penalty to be around 8% when using the fixed effects model. South

Africa's motherhood wage penalty is as low as that of the United States and Britain, despite that in South Africa ECD services still lack comprehensive policies, infrastructure development, adequate financial and human resources (South African Early Childhood Review, 2017). Furthermore, South African policies, including the National Development Plan, emphasise the need for a comprehensive provision of ECD services, however, there is still a significant gap between policy and implementation (Viviers et al., 2013). European countries have managed to decrease the motherhood wage penalty through government funded ECD services coupled with a lengthy paid maternity leave, regardless of the skill(s) the mother possesses (Hallden et al., 2016).

The three pooled OLS panels and the three random effects model results significantly show that the more educated women are, the more likely they are to earn more income than with low levels of education or no education. These findings are in line with the human capital theory which states that more education earns more wages in the labour market (Becker, 1964). The motherhood wage penalty is a result of women giving up some or all their work hours to attend to maternal responsibilities, resulting in loss of income. If the motherhood wage penalty is the opportunity cost of pregnancy, then South African mothers with more education or with higher qualifications incur a higher motherhood wage penalty. This is substantiated by the findings of Posel (2014) who discovered that the increased levels of education among South African women have increased the opportunity cost of pregnancy and child rearing. Waldfogel (1997) also finds wage penalties associated with having children tend to increase with the level of education, however, the study recommends further research on the relationship between the motherhood wage penalty and education. Hence, South African educated mothers are faced with a higher motherhood wage penalty due to their increased education levels. Therefore, the findings by Mlatsheni and Leibbrandt (2001) of a negative relationship between fertility and education, are substantiated.

The pooled OLS models and random effects models find that an additional year of experience is likely to increase earnings by approximately 2%, up to a certain point where work experience starts causing earnings to decrease. The fixed effects models suggest that work

experience increases a woman's earnings by approximately 5% up to a certain point where experience starts to decrease earnings. These findings are in line with the human capital theory that earnings increase as experience increases (Becker, 1964; Becker 1965). Therefore, the results from this study indicate that the motherhood wage penalty is as a result of women taking breaks due to maternal and childcare responsibilities, which eats the work experience.

Pooled OLS with all the variables on panel 3 also shows that union membership plays a critical and significant role in the total earnings of women. The total earnings of a union member are likely to be approximately 31% more than the earnings of a non-union member, *ceteris paribus*. When using the random effects model with all the variables on panel 3, the union membership premium for women is reduced to approximately 26%. When the study further controls for person-specific, fixed effects in Table 1(c), the log of wage earnings premium resulting from union membership of South African women is further reduced to approximately 7% across all three panels.

Using pooled OLS on panel 3 and random effects in panel 3, upon divorce, earnings increase by 7% and 5%, respectively. Married women experience a wage penalty on all models, especially married mothers because they trade-off higher wages maternal and childcare responsibilities, because their spouses can provide for them (Eissa & Hoynes, 2004). On the contrary, Waldfogel (1995) finds young single mothers to be having the highest motherhood wage penalty compared to married. Budig and England (2001) suggest that both married and divorced mothers have a larger motherhood wage penalty. Pooled OLS, random effects and fixed effects models show that household size is negatively related with the log of hourly earnings, while the log of household income positively affects the log of hourly earnings. All models show that the recipients of the child support grant earn significantly less than those who do not receive child support grant. These results confirm the findings by Eyal and Woolard (2010) that the child support grant is negatively related with hours worked, thus decreasing earnings. Despite the study (Eyal & Woolard, 2010) also finding a child support grant receipt to be associated with increased labour force participation.

Caregiver as a proxy for motherhood

Table 2, incorporating (a), (b) and (c), shows the complete regression results from three sets of different models. The first three panels in (a) show results from pooled OLS, while the three panels in (b) show the results from the random effects regressions. The last set in (c) show regression results from the fixed effects models. The models, instead of having motherhood as one of the explanatory variables, indicate that the caregiver variable is used as a proxy. The aim was to ascertain whether the motherhood wage penalty is as a result of biological motherhood or childcare.

Table 2: Regressions of log hourly earnings on caregiver and other explanatory variables

(a) Pooled OLS

VARIABLES	(1) Pooled-OLS2A	(2) Pooled-OLS2B	(3) Pooled-OLS2C
Caregiver	-0.130*** (0.0171)	-0.0585*** (0.0139)	0.0659*** (0.0139)
<i>Human Capital Variables</i>			
Basic education	0.310*** (0.0493)	0.0702 (0.0478)	0.0743* (0.0434)
Matriculated	0.809*** (0.0559)	0.310*** (0.0521)	0.265*** (0.0472)
Tertiary	1.436*** (0.0564)	0.628*** (0.0531)	0.511*** (0.0483)
Work experience	0.0303*** (0.00412)	0.0210*** (0.00320)	0.0155*** (0.00297)
Work experience squared	-0.000647*** (8.88e-05)	-0.000554*** (7.10e-05)	-0.000403*** (6.63e-05)
Enrolment status	0.215*** (0.0516)	0.107*** (0.0388)	0.0829** (0.0378)
<i>Job Characteristics</i>			
Union membership	0.571*** (0.0224)	0.319*** (0.0174)	0.307*** (0.0167)

Demographic Characteristics

Married		-0.0793*** (0.0158)	-0.150*** (0.0150)
Divorced		0.146*** (0.0240)	0.0644*** (0.0221)
Log of household Income		0.528*** (0.0115)	0.612*** (0.0131)
Child support grant		-0.307*** (0.0156)	-0.246*** (0.0149)
Coloured			-0.0702*** (0.0188)
Indian/Asian			0.00737 (0.0742)
White			0.147*** (0.0384)
Household size			-0.0674*** (0.00281)
Constant	1.283*** (0.0618)	-2.477*** (0.101)	-2.855*** (0.106)
Observations	10,157	10,142	10,142
R-squared	0.459	0.645	0.679

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(b) Random Effects

VARIABLES	(1) Random Effects2A	(2) Random Effects2B	(3) Random Effects2C
Caregiver	-0.0613*** (0.0132)	-0.0593*** (0.0132)	0.0458*** (0.0132)
<i>Human Capital Variables</i>			
Basic education	0.129*** (0.0448)	0.107** (0.0452)	0.100** (0.0429)
Matriculated	0.419***	0.394***	0.328***

	(0.0498)	(0.0501)	(0.0473)
Tertiary	0.692***	0.667***	0.551***
	(0.0508)	(0.0512)	(0.0484)
Work experience	0.0212***	0.0223***	0.0162***
	(0.00313)	(0.00313)	(0.00294)
Work experience squared	-0.000513***	-0.000553***	-0.000405***
	(6.95e-05)	(6.94e-05)	(6.55e-05)
Enrolment status	0.0691*	0.0664*	0.0506
	(0.0367)	(0.0365)	(0.0359)
<i>Job Characteristics</i>			
Union membership	0.255***	0.252***	0.254***
	(0.0171)	(0.0171)	(0.0165)
<i>Demographic Characteristics</i>			
Married		-0.0661***	-0.133***
		(0.0154)	(0.0146)
Divorced		0.121***	0.0524**
		(0.0231)	(0.0214)
Log of household Income	0.511***	0.520***	0.595***
	(0.0116)	(0.0120)	(0.0135)
Child support grant	-0.265***	-0.267***	-0.219***
	(0.0151)	(0.0152)	(0.0146)
Coloured			-0.0663***
			(0.0196)
Indian/Asian			0.0359
			(0.0666)
White			0.181***
			(0.0400)
Household size			-0.0662***
			(0.00269)
Constant	-2.475***	-2.514***	-2.783***
	(0.0996)	(0.102)	(0.107)
Observations	10,157	10,142	10,142
Number of pid	5,323	5,319	5,319

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(c) *Fixed Effects*

VARIABLES	(1) Fixed Effects2A	(2) Fixed Effects2B	(3) Fixed Effects2C
Caregiver	-0.0417** (0.0187)	-0.0418** (0.0188)	-0.00484 (0.0188)
<i>Human Capital Variables</i>			
Basic education	-0.181 (0.121)	-0.180 (0.122)	-0.217* (0.126)
Matriculated	-0.0866 (0.144)	-0.0858 (0.144)	-0.129 (0.147)
Tertiary	-0.0601 (0.149)	-0.0555 (0.150)	-0.108 (0.153)
Work experience	0.0447*** (0.0123)	0.0491*** (0.0123)	0.0411*** (0.0122)
Work experience squared	-0.000701*** (0.000131)	-0.000767*** (0.000131)	-0.000652*** (0.000129)
Enrolment status		0.000387 (0.0456)	0.000256 (0.0452)
<i>Job Characteristics</i>			
Union membership	0.0695*** (0.0240)	0.0693*** (0.0241)	0.0726*** (0.0238)
<i>Demographic Characteristics</i>			
Married		-0.0924*** (0.0282)	-0.115*** (0.0277)
Divorced		0.0271 (0.0382)	0.00597 (0.0374)
Inhhincome	0.419*** (0.0214)	0.424*** (0.0217)	0.470*** (0.0230)
Child support grant	-0.0904*** (0.0232)	-0.0882*** (0.0235)	-0.0838*** (0.0231)
Household size			-0.0464*** (0.00481)
Constant	-1.652***	-1.714***	-1.749***

	(0.314)	(0.317)	(0.316)
Observations	10,170	10,142	10,142
R-squared	0.417	0.419	0.432
Number of pid	5,325	5,319	5,319

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The caregiver explanatory variable is significant at 1% in all pooled OLS and random effects models, while fixed effects models in panel 1 and 2 show caregiver results significant at 5%. 2(a) the difference between panel 1 and 2 is that panel 2 is a complete model, because it consists of the human capital variables, demographic factors and job characteristics, while panel 1 represents missing demographic characteristics as in the motherhood tables. According to Table 2(a), panel 1, when only considering human capital variables and job characteristics caregivers incur a 13% wage penalty. This penalty is approximately 1% lower than the 12% motherhood wage penalty experienced by mothers over the same variables in Table 1(a), panel 1.

In panel 2, Table 2(a), the wage penalty for caregivers decreases to approximately 6% which is just over 2% less than the motherhood wage penalty from a pooled OLS regressed over human capital variables, job characteristics and demographic characteristics. Similar to the motherhood pooled OLS results, when the household size explanatory variable is included in pooled OLS regression in Table 2(a), panel 3, caregivers experience a caregiver premium. When comparing the sets of pooled OLS models in Table 1 and 2, it cannot be established whether the motherhood wage penalty results from biological motherhood or childcare.

Table 2(b) shows that according to the random effects models in panel 1 and 2, caregivers incur a lower wage penalty than mothers. When controlling for human capital variables, job characteristics and demographic factors, the caregiver wage penalty is 6%. This is more than 2% lower than the motherhood wage penalty given by the random effects models in Table 1(b), panel 1 and 2. As in the random effects model for mothers, the inclusion of the household size variable in the random effects model for caregivers yield a motherhood

premium of approximately 5%. Fixed effects models show that in Table 2(c), panel 1 and 2 show a 4% caregiver wage penalty significant at 5% level. This is 1% lower than the motherhood wage penalty given by the fixed effects models in Table 1(c), panel 1 and 2. It can be established from the results given by the random effects and fixed effects models in both Tables 1 and 2 (only panels 1 and 2 on (a) (b) and (c) tables), that in South Africa the motherhood wage penalty stems from biological motherhood than childcare.

Conclusions and Recommendations

In the labour market, mothers earn less than other women who are non-mothers. Mothers incurring a motherhood wage penalty is a phenomenon occurring regardless of skills or the level of employment. This is due to reasons on wage differentials covered in both classical and neoclassical theory, dating back as far as the times of Adam Smith. The hedonic theory of wages, human capital theory and wage discrimination are theories that have been developed by economists to, amongst other things, explain the presence of wage disparities between mothers and non-mothers. In the hedonic theory of wages for example, mothers may earn less wages than other women without children. This may be due to the fact that mothers may choose low paying lighter jobs which they will be able to combine with maternal responsibilities. Another example is that mothers incur decreased experience and forgo training due to maternal issues, causing human capital disparities between mothers and non-mothers. This then results in varied distributions of wages between mothers and non-mothers. Some employers discriminate against mothers through excluding them during instances where vacancies become available in higher high paying positions.

Apart from theoretical reasons, there are other factors that may lead to mothers earning less than their counterparts who are non-mothers. Some mothers may be married to husbands earning an income and may decide to leave the labour force, leading to a loss in earnings. Thus affecting the distribution of earning between mothers and non-mothers. Other factors that may affect the size of the motherhood wage penalty are the number of children, union membership, race, age and gender of the child. Older female children are said to decrease

the extent of the wage penalty that mothers experience by assisting with some of the household chores and childcare responsibilities.

This study aimed at establishing whether there are wage disparities between mothers and non-mothers in South Africa, and the extent to which these disparities exist in the country. The study further aimed to measure the extent of characteristics of women attributing to the motherhood wage penalty. Furthermore, in South Africa many working women rear children they did not bear on behalf of absent mothers. Therefore, should there be a motherhood wage penalty associated with childcare, then caregivers who are non-mothers may experience that wage penalty as well. Measuring and analysing the motherhood wage penalty are deemed necessary, because the results give insight into social issues including gender inequality, poverty and early child development. Furthermore, motherhood wage penalty contributes substantially to gender-inequality-related issues (Grimshaw & Rubery, 2015).

The econometric models regressed the log of hourly earnings as a dependent variable on a vector of human capital variables, job characteristics, family characteristics, demographic factors, including the motherhood dummy. The choice of explanatory variables was based on empirical literature which suggested that these factors affect the log of hourly wage earnings (Waldfogel, 1997; Budig & England, 2001; Agüero et al. 2011; Grimshaw & Rubery, 2015).

The study used three types of models, the pooled OLS, random effects and fixed effects models. The pooled OLS models could be seen in Table 1(a) and 2(a). Despite the pooled OLS ignoring the presence of individual specific unobserved characteristics, the model becomes useful when comparing results with those of the other models. The comparison gives insight on whether mothers, given their individual specific characteristics, have a potential of earning less wages than their counterparts who are non-mothers. The purpose of using fixed effects was to be able to control for possible unobserved person-specific characteristics that may be correlated with the explanatory variables, and lead to endogeneity bias. The fixed effects

model is highly preferred, hence, the tests favoured it over pooled OLS and random effects models in this study.

The study manages to answer all three research questions. The study determined that in South Africa there are wage disparities between mothers and non-mothers, and between caregivers and non-caregivers. Mothers earn 5% less than non-mothers, while caregivers earn 4% less than non-caregivers. From the magnitude of the difference between the motherhood and the caregiver wage penalty, the study has established that while childcare contributes to the motherhood wage penalty, biological motherhood augments the motherhood wage penalty greatly. Therefore, both the motherhood and the caregiver wage penalties resulting from childcare have serious economic and social implications in South Africa. Since most households are headed by single mothers, this means that the motherhood wage penalty also translates to a household penalty. Therefore, the motherhood wage penalty worsens poverty, especially in families headed by single mothers. Another economic implication is that it is evident that in the absence of reliable and affordable ECD centers, mothers are faced with a trade-off between using their skills in growing the economy and attending to their maternal responsibilities. Mothers face a trade-off between childcare and labour force participation. In some instances, mothers exit the labour force and focus on their childcare responsibilities. Decreased labour force participation coupled with decreased hours worked negatively impact the productivity of the country.

The government may focus on implementing policies aimed at enforcing maternal full-time employment in the labour market aimed at minimising the wage gap that exists between mothers and non-mothers, since employers discriminate against mothers. However, this will not solve costs associated with child rearing, but it will be shifting some of the costs to the employers. Childcare benefits from rearing children benefit the society as a whole, however, mothers and caregivers solely bear the costs. The government ought to socialise the costs incurred by women as a result of childcare and child bearing, through programmes such as free childcare, medical care and other social grants. These should be financed through taxes, so that costs associated with childcare are dealt with not only by mothers, caregivers or

employers but by society as a whole. The existing ECD policy framework needs to be extended from catering for children between the ages of birth to nine years, to cater for children of all ages. The implementation of a comprehensive ECD policy may also eliminate maximum childcare costs borne by women. The redistribution of resources aimed at eliminating the motherhood wage penalty would also tackle some of the economic challenges linked to the motherhood wage penalty such as poverty, income inequality and productivity.

REFERENCES

Aguero, J. M., Marks, M., & Raykar, N. (2011). Do children reduce their mother's earnings? Evidence from Developing Countries.

Aguero, J. M., Marks, M., & Raykar, N. (2017). Economic development and the motherhood wage penalty.

Anderson, D. J., Binder, M., & Krause, K. (2003). The motherhood wage penalty revisited: experience, heterogeneity, work effort, and work-schedule flexibility. *Industrial and Law Review*, 56(2):273-294.

Ardington, C., Case, A. & Hosegood, V. 2009. "Labor supply responses to large social transfers: Longitudinal evidence from South Africa." *American Economic Journal: Applied Economics* 1(1):22-4.

Baltagi, B. H., (2008). *Econometric Analysis of Panel Data*, Fourth Edition. London: John Wiley & Sons LTD.

Becker, Gary S. (1957). *The Economics of Discrimination*. Chicago: The University of Chicago Press, 2nd edition.

Becker G: *Human Capital*. 2nd edition. Columbia: Columbia University Press, New York; 1964.

Becker, G.S., (1965). A Theory of the Allocation of Time. *The Economic Journal*, 299(75), 493-517

Berger, J., Fisek, F. H., Norman, R.Z., Zelditch, M. & Fararo, T. J. (1978). Status characteristics and social interaction: An expectation-states approach. *American Journal of Sociology*, 84(2):533-540.

Blau, D. F., & Kahn, M.L. (2007). Changes in the Labor Supply Behavior of Married Women: 1980-2000. *Journal of Labor Economics*, 25(3):393-438.

Budig, M.J., & England, P. (2001). The Wage Penalty for Motherhood. *American Sociological Review*, 66(2):204-225

Budlender, D. & Lund, F. 2011. "South Africa: A legacy of family disruption." *Development and Change*, 42(4):925-946.

- Chaudry, A., Pedroza, J.M., Sandstrom, H., Danziger, A., Grosz, M., Scott, M., & Ting, S. (2011). *Child Care Choices of Low-Income Working Families*. Urban Institute.
- Correll, S.J., Benard, S. & Paik, I. (2007). Getting a Job: Is there a motherhood penalty? *American Journal of Sociology*, 112(5):1297-1338.
- Daly, M., Bray, R., Bruckauf, Z., Byrne, J., Margaria, A. Pecnik, N. & Samms-Vaughan, M. (2015). *Family and parenting support: Policy and provision in a global context*. UNICEF.
- Delany, A., Jehoma, S. & Lake, L. (2016). *The South African Child Gauge*. Children's Institute.
- Duncan, G.J. & Holmlund, B. (1983). "Was Adam Smith Right After All? Another Test of the Theory of Compensating Wage Differentials." *Journal of Labor Economics*, 1(4):366-379.
- Dunn, A., & Parry-Williams, J. (2011). *Alternative Care for Children in Southern Africa: Progress, Challenges and Future Directions*. UNICEF, East and Southern Africa Regional Office (ESARO).
- Dupper, O., Malherbe, K., Shipman, B., & Bolani, E. (2000). The case for increased reform of South African family and maternity benefits. *Democracy and Development*, 4(1):27-4.
- Eissa, N., & Hoynes, H. W. (2004). Taxes and the labor market participation of married couples: The earned income tax credit. *Journal of Public Economics*, 88(2004):1931-1958.
- Engle, P.L., Groza, V.K., Groark, C.J., Greenberg, A., McCreery-Bunkers, K. & Muhamedrahimov, R.J. (2011). *The Situation for Children without Parental Care and Strategies for Policy Change*. *Monographs of the Society for Research in Child Development*, 76(4):190-222.
- Eyal, K & Woolard, I. (2010). Female labour force participation and the child support grant in South Africa. *Paper presented at the ERSA Public Economics Workgroup*, University of Pretoria 9-10 September 2010.
- Gallen, Y. (2016). *The gender productivity gap*. *Job market paper*.
- Giese, S., Budlender, D., Berry, L., Motlatla, S., & Zide, H. (2011). *Government funding for early childhood development: Can those who need it get it?* Prepared for DG Murray Trust. Cape Town.

- Grimshaw, D., & Rubery, J. (2015). *The Motherhood Pay Gap: A Review of the Issues, Theory and International Evidence*. International Labour Organisation, Geneva.
- Halldén, K., Levanon, A. & Kricheli-Katz, T. (2016). Does the Motherhood Wage Penalty Differ by Individual Skill and Country Family Policy? A Longitudinal Study of Ten European Countries. *Social Politics: International Studies in Gender, State & Society*, 23(3):363-388
- Heckman, J.J. (1979). Sample Selection Bias as a Specification Error. *The Econometric Society*, 47(1), 153-161
- Herzberg-Druker, E. (2014). *Motherhood penalty in labor markets across countries*. A background paper prepared for the Working Group on the issue of discrimination against women in law and in practice. United Nations Human Rights.
- Holborn, L., & Eddy, G. (2011). *First Steps to Healing the South African Family*. Johannesburg: South African Institute of Race Relations.
- Kjeldstad, R. & Nymoen, E.H. (2009). *Part-time work, underemployment and gender. Worker versus job explanations*. Oslo: Statistics Norway.
- Lund, F. (2014) *Social Security and Social Grants. The oxford compilation of economics of South Africa*. Oxford University Press.
- Makusha, T., & Richter, L. (2015). Gatekeeping and its impact on father involvement among black South Africans in rural KwaZulu-Natal. *HSRC Review Readership Survey*.
- Mathambo, V., & Gibbs, A. (2009). Extended family childcare arrangements in a context of AIDS: collapse or adaptation? *AIDS Care*, 21(1):22-27.
- Mkhize, N. & Msomi, R. (2016). African Single Mothers' Experiences of Work and Career in South Africa. *Journal of Comparative Family Studies*, 47(3):323-342.
- Mlatsheni, C. & Leibbrandt, M. (2001). *The role of education and fertility in the participation and employment of African women in South Africa*. University of Cape Town: DPRU Working Papers. Development Policy Research Unit.
- Nizalova, O.Y., Sliusarenko, T., & Shpak, S. (2016). The motherhood wage penalty in times of transition. *Journal of Comparative Economic* 44(1):56-75.

- Ntshongwana, P. (2010). *Childcare Challenges faced by Lone mothers in South Africa*. Pretoria: Department of Social Development. Republic of South Africa.
- Ntuli, M. (2007). Determinants of South African Women's labor force participation 1995–2004. *Discussion Paper No. 3119*, Bonn: Institute for the Study of Labor.
- Posel, D. & Rudwick, S. (2012). Attitudes to marriage, cohabitation and non-marital childbirth in South Africa. *University of KwaZulu-Natal November 2012. Paper presented at the Microeconomic Analysis of South African Data conference (MASA)*.
- Posel, D. (2014). Gender Inequality. *The oxford compilation of economics of South Africa*. Cape Town: Oxford University Press.
- Roman, N.V. (2011). Maternal Parenting in Single and Two-parent Families in South Africa from a Child's Perspective. *Social Behavior and Personality*, 39(5):577-586.
- Rosen, S. (1974). Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. *Journal of Political Economy*.
- Samman, E., Prester-Marshall, E., Jones, N., Bhatkal, T., Melamed, C., Stavropoulou, M., & Wallace, J. (2016). Women's work. *Mothers, children and the global childcare crisis*. Report. Overseas Development Institute.
- September, R. & Blankenberg, C. (2004). Quest for excellence in multidisciplinary child protective services: An exploratory review. Bellville: Child and Youth Research and Training Programme With and for Children, University of the Western Cape.
- Viviers, A., Biersteker, L. & Moruane, S. (2013). Strengthening ECD service delivery: Addressing systemic challenges. *South African Child Gauge 2013*. Cape Town: Children's Institute, University of Cape Town.
- Waldfogel, J. (1995). The price of motherhood: Family status and women's pay in young British Cohort. *Oxford Economic Papers, New Series*, 47(4):584-610.
- Waldfogel, J. (1997). The Effect of Children on Women's Wages. *American Sociological Review*, 62(2):209-217.