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2024

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Shedi, Olwethu . (2024). The impact of ‘compensating’ women for hours of unpaid care work on household poverty [Masters dissertation, University of the Witwatersrand, Johannesburg]. WIReDSpace. https://hdl.handle.net/10539/45078

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"The impact of 'compensating' women for hours of unpaid care work on household poverty."

A Research Report submitted in partial fulfilment of the requirements of the degree of Bachelor of Commerce (Economics)

in the School of Economics and Business Sciences,

Faculty of Commerce, Law and Management,

University of the Witwatersrand

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June 2022

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Abstract

Estimating the effect of 'compensating' women for unpaid care work on household poverty levels, we used Time Use Survey data for 2000 and 2010 to estimate time spent on unpaid care work, and Post-Apartheid Labour Market Series to estimate earnings for both 2000 and 2010. To achieve this, we used the Economy-wide Mean wage approach, the Opportunity Cost Average wage approach, and the Generalist wage approach. In line with literature, we confirm that, on average, women spend more time on unpaid care work than men do, and that women's average earnings are lower than that of men. We found that the estimated monthly 'compensation' does indeed reduce the level of household poverty. However, the Generalist wage approach compensation had the least impact on household poverty levels. Unpaid care work affects women all around the world. While some countries have made progress in recognizing, reducing, and redistributing unpaid care work, women continue to bear the brunt of the burden. Governments have a role to play in encouraging a more equitable distribution of unpaid household care duties. Flexible work hours and shared parental leave are two options for businesses to facilitate more equitable split of unpaid family care duties and assist women in achieving a better work/life balance.

Declaration

I certify that all the work in this dissertation was completed by myself in the School of Economics and Finance. The text acknowledges the material acquired from the literature, and a list of publications cited is supplied. This dissertation has never been presented for another degree.

Signature: O. Shedi Date: 20 June 2022

1. Introduction

Unpaid care work is not only an important factor to paid economic activity but is also a crucial contributing factor to individuals' well-being as well as that of their families and society (Stiglitz et al., 2007). Unpaid labour is a significant part of economic activity and personal well-being (Alonso et al., 2019). If no one bore children and took care of their relatives and friends the economy would come to a standstill due to lack of labour (Elson, 2017). Children's care, elderly care, and home duties are all necessities in our everyday life (Alonso et al., 2019). These are important for maintaining household members' well-being and aids in human capital development (Wood, 2002). In turn this allows household members and women doing unpaid care work to enter the workforce and contribute to the economy via paid work (Hirway, 2015). Even though unpaid care work is crucial for well-being and has significant contribution to economic activities, it is frequently left out of policy agendas due to common misconceptions that it is difficult to measure and has no policy relevance (Ferrant et al., 2014). This is supported by the observation that Structuralist and Neo-classical economics have afforded great privilege to market-oriented production while paying no regard to social production, i.e., care (Razavi, 2007). This oversight persists even though ignoring unpaid care work results in incorrect implications about levels and changes in people's well-being and their value of time (Budlender, 2010; Coffey et al., 2020).

Due to gendered social conventions, women spend disproportionately more time on unpaid care duties than males and low bargaining power in the household, among others (Antonopoulos, 2008; Ferrant et al., 2014). Proving the point that women spend more time on unpaid care work than men is Ferrant et al. (2014) where they showed that across the world women spend three to six hours per day on unpaid care work, while men spend half an hour to two hours per day; Charmes (2019) whom, using a world compilation of Time Use Survey (TUS) found that women perform three-quarters of all unpaid care work, or more than 75 percent of total hours provided, over the world; and Alonso at al. (2019) who showed that on average, women perform two more hours of unpaid work per day than men, with large differences across countries (Alonso et al., 2019). Unpaid care work takes up 3.2 times as much time for women as it does for males (Charmes, 2019).

In south Africa, using the 2000 TUS Budlender and Brathaug (2004) found that women spend an average of 4.11 hours on unpaid care work a day while men spent 1.43 – using the full minutes measure for simultaneous activities. Unpaid care work takes up 2.3 times more time for women in South Africa than it does for males (Charmes, 2016). This adds on to their paid work activities and thus exerts a 'double burden' of work for women. Suh et al. (2020) valued unpaid care work in Bhutan using Time Use Data and found that women spend twice as much time on unpaid care work than men and this is regardless of their income, age, residency, or number of people in the household.

Budlender (2010) defined unpaid care work as the housework and care of people that happens in homes and communities of all social orders on an unpaid premise - and that is an area that has been grossly

disregarded by economists and by numerous development actors. Care, paid or otherwise, is pivotal to human welfare. It influences the nature and the amount of the labour force, and the pattern and the rate of economic development. Care, in any case, should be seen in much larger terms, as a social policy phenomenon, as it pieces together society and is fundamental to social development (Daly, 2001). The way in which society controls for the issue of care has substantial consequences for the achievement of gender equality, by either expanding the capabilities and choices of women and men or limiting women to traditional roles linked to femininity and maternity. This partly explains why feminist economists[1] are at the forefront of arguments for equal representation of unpaid care work in the economy, advocating for unpaid care work to be 'counted' in national accounts and statistics and 'taken into consideration' in policy making (Elson, 2000).

Despite the socio-economic importance of unpaid care work, the field of feminist economics has only recently gained traction with a growing number of scholarly articles, started from the 1970s (Nelson, 2016) and by the 1990s was recognised as a subfield within economics. In South African studies there is a growing body of literature looking at valuing unpaid care work, Budlender and Brathaug (2004), Valodia and Devev (2005), Charmes (2006), Budlender (2008), Hunter (2010), Budlender (2010) and Elson (2017). The number of these studies has grown exponentially since the COVID-19 pandemic hit, with an increasing number of scholars looking at the gendered effects of the pandemic, see for instance Casale and Posel (2020), Casale and Shepherd (2020), Francis (2020), Casale and Shepherd (2021).

This study extends the existing literature on gender, time use and valuing of unpaid care work by calculating the value of unpaid care work using data from the 2000 and 2010 TUS, and South Africa – Post Apartheid Labour Market Series (PALMS) data. It goes a step beyond valuing unpaid care work and analyses the impact of compensating women for hours spent doing unpaid care work on household poverty levels. The specific objectives are: (1) to estimate the value of unpaid care work, the 'compensation wages' (2) to analyse the effect of the 'compensation wages' on household poverty levels; (3) to analyse if there has been a temporal change in the effect of the 'compensation wages' on household poverty from 2000 to 2010. This period under observation is dictated by availability of South Africa National TUS. Based on these objectives the following questions arise:

i) On average, how much would women get in wages, for the hours they spend doing unpaid care work?

ii) What effect does compensating women for hours spent engaging in unpaid care work have on household poverty levels?

iii) Were there any changes in time use patterns between 2000 and 2010, and how has the 'compensation wage' and its effect on household poverty changed between 2000 and 2010?

[1] Feminist economists have been working on bringing awareness to the contribution of women to the economy. Time Use Surveys, whose initial use was to capture women's unpaid productive work, are now used to analyse and measure unpaid care work (Neetha, 2010).

To the author's knowledge, this is the first study to investigate whether 'valuing' women's unpaid work influences household poverty in South Africa. A comparative analysis is carried out based on Time Use Survey data for 2000 and 2010. This allows a temporal understanding of time devoted to unpaid care work and the effect of 'compensating' women for unpaid care work on household poverty during the given period. This temporal analysis is important given that the incidence of poverty and time use patterns change over time. For instance, there has been changes in time spent on unpaid care work during the COVID-19 pandemic – unpaid care work is affected by crises, which sometimes deepen gender inequality issues (Dugarova, 2020). Unfortunately, currently South Africa does not have comprehensive datasets on time use during the Covid-19 period, however results of this study will give an indication of whether valuing women's disproportionate contribution to unpaid care work can partly ameliorate the household poverty burden in South Africa that has been worsened by the global pandemic.

Income poverty is historically a burden in South Africa. For instance, Hoogeveen and Ozler (2006) showed that 57% of South Africans were poor in 2000. More recently, Statistics South Africa - StatsSA (2017) showed that 52.1% of South African households were poor in 2006 (6.5 million households), this decreased to 47.2% in 2009 and 38.3% in 2011 (5.6 million households). The poverty incidence is higher among individual females than males and similarly among female-headed than male-headed households. For instance, in 2015, in comparison to 33% male-headed homes, 50% of female-headed households were poor. Therefore, achieving objectives of this study will inform strategies for reducing household poverty in South Africa.

The rest of the study is structured as follows: Section 2 provides a background to the study. Section 3 discusses a review of relevant literature for the study. Methodology and data for the study are discussed in section 4. Section 5 presents results of the study while section 6 provides the conclusion.

2. Background

Poverty is one of key challenges to development throughout the developing world and South Africa is not an exception. South Africa has since made fighting the legacy of poverty and under-development a central issue (StatsSA, 2013). This is confirmed by the government's plans in the Reconstruction and Development Plan (RDP) (Government Gazette, 1994) and further asserted in the National Development Plan of 2011 (National Planning Commission, 2011). One of the main aims of the NDP are the reduction and eradication of poverty (National Planning Commission, 2011). In 2006 and 2009, the national poverty levels were 57.2% and 56.8%, respectively; and the average poverty gap was 27.9% (StatsSA, 2013). In 2011, 45.5% of the South African population was considered poor while 20.2% lived under extreme poverty (StatsSA, 2014).

South Africa's poverty is 'chronic' and has been transmitted across generations (Hulme et al., 2001). It dates to the era of political Apartheid where opportunities for black people were severely limited (Aliber, 2003). According to Aliber (2003), a disproportionate number of South Africans living under poverty were black Africans and Coloured people and within these groups the most affected were the elderly and female-headed homes. Thus, the incidence of poverty is gendered as women are more impoverished than men. According to Stats SA (2014), in 2006 every six out of ten (59.7%) women were poor compared to 54.6% of men. In 2011, however, the rate of females living under poverty dropped to 47.15% and males' dropped to 43.8%. Even though women remained poorer than men, the gender difference in poverty headcount was decreasing – from 5.1 percentage points in 2006 to 3.3 percentage points in 2011 (StatsSA, 2014)[2]. However, poverty headcount slightly increased from 2011 to 2015. In 2015, 52% of females and 46.1% of males were poor (StatsSA, 2017). The poverty gap also showed that women were farther away from the poverty line than men. For instance, women's incomes were 25.4% away from the upper-bound poverty line compared to 21.5% for men (StatsSA, 2017).

The gender gap in poverty also extended to households - female-headed households experienced a higher poverty incidence than male-headed households. As an example, in 2006, 65.8% of female-headed households were living under poverty compared to 43.3% of male-headed households (StatsSA, 2017). In 2009, the upper-bound poverty line showed that 57.6% of female-headed households were living under poverty, compared to the 40.1% of male-headed households (StatsSA, 2017). This suggests that any strategies that increase women's incomes will help to reduce poverty among individual women and their households, especially where women are breadwinners.

Several studies have looked at the incidence and the 'feminisation' of poverty in South Africa and these include: Olufemi (2000), Kehler (2001), Bentley (2003), Phalane (2004) and Bentley (2004). Majority of women in South Africa still cannot access their constitution guaranteed socio-economic rights which pushes

[2] In 2011, upper bound poverty headcount for females was 47.1% for females and 43.8% for males, the lower-bound poverty headcount for females was 20.5% and 18.8% for males and the food poverty headcount ratio for females was 11.3% and 10.3% for males (StatsSA, 2014).

them into poverty (Phalane, 2004). This is worse for women in the rural areas and women on farms who incur a struggle for survival due to deteriorating socio-economic conditions and lack of development (Kehler, 2001).

The problem of feminisation of poverty is not necessarily statistical – measuring the number of women living under poverty – instead poverty tends to be acute among women especially those who care for children under the circumstances (Bentley, 2004). Women not only suffer poverty but also bear the harshest burden of unpaid work (Antonopoulos, 2008). They spend more time on unpaid care work and still must set time aside for paid work activities which leads to what is called 'time poverty' (Harvey and Mukhopadhyay, 2007). Worse still, time poverty is complementary to income poverty (Williams et al., 2016). This can be partly alleviated by 'counting' the time that women spend on unpaid care work. Apart from benefitting individual women this can also help to loosen their households' budget constraints and reduce household income poverty. Complementary measures such as investing in infrastructure focused on the needs of the 'household economy'- in other words, unpaid care work activities are also necessary (Kes and Swaminathan, 2006).

3. Literature Review

A. Theoretical literature

Unpaid care work, is all the housework and care of persons performed within households and communities that is not remunerated, such as childcare, preparing and cooking food, cleaning and collecting water (Appelbaum et al., 2002; Budlender, 2008). A significant number of people that perform unpaid care work activities are doing that for family members. The closer the family connections the more one feels the responsibility for fulfilling unpaid work expectations, and similarly, the greater the societal expectations that this will be the case (Heron, 1998). To explain why men and women spend unequal time on household unpaid care work activities, this study follows the traditional gender division, 'new home economies' and resource bargaining approaches discussed in (Goni-Lengaz et al., 2010).

The traditional gender division viewpoint attributes households' disproportionate distribution of unpaid labour to tradition and gendered social norms. Historically, women's place was 'in the kitchen' – women did all unpaid housework while men were breadwinners who specialized in paid work outside the household – financial providers (Knudsen and Waerness, 2009). This followed the belief that women are more nurturing than men and therefore should take care of their families. Men are believed to be more masculine and seen as leaders, decision makers and providers for their families (Blackstone, 2003). Over time, men and women have been progressively breaking out of these traditional roles within the household. However, contemporary time use patterns in paid and unpaid work among couples are partly shaped by the traditional gender division of labour, age, and education (Goni-Lengaz et al., 2010). Couples from older generations and those who are less educated tend to respond more to the traditional values instilled and hence are susceptible to the traditional model of housework division, than younger and more educated couples (Voicu

et al., 2009). In the South African context, this prediction has been verified by (Budlender and Brathaug, 2004). It is also related to cultural values such as patriarchy, where women play a subservient role to men in the household and society.

The gendered social norms have led to some women being 'forced' to perform more unpaid care work activities than men which hinders them from supplying labour to gainful employment in the paid economy (Chen et al., 2005; Beaujot and Andersen, 2007). As such, women have few paid work options and make up a big fraction of part-time workers in the informal sector. In a 2005 UNIFEM report, Chen et al. (2005) asserted that in almost all developing countries, with the exceptin of North Africa, there are more women than men in the informal sector. Over 60% of working women are employed in the informal sector outside of agriculture, they are in unstable and risky forms of informal employment where there is no security for earnings.

According to the 'new home economies', the household time allocation decision is based on the unitary household model which supposes that the household acts a single decision-making entity (Becker, 1965). The household maximizes utility by assigning members to activities where they have a comparative advantage (Goni-Lengaz et al., 2010). Members that are more efficient at paid work tend to spend less time on household responsibilities, unpaid care work (Becker, 1965). On average, women have low human capital endowments and labour market skills when compared to men. Hence, they are less likely to be assigned to paid work but to household responsibilities. This theory predicts specialization in time use which is not always the case as both men and women engage in unpaid care work although to different extents. Also, household decisions are not always made by a single decision-making process but are an outcome of interaction by heterogeneous individuals.

The advocates Blood Jr and Wolfe (1960) and Kan and He (2018) of the resource-bargaining approach perceive the household time allocation decision as an outcome of a spousal bargaining process. They presume that men and women at home discuss their time resources and then decide about their unpaid work responsibilities. Women are assumed to have low bargaining power than men, they tend to bring fewer resources into negotiations. Consequently, women are unable to achieve an outcome in which unpaid housework is divided equally between them and men (Greenstein, 2000). This partly stems from the gender pay gap where women mostly earn less than men due to inferior labour market characteristics or wage discrimination (Ntuli, 2009; Adelekan and Bussin, 2018). Further, women often hold lower positions at work which suggests fewer work responsibilities and therefore less time dedicated to paid work. In South Africa fewer women hold senior and top management positions than men (Adelekan and Bussin, 2018). This theory, therefore, implies that most women shoulder a disproportionate amount of unpaid care work at home than men as they earn less and hold lower positions at work. Put differently, the greater the dependence of one partner on the other, the greater their involvement on household responsibilities and

unpaid work (Goni-Lengaz et al., 2010). Consequently, there is a need to value unpaid care work to empower women in South Africa and reduce household poverty.

B. Empirical Literature review

B1. Paid work and unpaid care work

Women carry out unpaid care work in disproportionately large numbers around the world, limiting their ability to pursue other interests such as education, employment, or leisure (McCarthy, 2018). Unpaid care work becomes a problem when it is invisible, largely unequal and exerts a heavy burden on women. The result of this is time poverty, poor health, and well-being, hindering women's ability to move and switch between jobs, and giving rise to women's unequal status in society (Maestre and Thorpe, 2016). In contrast, men are more likely to engage in work that is accounted for in the national accounts and do so for a longer period than women (Budlender, 2010). This can be substantiated by evidence from a TUS for Nepal, men were primarily involved in paid care work, while women were mostly found in unpaid care work for their families. Women also participated in small-scale subsistence farming on their spouses' land, with some doing lowly paid work in agriculture (Marphatia and Moussie, 2013).

The burden of unpaid care work tends to react to social shocks, recently it has been worsened by the COVID-19 pandemic and its associated social distancing measures. The hard lockdown measures to prevent the spread of COVID-19 during the first quarter of 2020 came with working from home, job and income losses, closure of schools and temporary suspension of formal and informal childcare services (such as day-care centres, family members – normally grandparents - and friends). Thus, unpaid care work saw substantial increases in care of children. For many parents this meant children were home for at least an additional six hours a day. This exerted immense pressure on parents' time, parents were now engaging in childcare for 9 hours a day and housework for 3 hours, on average (Andrew et al., 2020). Some working parents changed their paid work hours to meet the growing demands of childcare including home-schooling (Collins et al., 2020). In the United States of America (USA), the United Kingdom (UK) and Germany, evidence from real time surveys showed that women spent more time in childcare during the pandemic compared to the pre-pandemic period (Adams-Prassl et al., 2020). While everyone has been affected by the pandemic, many scholars have argued that in line with the social structures (Risman, 2004), effects of the pandemic are gendered to the disadvantage of women (Alon et al., 2020; Qian and Fuller, 2020; Collins et al., 2020). Especially, single and working moms had to take on the care hours that would normally be offered by their social support system (Alon et al., 2020).

Several studies looking at the gendered impacts of COVID-19 and the dynamics of unpaid care work during the crisis in South Africa indicate that the inequality between men and women in unpaid care persists – with women spending more time than usual on unpaid care work (Casale and Posel, 2020; Casale and Shepherd, 2021; Parry and Gordon, 2021; Cantillon et al., 2021). Wave 1 data from NIDS-CRAM showed that during the hard stages of the lockdown in South Africa, 73% of women and 63% of men who reported

to have been living with children indicated that they spent more time than they normally do on care of children – nearly 4 more hours a day (Casale and Posel, 2020). The NIDS-CRAM wave 1 and 2 data showed that in South Africa, 3.7 million women said that caring for children prohibited them from going to work or made it difficult to work, compared to 1.7 million males (Casale and Shepherd, 2021). Thus, COVID-19 had gravely unequal effects on the South African population and women were negatively impacted in most aspects of their lives – in the general economy, the paid economy and within the household (Parry and Gordon, 2021). This evidence is corroborated by studies from other countries such as Xue and McMunn (2021) for the UK, Mohring et al. (2021) for Germany who termed the COVID-19 recession a 'shecession', and Chen and Bougie (2020) for Canada.

Contrary to the discussion above, there are findings to prove gender gaps in care work to have narrowed during the pandemic (Craig and Churchill, 2020; Sevilla and Smith, 2020; Andrew et al., 2020). An online survey developed by Craig and Churchill (2020) between 7 and 30 May 2020 with over 2700 respondents from Australia found that during the lockdown imposed in May 2020 in Australia, the burden of unpaid care work increased for both men and women. Women still shared most of the burden of the extra unpaid workload, however men's childcare time also increased in relative terms and that narrowed the average gender gaps in Australia. A household survey data collected early May of 2022 in Spain showed that men increased their involvement in household related activities, such as going to the shops to buy groceries (Farre et al., 2020). In UK, real-time data of families with children under the age of 12, shows that even though mothers bear the most burden of care for children, the within household gender gap of care work has narrowed from 30.6% to 27.2% (Sevilla and Smith, 2020). In the UK, the fathers that lost their jobs due to the pandemic have doubled their time spent on childcare (Andrew et al., 2020). Fathers working from home, with relatively higher earnings, are reported to be providing more care support in Germany (Mohring et al., 2020).

Considering the above discussion, it crucial to acknowledge the value of unpaid care work in social policy, and trace how it changes over time. For instance, based on China's first large TUS, Dong and An (2015) found that unpaid care work comprises a significant percentage of GDP. This varied from 25 to 32% of China's GDP, from 52% to 66% of final consumption and from 63% to 80% of gross products of the tertiary sector. Due to the gendered nature of unpaid care work, including it in social policies aids to promote gender equality and women's economic positions (Yoon, 2014).

B2. Measuring and valuing unpaid care work

By using TUS to determine how much time is spent on unpaid care and domestic labour, and then placing a price on the output generated or a wage on the time spent, the economic value of unpaid care work can be calculated (Elson, 2017). Currently, there is a growing number of international studies that look at measuring and valuing unpaid care work such as Luxton (1997) for the United Nations (UN) and its member contries, De Vaus et al. (2003) for Australia, Krantz-Kent (2009) and Suh and Folbre (2016) for the USA, Dong (2012) for China, Ferrant, et. al. (2014) for the OECD countries, and Charmes (2019) for

developing countries. These scholars maintain that unpaid care work is grossly disregarded in mainstream economic analysis, it is often to a limited degree when it is included in analysis (De Vaus et al., 2003; Razavi, 2007; Gaelle et al., 2014). Particularly, Luxton (1997) recalls criticisms of the UN's National accounts for failing to account for women's unpaid care work which led to the UN's commitment to its measurement. He argues that the ways in which unpaid care work is measured has significant implications for women and social polices based on those measurements which is supported by Gaelle et al. (2014). This suggests a reconsideration of the importance of counting unpaid care work to inform society's socio economic development processes.

Evidence on the value of care work from Australia, with the value of unpaid care work derived from the 1997 Australian TUS, showed that those aged 65 and above contribute about $39 billion per year in unpaid care and voluntary work, a very large sum that is often ignored in national accounts (De Vaus et al., 2003). For the USA, Charmes (2019) found that supervisory childcare, even when valued at low replacement cost value, has the highest share of the non-market work, and thus makes significant changes to the American GDP. Also, American women spend more time on such activities than men (Krantz-Kent, 2009).

On the African continent we find studies such as Serrano (2009) titiled unpaid care work in Africa, Folbre (2014) on 'the care economy for Africa' and Chung et at., (2019) on rethinking the value of unpaid care work for Tanzania. Particularly, Serrano (2012) expressed the consequences of ommiting unpaid care work activities in national accounts, that in Africa which is already facing complex socio-economic issues the problem of omitting unpaid care work becomes even worse. The study further argues that women cannot be expected to sustain households and communities indefiniely. Not only does this work need recognition but its maintenance also has dire consequences for women's health, nutrition and education which in turn have bad consequences on the performance of conventional market indices such as GDP (Elson, 2002).

South Africa also has a growing number of studies looking at valuing unpaid care work, these include Budlender (2008), Budlender and Brathaug (2004), Hunter (2010) and Oosthuizen (2018). This literature has focussed on different approaches of valuing unpaid care work and have estimated the value of unpaid care work using TUS. Budlender and Brathaug (2004) and Hunter (2010) derived the wages data from the Labour force Survey (LFS), the former also made use of incomes data from the population Census, while the latter also utilised the integrated Labour Force Survey (ILFS). As for Oosthuizen (2018), he derived the wages data from Labour Market Dynamics in South Africa (LMD) dataset. Common among these studies is that they have either, just been looking at the monetary value of women's unpaid care work (Budlender, 2008), or estimating the value of unpaid care work and then estimating its share of the GDP. Budlender and Brathaug (2008) found that women's unpaid care work accounts for 26% of the 2000 GDP in South Africa. Oosthuizen (2018) found that household production accounted for 27.3% of GDP in 2010.

The present study deviates for existing literature in that it attempts to establish a relationship between the value of women's unpaid care work and household poverty levels. Put simply, we investigate the impact, if any, of 'compensating' women for unpaid care work on household poverty levels. We do this by making

use of both the 2000 and 2010 TUS, and we derive our average wages from PALMS data. Looking at both TUS data that is available, 2000 and 2010, now in South Africa allows us to compare how time use distribution has evolved over that decade between men and women.

B3. Measuring and valuing unpaid care work: strengths and weaknesses

Unpaid care work is a universal issue, it affects women all over the world regardless of their levels of education, social status, income, or their country's level of development (Ferrant et al., 2014). Since the 1980s, feminist scholars have advocated for properly acknowledging the economic contributions of all types of employment – paid and unpaid – as a requirement for attaining gender equality (Waring, 1988; Folbre 1991). These scholars have emphasised for empirical examination of time spent on unpaid care work, especially child and adult care (Suh, 2019). Although the output method is theoretically superior, categorising units of output from unpaid care work is challenging (OECD, 1995). One solution to this is thinking of square meters of the floor mopped, and kilograms of food prepared (Swiebel, 1999).

One of the advantages of valuing unpaid care work and incorporating it into the national accounts means that national accounts would reflect the real growth and welfare of a nation, and this would provide more precise measures of the effects of the business cycle in private households (Swiebel, 1999). Making women's unpaid household and childcare contributions transparent would highlight the resulting loss in earnings potential and so encourage the need for training and retraining (Bruyn-Hundt, 1996).

The disadvantages of valuing unpaid care work come from the arguments that unpaid work activities are outside the relevant production boundary as they cannot be distinctly classified as activities in an economic sense (Swiebel, 1999). Some disadvantages of valuing unpaid care work come each time-use method – the surveys ask respondents to keep a diary to record their daily activities or the observation method – which does not require literacy abilities and it can pick up on simultaneous activities (Hunter, 2010). The 'today' diary requires reading abilities and the respondent's willingness to carry the notebook with them throughout the entire day and remember to write things down (Budlender, 2002). Some Simultaneous activities, sequence of activities, contextual information, and number of episodes are difficult to collect, and recalling a "typical" day may lead to overestimation (Hunter, 2010.

B4. Unpaid care work and poverty

A few studies have looked at the link, or whether there is, between unpaid care work and poverty. These include Chem et al. (2005), Tacoli (2012) and Sepulveda Carmona (2013). For instance, urban poverty has been found to place a disproportinate burden on the members of households and communities that are responsible for unpaid care work, and these members are mostly women (Tacoli, 2012). This could stem from a lack of remuneration in these jobs that women spend disproportionaltely more time doing when compared to men. Moreover some individuals involved in unpaid care work also work in lowly paid part-time jobs in the informal sector.

In Guatemala, Gammage (2010) found that women between the ages of 12 and 65 are more likely than men to be in both time and financial poverty. Furthermore, poorer women with young children spend disproportionately more time on childcare and household reproduction than other women. For South Africa, Budlender (2005) revealed that women are more likey to be income poor than men. That women spend more time on unpaid care work suggests a link between this and their poverty incidence. Unsurprisingly, female-headed homes incur higher multidimensional poverty than male-headed homes (Rogan, 2016). In light of this, this study explores whether 'compensating' women for unpaid care work has an effect on household poverty in a temporal context, using available South African TUS data for 2000 and 2010.

Results for this study are important for informing government policy on whether the government would be 'taxing' women by not recognising the value of unpaid work to the economy. For instance, if compensating women for unpaid work reduces household poverty ceteris paribus, then women would be contributing to economic development, although not being acknowledged. In this case, the government can compensate women through action plans such as direct cash payment; subsidies for household technology (this can make the technology available to many women which helps to reduce time spent on arduous work); extending the supply of affordable and clean sources of fuel for cooking, such as electricity and gas, to many households across the country, *inter alia.*

4. Methodological Framework

A. Measuring and valuing unpaid care work

The United Nations (2005) has classified activities in TUS in the following[3] ten broad categories.

1. "Working in establishments"
2. "Primary production"
3. "Working in non-establishments"
4. "Household maintenance"
5. "Care of persons"
6. "Community service"
7. "Learning"
8. "Social and cultural activities"
9. "Mass media use", and
10. "Personal care".

These activities have been categorised according to their relation to the System of National Accounts (SNA), thus whether they are included in the standard measurement of gross domestic product (GDP) or

[3] As seen from Budlender, D. and Brathaug, A. L. 2004. Calculating the value of unpaid labour in South Africa. *Atlantis: Critical Studies in Gender, Culture & Social Justice, 28(2),* pp.29-40.

not. Activities from category 1 through category 3 fall within the SNA production and are included in the calculation of the GDP. Those from category 4 to 6 do not fall within the SNA production bound. However, they largely correspond to unpaid care work and are referred to as non-SNA activities (UN, 2009). We note that category 5, differentiates between care for household members and care for non-household members and further makes a distinction between care for children and the elderly (Oosthuizen, 2018).

For purposes of this study, we consider the following categories of unpaid care work as per UNECE (2017) guide on valuing unpaid care work.

i) *Household management (and accounting) – purchasing and/or transportation of goods*

ii) *Preparing of meals, household waste disposal and recycling*

iii) *Cleaning, decorating and maintenance of dwelling, durable goods, and gardening*

iv) *Childcare and instruction, transporting and care for the elderly, dependent or other household members and domestic animals, etc.*

These fall under category 4, which is related to household maintenance and category 5, which is related to care for household members. Consistent with (Budlender and Brathaug, 2004), we have excluded travel related to these non-SNA activities. The same applies to activities from category 6 – that is, community work related activities as we are focussed on households.

The task of measuring the value of unpaid care work is not simple since this type of work often produces intangible services. Measurement challenges that arise include the question of multitasking, for instance one can prepare a meal, watch over a small child, and assist another child with homework – all at the same time. Additionally, there is a question about the borderline with household work and leisure – some people regard household chores such as gardening as leisure (UNECE, 2017). Even though valuing unpaid work is not straightforward and very difficult to determine, it is important because unpaid care work sustains families, and consequently helps maintain society (Antonopoulos, 2008).

In literature there are two approaches to measuring the value of unpaid care work: the *direct* or *output* approach and the *indirect* or *input* approach. The direct approach entails measuring output by direct observation of prices and quantities of services supplied (Hirway, 2015). Though this approach may be theoretically superior as its methodology follows the one used to value market production of goods and services, the necessary data are not always available. Thus, the indirect method has been used (De Vaus et al., 2003). This measures and values output by considering costs of inputs and requires knowledge of time spent on household work. This approach values household production by adding inputs cost – which include labour costs (time use) and those of physical capital (De Vaus et al., 2003). Based on this approach, we proceed to briefly discuss actual methods used to value unpaid work.

The mean wage approach - This computes the hourly mean wage for the entire economy and assigns it to each hour of unpaid care work (Budlender and Brathaug, 2004). The calculation is done separately for men and women which lowers the estimated value of unpaid work because on average women perform more unpaid work than men, and the average wage for females is often lower than that of males (Hunter, 2010).

The opportunity cost approach - Measures opportunity costs associated with performing unpaid work (Sousa-Poza, Wilder and Schmid, 1999). That is, how much money members of the home would have made if they had spent the hours of unpaid care work on paid care work instead (De Vaus et al., 2003). According to the UNECE (2017) guide on valuing unpaid household service work, this is could be calculated by valuing the person's household use of their time by their actual employment wage. However, the reasoning of this method remains questionable, for instance, a meal prepared by an engineer will be valued highly than a meal prepared by an unskilled person – these are two similar tasks but have a very large gap in valuation (Hunter, 2010).

The generalist approach - This method assigns the mean hourly wage of workers performing the unpaid work to every hour of unpaid work (Budlender and Brathaug, 2004). For instance, taking the mean wage of domestic workers can be assigned for unpaid work performed in household chores.

The specialist approach - Values unpaid care work activity itself and not the person performing the activity. It assigns the wage earned by the person whose function is to perform the activity, for each activity performed (Budlender and Brathaug, 2004). For instance, time spent preparing meals could be compensated at the wage of a paid chef. The specialist approach yields high estimates and is an indication of the market value of household production (Hunter, 2010).

Notably, the main analysis for this study utilises the mean wage approach to approximate hourly wages for the time that South African women spent in unpaid work based on TUS for 2000 and 2010. This serves to average out any heterogeneities that may exist among women performing unpaid work and cannot be controlled for based on our data (Budlender Brathaug, 2004; Hunter, 2010). However, the mean wage calculation will also be carried out cognisant that the South African labour market has wage differentials based on factors such as education. Generalist and opportunity cost approaches are utilised to assess robustness of the findings. The specialist approach is not used mainly because it requires specific valuation of the works performed which varies across households.

To calculate the monthly value of unpaid care work, the study follows the steps in Budlender and Brathaug (2004), Budlender (2008) and (Hunter, 2010). These include:

i) Calculating the mean hourly wage for certain groups of women as highlighted above, using earnings data for 2000 and 2010.

ii) Calculating the total number of hours spent by an individual woman doing unpaid care work over a month, for 2000 and 2010.

iii) Multiply the unpaid care work hours by the mean hourly wage rate appropriate for each group of women, for 2000 and 2010.

Let t_i^* be the number of hours spent by an individual woman in performing unpaid care work per month, and w_i^* be the unpaid hourly wages that women will be compensated for, for doing unpaid care work. Thus, $unpaid\ wages = t_i^* w_i^*$.

B. Computing household poverty levels

To link women's 'compensation' for unpaid care work and household poverty, we calculate and compare households' money metric poverty incidence for 2000 and 2010 based on original monthly per capita household income and augmented per capita household income. The latter is computed based on a sum of original household income and total monthly 'compensation' for unpaid care work for all adult female household members.

For original household income, let $x_h = (x_1, \dots, x_h, \dots, x_H)$ be the vector of current household incomes, where each household is presented by the subscript h =1, …, H. Let the subscript i denote a woman living in h. Thus, total household income can be presented as: $x_h = \sum_{i \in h}(w_i t_i + g_h)$, where w_i and t_i represent the hourly wages earned (equal zero if person is unemployed) and number of hours worked by women i, respectively, and g_h represent household income from other sources. Thus, x_h represents the sum of income of all household members from all sources for the years 2000 and 2010.

As for augmented household income, let $x_h^* = (x_1^*, \dots, x_h^*, \dots, x_H^*)$ be the counterfactual distribution of household income that includes the 'value of unpaid work' – wages that women would earn from unpaid care work. This is obtained by adding $t_i^* w_i^*$ (as previously discussed) for each woman i living in h to total household income. Therefore: $x_h^* = x_h + \sum_{i \in h}(t_i^* w_i^*)$. This shows that the difference between the actual and counterfactual household income is the hypothetical compensation that each woman in the household receives for 'unpaid' care work performed.

Based on x_h and x_h^* the incidence of household poverty will be computed separately for 2000 and 2010 as follows:

i) *Calculate per capita household income, i.e., divide* x_h and x_h^* by household size

ii) *Compare the resulting figure with the StatsSA poverty lines.*

iii) Compute the ratio of the total number of households that have per capita incomes below the poverty line. Poverty gaps, and poverty severities will also be calculated as discussed below[4].

iv) The poverty estimates will be compared within and across periods, to establish the effect of 'compensating' women for unpaid work on household welfare.

In this study, a household is considered poor if its income per capita is below a certain poverty threshold. To establish comparison, we account for the impact of prices changes between 2000 and 2010, a price inflator has been applied to the 2000 household income, and earnings to reflect 2010 prices. This is a ratio for the CPI for 2010/CPI for 2000 (61.13/ 34/87) obtained from Stats SA (2021). Consequently, the analysis also uses poverty lines for 2010. Three Stats SA poverty lines are used for the analysis.

South Africa uses the FTG[5] kind of poverty lines (Cheteni, 2019). According to (StatsSA, 2019), the poverty lines for 2010 were:

a. Food poverty line (referred to as extreme poverty) – R230 per person per month – amount of money that one will need to afford the minimum of required daily calorie intake.
b. Lower-bound poverty line – R466 per person per month – average amount generated from non-food household expenditures added to the food poverty line the average amount derived from non-food household expenditure.
c. Upper-bound poverty line – R733 per person per month – the food poverty line plus the average amount derived from non-food items of households with food expenditures that are equal to the food poverty line.

We calculate the poverty headcount – percentage of households below a poverty line (Touray, 2016), the poverty gap – difference between the poverty line in question and household income per capita, poverty severity – by averaging the square of the poverty gap ratio (UN, n.d.). Poverty severity allows us to see how poor a household is compared to other poor households, essentially, this index deals with inequality among the poor (Ofori-Boateng, 2017). These poverty measures are computed using the poverty decomposition[6] (povdeco) software in Stata Software gap (Jenkins, 2021).

C. Data and descriptive Statistics

C1. Data

This study employs TUS data for 2000 and 2010, these data were produced by Statistics South Africa, and were obtained from the University of Cape Town's (UCT) DataFirst Resource Unit. South Africa is one of the few countries in the world that conduct TUSs. The first TUS in South Africa was conducted in 2000

[4] To estimate the poverty gap, we follow an analysis method from (Re et al., 2018) which was developed by Clark et al. (1981). The method uses the following formula:

$$G^t = Z - I^t \quad (1)$$

Where the symbol G^t is the poverty gap index in period t. Z represents the respective Stats SA poverty line. I^t is the original or augmented per-capita household income in period t.

[5] Foster-Greer-Thorbecke

[6] For more information on POVDECO please see (Jenkins, 2021).

and the second in 2010, and the third was meant to be conducted in 2016 but did not take place (Phoshoko and Shandukani, 2018). TUS data differ from general labour force surveys (LFS) in that they show how individuals allocate their time to different activities. Particularly they reveal the amount of time spent performing unpaid care work, paid work, socialising, personal care, taking care of the elderly and children, in 24 hours or a week. That TUS data provide information on men and women's distribution of time among paid and unpaid labour implies that they can be used to inform government policy across a wide range of gender issues (Floro and Komatsu, 2011). The TUS data also contain information such as individuals, gender, race, dwelling type, age, level of education, employment status and household income. However, they do not contain information on wages. Therefore, this paper uses PALMS data, also obtained from UCT's DataFirst Resource Unit, for individuals' wage information that is useful for calculating 'compensation wages.'

From the 2000 TUS we extracted data for analysis from the 'household', 'person' and 'member' data files. After merging the files and keeping only people that were selected to be part of the study, the resulting unweighted sample size was 11 951 individuals dwelling in about 7 900 households. As for the 2010 TUS, it was collected in October 2010 (StatsSA, 2013). Data for the study were obtained from the 'all persons', 'person' and 'activities' datasets. After merging the datasets and keeping relevant individuals for this study the resulting unweighted sample size was 32 073 individuals from 20 352 households. In the TUS respondents are asked for activities that they performed in a day, some report to have performed some activities simultaneously and other activities alone. StatsSA allowed for 3 activities for be reported in each 30-minutes period, and respondents would state whether the activities performed were simultaneous (StatsSA, 2000). There are two methods that StatsSA used to assign minutes from simultaneous activities; when one activity was performed 30 minutes were assigned; when two activities were performed, 15 minutes were assigned to each activity and when three were performed 10 minutes was allocated to each activity (StatsSA, 2013). A problem emerged when two or more activities were performed simultaneously, if two activities are performed in a 30-minute period, should each be assigned 30 minutes or 15 minutes? Assigning 15 minutes to each allowed for the persons' minutes to add up to 24 hours per day and this is referred to as the 24-hour method; the other method is assigning 30 minutes to each activity (Budlender and Brathaug, 2004). This study uses the 24-hour method against the argument that assigning 30 minutes to each activity is prone to overstating unpaid care work time.

For earnings information, we used version 3.3 of PALMS data. It contains microdata from 69 Statistics South Africa home surveys conducted between 1994 and 2019 and the data is at individual level (Kerr and Wittenberg, 2019). For our analysis for 2000, only earnings relating to the 2000 data were kept and the resulting sample size was 28 580. The corresponding sample size for 2010 data was 79 684. From the PALMS data, only individuals who are within the economically active population (EAP) have been taken into consideration. Respondents that replied with zero or did not disclose their monthly earnings have been dropped from the sample of analysis. This also applies to individuals that responded to have worked zero

hours a week. To generate hourly earnings, real monthly earnings were divided by monthly hours worked. The latter were derived by multiplying hours worked per week (in the past 7 days) in the main job by 4, 345.

C2. Descriptive statistics

This sub-section discusses average earnings and time use hours that are used throughout this report. Statistics for earnings are discussed for the mean wage, opportunity cost and generalist approaches to valuing unpaid care work. First, we discuss the hourly wage rates[7] and then hours of unpaid care work.

In our calculation we noted that the hourly wages were prone to extreme outliers. Table 1 shows statistics for hourly wages before and after trimming for outliers.

Table 1: Hourly average wages with and without outliers for 2000 & 2010

	Obs	Mean	Std. dev
	2000		
Hourly earnings_before	28 580	30.28	306.90
Hourly earnings_after	28 561	19.20	20.32
	2010		
Hourly earnings_before	79 724	37.70	536.34
Hourly earnings_after	79 684	31.80	58.18

Source: Own calculations based on PALMS data (2000 & 2010)

The outliers' values were identified according to the method employed by (Oosthuizen, 2018) whereby outliers are all the values above the cut-off of three standard deviations above the mean. In 2000, the average wage rate per hour before cutting off the outliers was R30.28 with a maximum of R47 846.35, a standard deviation of 306. 90. After accounting for the outliers, the average pay per hour became R19.20 – about 37% reduction from original value, affecting 19 observations. For 2010, before accounting for outliers, the average pay was R37.70, while the maximum amount was R96 227.87, and the standard deviation was 536.34. After accounting for outliers, the mean hourly wage reduced to R31.80, a reduction of about 16% (R5.90) from the original value, standard deviation became 58.18 and the maximum value became R1 626.24.

Table 2 shows average hourly wages estimated according to the mean wage, opportunity cost and generalist approaches to valuing unpaid care work – overall and by gender.

Table 2: Average wage per hour overall and by gender, 2000 & 2010

	2000			2010		
	Combined	**Female**	**Male**	**Combined**	**Female**	**Male**
Mean wage	R19.20	R17.94	R21.46	R31.80	R27.65	R35.44
Opportunity cost	R28.13	R23.51	R32.74	R30.33	R25.61	R35.04
Care wage	R8.12	R7.53	R8.71	R12.46	R11.51	R13.41
Domestic worker wage	R5.67	R5.66	R5.68	R9.26	R9.27	R9.25

Source: Own calculations based on PALMS data (2000 & 2010)

[7] All hourly wage and household incomes are in 2010 constant Rand terms, unless otherwise stated.

The first row of Table 2 shows statistics for hourly wages calculated following the *economy-wide mean wage approach*. The economy average wage per hour for 2000 was calculated to be R19.20 – this value was then disaggregated by gender and females had an average wage of R17.94 per hour while males had R21.46 per hour. In 2010, the economy wide average pay per hour was R31.80, disaggregated by gender the hourly wage rate was R27.65 and R35.44 for females and males, respectively. While our estimated hourly wages for 2000 are in 2010 values, a computation of the nominal values yields similar outcomes to previous studies. Our nominal average wage per hour for women in 2000 is R9.35 and for men it is R12.25. These values are similar to R12.17 and R8.10 for men and women, respectively from (Budlender and Brathaug, 2004). The economy average wage per hour calculated for 2010, R31.80, is similar to that of R33.40 calculated by (Oosthuizen, 2018).

Table 2 also shows statistics for hourly wages based on the *opportunity cost approach*. Following (Budlender & Brathaug, 2004) the opportunity cost hourly wage has been estimated and averaged for five education levels, 'No schooling', 'Primary education', 'Incomplete secondary', 'Matric' and 'Post matric'. Table A.1 in the appendix shows the average hourly wages for each education level. The second row in Table 2 shows the average opportunity cost wages which are R23.51 and R32.74 for females and males in 2000, respectively – all presented in constant 2010 prices. In 2010, the average opportunity cost wages for males and females were R35.04 and R25.61, respectively.

In 2000, the estimated nominal average opportunity cost wages were R18.67 and R13.41 for men and women, respectively. These values differ by a few rands from a study using a similar approach, the study (Budlender and Brathaug, 2004) calculated an average of R13.65 for males and R9.74 for women and a possible reason for these differences is because (Budlender and Brathaug, 2004) took at average of matric and post matric wages while this report reported them individually.

The last 2 rows of Table 2 show statistics for hourly wages computed from the *generalist approach*. This considers wages that are earned by workers in fields closely related to care work. Two variants of hourly wages are possible (1) the '*average domestic worker wage'*, and (2) *'care wage'* - the average wage for all occupations involving work similar to housework, whether performed in institutions or in the home. This approach generally includes a range of occupations in major category 5 of the International Standard Classification of Occupations or its equivalent. Teachers were removed even though teaching entails a significant amount of care, and their earnings, which are normally higher than those of the average domestic worker, would have skewed the value upward (Oosthuizen, 2018). In 2000, the estimated deflated hourly average wage according to the generalist approach was R5.67 (domestic wage) and R8.12 (care wage). In 2010, the estimated hourly average wages according to the generalist approach was R9.26 (domestic wage) and R12.46 (care wage). Overall, out of these three approaches, the generalist approach had the lowest estimated wages per hour, the economy-wide average had the second lowest and the opportunity cost approach had the highest values.

Table 3 shows the average time spent *on unpaid care work*, in hours, combined average for females and males and then disaggregated by gender.

Table 3: Average time spent doing unpaid care work per day by category, in hours (2000 & 2010)

	2000			2010		
	Combined	**Female**	**Male**	**Combined**	**Female**	**Male**
Care[8]	**3.04**	**3.16**	**2.59**	**0.30**	**0.47**	**0.07**
Childcare[9]	0.44	0.55	0.33	0.26	0.42	0.05
Adult care[10]	1.82	1.87	1.62	1.52	1.66	1.17
Cooking	0.33	0.41	0.27	1.72	1.98	1.16
Household maintenance	**1.57**	**1.73**	**0.93**	**2.88**	**3.5**	**1.93**
Average unpaid care work time	**3.33**	**3.72**	**2.92**	**3.17**	**3.98**	**2**

Source: Authors' calculations, using TUS (2000 and 2010) obtained from UCT's Datafirst data database

When looking at the two broad parts of unpaid work, household maintenance and care, our calculations show that in 2000 both men and women spend more time on care than on household maintenance, and vice versa in 2010. Looking at childcare and adult care, both men and women spend more time on adult care than childcare.

The last row shows the average time spent on all unpaid care work activities which is the focus of this study. Using 2000 TUS, we estimate that women spent an average of 3.72 hours on unpaid care work activities compared to 2.92 for men. Our 2000 estimations of time use for women is similar with the value estimated by (Budlender and Brathaug, 2004), that in 2000 women spent an average of 3.67 hours on unpaid care work per day. The gap widened in 2010, as women spent 3.98 hours on unpaid care work per day, while the hours for men reduced to 2 hours per day, meaning women spent 1.8 hours more on unpaid care work than men. Table A.2 in the appendix shows hours spent on unpaid care work by education level.

Other important variables for our analysis are household income and household size. Table 4 shows the average monthly household income in 2000 (R2 535.67) and 2010 (R3 704.36) for our sample of analysis. An average household had about 5 members in both periods.

Table 4: Household income and household size

	2000		2010	
	Average income	**Standard deviation**	**Average income**	**Standard deviation**
Household income	R2 535.67	R2 732.20	R3 704.36	R3 430.86
Household size	5.26	3	4.62	2.79

5. Results

A. Unpaid care work valued

After calculating the hourly mean wages based on the three approaches mentioned above, we proceeded to estimate the value of an individual's 'compensation' for unpaid care work per day. This is the product of

[8] Care includes care for children, the sick, the elderly and disabled for own household, this includes supervision, teaching and accompanying of children, the sick and the elderly.
[9] Childcare is physical care of children – mentioned spontaneously and not mentioned spontaneously.
[10] Adult care includes physical care of the elderly – mentioned spontaneously and not mentioned spontaneously.

daily hours spent on unpaid care work and the mean hourly wage. To obtain the value of monthly 'compensation', we multiplied the daily compensation by 30.31. Table 5 below presents the average value of the monthly 'compensation' overall and by gender.

Similar to Budlender and Brathaug (2004) and Oosthuizen (2018) the lowest mean 'compensation' is achieved through the generalist approach (the domestic wage gives the lowest 'compensation' – R572.29 overall). In 2000, the opportunity cost approach yielded the highest mean 'compensation' per month (R2 804.12 overall), while it was the economy average wage approach that yielded the highest monthly 'compensation' in 2010 (R3055.43 overall). Results by gender for both 2000 and 2010 show that on average women have a higher 'compensation' for unpaid care work than men. The exception is in 2000 when the 'compensation' is based on the opportunity cost wage approach. This result is associated with women's higher amount of time spent on unpaid care work than men rather than wages.

Table 5 Compensation of unpaid care work per month

	2000			2010		
	Female	Male	Combined	Female	Male	Combined
Economy-wide average						
Average unpaid care work	R2 022.79	R1 899.32	R1 936.90	R3 335.52	R2 148.37	R3 055.43
The generalist wage						
Domestic wage						
Value of unpaid care work	R638.18	R502.71	R572.29	R1 118.28	R560.74	R889.73
Care wage						
Value of unpaid care work	R849.03	R770.88	R819.57	R1 388.50	R821.04	R1 197.19
Opportunity cost wage						
Value of unpaid care work	R2 572.,44	R2 947.28	R2 804.12	R3 019.57	R2 145.37	R2 721.13

Source: Author's calculations, using PALMS and TUS data for 2000 and 2010

Note: The value of unpaid care work is an estimation of the monthly compensation, and is calculated by first, multiplying the hours of unpaid care work per day by the mean wage per hour and then multiplying by 30.31 to convert from daily compensation to monthly.

Table 5 also shows that the 'compensation' wage for women increased over time. As an example, the lowest values show that it increased from R638.18 in 2000 to R1118.28 in 2010 – based on the domestic worker generalist wage approach. For the highest values, the increase was from R2 572.44 to R3 019.57, based on the opportunity cost wage approach. This trend also applies to 'compensation' wages for men except for those valued by the opportunity cost wage approach. These statistics could be indicating that women's 'compensation' for unpaid care work had a larger welfare effect in 2010 compared to 2000.

B. Household poverty rates: before and after compensation

This section analyses the effect of 'compensating' women for unpaid care work on household poverty in 2000 and 2010. This is done by comparing households' money-metric poverty rates based on original monthly per capita household income and augmented per capita household income – computed as a sum of original household income and total monthly 'compensation' for unpaid care work for all adult female

household members. Three Stats SA poverty lines for 2010 are used for the analysis: upper bound, lower bound and food poverty lines as all monetary values in the study are in 2010 values[11].

Table 6 shows the poverty headcount incidence when original household incomes per capita are used. Results for 2000 show that 42% of South Africa households were poor according to the food poverty line. This was higher when the lower-bound (62%) and the upper-bound poverty lines (74%) were considered. The corresponding poverty gaps show that an average household had income that fell 16.7% below the food poverty line, 36% below the lower-bound poverty line and 48% below upper-bound poverty line. Considering the food poverty line, this implies that the average household needed an extra R38.41 (0.167*R230) for each of its members to be categorised as non-poor. Although marginally higher, our findings are comparable to those in existing literature. Using the StatsSA lower-bound and upper-bound poverty lines in 2000 Rands, (StatsSA and National Treasury, 2007) reported poverty rates of 52.6% and 70.4% respectively. Also, within this region (Leibbrandt et al., 2010) found a 71% headcount poverty with 45% average poverty gap based on the upper-bound poverty line in 2000. Headcount poverty based on the lower-bound poverty line was 54% and the average poverty gap was 29% (Leibbrandt et al., 2010).

Table 6 Household poverty levels according to each of the three poverty lines, using the 2000 original household per capita incomes

	2000			2010		
Variable	Food poverty line	Lower-bound poverty line	Upper-bound poverty line	Food poverty line	Lower-Bound poverty line	Upper-bound poverty line
Unweighted Number of households	7 408	7 408	7 408	20 166	20 166	20 166
Headcount ratio	0.416	0.619	0.735	0.20	0.43	0.55
Average normalised gap	0.167	0.359	0.480	0.08	0.20	0.31
Average squared normalised poverty gap	0.084	0.235	0.350	0.04	0.12	0.21

Source: Authors' calculations using TUS (2000) and (2010) obtained from UCT's Datafirst database.

Table 6 also shows that in 2010, 20% of the South African households lived in poverty based on the food poverty line, while 43% and 55% were classified as poor according to lower-bound and upper-bound poverty lines. The poverty gaps reveal that an average household had income that fell 8%, 20% and 31% below the food poverty, lower-bound and upper bound poverty lines. Our findings for poverty incidence are comparable to those from StatsSA (2017). StatsSA's poverty headcount ratios for 2009 [12] were 20.1% (food poverty line), 32.11% (lower-bound poverty line) and 47.2% (upper-bound poverty line). Overall, we conclude that occurrence of household poverty and its depth declined from 2000 to 2010. Below we procced to discuss the impact of 'compensating' women for unpaid work on household poverty as per the three approaches of 'counting' unpaid work.

[11] All estimations are weighted by household weights provided by Statistics South Africa in TUS for 2000 and 2010.

[12] The three poverty line statistics were first published by Statistics South Africa in 2012. South Africa's first poverty trends report was released in 2014 – with poverty estimates 2006, 2009 and 2011 poverty estimates; and the latest Stats SA report on latest poverty trends was released in 2017, including poverty estimates for 2006, 2009, 2011 and 2015.

i. 2000 results

Table 9 shows results for the effect of 'monthly compensation' for unpaid care work on household poverty in 2000 according to each wage approach. In the Table, Panel A shows results based on the food poverty line (R230) while panel B and C show results for lower-bound (R466) and upper-bound (R733) poverty lines respectively.

Results for the *food poverty line* in Panel A show that *monthly per capita household income plus economy wage-based compensation* produced a household poverty rate of 15.6%. This is a 26 percentage points decline from headcount poverty based on the original household income per capita. The average poverty gap also declined from 16.7% to 6.2%. This suggests that the amount required by an average household to be categorised as non-poor declined from R38.41 (0.167*R230) for each of its members to R14.26 (0.062*230). These findings are of the same order as those based monthly per capita household income augmented with monthly 'compensation' from the *opportunity cost approach*. In this study, we analysed the impact of *the generalist wage approach* according to the two variants – that is, the *domestic worker and the care work wages*. The *domestic worker wage* variant had a marginally low impact on household poverty levels. The percentage of households living under poverty fell to 17.3% - a decline of about 25 percentage points from original household poverty rates. Results for the *care wage* variant show that household poverty headcount declined to 16.5% from the original 41.6%. The poverty gaps hovered around 6.5%. Thus, counting the unpaid labour of women work reduced both the incidence and severity of household food poverty in 2000.

Table 7: The effect of 'monthly compensation' on household poverty according to each wage approach, 2000

Variable	Original Household income per capita	Per capita Household income plus economy wage-based compensation	Per capita Household income plus opportunity cost wage-based compensation	Per capita Household income plus *domestic worker*-based generalist wage compensation	Per capita Household income plus *care work-based* generalist wage compensation
Panel A: Food poverty line (R230)					
Unweighted Number of households	7 408	7 665	7 665	7 665	7 665
Headcount ratio	0.416	0.156	0.155	0.173	0.165
Average normalised gap	0.167	0.062	0.062	0.067	0.064
Average squared normalised poverty gap	0.084	0.031	0.031	0.033	0.032
Panel B: Lower-bound Poverty Line (R466)					
Headcount ratio	0.619	0.258	0.249	0.325	0.296
Average normalised gap	0.359	0.140	0.137	0.163	0.153
Average squared normalised poverty gap	0.235	0.089	0.088	0.101	0.095
Panel C: Upper-bound Poverty Line (R733)					
Headcount ratio	0.735	0.344	0.326	0.460	0.414
Average normalised gap	0.480	0.201	0.194	0.249	0.229
Average squared normalised poverty gap	0.350	0.140	0.137	0.166	0.155

Source: Authors' calculations using PALMS (2000) and TUS (2000) obtained from UCT's Datafirst database.
Notes: All estimations are weighted.

Results for the *lower-bound poverty line* in Panel B reveal that 25.6% of South African households are poor when considering *monthly per capita household income plus economy wage-based compensation*. This is a reduction of 36.1 percentage points from the original household poverty rate. Similarly, the poverty gap also declined by 21.9 percentage points: from 35.9% to 14%. We observe that when the *opportunity cost wage approach* monthly 'compensation' is added to the original household income, poverty headcount and poverty gap are comparable to those observed from the *economy wage-based compensation.* As expected, we observe that 'compensation wages' estimated from the *generalist approach* had the least impact on household poverty rates. The *domestic worker wage* variant reduced household poverty levels to 33% (a reduction of 29 percentage points from the original household poverty rates). The average poverty gap decreased to 16.3% from 35.9%. *The care wage variant* reduced household poverty rates to 30% (a 32% reduction from the original household poverty rates). This came with poverty gap of 15.3% implying that an average household now required R71.29 per person to be distinguished as non-poor, rather than R167.29.

Panel C in Table 9 shows results based on the *upper-bound poverty line***.** When household income is augmented by 'compensation wages' computed using the *mean economy-wide wage approach*, we find that 34% of South African households lived in poverty. This is a reduction of 40 percentage points from the original household poverty levels. This result is associated with a poverty gap of 20.1% - each person in a representative poor household required R147.33 for it to be classified as non-poor. The original per capita monthly household income augmented with the *opportunity cost monthly wage* 'compensation' gives a 33% poverty rate at household level (41 percentage points less than the original value). The poverty gap is of the same order as that uncovered by the *economy wage-based compensation.* According to the upper-bound poverty line as well, the *generalist wage approach* has the least impact on household poverty rates. The *domestic worker wage* variant gave us an estimation that 46% of all households were poor while the *care work* wage-based compensation classifies 41.4% of the households as poor. The respective poverty gaps are 25% and 23%, R167.86 - R182.5 is required by each member of an average poor household for it to be separated as non-poor. These results are in support of the idea that 'compensating' women for unpaid care work could have reduced household poverty in 2000, ceteris paribus.

ii. 2010 results

Table 8 presents results for household poverty rates in 2010 based on original and augmented per capita household incomes. These were estimated using PALMS data (2010) and TUS data (2010).

Results for the *food poverty line* in Panel A show that household poverty headcount decreases from 20% (using original per capita household income) to about 7.5% after accounting for women's 'compensation' for unpaid care work, regardless of the method used for its valuation. The average poverty gap among the poor decreases by 5 percentage points from 8% to about 3%. The lowering effect of 'valuing' women's unpaid work on household poverty incidence and its severity also extends to the lower-bound poverty

threshold. This is shown by results in Panel B of Table 8. Before adjusting for women's unpaid work, 42.8% of South African households lived below the lower-bound poverty line of R466. This decreased to 17.3% of households when incorporating the value of women's unpaid care work as evaluated by the *economy wide and opportunity cost* wage compensation criteria. A slightly lower reduction to 19% of households is observed based on the *generalist wage compensation* approach. These results suggest that compensating women for unpaid care work reduced household poverty incidence by 23.9 - 25.6 percentage points, i.e., close to 45%. The average poverty gap also declined from 20.4% to about 8%, i.e., 12.4 percentage points. Originally, R222.303 was required by each member of an average poor household for it to be classified as non-poor, now R207.065 is required.

Table 8: The effect of 'monthly compensation' on household poverty according to each wage approach, 2010

Variable	Original Household income Per capita	Per capita Household income plus economy wage-based compensation	Per capita Household income plus opportunity cost wage-based compensation	Per capita Household income plus *domestic worker*-based generalist wage compensation	Per capita Household income plus *care work*-based generalist wage compensation
Panel A: Food Poverty Line (R230)					
Unweighted Number of households	20 166	20 311	20 311	20 311	20 311
Headcount ratio	0.20	0.074	0.075	0.078	0.077
Average normalised gap	0.08	0.029	0.029	0.030	0.030
Average squared normalised poverty gap	0.04	0.015	0.015	0.016	0.016
Panel B: Lower-bound Poverty Line (R466)					
Headcount ratio	0.428	0.173	0.174	0.194	0.188
Average normalised gap	0.204	0.079	0.079	0.085	0.084
Average squared normalised poverty gap	0.122	0.0463	0.046	0.050	0.050
Panel C: Upper-bound Poverty Line (R733)					
Headcount ratio	0.55	0.24	0.241	0.29	0.274
Average normalised gap	0.311	0.126	0.126	0.142	0.138
Average squared normalised poverty gap	0.207	0.081	0.082	0.090	0.087

Source: Authors' calculations using PALMS (2010) and TUS (2010) obtained from UCT's Datafirst database.
Notes: All estimations are weighted.

Panel C in Table 8 presents household poverty rates for the upper-bound poverty line - R733 (StatsSA, 2019). Results for the *economy wide and opportunity cost* wage compensation approaches for unpaid care work show a 24% rate of poverty at household level – a reduction of 31 percentage points from the poverty rate uncovered for original per capita household income. This is coupled with a reduction of the average poverty gap from 31.1% to 12.5%, thus the depth of poverty decreased by 18.6 percentage points.

As already highlighted above, the *generalist wage approach* once again, had the least impact on household poverty rates. The *domestic worker wage* variant produced a 29% rate of poverty at household level, a reduction of 26 percentage points from the original poverty rate. It is also associated with an average poverty gap of

15% among the poor households. The *care wage* variant identified 27.4% of South African households as living below the upper-bound poverty line. Associated to this is an average poverty gap of 14% - on average R365.222 is required per person per month for a poor household to become non-poor. This is relatively low compared to R412.611 that is required when women's unpaid care work is not accounted for. This discussion also suggests that 'remunerating' the time that women spend on unpaid care work within the household could have reduced household poverty in South Africa in 2010, ceteris paribus.

iii. Comparison of 2000 and 2010 results: Impact on household poverty levels

This section discusses how each approach to measuring the value of unpaid care work affected the level of household poverty, according to the poverty headcount ratio, for each year and further compares the extent of poverty reduction between 2000 and 2010.

In 2000, the original monthly household income per capita per gave us 42% of households living below the food poverty line. After augmenting this unadjusted income with monthly 'compensation' from each of the approaches used to value unpaid care work – we observe that opportunity cost and the mean economy-wide wage approaches had the largest impact in reducing household poverty. This reduced household poverty levels from 42% to about 15.5%. This was followed by the care wage variant of the generalist wage approach (reduced household poverty rates to 16.5%) and lastly, the domestic worker wage variant which reduced household poverty levels to 17.3%. This pattern has also been uncovered for the lower-bound and the upper-bound poverty lines. For instance, the upper-bound poverty line produced a household poverty rate of 74% when the original household income was used. The opportunity cost and the mean economy-wide wage approaches reduced household poverty levels to about 33%. The generalist approach reduced household poverty rates to the range 41% - 46%.

In 2010, the original household income produced 20% of households that were living under the food poverty line. The augmented per capita household incomes reduced household poverty rates to the band 7% - 8%. For the lower-bound poverty line, about 43% of South African households were living in poverty as per unadjusted monthly per capita household income. Augmented per capita household incomes cut the household poverty rate by over 50 percent, i.e., to the range 17% - 19%. Similarly accounting for the time that women spent on unpaid care work in the household also reduced poverty when considering the upper-bound threshold; from 55% to 24% - 29%.

Overall, this discussion shows that household poverty rates were lower in 2010 when compared to 2000. All the approaches employed to measure the 'value' of women's unpaid care work within the household converge to an empirical regularity that accounting for this time serves to increase household resources and reduce poverty, ceteris. It is therefore reassuring that this result is robust across the years used to capture the decade 2000 – 2010.

D. Conclusion

This research aimed at looking at the effect of 'compensating' women for unpaid care work on household poverty levels. To achieve this, 2000 and 2010 TUS and PALMS data was used. In line with the pool of literature on unpaid care work in South Africa, our estimates showed that women spend more time on unpaid care work than men – in 2000 women spent an average of 3.72 hours on unpaid care work and men spent an average of 2.92 hours. The gap between time spent by women and men on unpaid care work widened in 2010, where average hours spent by men on unpaid care work reduced to 2 hours, while those for women increased to an average of 3.98.

Using the 2000 economy-wide mean average wage, we estimated the monthly 'compensation' for women to be R2 022.79, a monthly 'compensation' of R2 572.44 with the opportunity cost average wage and the generalist compensation wage approach had the lowest monthly *'compensation'* – the domestic worker wage monthly 'compensation' of R638.48 and the care wage variant gave R849.03. Similarly, in 2010 the *generalist based-wage* had the lowest monthly *'compensation'* – the domestic worker wage monthly 'compensation' was R1 118.28, and the care wage monthly compensation was R1 388.50, the opportunity cost *based-wage* gave us an estimation of R3 019.57 *'compensation'* for unpaid care work per month, and the economy-wide mean wage approach had an average monthly *'compensation'* of R3 335.52.

This study confirmed that compensating women for unpaid care work not only reduces poverty at household level but reduces the gap and incidence of poverty as well. In 2000, using the 2010 poverty lines and 2000 earnings that are quoted in 2010 Rand terms – we observed household poverty levels reduce significantly when the 'compensation' income was added to the original household income per capita. In 2000 household poverty reduced from 42% to 16%, with the *economy-wide* and *opportunity cost based-wage 'compensation'* and 17%, using the *generalist based-wage 'compensation'*. Household poverty reduced from 62% according to the lower-bound poverty line to 26% (*economy wage-based compensation*), 25% (o*pportunity cost-based wage compensation*) 33% and 30% using the domestic worker and care work wage based on the generalist wage compensation. Household poverty levels reduced from 74% to 34% (*economy wage-based compensation*), 33% (*opportunity cost-based wage compensation*) and 46% and 41% using the domestic worker and care work wage based on the generalist wage compensation.

In 2010, the household poverty headcount was reduced from 20% to a low 8% by the economy-wide average wage approach and opportunity cost approach and 9% by the generalist wage approach; lower-bound poverty line was reduced from a high 43% to 19% (*Opportunity cost wage based and Economy wage-based compensations*) and 20% and 21% by the care work and domestic worker-based generalist wage compensations. The upper-bound poverty line reduced from 55% 26% (*Opportunity cost and economy wage-based compensations*) and 29 and 30% by the *care work* and *domestic worker-based generalist wage compensations*.

Unpaid care work affects women all around the world, regardless of their level of education or income, regardless of their country's level of development (Antonopoulos, 2008). While some countries have made progress in recognizing, reducing, and redistributing unpaid care work, women continue to bear the brunt of the burden (Ferrant et al., 2014). Unpaid care measurement methods and research are therefore crucial for implementing public policies that improve women's lives. Governments have a role to play in encouraging a more equitable distribution of unpaid household care duties. Flexible work hours and shared parental leave are two options for businesses to facilitate more equitable split of unpaid family care duties and assist women in achieving a better work/life balance. Less unpaid care work for women frees them up to put more time on paid work (Charmes, 2019). To encourage meaningful change in attitudes toward unpaid care work, strategies to address unpaid care work at the community level are required. Audio visual methods, the media's involvement, and programs that engage men and boys were all cited as potential change agents (Ferrant et al., 2014). Governments and private sector should commit to creating working environments that are family-friendly and allow parents to manage their work and care duties. Flexible work schedules, often known as teleworking, allow women and men to choose work hours that are more conducive to their care obligations.

Our study has shown that compensating women for unpaid care work reduces household poverty, and while compensating women for unpaid care work is not a feasible policy recommendation, policies that reduce and redistribute unpaid care work can be implemented. Such policies would make it possible for women to have more time to look for or increase their time in paid work to earn the pay that would otherwise have been the 'compensation', and in turn reduce household poverty levels. This starts at recognizing unpaid care work and then understanding the implications that this work has for all economies and valuing it appropriately (Elson, 2017).

Governments can alleviate the burden of unpaid labor by investing in infrastructure and public services (Alonso et al., 2019). In underdeveloped nations, investments in water, sanitation, energy, and transportation are crucial to enabling the "engines of liberation" that allow women to spend less time doing low-productivity chores, such as fetching water, fetching firewood (Ilahi and Grimard, 2000; Cubas, 2016; Elson, 2017) Access to clean water, sanitation, and energy is not taken for granted in many poor nations, particularly in rural regions, where women and girls spend a significant amount of time collecting water and fuel (Elson, 2017). Improved labor standards and efficiency also help to reduce unpaid work among women. (Alonso et al., 2019). Gender equality necessitates that the unpaid domestic and care labor that remains after extensive investment in household-related infrastructure and public services be redistributed so that men and boys share it equally with women and girls - this can be supported by, amongst other things, providing tax-funded paid parental leave to both moms and fathers; and effective requirements that dads cannot transfer their entitlements to mothers (Elson, 2017).

Our study has painted a static picture of the effect of the 'compensation' wage on household welfare. However, we cannot rule out the possibility that the 'compensation' wage can incentivise some working

people, such as males, in the household to stop working. We, however, argue that this effect, if existent, could be minimal. Studies have found that work gives people some form of pride and identity when they are able to provide for themselves. (Cartwright and Holmes , 2006) note that work has become a main point in people's life 'in providing meaning, stability, and a sense of community and identity'. Further, male respondents in (Dawson and Fouksman , 2020) maintained that getting 'free money makes your mind relax' and prefer working for their own money due to the attached sense of pride and dignity. This is also in line with anecdotal evidence from South Africa that individuals would rather work than rely on non-work sources of income such as government transfers and more broadly household members' 'compensating' wages.

We regret that our study could not estimate the value of time that women do spend in the labor market. As an extension of this work, one may compare the time spent by women on paid and unpaid care work. Such a study would establish exactly by how much unpaid care work responsibilities affect women's participation in paid work. One more limitation of this study comes from the TUS data, TUS data can be selective – time is either recorded specifically for a certain activity or activities during a given period, or it is exhaustive, in which all actions performed during that period are evaluated (United Nations, 2005). Moreover, the data used for this study is now old, hence we encourage Statistics South Africa to produce a more recent TUS survey to enable a timely analysis of the effect of 'counting' women's unpaid care work on household poverty.

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Appendix

TableA.1: Average wage per hour by education level and gender, 2000 & 2010

	2000			2010		
	Combined	Female	Male	Combined	Female	Male
No schooling	R7.79	R5.77	R9.80	R12.33	R9.96	R14.69
Primary education	R9.24	R7.48	R11.00	R13.35	R10.87	R15.82
Incomplete secondary	R14.91	R11.65	R18.17	R19.37	R15.82	R22.94
Matric	R32.22	R29.65	R34.78	R31.59	R27.04	R36.13
Post matric	R76.47	R62.98	R89.96	R75.44	R65.28	R85.60
Average (Opp cost)	**R28.13**	**R23.51**	**R32.74**	**R30.33**	**R25.61**	**R35.04**

Source: Own calculations based on PALMS data (2000 & 2010)

Table A.2: Average Minutes spend on unpaid care work by education level, 2000 & 2010

	2000		2010	
	Female	**Male**	**Female**	**Male**
No schooling	3.88	3.22	3.87	3.36
Primary	3.77	2.82	3.71	1.81
Inc secondary	3.82	2.95	4.24	2.14
Matric	3.35	2.85	4.14	2.13
Post matric	3.28	3.02	3.47	1.79
Average	**3.61**	**2.97**	**3.89**	**2.02**

Source: TUS (2000 and 2010) obtained from UCT's Datafirst Database

Table A.3: Average hourly wage disaggregated by gender, 2000 & 2010

	2000		2010	
	Female	**Combined**	**Female**	**Combined**
Domestic work wage	R5.66	R5.67	R9.27	R9.26
Care wage	R7.53	R8.12	R11.51	R12.46

Source: PALMS data for 2000 and 2010