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Social Indicator of Unpaid Work in Brazil: A Methodological Proposal

Indicador social del trabajo no remunerado en Brasil: una propuesta metodológica

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Resumen

Las mujeres son en gran parte responsables del trabajo reproductivo. Quizás es por eso que también son histórica y socialmente responsables del trabajo doméstico y del cuidado de la familia. Este trabajo que se proporciona a la familia, principalmente por mujeres y, en menor medida, por hombres, se llama trabajo no remunerado. Este trabajo, además de mejorar el bienestar de la familia, es fundamental para el funcionamiento de la sociedad, ya que garantiza la disponibilidad de mano de obra para el mercado laboral. No obstante, el trabajo no remunerado y su producción de bienes y servicios es invisible para la sociedad. Esto se debe a que la mayoría de los países no tienen estadísticas oficiales sobre esta producción. Algunas estadísticas disponibles muestran que el trabajo no remunerado genera bienes y servicios alrededor del 13 al 30% del PIB. Y dado que este trabajo es realizado principalmente por mujeres, el tiempo dedicado a estas actividades afecta su participación en el mercado laboral y, en consecuencia, sus ingresos. Entre los Objetivos de Desarrollo del Milenio (Naciones Unidas) está la medición del trabajo no remunerado a través de una Cuenta Satélite para hacerlo visible y su importancia reconocida. Este estudio propone la discusión de un indicador social del trabajo no remunerado para Brasil. El desarrolla una propuesta metodológica para estimar una Cuenta Satélite de Trabajo No Pagado que se incorporará a las Cuentas Nacionales, enfatizando la importancia de esta estadística para definir políticas públicas para reducir la desigualdad más eficientes y más justas.

Abstract

Women are largely responsible for reproductive work of human life. Perhaps this is why they are also historically and socially responsible for the housework and care of other family members. This work that is freely provided to the family, mostly by women and to a lesser extent by men, is called unpaid work. Unpaid work, in addition to improving the well-being of the family, is fundamental to the functioning of society, as it ensures the availability of labor force for the paid labor market. Nonetheless, unpaid work and all its production of goods and services is invisible to the society. This is because most countries do not have official statistics on this production. Some statistics already available show that unpaid work generates goods and services that account for about 13 to 30% of GDP. Moreover, since women mostly perform this work, the time spent on these activities impacts women's participation in the paid labor market and, consequently, their income. Among the United Nations Millennium Development Goals for reducing inequality is the measurement of unpaid work through a Satellite Account in order to make it visible and its importance recognized by society. This study proposes the discussion of a social indicator of unpaid work for Brazil. To this end, it develops a methodological proposal to estimate a Satellite Account of Unpaid Work to be incorporated into National Accounts, emphasizing the importance of this statistic for defining more efficient and fairer public policies to reduce inequality.

Key words: Satellite Accounts (GDP); Sexual division of work; Labor market; Gender and macroeconomics.

Palabras clave: Cuenta Satélite (PIB); División sexual del trabajo; Mercado laboral; Macroeconomía de género.

Códigos JEL: E01; E24.

Introduction

According to labor market statistics (*United Nations*, 2016), women are less present in the labor force than men and are more often in productive sectors with lower wages and worse social coverage for workers. Women are less often in managerial positions. A reflection of this is that women have an income between 2 and 35% lower than men[1], even when they occupy similar positions within the company and have similar qualifications. Gender equality is important for social development. Among other things, it increases economic productivity and welfare of future generations (World Bank, 2012).

As women are the primarily responsible for unpaid work and family care, they are less likely to participate in the labor market on equal conditions with men. They have some possibilities to earning their own income. If they have a full-time job, they are overwhelmed with a double shift (unpaid and paid work) or they need to have a flexible job (part-time, home working, or flexible working time). These options are not the best either for women's income or for the future of their professional carriers. We can say that the traditional and cultural way of sharing household chores is harmful to women's income and professional life. As a result, they participate less than man in the labor market and are overrepresented in informal and part-time jobs.

It is essential that we recognize the importance of reproductive, unpaid, and caring work. This work is still invisible. We need to make it visible and, most importantly, we need to measure and value it in socially recognizable terms. This is possible by incorporating a Household Satellite Account into the National Accounts, thus fulfilling one of the UN Millennium Goals (UN, 2016 and 2016). The introduction of a Household Satellite Account aims to close the wage gap between women and men; increase women's participation in the paid labor market, reducing women's economic dependence; empower women; and reduce inequalities, including gender inequalities.

In this context, this study proposes a discussion on the methodology to create a social indicator for unpaid work in Brazil, a step to create a satellite account of unpaid work (Household Satellite Account HSA) to be incorporated into the System of National Account (SNA), one of the main data sources for macroeconomic and public policy decision making. The creation of the HSA is in line with the UN recommendation and fulfills its 2030 Millennium Goal[2], which recognizes public policy as a fundamental tool for reducing inequalities, including gender inequalities.

The gross domestic product (GDP) includes only the value of the produced and traded goods and services, which is not enough to determine the total wealth produced by the economy. This is because, as highlighted by Teixeira (2012, p. 15), "development occurs only when the benefits of economic growth serve to increase the ability of human beings" to decide and do the best for their lives. Human capacities should be construed as the possibility of having a long and healthy life; satisfactory material conditions of life; the ability and the possibility to participate in the life of the community; and access to education.

In this context, this study presents a proposal to create an indicator of unpaid work for Brazil. The objective is that this indicator can identify the differences in gender-related macroeconomic statistics, serving as a more realistic index for policies decisions and their

[1] Global gender gap report (2017).

[2] In Goal 5, Gender Equality, Item 5.c sets: "to adopt and strengthen sound policies and applicable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels".

outcomes on health, education, and employment. A gender-related macroeconomic index, complementary to GDP, is better for representing gender inequalities, which allows the adoption of more appropriate and efficient public policies to promote, if not the extinction, at least the reduction of these inequalities, bringing Brazil closer to the UN Millennium Goals.

This paper is structured in three sections. First, discuss the importance of the satellite account for gender statistics, highlighting the importance of household chores and care and the difficulties of reconciling family and work. The second part presents a brief summary describing international methodological proposals. And, in the third part, it presents a proposal, based on the disposable methodologies, to estimate unpaid work in Brazil, consistent with the National Accounts methodology.

The importance of satellite account for gender statistics

The System of National Account (SNA), whose "well-stablished objective [is]: from a theoretical framework, to make recommendations on how to obtain data to quantify this framework", has GDP as its main indicator (Feijó & Ramos, 2008, p. 3). This System was created according to economic theory and evolves with it, as well as incorporating technological and statistical advances that allow better data collection and processing. SNA is the most important data for macroeconomic analysis, due to its wide coverage and methodological approach, allowing comparisons over time and between countries. Economic analysis uses SNA statistics to better understand economic relationships, evaluate and propose solutions to unsatisfactory results of economic activity, such as income, production, employment, and prices levels. Concluding, thus, that the statistics of the SNA are the basis of economic policy decisions.[3]

GDP is a statistic of the aggregate product (income) generated in a country over a period of time (a year, e. g.). In its current presentation, it does not allow for gender and race or color-differentiated macroeconomic analysis, although researches show that there are important discrepancies when these categories are included in the income and employment analysis.[4] In addition, GDP also does not include the value of non-market output generated by households to reproduce life, ensure better quality of life, and create the possibility for family members to have paid work. One way to overcome this shortcoming, advocated by the United Nations, is to incorporate a Household Satellite Account into National Accounts.[5] The incorporation of HSA data into SNA results in more reliable and complete macroeconomic statistics, providing public policies decisions more appropriate to the economic reality of the country.[6] According to Van de Ven & Zwijnenburg (2016, p. 9), the satellite account allows, through the addition of extensions

[4] See also: Melo, Considera & Sabbato (2016); Morandi, Melo, Dweck (2018); Jesus (2018).

[5] The Beijing Platform for Action (UN, 1995).

[6] *"Broaden income measures to non-market activities … for many of the services people received from other family members in the past are now purchased on the market. This shift translates into a rise in income as measured in the national accounts and may give a false impression of a change in living standards, while it merely reflects a shift from non-market to market provision of services. Many services that households produce for themselves are not recognized in official income and production measures, yet they constitute an important aspect of economic activity" (Stiglitz, Sen and Fitoussi (2009), Joseph E. Stiglitz, Amartya Sen and Jean-Paul Fitoussi, "Report by the Commission on the Measurement of Economic Performance and Social Progress", Paris, 2010, op cit* Van de Ven & Zwijnenburg, 2016, p. 4).

and breakdowns in the framework of national accounts, the "monitoring [of] the developments and the relative importance of household non-market activities […] The most obvious extension relates to adding data on time spent on various household activities".

Satellite Accounts are an important analytical instrument because they are "an extension of the National System Accounts [and] […] they were created to expand the analytical analysis of the National Accounts for different areas" (IBGE, 2009, p. 5). Satellite Accounts allow the analysis of specific sectors, providing data that is statistically consistent with the National Accounts, expanding the detail and scope of the sectors under analysis.

In the SNA, household production of services consumed by the family is called *unpaid work*. It basically consists of domestic tasks and caring of people, which includes tasks, such as preparing food; washing the dishes; cleaning and maintenance of the house; washing clothes and ironing; gardening; subsistence activities such as fetching water or firewood; shopping; install and repair home or appliances; caring for young children, elderly, sick or disabled family members; and/or caring of domestic animals. In addition to these activities, voluntary and community work are also called unpaid work, such as informal help to others community members.

On the one hand, unpaid work is essential to guarantee family well-being and to ensure the availability of its members for paid work outside the home. People who have a paid work need someone to do housework properly and take care of children, the elderly or the sick at home. On the other hand, household chores tasks represent a huge burden to those who do them. As statistics show, women are primarily responsible for unpaid work and are less frequent in the paid labor market (Troncoso, 2012). Female employees earn on average 30% less than men, even when they are in similar jobs and have similar skills, they are the majority in informal labor market, which has precarious working conditions and they are more exposed to physical and sexual harassment. Income and working conditions tend to be even worth for poor women and/or immigrant, also exposed to racial, ethnic and/or marital status discrimination. (Biyani, 2017; Velazco & Velazco, 2016; Melo & Thomé, 2018, ch. 6)

Governments are responsible for promoting the reduction of inequalities, including gender inequality, and must guarantee women's rights. For this, it is essential to update and modernize the laws, following the guidelines agreed by the international conventions. However, promoting gender equality requires more than just good laws. In this regard, the government's definition of economic objectives and public policies plays an important role, as it can guarantee the provision of sufficient and quality public services, which is important to promote the reduction of inequalities. Good examples of such public policies is the provision of drinking water to all residential units and the provision of more and better public child care facilities. Mainly in poorer regions, the access to treated water can represents a good reduction of time spent by women and children fetching water, and the existence of public child care facilities allows women the right and conditions to participate in the paid labor market on more equal terms with men. (Jain-Chandra *et al.*, 2018; Vandelac, 1994)

Public policies guidelines define the distribution of the state budget and the allocation of tax revenue, structuring directives more or less committed to the reduction of inequalities, i. e., policies with greater or lesser socioeconomic bias. Moreover, it is necessary to make clear that these government decisions are made based on official macroeconomic statistics, which do not include data on the value of unpaid work or the

time spend on it. Consequently, we can conclude that these statistics and the policies decisions are biased.

That is to say, SNA aggregated statistics, which do not include the value of unpaid work production, bring distortions to the macroeconomic analysis.[7] The National Accounts, structured as they are, show only the evolution of the market productive capacity of the economy, neglecting or assuming zero value for all the contribution of unpaid activities.[8] However, it is important to point out that, if these activities wore not carried out, the market production would not be possible, at least not at the same way they are done, nor would be the well-being the same. Activities classified as unpaid work enable the generation of wealth through paid work activities. There is an amount of wealth generated that is invisible to the SNA, but we can say that without its production, human life would be more precarious and its reproduction would be compromised. Because household chores are socially recognized as an obligation of women, there are twice as many women as men involved in these tasks and the number of hours they devote to these activities is 2.5 times than men. (European Commission, 2019; Biroli, 2017; Velazco & Velazco, 2016; Melo, Considera & Sabbato, 2016; Luna, 2010)

One thing that should be highlighted is that the wage gap between women and men is age sensitive. According to statistics, at the beginning of their career, men and women have similar yields, probably because they both at the beginning of their professional careers. The yield gap between men and women widens between the age of 20 and 45, which coincide with the woman's fertile age. In this age group, women, compared to men, lose income and opportunities to gain new positions in the workplace. (European Comission, 2019; Global gender gap report, 2017; United Nations, 2016; Blau & Kahn, 2016; Hirway, 2015) This correlation is true even for the scientific career. Data from CNPq productivity scholarship show that the highest frequency of men is in the youngest group up to age 50, while women, on the other hand, are more frequent after this age. This is probably because, after age of 40-45, women are less burdened with pregnancy or caring for children. (Melo & Braga, 2018, p. 152) There is a close relationship between reproductive work, unpaid work, and more or less successful job and career opportunities. Clearly, valuing and recognizing unpaid work through statistics on time spent on care and reproductive work is key to reducing inequality and promoting more gender justice in the paid labor market. (Jain-Chandra *et al.*, 2018) The first step towards reducing gender inequality in the labor market is to recognize the social importance of the unpaid work and then to offer more and better public services, such as more and better day nurseries for children; care and assistance services for the elderly and/or sick people; plus full-time schools, especially for young children. It is up to the government to draft laws and public policies to reduce gender inequality, and to the economic theory, in its theoretical development, uncover and explains their origins. (Melo & Serrano, 1997) Therefore, the proposal to structure an indicator of unpaid work in Brazil is up to date and is a requirement of society.

Both women and men carry out indispensable activities for human life, such as domestic and care tasks (children, elderly or the sick). This production of goods and services can be – and must be – measured in monetary values and recognized by society as part of its wealth creation. For Brazil, preliminary statistics estimate that unpaid work corresponds

[7] GDP growth is overestimated at times when the labor market increases, usually substituting unpaid work (Van de Ven & Zwijnenburg, 2016, p. 4; Juster, 1973, p. 32).

[8] "[…] the accounts essentially specify that only the application of human skills to activities that result in money earnings are to be counted as output". (Juster, 1973, p. 57)

to about 11% of GDP for the years 2001 to 2011 (Melo, Considera & Sabbato, 2016; Melo & Thomé, 2018) and international researches estimate unpaid work as 13% of GDP. This means that countries' GDP would be in average 13% higher if we included the products and services that family members produce for each other.[9]

Despite its importance, as some preliminary statistics show, the burden of unpaid work has not brought about changes in the sexual division of labor, either in Brazil or in the world. However, the responsibility for unpaid work increases the burden on people who need to reconcile paid work and household chores, which are mostly women. And undoubtedly, this problem is more significant for women workers who have young children, elderly and / or sick people in their families. (Soares, 2016; CEPAL, 2016)

The IBGE released 2016 data from Continuous National Household Sample Survey (PNADC)[10], which investigates, in addition to some questions about household tasks, information related to the care of people. The survey introduced changes to the old Annual PNAD base questionnaire and included questions about: i) activities, such as helping someone to eat, dressing, combing; giving medicine, bathing; putting to sleep; assisting in school activities; assisting in reading; playing, monitoring or keeping company at home; transporting to school, to the doctor or for medical exams; take for outdoor activities (in the park or plaza), for social, cultural, sporting, or religious activities; or any other care tasks; and ii) household chores; food (prepare/serve); washing up, doing the laundry, cleaning the house; minor home repairs, or garage/backyard/garden repairs; household organization (such as paying bills, hiring services, guiding employees, shopping/searching for household goods; taking care of pets. (IBGE, PNADC, 2017) The results, published in 2018, showed that despite the increase in the number of men reporting that they spend time doing some of these activities, the total time spent by men in these activities did not increased much over the time of the survey and the difference between men and women has not narrowed. Data show that, in 2015, 91% of women aged 16 and over performed household chores, while only 53% of men, consistent with the evidence that household chores are primarily women's responsibility. (Melo & Thomé, 2018, ch. 6)

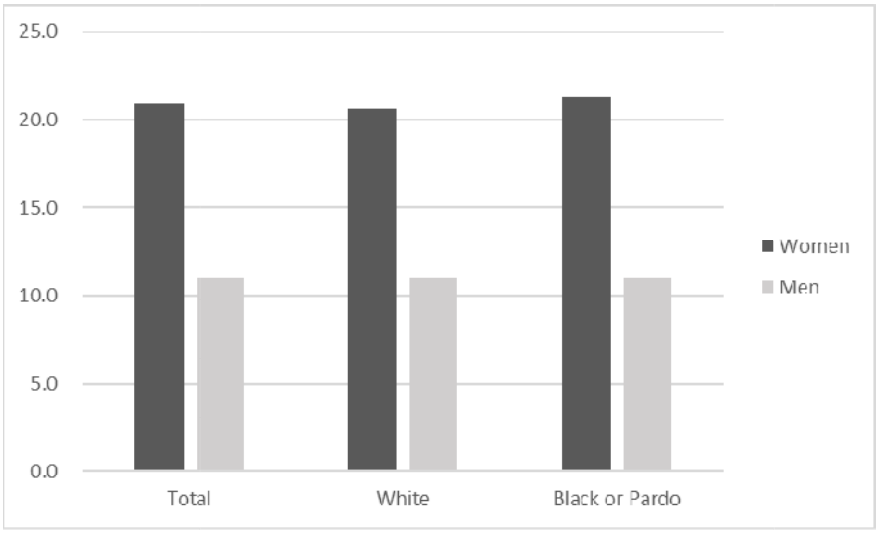
PNADC (2017) results show that among people aged 14 and over, 91.7% of women and 76.4% of men perform household chores. Participation in these activities is greater for women and men aged 25 to 49 (IBGE, 2018). The results also show a significant increase in the percentage of men who reported doing household chores against the slight increase in female statements (figures 1 and 2). However, the hours that men reported spending on these activities did not grow in the same way, remaining close to the 10 hours per week observed in previous surveys.

[9] In OCDE countries, "the addition of other non-market services would lead to a change of GDP in the range of 15 to 60%, depending on the country and the methodology applied" (Van de Ven & Zwijnenburg, 2016, p. 6). See also Biyani (2017) and Velazco & Velazco (2016).

[10] The Pesquisa Nacional por Amostra de Domicílios Contínua PNADC is published by IBGE.

Figure 1

Brazil - Time devoted to household chores and care by gender and color, 2016

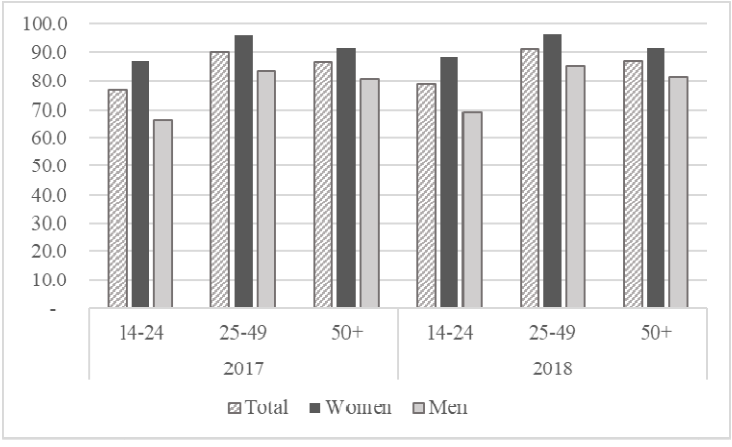


Source: IBGE/PNADC (2018)

Regarding care tasks, 37% of women reported caring for family members or non-residents relatives, compared to only 25.6% of men. In the 14 to 24 age group, this difference widens, with 33.6% of women spending time on some care tasks, compared to only 18.5% of men. Survey results show that the age group from 0 to 14 years is the one that receives most care attention. Of the group analyzed, black (and *parda*) women provided more care services to others than white women, and these provided more care services than men (white, black or *pardo*). Among men, the issue of color / race is less significant (figures 1 and 2). (IBGE, 2017, p. 6; IBGE, 2018, n. 38)

Figure 2

Brazil - Percentage of household chores performed, by sex and age group, 2016



Source: IBGE/PNADC (2018)

Household Satellite Account: Methodological Proposals

In 1995, the Forth UN World Conference on Women in Beijing approved an indicative for countries to set up an SNA-compliant Household Satellite Account. The objective was to give visibility to unpaid work, showing its importance in generating national wealth and highlighting its connections with the rest of social and economic activities, enabling more effective and fair public policies. The creation of a Satellite Account to measure family production, called unpaid work, complements the SNA methodology and unveils poorly studied or even ignored economic processes. In addition, it allows others reports and hypothesis, exposing the different relationships between subjects and activities, paving the way for a more comprehensive Social Accounting, a full Accounting.

At SNA family is defined as a "group of people living in the same house, sharing food and/or housing expenses", and may consist of "one or more people". (IBGE, 2015, p. 2) The SNA calculates the contribution of households relative to their activities that generate market output or some kind of remuneration. Households are accounting units that move resources from various sources: i) receive wage or other income for working in private or public sector companies; ii) receive remuneration for activities when they are entrepreneurs, self-employed, or non-constituted entrepreneurs, farmers (family farming), or receive rent income or have imputed rent income (when they own a house); and iii) pay income by employing paid labor to perform domestic work.

Families, in addition to assuming the role of consumer, also function as companies whose goods and services are produced and consumed by their own members and / or other families to meet their basic needs, to ensure their reproduction and survival. Household activities for the benefit of family members do not involve monetary intermediation, but their availability directly affects the welfare level and ensures the survival of family members. As highlighted by Durán (2016), time, "the resource most used by family members for their economic activities, is not paid or monetized directly, which leaves it out of conventional accounting" (p. 3). Unpaid work tasks performed on behalf of families define the work functions within the family and the patterns of time distribution of their individuals between paid and unpaid work. Moreover, this time planning is the basis for defining unpaid work within families as a productive activity. (Inegi, 2013, p. 47)

The usual claim not to include non-market family production in the SNA is that: i) this production is limited to households and has limited impact on the rest of the economy; ii) the value of this production is difficult to estimate because it is not intended for the market; and iii) imputed values have a different economic importance in relation to monetary values. Indeed, according to Durán (2006), the difficult in assigning value to these activities is because there is little interest in including them in official statistics.[11] This is a reflection of macroeconomic theory, which does not include household output as part of total social output in defining macroeconomic aggregates.[12] Since macroeconomic theory literature is the basis of public policies analyses and macroeconomic guidelines, these decisions are made ignoring the importance and relevance of family production, making public policies decisions at least short-sighted and biased.[13] Estimating the monetary value of unpaid work for families, friends, and neighbors makes it clear that

[11] See also Waring (1988).

[12] One way to include is considering "households as small firms producing a flow of utilities or satisfactions, with a production function whose arguments are the time of family members allocated to intrahousehold activities" (Juster, 1973, p. 35).

[13] On the invisibility of women's work and economic theory, see Melo & Serrano (1997).

market transactions are only part of the goods and services needed to develop human capabilities and define living standards and well-being.[14]

On the other hand, measuring unpaid work is not an alternative to the GDP measure, but is complementary to this. In order to attribute value to non-market labor, it must be assumed that there is some substitution between paid and unpaid labor, which, although limited, is, according to Folbre (2015), quite extensive. In order to increase time spent on paid work, one needs to reduce the time devoted to activities that cover the needs of the family. If it is not possible to perform care for the family because of paid work, someone should perform these tasks to maintain the welfare of the family.

The GDP without the value of unpaid work is an incomplete measure of human welfare because it represents only the monetary value of goods and services produced and traded. Since GDP is the benchmark to weighing the relationship between inputs and outputs (resource use and wealth production), while neglecting the contribution of some inputs, such as unpaid labor, in fact the GDP measure overstates the efficiency and importance of the products generated by market production.

There is some methodologies to the estimation of unpaid work value. The most used one measure unpaid work as the market value of the salary corresponding to the service performed, multiplied by the number of hours spent in similar service within families. A second way uses de opportunity cost, which is uses, the corresponding wage she/he would receive if she/he were not involved in unpaid work.[15] This is also used an as a rough measure of how much a person would accept to pay a substitute for unpaid work. However, this proposed measure is not compatible with the SNA, because the imputed wage may not be consistently with the market value. A third method uses the market value of a similar product, such as the price of a meal and the cost to make it at home (the cost of ingredients). The difference between these two values represents the contribution of unpaid work performed by families.[16]

The researches performed at different countries show that women are the primary responsible of unpaid work, spending more hours in these activities than men do. Importantly, unpaid work cannot be random, performed or not according to the mood or desire of family members. It is a routine work, meticulously structured, necessary to meet daily needs and ensure the well-being of families, especially children, the elderly, and those suffering from illness or disability. They are not merely secondary activities and require time.

Clearly, care provided by family member replaces public spending and investment for social welfare. In this sense, the cutbacks in public expenditures are unfair because they represent a greater reduction in the welfare of poorer families, who do not have enough income to pay privately for these services. Moreover, as women are the primary responsible for care and household chores, cuts in public spending affect women more, compromising their ability to engage in the profession and compete on equal terms with

[14] According to Van de Ven & Zwijnenburg (2016, p. 24), "looking at the results of some provisional calculations, it shows that extending the production boundary with household non-market services has a significant impact on the traditional macro-economic aggregates. Here, it should be emphasized that the inclusion of household non-market services, in a consistent set of national accounts, does not only have an impact on GDP, but also on other macro-economic aggregates such as household disposable income, final consumption and investments".

[15] See also Van de Ven & Zwijnenburg (2016, p. 7).

[16] There may also be unmeasurable inputs and products that go beyond the meal itself, such as the greater nutritional value of the home-cooked meal and the possibility of greater social interaction among family members. (Folbre, 2015)

men in the labor market. This is even more important for women living in not developed countries, where they spend more time in these activities and have less access to household appliances.[17] In less wealthy countries, investments in infrastructure (electricity, gas, running water) represent major productivity gains in care and household chores, with a significant reduction in time spent on these activities. More recently, according to Werner *et al.* (2007), richer countries have experienced larger deficits in care delivery due to increased female participation in the paid labor market and higher average age of population. The answer has been to employ immigrant women, usually from poorer countries. In many cases, women migrate without being able to bring their children, creating a larger care deficit in the poorest countries. In many cases, women migrate without being able to bring their children, creating a larger care deficit in the poorest countries, increasing welfare inequality between these two blocks of countries. Time use surveys are essential for estimating the market value of unpaid labor. They should be carefully defined and related to the activities that provide for the well-being of family members. It is necessary the creation of a specific Satellite Account to include these values in the SNA, resulting in a GDP that embodies the value and wealthy created by unpaid work. (Aguiar, 2010; Bandeira, 2010; Fontoura *et al.*, 2010)

According to Folbre (2015), there is no basis for the criticism that including the value of unpaid labor in SNA through Satellite Accounts would cause distortions. As it is structured, the SNA already creates significant distortions because it assigns zero value to breastfeeding and its benefits to the baby, but includes spending on poorer processed foods used in place of breastfeeding. On the other hand, more recently imputed values have been incorporated into the SNA for some activities, which however create important distortions. Some examples are the values imputed to illegal drug and prostitution transactions, with unreliable data; or the new procedures for assessing the contribution of the financial sector using the interest rate. In this case, it is assumed that the higher the interest rates, the better or higher the services generated by the sector, ignoring the fact that higher interest rates also imply greater risks of default and economic crisis. As Folbre (2015, p. 8) states, “compared to these recent revisions, the measurement of unpaid work is based on especially sound methodological foundations”.

Estimation of Unpaid Work for Brazil: A Methodological Discussion

The time use surveys are the main instrument for measuring unpaid work in households, allowing the estimation of the replacement costs of these activities at their market value. These surveys use questions to estimate time spent on specific activities, such as preparing food, cleaning and maintaining homes, and caring for children (table 1). Folbre (2015) warns that surveys should also include time spent on care supervision (supervisory or on-call responsibilities). Second, it is necessary to do the survey with all family members, not just one randomly chosen adult. In this case, the result allows direct measurement of the value of unpaid work by household type, which is an important information for defining the living standards of the families. And, third, time-use surveys should include questions about the characteristics of consumer spending, the household appliances available to help with tasks, or the health conditions of its members. These aspects are relevant because inequality may have increased more than the data show.

[17] As these appliances are generally not produced locally, they cost much more outside developed countries.

Increasing women's participation in the labor market may have led to a decline in the quality of care for children and others family members, especially for low-income families who cannot afford adequate replacement services. (Aguiar, 2010)

Table 1
Household activities (included and excluded) in SNA

	SNA	Satellite Accounts	Activities outside Satellite Accounts
Families	❖ Production of goods and services for sale ✓ Production for own final use ✓ Production and storage of agricultural products ✓ Production of other goods for own use ✓ Production of imputed housing services ✓ Production of goods in voluntary activities ✓ Paid domestic services	❖ Maintenance of residence ✓ Food preparation ✓ Shopping ✓ Repair services ✓ Financial services ✓ Use of transport ❖ Care of people ✓ Children ✓ Elderly people ✓ Others ✓ Use of transport ❖ Personal development ✓ Education and training ❖ Volunteer activities	❖ Personal care (own) ✓ Sleep ✓ Eat ✓ Personal cleanliness ✓ Health care ✓ Transport related ❖ Leisure and entertainment ✓ Media ✓ Games ✓ Social relations ✓ Sports ✓ Tours ✓ Shows ✓ Transport related
Enterprises	❖ Production of goods and services for sale ❖ Production for own final use		
Public Adm. and nonprofit societies	❖ Production of individual and collective services not for sale ❖ Production of goods and services for sale		
Conventional GDP			
Amplified GDP			

Source: Durán (2006); CAUTAL (2016)

In 1993, social movements succeeded obtained a revision of the SNA by the United Nations Statistical Commission to incorporate household production into the National Accounts, widening the boundaries of production considered in macroeconomic aggregates. Methodological development culminated in the publication of "Household

Production and Consumption Proposal for a Methodology of Household Satellite Accounts" (European Comission, 2003).

An activity is defined as work (*versus* leisure) if a person can be paid to perform it (Werner *et al.*, 2007) and is considered productive if it generates goods or services that can be exchanged/sold in the market. The key criterion for defining an activity as productive is how much it would cost to replace one person's dedication with another who charges for it. Household production includes unpaid activities performed for the benefit of the family or others that can be replaced by goods and services purchased in the market, such as housing, food, washing and ironing, and care.

In defining activities that assemble unpaid work, the United Nations has also included volunteer work performed for non-family members or non-profit societies. As defined by European Comission (2003), non-profit entities are private organizations that do not distribute surplus to the controllers or managers, are self-managed and guarantee freedom of adhesion and contribution.

Each country specify which activities performed by families are fundamental or vital for their life and maintenance. Traditionally, the six main activities considered are the provision of: housing; meals and snacks; clothing and clothing care; transportation of children, the elderly, or for shopping; house management and administration; children and/or elderly care; and volunteer work (table 2). Specific and well-designed surveys are very important because they will define the weights, such as hours worked and price per hour, to be used to assign value to the activities.

Table 2: Unpaid work surveys - Categories to consider

Unpaid work activities	Valuation – Alternative Models
❖ **Household chores (at family, neighbors, or relatives' residence)** ✓ Food/meal preparation ✓ Wash dishes ✓ Washing and ironing, and cleaning shoes ✓ Cleaning, maintenance and minor repair of durable or non-durable goods ✓ Purchasing/procurement and administration of services ✓ Bill payment and other transactions ❖ **House maintenance** ✓ Cleaning, embellishment, maintenance and minor repair ✓ Garden and kitchen garden grooming activities ✓ House management (including financial) ❖ **Care for people (children, elderly or infirm)** ✓ Care, training and children-rearing ✓ Health care ✓ Care provided to other family members	❖ **Output model (product)** ✓ Estimates the volume and value of the product or service by the price of the corresponding good/service purchased in the market, e. g. price of a similar meal in a restaurant ❖ **Input model** ✓ Time use surveys: estimates the number of hours spent on unpaid activity times the price of paid work hour for similar activity ✓ Value of work: ✓ Opportunity cost: time spent in unpaid activity times the hourly price of the activity in the paid labor market ✓ Replacement cost: how much are you willing to pay someone to do the activity for you Others social indicators to consider:

✓ Other care ✓ Travel related to these care ❖ **Civil or organizational activities** ✓ Volunteer work at social events or community bodies ✓ Formal volunteer work (fundraising) in an organization ✓ Informal volunteer work to other residences or relatives	✓ Sex ✓ Age ✓ Race ✓ Place of birth ✓ Marital status ✓ Presence of children or elderly in the family

Source: Luna (2010); Werner *et al.* (2007); CEPAL (2016); CAUTAL (2016)

Table 3: Research Structure: Activity List

Provision of unpaid domestic services to the family	**Time**
✓ Cooking and preparing food ✓ Serve the food and clean the table ✓ Wash, dry and store dishes ✓ Clean or wash appliances ✓ Clean or wash bathroom ✓ Do laundry and ironing for family members ✓ Folding and storing clothes for family members ✓ Clean or brush shoes ✓ Make a bed and tidy up the bedroom ✓ House cleaning ✓ Take out the trash ✓ Wash family car or other transportation ✓ Repair car or other transportation ✓ Minor electrical repairs, plumbing or pipeline ✓ Minor repairs to appliance or furniture ✓ Make furniture, ornaments, or crafts for the home ✓ Do family accounting ✓ Make payment for services ✓ Pay credit card, Family dues and debts, make deposits ✓ Supervise repairs or take car, appliance, furniture etc. for repair ✓ Take care of pets ✓ Do daily grocery shopping ✓ Buy clothes and shoes for family members ✓ Buying household appliances and furniture ✓ Take care of your own or family business ✓ Bring or pick up clothes to fix or clean	Number of weekly hours spent on each activity (hours per week)
Unpaid domestic care services for Family members	
✓ Help or take somewhere or pick up a family member with physical or mental difficulties ✓ Bathing or dressing a family member with physical or mental difficulties ✓ Help a family member with physical or mental difficulties to go to the toilet or change diapers	

✓ Caring for temporarily ill a family member ✓ Accompany family member anywhere ✓ Help children to feed ✓ Bathe and dress a child ✓ Play or talk with a child ✓ Help a child with homework or be available to ✓ Take a family member with physical or mental difficulties to a medical visit, therapy, or other activity or business ✓ Take or pick up family member somewhere ✓ Bring food to the workplace or school to a Family member	hours per week
Provision of unpaid services to the community or other families	
✓ Helping other families or relatives ✓ Help get services or participate in community improvement ✓ Apply to a community service ✓ Participate in civic, professional or voluntary policy activities	hours per week

Source: Luna (2010, p. 51); Werner *et al.* (2007); CEPAL (2016); CAUTAL (2016)

According to Gee (2015), if the survey is well structured and has an adequate definition questions, its results are reliable and compatible over time and across countries. Experience with this type of research shows that it must, first, incorporate the possibility of more than one task being performed at the same time, such as preparing food and caring for children. This is important not to underestimate unpaid labor production. Second, a survey form with a list of activities considered unpaid work has more answers than those that require the activity to be written by the researched person (table 3). On the other hand, although the list makes it easier to answer, the description of tasks is simplified and the categories are more subjective, which may cause questions to the respondent. And, third, the valuation of activities uses a market hourly price of labor, which refers to the hourly income of worker, but does not include others costs related to hiring labor or market service. (Luna, 2010)

As the objective is an estimate to be used in the macroeconomic analysis, the incorporated activities should be treated similarly to activities already included in the SNA. One way is to evaluate unpaid activity at the market cost of a similar one. In general, official surveys data on the hourly price of labor in the market are not so specific as the list of unpaid activities. Therefore, an hourly price of paid work should be used for a broader set of unpaid work activities. The value of unpaid work is obtained by multiplying the hourly price of paid work by the number of hours per week devoted to unpaid activities. The output value of each unpaid activity results in a Satellite Account and the sum of these values corresponds to the aggregate output or GDP of unpaid labor. The amount of unpaid work is calculated as:

$$VUW_t = ACW_t * \frac{AHW}{day} * 365 * Pop_{15+} \quad (1)$$

where *VUW* is the current value of unpaid work; *ACW* is the average cost per hour of work (including taxes)[18]; *AHW* is the average hours worked[19]; *365* days per year; and *Pop* is the population aged 15 or more[20], calculated for year *t*.

The value of the service of capital goods is estimated as:

$$SDG_t = PDG_t * NIDG_t * (RR_t + D_t) \quad (2)$$

where, *SDG* the service value of durable consumer goods[21]; *PDG* price index for durable consumer goods; *NIDG* the net inventory of durable consumer goods; and *RR* and *D* the rates of return and depreciation, respectively. Household non-market output, *HGDP*, is the sum of these two values:

$$HGDP_t = VUW_t + SDG_t \quad (3)$$

This calculation form allows a well-defined picture of the representativeness of unpaid work in terms of wealth generation for society as a proportion of GDP. Including the value of unpaid labor in GDP is consistent with the SNA's objective of measuring all output of goods and services available in the economy. GDP corresponds to the economy's ability to generate wealth and create welfare conditions, regardless of whether these goods and services have been marketed or are for the family or community's own consumption. Even when not traded, goods and services meet requirements and need to continue to be produced. They should therefore be part of official macroeconomic statistics and analyzes of public policy guidelines and objectives.

In addition, research should consider whether the family has capital goods that facilitate unpaid work, such as a bicycle or car for shopping; or washing machine. In this case, the proposed methodology is to assign a value to the service provided by the capital good, corresponding to the cost of renting the appliance or purchasing the corresponding service. This makes it possible to differentiate households according to greater or lesser access to household appliances and capital goods that help in the production of goods and services for the family. The estimation and incorporation of the unpaid labor value into the National Accounts, through the Satellite Accounts, does not cause loss or distortion in GDP measurements and, on the other hand, ensures the correct assessment of the economy's capacity to generate wealth. It cannot be disregarded that the people who are working in the market depend on some kind of support to be absent from their home during their working hours. This silent work, done mainly by women, is crucial for the economy. It can only be replaced, never eliminated. Moreover, when unpaid work is replaced by paid domestic private service, it creates distortions, because only families with sufficient income can pay for such services. This is only socially fair when unpaid work is replaced by public services that can reach all families in need of these services

[18] The reference value of the wage used in the equations to estimate the value of household production includes taxes. This is because the final value of household production will be accumulate to the value of GDP (through the satellite account). It represents the economy's ability to generate income. In this case within families.

[19] This data is extracted from time use surveys. For Brazil, the data available are from the PNADC, which contains some information about the time spent on household chores (as a whole) and care activities (as a whole). PNADC is an annual household sample survey and includes questions about time spend on household activities since 2012.

[20] Population data generally used are those referring to the economically active population (PEA). In Brazil, it is published by the Brazilian Institute of Geography and Statistics (IBGE).

[21] The service value of consumer durable is calculated from the capital stock of consumer durables. These data are not available in Brazil.

(childcare; ancillary recovery/support centers for patients and the elderly; water and sewage treatment; proper waste collection; etc.). The true extent of the family need for these policies can only be known if unpaid work is adequately quantified, when it is no longer an invisible statistic for society and policymakers.

In Brazil, a survey on the use of time has not yet been carried out. However, there are IBGE surveys that provide some data that can be used to have a first estimate of the value of non-market domestic production. PNAD, a national household sampling survey, since 2012 included some questions about time spent on household chores (as a whole) and care. This survey can provide a first approximation of data on the number of hours per week spent on these activities by women and men. IBGE has some surveys in the labor market that provide data on occupancy rates, labor income, position held, sector of activity, type of activity, etc. The value of unpaid work per hour can be extracted from these surveys using the average yield from market activities corresponding to household activities. In the past, the domestic assistant's wage had been used as a proxy to value domestic production, because there was not enough data to take any other approach. The result was that non-market domestic production accounted for 13% of GDP (Melo, Considera & Sabatto, 2016). New research has shown that the domestic assistant's wage (minimum wage) is too low to be the benchmark for valuing household production. Using different values of market wages for different household activities, the result is that the value of household production can vary from 13 to 62% of GDP, depending on the country and the methodology used (Van de Ven & Zwijnenburg, 2016).

Van de Ven & Zwijnenburg (2016, p. 19) use three different methods to value labor costs in producing non-market household services: minimum wage costs, replacement costs, and opportunity costs. They conclude that "taking the replacement cost method as a point of reference, the imputed monetary value ranges from 13.3% of GDP for the USA to 41.9% for Spain. It doesn't come as a surprise that the numbers for the opportunity cost method are significantly higher, ranging from 42.5% for Estonia to 62.0% for the United Kingdom. On the other hand, the results using the minimum wage cost method are the lowest, ranging from 12.9% for the USA to 22.4% in New Zealand. It has to be noted that the results are very sensitive to the use of the various wage rates".

Even without a time use survey, it is possible to estimate a value for non-market household production in Brazil. It is important to highlight the importance of including the value of this production in the measurement of GDP. As discussed by Van de Ven & Zwijnenburg (2016), when analyzing the time spent on household and care tasks, the availability or not of domestic appliances and transport vehicles (capital stock of consumer durables) should be considered, which can really mean a huge reduction in the time used in these tasks by families that have more of these items.

The estimated value for unpaid work depends on the method used to calculate the value of the hours of unpaid work and the estimated number of hours spent on these activities. Therefore, there is an urgent need to implement time use survey in Brazil and the satellite account of unpaid work. This is important in the sense of macroeconomic analysis and because this statistic will help public policies to promote more efficient policies to reduce poverty and inequalities. Understanding the economic importance of unpaid work, highlights the importance of the people who do this job and the heavy burden this represents for them. More and better public services, such as kindergartens and daycare centers for children, nursing and retirement homes for elderly, a more efficient public transport system, access to treated water, basic indoor plumbing and electricity, are key to enabling women, especially in low-income families, be available in good condition to

compete in the labor market. More and better public services are important not only to make women less economically dependent. It is a good way to allow low-income families to increase their income. Without these services, it is a way to perpetuate poverty.

Extending the concept of GDP, with the inclusion of the value of household production in the calculation of national accounts, has an important impact on the values of GDP, income, consumption and investment, reflected in the estimate of the capital stock of the economy.[22] It is important to emphasize that, when all countries publish the extended GDP, the country's position in a world classification will not undergo significant changes, depending on the methodology used to estimate the household production. The decision on which methodology to use must be a guideline indicated by the UN, as well as the methodology to calculate the values of the national accounts. The logical conclusion is that it has a direct impact on policy decisions, which use macroeconomic analysis to decide why, which, how and how much to apply tax money; or what kind of policies are needed and where to reduce poverty, gender or color / race inequalities.

In addition, some economic researchers still have doubts about the importance of including a household satellite account into national accounts and justify it by the potential disruption that could cause in macroeconomic series. According to Van de Ven & Zwijnenburg (2016, p. 24), "it is not considered opportune to extend the production boundary of the current SNA with the production of household non-market services". They substantiate their position by saying that "it clearly moves the system away from a monetary notion of the economy". For the authors, the purpose of national accounts is to describe monetary economic activities and not to measure welfare. This conclusion is nothing but a misconception about the use of national accounts data, which are the basis of macroeconomic analysis over the years and in the comparison between countries. There is a consensus that the methodology available for calculating the value of unpaid work is feasible and the incorporation of a satellite account does not harm national accounts (Van de Ven & Zwijnenburg, 2016; United Nation, 2015; Durán, 2006; European Commission, 2003). There is also a consensus that national accounts data without the value of unpaid work distorts reality and contributes to perpetuate inequalities, in part because many degrees of inequality are invisible (Waring, 1988; Folbre, 2015; Hirway, 2015; D'Alessandro, 2016).

Final considerations

This paper expresses concern about inequality in relation to the sexual division of unpaid work and its consequences on the participation of women in the paid labor market, especially women from poor families. The lack of data on unpaid work statistics means that public policy decisions to reduce inequalities (gender, race /color, etc.) are neither accurate nor complete. Decisions are made based on statistics with biased or incomplete data, such as the macroeconomic variables resulting from GDP statistics that do not incorporate unpaid work production.

[22] According to Van de Ven & Zwijnenburg (2016, p. 15), "not only GDP is affected by the extension of the production boundary with household non-market services, but also disposable income, final consumption and investments […] Looking at a micro-level, extending the production boundary, may actually lead to a quite counterintuitive increase of income, when someone, for example, gets unemployed, receives say 70% of his previous income as a social benefit, and starts doing additional work at home. Also at a macro-level, something similar could happen, for example in the aftermath of an economic crisis with quickly increasing rates of unemployment"

As GDP follows and evolves with economic theory, it can be argued that it does not incorporate the value of household non-market production because economic theory does not recognize these activities as value-generating. However, other activities performed by households are incorporated into the GDP, such as traded goods/services produced by households, or imputed rental income as value of the home service. It is essential to include in GDP accounting all the wealth-generating capacity in goods and services that society is able to produce and make available. It is important to recognize that more detailed income and employment statistics, by gender, color / race and/or geographical region, allow for more accurate analyzes of income distribution and unemployment rate and results in public policies more consistent with the economic reality of each country.

The provision of free or affordable public services can only be properly conducted by recognizing that household chores and care of people are essential for the population's quality of life.According to Peskin & Peskin (1978, p. 24), the inclusion of non-market activities in income accounting "not only improves the coverage and accuracy of the national accounts but permits an understanding of economic forces and governmental policy options that would not otherwise be possible". The aim of this study is to present a proposal, still embryonic, for the formulation of statistics on unpaid work for Brazil, through the creation of a Household Satellite Account, including household and care tasks. Time use surveys conducted in some Latin American countries show that the data allow us to analyze the effects of time spent on unpaid domestic activities in the labor market, both in relation to career development and wage evolution over time.

An important part of the difference in wage between men and women can be explained by the time spent, especially by women, for activities related to life reproduction, home maintenance and care tasks. Finally, the purpose of this study is to contribute to this discussion in Brazil and to present a proposal to measure the invisible work that women do to society. Although the UN recommended in 1995 the need for states to formulate statistics to account for these forms of work, Brazil is still in the process of formulating a household satellite account. From the results of surveys already conducted in other countries, it is evident that the availability of statistical data on the use of time (of men and women) and its impact on the labor market is essential to better understanding inequalities. In addition, they are especially important for the design of public policies to combat gender discrimination.

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