SOCIEDAD & ECONOMÍA
N° 57
2026

Making Family Caregiving Work Pay: A Reassessment of Bargaining Power Within the Household

Haciendo que el trabajo de cuidado familiar pague: una reevaluación del poder de negociación dentro del hogar

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Received: 20-03-2025
Accepted: 16-10-2025
Published: 30-04-2026

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Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

Abstract

Introduction

Research shows that bargaining power within the household influences consumption, fertility, and time use. Given gender inequalities in decision-making and the undervaluation of unpaid care work, this article asks: How would this power shift if such work were financially recognized?

Objective

To reassess bargaining power within the household by valuing unpaid care work in Colombia.

Methodology

We focus on income shares within the household as the individual power measure. We value unpaid care work using two alternatives: opportunity and replacement costs and econometrically simulate the shift of power using a representative time-use survey for Colombia.

Results

We find that women's power within the household in the baseline is on average 31.4%, lagging that of men by 18 percentage points. Considering that on average, women are responsible for 58% of the time devoted to unpaid care, if we were to remunerate those activities we would find a complete reversal of roles: women's power would be around 50% while men's would be slightly below 30%.

Conclusions

We recognise that making family caregiving work pay is close to impossible under the current social norms of modern economies, but the important gaps in income and bargaining power are worth to be studied further from a normative point of view.

Keywords:

intrahousehold bargaining; bargaining power; gender; unpaid care work; care activities; opportunity cost; replacement cost; individual relative income; working time; simulation; time-use survey; Colombia.

JEL Classification:

J16; D13; D61.

Resumen

Introducción

La literatura muestra que el poder de negociación intrahogar incide en el consumo, la fecundidad y el uso del tiempo. Ante las desigualdades de género en la toma de decisiones y la subvaloración del cuidado no remunerado, este artículo pregunta: ¿cómo cambiaría dicho poder si este trabajo fuera reconocido económicamente?

Objetivo

Medir el poder de negociación en el hogar al valorar el trabajo de cuidado no remunerado en Colombia.

Metodología

Nos centramos en la distribución de los ingresos dentro del hogar como medida de poder individual. Valoramos el trabajo de cuidado no remunerado utilizando dos métodos: los costos de oportunidad y de sustitución, y simulamos econométricamente el cambio en el poder utilizando la Encuesta Nacional del Uso del Tiempo para Colombia 2016-2017.

Resultados

Encontramos que el poder de las mujeres dentro del hogar en la línea base es 18 puntos porcentuales inferior al de los hombres (31.4% para las mujeres y 49.4% para los hombres). Dado que, en promedio, las mujeres son responsables del 58% del tiempo dedicado al cuidado no remunerado, si remuneráramos estas actividades, se produciría una reversión completa de los roles: el poder de las mujeres rondaría el 50%, mientras que el de los hombres estaría ligeramente por debajo del 30%.

Conclusiones

Aunque remunerar el cuidado familiar resulta poco viable bajo las normas sociales actuales, las brechas de ingreso y poder de negociación justifican un análisis normativo más profundo.

Palabras clave:

negociación dentro del hogar; poder de negociación; género; trabajo de cuidado no remunerado; actividades del cuidado; costo de oportunidad; costo de reemplazo; ingreso relativo individual; tiempo de trabajo; simulación; encuesta de uso del tiempo; Colombia.

Clasificación JEL:

J16; D13; D61.

1. Introduction

Despite important improvements in women's earnings and labour market outcomes in developing economies (Iregui-Bohórquez et al., 2024), there are still important gender gaps (Agénor et al., 2021; Frisancho & Von Heideken, 2022; López et al., 2021). These gaps are also present if we focus the attention on the couple's dynamics within households and could have important effects on resource allocation and decision making. Recent literature has pointed out that bargaining power of men and women leading households influences how resources are distributed within the household, including income, time, and access to goods and services (Agarwal, 1997; Anderson et al., 2018).

Another segment of the literature on gender economics has posit the important role of unpaid care work within the household (Girón, 2018; Goldin, 2021) and how gender roles have historically contributed to gender gaps in the labour market (Cortés, 2023). Considering that recent literature quantifies unpaid care activities (Dong & An, 2015) and the importance of bargaining power within the household (Phan, 2016), this paper posits the following question: how much bargaining power within the household would change if we were to value unpaid care activities? To answer it, we follow the literature that finds that bargaining power depends on income and measure heads of the household, their partners, and "other" members bargaining via their share of total household income (Molina et al., 2022; Friedberg & Webb, 2006; Pollak, 2005).

Methodologically, we focus on individual shares of total household income (i.e. the sum of labour income, non-labour income and government transfers) as the bargaining power within the household measure. We econometrically quantify the value of unpaid activities either at the market value (i.e. the costs of hiring someone) or at the opportunity cost (i.e. the foregone earnings resulting from devoting time to unpaid activities). We refer to these two alternatives as replacement and opportunity cost respectively. We simulate an intrahousehold redistribution to remunerate unpaid care and calculate new individual income and bargaining power based on data from the 2016–2017 National Time Use Survey (ENUT).

There are several important findings from our exercise. Firstly, we confirm for Colombia the double negative gap of lower earnings and higher unpaid care activities for women. Within couples, hourly earnings for women are 7.6% lower than those of men3 and men devote only 37.2% of the time women devote to care activities. Secondly, as expected, households with kids, require women to dedicate around 10 daily hours of unpaid care, the highest burden among men and women. Lastly, with our simulation exercise there is a reversal of roles in terms of bargaining power: women observed power within the household is on average 31.4% and lags that of men by 18 percentage points (pp). In the redistribution scenario, women bargaining power would be around 50% while men's power would be slightly below 30%.

The rest of the paper is divided as follows, in Section 2 we briefly introduce some definitions. In section 3 we present empirical studies on power within the household and care economy. Section 4 presents the Colombian data and the methods. Section 5 introduces the results: first it delves into the gender differences in care activities and earnings, next it focuses on replacement and opportunity costs and lastly, it analyses the simulated shifts in bargaining power within the household. Section 6 proposes a discussion of social norms and concludes.

2. Definitions

This section reviews the main concepts linking care work and intra-household bargaining power. First, it defines paid and unpaid care work, emphasizing its economic and social relevance, its feminization, and its unequal distribution by gender. Second, it discusses bargaining power within the household as a key mechanism through which resources, responsibilities, and decisions are allocated among household members.

3 This percentage is relative to men's earnings.

Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

2.1 Paid and unpaid care work

Care work includes domestic responsibilities and the direct care of vulnerable individuals, as well as indirect tasks such as cleaning, washing, and cooking. Although essential to social and economic well-being, these activities are often undervalued, precarious, and unpaid, and have fallen mainly on women, reinforcing gender inequalities (Beneria et al., 2015; Esquivel, 2011; Daly & Lewis, 2000; Gardiner, 1997). Paid care work includes sectors such as education, health care, and domestic services, which are highly feminized and marked by lower wages (Esquivel, 2011).

Globally, women in health and care sectors earn 19.2% less per hour than men, while in Latin America 91.1% of domestic workers are women; in Colombia, this share reaches 92%, and domestic workers earn 51% less than other wage earners (ILO, 2021; 2022). Women's greater participation in unpaid care also restricts their labour market opportunities and time for self-care, education, social participation, and rest (Cagatay et al., 1995). In Colombia, women spent 7 hours and 44 minutes per day on unpaid care in 2021, compared to 3 hours and 6 minutes for men, making this unequal distribution a key factor in labour inequality (Cicowiez et al., 2023).

Consequently, given the importance of unpaid care work, several studies have employed methodological strategies to value these activities. Estimates have focused on two main approaches: valuing unpaid hours using the market wage of a person who could perform that activity, also known as the replacement cost (Landefeld & McCulla, 2000; Landefeld et al., 2009; UNECE, 2017), and valuing those hours based on the income the person forgoes by devoting time to caregiving, known as the opportunity cost (UNECE, 2017; Besporstov & Sinclair, 2022; Krennmair et al., 2026).

2.2 Bargaining power within the household

Bargaining power within the household could be defined as the individual ability of negotiating resources, responsibilities, and decisions within the household. It is considered a key aspect that affects gender dynamics in households. It has been studied from various approaches to explain the capacity among spouses to influence the distribution of resources and household decisions. Initially, the unitary model was proposed, which assumes that household members share the same preferences and act collectively to maximize a common utility function (Becker, 1973; 1974). Subsequently, the collective model was introduced based on Pareto efficiency, considering external options for spouses such as employment and education, which influence bargaining power within the household (Baland & Ziparo, 2018).

Other approaches include cooperative and non-cooperative models that place greater emphasis on negotiation and agreements among household members. In the cooperative model, starting from a pooling of incomes and binding contracts, household members cooperate to the extent that they obtain greater benefits than if they did not cooperate. However, the outcomes of cooperation differ according to the bargaining power of each household member (Manser & Brown, 1980). On the other hand, the non-cooperative model considers that individuals can make separate production and consumption decisions according to an individual budget constraint, but spouses negotiate over jointly shared goods and activities, such as meals and childcare (Agarwal, 1997).

3. Empirical studies on power within the household and care economy

The empirical literature has identified various factors associated with measuring bargaining power within the household. These studies indicate that intra-household decisions depend on the distribution of power among household members, which may be determined by variables such as relative labour income (Friedberg & Webb, 2006), potential wages or wage rates (Pollak, 2005), asset ownership and property rights (Wang, 2014), level of education (Doss, 2013), labour force participation (Phan, 2016),

non-labour income, transfers, and institutional and environmental factors related to divorce and custody laws (Chiappori et al., 2002).

Wang (2014) found that, in China, the transfer of housing property rights to men increases the amount of time women spend on household chores and household consumption of goods preferred by men, such as tea. Conversely, the transfer of property rights to women leads to improvements in children's weight and a reduction in household consumption of certain goods preferred by men, such as cigarettes and alcohol. On the other hand, Pollak (2005) argues that wage rates, rather than total income, are a determining factor in bargaining power within marriage. To this end, the author examines bargaining power within the household through a Nash cooperative bargaining model, analysing the role played by non-labour income, wage rates, and productivity in household production. He notes that productivity in domestic production can also be a source of bargaining power, asserting that a person who is more productive in the household has a stronger position at the point of threat (without cooperation within the household).

Other studies have found evidence that intra-household bargaining power is closely related to the relative distribution of economic resources and human capital among couple members. Hoddinott and Haddad (1995) use women's share of household monetary income as an indicator of relative power. Their results show that an increase in this share raises the proportion of spending allocated to food and reduces that directed toward alcohol and cigarettes. Similarly, Friedberg and Webb (2006) show that decision-making power depends on current and life-cycle income, although their estimates suggest that the effect of the wife's income on reducing the husband's relative power is moderate. Finally, Bertocchi et al. (2014) study responsibility for economic and financial decision-making within the household and conclude that the probability that the wife is responsible for such decisions increases when her characteristics in terms of age, education, and income approach or exceed those of the husband.

Additionally, from a gender perspective, Doss (2003) analyses how women's decision- making power in the household influences economic decisions, highlighting that women with greater asset ownership have more power to influence these decisions. It is observed that in contexts where women own a larger proportion of assets, it is more likely that more resources are allocated to activities that directly benefit household well-being, such as education and nutrition.

From a different perspective, some authors have measured bargaining power within the household based on a theoretical sharing rule for household income, using a collective labour supply model and the Pareto weight. However, they explain that the Pareto weight is not directly observable but depends on observable variables such as wages, non-labour income, and distributional factors (Molina et al., 2022; Bourguignon et al., 2009; Chiappori et al., 2002; Browning et al., 1994).

Additionally, the empirical literature agrees that bargaining power within the household has significant effects on household decisions. For example, it has been shown that women with greater empowerment are more likely to use contraceptives (Al Riyami et al., 2004; Corroon et al., 2014). Booysen and Guvuriro (2021) observe that when the wife has greater financial decision-making power, spending is higher on household goods, education, personal items, healthcare, utilities, and non-food items. On the other hand, average spending is higher when the husband has greater financial decision-making power, specifically on transportation, clothing, insurance, and food.

However, the relationship between bargaining power and time spent on unpaid work is not conclusive in the empirical literature. Bittman et al. (2003) analyse this relationship for the United States and Australia using ordinary least squares models, in which weekly hours of unpaid domestic work are explained, among other factors, by each spouse's relative contribution to household income. The authors find that, in the United States, an increase in women's relative income reduces the time

Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

they spend on household chores, consistent with the theory of intra-household bargaining. However, for Australia, this same effect is not evident; rather, it is observed that women increase the amount of household work as household income rises.

4. Data and methods

This section describes the data and empirical strategy used to estimate how valuing unpaid care work would affect bargaining power within Colombian households. It first presents the data source and then explains the two valuation strategies used to assign a monetary value to unpaid care work. Finally, it describes the simulation exercise through which household resources are redistributed to estimate counterfactual bargaining power.

4.1 Data

For the simulation exercise, we take advantage of a detailed Colombian household survey: ENUT 2016-2017 (DANE, 2020). Despite the survey collected data for the period 2020-2021, we use data from a previous period 2016-2017 because of the unbalances of unpaid and paid work during the pandemic. The survey has 146,190 observations representative of the 47.7 million Colombian population at the time. We only consider family members and drop those observations corresponding to domestic workers and other non-family members living within the household (1.5% of the sample). Considering this, in what follows, we indistinctly refer to a household as a family.

The survey is very detailed on unpaid activities with more than 80 specific household activities recorded with their hours and minutes for each member aged 10 years or more. Activities range from preparing food to taking care of children.

Individual reported hours and minutes of work are converted to daily hours and monthly hours, the latter by multiplying daily hours by 30. Individual income is composed of labour, non-labour income and government transfers. Labour income consists of wages and employment bonuses to employees, monthly profits for self- employed, second employments and labour income from previous jobs received within the period. Non labour income consists of private transfers to household members, financial returns, and property income. Government transfers consist of conditional cash transfers, monetary subsidies and pensions. Deciles are computed on household per capita income.

To analyse bargaining power within households we focus on heads of the household and their partners, all other household members are grouped under the term “other” regardless of gender. We define seven different family types, single man without children, single woman without children, single man with children, single woman with children, couples without children, couples with children and extended family. The male and female distinction for singles is purposely made to distinguish the contribution of other household members. Children are defined as any son or daughter of the head of the household living with the family regardless of age.

4.2 Methods

To analyse the possible shift of bargaining power within the household when we consider unpaid care work, we proceed in two steps. First, we determine the hourly value of each care activity at the individual level. We propose two alternative valuations, the first is replacement cost, that is, the hourly cost of hiring a paid care worker to do the specific activity. Alternatively, we compute the opportunity cost, that is, we econometrically calculate the foregone hourly earnings of each individual doing the care activity based on their specific characteristics. In the second step, we simulate that each family member is paid for their unpaid care work. The resources to make such payments result from a common family pool in which each family member contributes according to their initial share in family income, in other words there is a redistribution process inside the family, where those with monetary income pay those doing unpaid care activities. The next two subsections present these two steps in more detail.

4.2.1 Valuing unpaid care work: replacement cost

In this case, we use the median monthly income of workers in occupations that could perform each unpaid activity. We group activities in eight categories: food and drink prep., laundry and care of textiles, cleaning, home maintenance and repairs, purchasing of goods, household management, care for members of the household, and care for other households. Using the national classification of occupations, we find the most suitable occupation to carry the activity. We multiply the monthly hours of unpaid work by the median hourly labour income of the occupation, then we add up the values of all activities. Considering that literature finds that most care activities have medium to low earnings, we expect that for some very low earning households, replacement costs could be extremely high compared to opportunity costs, but for households at the top of the earnings distribution the opposite could be the case.

4.2.2 Valuing unpaid care work: opportunity cost

In this case, we econometrically determine the opportunity cost, that is, the foregone hourly earnings assumed by the household member doing the unpaid activity. We estimate a Mincer (1958) equation. To correctly take into account selection into work for the prediction of earnings of those not working, we use a two-step Heckman selection model (1979). In the first step, we estimate the following probit model for those aged ten years or more (i.e. the working age in Colombia):

$$\begin{aligned} &P(\text{working} = 1) \\ &\quad = \Phi(\beta_0 + \beta_1 \text{age} + \beta_2 \text{age}^2 + \beta_3 \text{woman} + \text{educ} + \text{ethn} + \text{region} \\ &\quad + \text{instr}) \end{aligned} \quad [1]$$

Where working is a dummy variable that takes the value of one if a person aged 10 years or more has positive labour earnings, zero otherwise. Φ is the cumulative standard normal density function. The betas are a vector of coefficients to be estimated by maximum likelihood: age is individual age in years. woman is a dummy variable for this gender, educ is a vector of education dummies, region is a vector of regional dummies including a dummy for rural areas, ethn is a vector of ethnicity variables. Lastly, instr is a vector of instrumental variables that help identifying the first stage of the Heckman model: variables that determine the decision to work but do not determine labour earnings in Equation [2] below. In this case the instrumental variables are the daily hours each individual is spending in the eight activities presented in section 4.2.1.

$$\ln(\text{earnings}) = \alpha_0 + \alpha_1 \text{age} + \alpha_2 \text{age}^2 + \alpha_3 \text{woman} + \alpha_4 \lambda + \text{educ} + \text{ethn} + \text{region} + u \quad [2]$$

Where earnings is the hourly labour income resulting from dividing the total monthly labour income (as defined above) by monthly hours of work[4], the alphas are a vector of coefficients to be estimated by OLS, λ is the so-called inverse Mills ratio defined as in Equation [3].

$$\lambda = \begin{cases} \dfrac{\varphi(X\hat{\beta})}{\Phi(X\hat{\beta})} \text{ if working} = 1 \\ \dfrac{-\varphi(X\hat{\beta})}{1 - \Phi(X\hat{\beta})} \text{ if working} = 0 \end{cases} \quad [3]$$

4 In the survey, hours of work are recorded at weekly frequency, thus we assume a month consists of 4.3 weeks.

Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

Where $\varphi(X\beta)$ is the standard normal density evaluated at the estimated beta parameters ($\hat{\beta}$) for the vector X of variables in Equation [1] for each observation. Given that the Mincer equation uses the natural logarithm of hourly earnings, we use the retransformation proposed by Duan (1983) and obtain the hourly foregone earnings using the expected value of Equation [4].

$$E(\text{earnings}_i) = \exp(X_i\hat{\alpha})\exp(0.5\hat{\sigma}^2) \quad [4]$$

Where $\hat{\sigma}$ is the standard error of Equation [2] and $X_i\hat{\alpha}$ is the predicted log-earnings of the i-th observation. We multiply the resulting hourly earnings by the total amount of hours devoted to unpaid care activities within the household.

4.2.3 Shift in bargaining power

As previously discussed, this paper makes counterfactual simulations that value unpaid care activities and reassess bargaining power inside the household based on relative income metrics. We need to highlight that, individual incomes are not only determined as in the Mincer equation presented above, but they are also a result of previous work-leisure decisions of household members based on their bargaining power. This points to an endogeneity of household income to bargaining power that must be addressed and is an avenue of potential future research.

For this research, we neglect this issue, and study the potential bargaining effect of remunerating unpaid care activities, we firstly define each member's bargaining power (w_i) as his or her income share inside the household:

$$w_i^m = \frac{Y_i^m}{\sum Y_j^m} \quad [5]$$

Where Y_i^m is total individual monetary income (labour and non-labour) for the i-th observation, and $\sum Y_i^m$ is the sum of individual monetary incomes over all family members. Considering our purpose of redistributing resources inside the household considering unpaid care work, we define total household value of care work for a scenario sc, C_{hh}^{sc}, as follows:

$$C_{hh}^{sc} = \min\left(\sum C_j^{sc}, \sum Y_j^m\right) \quad [6]$$

Where $\sum C_j^{sc}$ is the sum of the values of care activities over all family members in scenario sc with sc=replacement, opportunity scenarios. The definition in Equation [6] allows us to deal with cases in which the total monetary resources of the household are not enough to pay the value of unpaid care activities. We next define individual counterfactual income Y_i^{sc}:

$$Y_i^{sc} = \min\left(\max\left(Y_i^m - w_i^m C_{hh}^{sc} + C_i^{sc}, 0\right), \sum Y_j^m\right) \quad [7]$$

In Equation [7], the first component inside the max function corresponds to individual monetary income subtracting the contribution of the i-th individual to paying care activities $w_i^m C_{hh}^{sc}$ and adding the individual value of such activities. The maximum function allows us to set a lower bound for counterfactual incomes at zero in cases $w_i^m C_{hh}^{sc} + C_j^{sc} > Y_i^m$. On the other hand, the minimum function prevent that individual incomes exceed total household monetary income. By construction $\sum Y_j^{sc} = \sum Y_j^m$ must hold for each household. With individual counterfactual income Y_j^{sc} we create a new set of weights i.e bargaining power in the counterfactual, for each observation following Equation [5]. We also use Equation [5] to compute weights for hours of unpaid work.

5. Results

In this section we start by presenting a characterization of unpaid care activities and earnings. Next, we move to the main results of the estimation and simulation of opportunity and replacement costs. Lastly, we present the potential changes in bargaining power within the household of valuing unpaid care activities. In several figures we focus on the education dimension, this is because, there are important differences in the simulation exercise for highly educated groups.

5.1 Earnings and unpaid care activities

Table 1 presents some descriptive statistics on earnings and hours of unpaid work by educational level. In the table we focus on heads of the household (HoH) and his or her partner if any. As expected according to human capital or signalling theories, hourly earnings are increasing on education. We observe the double gap facing women. On the one hand, regardless of education level there is a gender earnings gap of between 2% and 25% of men's earnings favouring men. More interestingly, this gap has an inverse u-shaped form relative to education: the gap is the highest (25%) for tertiary education. On the other hand, there is an hour of unpaid work gender gap favouring men. Men's hours of unpaid work are between 33% and 63% of women's hours. We observe that the total amount of hours is increasing in education for men, but it has an inverse u-shaped relation for women, with women with at most secondary education devoting the most to unpaid care work: 8.3 hours a day.

Figure 1 displays the number of daily hours of unpaid work for each of the eight categories discussed above and for different household types. Overall, we observe that women devote more daily hours to unpaid activities than men, but with a great variation depending on household type. The time devoted to taking care of household members is always the most important item among all unpaid activities.

We observe that woman within couples with kids spend the greatest number of hours in unpaid activities: more than 10 hours a day. For this group, around 6 hours are devoted to taking care of children. As expected, the presence of children within the household increases the hours of unpaid activities both for men and for women. Single men with no kids spend fewer hours on care activities than similar women, specially devoting less time to preparing food and cleaning. The same pattern is observed for single men with kids relative to single women with kids. Single women with kids spend close to 8 hours a day in care activities while single men spend half of that. Lastly, in the case of extended families, the weight of unpaid hours is shifted to other household members other than the couple.

The two pieces of data presented so far indicate that, if there is redistribution within the household to compensate for unpaid activities, there would necessarily be a shift in bargaining power favouring women. In the following subsections we try to quantify the change in bargaining power.

5.2 Opportunity and replacement costs

The results of the two econometric models discussed in section 4 are presented in Table 2 below. Results are in line with previous studies and the theory. The probability of working has an inverse u-shaped relation with age, women have a lower probability (12.6 pp less) of working than men, employment probability is increasing on education with the exception of postgraduate studies. All instruments are statistically significant and have the expected negative sign with the important exception of time spend in unpaid care activities for other households which has a positive sign albeit a

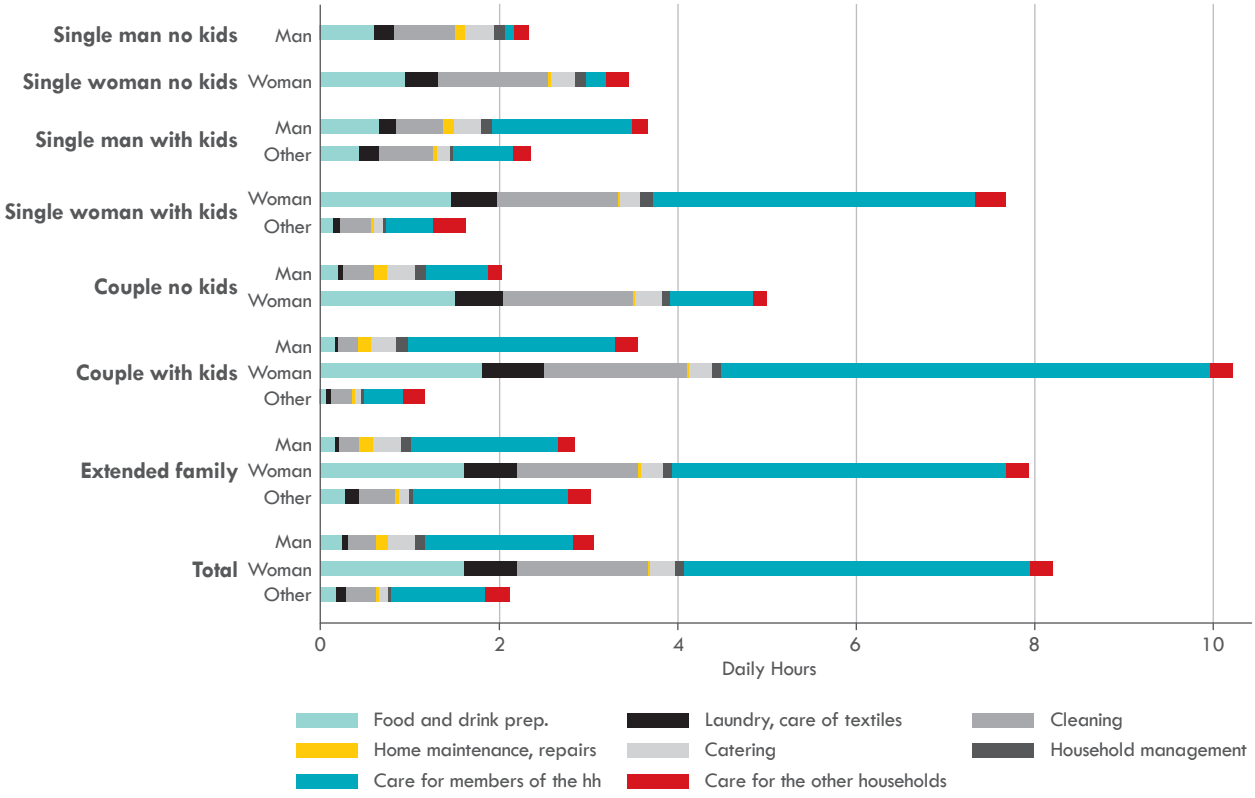
Table 1. Hourly labour earnings and daily hours of unpaid work, HoH and partners, by education level

Highest education level	Hourly labour earnings (thousands of COP)			Daily hours of unpaid work		
	Man	Woman	Gap (%)	Man	Woman	Man/Woman (%)
None	2.80	2.74	2.1	2.75	7.09	38.8
Primary	3.61	2.99	17.2	2.55	7.60	33.6
Secondary	5.04	4.20	16.7	3.29	8.99	36.6
Tertiary	11.38	8.59	24.5	3.52	7.93	44.4
Postgraduate	27.97	21.64	22.6	3.64	5.85	62.2
Total	6.01	5.55	7.7	3.06	8.22	37.2

Source: own calculations based on DANE (2020).

Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

Figure 1. Daily hours of unpaid care activities by household type



Source: own calculations based on DANE (2020).

small effect in practical terms. The values of these negative effects on the probability of working range from 0.1 to 6.5 pp.

In the case of the Mincer equation for hourly earnings, we also observe an inverse u- shaped pattern for age (which is a proxy for experience, a negative effect of being women, with a 10.6 % reduction in hourly earnings relative to men. Increases in education levels consistently increase hourly earnings relative to no education, with increases ranging from 16.5% for primary education to 193% for postgraduate. Being in the rural sector decreases hourly earnings by 25% relative to urban workers. Lastly, the inverse Mills ratio is negative and statistically significant.

Figure 2 below presents the percentage of household income that the household were to assume if all unpaid activities are paid. Strikingly, at the bottom of the income distribution the income levels are so low relative to the burden of unpaid activities that this percentage is above 1000%, regardless of the valuing strategy: replacement or opportunity cost. The households at the first decile of the income distribution would require close to 15 times their income to pay the activities they assume without pay. This value decreases as we move above in the income distribution, but it is still above 100% for the seventh decile and are only around 30% for the last decile and close to 120% for all households. Another interesting result is the difference arising from the two methodologies themselves. At the bottom of the income distribution, earnings are so low that replacement costs are always higher than opportunity costs. However, starting from the eight decile the opposite is true as a result of higher earnings and thus higher opportunity costs. For instance, at the last decile, with opportunity costs the household must pay 46% of its income for care activities but hiring some-

Table 2. Econometric estimates for the Heckman model

	(1)	(2)	(3)
Variables	**Probit**	**Margins for probit**	**Mincer**
Dependent variable	**P(working=1)**	**P(working=1)**	**log(earnings)**
Independent variables			
Age	0.185***	0.00853***	0.0101***
	(0.00129)	(8.89e-05)	(0.00236)
Age squared	-0.00205***		-8.47e-05***
	(1.50e-05)		(2.68e-05)
Woman	-0.378***	-0.126***	-0.106***
	(0.00997)	(0.00332)	(0.00969)
Primary	0.115***	0.0436***	0.165***
	(0.0199)	(0.00765)	(0.0185)
Secondary	0.423***	0.150***	0.447***
	(0.0201)	(0.00769)	(0.0192)
Tertiary	0.603***	0.203***	0.994***
	(0.0220)	(0.00806)	(0.0206)
Postgraduate	0.486***	0.170***	1.934***
	(0.0351)	(0.0116)	(0.0269)
Rural	0.157***	0.0515***	-0.252***
	(0.0120)	(0.00381)	(0.00922)
Food and drink prep.	-0.158***	-0.0532***	
	(0.00552)	(0.00185)	
Laundry, care of textiles	-0.0973***	-0.0329***	
	(0.00690)	(0.00233)	
Cleaning	-0.192***	-0.0648***	
	(0.00508)	(0.00173)	
Home maintenance, repairs	-0.0659***	-0.0222***	
	(0.00848)	(0.00286)	
Purchasing goods	-0.0336***	-0.0114***	
	(0.00624)	(0.00211)	
Household management	-0.0685***	-0.0231***	
	(0.00929)	(0.00314)	
Care for members of the hh	-0.00386***	-0.00130***	
	(0.000810)	(0.000273)	
Care for other households	0.00779***	0.00263***	
	(0.00293)	(0.000988)	
Inverse Mills Ratio			-0.176***
			(0.0191)
Constant	-3.401***		7.543***
	(0.0295)		(0.0612)
Ethnicity dummies	YES	YES	YES
Region dummies	YES	YES	YES
Observations	122,202	122,202	56,405
R-squared/pseudo R-squared	0.2770	0.2770	0.2700

Note: standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Source: own calculations based on DANE (2020).

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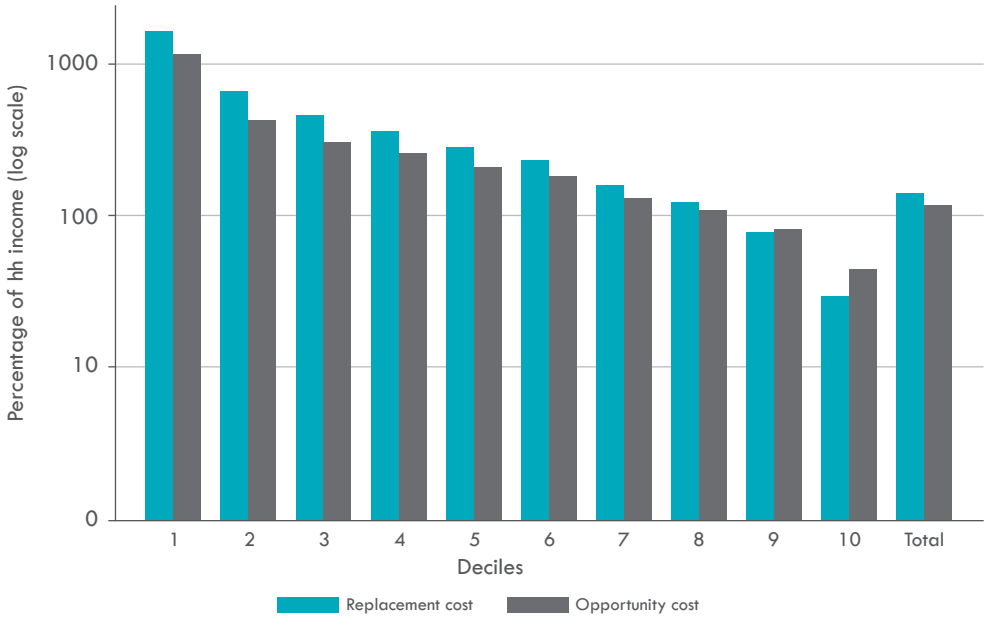
https://doi.org/10.25100/sye.v0i57.14798

Figure 2. Unpaid care value relative to income at the household level (log-scale), by monetary income deciles



Note: only for those households with positive monetary income. Uses population survey weights.

Source: own calculations based on DANE (2020).

one in the market to do these activities only costs 26.5% of its income.

5.3 Changes in gender income gaps and bargaining power

In this section we present the potential changes in gender income gaps and bargaining power if all unpaid care activities were remunerated following Equation [7] above. Table 3 presents income gender gaps for different income categories: monthly and hourly labour income, total income (including non-labour income) and total income after adjusting for unpaid care using replacement costs or opportunity costs. The gaps are defined as the differences in mean incomes between males and females divided by mean male's income. The table is divided into two panes, one considers all women and men and the second focuses on women and men in couples, that is, excluding all household members other than household head and his or her partner.

For observed incomes we always find gaps favouring men. In the case of monthly income, the gap is between 20% and 40% and it is lower for higher education groups. After controlling for hours of work, the gap is still positive, but it reduces to values below 26%, for the overall working population the gap is around 3.1%. If we turn to total income, we observe larger gaps, always above 20% regardless of education, but decreasing in this variable. It must be noted that, in this case, women and men with zero income are included in the averages required to build the gap.

In the case of our simulation exercise the total income gaps favouring men are eliminated for most education groups. In other words, if there is an intrahousehold redistribution to monetarily compensate for unpaid care activities, women's total income would be higher than men's for all education levels except for those with postgraduate education. For the latter group, the total cost of unpaid activities relative to total individual income is low, and after the intrahousehold redistribution the gap still favours men.

Results are similar if we consider all men and women aged 10 years or more, or if we focus

Table 3. Raw income gender gaps by education (as a percentage of male's income)

All women and men					
Highest education level	**Monthly labour income**	**Hourly labour income**	**Total income**	**Total income replacement cost**	**Total income opportunity cost**
None	27.3	6.8	47.0	-55.2	-61.5
Primary	35.2	15.6	55.0	-50.3	-61.8
Secondary	25.2	11.5	48.5	-37.9	-48.2
Tertiary	23.6	19.7	35.3	-0.5	-10.0
Postgraduate	19.2	21.6	21.3	14.4	5.8
Total	14.1	3.1	40.8	-29.3	-38.6
Women and men in couples					
Highest education level	**Monthly labour income**	**Hourly labour income**	**Total income**	**Total income replacement cost**	**Total income opportunity cost**
None	23.8	3.5	61.9	-84.6	-100.8
Primary	39.2	16.7	67.8	-52.2	-71.7
Secondary	32.3	16.1	63.3	-26.0	-43.9
Tertiary	26.5	24.0	45.0	3.1	-10.1
Postgraduate	22.6	25.8	25.2	15.5	4.9
Total	19.1	6.4	55.4	-19.6	-33.7

Note: labour income gaps are conditional on positive earnings. Total income gaps are unconditional, that is, for all those aged 10 years or above.

Source: own calculations based on DANE (2020).

on women and men living as couples. However, there are important differences if we use the opportunity or the replacement cost. The effect of the simulation reducing the gap is always larger for opportunity than replacement costs, apart from the postgraduate education group where the reverse is true.

On average, for all women and men aged 10 or more, if we value unpaid care with replacement costs the total income gap goes from 40.8% favouring men to 29.3% favouring women an astonishing 70pp change. In the case we use opportunity costs the gap turns to 38.6% favouring women. Results are 19.6% and 33.7% favouring women for replacement and opportunity cost respectively.

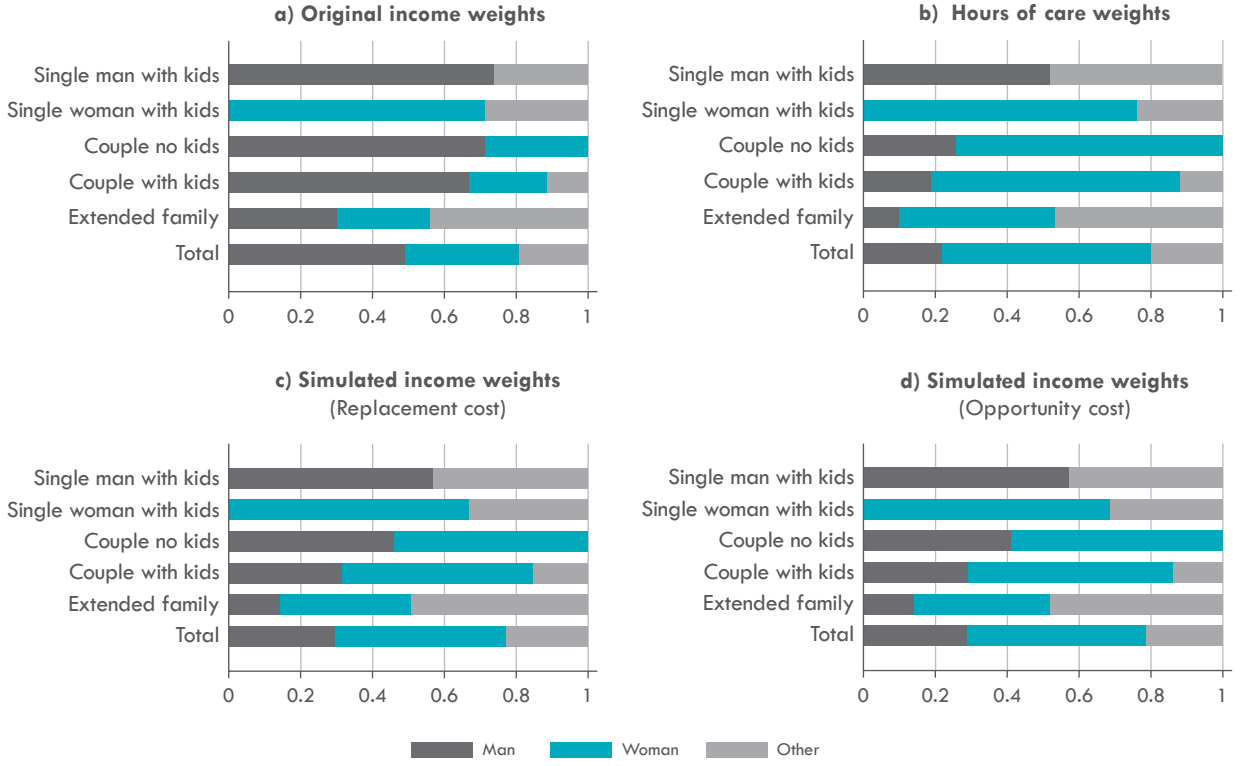
Figure 3 below presents the shifting patterns in bargaining power within the household. The top left pane presents observed income weights following Equation [5]. The top right pane displays a set of similar weights but for hours of unpaid care. At the bottom of the figure, we present simulated income weights after intrahousehold redistribution takes place with the two proposed methodologies.

In the case of observed income, bargaining power within the household is about 49.4% for men and for women it is 31.4%, a gap of 19pp. The remaining 19.2% belongs to other household members. A completely opposite figure results for hours of unpaid care activities: men are observed to do only 21.8% of household hours of care, while women's figure is 57.9%. As discussed before, our simulation puts a price to unpaid care activities and re-evaluates bargaining power within the household. We observe a reversal of roles in terms of bargaining power: for women, new shares of total income are 47.0% and 49.7% for replacement and opportunity costs respectively. Men's figures are 30.0% and 28.3% respectively. In other words, if we are willing to recognise both paid and unpaid work activities in determining power within the household, close to half of that power would be wield by women.

These results vary in important ways if we consider household composition. In the case of observed income, men always have a higher bargaining power inside the household than women and other household members, at around 50%. Only in the case of extended fam-

Sociedad y Economía N° 57 (2026) / e-ISSN: 2389-9050 / e10814798
https://doi.org/10.25100/sye.v0i57.14798

Figure 3. Income and hours weights by family type



Note: singles without kids always have a weight of one and are not presented.

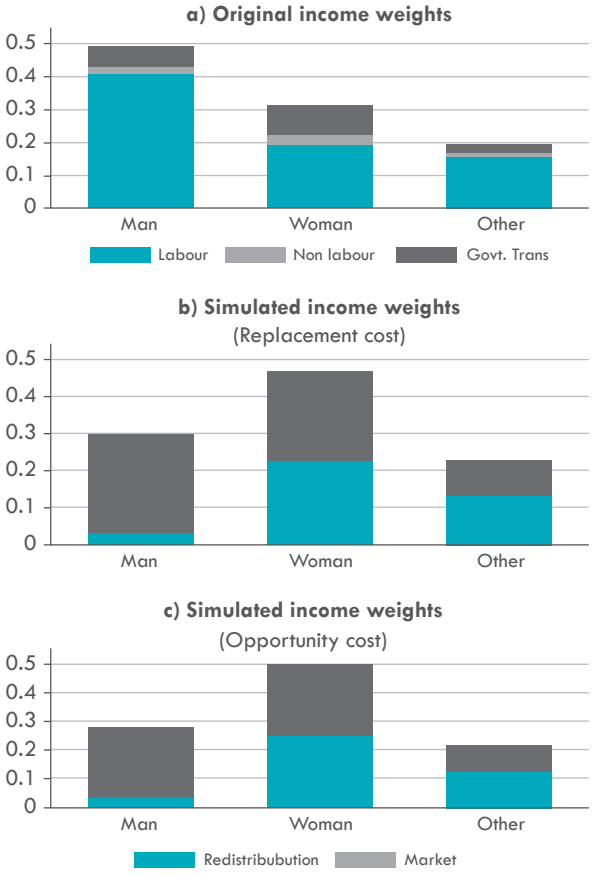
Source: own calculations based on DANE (2020).

ilies, other household family members jointly have more bargaining power. The income share for women is mostly below 30% apart from single woman with kids, where her power is around 70%. In the simulations, women power shifts from less than 30% to more than 50%. Results are slightly better for women if we consider opportunity costs rather than replacement costs, but the differences between the two methods are lower than 5pp.

Lastly, Figure 4 decomposes income weights in the baseline and the two proposed simulations. In the top pane we decompose bargaining power from original income into three components: labour income, non-labour income and government transfers as defined in section 2. The two bottom panes decompose the simulated weights into a part corresponding to market income and another one corresponding to redistribution within the household[5]. For the original bargaining power, we observe that the most important component for bargaining power is labour income, regardless of household member. Government transfers, mainly consisting of pensions, are second in importance, with a special effect increasing women's power. In the case of counterfactual bargaining power, we do not observe significant differences between the contribution of market income or redistribution between the two methodologies. As expected, we observe that income coming from within the household explains half the bargaining power of women, more than half the power of other household members but a very small fraction of power for men.

5 In this case, with redistribution we refer to positive net receipts at individual level, that is, $\max(Y_i^{sc} - Y_i^{m}, 0)$.

Figure 4. Decomposition of income weights



Source: own calculations based on DANE (2020).

6. Discussion and conclusions

In this paper we studied bargaining power within the household, unpaid care activities and the potential role of remunerating those activities to alter the balance of power. Following previous literature, we propose to analyse individual power in decision making via the share of household income accrued to each member[6]. We quantify the shift in power if the household was to pay care activities at the replacement or opportunity costs. We focus on the head of the household and his or her spouse. Considering the higher burden of care activities for women leading the household, we find a reversal of bargaining power: We observe that women's power within the household is on average 31.4% lagging that of men by 18pp. However, women leading the household are responsible for 58% of the time devoted to unpaid care. Within our simulations, if we were to remunerate unpaid care, women's power would be around 50% while men's would be slightly below 30%. There are no important differences between replacement or opportunity costs.

We recognise that, under the current social norms, making the proposed redistribution inside the household is highly impractical. The precise division between market and non-market activities for household members in modern economies, which is mostly rooted on the traditional sexual division of labour, prevents arrangements such as the one proposed here to become a reality. However, the importance of our findings lies not on its practicality for policymaking, but on a reading of the main results from a normative point of view. Decisions inside households, from labour participation to time use are the backbone of a market economy. Most research indicate the advantages of women decision-making power in various dimensions. The gender gaps in decision power inside the household highlighted in this document, despite the overwhelming time women devote to unpaid care, should make us reflect on the biases that permeate the market economy of most economies.

6 For future avenues of research, it could be interesting to compare our income weights with data directly from the ENUT surveys on power to decide within the household.

Author contributions

David Rodríguez: conceptualisation; data curation and cleaning; methodology; full development of the econometric model; formal analysis; project administration; visualisation; writing; review and editing.

Johana Silva: conceptualisation; context analysis; literature review; formal analysis; original draft preparation; writing; review and editing.

Funding

This research did not receive funding from any public, state or private institution.

Conflict of interest

The authors declare that they have no conflict of interest regarding the writing and the publication of this article.

Ethical implications

The authors have no ethical implications that should be declared in the writing and publication of this article.

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¿Cómo citar este artículo?

Rodríguez, David y Silva, Johana. (2026). Making Family Caregiving Work Pay: A Reassessment of Bargaining Power Within the Household. *Sociedad y Economía*, (57), e10814798. https://doi.org/10.25100/sye.v0i57.14798