Care Policies, Time Use, and Gender Gaps: A General Equilibrium Analysis [*†]

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Abstract

Demographic transitions characterized by declining fertility and aging populations pose significant challenges to social protection systems globally, particularly regarding the increasing demand for care. In many developing economies, the burden of care falls disproportionately on women with lower education levels, exacerbating gender gaps in labor participation and wages. This study evaluates the long-term macroeconomic and welfare impacts of expanding public care policies, including childcare and long-term care. To capture the complex interactions between the care economy and the broader market, we construct a Social Accounting Matrix (SAM) that explicitly integrates paid and unpaid care activities. We use this matrix to calibrate a dynamic Computable General Equilibrium (CGE) model –GEM-Care– using data from Uruguay as an illustrative case study.

Our simulations suggest that expanding care policies generates positive multipliers for employment, both within the care sector and the broader economy, leading to aggregate economic growth. However, the analysis reveals that some gender gaps might worsen, suggesting that public care expansion must be complemented by other policies, such as targeted training and anti-discrimination policies in the labor market.

Keywords: gender gaps; care economy; unpaid care work; care policy; social accounting matrix; demographic change; computable general equilibrium model; Uruguay

JEL: D58; J22; J16; J11

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1 Introduction

Macroeconomic models commonly used in policy analysis often overlook the considerable economic and social value of unpaid domestic and care work, despite its crucial role in the sustainability of economies and societies (Blecker and Braunstein, 2022a). These omissions reflect the fact that the current System of National Accounts (SNA) excludes unpaid household and care services consumed within the household from what is considered "production" (European Commission et al., 2009; UNECE, 2017; OECD, 2018). The distribution of unpaid care work is highly unequal between men and women, with women performing nearly three times more than men worldwide, which restricts the economic participation and generation of income of women (UN Women, 2023). Feminist economics, through the notion of care economy, conceptualizes care as part of social reproduction structured by the interactions of family, state, market, and community, known as the "care diamond" (Razavi, 2007; Folbre, 1994), and underscores its contribution to economic development (Salvador and Santos, 2016). These considerations motivate the use of satellite accounts and time-use extensions to better reflect the value of care.

Recent gender-aware macroeconomic research has evolved along two complementary approaches. First, a body of theoretical work integrates gender and care into macro frameworks across alternative macroeconomic schools of thought. Within neoclassical and structuralist perspectives, the literature has explored the interaction between household time allocation, labor supply, and production, as documented in Blecker and Braunstein (2022b). In parallel, post-Keynesian and Kaleckian approaches have embedded unpaid care and gendered labor dynamics into demand-driven and distributional models (Braunstein et al., 2011; Onaran et al., 2022). Based on this theoretical work, recent syntheses emphasize how gender gaps in paid and unpaid work, wages, and employment influence both the supply and demand sides of macroeconomic dynamics (Seguino, 2020). Second, a set of applied modeling tools has emerged to evaluate specific care-related policies. These include input–output and microsimulation frameworks that focus on employment multipliers and sectoral spillovers (Antonopoulos et al., 2011; De Henau and Himmelweit, 2021b; Ilkkaracan et al., 2021), as well as computable general equilibrium (CGE) models that extend Social Accounting Matrices (SAMs) with time-use accounts to explicitly represent paid and unpaid care (Fontana and Wood, 2000; Löfgren and Cicowiez, 2021; Cicowiez et al., 2022b).

On the empirical side, the main findings of the literature indicate that expanding public or subsidized childcare frees women's time, increases female labor force participation, and improves household welfare (Cicowiez et al., 2022c; Cicowiez and Löfgren, 2023). At the aggregate level, the overall effect depends on how policies are financed (Cicowiez and Löfgren, 2023). Input–output and microsimulation evidence further confirms that investments in care generate higher employment multipliers and more equitable income effects than equivalent spending in physical infrastructure (Antonopoulos et al., 2011; De Henau and Himmelweit, 2021a; Ilkkaracan et al., 2015; Kim et al., 2019; Ilkkaracan et al., 2021). In addition, econometric analyzes based on vector autoregressive models provide macro-level

evidence that spending on social infrastructure, including care, education, and health, has positive effects in the short and medium term on output and employment, while contributing to gender equality (Oyvat and Onaran, 2022; Onaran and Oyvat, 2023). In general, these empirical findings show that expansion of care constitutes both a social and productive investment, with substantial short- and long-term macroeconomic returns.

A key gap in the literature lies in the integration of demographic change and evolving care needs within medium- to long-term analyzes. Applications remain largely single-country, short-term, and focused on static reallocation of time and labor, with scarce attention to demographic dynamics (aging and fertility) that shape care demand and condition the macroeconomic outcomes of expanding care provision. This analysis shows how demographic shifts interact with care policies to influence GDP, employment composition, and household welfare over time. This paper contributes to the literature by incorporating population projections by age and sex and linking them to care demand profiles based on time-use in a recursive-dynamic CGE model. Furthermore, it responds to calls for models that trace long-term feedback between demographic transitions, care provision, and fiscal sustainability (Fontana et al., 2019), advancing the literature beyond short-horizon simulations and providing new evidence from a country with an institutionalized care system.

In this paper, we apply a care-oriented dynamic computable general equilibrium model (GEM-Care) calibrated with a gender-sensitive and care-oriented Social Accounting Matrix (GC-SAM) for Uruguay. The objective is to assess the macroeconomic impacts of expanding the National Integrated Care System (sNIC). The SAM records economic interactions based on the National Accounts System and extends them to include non-market activities of unpaid care that lie outside the production possibility frontier of the GDP (Löfgren et al., 2020; Löfgren and Cicowiez, 2022). The resulting GC-SAM covers 31 market sectors, 11 of which are care-related, distinguishing between public and private care provision. It also includes domestic care provision, and female's between households, with household groups classified by care needs and location, and the differentiation of labor by skill and sex. Although (Terra et al., 2008) built a gendered SAM for Uruguay, ours is the first to explicitly differentiate paid and unpaid care activities, allowing the evaluation of policies from a care and gender perspective ((Fontana et al., 2019)).

Uruguay provides a relevant setting for this analysis. The country has faced a rapid demographic transition and has one of the most aged populations in Latin America. In addition, it has a long and comprehensive welfare system. In 2015, the SNIC was created, reflecting an institutional effort to address the growing care needs. However, coverage and budget remain limited relative to projected demand. Understanding how an expansion of these policies would affect the economy is therefore essential to designing sustainable and gender-responsive care strategies.

Population and household projections up to 2050, estimated using data from the 2023 national census, are integrated into the dynamic model to reflect how demographic change will reshape both care demand and labor supply. This demo-

graphic component provides a forward-looking basis for anticipating the evolution of care needs and household caregiving capacities in an aging society such as Uruguay. The model is then used to simulate several scenarios of public care expansion, distinguishing policies targeted at early childhood and dependent adults. We evaluate how these scenarios differently affect women and men in the labor market and at home and whether the results are sensitive to alternative labor market assumptions. By analyzing the expansion of the SNIC through a general equilibrium lens, the study offers lessons on the design, financing, and scalability of care systems in contexts facing similar demographic transitions.

2 Care in Uruguay

Uruguay, with a population of just over 3.4 million, is the least densely populated country in Latin America and is experiencing one of the most dramatic demographic transformations in the region. Fertility rates have declined sharply in recent decades as life expectancy has risen, resulting in an increasingly aged population (one of the oldest in the region): by 2023, 16% of Uruguayans were 65 years or older (Cabella et al., 2024). According to ECLAC projections (CEPAL, 2022), the share of elderly dependents will exceed that of children by 2030, an inflection point reached nearly 20 years earlier than the regional average. This rapid shift places increasing pressure on families, communities, and public budgets to devise sustainable mechanisms to provide long term care.

Building on a long-standing welfare tradition, Uruguay has developed a robust social-policy framework characterized by universal education, comprehensive health coverage, and nearly universal pension entitlement. In 2015, recognizing that care needs extend beyond health and income support, the government created the National Integrated Care System (SNIC) as a fourth pillar of social protection. Unlike many regional counterparts whose care-policy mandates remain unfunded or only nominally resourced, SNIC has benefited from a relatively steady budget allocation. Through programs spanning early-childhood centers, day-care and telecare for dependent adults, and direct financial support for long-term care, SNIC seeks to promote autonomy, equity, and shared responsibility in caregiving.

2.1 The National Integrated Care System (SNIC)

For children under the age of four years, the Child and Family Care Centers (*Centros de Atención a la Infancia y Familia*, CAIF) program covers most services. However, it faces challenges in meeting high demand, offers limited extended-hours, and there is practically no coverage for children under one year of age. From the age of four onward, children are generally covered by the public education system, which operates independently of the SNIC. Coverage rates among children under the age of four reach nearly 60%, even when some families opt for private childcare services, approximately 30% of children under the age of four do not receive formal care or early education. Demographic projections indicate a continued decline in the child population, presenting an opportunity to expand coverage towards universal access.

By contrast, population aging makes the expansion of adult and disability care services increasingly urgent. For dependent adults, the SNIC offers a distinct set of services, including day centers, telecare devices, and financial support for long-term care. However, the reach of this program is limited, particularly for people with severe dependency. In fact, less than 18% of the population with significant care needs are currently receiving support from the system, and among those with low and mild dependency, coverage rates are as low as 1% (Villalobos, 2025). Among SNIC's targeted programs, the Personal Assistant Program stands out for providing up to 80 monthly hours of subsidized care to individuals with severe disabilities, but it only covers those aged 0-29 years or older than 80 years. As a result, people between the ages of 30 and 79 are largely left without access to essential support.

The sole source of funding for the SNIC is transfers from the central government. After a phase of gradual budget expansion between 2015 and 2020, the system's funding stagnated, remaining flat in nominal terms and reaching just 0.09% of GDP by 2024. The limited budget of the SNIC reflects broader fiscal constraints and shifting political priorities, which have hindered further expansion. To ensure the long-term sustainability of the system and expand its reach, innovative funding strategies (such as a mix of ex-ante and ex-post mechanisms) will be necessary (UN Women, 2022).

2.2 Uruguay in the regional and global context of care expenditure

Uruguay has experienced the fastest growth in public care spending among Latin American countries, but its absolute levels remain modest compared to the OECD countries. As shown in Table A1 in the Appendix, total care expenditure increased from 0.05% of GDP in 2016 to approximately 0.13% in 2023, surpassing Chile (0.005%) and the Dominican Republic (0.03%) during the same period. Despite this relative improvement, Uruguay's absolute spending is still negligible compared to the OECD averages (see Table A1), highlighting both its fiscal commitment and the considerable scope for expanding the coverage of health care in the region.

Uruguay stands out in Latin America for bringing together a legal framework for integrated care with sustained budgetary execution, a combination that remains rare in the region. As shown in Table A2 in the Appendix, only Chile (2018) shares this distinction, having both a sanctioned national care statute and dedicated budgetary allocations. Some other countries have recently passed legislation to create a National Care System: Brazil (2024), Colombia (2025), Costa Rica (2022), Cuba (2024), Ecuador (2023), Mexico (2020) and Panama (2024); but most have yet to implement consistent public funding mechanisms. The SNIC of Uruguay, established in 2015, has maintained continuous funding through the Ministry of Social Development (MIDES), the Institute of Children and Adolescents in Uruguay (INAU) and the National Association of Public Education (ANEP), reaching 0.09% of GDP in 2024 (Figure 1). This persistent commitment to budget execution places Uruguay among the regional leaders in institutionalizing the care system, in contrast to the many countries where care policy remains

at a normative stage without institutionalized budgetary provision.

Despite its strong regional standing, Uruguay's formal long-term care (LTC) financing remains modest by global benchmarks [1]. Table A1 (Appendix) indicates OECD averages of 4.1% in the Netherlands, 3.2% in Denmark, and 2.5% in Japan. Even established social-insurance schemes with payroll levies, such as Germany (2.5%) and South Korea (1.1%), exceed Uruguay's magnitude. This international disparity underscores the potential gains from supplementing Uruguay's current reliance on general taxation and modest user fees with dedicated financing instruments present in OCDE countries, namely, a targeted payroll tax, cash benefits or calibrated means-tested co-payments.

3 Methodology

The objective of this paper is to assess the macroeconomic impact of expanding the SNIC in Uruguay, as well as to capture the effect on time use and gender gaps in the labor market and at home. In this section, we outline the methodology applied to reach this objective. First, we present the main features of GEM-Care, a gender-oriented computable general equilibrium model designed to simulate care policies. Then, we outline the social accounting matrix built for Uruguay to calibrate the CGE model. Finally, we present the dynamic baseline scenario and our simulation results.

3.1 GEM Care Model

Computable general equilibrium (CGE) models are representations of an economy, incorporating all relevant interactions among productive sectors and agents in the country. They allow to evaluate ex-ante policies, capturing both direct and indirect effects through the variables included in the model. They consist of a set of equations solved simultaneously for each period. Dynamic CGE models are solved for many periods in which some variables are endogenously adjusted to previous levels, typically capital stocks, depending on previous investment levels.

CGE models have been applied to analyze the impact of a wide range of policies, from trade and fiscal policies to environmental, labor market, health, and education policies, among others. They are also useful for evaluating care policies, as documented in Fontana et al. (2020). As Fontana et al. (2020) argue, in this context, it is important that CGE models include a representation of the unpaid sphere of the economy, addressing the time constraints women face. Gender inequalities in the distribution of care work within the household might lead to inequalities in the labor markets (participation rates, wage gaps, sector segregation). Thus, a gender-sensitive CGE model should simultaneously capture the effects of both the demand side (direct and indirect employment generation) and the supply side (alleviation of constraints on unpaid work) of the policies to be

[1] For Uruguay, we consider the total care budget; for the OECD countries, only LTC expenditure is used, as this series offers the most granular data available.

evaluated. Only "two-system" models are valid for analyzing gender issues to understand and capture the interdependence between productive and reproductive activities and the gendered division of labor within them (Fontana, 2013).

The model applied in this paper, GEM Care, belongs to the two-system class of models. It was developed by Löfgren and Cicowiez (2022) and used to analyze care policies in Korea (Cicowiez and Lofgren, 2023) and Colombia (Cicowiez et al., 2022c), as well as energy policies in Nigeria (Cicowiez et al., 2022a). The complete description of the model and the set of equations are presented in Lofgren and Cicowiez (2020).

GEM-Care is a single-country model in which the rest of the world is exogenous. It is dynamically recursive, which means that agents maximize their behavior in each period, which serves as a starting point for the following period. A certain number of years are simulated to allow for the assessment of the long-term impacts of the simulated policies.

This model comprises the care economy and its interaction with the rest of the country's economy, including the labor market, productive activities, and household demand. Figure 1 presents these interactions, as well as the rest of the economic relations included in the model. Unlike other economic activities that produce goods and services utilizing intermediate inputs and value added, care activities only demand labor. Most of the care services produced are consumed at home, although households also transfer care services to other households. There is a public and private provision of market care services. Households demand care services according to their care needs. There is an imperfect substitution for the care services provided in the market and at home. In addition to home care activities, the model also includes leisure activities (including leisure, commuting, and study). The time devoted to self-care is considered exogenous and fixed.

The labor supply is endogenous in the model. Agents decide how much time to offer in the labor market, how much time to devote to unpaid domestic and care work, and how much time to spend on leisure activities, depending on the wages paid in the labor market and the need to devote time to unpaid activities. The model also includes unemployment, modeled through a wage curve that negatively relates unemployment and wages (Blanchflower and Oswald, 2008). There is one wage curve per category of worker.

The rest of the activities produce goods and services offered in the domestic market and to the rest of the world as a supply of exports. The domestic and external supply decision follows a constant elasticity of transformation (CET) function. The activities have a nested production function (Figure A1). In the first level, activities combine intermediate inputs and value added (labor and capital) following a Leontief production function. Value added is obtained in nested constant elasticity substitution (CES) functions combining, in a first level, unskilled labor, skilled labor, and capital, and in a second level, skilled and unskilled labor by gender. The model also includes a gender wage gap, which has a discrimination component that differs in the production sectors.

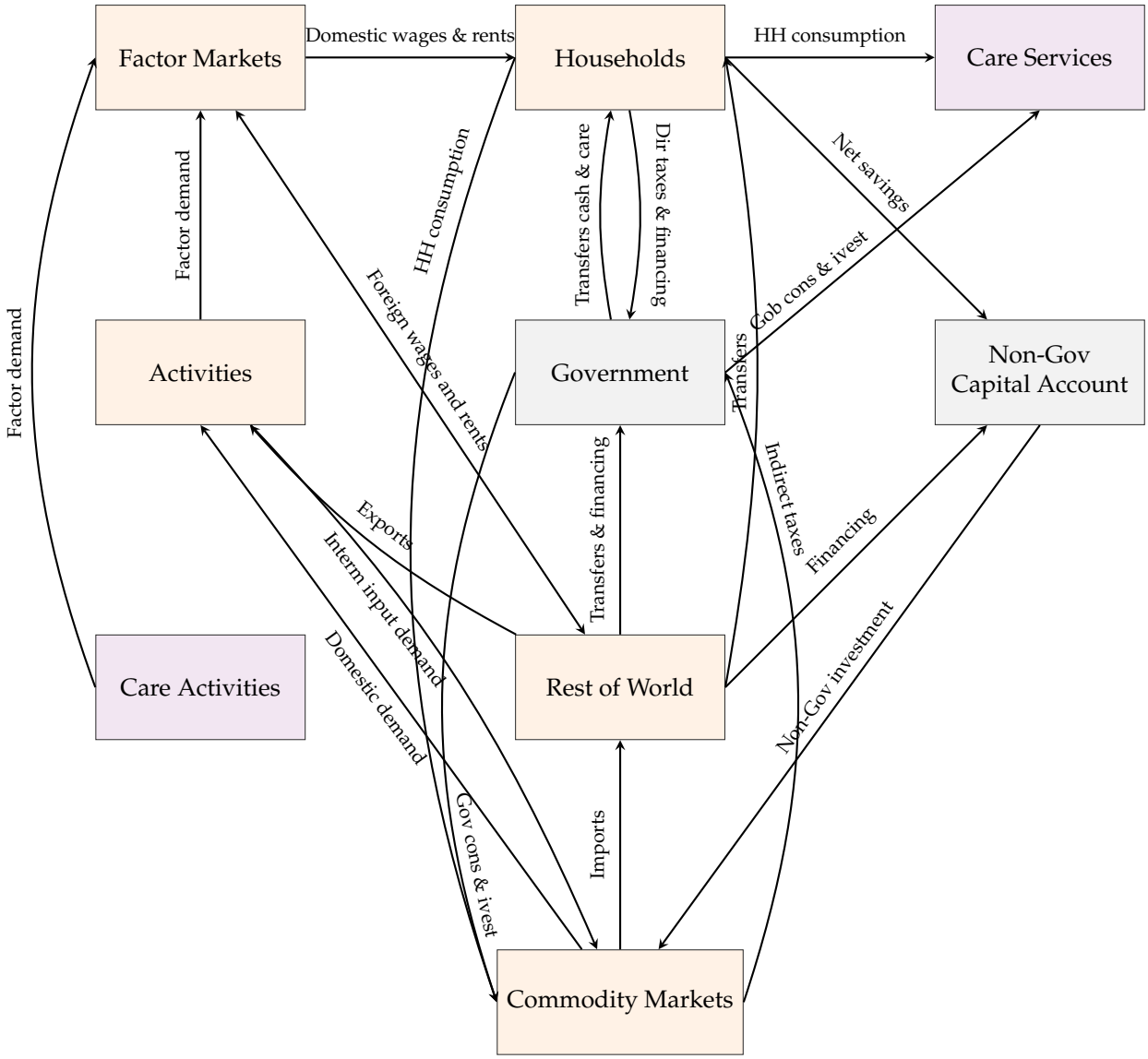


Figure 1: Circular flow model for GEM-Care.

Households' demand for goods and services is derived from the maximization of a nested linear expenditure system at the top and the CES function at the bottom (LES-CES utility function), subject to their budget restrictions. Households' income comes from labor and capital, and transfers from the government and the rest of the world. There are intra-household monetary transfers. Households spend on goods and services offered in markets, make transfers, and pay taxes. In addition, they demand care services. The substitution between the different types of care services is modeled using a CES function. The home production of care services can be consumed at home by members of the same representative household or transferred to other representative households.

The government receives its revenue from tax collection, demands goods and services, and makes transfers to households. It also provides care services to households in the form of care transfers. Tax rates are fixed and transfers to agents are fixed as a share of GDP. Households, the government, and the rest of the world save, and in each period these savings are invested, which increases the capital

stock in the following period.

There is an external agent (the rest of the world) whose income is exogenous. The rest of the world demands exports of goods and services and supplies imports of goods and services. There is an imperfect substitution between imported goods and services and goods and services produced domestically, following Armington (1969).

All markets clear; that is, income equals expenditure and supply equals demand. The model allows for different macroeconomic closures. In our version of the model, we assume that savings rates are fixed and investment levels adjust to savings. The current account is fixed in the external sector, and the real exchange rate adjusts. In the public sector, we work with two different closures: income adjusts through changes in the direct tax rates or domestic debt. The model is solved for relative prices, and the numeraire is the consumer price index.

3.2 Calibration of the model

To calibrate the model, we built a gender-aware care-oriented Social Accounting Matrix (GC-SAM) that represents the links of the care economy to the rest of the Uruguayan economy. To do so, we use information from various sources. The main one is the Supply and Use Tables (SUTs) published by the Central Bank of Uruguay (Banco Central del Uruguay, 2021), with 2016 as the base year. The SUTs are complemented with data from the 2016 Continuous Household Survey (*Encuesta Continua de Hogare*, ECH), the 2016/2017 National Household Income and Expenditure Survey (*Encuesta de Gastos e Ingresos de los Hogares*, ENGIH) and the 2021/2022 Time-Use Survey (*Encuesta de Uso del Tiempo*, EUT). Additional inputs include the 2022 Generations and Gender Survey (*Encuesta de Generaciones y Género*, GGS), the Ministry of Education and Culture (*Ministerio de Educación y Cultura*, MEC) statistical yearbook, and selected public budget reports, among other sources.

3.2.1 GC-SAM

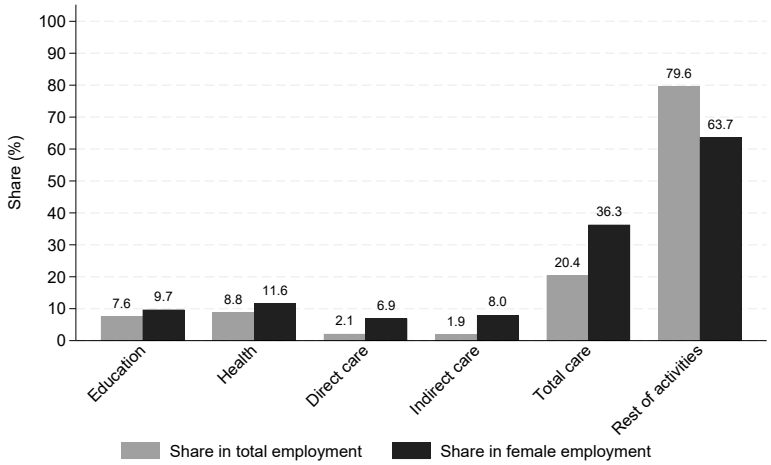
A Social Accounting Matrix (SAM) is a comprehensive, double-entry framework that records all economic interactions among the institutions of an economy at a given point in time. Each account appears twice: in the rows, where receipts are recorded, and in the columns, where outlays are shown. By construction, all accounts are in balance—row and columns are equal—ensuring full consistency throughout the system.

To reflect the role of the care sector in the economy, the GC-SAM incorporates a sectoral disaggregation that includes 11 care sectors: preschool education, other education, health services, care services, paid domestic care for children and adults and domestic service. Education and health services are also differentiated by public and private provision. There are also 20 market sectors covering other services, manufacturing, and agricultural production.

Figure 2 shows the distribution of employment in care and non-care activities in Uruguay, distinguishing between total employment and female employment.

Although the care sector as a whole represents 20% of total employment, it represents nearly twice as much within female employment. Within care activities, direct and indirect care (typically domestic service) represent a relatively small share of overall employment, but exhibit a strong overepresentation of women. This pattern highlights the gendered segmentation of care-related occupations, especially in lower-paid and unpaid care roles. In contrast, the "rest of activities" category, which includes all non-care sectors, accounts for 80% of total employment but only 64% of female employment.

Figure 2: Participation in care-related activities within total and female employment



Source: Author's elaboration based on data from GC-SAM.

The GC-SAM includes the segmentation of the labor market by sex and educational attainment of the worker. Workers are considered low-qualified (unskilled) if they have not completed upper secondary education and high-qualified (skilled) otherwise. Table A3 in the Appendix shows the intensity of labor by category in the different sectors of the CG-SAM. Notably, public care services use more intensively high-educated workers, while private care services, especially at home paid services, are mostly provided by low-skilled women. The participation of men in childcare sectors is negligible, and both low and high-educated men have a small participation in adult-care facilities.

3.2.2 Incorporating unpaid work into the SAM

To fully capture the gendered structure of economic activity, the SAM extends beyond market-based production to include unpaid services, particularly care and domestic work. These non-market activities are introduced as household-based production accounts whose outputs are either self-consumed or transferred to other households.

To introduce unpaid work in the GC-SAM, we first estimated the time devoted to unpaid activities using Uruguay's 2021/2022 Time-Use Survey (EUT). Six categories are identified: direct care for children under 4, children aged 4-12, older adults (65 or older), and people with disabilities; indirect care (domestic work);

and other non-market activities such as commuting, leisure, and study. Time is disaggregated by sex and education. Table 1 shows gender differences, with women (especially those with lower education) concentrating more on unpaid work, while men dedicate more time to paid activities.

Table 1: Time use distribution in paid and unpaid activities, by sex and education level (%)

Activity	Low-educated women	Highly educated women	Low-educated men	Highly educated men
Paid work	24.8	33.9	48.1	49.7
Domestic work	45.9	33.3	24.8	19.9
Care for children under 4	2.5	1.6	0.7	0.5
Care for children aged 4 to 12	6.2	5.0	3.2	3.1
Care for older adults	0.9	0.7	0.6	0.5
Care for persons with disabilities	0.6	0.4	0.3	0.3
Other unpaid tasks	0.4	0.9	0.9	1.2
Leisure	12.5	14.8	14.4	15.9
Transportation	0.5	1.4	0.4	1.0
Study	5.7	8.1	6.5	8.0
Total	100.0	100.0	100.0	100.0

Source: Authors' elaboration based on 2021/2022 Time Use Survey (EUT).

Secondly, we assign a monetary value to this time to integrate these activities into the GC-SAM. Following (Salvador and Santos, 2016), we use an indirect valuation method in which the value of unpaid work is equal to the cost of producing it, understanding that only the labor factor is used in the production of that service. Domestic work is valued through the generalist replacement-cost method[2], while direct care is valued using a specialist wage (from the 2016 ECH). Leisure, commuting, and study are valued using the opportunity-cost method, applying average wages by sex and education.[3] This allows the unpaid production block to be integrated into the SAM consistently with its labor market segmentation.

The final step involves allocating the consumption of unpaid services between the representative households. While leisure, commuting, and study are consumed by the individual producing them, care services may be transferred to others. The EUT identifies whether care recipients are members of the same households or members of other households (Figure A2 in the Appendix). Since the EUT does not report other household characteristics, data from the GGS is used to impute transfers by household type based on kinship and household composition.

3.2.3 Institutional Agents

We distinguish eight representative households to capture the variation in the demand for care services and the provision of unpaid care. Households are classified by their care needs and their place of residence. We distinguish two areas: the metropolitan region (the departments of Montevideo, Canelones, and San José, which together host 51% of the population) and the rest of the country. For each area, households are grouped into four categories according to whether they

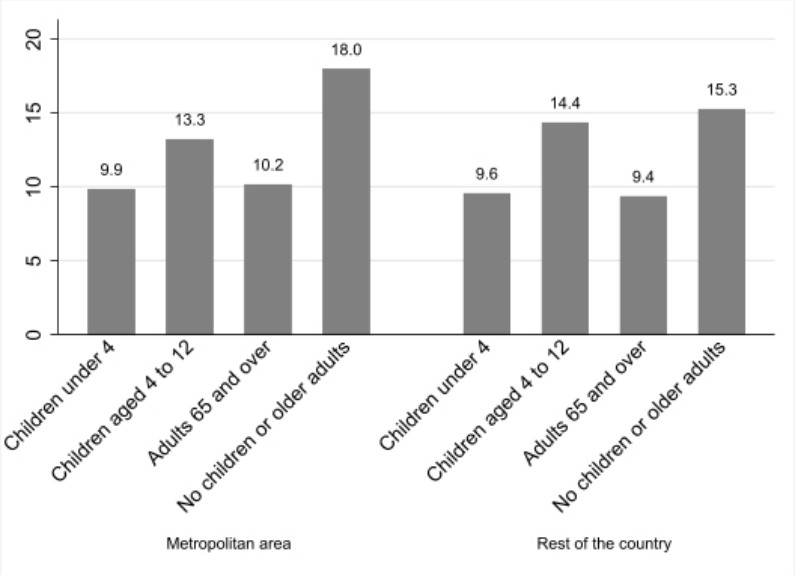
[2]This approach is the most frequently applied in the literature; see, among others, Salvador (2009), Folbre (2021), and Bridgman et al. (2018).

[3]For an international comparison of these estimates, see subsection A.2.

include (1) children under 4 years, (2) children between 4 and 12 years, (3) adults 65 years or older, or (4) no members in the above groups. In Uruguay, extended and composite households (representing 15% of all households) may include children and older adults. In such cases, households were classified according to the group with the highest care demand, prioritizing children under 4, then those aged 4 to 12, and finally adults over 65 years.

As shown in Figure 3, approximately 27% of the population live in households with at least one child under 4 years of age, 21% live in households with children between 4 and 12 years of age, 19% live in households with people over 65 years of age, while 33% live in households with neither children nor elderly people. The most relevant distinction between the metropolitan area and the rest of the country is the higher concentration of households without care needs in the metropolitan area.

Figure 3: Distribution of representative households, Uruguay (2016)



Source: Authors' calculations based on 2016 ECH microdata.

The SAM and the GC-SAM include four additional institutional agents: Government, Firms, a Social Security Institution, and the Rest of the World (ROW). The Government collects taxes, spends, and records net saving or borrowing; Firms earn capital income and retain or redistribute it; the Social security institution collects social contributions and pay retirement and other pensions to households, and the ROW handles trade, factor income, and transfers, with net saving equal to the inverse of the current account balance.

3.2.4 Other parameters and estimations

The elasticities values not calibrated from the GC-SAM are taken from the literature and previous estimates for Uruguay, as presented in Table 2.

Table 2: Parameters used in the model

Parameter	Notation	Lower value	Upper value	Source
Trade elasticities	1.3	2.0		Cassoni and Flores (2010)
Production elasticities:				
Labor-capital substitution	1.1	1.1		Terra et al. (2008)
Female–male labor substitution	0.5	0.8		
LES-CES parameters:				
Income elasticity	0.03	0.98		Gesto (2025)
Price elasticity	-0.01	-1.0		
Substitution of care	1.5	2.5		Authors' estimate
Wage curve elasticities	-0.04	-0.15		Bucheli and González (2012)

Source: Authors' elaboration based on cited references.

The discrimination component in the gender wage gap was estimated using Oaxaca decomposition analysis.[4] We estimated a separate discrimination rate among skilled and unskilled workers and among the different productive activities included in the GC-SAM.

3.3 Scenarios

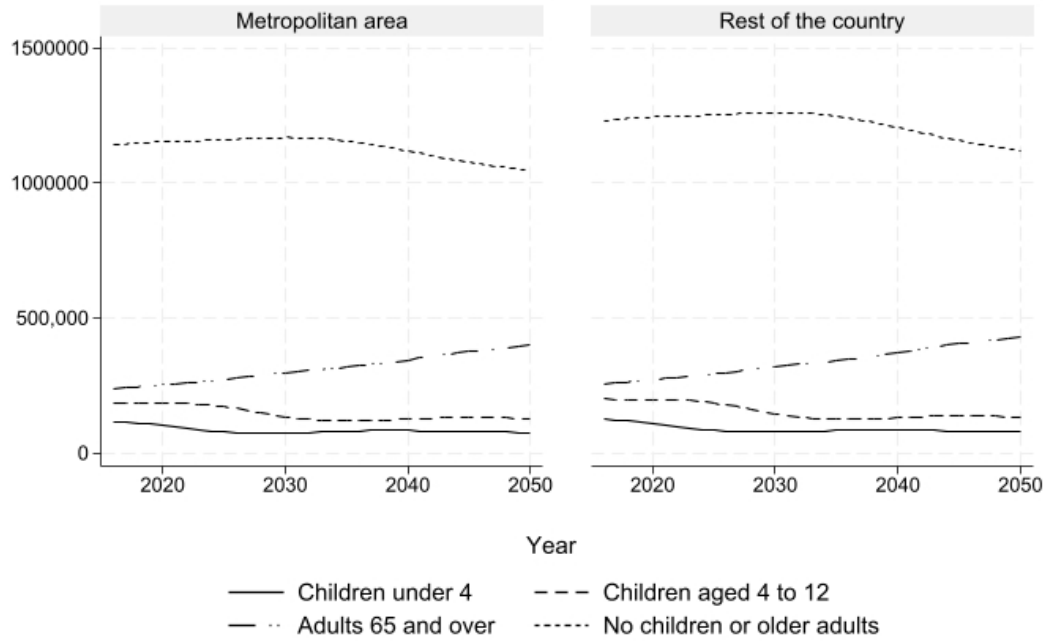
In this section, we present the baseline and simulation scenarios. All scenarios are dynamic and run up to 2050.

3.3.1 Baseline scenarios

The baseline scenario (Business-as-Usual, or BaU) depicts the trajectory of the economy without changes in public policies. GDP projections (IMF, 2025) are used to calibrate changes in total factor productivity (TFP), which are, in turn, fixed in the simulation scenarios. Care needs shift as the composition of the population changes. To account for these changes, we estimate population projections up to 2050 using the Uruguayan population census of 2023 ((National Institute of Statistics (INE), 2024)) and applying the most widely validated demographic techniques, including the cohort-component method and probabilistic models for fertility. As illustrated in Figure 4, the most significant change in the next 25 years will be the increasing importance of elderly households and the decreasing trends of households with children, especially in the Metropolitan region.

[4]In the Oaxaca decomposition, the discrimination component coefficient is the unexplained difference in the wage gap, after accounting for group differences in observed characteristics. The unexplained component is typically interpreted as a measure of discrimination or potential omitted variable bias.

Figure 4: Projected household types (2016-2050)



Source: Authors' elaboration based on population projections of the 2023 census data.

In the BaU, we also assume that the completion rate of secondary education among workers increases in the long run. We assume that the annual percentage change in the skilled labor population observed between 2016-2023 is projected annually until 2050. In this scenario, the tax rates are fixed. Public transfers and public expenditure are constant as shares of GPD. The predicted trajectory of the economy between 2016 and 2025 follows the observed trajectory, so no adjustments were needed.

3.4 Care policies scenarios

We run different policy scenarios, expanding childcare public services and adult-care public services. Following Villalobos (2025), we assume that the expansion of care services leads to a full coverage of demand. In the case of childcare services, this implies reaching 75% coverage rates, while in the case of dependent adults, it is assumed that coverage rates among severely dependents reach 100% and among mildly dependents reach 50%. The childcare expansion scenario also simulates an increase in public investment, following Villalobos (2025).

We test two different financing options: increasing direct tax rates and allowing for an increase in domestic debt. In the first case, even though there is no room to increase current direct tax rates, if we consider that households substitute private care services with public services, they could be eager to contribute if the contribution is lower than the current costs. In addition, adopting long-term care financing options similar to the ones applied by some OECD countries, such as Japan and the Netherlands, could imply workers' contributions to finance long-term care.

Table 3 presents the details of the simulation scenarios, which are run separately and in combination. We also introduce spillover effects from public care policies, meaning that the labor market responds to the expansion of public care services. First, we assume an increase in labor productivity, following the international evidence that finds a causal link between early childhood investments and long-term labor market productivity ((Heckman and Masterov, 2007; Elango et al., 2015; Magableh et al., 2022; Egert et al., 2023)). Thus, we assume that labor productivity increases by 1% for all types of labor in the last years of the simulation period (2048-2050). Second, we also assume that discrimination in the labor market against women is reduced, with the understanding that increasing public care infrastructure could reduce the motherhood penalty and other components of discrimination against women ((Goldin et al., 2022)).

Table 3: Simulation scenarios

Scenario	Description	Coverage in 2050	Financing	Other effects
Childcare	Expansion of early childhood public care services	75%	Direct tax rates	Increase in public investment
Adult-care	Expansion of dependent adult public care services	100% among highly dependent	Direct tax rates	Differentiated increase by representative households
Care	Childcare and Adult-care combined	–	–	–

Source: Authors' elaboration.

4 Results

In this section, we present the impact of the scenarios described above. In most cases, we present the results as the percentage variation compared to BaU in 2050; that is, we analyze the long-term impact compared to the projected trends without an expansion of care services. We first present results assuming that the increase in public care services is financed through direct taxes. We then present how these results are affected if we assume that the expansion of public care is financed through public debt.

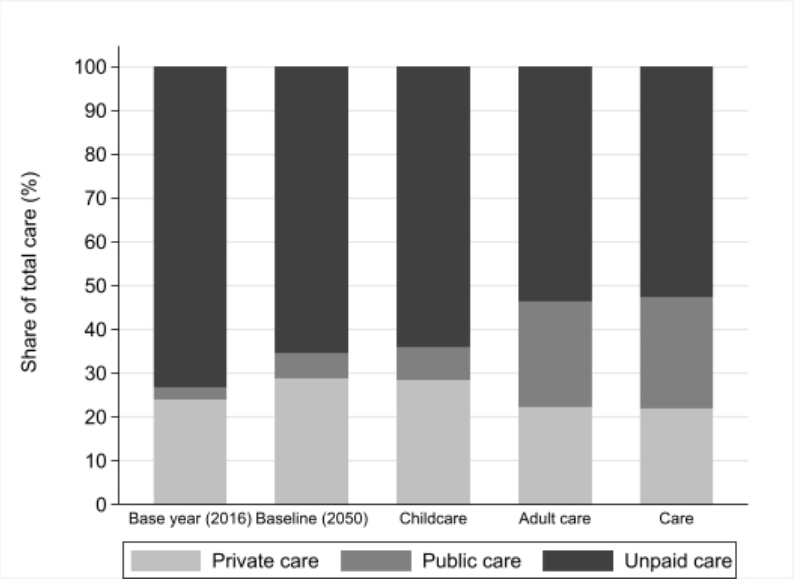
4.1 Use of time and gender gaps

We first analyze how the expansion of public care affects the share of care by type of provision (Figure 5). First, it is interesting to see that comparing the base distribution (2016) and the trend in the BaU (2050), there is a redistribution due to demographic changes: demand for adult care increases, but the population that takes care of adults falls, so home provision of care is less significant and private provision increases. The long-term labor supply increases because the infant population declines.

Figure 5 also shows how care provision changes in simulation scenarios. The expansion of public care services has an even greater impact on the time spent

on care activities by members of households. The impact is more pronounced when adult-care services expand, as coverage rates increase more in this scenario. As a result, households' members reduce the time allocated in home-produced care services. The provision of care in the market is also affected, as private care services are replaced by public care services.

Figure 5: Impact on care provision by type. Share of total care provision, base year and last year of simulation (2050).

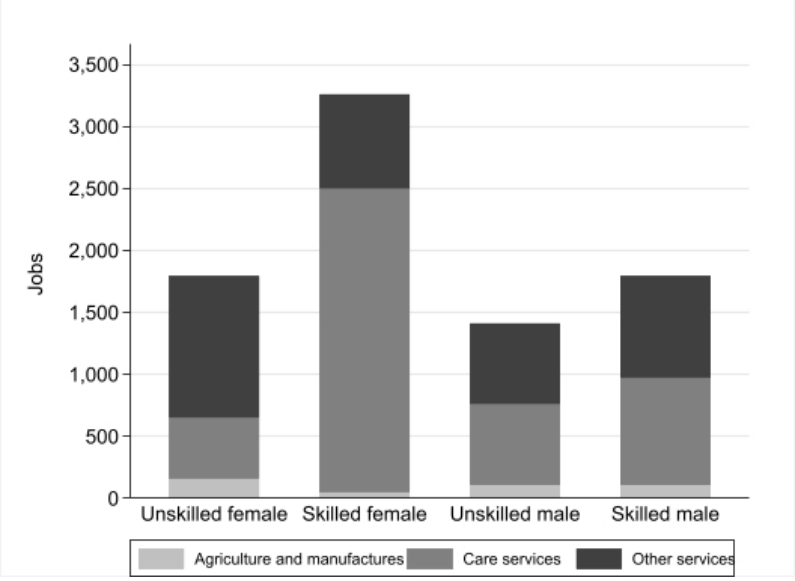


Source: GEM Care results.

The working age population that substitutes home-produced care with public care now has more time to participate in other activities. Consequently, labor supply expands, particularly among women, who exhibit lower participation rates in the labor market in the base year. The expansion of labor supply can be done on the extensive margin (new workers entering the labor market) and on the intensive margin (switching from part-time to full-time jobs). Assuming that all jobs are created at the extensive margin, the Care scenario could lead to the creation of around 8,000 jobs per year. Of these, more than half would be for women and mainly in the care and other service sectors, as shown in Figure 6.

Even when there is a slight contraction of private provision of care services, the combined impact on the market care sector is positive: overall care services expand and demand for labor in these activities also increases. The expansion of public care policies also has a positive impact on total employment. The expansion of public care services has an indirect impact on the rest of the economy, and other sectors also expand. The sectors that increase labor demand the most are public care services, professional services, private health services, retail, and transport services. Employment increases more among qualified workers due to the assumption that in the long run, culmination rates of secondary education are expected to rise, leading to a more educated working population, but also because public care sectors are more intensive in qualified labor than private care sectors.

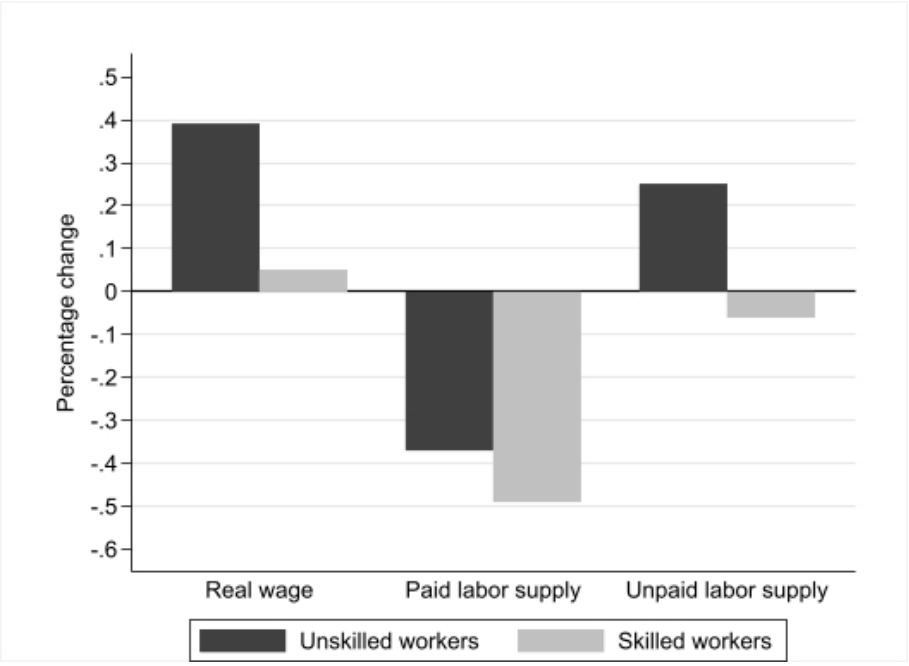
Figure 6: Impact on jobs creation, by labor category and aggregated sector of activity. Care scenario, 2050 compared to BaU



Source: GEM Care results.

Figure 7 shows the percentage changes in gender gaps in wages and participation in paid and unpaid work, in the combined policy scenario relative to the business-as-usual baseline. Gender gaps in labor supply decline: as noted earlier, women increase their labor market participation to a greater extent (Figure 7). However, this comes at the cost of widening wage gaps, which increase among both skilled and unskilled workers. Finally, the unequal distribution of unpaid labor at home is affected differently among skilled and unskilled workers: among skilled workers, the gender gaps are reduced, but among unskilled workers, the policies lead to an even more unequal distribution of unpaid labor.

Figure 7: Impact on gender gaps. Care scenario, percentage variation compared to BaU, 2050



Source: GEM Care results.

4.2 Macroeconomic impact and public financing

Expanding the public provision of care services has a positive impact on the economy, as evidenced in Table 4. Private consumption expands, and so does GDP. Implemented jointly, the two policies increase GDP by 0.7% relative to the BaU projection for 2050.

Table 4: Impact on macroeconomic indicators. Percentage variation in 2050 compared to BaU

	Childcare	**Adult-care**	**Care**
Private consumption	0.1	0.9	1.0
Public consumption	0.0	-0.2	-0.2
Exports	0.0	0.1	0.1
Imports	0.0	0.2	0.3
Real GDP	0.1	0.6	0.7

Source: GEM Care results.

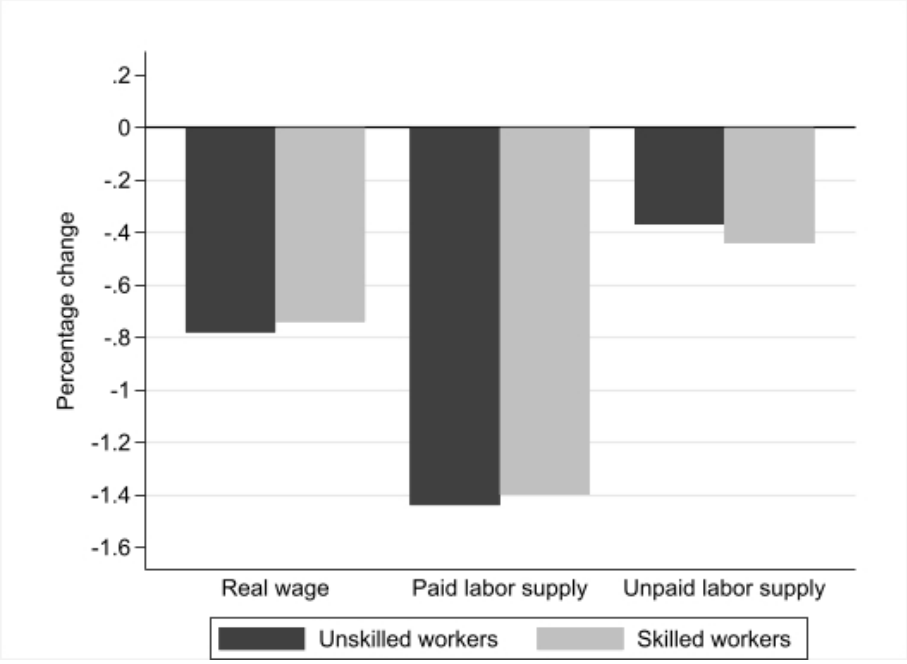
As commented above, it is assumed that the expansion of care services is financed through an increase in direct taxes. However, the positive impact of the policy on the economy leads to an increase in revenue from indirect taxes, factor taxes and tariffs, that together finance almost 20% of the expansion in public transfers and investment.

We obtain similar macroeconomic impacts when we assume that the provision of public care services is financed through adjustments in public debt.

4.3 Spillover impacts of public care policies

In this subsection, we present the results obtained when the expansion of public childcare and adult-care services is combined with labor market spillover effects, specifically a long-run increase in productivity and a reduction in discrimination rates. The results indicate that changes in productivity matter, but reductions in discrimination against women are even more important for closing gender gaps in both paid and unpaid work. As González et al. (2022) show, the dynamics of market power, together with gender norms, reinforce women's dependence on providing unpaid care. Thus, improving the provision of care services is necessary but not sufficient: deeper structural changes are required to transform the distribution of care and reduce gender gaps in the long run. Figure 8 illustrates the overall impact of these spillovers. As shown in Figure 9, these improvements are mainly driven by the decline in discrimination rates faced by women.

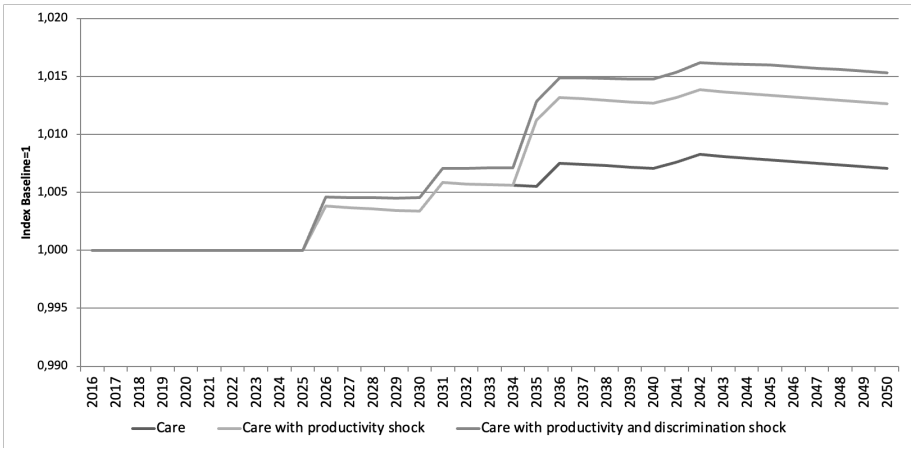
Figure 8: Impact on gender gaps. Care scenario with productivity and discrimination changes, percentage variation compared to BaU, 2050



Source: GEM Care results.

These positive shocks in the labor market also have a positive impact on macroeconomic indicators, more than doubling the rise in GDP compared to the BaU trends (Figure 9).

Figure 9: Impact on real GDP relative to BaU, 2016-2050



Source: GEM Care results.

5 Concluding remarks

This study underscores the critical importance of integrating the care economy into macroeconomic analysis. Despite its substantial economic and social contribution, care work remains largely invisible in traditional frameworks. In a global context characterized by demographic transitions—declining fertility and rising life expectancy—economies face urgent pressure to rethink care systems, particularly for long-term care. This challenge is more relevant in developing economies, where public investment in care remains low. Uruguay serves as a pertinent case study: while the country has established a National Care System, coverage remains insufficient. Therefore, care provision is performed within households and unpaid, a burden that falls disproportionately on women with lower educational attainment. These structural inequalities highlight the urgent need to expand the coverage of the National Care System for both children and dependent adults.

To assess the long-term impacts of such expansions, we construct a gender care sensitive Social Accounting Matrix (GC-SAM) that explicitly integrates paid and unpaid care activities. This matrix is used to calibrate a dynamic Computable General Equilibrium (CGE) model. This methodological innovation provides a comprehensive perspective on the interaction between the care sector and the broader economy, allowing us to value unpaid work—estimated at approximately 27% of GDP—and quantify the market care sector, which accounts for 20% of total employment.

Our simulations show that expanding care policies has a positive impact on economic growth. The expansion of the public care sector creates direct employment and stimulates labor demand in interconnected sectors such as professional services, healthcare, and transportation. While this expansion generally reduces gender gaps by increasing female employment, the benefits are not uniformly distributed; gaps may persist or widen for unskilled women. Crucially, our analysis suggests that potential negative impacts on wage and unpaid labor gaps can be overturned if policy expansions are accompanied by gains in labor productivity and reductions in labor market discrimination. Therefore, we argue that

fiscal expansion must be complemented by targeted training programs and anti-discrimination measures to ensure equitable outcomes.

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A Appendix

A.1 Additional tables and figures

Table A1: Public care and long-term care expenditure as a share of GDP, 2016–2024.

Panel A. Latin America: Total care expenditure (% of GDP)[a]

Country	2016	2017	2018	2019	2020	2021	2022	2023	2024
Chile	–	–	–	0.002	0.003	0.004	0.005	0.004	0.073
Dominican Republic	–	–	–	–	–	–	0.027	–	–
Uruguay	0.047	0.095	0.127	0.148	0.080	0.079	0.080	0.076	0.092

Panel B. OECD: Long-term care expenditure (% of GDP)[b]

Country	2016	2017	2018	2019	2020	2021	2022	2023
Australia	1.192	1.189	1.221	1.282	1.338	1.297	1.329	—
Austria	1.551	1.552	1.518	1.520	1.663	1.577	1.510	1.553
Belgium	2.643	2.696	2.724	3.189	3.181	3.095	3.075	3.125
Canada	2.127	2.163	2.193	2.247	2.464	2.319	2.298	2.399
Czechia	1.643	1.704	1.828	1.951	1.959	1.959	1.831	1.869
Denmark	3.171	3.154	3.201	3.224	3.317	3.167	3.030	3.160
Estonia	0.633	0.639	0.652	0.683	0.775	0.756	0.752	0.881
Finland	2.522	2.406	2.330	2.385	2.464	3.646	3.486	3.174
France	2.397	2.397	2.400	2.385	2.617	2.506	2.454	2.442
Germany	1.850	2.065	2.142	2.229	2.488	2.454	2.433	2.495
Greece	0.106	0.150	0.185	0.143	0.158	0.167	0.156	0.176
Hungary	0.598	0.577	0.571	0.592	0.673	0.682	0.675	0.690
Iceland	1.782	1.768	1.731	1.776	2.014	2.030	1.907	1.764
Ireland	1.639	1.486	1.466	1.433	1.513	1.379	1.312	1.464
Israel	1.014	1.039	1.021	0.880	1.269	1.363	1.315	0.847
Italy	0.935	0.948	0.943	0.917	0.996	0.932	0.898	0.861
Japan	2.232	2.259	2.262	2.326	2.489	2.552	2.540	2.412
Korea	0.772	0.823	0.888	1.003	1.087	1.042	1.075	1.112
Latvia	0.537	0.565	0.586	0.616	0.679	0.656	0.674	0.671
Lithuania	1.150	1.068	1.116	1.138	1.363	1.264	1.265	1.320
Luxembourg	1.260	1.272	1.283	1.360	1.388	1.328	1.359	1.335
Netherlands	3.870	3.848	3.873	3.974	4.524	4.348	4.039	4.059

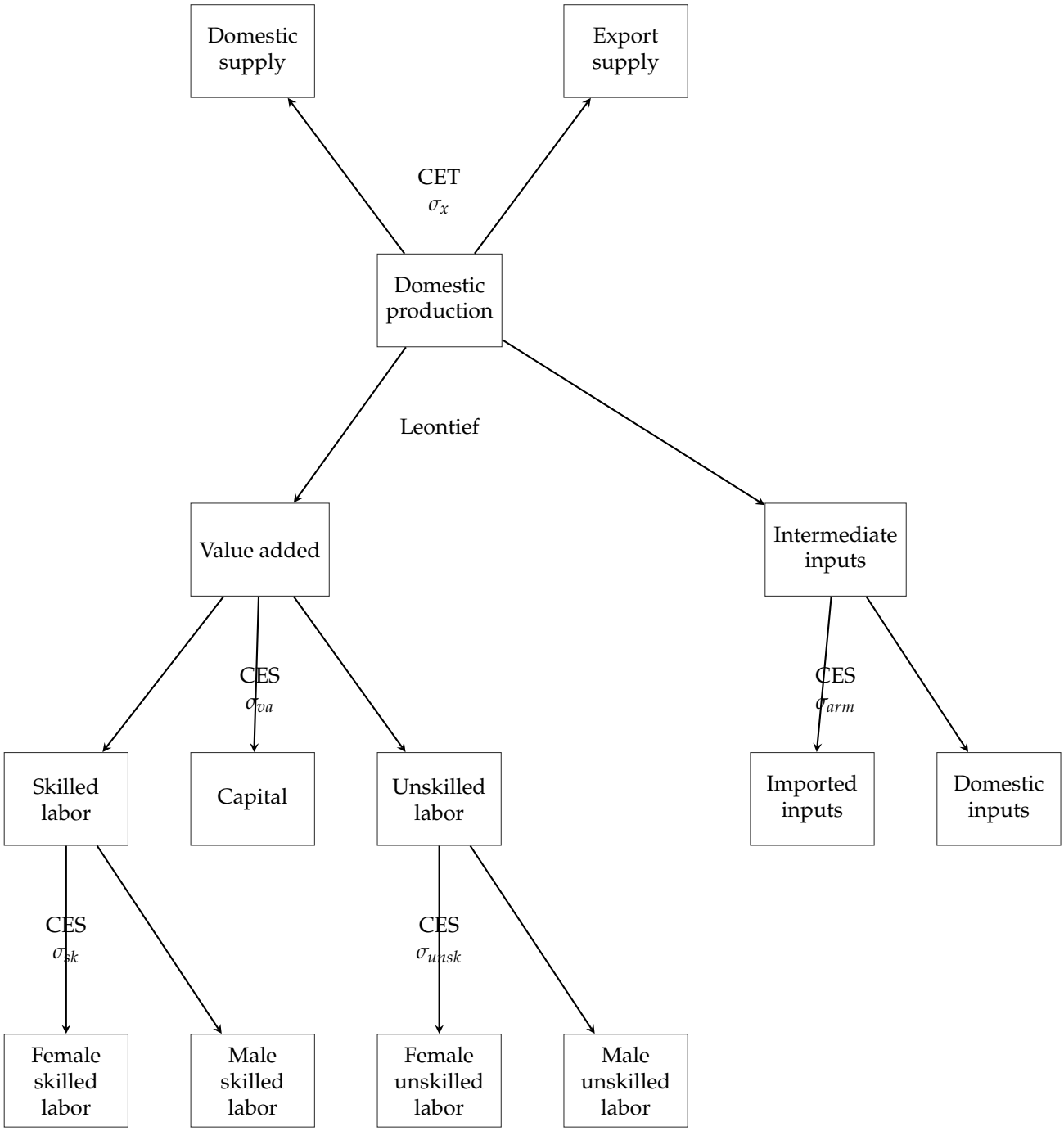
Source: Author's elaboration based on Villalobos (2025), (Dirección de Presupuestos, Ministerio de Hacienda, Gobierno de Chile), Central Bank of Chile, and the World Bank for Chile; Ministerio de Economía, Planificación y Desarrollo (MEPyD), Dirección General de Impuestos Internos (DGII) for the Dominican Republic, and OECD Health Statistics.
Notes: [a] Latin American data refer to total public care expenditure. Data for Uruguay includes the budget allocated to the SNIC by MIDES and INAU. [b] OECD data refer to public long-term care (LTC) expenditure.

Table A2: National Care Systems in Latin America.

Country	Has a National Care System?	Year	Has Budget Executed?	System
Observations				
Argentina	No	—	No	Cuidar en Igualdad
Proposed bill promoted in 2021				
Bolivia	No	—	No	Hacia un Sistema Nacional Integral
Policy draft in UN Women 2023				
Brazil	Yes	2024	No	Politica Nacional de Cuidados
Law passed in Dec. 2024				
Chile	Yes	2018	Yes	Subsistema Nacional de Apoyos y Cuidados
Colombia	Yes	2025	No	Sistema Nacional de Cuidados
Commission created in 2022				
Costa Rica	Yes	2022	No	Sistema Nacional de Cuidados y Apoyos para Personas Adultas y Personas Adultas Mayores en Situación de Dependencia (SINCA)
Law passed in 2022				
Cuba	Yes	2024	No	Sistema Nacional para el Cuidado Integral de la Vida
Created by Decree 109-2024				
Ecuador	Yes	2023	No	Sistema Nacional Integrado de Cuidados
Established via Organic Law in May 2023				
El Salvador	No	—	No	Política Nacional de Corresponsabilidad de los Cuidados 2022–2030
Guatemala	No	—	No	Política Nacional de Cuidados
Policy under development				
Honduras	No	—	No	Política Nacional de Cuidados
Draft policy presented in Dec 2024				
Mexico	Yes	2020	No	Sistema Nacional de Cuidados
General law frozen in Senate since early 2024				
Nicaragua	No	—	No	—
Information not available				
Panama	Yes	2024	No	Sistema Nacional de Cuidados de Panamá
Law 431 of Apr 2024				
Paraguay	No	—	No	Política Nacional de Cuidados
PNCUPA approved in Jan 2023				
Peru	No	—	No	Resolución Ministerial
Conceptual framework set in 2021				
Dominican Republic	No	—	Yes	Sistema Nacional de Protección y Cuidado (SNPC)
Bill in Senate since 2023				
Uruguay	Yes	2015	Yes	Sistema Nacional Integral de Cuidados (SNIC)
Law 19.353				
Venezuela	No	—	No	Misión Amor Mayor y programas sociales
Care as social mission programs				

Source: Author's elaboration based on official legislation, government decrees, and public policy documents from each country.

Figure A1: Production in GEM- Care



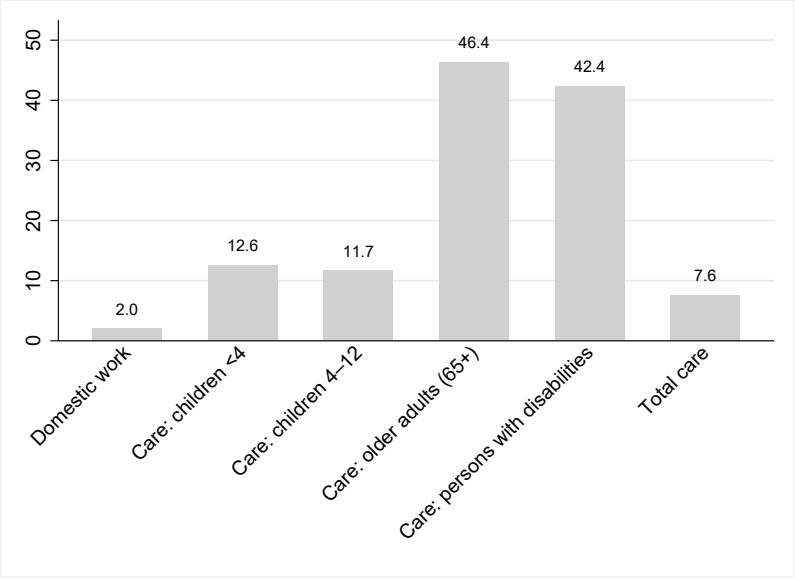
Source: Own elaboration.

Table A3: Value added distribution by activity sector (%)

Sector	Unskilled women	Skilled women	Unskilled men	Skilled men	Total
Agriculture and livestock	11.2	4.8	65.3	18.7	100
Forestry, fishing and mining	3.5	7.7	70.0	18.8	100
Meat products	12.0	6.0	64.4	17.7	100
Food and beverages	15.8	11.6	53.0	19.7	100
Textiles and apparel	34.1	15.3	35.5	15.2	100
Wood and paper	6.5	15.8	49.6	28.2	100
Fuels	0.8	14.0	27.2	58.0	100
Chemicals and pharmaceuticals	6.7	28.7	23.4	41.3	100
Other manufacturing	7.9	8.2	54.7	29.2	100
Construction	1.7	3.8	77.1	17.3	100
Commerce	22.1	18.0	35.6	24.2	100
Tourism services	29.8	18.0	32.9	19.3	100
Transport services	3.8	7.9	61.7	26.6	100
Postal and telecommunications	5.0	24.1	16.3	54.6	100
Electricity, gas, water and sanitation	2.8	14.4	43.8	39.0	100
Financial services	5.7	38.0	10.2	46.1	100
Professional services	9.6	34.0	16.1	40.2	100
Repair and production support	5.3	4.1	62.7	27.8	100
Public administration and social security	10.5	33.7	27.3	28.4	100
Public preschool education	8.9	91.1	0.0	0.0	100
Other public education	5.9	67.9	2.8	23.4	100
Private preschool education	19.0	79.4	0.0	1.7	100
Other private education	7.6	59.4	5.4	27.6	100
Public hospital and human health	16.9	53.7	7.2	22.2	100
Private hospital and human health	13.8	47.6	7.0	31.6	100
Public social care services	24.1	48.6	14.4	13.0	100
Private social care services	44.6	37.8	7.5	10.1	100
Other services	18.3	22.8	29.8	29.0	100
Domestic service	73.6	5.8	17.1	3.4	100
Private childcare	78.4	21.5	0.1	0.0	100
Private adult care	80.9	15.7	3.0	0.4	100

Source: Authors' elaboration based on the SAM.

Figure A2: Share of unpaid care supplied to other households, by care type



Source: Authors' elaboration based on 2016 SAM.

A.2 Unpaid work as share of the GDP

International stylized facts indicate that unpaid care and domestic work constitutes a sizable (yet typically uncounted) share of economic activity. Globally, valuing unpaid work at country-specific minimum wages implies an order of magnitude of about 9% of world GDP, with the bulk in in-home housework and smaller components in direct personal care and help to other households/organizations (International Labour Organization, 2018). For OECD countries (where estimates focus explicitly on non-care housework: cooking, cleaning, laundry, gardening, small repairs) the value is around 15% of GDP under a replacement-cost approach (market-based post-tax prices for domestic services) and about 27% under an opportunity-cost approach (average net wages) (OECD, 2021). For Latin America and the Caribbean, compilations based on national satellite accounts suggest an average near 21–22% of GDP (UNDP Latin America and the Caribbean, 2024). These magnitudes are not directly comparable across sources: they vary with (i) the valuation price (minimum wage, domestic workers' wage, specialist wages, or economy-wide net wages), (ii) coverage (non-care housework only vs. housework and direct care; treatment of passive/supervisory care), (iii) the reference year and denominator (local currency vs. PPP), and (iv) population/hour aggregation and annualization choices (International Labour Organization, 2018; OECD, 2021). Table A4 summarizes selected estimates across countries under a common presentation.

Country evidence aligns with this range. Recent or benchmark figures include: Argentina (2021) at 14.8% (generalist, no passive care) and 26.7% (hybrid, with passive care) (INDEC, 2023); Mexico (2023) at 26.3% (INEGI, 2024); Colombia (2017) between 16% (generalist) and 19.6% (specialist) (DANE, 2018); Peru (2010) at 17.0% (generalist), 24.4% (specialist), and 20.4% (hybrid) (Instituto Nacional de Estadística e Informática (Perú), 2016); Ecuador (2023) around 21% using a production-cost (hybrid-type) approach (INEC Ecuador, 2025); Costa Rica (2022) at 21.3% (hybrid) (Banco Central de Costa Rica, 2024); Chile (2020) near 25–26% under a specialist replacement-cost approach (Banco Central de Chile, 2021); El Salvador (2010) about 21.3% (Universidad Centroamericana (UCA), 2018); Guatemala (2014) around 18.8% (Instituto Nacional de Estadística (Guatemala), 2017); and Uruguay (2013) roughly 22.9% under a hybrid specification (domestic-services wages for housework and specialist wages for other activities) (Salvador, 2015). Taken together, these estimates underscore both the economic scale of unpaid work and the sensitivity of levels to methodological choices.

Table A4: Participation of unpaid work in GDP (%).

Study / reference	Country / region	Year	Method	Expanded	Domestic	UHW (% of GDP)
ILO 2018	Global	2018	Generalist	0	0	9.0
OECD 2018	OECD	2018	Replacement	0	1	15.0
OECD 2018	OECD	2018	Opportunity	0	1	27.0
UNDP 2022 (LAC average)	LAC	2022	Mixed	0	0	21.4
Argentina 2021	Argentina	2021	Generalist	0	0	14.8
Argentina 2021	Argentina	2021	Hybrid	0	0	26.7
Mexico 2023	Mexico	2023	Hybrid	0	0	26.3
Colombia 2017	Colombia	2017	Specialist	0	0	19.6
Colombia 2017	Colombia	2017	Generalist	0	0	16.0
Peru 2010	Peru	2010	Specialist	0	0	24.4
Peru 2010	Peru	2010	Generalist	0	0	17.0
Peru 2010	Peru	2010	Hybrid	0	0	20.4
Ecuador 2023	Ecuador	2023	Hybrid	0	0	21.0
Costa Rica 2022	Costa Rica	2022	Hybrid	0	0	21.3
Chile 2020	Chile	2020	Specialist	1	0	25.6
El Salvador 2010	El Salvador	2010	Unspecified	1	0	21.3
Guatemala 2014	Guatemala	2014	Hybrid	1	0	18.8
Uruguay 2013	Uruguay	2013	Hybrid	0	0	22.9
Our estimate (with passive care)	Uruguay	2017	Hybrid	1	0	27.0
Our estimate (without passive care)	Uruguay	2017	Hybrid	0	0	19.9

Notes: (i) *Expanded* (=1) includes passive care; (ii) *Domestic* (=1) refers to estimates restricted to domestic production only (excluding care).
Sources: Country-level information was drawn from national satellite accounts on unpaid work and from the most recent official or academic estimates.