Gender and Time Use in Morocco – Simulations of Increased Equality at Home and in the Labor Market [*]

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Abstract

Like many other low- and middle-income countries, the gender situation in Morocco is characterized by inequalities in time use, with a low female rate of labor force participation and little male participation in household work (differences that, for women, are particularly pronounced in rural areas), wage discrimination against women, and gains in education that are particularly strong for women.

The analysis in this paper is based on simulations with a dynamic computable general equilibrium (CGE) model that is unique in that time use is extended to account for market (or GDP) production, production of household services (for own consumption), and leisure. In terms of theory, the model represents a pragmatic implementation of neoclassical economics with optimizing agents, including utility-maximizing households, which make decisions in the context of imperfect sector-specific substitutabilities between labor categories disaggregated by gender and education as well as choices between household services and substitutes provided by the government or the private sector). The model is applied to a Moroccan database, covers the period 2024-2035, and is used as a laboratory to simulate the impacts on gender equality and other economic indicators of changes in labor productivity (for women in market work and for both genders in household production), male time input into household production, wage discrimination, and the provision of government child care services.

From the perspective of promoting over-all welfare and gender equality, the most encouraging outcomes are generated by a multi-pronged approach that includes increased productivity in home production, reduced wage discrimination against women, expanded child care outside the home, and changed social norms (represented by a larger male time share in home production and higher elasticities of substitution between men and women in home and market production). Changes in individual areas generate uneven shocks in labor supplies that a rigid market finds it difficult to absorb while maintaining attractive market employment conditions. For example, other things being equal, a shift in gender time shares in home production toward men raises the market supply of female labor while

reducing the male supply. The gain in the female share in total labor incomes is dampened by lower female wages and higher male wages. The impact on the GDP economy (including total labor incomes and total employment) is negative even though, if defined to include home production, total household consumption increases.

Keywords: Economics of Gender - Non-labor Discrimination, Time Allocation and Labor Supply, Computable General Equilibrium Models, Social Accounting Matrix, Morocco

JEL codes: C68, E16, J16, J22

1. Introduction

The gender situation in Morocco is characterized by inequalities in time use, with a low female rate of labor force participation, little male participation in household work, wage discrimination against women, and on-going gains in education that are particularly strong for women. In these respects, the country is similar to many other low- and middle-income countries.

One of the policy objectives of Morocco's government is to reduce gender inequalities. Given this and drawing on a Moroccan gendered dynamic computable general equilibrium (CGE) model and a new database, this paper analyzes the potential contributions to increased gender equality in time use and incomes of a wide range of policy changes and other shocks. The analysis covers the period 2024-2035. The shocks considered include reductions in wage discrimination, increased female productivity in the labor market, increased productivity in the production of household services for own consumption, a larger male time input into the production of these services, and the provision of government child care services.

After presenting the model and database (Section 2), we turn to the model-based analysis: the base scenario (Section 3), and the non-base simulations (Section 4), which are focused on the issues listed in the preceding paragraph, winding up with the main conclusions (Section 5). In a set of appendices, we present the Oaxaca-Blinder decomposition of gender wage gaps in Morocco (Appendix A), background data and excerpts from the model database (Appendix B), simulation results in table form (Appendix C), and the results of systematic sensitivity analysis of the simulation results (Appendix D)

2. Model and database

This section briefly overviews the model and database with the aim of providing the background needed to interpret the simulation analysis of Sections 3 and 4.

2.1. Model

The emerging literature of gendered computable general equilibrium (CGE) models, which is surveyed in Lofgren and Cicowiez (2024a), offers an analytical approach that permits

analysis of the impacts of policies and other shocks on the conditions of men and women, both in the labor market and in the production of household services for own consumption. The impacts are considered in the context of the broader economy, considering links between production, factors (including different labor types, foreign trade, household welfare, the government budget, and the balance of payments.

The model used in this paper, GEM-Gender Morocco, documented in Lofgren and Cicowiez (2024b), is part of this literature.[1] It is a gendered dynamic country-level CGE model adapted to the needs of this study of Morocco, most importantly the simulation of changes in gender norms and rigidities in market and household production as well as in wage discrimination.[2] Its starting point is GEM-Care, a model used for analyses of South Korea and Colombia (Cicowiez and Lofgren 2023; Cicowiez et al. 2023), which in its turn draws on a set of earlier models, including Cicowiez and Lofgren (2017), Lofgren et al. (2013), and Lofgren et al. (2002).

In terms of gender and the related area of household service production, the following extensions distinguishes GEM-Gender from other models: (a) in addition to the GDP economy, its production covers leisure and household services produced for own consumption; (b) the GDP sphere singles out sectors that produce substitutes for household services (for example child care);[3] (c) it has a nested CES treatment of value added with composite labor and other factors at the top and, below the top, labor factors disaggregated first by level of education and then by gender); (d) its structure of household consumption is also nested – at the bottom, it has CES (Constant-Elasticity-of-Substitution) functions that

[1] The model of this paper and the other models referred to in this paragraph were implemented in the GAMS software (GAMS 2025).

[2] The adjustments make it possible to run simulations with gradual changes in (a) male and female shares in household production (via changes in factor share parameters in the CES value-added functions); and (b) the flexibility of the employment of gendered labor factors to changes in relative wages (by formulating the same functions in a manner that facilitates the implementation of such elasticity changes). In addition, the Morocco model includes adjustments in the treatment of wage discrimination – this phenomenon is treated as a tax on activity payments to female labor that are recycled as a subsidy to the discriminating activities.

[3] Under the System of National Accounts, production that is part of GDP is referred to as being "within the production boundary." It includes (a) all production actually destined for the market or provided for free by the government or NPISHs (non-profit institutions in the service of households); (b) household production of *goods* that are retained for final consumption within the household (such as production of agricultural goods); and (c) the production of *housing services* for own final consumption by owner occupiers. It does not include the production of domestic and personal services for consumption within the same household (such as preparation of meals and care and training of children) (UN 2009:6-7).

capture the choice between market services and services produced by the household itself (whenever this choice is relevant) and, among market services, between those provided by the private sector and the government; at the top, it has LES (Linear-Expenditure-System) functions to capture the choice between all consumption items, including aggregates (or composites) of the just-mentioned services that both are purchased from the market and provided by the household;[4] (e) the government may similarly provide care services to households for free or at subsidized prices; and (f) thanks to an extension of the producer first-order conditions for labor hiring, it is able to analyze the consequences of wage discrimination (i.e., wage differences that are unrelated to marginal productivity differences).

Beyond its gender-related aspects, GEM-Gender shares most of its features with most other CGE models, making it easier to understand the results: it is a system of simultaneous non-linear equations that is solved numerically and provides an economywide multisectoral representation of the real sphere of the economy with the bulk of the data derived from a base-year social accounting matrix (SAM). The equilibrium aspect of the model refers to the fact that, under each solution, agents are assumed to have reached "optimal" decisions, meaning that, subject to budget constraints, producers and consumers maximize profits and utility, respectively, while government decisions respect a set of explicit rules (for example, to tax on the basis of policy-determined rates and make sure that spending and receipts, including borrowing, are equal). Similarly, the economy lives under a budget constraint in its dealings with the rest of the world (represented by the balance of payments). In the markets for commodities (goods and services) and factors, prices and wages (or rents) adjust to make sure that the quantities supplied and demanded be equal in the context of government policies and, for many commodities, international trade.

More specifically, for commodities, prices are flexible for the domestic output that is used domestically. For exports and imports, the prices in foreign currency are exogenous, determined in world markets – this is the small-country assumption. These prices are translated into domestic-currency prices after adjustments for the exchange rate and any

[4] The bottom level is only relevant for care and other services for which the households face a choice between the market and own production. The database also includes demands for market services without any household production, for example health services.

taxes on exports and imports. On the domestic supply side, it is assumed that the producers allocate output between exports and domestic sales with the objective of maximizing revenue in the context of imperfect transformability between these two destinations (a phenomenon that is captured via Constant-Elasticity-of-Transformation [CET] functions). On the domestic demand side, the demanders are assumed to minimize costs in the context of imperfect substitutability between imports and domestic output (a situation captured by the so-called Armington functions).

For factors, wages (rents) clear the markets in the context of alternative assumptions for mobility between the different activities that demand any given factor. For private capital, the mobility is restricted: for new investments, the sectoral allocations respond to changes in relative rents in different activities while, one installed, private capital is immobile. In this setting, in any year, activities have their own capital markets with exogenous quantities supplied (activity-specific stocks), endogenous quantities demanded, and market-clearing rents.

Non-capital factors are invariably fully mobile between the activities (one or more) that use them with a market-clearing economywide wage or rent variable. Of course, the mobility is only conceptual if the database indicates that only one activity uses a given factor (which, for example, is the case if a natural resource factor only is used by a single mining activity).

For labor, this treatment is extended to consider the empirical fact that, for any given category (here distinguished by gender and education level), the wages vary across the activities in which they are employed – for example, unskilled labor almost invariably receive lower wages in agriculture than in other activities. In this setting, market-clearing wage changes lead to the scaling of the wages earned in any given activity, thus leaving relative wage gaps intact.

Another feature that GEM Gender shares with most CGE models is that its dynamics are recursive: actors are assumed to be myopic, making decisions based on data for the current year, which are influenced by past decisions. It is appropriate for medium- to long-run analysis of shocks that have significant repercussions beyond the sectors or households that are affected directly, drawing on its ability to capture links between different parts of an economy, for example links between production sectors via intermediate demands, or links

between household incomes from production, household consumption demands, production, and trade.

In a post-calculation module, following the approach in Lofgren et al. (2013), the evolution of real consumption per capita from the simulations is used to feed a simple microsimulation model that generates estimates of poverty, vulnerability, and inequality (including headcount ratios and a Gini coefficient) for each representative household in the model database. This model assumes that, for each representative household in GEM-Gender Morocco, the income distribution is unchanged (in the sense that all per-capita consumption levels are scaled by the same factor).[5]

2.2. Database

The major components of the database are a SAM for 2019, documented in Cicowiez and Lofgren (2024), physical data on gendered time use and population, as well as a set of elasticities (related to production, trade, and household consumption). The main data sources for the construction of the 2019 SAM are Supply and Use Tables (SUTs), a macro SAM based on the SUTs, and the Integrated Economic Accounts (IEA), all based on 2019 data, complemented by data from the 2014 national household survey, the 2011 labor force survey, the 2012 time use survey, and the 2014 household production satellite account. The disaggregation of the SAM and the rest of the database is presented in Table 2.1. For a detailed description of the SAM and how it was built, see Cicowiez and Lofgren (2024).

[5] Different approaches to microsimulation are possible. For example, GEM-Gender could alternatively feed data to a module that, unlike ours, is not integrated into the GAMS code.

Table 2.2.2. Disaggregation of GEM-Gender Morocco database & model

Sectors (activities and commodities) (86)	*Agriculture and industry, GDP (7)* agriculture, mining; food processing, textiles and clothing, other manufacturing, utilities, construction *Services, GDP (13)* trade, transport, education-private, health-private, childcare-private, elderly care-private, domestic services*, other services, education-government, health-government, childcare-government, elderly care-government, other government *Services, non-GDP (household) (66)*** child care, elderly care, other household services, leisure
Factors (12)	*Labor (8)* Male by education (primary or less, lower secondary, upper secondary, tertiary) (4) Female by education (primary or less, lower secondary, upper secondary, tertiary) (4) *Other (4)* Capital - private Capital - government Land (for agriculture) Mining natural resource
Institutions (10)***	*Households (6)* Rural (working age head with children; working age head without children; elderly head) (3) Urban (working age head with children; working age head without children; elderly head) (3) *Other (4)* NPISH (Non-profit institution in the service of households) Enterprise Government Rest of the World
Taxes and subsidies (6)	Tax - activities Tax - commodities Tax - imports Tax - income Subsidy - commodities Subsidy - activities
Distribution margins (3)	Trade and transport margins - domestic Trade and transport margins - imports Trade and transport margins - exports
Investment (3)	Investment - private Investment - government Investment - change in inventories

*Substitutes for other household services in household consumption

**Non-GDP (household service) sectors are disaggregated by household and, for leisure, also by labor type

***The institutional capital accounts are for split into domestic non-government (aggregate of households and enterprises), government, rest of the world, and financial institution.

Source: GEM-Gender Morocco database.

This disaggregation was developed in light of the objectives of this analysis, to try to better understand the factors that influence female labor force participation: in particular, the disaggregation of household services for own consumption and GDP sectors is designed to make it possible to analyze household choices between own production and market purchases while the disaggregation of labor by gender and level of education is conceived to capture inequalities, both in the labor market and in household production. Moreover, the household groups in both rural and urban areas are distinguished on the basis of their reliance on care and other household services, as this influences how they are affected by different policy shocks. It should be noted that "care" here is defined narrowly to cover only care of children and elderly provided by households and the GDP economy. Broader definitions are sometimes used. Care could, for example, also include health sectors as well as most other household services (like cooking and cleaning) and their market substitutes.

The SAM is used to define the base values for the bulk of the model parameters, including those covering production technologies, sources of commodity supplies (domestic output or imports), commodity demands (for household and government consumption, investment, changes in inventories, and exports), transfers between different institutions, and tax rates.

The main challenges related to the SAM construction were due to the need to include data related to (non-GDP) household services, leisure, wage discrimination, and government provision of substitutes for household services for use by the households. The extension of the SAM to household services and leisure required that the time inputs for these activities be given values, drawing on data on the wage and the hours spent on each activity. However, as opposed to GDP work, these wages are not observable. In the Morocco SAM, for leisure, the wage (or price) is defined on the basis of the opportunity cost of each labor category (i.e., the income that is sacrificed since this time is not spent earning a market wage). For household services, the wage is defined on the basis of the wage of labor producing the closest available market substitute.[6] (To exemplify, for child care, this may be the wage paid to a baby sitter coming to the family home.)

[6] One consequence of this approach is that, for any labor type, the wages will vary across activities. However, this is also the case for observed wages in GDP sectors, a phenomenon that is handled by the model structure in a straightforward manner. In the background, wage variations across activities for a given labor category

With regard to wage discrimination against women, we draw on econometric estimates from analysis using the Oaxaca-Blinder approach (see Appendix A). Using these estimates, the SAM was expanded to include information that makes it possible to identify the part of the wage gaps between labor categories that is due to discrimination against women.[7]

Finally, government care services for household consumption were treated as transfers from the government to the households, used by the households to pay for these services, produced by government care activities.[8]

With regard to the database beyond the SAM, the time use data, disaggregated by activity and labor category (male and female labor disaggregated by level of education), are an essential part given that the model captures labor allocation in terms of time use, not only in terms of monetary values. Together with the SAM (which shows payments at the prices of the base-year of the SAM), the time use data make it possible to define wages by labor category.

The fact that the model is dynamic imposes additional data needs. The key data inputs include population and labor force projections. For population, disaggregated by household category, we draw on UN population projections by age group and urbanization (UN 2024; and UN 2018). For labor force disaggregated by gender and level of education, we use IIASA data (KC, et al. 2024). The database also includes a set of elasticities – these are stated in Appendix B, Table B.1.

The specific elasticity needs depend on the functional forms used to cover production, household consumption, and foreign trade (described in Section 2.1). The values used are

may, among other factors, be due to variations in the marginal utilities (or disutilities) of different types of time use: spending time with a child may be very different from harsh physical work. Different time uses may also vary in terms of job security, status, and risk for injury. Together, such considerations tend to lead to large wage gaps between different activities for a given labor category.

[7] More specifically, in the SAM, the values related to wage discrimination (the underpayment of women relative to their marginal product) appear as payments between the discriminating activities and what may be labeled a tax (or subsidy) account: a payment to this account is added to the payments of the activity to female labor; in its turn, the tax account uses this receipt to subsidize the activity. In the model, this translates into payments from activities to female workers below their marginal value products due to the internal workings of the activity (i.e., without facing a loss or gain due to taxes or subsidies) and discouragement of female labor hiring. For more details on how this appears in the SAM, see Cicowiez and Lofgren (2024).

[8] In the model, one key advantage of this approach is that the use of the services naturally adds to household welfare (like household consumption of other goods and services). In the model, an additional twist is that an endogenous subsidy assures that the households decide to consume the policy-driven value of government care services.

informed by the literature and selected to capture the observed rigidities of gender roles, particularly within the households: In value-added generation, this is reflected in relatively low elasticities of substitution between male and female workers (at 0.9 and 0.5 in the GDP and non-GDP sectors, respectively).[9] Similarly, the price elasticities of demand are relatively high, at -1.0, for GDP goods and services but relatively low, at -0.5, for services that are composites of market and household services. For male and female leisure, the price elasticities are moderate, set at -0.85. Most of these values are obviously uncertain and may also be changing over time: to address this concern, we test the impact of systematic changes in elasticities – Appendix D shows the results of these tests.

As explained, to conduct distributional analysis, GEM-Gender Morocco is linked to a simple microsimulation model. To that end, we used micro level household data from the 2014 Enquête Nationale sur la Consommation et les Dépenses des Ménages (ENCDM) -- this is the most recent household income and expenditure survey available for Morocco. Therefore, we assume that the 2024 distribution of consumption per capita is the same as in 2014. In addition, each household in the ENCDM 2014 is mapped to one household group in GEM-Gender Morocco. In other words, in the ENCDM 2014, we single out the same six households as we have in the 2019 SAM.

For each scenario (see below), the resulting per capita consumption expenditure (on GDP products) is used to conduct poverty and vulnerability analyses with constant thresholds and different distributional analyses. Specifically, based on these variables, the usual measures of income poverty of the FGT (Foster et al., 1984) and inequality (Gini) are calculated for each household type.

The poor households (and individuals) have a per capita consumption expenditure below the national poverty line differentiated according to the area of residence (i.e., rural and urban). The vulnerable households have a per capita consumption expenditure above the poverty line and below the vulnerability threshold. Following HCP (2022), we use a vulnerability threshold equal to the poverty line plus 50 percent.

[9] Morocco-specific estimates of these elasticities and many others are not available. In Appendix C, we report the results for systematic sensitivity analysis of simulation results to changes in elasticity values.

3. Simulation analysis: Introduction and base scenario

3.1. Introduction

The simulations in this study are designed to analyze the effects of a set of policy changes and other shocks that may raise female labor force participation and increase equality between men and women at home and in the labor market. Given that we use a CGE model, the analysis does not only address the effects on the labor market but also the broader economic effects of these shocks.

The simulations are split into a base (or business-as-usual) scenario and a series of non-base scenarios that introduce one or multiple shocks. In Section 3.2, we present the base scenario and analyze its results. After this, Section 4 turns to the non-base scenarios – the assessments of the impacts of the different scenarios are focused on comparisons between the results for the non-base scenarios and the base.

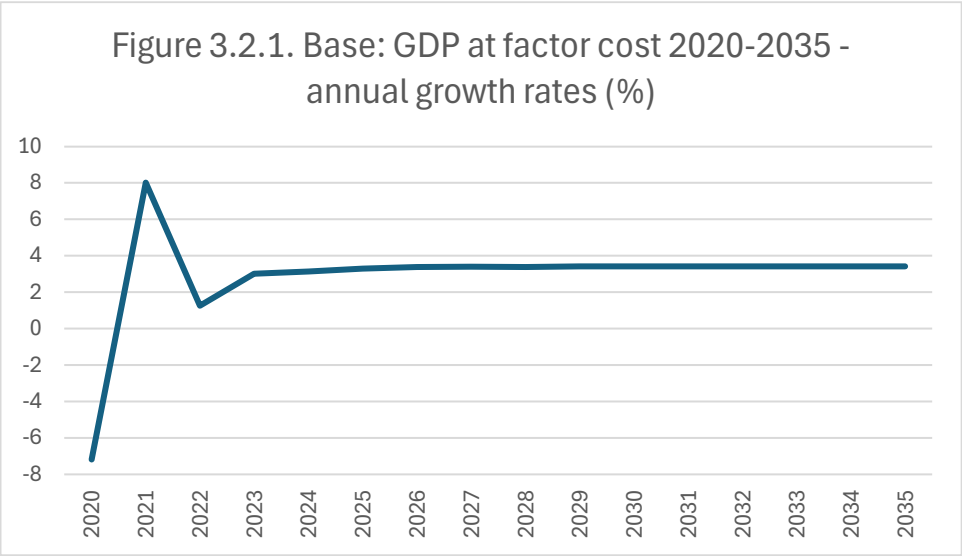
All scenarios are run for the period from 2019 (the base-year for the SAM and rest of the database) to 2035. The model data are calibrated so that the solution for 2019 exactly replicates the detailed 2019 dataset. Given our forward-looking perspective, we focus on the results for 2024 and onwards. For all scenarios, the results are identical for 2019-2024; thus, 2024 provides a common starting point when results for different scenarios are compared.

3.2. The base scenario

As noted, the base scenario is designed to simulate the evolution of Morocco's economy in the absence of policy changes. For this scenario (but not for the other scenarios), growth in GDP at factor cost is exogenous.[10] Drawing on IMF (2024), for the years 2019-2029, the scenario imposes annual growth rates in the range of 3.0-3.4 percent; for 2030-2035, we

[10] Technically, for the *base* scenario, the variable GDP at factor cost is fixed at the projected levels while, at the same time, the model has an endogenous variable that, in each year, scales TFP in selected production activities so that the exogenous GDP level is generated. For the *non-base* scenarios, this setting is reversed: GDP at factor cost is endogenous and the TFP scaling variable exogenous, *fixed at the levels generated by the base scenario*. The point *in italics* is important: this means that the results for the non-base scenarios are no different if the only change is a switch from exogenous to endogenous GDP. However, given that, in fact, other shocks are introduced, the GDP level (and other results) will deviate from the base.

assume that the economy continues to grow at 3.4 percent (the projected 2029 rate) – Figure 3.2.1 shows the annual growth rates for GDP at factor cost that are imposed.



For the government, the indirect (producer and product) tax and subsidy rates of 2019 remain in place throughout the simulation period while other receipts and the different spending items either grow at the rate of GDP or maintain the observed 2019 GDP *shares* (i.e., grow at rates similar to the rates of GDP growth).

Like all simulations, the base scenario follows rules for clearing the three macro balances of the model: the government budget, the balance between private investment spending and its financing, and the balance of payments. For the government, the budget is balanced via adjustments in direct tax rates, while the level of private investment adjusts to the level of available financing (primarily from domestic private savings), and the balance of payments clears via changes in the real exchange rate (through its impact on the quantities and values of exports and imports). Given the assumption of stable policies and the absence of other shocks, the economy as a whole grows in a balanced fashion, with only moderate adjustments in these clearing variables.

Selected results for the base scenario are summarized in Figures 3.2.2-3.2.16, which are all focused on the period 2024-2035 – the period that is relevant to the following analysis. (Tables with results for both base and non-base simulations are found in Appendix C; this

information is often more detailed.) As intended, the structural changes are minimal, i.e., the scenario is indeed a business-as-usual scenario. In the absence of other economic shocks, the overall annual evolution of the economy is driven by the exogenous growth of GDP at factor cost (shown above in Figure 3.2.1).

The simulated average annual growth rates for standard macro indicators in the GDP economy during the period 2025-2035 are in the narrow range of 3-4 percent (Figure 3.2.2). At the level of broad sectors, the range of growth rates is wider, reflecting different expenditure elasticities and, for care sectors, a switch from household to market services (Figure 3.2.3). The relatively slow growth for domestic services is related to an increase in its price relative to most other commodities, which is due to relatively rapid wage growth for women with the lowest education level, the main cost item for this sector.

Figure 3.2.2. Base: Macro indicators (GDP economy) - average annual growth 2025-2035 (%)

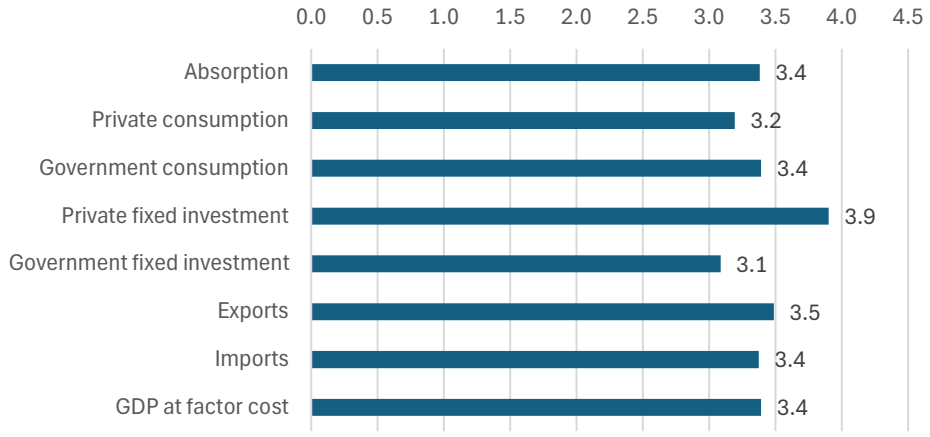


Figure 3.2.3. Base: Value added GDP sectors - average annual growth 2025-2035 (%)

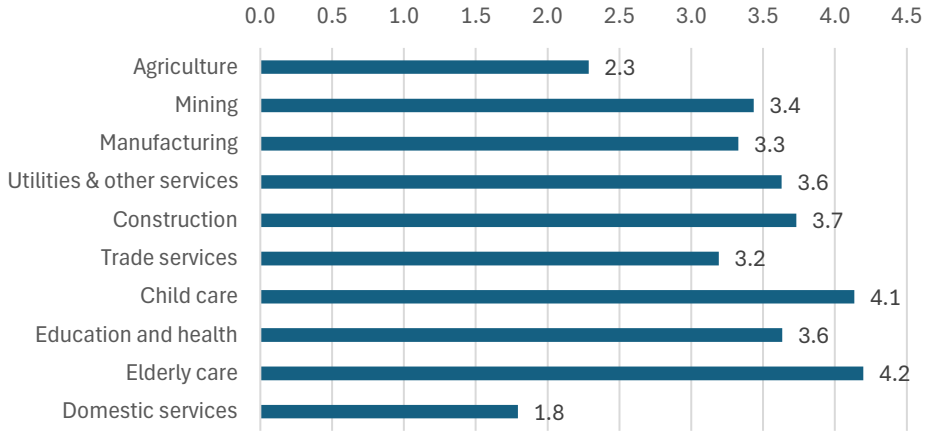
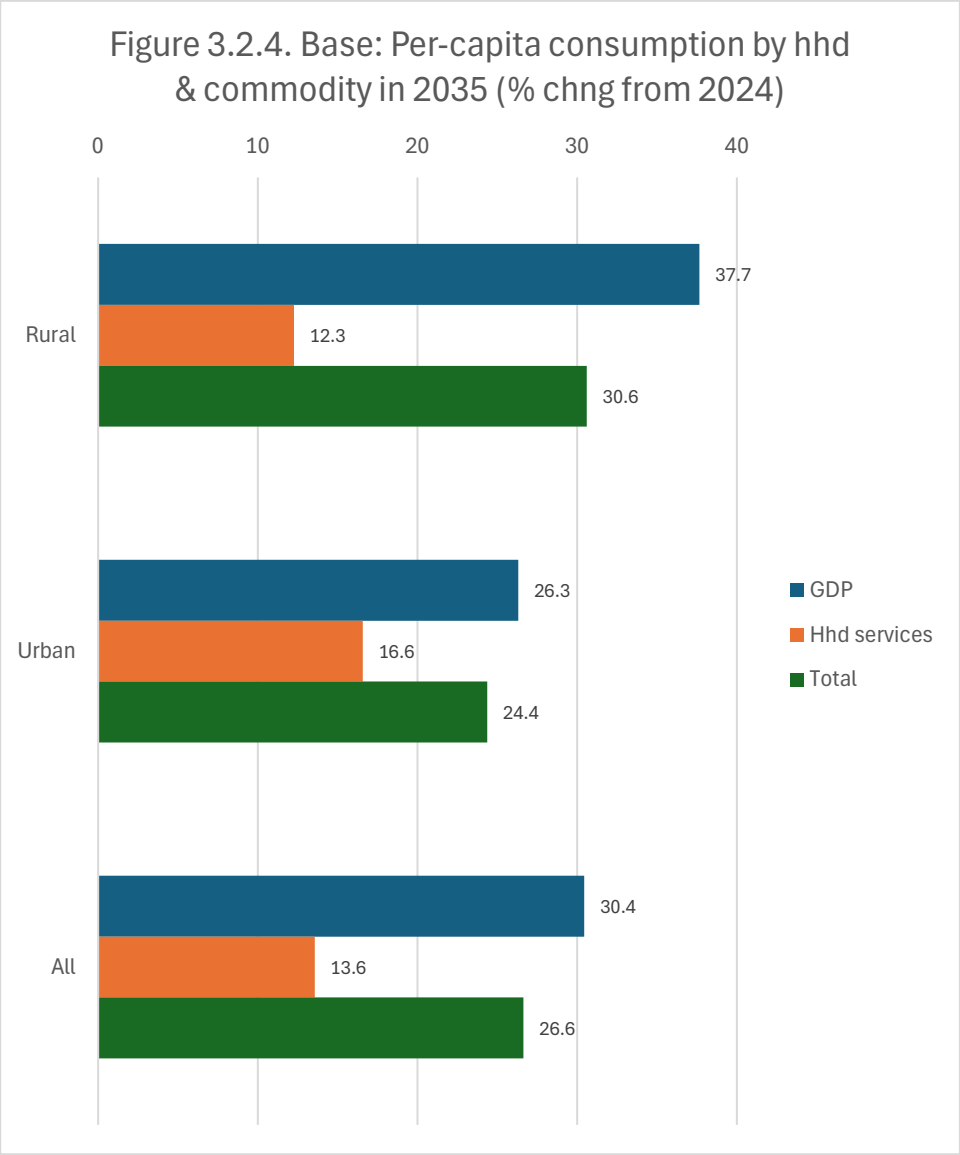
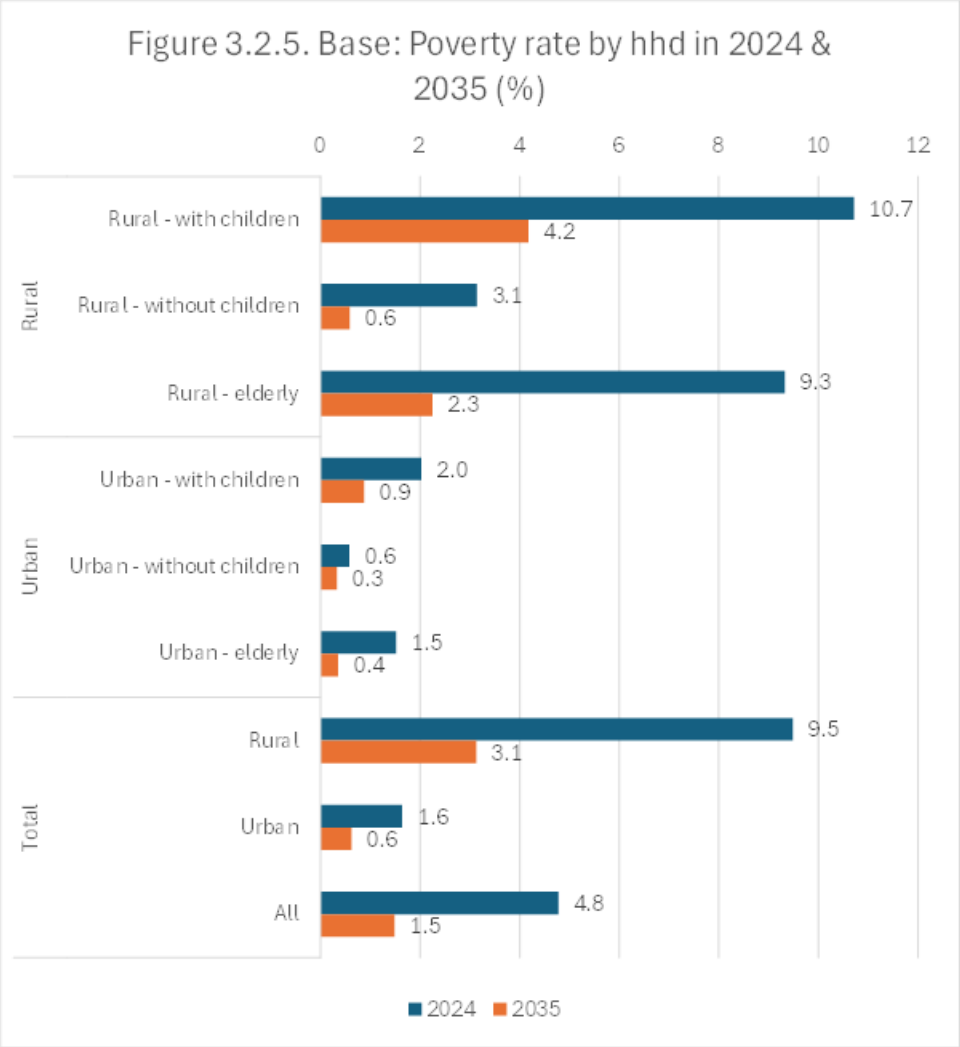
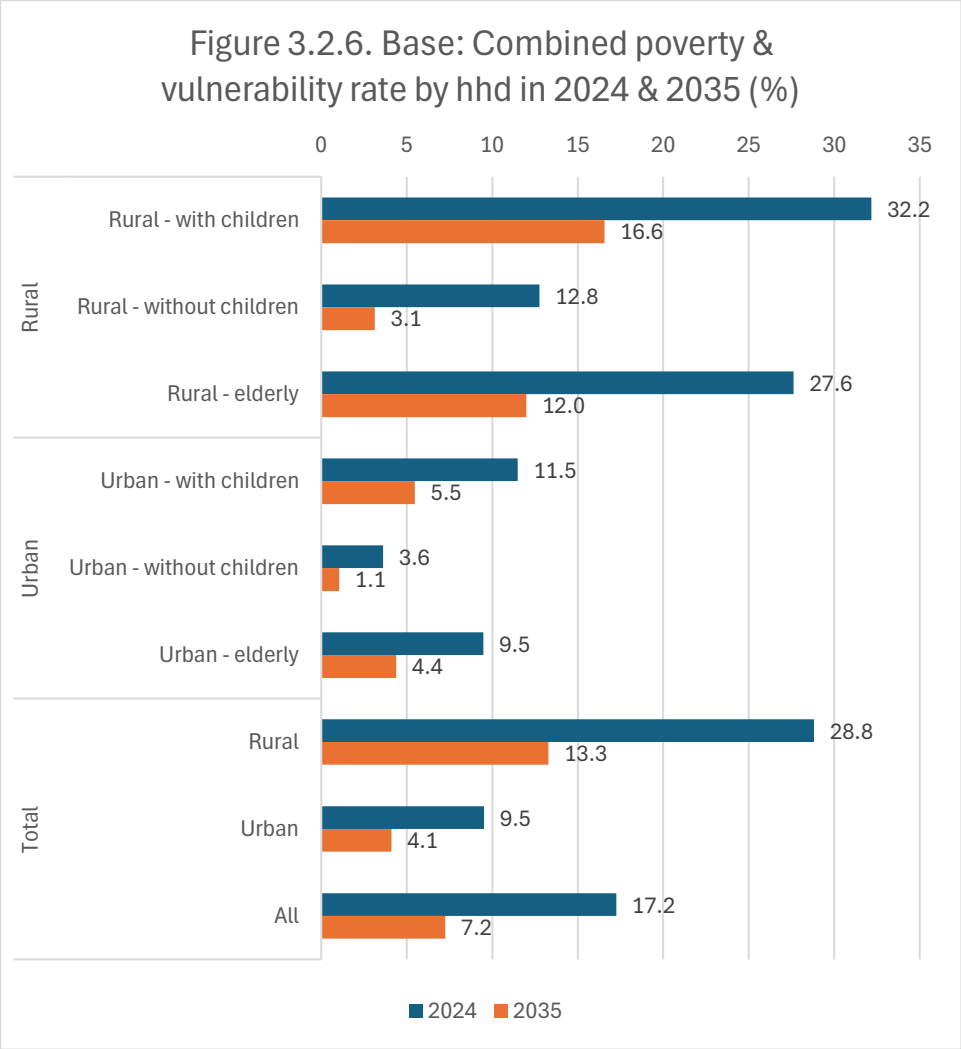


Figure 3.2.4 provides a broader and more disaggregated perspective on household consumption, showing the growth in per-capita consumption by household and broad commodity group between 2024 and 2035 – these can be seen as indicators of household level welfare changes. At the aggregate level, the per-capita increases are around 27 percent for the aggregate of GDP and household products, with a higher rate for the former (30 vs. 14 percent). Comparing household outcomes, at the national level, the increases are stronger for rural than for urban households; at a more disaggregated level, both in rural and urban, they are strongest for households without children.



In the base, the increase in overall household per capita consumption leads to decreases in poverty rate (i.e., the share of the population with a per-capita consumption below the poverty line) and in the combined poverty and vulnerability rate (defined as the share of the population with a per-capita consumption below 1.5 times the poverty line). For the poverty rate, the decline is from 4.8 percent in 2024 to 1.5 percent in 2035 (Figure 3.2.5); for the combined poverty and vulnerability rate, the decline is from 17.2 percent to 7.2 (Figure 3.2.6). In both urban and rural areas, the households with a working age head and children have the highest rates for both indicators.


Figure 3.2.5. Base: Poverty rate by hhd in 2024 & 2035 (%)
0
2
4
6
8
10
12
Rural
Rural - with children
10.7
4.2
Rural - without children
3.1
0.6
Rural - elderly
9.3
2.3
Urban
Urban - with children
2.0
0.9
Urban - without children
0.6
0.3
Urban - elderly
1.5
0.4
Total
Rural
9.5
3.1
Urban
1.6
0.6
All
4.8
1.5
2024
2035

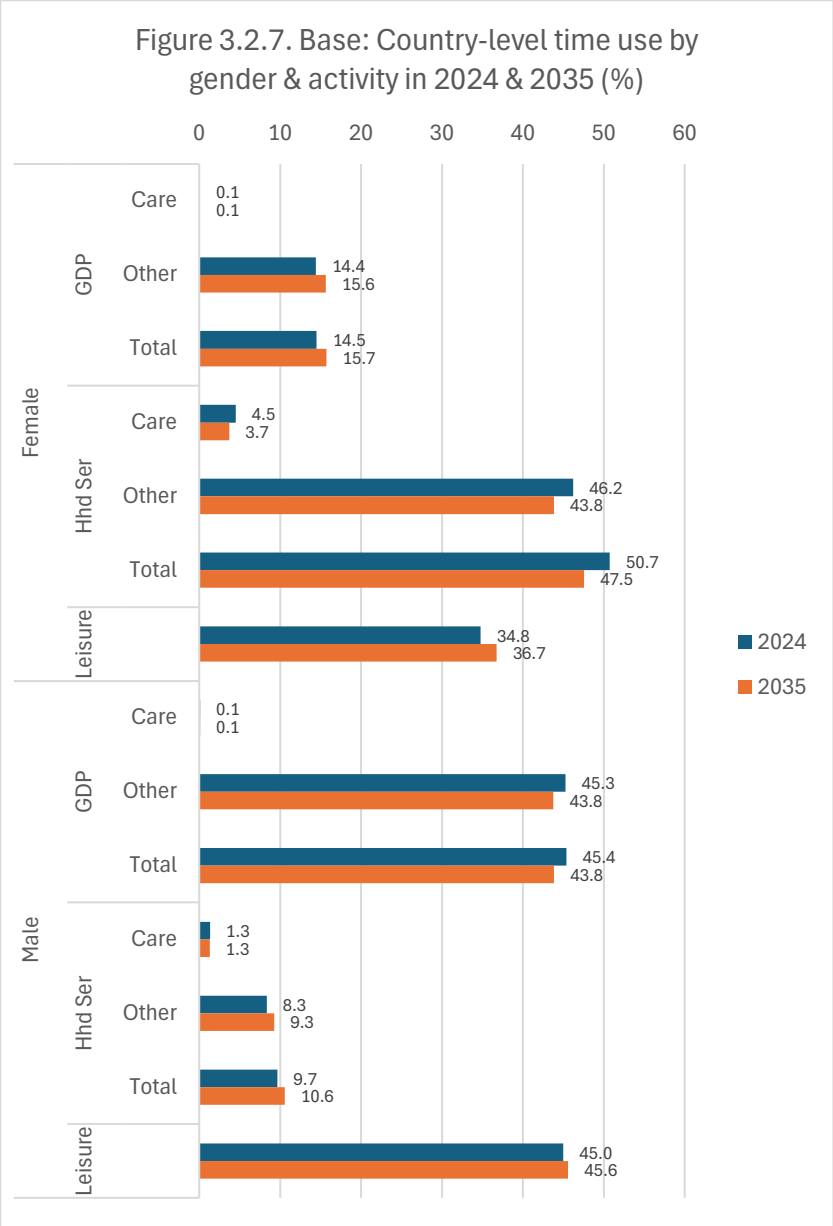


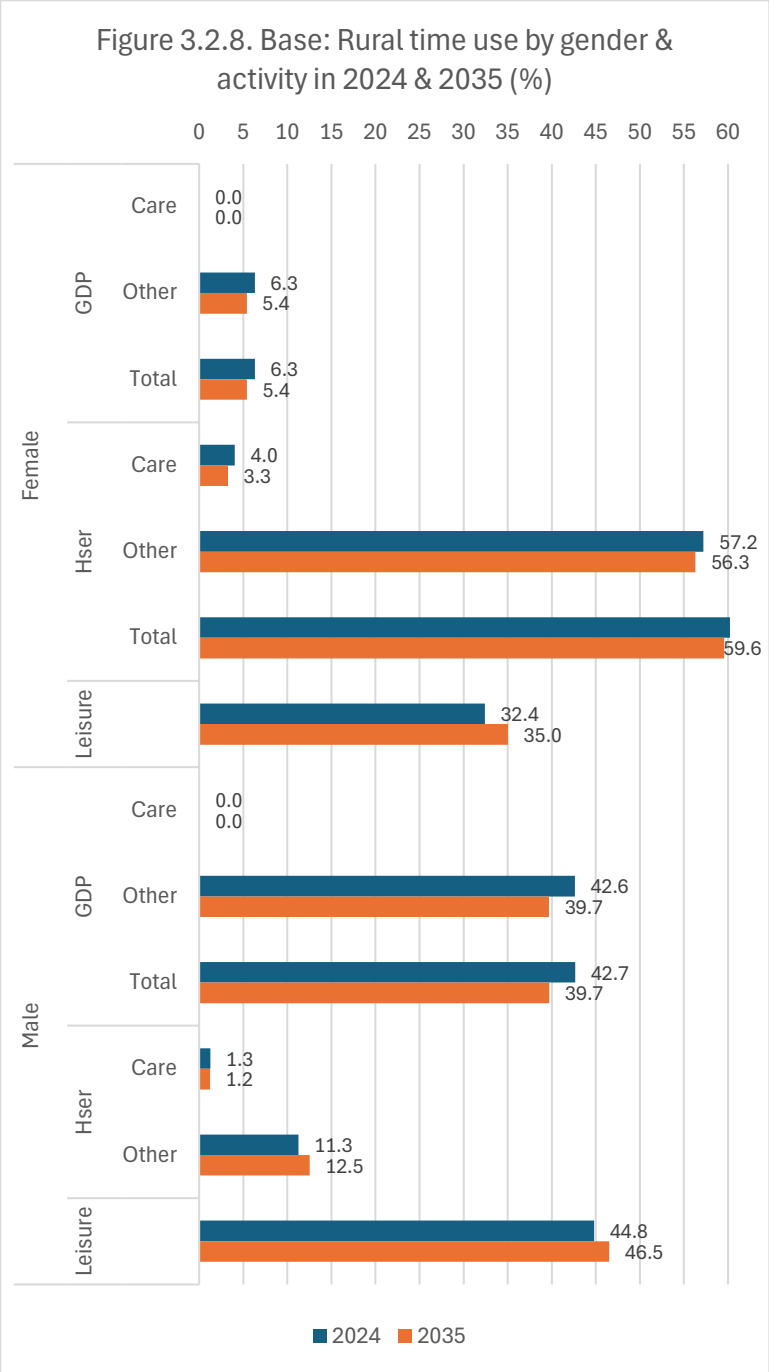
Figures 3.2.7-3.2.16 highlight results related to the focus of this study: time use, wages, labor incomes, and indicators of employment, unemployment, and labor-force participation – all of these results are disaggregated by gender.[11] Figures 3.2.7-3.2.9 show the distribution of time use by gender and broad activity in 2025 and 2035 for the country as a whole and for rural and urban areas separately. The numbers in these figures have a simple interpretation: one percent corresponds to one hour per week.[12] In general, the changes are

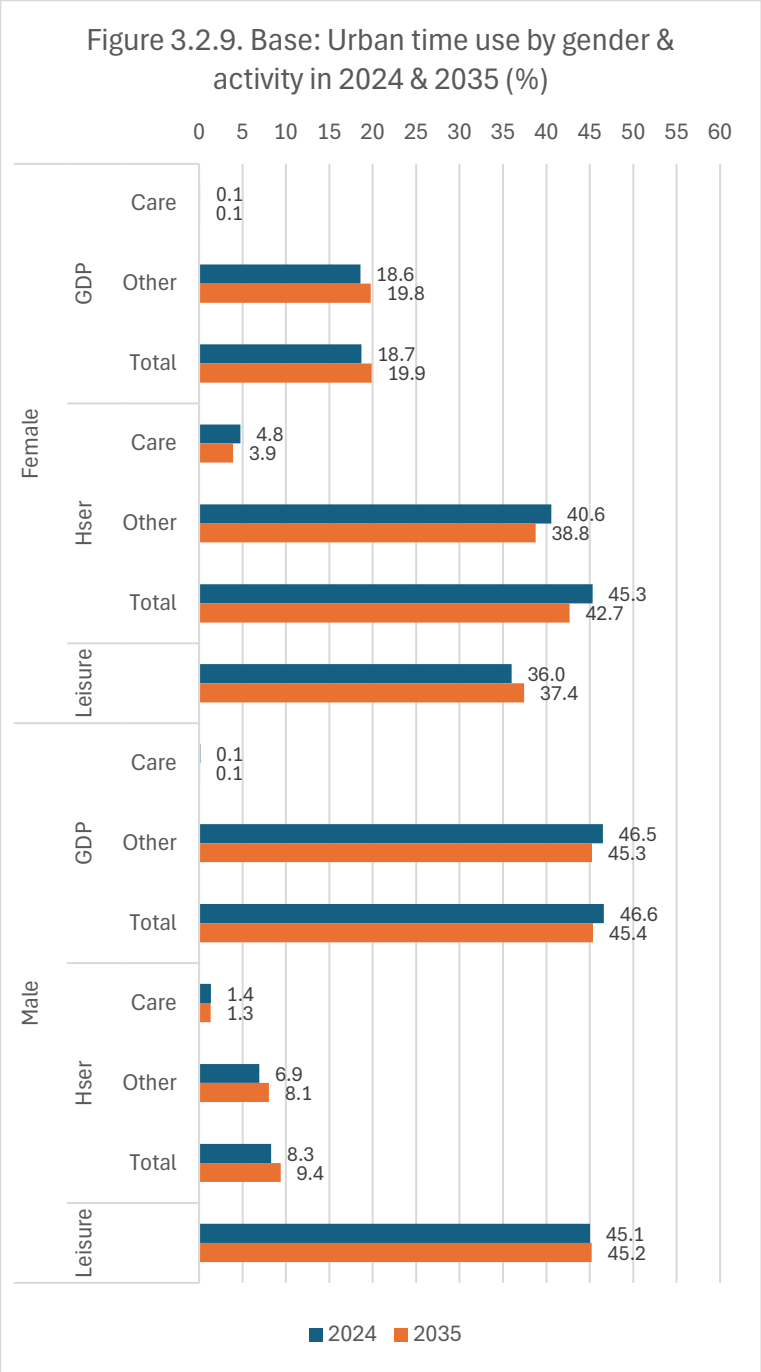
[11] The model does not generate outcomes for unemployment and labor-force participation – the time of the population that is not employed is allocated to leisure and household work. The rates for employment, labor-force participation and unemployment are based on post-calculations. The aggregate rates for men and women are calibrated to stay close to first-quarter data for 2024 (HCP 2024). Starting from 2025, the changes are determined by simulated changes in employment, the population in labor-force age, and the 2024 splits among those who are not employed between unemployment and inactivity.

[12] The model covers 14 hours of time per day; 10 hours to meet minimum needs for sleeping, hygiene and other necessities are excluded from the analysis. Given this, it covers approximately 100 hours per week (14 times 7 is 98) and, accordingly, a change by 1 percentage point is very close to a change of 1 hour.

small. For men, there is a slight shift in both areas from GDP work to household services and leisure. For women, household services decline in both areas while leisure increases; GDP work slightly decreases in rural areas but increases in urban areas. Well-known standard patterns prevail: men work more in GDP production and enjoy more leisure, while women work more in household production. In rural areas, both women and men allocate more time to household services; for rural women, this is reflected in much less time in GDP work. Both for rural and urban women, the time share for care is around 3-5 percent while this share is 1-2 percent for men. Time spent on GDP production of child and elderly care is negligible for all.


Figure 3.2.7. Base: Country-level time use by gender & activity in 2024 & 2035 (%)
0
10
20
30
40
50
60
Female
GDP
Care
0.1
0.1
Other
14.4
15.6
Total
14.5
15.7
Hhd Ser
Care
4.5
3.7
Other
46.2
43.8
Total
50.7
47.5
Leisure
34.8
36.7
Male
GDP
Care
0.1
0.1
Other
45.3
43.8
Total
45.4
43.8
Hhd Ser
Care
1.3
1.3
Other
8.3
9.3
Total
9.7
10.6
Leisure
45.0
45.6
2024
2035

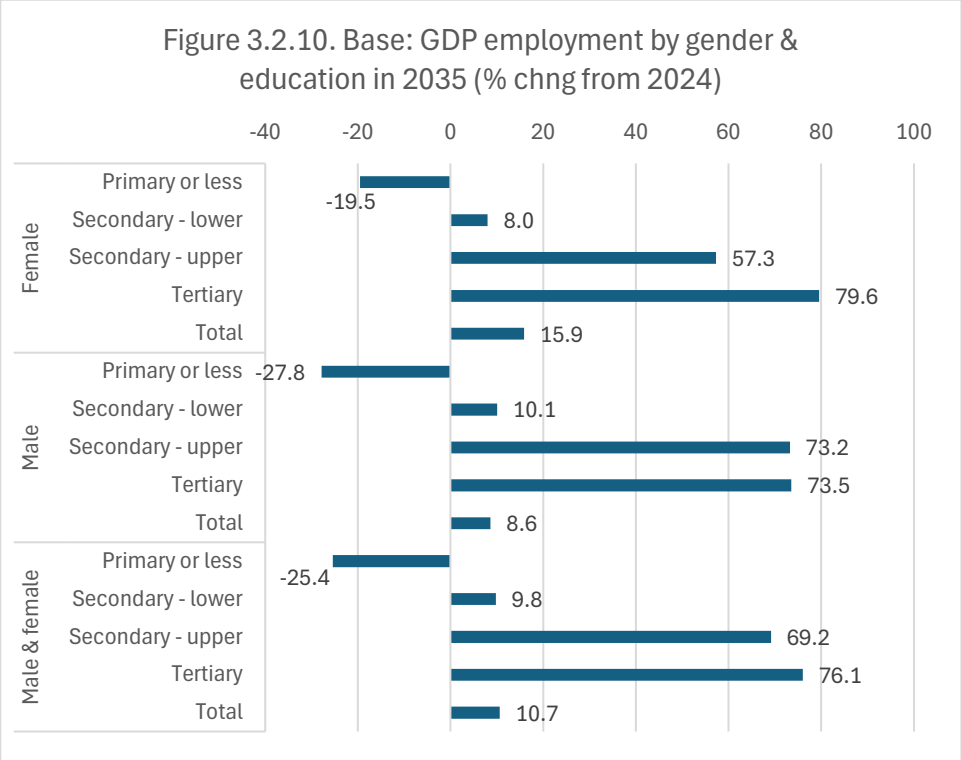

Figure 3.2.8. Base: Rural time use by gender & activity in 2024 & 2035 (%)
0 5 10 15 20 25 30 35 40 45 50 55 60
Female
GDP
Care
Other
Total
Hser
Care
Other
Total
Leisure
Male
GDP
Care
Other
Total
Hser
Care
Other
Leisure
0.0
0.0
6.3
5.4
6.3
5.4
4.0
3.3
57.2
56.3
59.6
32.4
35.0
0.0
0.0
42.6
39.7
42.7
39.7
1.3
1.2
11.3
12.5
44.8
46.5
2024
2035



The rates of growth in market (or GDP) employment reflects that, both for men and women, the population segments with higher levels of education grow more rapidly (Figure 3.2.10).[13] In the background, it is assumed that the higher the level of education, the more

[13] Between 2024 and 2035, the annual growth rates for the population in working age range between -1.5 percent for the group with primary or less to +4.7 percent for those with tertiary education. The growth rates for women are higher than for men at the two highest levels of education (upper secondary and tertiary).

rapid the growth in labor productivity growth – the aim is to reflect that the fact that, at least in the long run, as education progresses, skill requirements in different sectors follow along. In the background, sectoral growth patterns influence the growth in labor demand by gender and education.



The relative growth rates for wages by level of education are the opposite of the growth rates for potential labor supply and GDP employment (Figure 3.2.11): the higher the level of education, the lower the wage growth; the only deviation is that the wage growth for labor with upper secondary education is below that of labor with tertiary education. The pattern is the same for men and women. It should also be noted that, even though the wage growth differences are substantial, they only lead to a small reduction in the initially large wage gaps in favor of workers with higher levels of education.[14] For the different aggregates – women, men, and all workers – wage growth is faster than for the individual labor

[14] For example, between 2024 and 2035, the wage ratio between the highest and lowest educational levels falls from 3.9 to 3.3 for women and from 3.6 to 3.0 for men. However, there is one change in ranking: among the men, the 2024 wages for those with lower secondary was 2 percent above those with primary education or less; by 2035, the ordering had been reversed with the lower secondary group around 7 percent below the group with less education.

categories due to more rapid employment growth for the more educated and high wage labor categories (cf. Figure 3.2.10).

Figure 3.2.11. Base: Wage by gender & education in 2035 (% chng from 2024)

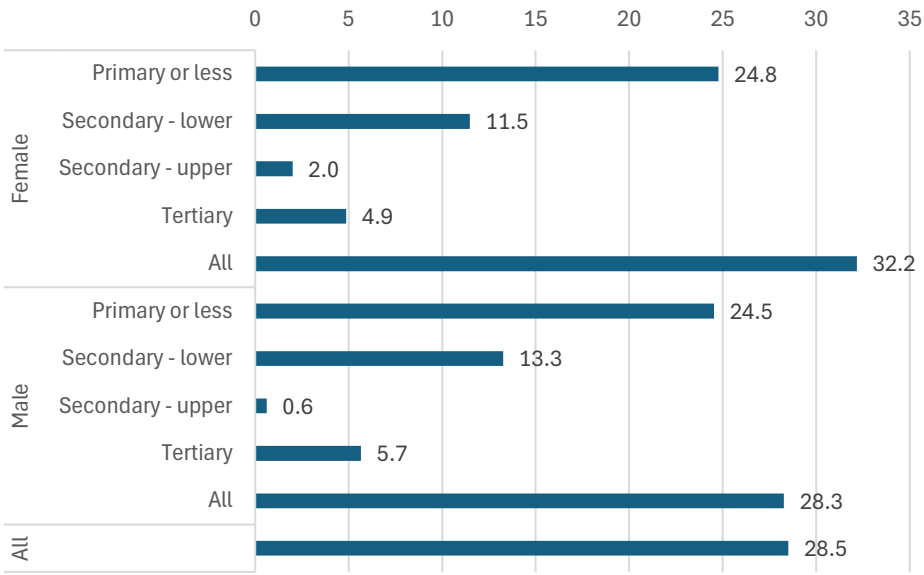


Figure 3.2.12 shows the evolution of labor incomes – since it is a function of changes in wages and employment, it reflects the changes presented in the preceding two figures: the higher the level of education, the stronger the income growth and, on balance, the incomes grow slightly more for women than men. However, this difference is not sufficient to significantly change the distribution of labor incomes between men and women (Figure 3.2.13), an indicator that often is seen as related to the relative bargaining power of each gender in household decisions: the increase in the total female share is moderate, from 20.9 percent in 2024 to 21.9 percent in 2035.[15]

[15] In a review of the international literature, Agénor and Agénor (2023) find that changing income shares for women may influence bargaining power and time allocation within households. In a related observation, Mounir and Hanchane (2023, p. 22) propose that wage discrimination may be related to weak female bargaining power, making women more prone to accept discrimination and low-paying positions, and to view their work as less essential, complementary to the work of men.

Figure 3.2.12. Base: Labor income by gender & education in 2035 (% growth from 2024)

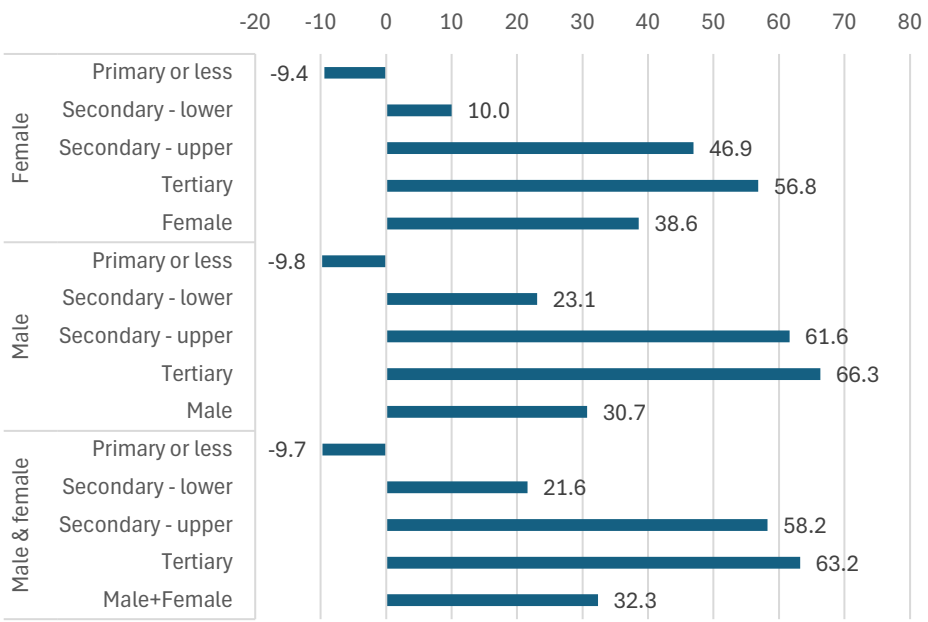
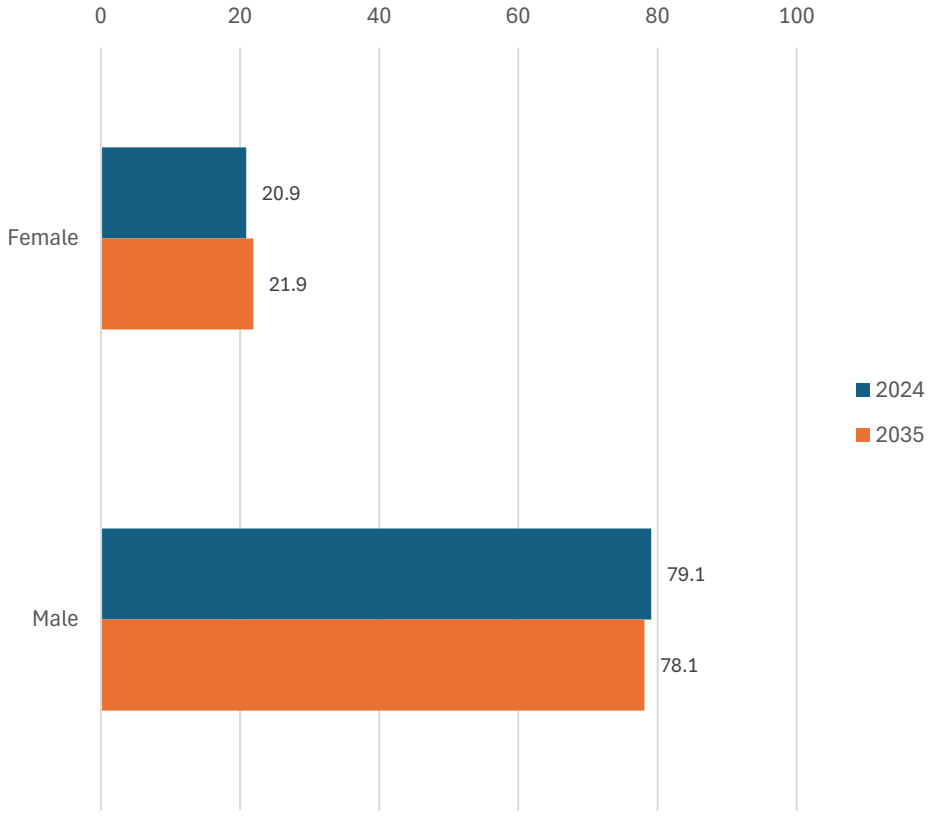


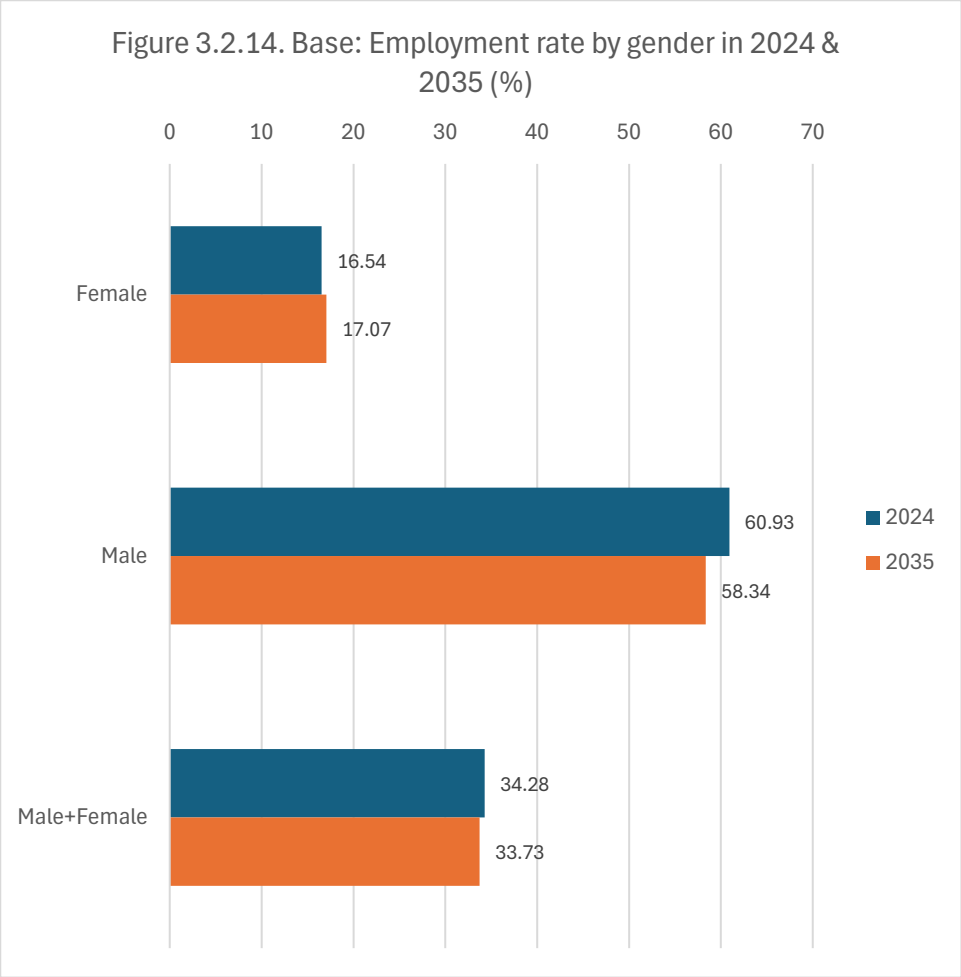
Figure 3.2.13. Base: Share in total labor income by gender in 2024 & 2035 (%)

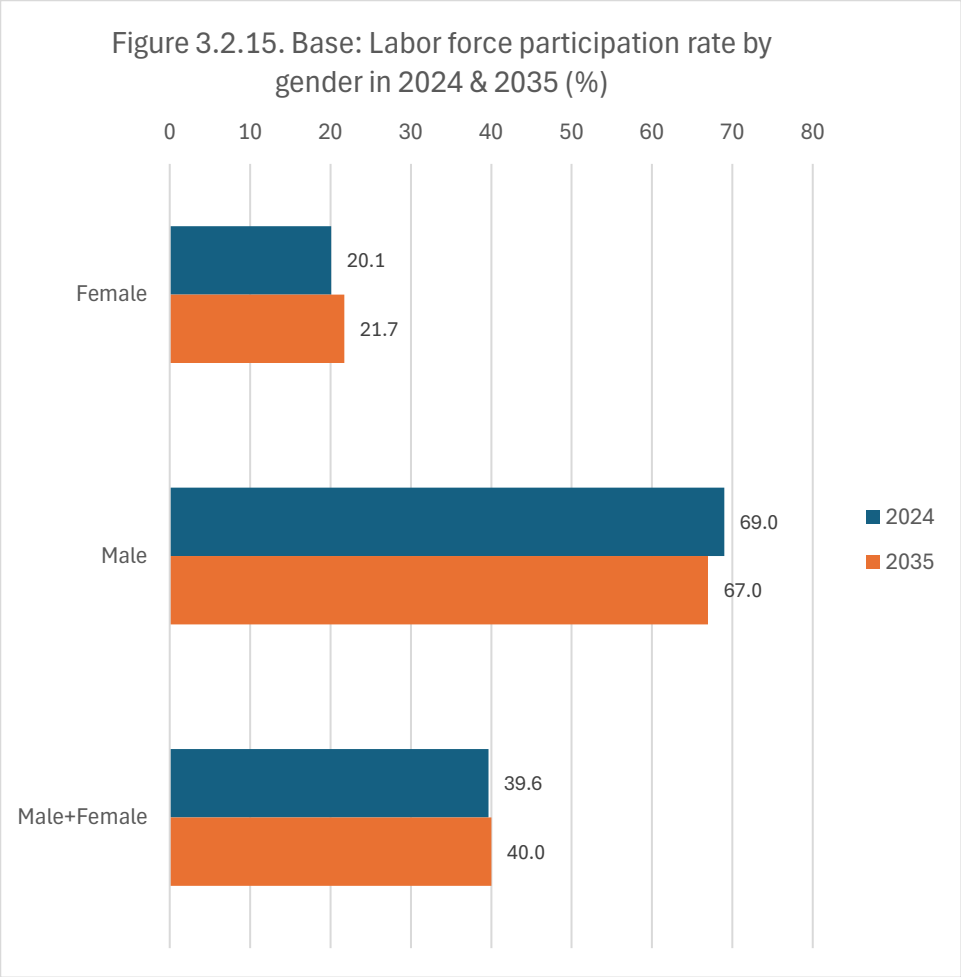


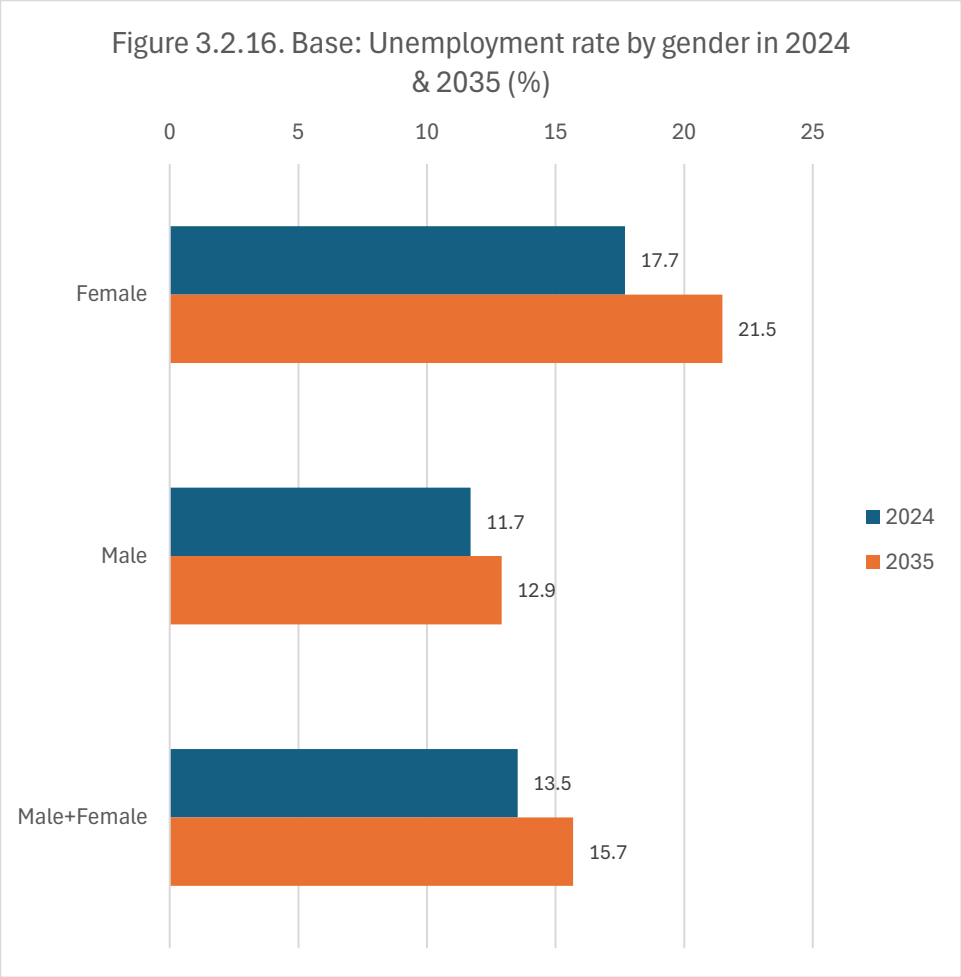
Finally, a major concern of Moroccan policymakers is to raise the rates of female employment and labor-force participation while reducing female unemployment rates. Figure 3.2.14-3.2.16 show the simulated values for these three rates by gender and level of education in 2024 and 2035.[16] In essence, employment growth is more rapid for women than men, in terms of employment and labor-force participation rates reflected in gains for women of around 0.5-1.0 percentage points and losses for men of around 2.0-2.5 points (Figures 3.2.14-3.2.15). The unemployment rates increase for both genders, from 18 to 22 percent for women and 12 to 13 percent for men (Figure 3.2.15).

The non-base simulations, presented in the following section, explore ways of making progress on government objectives related to female labor market indicators and more broadly, the promotion of more egalitarian gender conditions and overall economic progress.

[16] The following definitions apply to these three rates (all expressed as percent): [employment rate] = [number of employed/[population in working age (aged 15-64)]; [labor-force participation rate] = [sum of the number of employed and unemployed]/ [population in working age (aged 15-64)]; and [unemployment rate] = [number of unemployed]/[sum of number of employed and unemployed]. In the computations, the simulated number of hours worked are transformed into number of employed on the basis of sector-specific average working hours by gender. The model has no explicit unemployment since persons who are not employed allocate their time to leisure and household services. In the post-calculations, it is assumed that, for each labor category (defined by gender and level of education), the 2024 ratios between persons unemployed and persons outside the labor force stays the same during the simulation period. As a result, for disaggregated labor categories, an increase in the simulated employment rate leads to declines, both in the population shares for the unemployed and the inactive (those outside the labor force), generating increases in the rates of as labor-force participation and decreases in the rates of unemployment (using the definitions in the beginning of this footnote).


Figure 3.2.14. Base: Employment rate by gender in 2024 & 2035 (%)
0
10
20
30
40
50
60
70
Female
16.54
17.07
Male
60.93
58.34
Male+Female
34.28
33.73
2024
2035


Figure 3.2.15. Base: Labor force participation rate by gender in 2024 & 2035 (%)
0
10
20
30
40
50
60
70
80
Female
20.1
21.7
Male
69.0
67.0
Male+Female
39.6
40.0
2024
2035



4. Non-base scenarios

4.1. Introduction

The non-base scenarios explore the effects of policies and other shocks that may contribute to increased gender equality in time use and labor markets. Table 4.1.1 defines the different simulations. As indicated, they are divided into individual and combined simulations (or shocks). Apart from the shocks that are spelled out, the non-base simulations also deviate from the base in that GDP at factor cost is endogenous. Other assumptions, including the rules for maintaining balance in the government budget and other macro accounts, are the same as for the base. Given that the policy shocks are introduced starting from 2025, the results for all scenarios are identical for 2019-2024. The analysis is focused on comparing the non-base scenarios to the base for various indicators either in terms of growth rates for

the full period 2025-2035 or in terms of differences between indicators in 2035. The main results are shown in a set of figures, complemented by tables in Appendix C that provide more detailed information.

Name	Description
Individual shocks	
wdscr-50	50% reduction in wage discrimination against women
lprdgdpf+5	5% increase in female labor productivity in GDP activities
lprdhser+10	10% increase in male and female labor productivity in household production
mfgaphser-125	12.5% reduction in male-female gap in household production time
govccare+25	increase in government childcare spending equivalent to 0.25% of base GDP
Combined shocks	
combi-1	wdscr-50 + lprdgdpf+5 + lprdhser+10 + govccare+25
combi-2	combi-1 + doubling of male-female substitution elasticities in GDP production
combi-3	combi-2 + mfgaphser-125
combi-4	combi-3 + 100% (not 50%) reduction in wage discrimination + quadrupled (not doubled) substitution elasticities in GDP production

Note: All shocks are introduced gradually during the period 2025-2029 and kept in place during the remaining simulation period.

4.2. Individual simulations

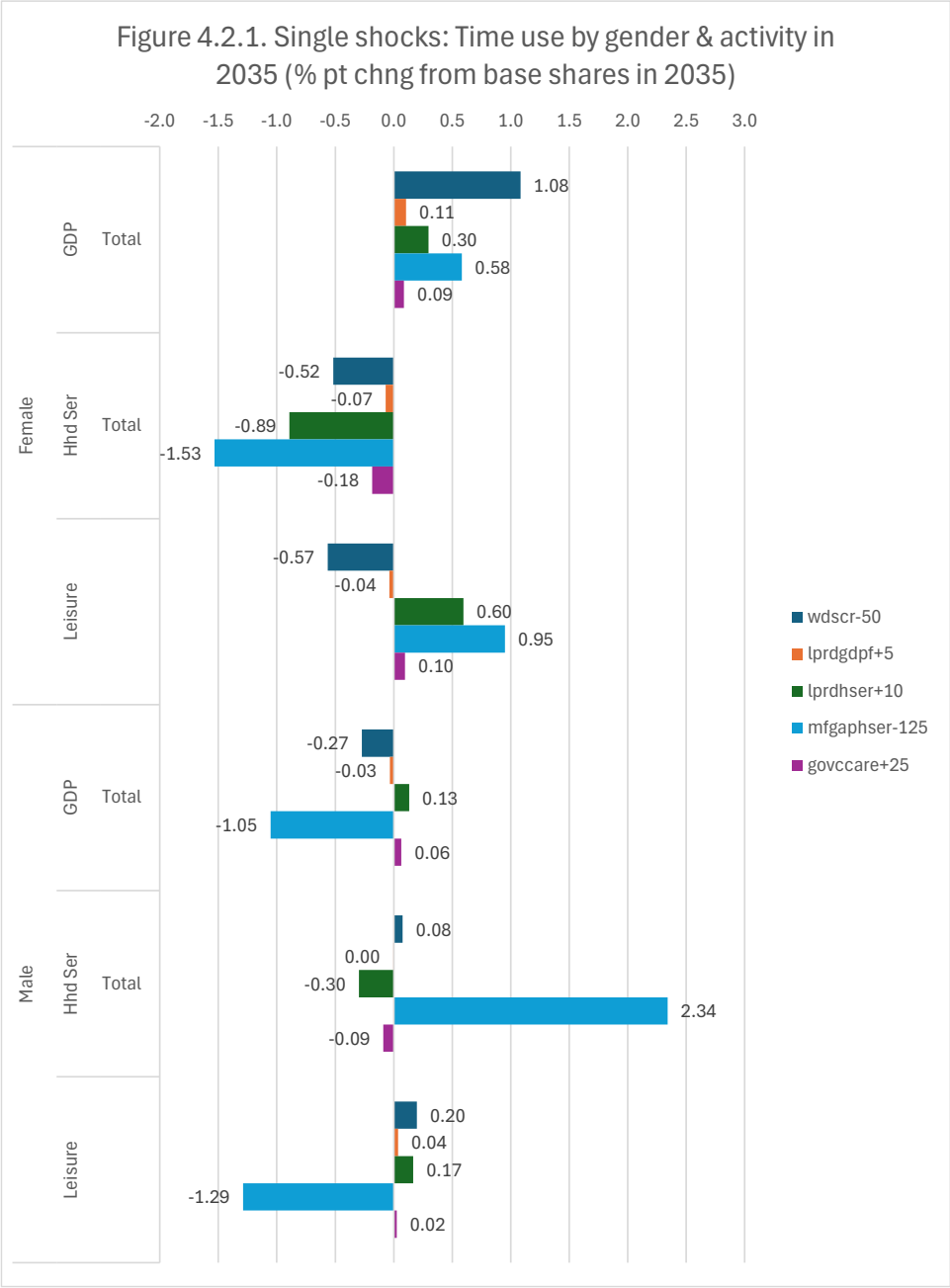
The results for the individual simulations are summarized in Figures 4.2.1-4.2.11. The first simulation, *wdscr-50*, cuts the wage discrimination against women by 50 percent across all educational levels, reducing a source of inequality and inefficiency (distorted female wages) and, other things being equal, raising the average female wage, thus encouraging women to switch part of their time to market work while reducing other time uses. As shown in the figures, compared to the base results for 2035, for the women, this shock leads to (a) a market work time increase of 1 percentage point (1 hour per week) at the expense of household services and leisure (Figures 4.2.1; cf. Figure 3.2.7);[17] (b) increases in wages, labor incomes, and in the female share in total labor incomes (Figures 4.2.2-4.2.4); and (c) increased rates of employment and labor force participation, accompanied by a decline in the unemployment rate (Figure 4.2.5-4.2.7).

[17] Table C.7 shows this and other changes in time use as percentage points of total time (i.e., time available for work in GDP production or household production, and leisure). In this case a 7 percent increase in total GDP work corresponds to a one percentage point increase in the time allocated to GDP work.

For men, the changes are all smaller (in relative or percentage terms) and mostly in the opposite direction.

Thanks to the increase in market work, GDP increases (Figure 4.2.8). The changes in per-capita household consumption, which reflect the combined impact of increased market consumption and reduced consumption of household services, are slightly positive for urban households and close to zero for rural households (Figure 4.2.9).[18] The poverty rates and the combined poverty and vulnerability rates, which all are defined on the basis of GDP consumption, decline but only slightly since the positive consumption changes are small (Figures 4.2.10-4.2.11).

[18] Given that the population changes are exogenous, the percent changes in 2035 from the base for total and per-capita household consumption are identical.



Our presentation of the results for the other simulations in this section draws on the above figures.

The simulation *lprdgdpf+5* raises female labor productivity in GDP activities by 5 percent, a change that encourages substitution of women for men but also may reduce the need for female workers in sectors where output demand is inelastic and the labor market has rigid

gender roles.[19] The changes in indicators related to market work – time use, wages, and employment – are small. For women, market employment, wages, and wage incomes all increase. For men, market employment declines slightly; however, thanks to a wage increase, they still enjoy an income gain, which is smaller than the gain for women, reducing the male share in total labor incomes (Figures 4.2.1-4.2.4). Women see increases in the rates of employment and labor-force participation and a decrease in the unemployment rate; for men, small changes go in the opposite directions (Figures 4.2.5-4.2.7). The main impacts are an increase in GDP (by 0.9 percent; Figure 4.2.8) and gains in household consumption due to increased market consumption with a slight decline in household service consumption (Figure 4.2.9). The poverty and combined poverty and vulnerability rates decline slightly across the board (Figures 4.2.10-4.2.11).

A 10 percent increase in both male and female labor productivity in household services – the simulation *lprdhser+10* – leads to shifts toward market work that are positive for both genders but more so for women, with predictable impacts on the rates of employment, unemployment, and labor-force participation. Market wages are virtually unchanged for men but decline for women since more of their time is freed up (given their larger share in household work). Slightly stronger income gains for women are not sufficient to have any noteworthy impact on the distribution of wage incomes between men and women. GDP grows more rapidly thanks to the employment gain. However, the main impact of this is a 10 percent increase in the consumption (and production) of household services, leading to an overall 2 percent increase in total household consumption.

With the aim of capturing a moderate change in social norms toward more equal sharing of household chores, the simulation *mfgaphser-125* imposes a moderate closing of the gap between male and female shares in time spent on household production: other things being equal, 12.5 percent (1/8) of the gap between male and female shares is closed for each household group.[20] Even though it is a moderate change from an equality perspective, it has a significant impact on the labor markets and the broader economy. Women shift from

[19] Such a productivity gain may, for example, be achieved thanks to technical training activities targeted to females.

[20] To illustrate, if for a household group, men put in 10 and women 90 percent of the total time on household production, under this simulation this would change to 15 and 85 percent, respectively, ceteris paribus.

household work to market work and leisure while men shift in opposite directions. Total market work declines, reflecting the impact of various factors that make it difficult to replace one group of workers (here men) by another group (here women) when these two groups differ in terms of sectors of employment, educational composition, marginal value products, and exposure to wage discrimination. Furthermore, within the different production sectors, workers from the two groups are imperfect substitutes also when they are at the same educational level. The simultaneous labor market entry of women and withdrawal of men lead to wage cuts for women (-1.3 percent) and gains for men (+1.7 percent). The changes in labor incomes are small (as wages and employment move in opposite directions), leaving the male and female shares virtually unchanged. Female rates of employment and labor-force participation increase at the same time as their unemployment rate decreases. Men register changes in the opposite direction (i.e., more negative outcomes). The aggregate impact of these changes on the employment and labor-force participation rates is negative. The shrinking of market employment and labor reallocations reduce GDP by around 0.7 percent. Total per-capita household consumption declines by a smaller percentage, with a stronger decline for urban households. For all households, the smaller decline is due to the fact that an increase in consumption of household services makes up for part of the decline in market consumption.

Under the final individual simulation, *govccare+25*, the government in 2025 increases its provision of childcare services to households with children for free. By 2029, government spending on this item increased by 0.25 percent of base GDP (i.e., 0.25 of simulated GDP for the base scenario in the relevant years). Given that they do most of the care work, this matters most for women. However, the impact is still small: while female care time declines by 7 percent (see Table C.7), the share of total time that is released for other purposes and the broader repercussion are very small. The broader effects, which also are small, follow expected patterns. Both for men and women, market work and leisure time increase with a less favorable wage change for women (due to their larger entry to market employment). On balance, the female income gain is also stronger, in part due to an increase in female employment in the GDP care sectors. Higher employment and employment rates for both men and women raise GDP. Per-capita household consumption of household services

declines while their market consumption increases, in part due to increased consumption of government childcare, which is provided for free.

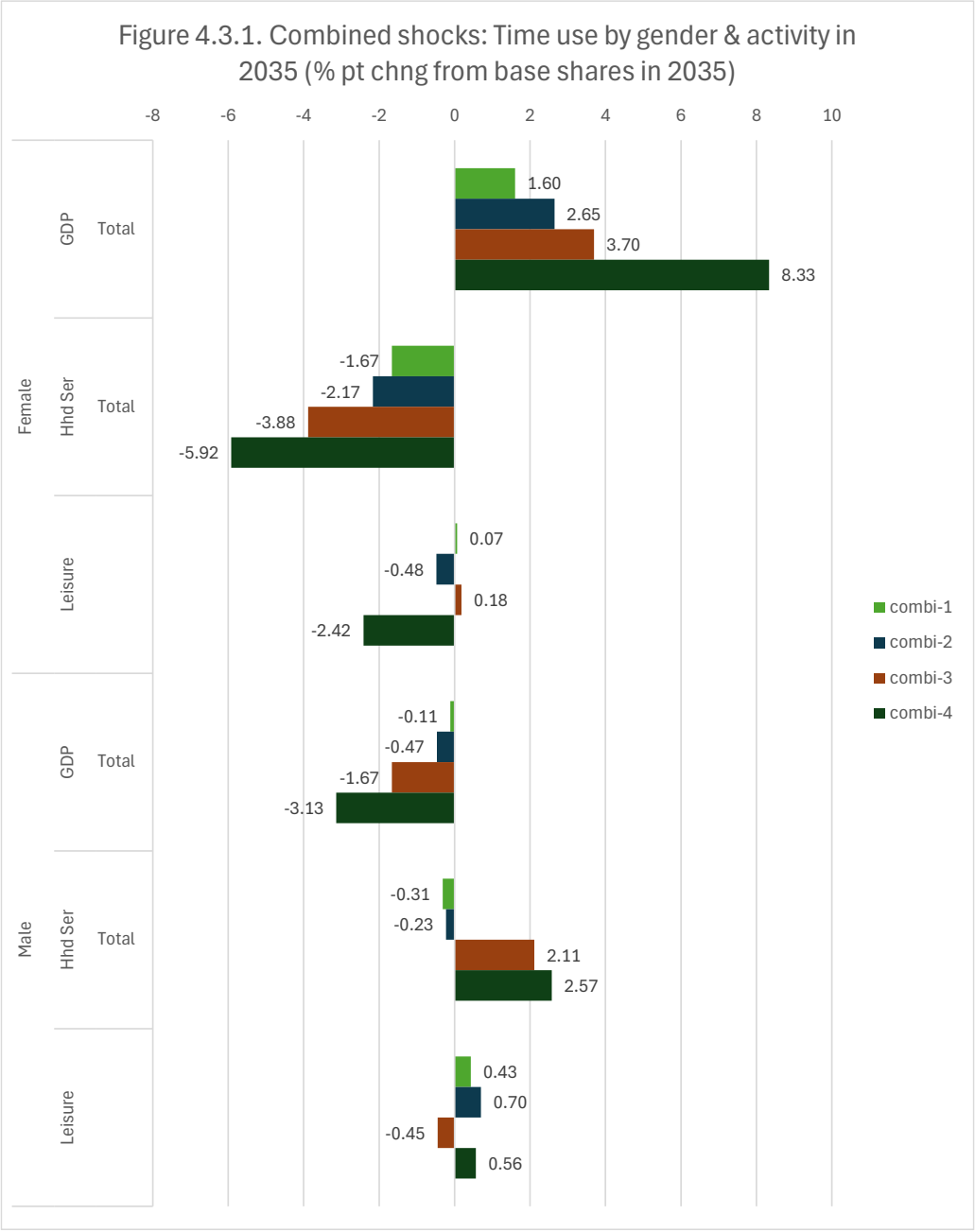
4.3. Combined simulations

Even though the individual shocks analyzed in Section 4.2 tended to have positive impacts of various aspects of gender equality, these impacts were small, suggesting that, to significantly reduce the situation, it will be necessary to simultaneously undertake stronger actions on several fronts. To explore this, the four simulations of this section, defined in Table 4.1.1, combine shocks. In addition to the specific shock sizes covered in the preceding section, they include stronger shocks and other adjustments that make it easier for the economy to absorb more women in the labor market.

The first simulation, combi-1, combines four of the five shocks that were introduced individually in Section 4.2; the reduction in the male-female gap in household work time (in the simulation mfgaphser-125) is not included. The second, combi-2, is identical to combi-1 except for a doubling of the elasticities of substitution between men and women in GDP production – this addition is meant to mimic a shift in social norms toward viewing men and women, at each level of education, as more easily substitutable. It could also reflect that, over time, increased female market work leads to that women gain skills and experience that make them closer substitutes for men. It has the effect of making it easier for the labor market to absorb both men and women when the growth rates of their market labor supplies differ. The third simulation, combi-3 is identical to combi-2 except for the imposition of a larger male share in household services (same shock as for the simulation mfgaphser-125) to combi-2. Finally, combi-4 is identical to combi-3 except for the elimination of all wage discrimination (not a 50% reduction as in wdsc-50 and the preceding combi-2 and combi-3).

Figures 4.3.1-4.3.11 summarize the results of these simulations. As expected, combi-1 leads to stronger effects than any of the individual simulations. Compared to the base results for 2035, female market work increases by around 1.6 hours per week, wages by 0.6 percent, and labor incomes by close to 10 percent. The female employment and labor-force participation rates increase, both by around 1.7 percentage points; the female

unemployment rate declines. Total male wage incomes register an increase by 0.3 percent, reflecting the combined impact of a wage gain and a slight decline in market work – the male employment rate and labor-force participation rates decline while their unemployment rate increases. Given that female incomes grow more rapidly, the female share in total wage incomes increases by 1.6 percentage points (from 21.9 to 23.5 percent). Total GDP increases by 2.1 percent compared to the base thanks to gains in market employment and labor productivity. Per-capita household consumption ends up around 3 percent higher both for rural and urban households, reflecting growth in market and household service consumption by roughly 2 and 6 percent, respectively.



For the simulation combi-2, the gains for women and in gender equality are considerably stronger than for combi-1, pointing to the importance of labor market flexibility (captured by higher elasticities of substitution) in the context of more rapid employment growth for women than men. Compared to the base results for 2035, women allocate an additional 2.7 weekly hours to market work and enjoy a wage gain of 1.6 percent while their labor income increase reaches 34 percent. The rates for female employment and labor-force participation

both gain close to 3 percentage points, accompanied by a decline in the female unemployment rate of 3 percentage points.

For men, the changes for combi-2 compared to the base 2035 outcome are small but negative. Their labor incomes decline by 1.3 percent, the outcome of the combination of unchanged wages and a decline in the employment rate (by 0.6 percentage points). The now larger gap between male and female wage income growth raises the increase in the female share in labor incomes to 3 percentage points. The total GDP gain is boosted slightly, reaching 2.5 percent, thanks to the smoother integration of women in the labor force. However, the aggregate gain in per-capita household consumption is unchanged compared to combi-1: market consumption growth is stronger but household service growth weaker, an outcome that is related to increased female market work and rigid gender roles in the household economy.

The results from the individual simulation mfgaphser-125 indicated that, while a relocation of household production has the obvious advantage of leading to less gender inequality in terms of time use, it may give rise to adjustment challenges in labor markets and the broader economy, leading to female wage declines, a lower GDP, and less household consumption. The simulation combi-3 reintroduces the same shock but now in the context of a more flexible economy and other changes designed to favor gender equality. In this setting, the marginal impacts on women (compared to combi-2) are more positive or less negative than for the simulation mfgaphser-125: on average, females add 3.7 hours per week to market work; the marginal wage effect is still negative but smaller (a loss of 1 percent); and wage incomes are not stagnant but increase by 3 percent. Compared to combi-2, male wage income growth declines by 1.5 percentage points, reflecting the combined impact of reduced participation in market work (in favor of household services and leisure) and wage gains that are insufficient to fully compensate for a lower market work time. The female gain in the total wage pool expands to 3.7 percentage points. The impact on GDP growth remains negative but is slightly smaller, while household consumption declines by 0.3 points in the context of a loss in market consumption and a gain in the consumption of household services.

The final simulation, combi-4, explores the consequences of a more radical shift in two respects: full elimination of wage discrimination and a labor market with employment

decisions that are getting closer to being gender blind (reflected in quadrupled elasticities of substitution). In the absence of wage discrimination and as a result of having a labor market that is better able to absorb female market work, there are drastic gains in female market work – the increase in market work is more than doubled compared to combi-3, reaching more than 8 hours per week compared to the base (i.e., adding an average workday); this change is accompanied by reductions in leisure and household work of 2 and 6 hours, respectively.[21] The female employment rate gains 9 points compared to the base in 2035, i.e., an increase from 22 to 31 percent. Female wage growth is boosted by 0.9 percent. The increase in female market time dedicated to market work is accompanied by a reduced time for household service work and leisure: in terms of shares of total discretionary female time, a total of 8 hours per week is shifted to market work, combined with reductions in leisure and household work of 2 and 6 hours.

For men, the changes are once again smaller and in the opposite direction: time spent on household work and leisure both increase at the expense of market work. On average, wages decline by 0.8 percent. As a result of a more substantial gain in labor income growth for women and a loss for men, the share of women in total labor incomes increases to 31 percent, i.e., by close to 9 percentage points compared to the base in 2035.

The gain in female employment is stronger then the loss in male employment, leading to an overall increase in the employment rate, raising it to around 38, compared to 34 percent for the base in 2035. Increased employment leads to slightly stronger GDP growth; in 2035 the level is 2.8 percent above the base. Total household consumption is virtually unchanged, once again in the context a gain in market consumption and reduced household services, suggesting that, as the opportunities for market employment improve for women, household economize on their consumption of the services that they have to produce themselves.

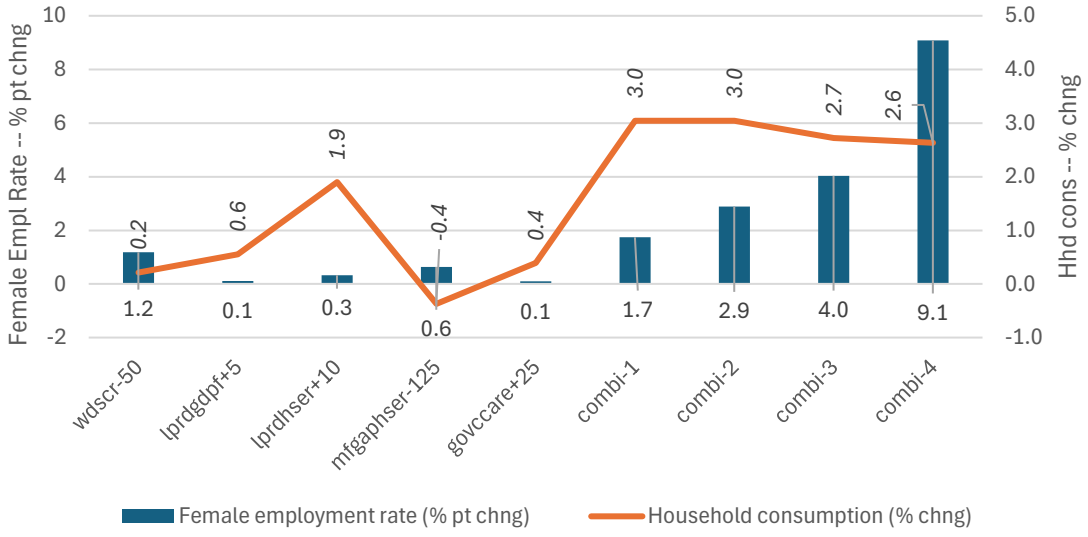
[21] Data from the employment satellite account (HCP 2023) indicate that, on average, those who are employed in the GDP economy work roughly 40 hours per week, i.e., 8 hours per day if one treats a 5-day work week as the norm.

5. Conclusions

The simulations in this paper analyze the impacts of a set of shocks aimed at reducing gender inequality. The analysis addresses both the economic position of women, especially female employment and wages, and impacts on the broader economy, including household consumption.

The results indicate that a multi-pronged approach is needed to significantly change the role of women in the economy: the impacts of feasible changes in individual areas are modest and may involve trade-offs. Figure 5.1 highlights the impact of the different simulations on two indicators, the female employment rate and household consumption, defined broadly to cover both market consumption and household services.

Figure 5.1. All shocks: Female employment & household consumption in 2035 (chng from base in 2035)



Among the single shocks, reduced wage discrimination has a strong positive employment effect a smaller positive impact on consumption; the opposite applies to the shocks that in different ways enhance productivity (lfprdgdpf+5 and lprdhser+10). The simulation that imposes a reduction in the female time share in household services (mfgaphser-125) has a noticeable positive effect on female employment but reduces household consumption.

Policy packages that together boost both female employment and consumption, an indicator of household welfare, are obviously more attractive politically. This points to the

appeal of complementing reduced wage discrimination and more equal sharing of work at home with productivity-raising measures that, other things being equal, permit both genders (but in particular women, given their larger share) to reduce the time spent on household tasks.

As expected, the combined shocks, which represent the outcomes of policy packages, generate stronger effects. It is important to note that higher elasticities of substitution between men and women (doubled for combi-2 and combi-3; quadrupled for combi-4) make it possible to raise female employment substantially with little or no negative impact on household consumption. In economic terms, this signals that women enter a labor market that, thanks to little gender-based segmentation, can absorb them without significant losses in marginal productivity. Such outcomes would require a shift in social norms toward employment based on skills and education without imposition of gender-specific roles.

From a broader perspective, there are substantial cross-country differences in terms of time spent on household services. Relative to other countries, in Morocco, women spend relatively much time on household work while men spend relatively little. However, the total (male plus female) time spent on household work is relatively low.[22] This suggest that a key issue for gender equality in the labor market is to encourage more equal sharing of tasks at home. At the same time, as stressed by Agénor and Agénor (2023), the time needed to perform core household tasks could be reduced by improvements in infrastructure and technology, used inside the home or in their broader environments. At home, further progress in terms of access to clean water and sanitation and, benefiting from recent progress in electrification, improved access to the internet and time-savings appliances, may

[22] In a comparison of time-use surveys across 75 countries, Morocco ranks 23rd in terms of women's time spent on household work, 67th in terms of male time, and 5th in terms of female share in this work (Charmes 2019, pp. 18, 19, and 22). Similarly, the data in World Development indicators for the period 2000-2022 on male and female time shares in household production show that Moroccan women put in relatively much time compared to the women of other countries while the opposite holds for Moroccan men: out of 89 countries, Morocco ranks 17 and 79 in terms of the female and male shares in household work while, in terms of total household work, Morocco ranks 17 out of 89, i.e., the total housework time is below the median (World Bank. 2024). Cross-country regressions indicate that there is a significant positive association between the male share and GNI per capita at purchasing power parity while there is no significant association between the female share and GNI per capita.

lead to future productivity gains in household work.[23] Beyond the home, it may be essential to create infrastructures that locate homes, stores, and work places at short distances from each other and also provides access to well-functioning low-cost transportation systems.

Finally, it is important to note that the simulated gains in female labor-force participation are strongly correlated with increases in the female shares in labor incomes, which, as pointed out earlier, may strengthen female bargaining power. If women use this power to promote further changes in the labor market and at home, then a process of mutually reinforcing changes toward increased gender equality may emerge, further reinforced by projected educational gains for the female labor force.

[23] For Morocco-specific evidence in support of this claim, see Devoto et al. (2012). Agénor and Agénor (2023) includes a general review of the relevant international literature, which also finds that there are strong links between infrastructure improvements and reductions in the time women spend on household chores.

References

Agénor, Pierre-Richard, and Madina Agénor. 2023. Access to infrastructure and women's time allocation: Implications for growth and gender equality. Journal of Macroeconomics 75 (2023) 103472.

Charmes, Jacques. 2019. The Unpaid Care Work and the Labour Market: An analysis of time use data based on the latest world compilation of time-use surveys. ILO

Cicowiez, Martín, and Hans Lofgren. 2017. A GEM for streamlined dynamic CGE analysis: Structure, interface, data, and macro application. World Bank Policy Research Working Paper, 8272.

Cicowiez, Martín, and Hans Lofgren. 2023. Child and elderly care in South Korea: Policy analysis with a gendered, care-focused computable general equilibrium model. The Philippine Review of Economics 60(1):19-64. DOI:10.37907/3ERP3202J

Cicowiez, Martín, Hans Lofgren, Ana Tribin, and Tatiana Mojica. 2023. Women's market work and childcare policies in Colombia: Policy simulations using a computable general equilibrium model. The Philippine Review of Economics 60(1):65-98. DOI:10.37907/2ERP3202J.

Cicowiez, Martín, and Hans Lofgren. 2024. Technical Note on the Construction of a Gendered and Care-Extended Social Accounting Matrix for Morocco 2019. May 2. Draft.

Devoto, Florencia, Esther Duflo, Pascaline Dupas, William Parienté, and Vincent Pons. 2012. Happiness on tap: Piped water adoption in urban Morocco. American Economic Journal: Economic Policy 4, 68–99.

GAMS. 2025. GAMS Documentation Center. (https://www.gams.com/latest/docs/).

Harrison, G. W., & Vinod, H. D. 1992. The sensitivity analysis of applied general equilibrium models: completely randomized factorial sampling designs. Review of Economics and Statistics, 74 (2), pp. 357-362.

HCP. 2022. Concepts et définitions - Pauvreté et vulnérabilité. Rédigé le vendredi 22 avril 2022; modifié le vendredi 16 septembre 2022 (https://www.hcp.ma/methodologie-pauvrete-vulnerabilite_r497.html).

HCP. 2023. Le Compte Satellite de L'Emploi.

HCP. 2024. Enquête nationale sur l'emploi.

IMF. 2024. World Economic Outlook Database. April.

KC, Samir, Moradhvaj Dhakad, Michaela Potancokova, Saroja Adhikari, Dilek Yildiz, Marija Mamolo, Tomas Sobotka, Krystof Zeman, Guy Abel, Wolfgang Lutz, Anne Goujon. 2024. Updating the Shared Socioeconomic Pathways (SSPs) Global Population and Human Capital Projections. IIASA Working Paper. Laxenburg, Austria: WP-24-003. (Data accessed from https://dataexplorer.wittgensteincentre.org/wcde-v3/)

Lofgren, Hans, and Martín Cicowiez. 2024a. CGE Modeling and SAM Building for Gendered Policy Analysis. May 28. Draft.

Lofgren, Hans, and Martín Cicowiez. 2024b. GEM-Gender Morocco: A Dynamic General Equilibrium Model for Analysis of Gender Issues for Morocco. August 10. Draft.

Lofgren, Hans, Martín Cicowiez, and Carolina Diaz-Bonilla. 2013. MAMS – A Computable General Equilibrium Model for Developing Country Strategy Analysis. In P. B. Dixon, & D. W. Jorgenson (Eds.). Handbook of computable general equilibrium modeling (Volume 1A). North Holland, Elsevier.

Lofgren, Hans, Rebecca Lee Harris, and Sherman Robinson. 2002. A Standard Computable General Equilibrium (CGE) Model in GAMS. Microcomputers in Policy Research Vol. 5. Washington, D.C.: IFPRI.

Mounir, Fatima, and Said Hanchane. 2023. Understanding gender pay gaps in the Moroccan labor market. July. World Bank.

Muhammad, Andrew, James L. Seale, Jr., Birgit Meade, and Anita Regmi. 2013. International Evidence on Food Consumption Patterns: An Update Using 2005 International Comparison Program Data. TB-1929. U.S. Dept. of Agriculture, Econ. Res. Serv. March 2011. Revised February 2013.

UN. 2018. World Urbanization Prospects: The 2018 Revision, Online Edition. United Nations, Department of Economic and Social Affairs, Population Division (Data accessed from https://population.un.org/wup/).

UN. 2024. World Population Prospects 2024, Online Edition. United Nations, Department of Economic and Social Affairs, Population Division. (Data accessed from https://population.un.org/wpp/).

World Bank. 2024. World Development Indicators. Accessed October 29.

Appendix A. Oaxaca–Blinder decomposition of gender wage gap

In this appendix, we decompose the wage gap for male and female workers into the explained portion, accounted for by measuring labor market characteristics, and the unexplained portion. Specifically, we use the Oaxaca–Blinder decomposition of log hourly wages in 2011 (i.e., the latest year for which we have a labor force survey) (Blinder, 1973; Oaxaca, 1973). The Oaxaca–Blinder decomposition measures both the explained and unexplained components of the mean hourly wage gap by estimating the separate male and female wage equations for individuals. In addition, we also conducted the decomposition separately for each labor category in the GEM-Gender Morocco. The following equations are used to explain their decomposition:

$W_m = X_m \cdot \beta_m + \varepsilon_m$	(A.1)
$W_f = X_f \cdot \beta_f + \varepsilon_f$	(A.2)
$\bar{W}_m - \bar{W}_f = b_m \cdot \bar{X}_m - b_f \cdot \bar{X}_f = b_m \cdot (\bar{X}_m - \bar{X}_f) + \bar{X}_f \cdot (b_m - b_f)$	(A.3)

$\bar{W}_m - \bar{W}_f$

$= \bar{X}_m \cdot b_m - \bar{X}_f \cdot b_f$

$= \bar{X}_m \cdot b_m - \bar{X}_f \cdot b_f - \bar{X}_f \cdot b_m + \bar{X}_f \cdot b_m$

$= \bar{X}_m \cdot b_m - \bar{X}_f \cdot b_m + \bar{X}_f \cdot b_m - \bar{X}_f \cdot b_f$

$= b_m(\bar{X}_m - \bar{X}_f) + \bar{X}_f(b_m - b_f)$

where

W_m and W_f are vectors with the log hourly wages and m and f denote male and female, respectively;

X_m and X_f are vectors containing the explanatory variables and a constant; in our application, the explanatory variables are age, age squared, level of educational attainment (completed primary or less, completed lower secondary, completed upper secondary, and completed tertiary), and sector of employment (activity);

β_m and β_f indicate the coefficients of the explanatory variables and the intercept;

ε_m and ε_f are error terms from the ordinary least squares (OLS) regressions;

$\bar{W}_m$ and $\bar{W}_f$ are the mean values of log hourly wages for full-time male and female workers, respectively;

$\bar{X}_m$ and $\bar{X}_f$ are the mean values of the explanatory variables for men and women, respectively; and

b_m and b_f indicate the OLS estimates from equations (A.1) and (A.2), respectively.

The first term of the right-hand side of equation (A.3) is the impact of differences between male and female workers in the explanatory variables, evaluated using the coefficients for male. The second term is the differentials not explained by the differences in measured characteristics. Table A.1 shows the results of our Oaxaca–Blinder decomposition at the aggregate level (across all educational levels) for 2011, the most recent year for which we have data.

Table A.1 Decomposition of the gender (hourly) wage gap 2011

Variables	Log points	Percent of gender gap explained
male wage	2.2472	
female wage	2.2353	
Age	-0.0077	-64.22
Education	-0.1981	-1656.92
Activity	-0.0130	-109.05
Total explained	-0.2189	-1830.19
Total unexplained	0.2308	1930.19
Total wage gap	0.0120	100.00

The results, summarized in Table A.1, show that, in the absence of discrimination, i.e., on the basis of the worker characteristics that are considered – age structure, education, and sector of employment – the unconditional average wage for women would be 21.9 percent above the male wage (i.e., the wage disadvantage of women would have been negative;

women would have a wage *ad*vantage). Inter alia, this reflects a higher level of education among female workers: 23 percent of women have tertiary education as opposed to only 9 percent among the men. However, the unexplained wage gap, attributed to discrimination, brings down the female wage by 23.1 percent, with the net effect of leaving the women with a conditional average wage that is 1.2 percent below the male average.

Table A.2 presents the results from our decomposition analysis with the workers disaggregated by educational attainment. For labor with completed primary or less (panel a) and completed lower secondary (panel b), the qualitative results are similar to those at the aggregate level: in the absence of discrimination, the unconditional average female wage would have been 2.3 and 3.7 percent above the male wage for completed primary or less and completed lower secondary, respectively. The respective reductions in the female wages are by 33.5 and 13.3 percent, leaving women with wage shortfalls of 31.2 percent for the first group and 9.6 percent for the second group.

However, for the two groups with higher education, the worker characteristics indicate that, even in the absence of discrimination, men would have earned wages that are 2.3 and 9.5 percent above the female averages for completed upper secondary (panel c) and completed tertiary (panel d). However, also for these two groups, discrimination raises the relative wages of males, by 6.9 and 18.3 percent, respectively.

Table A.2. Decomposition of the gender (hourly) wage gap by educational attainment 2011

a. completed primary or less

Variables	Log points	Percent of gender gap explained
male wage	2.0258	
female wage	1.7138	
Age	-0.0110	-3.52
Activity	-0.0115	-3.69
Total explained	-0.0225	-7.21
Total unexplained	0.3345	107.21
Total wage gap	0.3120	100.00

b. completed lower secondary

Variables	Log points	Percent of gender gap explained
male wage	2.1136	
female wage	2.0175	
Age	-0.0008	-0.88
Activity	-0.0360	-37.43
Total explained	-0.0368	-38.31
Total unexplained	0.1328	138.31
Total wage gap	0.0960	100.00

c. completed upper secondary

Variables	Log points	Percent of gender gap explained
male wage	2.6732	
female wage	2.5813	
Age	0.0403	43.89
Activity	-0.0170	-18.45
Total explained	0.0234	25.44
Total unexplained	0.0685	74.56
Total wage gap	0.0919	100.00

d. completed tertiary

Variables	Log points	Percent of gender gap explained
male wage	3.3830	
female wage	3.1046	
Age	0.0960	34.49
Activity	-0.0006	-0.22
Total explained	0.0954	34.27
Total unexplained	0.1830	65.73
Total wage gap	0.2784	100.00

Appendix B. Background data and excerpts from model database

Table B.1. Value-added, trade, and consumption elasticities

Sector	VA-top	VA-labor	Armington	CET	HhdCons-LES	HhdCons-CES
GDP						
Agriculture	0.25	3.00	2.00	2.00	-0.70	n.a.
Mining	0.20	3.00	2.00	2.00	-1.00	n.a.
Food	0.95	3.00	1.50	1.50	-0.70	n.a.
Textiles and clothing	0.95	3.00	1.50	1.50	-1.00	n.a.
Other manufacturing	0.95	3.00	1.50	1.50	-1.00	n.a.
Utilities	0.95	3.00	0.90	0.90	-1.00	n.a.
Construction	0.95	3.00	0.90	0.90	-1.00	n.a.
Trade	0.95	3.00	0.90	0.90	-1.00	n.a.
Transport	0.95	3.00	0.90	0.90	-1.00	n.a.
Education - private	0.95	3.00	0.90	0.90	-1.00	n.a.
Health - private	0.95	3.00	0.90	0.90	-1.00	n.a.
Childcare - private	0.95	3.00	0.90	0.90	-1.00	n.a.
Elderly care - private	0.95	3.00	0.90	0.90	-1.00	n.a.
Domestic services	0.95	3.00	n.a.	n.a.	-1.00	n.a.
Other services	0.95	3.00	0.90	0.90	-1.00	n.a.
Education - government	0.95	3.00	0.90	0.90	-1.00	n.a.
Health - government	0.95	3.00	0.90	0.90	-1.00	n.a.
Childcare - government	0.95	3.00	0.90	0.90	-1.00	n.a.
Elderly care - government	0.95	3.00	0.90	0.90	-1.00	n.a.
Other government	0.95	3.00	n.a.	n.a.	-1.00	n.a.
Non-GDP (household production)						
Child care	0.95	3.00	n.a.	n.a.	n.a.	n.a.
Elderly care	0.95	3.00	n.a.	n.a.	n.a.	n.a.
Other services	0.95	3.00	n.a.	n.a.	n.a.	n.a.
Composite products*						
Child care	n.a.	n.a.	n.a.	n.a.	-0.50	1.50
Elderly care	n.a.	n.a.	n.a.	n.a.	-0.50	1.50
Other services	n.a.	n.a.	n.a.	n.a.	-0.50	1.50
Leisure						
Female	n.a.	n.a.	n.a.	n.a.	-0.85	n.a.
Male	n.a.	n.a.	n.a.	n.a.	-0.85	n.a.

*Composite products are CES aggregates of GDP and non-GDP (household) products

Note:

VA-top = CES substitution elasticities between aggregate labor and other factors at top of VA nest;

VA-labor = CES substitution elasticities between labor factors at lower levels of nest for VA generation;

Armington = CES (Armington substitution elasticities between imports and domestic output;

CET = CET elasticities for transformation of output between exports and domestic sales;

HhdCons-LES = LES price elasticities at top of household consumption nest; and

HhdCons-CES = CES substitution elasticities between services from market and the household at bottom of household consumption nest.

Source: GEM-Gender Morocco database

Table B.2. Broad sectoral structure in 2019 (%)

Sector	Value added	Production	Employment	Exports	Imports
Agriculture	11.75	9.70	29.06	8.72	5.11
Mining	1.76	1.60	0.36	2.94	3.23
Food	5.05	10.58	4.46	11.31	5.65
Textiles	2.36	2.83	3.74	6.46	5.21
Other manuf.	9.89	15.87	6.00	38.94	68.27
Utilities	4.04	3.43	1.13	1.48	0.28
Construction	6.11	9.01	8.63	1.09	0.69
Trade services	10.10	8.58	16.98	0.38	0.12
Transportation	3.82	4.49	3.43	10.11	6.43
Education - private	1.40	0.82	0.72	0.28	0.00
Health - private	0.42	0.33	0.19	0.13	0.00
Childcare - private	0.13	0.08	0.07	0.03	0.00
Elderly care - private	0.02	0.02	0.01	0.01	0.00
Domestic services	0.21	0.09	0.83	0.00	0.00
Other private services	27.44	21.63	16.39	18.11	4.99
Education - gov't	4.15	2.44	2.15	0.00	0.01
Health - gov't	1.29	1.01	0.58	0.00	0.00
Childcare - gov't	0.39	0.23	0.20	0.00	0.00
Elderly care - gov't	0.07	0.05	0.03	0.00	0.00
Other government	9.61	7.21	5.03	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00

Appendix C: Additional simulation results

Table C.1. Macro indicators: average annual growth 2025-2035 by simulation

	base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Absorption	3.38	0.04	0.07	0.04	-0.06	0.03	0.18	0.21	0.16	0.23
Private consumption	3.19	0.05	0.07	0.04	-0.06	0.05	0.21	0.23	0.18	0.25
Government consumption	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed investment	3.76	0.05	0.13	0.08	-0.10	0.01	0.27	0.32	0.24	0.36
Private fixed investment	3.90	0.06	0.16	0.10	-0.12	0.01	0.33	0.38	0.29	0.44
Government fixed investment	3.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stock Change	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exports	3.49	0.05	0.10	0.07	-0.09	0.01	0.23	0.27	0.20	0.31
Imports	3.37	0.04	0.08	0.05	-0.07	0.01	0.19	0.22	0.16	0.25
GDP at factor cost	3.39	0.04	0.08	0.05	-0.07	0.03	0.20	0.23	0.17	0.26
Real exchange rate	0.33	0.00	0.02	0.01	-0.01	0.00	0.03	0.04	0.03	0.03

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Table C.2. Sector value added: average annual growth 2025-2035 by sector and simulation

	base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Agriculture	2.29	0.04	0.06	0.04	-0.08	0.01	0.14	0.18	0.12	0.23
Mining	3.44	0.03	0.05	0.04	-0.08	0.00	0.13	0.16	0.10	0.18
Manufacturing	3.24	0.05	0.09	0.06	-0.08	0.01	0.22	0.25	0.19	0.28
Utilities & other services	3.64	0.04	0.07	0.05	-0.06	0.01	0.16	0.18	0.14	0.21
Construction	3.73	0.04	0.12	0.08	-0.09	0.01	0.25	0.30	0.23	0.34
Trade services	3.19	0.04	0.08	0.06	-0.08	0.01	0.19	0.22	0.16	0.26
Child care	4.13	0.03	0.20	-0.33	-0.06	3.97	3.96	3.97	3.96	3.96
Education and health	3.63	0.02	0.05	-0.12	-0.02	0.00	-0.06	-0.04	-0.06	-0.01
Elderly care	4.20	0.00	0.06	0.03	-0.01	0.00	0.09	0.10	0.09	0.06
Domestic services	1.79	0.08	0.48	-0.68	0.09	0.01	-0.13	-0.12	-0.04	-0.29

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Table C.3. Per-capita consumption: average annual growth 2025-2035 by household, commodity, and simulation

			base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Rural households	**with children**	**GDP goods & services**	2.38	-0.10	-0.01	0.69	0.06	-0.08	0.50	0.41	0.44	0.00
		Household services	0.77	-0.10	-0.01	0.69	0.06	-0.08	0.50	0.41	0.44	0.00
		Total	1.94	-0.10	-0.01	0.69	0.06	-0.08	0.50	0.41	0.44	0.00
	without children	**GDP goods & services**	3.71	-0.09	-0.01	0.68	0.14	0.01	0.58	0.50	0.62	0.22
		Household services	1.72	-0.09	-0.01	0.68	0.14	0.01	0.58	0.50	0.62	0.22
		Total	3.24	-0.09	-0.01	0.68	0.14	0.01	0.58	0.50	0.62	0.22
	elderly	**GDP goods & services**	2.92	-0.09	-0.01	0.69	0.11	0.00	0.58	0.49	0.57	0.13
		Household services	1.13	-0.09	-0.01	0.69	0.11	0.00	0.58	0.49	0.57	0.13
		Total	2.48	-0.09	-0.01	0.69	0.11	0.00	0.58	0.49	0.57	0.13
Urban households	**with children**	**GDP goods & services**	1.88	-0.07	-0.01	0.70	0.04	-0.06	0.54	0.47	0.48	0.18
		Household services	1.51	-0.07	-0.01	0.70	0.04	-0.06	0.54	0.47	0.48	0.18
		Total	1.80	-0.07	-0.01	0.70	0.04	-0.06	0.54	0.47	0.48	0.18
	without children	**GDP goods & services**	2.21	-0.07	-0.01	0.65	0.10	0.01	0.57	0.50	0.59	0.32
		Household services	1.77	-0.07	-0.01	0.65	0.10	0.01	0.57	0.50	0.59	0.32
		Total	2.13	-0.07	-0.01	0.65	0.10	0.01	0.57	0.50	0.59	0.32
	elderly	**GDP goods & services**	1.83	-0.07	-0.01	0.64	0.08	0.01	0.57	0.50	0.56	0.30
		Household services	1.26	-0.07	-0.01	0.64	0.08	0.01	0.57	0.50	0.56	0.30
		Total	1.73	-0.07	-0.01	0.64	0.08	0.01	0.57	0.50	0.56	0.30
Aggregates	**all rural**	**GDP goods & services**	2.95	-0.09	-0.01	0.69	0.09	-0.04	0.54	0.45	0.51	0.08
		Household services	1.06	-0.09	-0.01	0.69	0.09	-0.04	0.54	0.45	0.51	0.08
		Total	2.46	-0.09	-0.01	0.69	0.09	-0.04	0.54	0.45	0.51	0.08
	all urban	**GDP goods & services**	2.15	-0.07	-0.01	0.67	0.06	-0.03	0.56	0.48	0.52	0.24
		Household services	1.40	-0.07	-0.01	0.67	0.06	-0.03	0.56	0.48	0.52	0.24
		Total	2.00	-0.07	-0.01	0.67	0.06	-0.03	0.56	0.48	0.52	0.24
	all rural & urban	**GDP goods & services**	2.45	-0.08	-0.01	0.68	0.07	-0.03	0.55	0.47	0.52	0.19
		Household services	1.16	-0.08	-0.01	0.68	0.07	-0.03	0.55	0.47	0.52	0.19
		Total	2.17	-0.08	-0.01	0.68	0.07	-0.03	0.55	0.47	0.52	0.19

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Table C.4. Poverty rate by hhd in 2024 (%) and in 2035 by simulation (% pt chng)

		2024	base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Rural	**Households with children**	10.71	-6.53	-6.62	-6.66	-6.66	-6.48	-6.83	-7.07	-7.07	-6.99	-7.07
	Households without children	3.14	-2.55	-2.55	-2.55	-2.55	-2.55	-2.55	-2.55	-2.55	-2.55	-2.55
	Elderly households	9.32	-7.07	-7.20	-7.43	-7.20	-7.07	-7.20	-7.58	-7.58	-7.43	-7.43
Urban	**Households with children**	2.02	-1.15	-1.20	-1.20	-1.20	-1.10	-1.20	-1.21	-1.21	-1.21	-1.21
	Households without children	0.58	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.36
	Elderly households	1.52	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17
Total	**Rural**	9.48	-6.35	-6.44	-6.51	-6.46	-6.32	-6.56	-6.79	-6.79	-6.71	-6.76
	Urban	1.64	-1.01	-1.04	-1.04	-1.04	-0.99	-1.04	-1.05	-1.05	-1.05	-1.08
	All	4.78	-3.29	-3.34	-3.37	-3.35	-3.26	-3.38	-3.47	-3.47	-3.44	-3.47

Table C.5. Vulnerability rate by hhd in 2024 (%) and in 2035 by simulation (% pt chng)

		2024	base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Rural	**Households with children**	21.45	-9.06	-9.13	-9.14	-9.14	-8.94	-9.34	-9.92	-10.03	-9.89	-10.03
	Households without children	9.63	-7.07	-7.07	-7.07	-7.07	-7.07	-7.07	-7.18	-7.18	-7.18	-7.18
	Elderly households	18.29	-8.55	-8.46	-8.23	-8.46	-7.65	-8.42	-8.24	-8.24	-8.23	-8.23
Urban	**Households with children**	9.47	-4.86	-4.94	-5.00	-4.94	-4.64	-5.14	-5.64	-5.66	-5.35	-5.64
	Households without children	3.05	-2.32	-2.32	-2.32	-2.32	-2.32	-2.32	-2.40	-2.45	-2.45	-2.36
	Elderly households	7.97	-3.94	-3.94	-3.94	-3.94	-3.71	-3.94	-4.11	-4.20	-4.03	-4.52
Total	**Rural**	19.34	-9.19	-9.21	-9.16	-9.22	-8.90	-9.32	-9.65	-9.71	-9.63	-9.71
	Urban	7.89	-4.41	-4.45	-4.49	-4.45	-4.25	-4.56	-4.88	-4.93	-4.72	-4.95
	All	12.47	-6.71	-6.74	-6.75	-6.74	-6.50	-6.85	-7.17	-7.23	-7.06	-7.24

Table C.6. Poverty & vulnerability rate by hhd in 2024 (%) and in 2035 by simulation (% pt chng)

		2024	base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Rural	Households with children	32.16	-15.60	-15.76	-15.80	-15.80	-15.41	-16.17	-16.99	-17.10	-16.88	-17.10
	Households without children	12.77	-9.63	-9.63	-9.63	-9.63	-9.63	-9.63	-9.74	-9.74	-9.74	-9.74
	Elderly households	27.62	-15.62	-15.66	-15.66	-15.66	-14.72	-15.62	-15.81	-15.81	-15.66	-15.66
Urban	Households with children	11.49	-6.01	-6.13	-6.20	-6.13	-5.74	-6.34	-6.85	-6.88	-6.56	-6.85
	Households without children	3.63	-2.57	-2.57	-2.57	-2.57	-2.57	-2.57	-2.65	-2.70	-2.70	-2.71
	Elderly households	9.49	-5.10	-5.10	-5.10	-5.10	-4.88	-5.10	-5.28	-5.37	-5.19	-5.69
Total	Rural	28.82	-15.54	-15.65	-15.67	-15.67	-15.22	-15.88	-16.44	-16.51	-16.34	-16.47
	Urban	9.52	-5.42	-5.49	-5.52	-5.49	-5.23	-5.60	-5.93	-5.97	-5.77	-6.03
	All	17.25	-10.00	-10.08	-10.11	-10.09	-9.77	-10.23	-10.64	-10.69	-10.50	-10.72

Table C.7. Time use shares in 2024 & 2035 by region, gender, and activity; for simulations (% chng from base in 2035)

				2024	2035	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Nation	Female	GDP	care	0.08	0.08	2.34	0.47	-2.54	2.76	49.29	50.95	54.32	60.91	69.18
			other	14.42	15.64	6.91	0.67	1.91	3.71	0.32	9.98	16.66	23.34	52.95
			total	14.50	15.72	6.89	0.67	1.89	3.70	0.56	10.18	16.84	23.52	53.03
		Household services	care	4.52	3.72	-1.31	-0.47	0.26	-1.48	-7.10	-8.38	-9.61	-11.59	-16.38
			other	46.21	43.81	-1.07	-0.12	-2.06	-3.37	0.18	-3.09	-4.13	-7.87	-12.12
			total	50.72	47.54	-1.09	-0.14	-1.88	-3.22	-0.39	-3.50	-4.55	-8.16	-12.45
		Leisure		34.78	36.75	-1.54	-0.10	1.62	2.59	0.26	0.18	-1.31	0.50	-6.58
	Male	GDP	care	0.10	0.09	-1.51	-0.15	-4.07	-2.86	48.94	41.88	39.12	34.51	27.22
			other	45.27	43.75	-0.62	-0.07	0.31	-2.40	0.05	-0.34	-1.15	-3.87	-7.22
			total	45.37	43.84	-0.62	-0.07	0.30	-2.40	0.15	-0.26	-1.07	-3.80	-7.15
		Household services	care	1.34	1.30	0.63	-0.36	-1.02	7.97	-6.86	-7.43	-6.49	1.07	4.47
			other	8.32	9.27	0.74	0.01	-3.06	24.14	0.01	-2.34	-1.51	22.65	27.14
			total	9.66	10.57	0.72	-0.04	-2.81	22.15	-0.84	-2.97	-2.13	19.99	24.35
		Leisure		44.97	45.59	0.43	0.08	0.36	-2.83	0.05	0.94	1.53	-0.98	1.23
Rural	Female	GDP	care	0.01	0.00	6.42	0.50	-0.96	3.51	52.86	62.23	68.70	77.31	106.43
			other	6.32	5.39	23.20	2.50	9.18	19.69	6.67	40.93	60.88	86.38	182.84
			total	6.33	5.40	23.19	2.50	9.18	19.68	6.71	40.94	60.89	86.38	182.77
		Household services	care	4.04	3.25	-1.58	-0.60	0.80	-1.44	-12.04	-12.74	-13.95	-15.55	-21.15
			other	57.22	56.31	-1.10	-0.12	-1.98	-3.44	0.01	-3.16	-4.09	-7.68	-11.97
			total	61.26	59.56	-1.12	-0.15	-1.83	-3.33	-0.65	-3.68	-4.63	-8.11	-12.47
		Leisure		32.41	35.04	-1.67	-0.14	1.69	2.62	0.07	-0.05	-1.51	0.48	-6.97
	Male	GDP	care	0.04	0.03	-1.57	0.09	-3.50	-1.32	50.48	44.40	40.60	37.68	24.66
			other	42.61	39.70	-0.47	-0.05	0.36	-2.26	0.24	0.07	-0.61	-3.08	-6.27
			total	42.65	39.73	-0.47	-0.05	0.35	-2.26	0.27	0.10	-0.58	-3.05	-6.25
		Household services	care	1.26	1.21	0.81	-0.39	-0.54	6.62	-10.88	-10.55	-9.76	-3.94	-0.59
			other	11.28	12.53	0.70	0.03	-2.85	23.41	0.02	-2.15	-1.43	21.86	25.90
			total	12.54	13.74	0.71	-0.01	-2.65	21.93	-0.94	-2.89	-2.16	19.59	23.57
		Leisure		44.81	46.53	0.20	0.05	0.48	-4.55	0.04	0.77	1.13	-3.18	-1.62
Urban	Female	GDP	care	0.12	0.10	2.20	0.47	-2.55	2.86	49.30	50.71	53.89	60.48	67.47
			other	18.57	19.78	5.07	0.47	1.12	2.02	-0.34	6.56	11.71	16.34	38.25
			total	18.69	19.88	5.05	0.47	1.10	2.03	-0.08	6.79	11.93	16.57	38.40
		Household services	care	4.76	3.91	-1.23	-0.42	0.09	-1.48	-5.43	-6.92	-8.17	-10.28	-14.91
			other	40.56	38.77	-1.02	-0.11	-2.11	-3.38	0.26	-3.04	-4.09	-7.94	-11.94
			total	45.32	42.69	-1.04	-0.14	-1.91	-3.21	-0.26	-3.39	-4.47	-8.15	-12.21
		Leisure		35.99	37.43	-1.50	-0.09	1.59	2.58	0.34	0.26	-1.24	0.49	-6.47
	Male	GDP	care	0.13	0.11	-1.49	-0.16	-4.13	-2.92	48.79	41.66	39.03	34.39	27.78
			other	46.51	45.26	-0.67	-0.08	0.29	-2.43	-0.01	-0.47	-1.32	-4.11	-7.50
			total	46.64	45.37	-0.67	-0.08	0.28	-2.43	0.11	-0.37	-1.23	-4.02	-7.41
		Household services	care	1.37	1.34	0.57	-0.34	-1.18	8.44	-5.51	-6.37	-5.39	2.79	6.22
			other	6.94	8.06	0.75	-0.01	-3.17	24.47	0.00	-2.47	-1.60	22.98	27.64
			total	8.31	9.39	0.72	-0.06	-2.89	22.18	-0.79	-3.03	-2.14	20.10	24.59
		Leisure		45.05	45.23	0.52	0.09	0.32	-2.17	0.06	1.00	1.68	-0.14	2.33

Note: For 2024 and 2035, % of time use; the values for each gender sum to 100. The 2035 values are the base results for 2035.
For the non-base simulations, % point deviations of 2035 time use from the 2035 (base) values.

Table C.8. Time use shares in 2024 & 2035 by region, gender, and activity; for simulations (% pt chng from base in 2035)

				2024	2035	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Nation	Female	GDP	care	0.08	0.08	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.05	0.05
			other	14.42	15.64	1.08	0.11	0.30	0.58	0.05	1.56	2.61	3.65	8.28
			total	14.50	15.72	1.08	0.11	0.30	0.58	0.09	1.60	2.65	3.70	8.33
		Household services	care	4.52	3.72	-0.05	-0.02	0.01	-0.06	-0.26	-0.31	-0.36	-0.43	-0.61
			other	46.21	43.81	-0.47	-0.05	-0.90	-1.48	0.08	-1.35	-1.81	-3.45	-5.31
			total	50.72	47.54	-0.52	-0.07	-0.89	-1.53	-0.18	-1.67	-2.17	-3.88	-5.92
		Leisure		34.78	36.75	-0.57	-0.04	0.60	0.95	0.10	0.07	-0.48	0.18	-2.42
	Male	GDP	care	0.10	0.09	0.00	0.00	0.00	0.00	0.04	0.04	0.03	0.03	0.02
			other	45.27	43.75	-0.27	-0.03	0.13	-1.05	0.02	-0.15	-0.50	-1.70	-3.16
			total	45.37	43.84	-0.27	-0.03	0.13	-1.05	0.06	-0.11	-0.47	-1.67	-3.13
		Household services	care	1.34	1.30	0.01	0.00	-0.01	0.10	-0.09	-0.10	-0.08	0.01	0.06
			other	8.32	9.27	0.07	0.00	-0.28	2.24	0.00	-0.22	-0.14	2.10	2.52
			total	9.66	10.57	0.08	0.00	-0.30	2.34	-0.09	-0.31	-0.23	2.11	2.57
		Leisure		44.97	45.59	0.20	0.04	0.17	-1.29	0.02	0.43	0.70	-0.45	0.56
Rural	Female	GDP	care	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			other	6.32	-0.92	0.33	-0.79	-0.43	0.14	-0.56	1.28	2.36	3.74	8.94
			total	6.33	-0.93	0.32	-0.79	-0.43	0.13	-0.57	1.28	2.36	3.74	8.94
		Household services	care	4.04	-0.79	-0.84	-0.80	-0.76	-0.83	-1.18	-1.20	-1.24	-1.29	-1.47
			other	57.22	-0.92	-1.54	-0.99	-2.03	-2.85	-0.91	-2.70	-3.22	-5.24	-7.66
			total	61.26	-1.70	-2.37	-1.79	-2.79	-3.68	-2.09	-3.90	-4.46	-6.54	-9.13
		Leisure		32.41	2.63	2.05	2.58	3.23	3.55	2.66	2.61	2.10	2.80	0.19
	Male	GDP	care	0.04	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.00	0.00	0.00	0.00
			other	42.61	-2.92	-3.10	-2.94	-2.77	-3.81	-2.82	-2.89	-3.16	-4.14	-5.41
			total	42.65	-2.93	-3.11	-2.95	-2.78	-3.82	-2.82	-2.88	-3.15	-4.14	-5.41
		Household services	care	1.26	-0.05	-0.04	-0.06	-0.06	0.03	-0.18	-0.18	-0.17	-0.10	-0.06
			other	11.28	1.25	1.34	1.26	0.90	4.19	1.26	0.98	1.07	3.99	4.50
			total	12.54	1.20	1.30	1.20	0.84	4.21	1.07	0.80	0.90	3.89	4.44
		Leisure		44.81	1.72	1.81	1.75	1.95	-0.39	1.74	2.08	2.25	0.24	0.97
Urban	Female	GDP	care	0.12	-0.01	-0.01	-0.01	-0.02	-0.01	0.04	0.04	0.04	0.05	0.06
			other	18.57	1.20	2.21	1.30	1.43	1.60	1.14	2.50	3.52	4.44	8.77
			total	18.69	1.19	2.20	1.29	1.41	1.59	1.18	2.54	3.56	4.49	8.83
		Household services	care	4.76	-0.85	-0.89	-0.86	-0.84	-0.90	-1.06	-1.12	-1.17	-1.25	-1.43
			other	40.56	-1.78	-2.18	-1.83	-2.60	-3.10	-1.68	-2.96	-3.37	-4.86	-6.41
			total	45.32	-2.63	-3.08	-2.69	-3.45	-4.00	-2.74	-4.08	-4.54	-6.11	-7.84
		Leisure		35.99	1.44	0.88	1.41	2.04	2.41	1.57	1.54	0.97	1.62	-0.98
	Male	GDP	care	0.13	-0.02	-0.02	-0.02	-0.03	-0.02	0.03	0.02	0.02	0.02	0.01
			other	46.51	-1.24	-1.55	-1.28	-1.11	-2.34	-1.25	-1.46	-1.84	-3.10	-4.64
			total	46.64	-1.26	-1.57	-1.30	-1.14	-2.37	-1.22	-1.43	-1.82	-3.09	-4.63
		Household services	care	1.37	-0.03	-0.02	-0.04	-0.05	0.08	-0.11	-0.12	-0.10	0.00	0.05
			other	6.94	1.11	1.17	1.11	0.86	3.08	1.11	0.91	0.98	2.96	3.34
			total	8.31	1.08	1.15	1.08	0.81	3.16	1.01	0.80	0.88	2.97	3.39
		Leisure		45.05	0.18	0.42	0.22	0.33	-0.80	0.21	0.64	0.94	0.12	1.24

Note: For 2024 and 2035, % of time use; the values for each gender sum to 100. The 2035 values are the base results.
For the non-base simulations, % point deviations of 2035 time use from the 2035 values; the values for each gender sum to zero.

Table C.9. GDP employment: average annual growth 2025-2035 by gender, education, and simulation

		base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Female	**Primary or less**	-1.96	1.17	0.08	0.15	0.36	0.03	1.42	2.35	2.95	6.71
	Secondary - lower	0.70	0.24	0.04	0.16	0.30	0.04	0.48	0.96	1.49	2.71
	Secondary - upper	4.21	-0.03	0.04	0.19	0.28	0.07	0.26	0.33	0.84	0.75
	Tertiary	5.47	0.42	0.06	0.19	0.33	0.06	0.72	1.06	1.47	2.18
	All	1.35	0.61	0.06	0.17	0.33	0.05	0.89	1.42	1.94	3.94
Male	**Primary or less**	-2.92	-0.02	-0.01	0.01	-0.22	0.00	-0.01	-0.09	-0.33	-0.63
	Secondary - lower	0.88	-0.09	-0.02	0.01	-0.21	0.01	-0.10	-0.15	-0.39	-0.70
	Secondary - upper	5.12	-0.10	-0.01	0.03	-0.28	0.01	-0.06	-0.12	-0.44	-0.75
	Tertiary	5.14	-0.02	0.01	0.06	-0.15	0.04	0.09	-0.03	-0.24	-0.60
	All	0.76	-0.06	-0.01	0.03	-0.22	0.01	-0.02	-0.10	-0.35	-0.67
Male &	**Primary or less**	-2.63	0.37	0.02	0.06	-0.03	0.01	0.46	0.75	0.82	2.28
Female	**Secondary - lower**	0.85	-0.05	-0.01	0.03	-0.14	0.01	-0.02	0.01	-0.10	-0.15
	Secondary - upper	4.90	-0.08	0.00	0.07	-0.14	0.03	0.02	-0.01	-0.12	-0.37
	Tertiary	5.28	0.17	0.03	0.12	0.06	0.05	0.37	0.45	0.53	0.68
	All	0.92	0.14	0.01	0.07	-0.06	0.02	0.25	0.37	0.37	0.90

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Table C.10. Wages: average annual growth 2025-2035 by gender, education, and simulation

		base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Female	**Primary or less**	2.03	0.21	0.06	-0.11	-0.31	-0.01	0.15	0.32	0.09	1.03
	Secondary - lower	0.99	0.15	0.06	-0.13	-0.31	-0.01	0.07	0.20	-0.03	0.51
	Secondary - upper	0.18	0.14	0.06	-0.14	-0.32	-0.01	0.05	0.17	-0.07	0.38
	Tertiary	0.43	0.25	0.07	-0.13	-0.29	-0.01	0.20	0.43	0.27	1.05
Male	**Primary or less**	2.01	0.01	0.04	0.00	0.14	0.01	0.07	0.00	0.12	-0.17
	Secondary - lower	1.14	-0.03	0.03	0.00	0.11	0.01	0.01	-0.01	0.10	-0.01
	Secondary - upper	0.06	-0.04	0.05	0.00	0.16	0.01	0.02	0.00	0.14	0.06
	Tertiary	0.50	0.00	0.06	-0.01	0.14	0.01	0.06	-0.05	0.04	-0.16

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Table C.11. Labor incomes: average annual growth 2025-2035 by gender, education, and simulation

		base	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Female	**Primary or less**	-0.90	1.42	0.14	0.01	0.02	0.02	1.59	2.68	3.01	7.79
	Secondary - lower	0.87	0.41	0.09	0.02	-0.02	0.04	0.57	1.18	1.46	3.29
	Secondary - upper	3.56	0.10	0.08	0.03	-0.03	0.08	0.30	0.47	0.76	1.11
	Tertiary	4.17	0.68	0.09	0.04	0.04	0.10	0.92	1.46	1.68	3.22
	All	3.01	0.63	0.10	0.03	0.02	0.08	0.84	1.39	1.64	3.48
Male	**Primary or less**	-0.93	-0.01	0.03	0.02	-0.08	0.01	0.05	-0.08	-0.20	-0.77
	Secondary - lower	1.90	-0.12	0.01	0.01	-0.09	0.02	-0.09	-0.16	-0.29	-0.70
	Secondary - upper	4.46	-0.15	0.02	0.02	-0.12	0.03	-0.08	-0.14	-0.33	-0.70
	Tertiary	4.73	-0.03	0.05	0.04	-0.03	0.08	0.13	-0.12	-0.24	-0.81
	All	2.46	-0.07	0.03	0.02	-0.07	0.04	0.03	-0.12	-0.26	-0.75
Male &	**Primary or less**	-0.93	0.17	0.05	0.02	-0.07	0.02	0.25	0.29	0.24	0.72
Female	**Secondary - lower**	1.79	-0.06	0.01	0.01	-0.08	0.02	-0.02	-0.01	-0.09	-0.21
	Secondary - upper	4.26	-0.09	0.03	0.02	-0.10	0.04	0.00	-0.01	-0.09	-0.29
	Tertiary	4.55	0.20	0.06	0.04	0.00	0.09	0.38	0.40	0.40	0.63
	All	2.58	0.09	0.04	0.03	-0.05	0.05	0.21	0.23	0.19	0.34

Note: % average annual growth for base; %-age point deviation from base growth for other simulations

Appendix D. Systematic sensitivity analysis of simulation results

In economic simulation models, results depend on the values of the employed behavioral and other parameters such as price and income elasticities. Therefore, it is often informative to analyze the sensitivity of results to selected parameter values. In this appendix, analyze the sensitivity with regard to all model elasticities of simulated results for three major indicators: private consumption, GDP, and time use changes (GDP, household services production, and leisure). To do so, we implement a variant of the method originally proposed by Harrison and Vinod [1992].

We assume that each model elasticity is uniformly distributed around the central value used to obtain the results presented in the main text. The range of variation allowed for each elasticity is +/- 50%. The model is solved iteratively with different sets of elasticities. The resulting distribution of results is used to build confidence intervals for selected model results. The steps for the systematic sensitivity analysis are as follows:

1. The distribution (i.e., lower and upper bound) is computed for each model parameter that will be modified: elasticities of substitution between male and female labor both for GDP activities and household production, elasticities of substitution between GDP and household services, elasticities of substitution between primary factors of production, trade-related elasticities, and price elasticities for household demands.

2. The model is solved repeatedly, each time with a different set of elasticities following a Monte Carlo type procedure: (i) the value for all model elasticities is randomly selected; (ii) the model is calibrated using the selected elasticities; and (iii) the same counterfactual scenarios as previously described are conducted.

These three steps are repeated 200 times, with sampling with replacement for the value assigned to the elasticities.

Table C.1 shows the percentage change in private consumption and GDP estimated (a) under the central elasticities, and (b) as the average of the 200 observations generated by the sensitivity analysis. For the second case, the upper and lower bounds under the normality assumption were also computed. All runs from the Monte Carlo experiment receive the same weight. Table C.2 is similar to Table C.1 but shows changes in time use for males and females. As can be seen, the results reported in the main text are within the

confidence intervals reported in Table C.1 and Table C.2. For example, Table C.2 indicates that, if government spending on child care is expanded as in scenario govccare+50, it is almost fully certain that private consumption will increase between 0.51 and 0.56 percent.

In other words, results given in Table C.1 and Table C.2 suggest that qualitatively, i.e., in terms of the direction of the changes for the key indicators that are shown, the results are robust to changes in the elasticities. However, as expected, higher elasticity values lead to larger changes.

Table C.1: Systematic sensitivity analysis: 95% confidence interval under normality assumption for private consumption and GDP in 2035 (percent change from base)

	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	combi-1	combi-2	combi-3	combi-4
Private consumption									
Mean	0.469	0.727	0.367	-0.701	0.538	2.122	2.353	1.799	2.720
Std Dev	0.063	0.057	0.153	0.110	0.068	0.191	0.225	0.248	0.311
Lo bound	0.447	0.707	0.315	-0.739	0.514	2.057	2.277	1.714	2.615
Up bound	0.490	0.746	0.419	-0.664	0.561	2.187	2.430	1.883	2.826
GDP									
Mean	0.392	0.864	0.464	-0.847	0.225	1.970	2.262	1.618	2.635
Std Dev	0.074	0.049	0.181	0.157	0.052	0.197	0.233	0.298	0.317
Lo bound	0.367	0.847	0.403	-0.900	0.207	1.903	2.183	1.516	2.527
Up bound	0.417	0.881	0.525	-0.794	0.242	2.037	2.342	1.719	2.743

Source: Authors' calculations.

Table C.2: Systematic sensitivity analysis: 95% confidence interval under normality assumption for time use by gender in 2035 (percent change from base)

	wdscr-50	lprdgdpf+5	lprdhser+10	mfgaphser-125	govccare+25	govccare+50	combi-1	combi-2	combi-3	combi-4
Female labor										
GDP										
Mean	6.617	0.633	1.592	3.224	0.404	0.856	9.432	16.358	22.592	52.056
Std Dev	0.840	0.339	0.661	0.524	0.124	0.221	1.415	2.480	3.042	6.290
Lo bound	6.332	0.518	1.367	3.046	0.362	0.781	8.951	15.515	21.558	49.917
Up bound	6.903	0.748	1.816	3.403	0.447	0.931	9.913	17.201	23.626	54.194
Household services										
Mean	-1.014	-0.133	-1.670	-3.175	-0.293	-0.571	-3.134	-4.220	-7.805	-12.075
Std Dev	0.161	0.051	0.608	0.167	0.103	0.186	0.662	0.743	0.826	0.991
Lo bound	-1.069	-0.150	-1.877	-3.232	-0.328	-0.634	-3.359	-4.472	-8.086	-12.412
Up bound	-0.959	-0.115	-1.463	-3.118	-0.258	-0.508	-2.908	-3.967	-7.524	-11.738
Leisure										
Mean	-1.557	-0.103	1.454	2.709	0.203	0.366	-0.053	-1.657	0.279	-6.952
Std Dev	0.235	0.086	0.492	0.233	0.087	0.159	0.606	0.826	0.902	1.925
Lo bound	-1.637	-0.132	1.286	2.629	0.173	0.312	-0.259	-1.938	-0.028	-7.607
Up bound	-1.477	-0.074	1.621	2.788	0.233	0.420	0.153	-1.377	0.585	-6.298
Male labor										
GDP										
Mean	-0.660	-0.068	0.255	-2.493	0.128	0.279	-0.347	-1.307	-4.091	-7.608
Std Dev	0.084	0.060	0.104	0.225	0.035	0.056	0.172	0.300	0.368	0.725
Lo bound	-0.689	-0.089	0.220	-2.569	0.116	0.260	-0.406	-1.408	-4.216	-7.855
Up bound	-0.632	-0.048	0.291	-2.417	0.140	0.298	-0.289	-1.205	-3.965	-7.362
Household services										
Mean	0.674	-0.034	-2.469	22.431	-0.681	-1.303	-2.526	-1.678	20.726	24.666
Std Dev	0.214	0.060	0.877	0.857	0.236	0.421	0.831	0.762	1.350	1.244
Lo bound	0.602	-0.054	-2.768	22.140	-0.761	-1.446	-2.809	-1.938	20.267	24.243
Up bound	0.747	-0.014	-2.171	22.722	-0.601	-1.159	-2.244	-1.419	21.185	25.089
Leisure										
Mean	0.473	0.072	0.321	-2.765	0.034	0.032	0.906	1.625	-0.857	1.586
Std Dev	0.055	0.046	0.111	0.234	0.034	0.061	0.157	0.221	0.343	0.537
Lo bound	0.454	0.056	0.283	-2.845	0.022	0.012	0.853	1.550	-0.973	1.404
Up bound	0.492	0.088	0.359	-2.686	0.045	0.053	0.959	1.700	-0.740	1.768

Source: Authors' calculations.