

# Gender and Fiscal Policy

## A Methodological Proposal and Its Application to Jordan and Armenia

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## Abstract

Fiscal policies affect households and individuals in a variety of ways. Even though these effects are likely to be different for men and women, conventional tools of fiscal incidence analysis are typically unable to capture these gender differences. Using a particular type of incidence analysis known in the literature as the Commitment to Equity framework, this paper proposes a methodology to overcome this challenge. A particular novelty the paper introduces is the explicit incorporation of social reproduction into the fiscal

incidence analysis framework, enabling the implicit valuation of unpaid work that is typically undertaken by women on activities such as cooking, cleaning, and caring for children and the elderly. Applying this methodology to the cases of Jordan and Armenia—two countries with very different approaches to fiscal policy and cultural norms around the economic and social roles of men and women—the paper also highlights some of the insights that this engendered perspective could add to standard fiscal incidence analysis.

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# 1 Introduction

Public revenue and expenditure policies, or taxes and transfers, shape individuals' behaviors, consumption, savings and investment patterns, participation in labor markets, and access to social safety nets and other publicly provided goods and services. Poor and vulnerable women, men, and children make decisions about how much to work outside the home for pay or inside the home without pay, about how much to save and spend, about what to buy, and about which services are essential for which household members. These decisions are often made under severe financial, social, and cultural constraints, which fiscal policies can either ameliorate or exacerbate. Fiscal incidence analysis (FIA), which accounts for the receipt of public expenditures (transfers) and contributions to public revenues (taxes), can demonstrate how policies affect welfare, purchasing power, and wealth, and can identify policies that are most effective in redistributing public resources to those who need it most.

While FIA has become an integral component for assessing the equitable nature of fiscal systems, most FIA work does not attempt to describe how fiscal policy differentially impacts men, women, and children. Incidence accounting at the individual level is challenging for two reasons. First, fiscal policies either support or hinder activities a household member pursues, rather than individual household members or their characteristics. Second, when tax burdens and transfer benefits are linked directly to individuals or their characteristics, they may or may not be shared broadly among all household members. For instance, a woman receiving a cash transfer may not necessarily control how that additional income is used. Analogously, a man's statutory liability for income taxes may not mean he alone will bear the entire economic burden of any income lost to tax payments.

Gender norms influence the activities in which men and women participate. Fiscal policy either supports economic and social activities through public expenditures or makes such activities more expensive by imposing taxes. For example, Barnett and Grown (2004) identify four differences in economic activity which condition the impact of fiscal policies: gender differences in paid formal and informal employment and wages, gender differences in unpaid care work or participation in social reproduction, gender differences in asset ownership, and gender differences in consumption behavior. The imposition of taxes on the wages of those who are formally employed or the support of subsidy expenditures encouraging consumption of basic commodities, for example, link fiscal policy directly to economic and gender-based inequality.

International frameworks have also implicitly connected fiscal policy to gender inequality. For example, the Sustainable Development Goals 2030 (SDGs) have listed gender equality (SDG 5) and reduced inequality (SDG 10) as separate goals; while SDG Target 5.4, "Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies..." and SDG Target 10.4, "Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality" are listed separately. Both dimensions of equality will likely be addressed through a common set of fiscal and social policies.<sup>1</sup>

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1. Social and fiscal policies supporting goals and activities in targets 5.4 and 10.4 will be funded at least partially by countries' own revenues, which also links these SDG targets explicitly to tax and revenue collection policy. While grants, donor aid, and concessional loans will partially fund or otherwise support public policy, the contribution from domestic resources is expected to be equally large if not larger (Lagarde and Gaspar 2018). For an empirical look at how increased mobilization of domestic resources may weaken the equity impacts of expenditures, see Lustig (2018).

This paper makes two main contributions to the literature on the equity impacts of fiscal policy. First, it uses the Commitment to Equity (CEQ) framework to bring taxes and benefits together to examine the differential impacts of fiscal systems on activities that men and women undertake at the household level.<sup>2</sup> Developed in 2008, the CEQ framework examines how taxes and spending (including indirect subsidies, education, and health expenditures) affect income inequality and poverty at the country level. Since the development of this methodology, it has been applied to more than 105 countries across the world.<sup>3</sup>

Second, this paper explicitly brings social reproduction into the FIA framework. Social reproduction is the production and maintenance of human capabilities, often undertaken by women, such as cooking, cleaning, and caring for children, the elderly, and other dependents; subsistence activities like fetching water; and the provision of cultural, social, physical, and educational guidance necessary for the household members to thrive and increase their capability. Social reproduction is crucial for the development of human capabilities; it is therefore a necessary condition for the short- and long-term growth of economies and the social and cultural institutions supporting the economies. We treat social reproduction as part of a household's total social and economic activity. Social reproduction – how it is accomplished and who accomplishes it – is therefore subject to the same type of constraints that inform other household decisions. We suggest a household-level typology to understand *which* households are involved in *which* activities critical for social reproduction and, based on a large literature about the gender division of paid and unpaid work,<sup>4</sup> make assumptions about *who* in those households is responsible for those activities. This analytical choice allows estimation of the likely impact of fiscal policies on individuals – based on their household roles – to incorporate a deeper understanding of gender inequalities in economic life.

The rest of the paper is organized as follows. Section 2 provides a summary of studies that have investigated the differential impacts of fiscal policies on men and women and situates this paper's contributions within that literature. Section 3 includes a discussion of gender, social reproduction, and the market economy and outlines the various ways in which a gender lens might feature within a fiscal incidence analysis. Section 4 introduces the CEQ and proposes a methodology for practitioners in examining the different ways in which fiscal policies support or undermine equality between men and women. Section 5 presents the application of the proposed methodology to the cases of Jordan and Armenia, highlighting some of the main results. The final section concludes with some reflections on the application of this methodology to other countries and the kind of data that could be useful to extend it further.

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2. The CEQ approach was developed by the Commitment to Equity Institute (CEQ Institute) at Tulane University. The methodology, implementation guidelines, applications, and software of the CEQ approach can be found in Lustig, Nora, ed. 2018. *Commitment to Equity Handbook: Estimating the Impact of Fiscal Policy on Inequality and Poverty*. Brookings Institution Press, pp. 3–55. As such the methodology is a registered trademark.

3. The World Bank and the CEQ Institute are responsible for approximately two-thirds of the existing or ongoing CEQ assessment exercises while the CEQ Institute and other partners are responsible for the remaining one-third.

4. See Charmes (2019, 2022); Rubiano and Vollaz (2019); Dinkelman and Ngai (2022); and Pailhe, Solaz, and Stanfors (2020).

## 2 Gender Dimensions in Fiscal Policy

Early studies investigating the differential impacts of fiscal policy across sex and gender<sup>5</sup> looked at the expenditure or tax sides of fiscal policy in isolation. For example, Selden and Wasylenko (1995), Demery (1996), Sahn and Younger (2000), and Pritchett and Filmer (1999) examined the incidence of education and health expenditures separately for men and women using a sample of 57 Demographic and Health Surveys (DHS) from 41 countries. Glick, Saha, and Younger (2004) developed a more systematic attempt to “engender” benefit incidence analysis, examining gender gaps in benefits from health, education, and infrastructure (water supply, electricity, and roads).<sup>6</sup> Using household survey data from Bulgaria, Ghana, Jamaica, Madagascar, Mauritania, Pakistan, Peru, Uganda, and Viet Nam, they calculated the share of benefits as the proportion of males/females in any given quintile that benefit from a particular public service in these sectors and documented large gender gaps in access to these services.

Grown and Valodia (2010) investigated the differential burden of taxes across genders via household types.<sup>7</sup> For example, households might have male, female, or joint income earners; or male or female adult majorities; or younger- or older-age dependents (or both). Tax incidence<sup>8</sup> is estimated and compared across the different household types and across the post-tax expenditure distribution. More recently, Komatsu and others (2021) used sociological, cultural, and institutional information regarding the role of women in agricultural production in Ethiopia to better illuminate why a statutorily *neutral* agricultural income tax and rural land use fee nonetheless created larger economic burdens for households distinguished by having female agricultural landowners.

Greenspun (2019) used the Grown and Valodia (2010) household categories but brought both the expenditure and tax sides together within the CEQ assessment FIA framework.<sup>9</sup> The CEQ assessment architecture is fully generalizable to any social, economic, or fiscal context. More recently, Ambel, Wondigmagegn, and Yonis (2022) estimated the differential impacts of fiscal policy within a CEQ assessment framework for Ethiopia.

The approaches described above capture certain aspects of gender relations at the household level: it is the household that is classified according to type, and it is across households of different types that the incidence of fiscal policy is compared. Estimating a complete intrahousehold distribution of benefits or burdens from fiscal policy requires fine-grained individual data which is often not available. The reason is neoclassical economic

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5. Sex refers to the biological differences that characterize males and females, while gender is the social construction of male and female identity based on biological differences (see page 5).

6. More recent work looking at the differential impact of benefits or transfers created from public expenditure includes Aziz, Gemmell, and Laws (2013) for New Zealand; Doorley and Keane (2020) for Ireland and the United Kingdom; and Garcia-Peña (2019) for Barbados.

7. Grown and Valodia (2010) piloted the proposed methodology in eight countries: South Africa, Ghana, Uganda, Morocco, India, Mexico, Argentina, and the UK.

8. Incidence is measured as cumulative taxes paid as a share of post-tax household expenditure. Other studies estimating the differential incidence of direct tax regimes include Doorley and Keane (2020) for Ireland and the UK; Aziz, Gemmell, and Laws (2013) for New Zealand; Lahey (2017) for Australia; Garcia-Peña (2019) for Barbados; Rossignolo (2018) and Rodriguez-Enriquez and Aguila (2017) for Argentina; and Bakker and Philipps (2018) for Canada. Other studies estimating the differential incidence of indirect taxes include Garcia-Peña (2019) for Barbados; Vijil (2017) for Nicaragua; Casale (2012) for South Africa; Fragoso and Gonzales (2010) for Mexico; and Bucheli and Olivieri (2013) for Uruguay.

9. Greenspun (2019) covered five Latin American countries.

theory assumes that households maximize the welfare of all household members, and that the household functions collectively and has a single, cohesive objective. Neoclassical economic theory also assumes that individuals maximize their own personal utility, including, for example, deciding whether and how to share any personal income gains or agreeing to share tax burdens. Household-based surveys do not yet systematically capture how the income-based benefits received and the income losses from tax payments are shared among individual members of the household.<sup>10</sup>

Understanding how the income gains and losses generated by transfers and taxes are allocated among individual household members is necessary to understand how fiscal policies create individual impacts. A class of empirical models has attempted to capture intrahousehold resource allocations using information on exclusive or assignable expenditures; an example of the former is spending on toys exclusively for children and of the latter is expenditure on clothing for boys, men, girls, and women (Lewbel and Pendakur 2008; Dunbar and others 2013; Chiappori and others 2002; Bose-Duker and others 2021; Bargain 2022). In describing how the intrahousehold allocation of resources creates inequality within the household, or varying levels of resource poverty for different members of the same household, these models allow a description of how intrahousehold inequality changes from pre-fiscal to post-fiscal income levels.

However, three practical disadvantages of empirical models of intrahousehold allocations make it hard to apply them widely and transparently to gendered fiscal incidence analysis. First, in low-income settings, and for low-income households in low- and middle-income settings, assignable expenditures are infrequent and account for small shares of total household expenditure. Infrequent, marginal expenditures might provide unreliable estimates of how (total) income gains and losses are shared.<sup>11</sup> Second, available evidence suggests consumption magnitudes (for individual items) are themselves often imprecisely estimated. In Mexico in 2016, for example, the coverage rate – defined as the cumulative consumption expenditure magnitude for an item covered in a household survey divided by cumulative consumption expenditure (for the same item) from national accounts – of alcohol and tobacco expenditures was less than 10 percent while the coverage rate of education expenditures was more than 160 percent (Zwijnenburg and others 2021).

The third disadvantage helps distinguish our approach from empirical approaches to intrahousehold decision-making that make use of exclusive or assignable expenditures. In order to determine how individuals would allocate income gains to maximize their own individual utility, it is usually assumed that preferences for single individuals without dependents or spouses also describe the preference of similar individuals in households with children or elderly dependents (or both); with one, two, three, or more caretakers who may also be income earners; and with members that have both a fiduciary responsibility and intrinsic motivation to care for and

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10. Individual-level data helpful for more precise estimates of the incidence of fiscal policies on individuals is time-use data, or records summarizing the differential time-use patterns of males and females, children, and the elderly, and (potentially) household members who are either temporarily or permanently absent. Beyond that, detailed individual-level information on assets, employment, income, and consumption expenditure could be used to provide individual-level impact estimates of fiscal policies.

11. Past expenditures on single items may also be unreliable for predicting future intrahousehold allocation or decision-making processes.

provide for others (for example). As Bargain (2022) notes, applying this assumption in developing countries is problematic because “it is not common to find people living alone.”<sup>12</sup>

The approach taken in this paper instead exploits household demographic composition and economic information to guide estimates of which household activities benefit the most (on net) from fiscal policies and which individual household members fill those roles. It also falls squarely within the “accounting” approach to fiscal incidence analysis which attempts to map fiscal facts (e.g., the taxes collected and the expenditures made) to the behaviors observed in a cross-section of individuals. This analytical choice also limits us to a description of how total economic activity at the household level is supported or hindered by fiscal policies and for whom within the household that such support or hindrance will matter most. These limitations are sufficiently different from those relevant for the intrahousehold bargaining literature, and we do not propose our method as a substitute for those approaches.

The methodology we propose is generalizable to most fiscal, socioeconomic, and cultural contexts for the following reasons. First, we include a broader set of activities and points of interaction with the fiscal system, such that individuals who spend most of their productive hours working without remuneration can nonetheless be made more productive by, or face burdens from, fiscal policy. Second, we propose procedures for a gendered fiscal incidence analysis where only the household-level data required for standard CEQ assessments is available and suggest modifications to those procedures when richer individual-level data is available.

### 3 Gender Inequality, Social Reproduction, and Fiscal Policy

Gender is a normative social construct defining and differentiating the roles, rights, entitlements, responsibilities, and social obligations of women and men. Gender is also a set of expectations providing positive and negative incentives for broad-based compliance with those roles, responsibilities, and obligations. Gender relations are embedded in markets and institutions and are integral to how an economy functions. Economic institutions, policies, and the implicit rules and traditions that govern aspects of economic life can exacerbate, ameliorate, or simply modify existing gender inequalities.<sup>13</sup> The nature, degree, and social, cultural, and institutional location of these gender differences vary from one society to the next; historically they have favored men (Beneria, Berik, and Floro 2016).

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12. Potential solutions to this problem provide estimation strategies to generate individual budget shares from household expenditure data alone without data on single individuals (Dunbar and others 2013). However, these solutions must also restrict preferences across household compositions or across people in order to identify individual allocation shares. Either solution flattens estimated fiscal policy impacts precisely where we believe these impacts would exhibit variability that enhances or discourages gender equity.

13. See chapters in Berik and Kongar 2021, including Berik and Kongar, Beneria and Sen, Seguino, and Braunstein. See also Duflo (2012), and World Bank (2012).



Fiscal policy can reduce some gender inequalities directly. For example, conditional cash transfers providing household-level transfers for every child enrolled in school can create positive incentives for girls to remain in school longer and for households to reduce the time spent by school-age girls in care for younger dependents.<sup>14</sup> Here too a direct reduction in gender inequality in one area (time spent caring for younger dependents) may lead indirectly to a reduction in gender inequalities in another area (a reduction in the wage gap for externally supplied labor).

Fiscal policy can also directly reduce or exacerbate gender differences in paid employment. Around the world, women's labor force participation rates are lower than men's (ILO 2023). Women enter and exit the labor force more frequently than do men, which means their participation is more discontinuous than men, and they are more likely to be in part-time and seasonal jobs (ILO 2023). Women on average earn less than men, even after controlling for standard human capital variables (age, education, job experience), though the gap has narrowed in many countries over the last decade (Chamberlain, Zhao, and Stansell 2019). Women tend to dominate in informal employment, especially in low-income settings. Revenue policy can promote female employment by eliminating higher marginal rates on secondary earners in married couples; public expenditures can support unemployed women through unemployment insurance or informally employed women through social protection benefits. Here too, direct impacts today can lead to indirect impacts tomorrow. For example, women's participation in the paid labor force can help rebalance expectations and social norms regarding women's and men's participation in social reproduction activities. An increase in labor force participation is good for the macroeconomy, and any policy encouraging labor force participation can potentially reduce gender employment gaps.<sup>15</sup>

Fiscal policy can also support or undermine social reproduction. As noted earlier, social reproduction is the production and maintenance of human capabilities. It involves both daily household maintenance using women's and men's unpaid labor time and the commodities that men and women purchase. Social reproduction also includes unpaid activities such as fuel and water collection; cooking and cleaning and caring for children, the elderly, and other dependents; and providing cultural, social, athletic, recreational, and educational instruction that encourages the thriving and increased capability of dependents in many walks of life.

In the short run, social reproduction activities may positively impact labor productivity when workers are nourished, cared for, and replenished at home (Braunstein and others 2020). Social reproduction may also lead to direct increases in purchasing power. For example, consider the exchange of clothing between a mother with an older child and a mother with a younger child: even if no money changes hands, the time, effort, and social

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14. In some countries, conditional cash transfers have also negatively affected maternal employment. For instance, Molyneux and Thomson (2011) noted that in a survey of women who received transfers from the *Oportunidades* program (Mexico), between one-third and half reported that the demands of the program conflicted with their income-earning activities, which echoed findings from other cash transfer programs in Latin America.

15. However, the gender wage gaps may be unchanged.

transactions that are wrapped up in the exchange of clothing have an opportunity cost for individuals who have arranged the exchange.<sup>16</sup>

Social reproduction includes investments (and associated returns) in human capabilities through education, health care, and the building of social capital. These investments raise future productive capacity while creating a virtuous cycle within social reproduction itself – the more educated, healthy, and capable the younger generations are, and the more positive social connections they benefit from, the generation to follow them will benefit as well. Social reproduction is therefore not only a necessary input into economic production but is also a public good, encouraging positive externalities and limiting negative externalities of current and future economic systems. In short, the work of social reproduction is vital for the paid economy to function and an important criterion for fiscal policy to consider.

To the extent that women participate more and men less in unpaid social reproduction activities – which is the case in most countries – fiscal policy supporting social reproduction activities may also be enhancing the productivity of women across all of their activities. For example, public expenditure on roads, transport, and energy services directly supports social reproduction by reducing the amount of time that women spend in unpaid work.

Cash transfers and other fiscal expenditures that enhance the bargaining power of women caretakers can affect the amount and type of expenditures, savings, and other investments made by those women. However, in general, empirical studies are inconclusive regarding gender differentials in expenditures and investments. Some studies find that women tend to spend a higher proportion of income under their control on goods that enhance the well-being and capabilities of children, such as food, education, and health care (Thomas 1993; Haddad and others 1997; Quisumbing and Maluccio 2000; Armand and others 2016). However, Benhassine and others (2015) found that, in Morocco, the gender of the unconditional cash transfer recipient has no differential impact; while Akresh, De Walque, and Kazianga (2016) found better outcomes among children (relative to regional macroeconomic conditions) when cash transfers were given to fathers rather than to mothers in Burkina Faso.

Public benefits directly supporting women may also indirectly support the unpaid social reproduction activities that women are often responsible for. However, indirect taxes (such as a value-added tax or an excise tax) on expenditures that women are typically responsible for may both directly reduce the bargaining power of women and indirectly discourage the social reproduction activities in which women are typically involved.

Finally, in many developing countries, women are denied the right to own and inherit a property or other productive assets. Men hold the majority of land and housing titles, and social norms may dictate that businesses are owned by male family members, and women may supply labor to them. Nonetheless, in recent decades, women have made strides in some areas of property ownership, most notably in entrepreneurship and business development. Taxes and transfers can promote or discourage female entrepreneurship and land ownership.

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16. Neither the inputs to this transaction, the transaction itself, nor the results of the transaction are visible in a typical household survey.

As noted in these examples, fiscal policy directly and indirectly impacts gender inequality and social reproduction. It directly supports social reproduction through provision of goods and services, creation of incentives for behaviors, and setting of prices for goods and services that support social reproduction. However, standard microdata-based fiscal incidence analysis (FIA) distributes cumulative burden and benefit totals uniformly to all household members regardless of the roles that members play in an economic activity (including social reproduction) of the household. In what follows, we propose a series of steps to bring a gendered perspective within the CEQ assessment fiscal incidence analysis framework in a transparent manner and without additional data requirements.

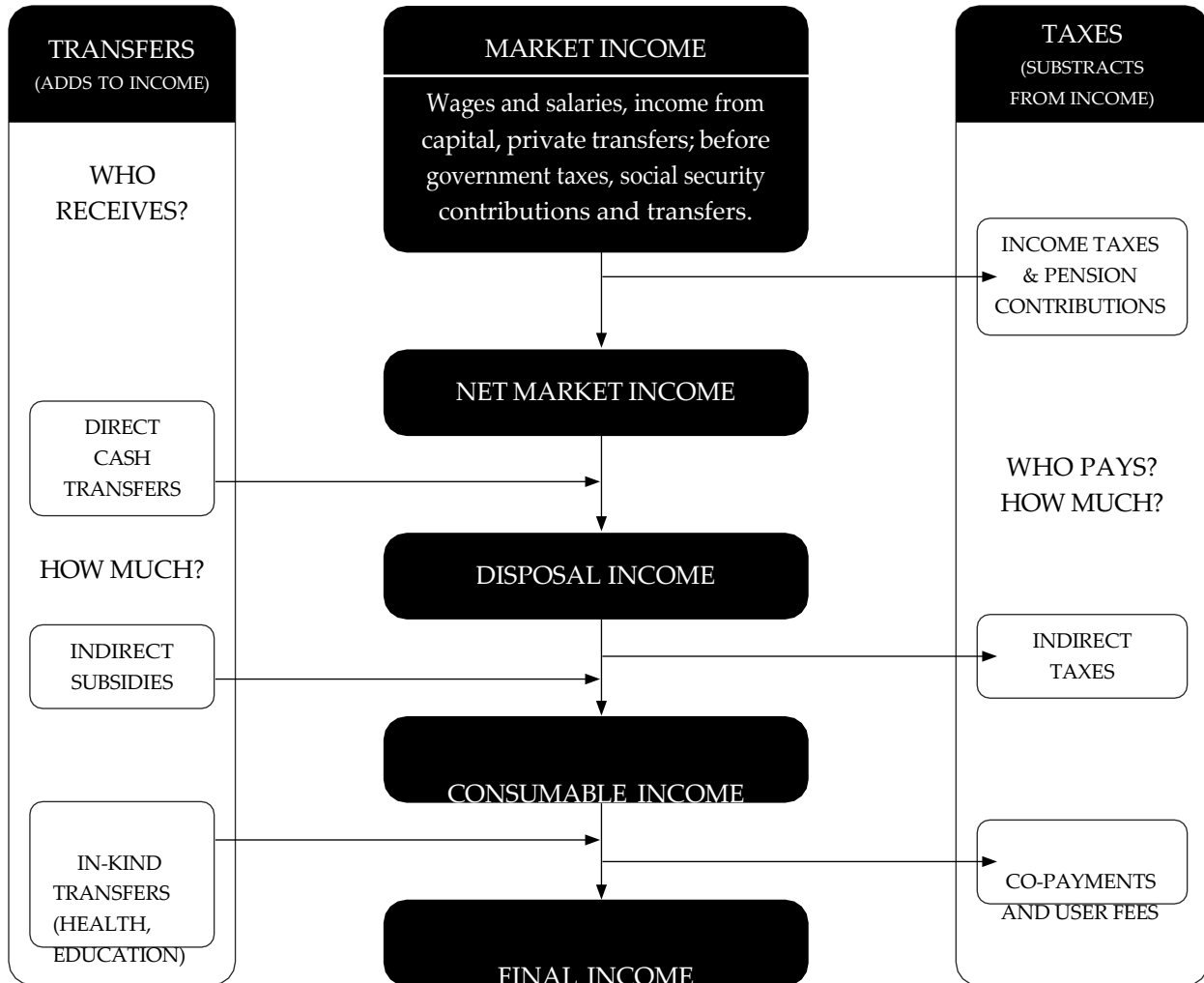
## 4 Methodology

We begin this section with a brief summary of the CEQ assessment method and how the CEQ “income concepts” framework lends itself to a gender-differentiated fiscal incidence analysis. Following this introduction, we discuss in which dimensions of gender inequality we might expect to observe or deduce evidence of fiscal policy impact. We then propose a methodology for examining the impact of fiscal policy on gender by expanding the CEQ assessment method using standard datasets and techniques.

### CEQ Assessments

A CEQ assessment accounts for and quantifies the nature, character, and magnitude of benefits received as well as the burdens experienced by individuals and households from the execution of a fiscal policy. A CEQ assessment generates counterfactual income distributions and computes poverty and inequality indices based on the distribution of each of these income concepts. These pre-fiscal and post-fiscal incomes contain more or fewer of the benefits created from public expenditure or tax contributions to public revenues. The analysis starts with pre-fiscal income (referred to as “market income” or “market income + pensions”) which is earned or unearned from wages and salaries or profits from enterprises, self-employment activities, or as returns on capital and other private income sources (Figure 1). Net market income is what would be left behind after all relevant income taxes are paid and households and the necessary deductions and withholdings have been taken out. If the household is a recipient of any direct cash transfer from the government, this would be added to net market income to arrive at disposable income. At this stage, depending on the consumption basket of the household, various indirect taxes (VAT and excise) as well as indirect subsidies (energy subsidies) would be paid or accrued. Adding or subtracting these as appropriate would yield consumable income or post-fiscal income. Finally, accounting for any in-kind benefits received from the government on things like education and health and discounting associated copayments and user fees would yield final income.

Figure 1. Overview of the Commitment to Equity Methodology



Source: Lustig (2018).

How do gender norms and roles play out in this framework? Broadly three types of activities create exposure to fiscal policies: as individuals earn income, as individuals become consumers, and as individuals provide unpaid labor to the household or become investors in household care (Figure 2).

Figure 2. Economic and Social Activities and Fiscal Policy

HOW/WHERE DO INDIVIDUALS EXPERIENCE FISCAL POLICIES? WHICH POLICIES?

|  |   |
|--|---|
| <p>As suppliers of external labor</p> <ul style="list-style-type: none"> <li>Income taxes including tax credits and taxable income rules</li> <li>MSME finance</li> <li>Maternal/parental leave policies that address wage gaps</li> </ul> | <p>As consumers</p> <ul style="list-style-type: none"> <li>Direct transfers - can target recipient/eligibility; can target control of benefit</li> <li>Indirect taxes and subsidies</li> </ul>  |
| <p>As investors in human capital</p> <ul style="list-style-type: none"> <li>Labor-market activation programs</li> <li>Provision of housing and other assets</li> </ul>   | <p>As participants in social reproduction</p> <ul style="list-style-type: none"> <li>In-kind transfers: education; health; water; sanitation, and hygiene (WASH) services; childcare elderly care</li> <li>Infrastructure</li> <li>Communications/internet and media</li> </ul> |

First, as income earners, individuals supply labor (externally, or outside the household) both formally and informally in market-based arrangements. Most often, fiscal policies surrounding the provision of labor or wages will have an impact on pre-fiscal income (also known as market income) or net market income, which is pre-fiscal income minus any direct taxes owed on wages or other earned or unearned income. For example, the personal income tax statutes and rate schedules may privilege the “primary” income earner and penalize the “secondary” income earner; secondary income earners are more often women than men. Policies subsidizing paid parental leave may ameliorate or exacerbate inequalities with respect to at-home care for young dependents. Subsidized micro, small, and medium-sized enterprise (MSME) finance – which in principle should lead to higher market or net market incomes – may not benefit women and men equally when women are unable to be deed holders of productive assets.

Individuals must also demand goods and services and make decisions regarding how much to consume or save; these activities also create exposure to fiscal policies. For example, direct transfer programs like conditional or unconditional cash transfer programs effectively supplement budgets for essential goods and services like food, clothing, shelter, and energy; direct transfers have an impact on disposable income. Indirect taxes on consumption activities – VAT, excise taxes, customs duties, and sales taxes – effectively reduce consumption of goods and services (for a given budget) while indirect subsidies on consumption activities will effectively increase consumption (for a given budget).

Finally, the third type of exposure to fiscal policy occurs when individuals within a household provide unpaid labor and invest in the care of all household members and the communities in which they exist. These activities belong to social reproduction as defined above.<sup>17</sup> The public provision of education, health care, WASH, and housing services directly provide social reproduction components at low cost. Providing transport and communication infrastructure enables faster access to essential social services for those involved in social reproduction (and therefore lower opportunity cost).

#### Which Gender-Based Impacts Are Observed or Deducible?

The impact of an individual fiscal policy, or fiscal policy in general, on gender equality will be multifaceted. To quantify fiscal policy impact, we would like to know (among other things) whether the policy (1) supports social reproduction, (2) creates incentives for more or higher-quality female labor force participation, (3) creates incentives for more or higher-quality male participation in social reproduction, (4) increases the individual purchasing power of women, (5) increases individual agency<sup>18</sup> for women, and (6) increases the per-capita cumulative purchasing power of the household.

The approach developed in this paper does not permit estimation of the impact of fiscal policy on gender inequality or women's agency along all these dimensions. This is in part due to data limitations. To understand whether and how agency is affected by fiscal policy, for example, would require a wide perspective on the tradeoffs that households face, how options are weighted and judged by all household members, how compromises are made, and which characteristics inform bargaining positions.<sup>19</sup> Understanding the potential for agency also calls for an investigation into prevailing social norms, legal rules, and cultural expectations that may encourage (or limit) agency outside the household.<sup>20</sup>

Irrespective of data limitations, our inability to categorize a fiscal policy as “good” or “bad” for gender equality is also partly due to conflicting impacts along these different dimensions. For example, giving benefits to mothers who stay at home to look after their children reduces gender inequality in total incomes while exacerbating gender inequality in labor force participation. In the same vein, generous maternity leave has been shown to discourage women returning to the labor market while voucher systems for childcare have been shown to discourage the use of market-provided childcare services in some contexts (Spiess and Wrohlich 2008).

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17. These activities should be distinguished from other types of unpaid labor, for example, in subsistence agriculture or labor supplied by household members to a family business.

18. Agency is the ability to define goals and act on them; see Donald and others (2020).

19. See Bakhtiar and others (2022) for an experimental examination of the processes determining intrahousehold allocations and the impact of those processes on women's agency.

20. When such data is available, or when FIA can be complemented with a discussion of social norms and institutions that limit policy-based progress on gender inequality, a gendered FIA will be much richer and more nuanced. Such information is available from, for example, the [Social Institutions and Gender Index](#); [Afrobarometer](#); the [World Values Survey](#); and [Women, Business and the Law](#). These sources, among others, can be used to complement FIA and triangulate policy-relevant advice.

Consider also introducing work requirements into welfare programs. If the labor force participation requirement leads to less or lower quality time of single female parent households in social reproduction activities, that could lead to worse outcomes among dependents (Kalil and others 2022). Higher labor force participation may lead to total lifetime income reductions for the same women (assuming that their incomes later in life are at least partially supported by intrafamily transfers from working-age members to elderly dependents). On the other side of the same coin, conditional cash transfer programs may require additional time spent in nonremunerated social reproduction activities by caregivers – who are most often women – even while generating better human capital outcomes among dependents.

Lastly, the “same” policy from a fiscal standpoint may have different gender inequality impacts depending on the mode of delivery. Bjorvatn and others (2022) demonstrate in an experimental setting in Uganda that a childcare subsidy delivered as an in-kind service was at least as effective as an equivalent cash grant in increasing a mother’s total income and labor productivity; that the childcare subsidy also led to increased labor income for fathers while the equivalent cash grant had no impact; and that the childcare subsidy led to higher enrollments while the equivalent cash grant did not. The two policies are equivalent from a fiscal expenditure point of view, and yet the positive impact of the childcare subsidy on women, children, and men is greater than that of the equivalent cash grant.

We can begin to understand how fiscal policy affects gender inequality, social reproduction, and care by analyzing household demographics and social organization. The sex and age composition of households plays a significant role in determining care needs as well as which taxes and transfers supporting or undermining social reproduction are relevant: children enrolled in public school receive in-kind education services; women of child-bearing age have greater health care needs; households with older, non-working older male members may qualify for old-age support.

The employment status of household members plays a role too. For instance, the employment status of a married couple can influence effective marginal tax rates on “secondary” income. Who takes part – and how frequently – in social reproduction can influence the impact that education service provision has: preschool children require more care while school age children require less, but school-age girls may be called on to provide some or all the care of younger dependents. And if women (rather than men) are more responsible for social reproduction, they may not look for paid employment.

### Household Typologies: Bringing Care and Social Reproduction into the Picture

The size and organization of the household are observable in household budget surveys, income and expenditure surveys, living standards measurement surveys, and other survey instruments used in standard CEQ assessments. We propose, therefore, that the CEQ assessment toolkit be adapted to estimate fiscal policy impacts on households according to their demographic (sex and age) and employment-disaggregated characteristics.

We present below a list of generic household types that can be tailored to specific country contexts. At a minimum, these types should specify the sex and age ranges of household members, the relationships among the household members (for example, married or in consensual union, with and without dependents), and the employment or earning status of the principal adults in the household. Together, that information is important in establishing what the care and social reproduction needs of various households may be.

Constructing the household typology and undertaking the fiscal incidence analysis should follow a few steps. The first step is to compile information from censuses, household surveys, labor force surveys, and other sources, such as time use if available,<sup>21</sup> to get a big-picture understanding of the nature of gender inequalities in employment and social reproduction. The second step is to use this data to construct economic and demographic categories. A generic set of groupings that can be adopted in most countries is as follows:

### Economic categories

1. Single male/female member households, who are employed or not employed. In many countries, these are older retired adults.
2. Households with married couples or consensual unions.<sup>22</sup> This category should be divided into at least four subcategories: where both principal adults are employed, where only the principal male is employed, where only the principal female is employed, and where no adult is employed.
3. Households with working-age adults and dependents, disaggregated by which members are employed. Examples of this type of household may be an adult child living with an elderly parent or younger-generation children living with older-generation children (from the same parents).

### Demographic categories

Using the economic categories above, households should then be further classified by their care needs:<sup>23</sup>

1. without dependents and with dependents
2. total dependents
3. dependents disaggregated by age: for example, children 0 to 3 years old, children ages 4 to 12, adults over 75, and/or other age compositions relevant in a particular country context.

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21. Additional contextual information is available in sociological, legal, and anthropological studies and in databases summarizing the institutional and legal structures that inform gender-based equity. See for example the [Social Institutions and Gender Index](#), [Afrobarometer](#), the [World Values Survey](#), and the [Women, Business and the Law](#) databases.

22. In those countries where same sex marriages or consensual unions are recognized and such data exist, the types could also be male/male and female/female. Consensual unions also include polygamous structures.

23. In the first stage of work, country pilots classified households into separate economic and care categories. However, for fiscal incidence analysis, it is important to use a single combined classification.



Analyzing these categories is important for understanding country-level patterns. For the fiscal incidence analysis, a single household classification system should be created by combining the economic and care categories.<sup>24</sup> That is because tax and transfer policies condition *simultaneously* all of the economic and care activities that households and household members pursue. For example, personal income tax policy will determine how many household members will spend time in paid employment (as well as how long each member will spend in paid employment), how many dependents from each age bracket can be supported from wage earnings, and how much time each household member will spend on social reproduction activities.

Table 1 illustrates the advantages and disadvantages of each of these categories from a fiscal incidence perspective in the context of Armenia.<sup>25</sup> Beginning with Type 2 (T2) households, the needs and opportunities of individual household members shape household organization and the incentives informing choices and behaviors at home, in the labor market, and in markets for goods and services. T2 categorizes households according to the contributions (to household income) of individual male and female members, while T3 assumes that not all household earners have equal contributions or bargaining power within households. T4 implicitly identifies the presence of children and the elderly to capture the household’s care needs and domestic responsibilities, and their interaction with incomes and labor decisions. While initially the demographic and employment categories can be studied separately, the fiscal incidence analysis would ideally be performed on the integrated employment/care category (see T4 in the last column of Table 1).

Table 1. Household Typology, Armenia

|   | (T1) Demographic composition  | (T2) Income contributions   | (T3) Gender-shares of HH earnings  | (T4) Mixed typology  |
|---|---|---|--|--|
| Types                                     | Female majority or male majority (or equal numbers) of household members        | Earners are a female majority, Earners are a male majority, equal number of male and female earners | Female earnings >60% of total earnings, male earnings >60% of total earnings, No earners | Earners are female majority + dependent children + dependent elderly, Earners are male majority + dependent children + dependent elderly |
| Usefulness/ relevance for gender analysis | Exploits variation in consumption patterns and gender-specific demands or needs | Introduces women’s economic opportunities and household roles                                       | Exploits variation in bargaining power   | Captures care needs and domestic responsibilities, and interaction with incomes and labor decisions                                      |

Source: Based on Fuchs and Gonzalez (2022).

24. In some countries, like Jordan, the cell sizes for a combined economic/demographic classification may be too small for a fiscal incidence analysis. In this case, the analyst will need to make choices about which classifications make most sense in any particular country context (see Rodriguez, Wai-Poi, and Woodham 2022).

25. A household type defined by household headship is included in Fuchs and Gonzalez (2022). However, Grown and Komatsu (2010) discuss the lack of relevant information in standard household survey techniques that ask household members to identify the head of household.

After the household types have been constructed, the next step is to nest them within pre-fiscal and post-fiscal income distributions so that fiscal impacts along gender, social reproduction, and income-disaggregated lines can be estimated and analyzed (see Table 2).<sup>26</sup> Household types can also be disaggregated by other key characteristics including poverty status according to national or international poverty lines, rank in the income distribution, rank in the urban or rural or provincial-level income distributions, and rank in the conditional (upon household type) income distribution. (See Armenia examples in the next section and in the Appendix.)

Table 2. Examples of Disaggregated Household Types, by Income Rank

| Quintiles of prefiscal<br>or postfiscal<br>income distribution | Single member<br>households        | Male<br>employed                                    | Male not<br>employed                                | Female<br>employed   | Female not<br>employed   |
|--|------------------------------------|---|---|--|--|
| Q1   |                                    |   |   |  |  |
| Q2   |                                    |   |   |  |  |
| Q3   |                                    |   |   |  |  |
| Q4   |                                    |   |   |  |  |
| Q5   |                                    |   |   |  |  |
|  | Married or<br>Consensual<br>Unions | Dual<br>employed<br>with children<br>(by age range) | Male<br>employed<br>with children<br>(by age range) | Female<br>employed<br>with children<br>(by age range<br>as feasible) | Not employed<br>with children<br>and<br>other adults<br>(by age range) |
| Q1   |                                    |   |   |  |  |
| Q2   |                                    |   |   |  |  |
| Q3   |                                    |   |   |  |  |
| Q4   |                                    |   |   |  |  |
| Q5   |                                    |   |   |  |  |

After the household types are located in the pre-fiscal and post-fiscal income distributions, the next step is to generate a fiscal incidence analysis (for example, using the CEQ assessment framework) to summarize which of the household types most often benefit from policies that support social reproduction, which households experience the biggest burden of indirect taxes on different commodities, or which households most often confront

26. In countries where income data are not available or less reliable, consumption expenditure can be used to construct a welfare distribution.

disadvantageous tax rates on secondary incomes. Finally, the completed FIA is then used to analyze whether, as executed, the policies support an equitable distribution between different household members via a mapping of household roles and functions across individual households.<sup>27</sup>

When additional microdata beyond the standard household budget or income or expenditure survey is available, it can be incorporated to more precisely identify individuals who fulfill the roles or most often carry out the activities supported by public expenditures or made costlier via the application of taxes. Time-use data, for example, which records how individuals spend their waking hours, are used to capture who most often carries out care activities or other aspects of social reproduction. Then, each household type's share of taxes and transfers can be further allocated to roles or activities and the individuals that most often perform those roles or carry out those activities.

## 5 Applying the Method to Jordan and Armenia

This section discusses the application of this methodology in Armenia and Jordan. Both countries have recently completed CEQ assessments and are using the methodology described here to dig deeper into potential impacts of fiscal policies on gender inequality. The fiscal and social structures of the two countries provide useful contrasts and illuminate how country specificity may be important in the identification and operationalization of household categories relevant for gender-specific incidence analysis.<sup>28</sup>

### 5.1 Armenia

Armenian women have low labor force participation rates. Less than 60 percent of working-age women participate in the labor force, compared with just over 70 percent of men (World Bank 2023a). Women are also more likely to work part-time positions than men. Women are underrepresented in science, technology, engineering, and math fields, accounting for only 38 percent of graduates in these fields (World Bank 2023b). In 2019, one-quarter of women workers were employed in agriculture, while women were virtually excluded from industrial activities, such as construction and mining. Men consistently earn higher wages than women, regardless of age and educational attainment; even tertiary-educated women employees earn only 72 percent of the average wage earnings of tertiary-educated men. That evidence suggests that women are segregated both across and within sectors of employment, facing exclusion from higher-paying sectors and higher-paying positions.

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27. This likely requires a consultation with in-country experts or primary or secondary data sources to determine *who* most often fills the roles that are either supported by or made costlier by fiscal policy.

28. Armenia is a transition economy with an aging population wherein much of the redistributive impact of fiscal policy is due to pensions. Jordan, on the other hand, is a country with strong social norms against female participation in the labor market.

Preliminary demographic analysis reveals that over a quarter of Armenian households are composed of a male and female couple with children, with other adults also living in the household (Fuchs and Gonzalez 2022). Most single-headed households – where the self-identified household head is not living with a spouse – are sustained by females; single female-headed households account for almost one-fifth of all households.

a. Definition of Household Types

Three typologies were tested for the fiscal incidence analysis (see Table 3). Ultimately the T3 category was used most often while T2 was used in some analyses due to sample size limitations.

Table 3. Household Types Based on Armenia ILCS 2020

| Demographics + Income (proxy for intrahousehold roles and bargaining power)  |   |   |
|--|---|---|
| (T1)<br>Gender of household earners in labor markets   | <ul style="list-style-type: none"> <li>A. (Labor) earners are a female majority</li> <li>B. (Labor) earners are a male majority</li> <li>C. Equal number of male and female labor earners</li> <li>D. No (labor) earners in the household</li> </ul>  | <ul style="list-style-type: none"> <li>• Calculated from the gender of household members who report positive labor earnings</li> <li>• Labor earnings include salaries and self-employed earnings; exclude incomes from agricultural sales and own consumption</li> </ul> |
| (T2)<br>Gender sustaining household earnings   | <ul style="list-style-type: none"> <li>A. Larger share of female earnings (&gt;60% of household labor earnings)</li> <li>B. Larger share of male earnings (&gt;60% of household earnings)</li> <li>C. No earners in the household</li> </ul>  | <ul style="list-style-type: none"> <li>• Calculated over total labor earnings reported by gender of household members</li> <li>• Labor earnings include salaries and self-employed earnings; exclude incomes from agricultural sales and own consumption</li> </ul>       |
| Demographics + Income (proxy for intrahousehold roles and bargaining power)<br>+ Presence of children and elderly (proxy for care needs and domestic responsibilities) |   |   |
| (T3)<br>Gender sustaining household earnings + presence of children and elderly  | <ul style="list-style-type: none"> <li>• Typology (3) of gender sustaining household labor earnings</li> <li>• Combined with the presence of retirees who may contribute to domestic tasks and care</li> <li>• Combined with the presence of dependent household members: <ul style="list-style-type: none"> <li>- Children &lt;6 years old</li> <li>- Elderly 80+ years old</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Calculated from gender and age of all household members (self-reported) in household interview roster; labor earnings reported by gender of household members</li> </ul>   |

Note: ILCS = Integrated Living Conditions Survey.

Within the T3 hybrid set of economic and care subcategories, the following disaggregations were created and located within the post-fiscal income and geographic distributions (Table 4). Two of the most common subcategories in the general population are households where male earnings account for more than 60 percent of all earnings, and households in these two subcategories are more often urban and in the top three quintiles of the income distribution (rather than in the bottom two quintiles). The most common subcategory of households where females account for greater than 60 percent of all earnings are those households with no young- or old-age dependents; this subcategory is also far more likely to be urban-based and far less likely to belong to the bottom two quintiles of the income distribution.

Table 4. Household Types Based on Armenia ILCS 2020

| Demographics + Income (proxy for intrahousehold roles and bargaining power)<br>+ Presence of children and elderly (proxy for care needs and domestic responsibilities) |                        | Population | Bottom 40 | Top 60 | Rural |
|--|------------------------|------------|-----------|--------|-------|
| Subcategory T4   |                        | Share (%)  | (%)       | (%)    | (%)   |
| Dependents<br>+ Elderly  | Female (>60% earnings) | 1.2        | 37        | 63     | 46    |
|  | Male (> 60% earnings)  | 3.4        | 51        | 49     | 44    |
|  | No labor earnings      | 1.5        | 61        | 39     | 54    |
| Dependents,<br>No elderly  | Female (>60% earnings) | 3.9        | 46        | 54     | 43    |
|  | Male (> 60% earnings)  | 19.7       | 45        | 55     | 46    |
|  | No labor earnings      | 5.6        | 59        | 55     | 46    |
| No dependents,<br>Elderly  | Female (>60% earnings) | 4.4        | 35        | 65     | 29    |
|  | Male (> 60% earnings)  | 7.4        | 43        | 57     | 36    |
|  | No labor earnings      | 7.3        | 39        | 61     | 34    |
| No dependents,<br>No elderly   | Female (>60% earnings) | 10.5       | 31        | 69     | 30    |
|  | Male (> 60% earnings)  | 28.1       | 31        | 69     | 38    |
|  | No labor earnings      | 6.8        | 47        | 53     | 61    |

Note: ILCS = Integrated Living Conditions Survey.

#### b. Findings: Impact of Taxes and Transfers across Household Types

In Armenia, direct taxes and the public contributory pension system have a large impact on improving the relative income position of either female-headed households or households where female earnings account for at least 60 percent of cumulative household income. At the same time, dual earner households contribute the highest pre-fiscal income share to income taxes while benefiting the least from direct transfers, which is an implicit disincentive for households to allocate all their labor supply to formal labor markets. Taken together, and conditional on cultural practices or community- or household-level arrangements that prioritize men as “primary” income

earners, these facts may indicate that fiscal policy in Armenia seems to be associated with women (1) staying out of the labor force, (2) taking lower-paying employment, and/or (3) working in economic activities that tend to be in the informal sector.<sup>29</sup>

The fiscal system significantly reduces gender gaps in incomes for all household types, but the gaps for households with dependents remain negative and the largest, indicating that dependents create demands on caregivers more so than they contribute to the supply of caregiving. On the other hand, the presence of stay-at-home elders reduces the gender gap relative to a household type with dependents but no assistance from elders. The reduction is most significant from pre-fiscal to disposable incomes, highlighting the association with household labor market decisions and the associated PIT liabilities.<sup>30</sup> For reference, the relatively small gender gap at pre-fiscal income in households with neither older-age nor younger-age dependents is actually reversed and becomes a gender “bonus” at the disposable and consumable income concepts. These patterns are consistent with older-age dependents contributing resources to care, social reproduction, and household production simultaneous with creating expenses associated with their care needs; they are also consistent with those expenses being assigned more frequently to women.

### c. Incorporating Time-Use Data

Worldwide, women spend over three times as much of their time on unpaid work, and approximately one-third as much of their time on paid work, as men (Charmes 2019). The volume of unpaid work may mean women have less time than men to engage in paid work; or women may feel restricted to jobs allowing for a balance between paid and unpaid work. Either way, a one-hour decrease in time spent on unpaid care work is correlated with a five-percent increase in women’s labor force participation (Ferrant and others 2014).

Women in Armenia are much more likely than men to miss economic opportunities due to childcare, older dependent care and support, and other social reproduction activities. Women experience “time poverty” linked to responsibilities for unpaid domestic tasks and non-utilization of childcare services. A contributing factor to women’s burden is the low enrolment of children in preschool institutions, at only 30 percent nationally and 17 percent in rural areas in Armenia (SCRA 2021). Although there are government-provided childcare services, childcare payments are not tax deductible and private childcare centers do not receive nontax benefits (USAID 2019).

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29. For example, informal employment, household production for self-consumption, and other forms of work outside labor markets such as domestic work at one’s own household, and childcare. Domestic tasks, including childcare and care for other household members are generally classified as out-of-the labor-force. This paper situates all social reproduction activities squarely within the set of economic activities that a household pursues.

30. Contributory pension incomes (and other benefits) also have a significant gender-equalizing effect, particularly among households with elders 65 to 79 years old.

Time-use data confirms women are overburdened by household and family responsibilities, including care for children and the elderly.<sup>31</sup> Time spent on childcare and elderly care (as a share of total hours of activity in a regular weekday) is three times as much for women than men (Table 5). The pattern is independent of geographic location and much more significant in households with children, especially young children.<sup>32</sup>

Table 5. Time Use Survey Responses, Armenia

QUESTION: HOW MANY HOURS DID YOU SPEND IN A TYPICAL WEEKDAY/WEEKEND ON THE FOLLOWING ACTIVITIES?

|                           | Sleeping | Elderly care | Childcare | Work and commuting to work | Studying | Leisure | Domestic tasks | Transport | Others |
|---------------------------|----------|--------------|-----------|----------------------------|----------|---------|----------------|-----------|--------|
| Location                  |          |              |           |                            |          |         |                |           |        |
| Female respondent Armenia | 31.3     | 1.9          | 9.8       | 14.4                       | 4.8      | 17.7    | 12.6           | 4.9       | 0.4    |
| Male respondent Armenia   | 32.7     | 1.3          | 3.5       | 26.8                       | 3.1      | 19.8    | 3.2            | 4.7       | 0.4    |

Women with tertiary education spend more time at work than women with no tertiary education while men spend close to 27 percent of their time in employment. Adding up time spent on elderly care, childcare, and domestic tasks – all of which contain elements of social reproduction – reveals that women (nationally) spend three times as much on those three tasks as men. Even the group of women spending the most time working – those with tertiary education or living in the capital Yerevan – spend three to four times as much on these activities as their men counterparts. The groups of women who spend the least time working – those in households with children, with or without elderly dependents – also spend three to four times as much on these activities as their men counterparts.

31. The survey for “Assessing Gender Disparities in Time Allocation and Household Responsibilities in Armenia” was conducted in 2022, by the World Bank, in partnership with CRRCA Armenia. It aimed to complement results from the pilot study for the Engendered CEQ analysis and address current knowledge gaps on the decisions and perceptions of adults in Armenia related to (1) time use, (2) gender roles and responsibilities within households, (3) childcare access, (4) access to elderly care, and (5) opinions and preferences on gender disparities.

32. Men also consistently spend more time on leisure activities than women; the gap in leisure hours is also larger in households with young children.

Interviewed women and men ages 65 and above allocate 5 percent of their time to childcare, indicating that elderly dependents in Armenia can contribute to childcare within the household (or family). Women living in households with young children reduce their time allocated to childcare slightly with the presence of elderly members (from 21 to 18 percent).

Empirical results indicate that gender roles and disproportionate time allocations to social reproduction activities constrain women's time and labor market opportunities, which conditions women's interactions with the fiscal system. The gender gap (in labor market participation) is consistently higher for households with dependents, who most likely need care instead of helping out by providing it. The fiscal system significantly reduces gender gaps for all household types, but the gaps for households with dependents remain negative and the largest.

Aid from stay-at-home (healthy) elders can reduce gender gaps in labor earnings for households with primary school children (or older) while children and elders can aid with household chores and care for family members in need. Access to affordable and convenient care for children and elderly family members can therefore influence their labor decisions and interactions with the fiscal system, for women in particular, and potentially for every household member.

Results from the Engendered CEQ assessment with time-use data in the Armenia example demonstrates the intricacies in which a model of intrahousehold bargaining would have to consider for it to be useful within a fiscal incidence model. It appears that older dependents can contribute in a positive way to household incomes or social reproduction and care responsibilities of females within the household (or both). The type of contribution made by an older dependent, however, likely depends on the dependent's gender and health status. Furthermore, in Armenia, the positive nature of the contribution has been neutralized at post-fiscal income stages, which indicates (among other things) that the incorporation of older-age dependents into the household is likely negotiated by the household's adults. Both the starting positions of the negotiating members and the outcomes are likely affected too by the nature of the contribution as well as the gender of the older-age dependent. A single policy, therefore, may create impacts at different decision or negotiation points, and intrahousehold bargaining models that completely describe interactions and the incentives that constrain those interactions at each of those points will lack generality.

## 5.2 Jordan

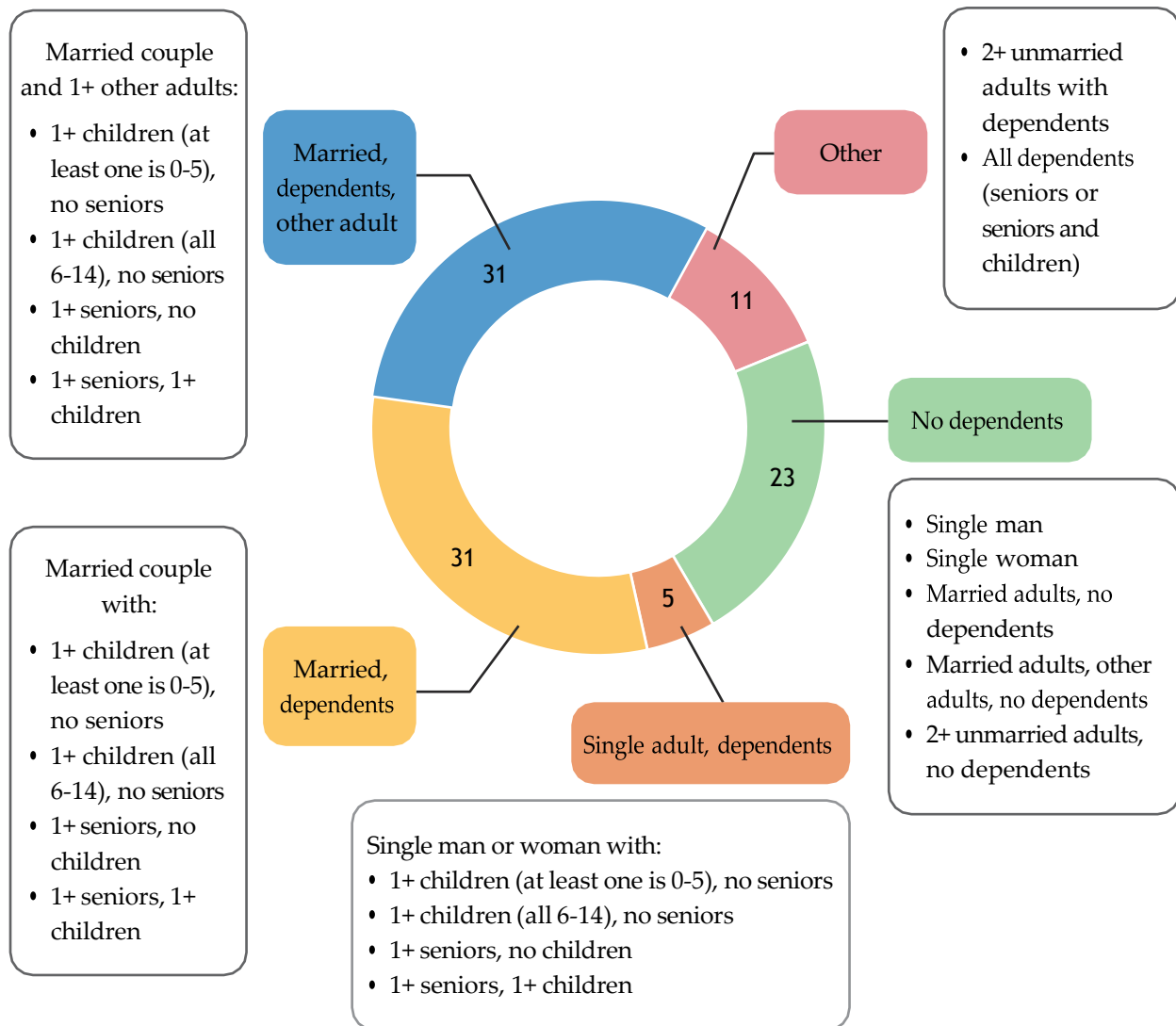
To create household types in the Jordan Engendered CEQ assessment, Rodriguez, Wai-Poi, and Woodham (2022) explored whether households could be grouped into commonly occurring categories that exhibit demographic or organizational differences salient in the allocation of care and social reproduction responsibilities on the one hand and the incidence of taxes and spending on the other.<sup>33</sup>

A relatively small number of categories are needed for tractable analysis. Each category should neither represent too many people so as not to obscure differences between them nor too few people so as to lack representativeness of the entire population. The statistical tradeoff between large groups with precisely estimated average characteristics and smaller groups that would likely show greater deviation from a national average but exhibit less precise estimates should also be taken into account.



In Jordan, Rodriguez, Wai-Poi, and Woodham (2022) proposed five “care” subcategories to represent the important differences in the amount of home-based care and social reproduction necessary as well as in the share of these activities accomplished by different household members (Figure 3). Three of the five categories represent a quarter to a third of each of the following Jordanian population groups: married with dependents, married with dependents and other adults, and no dependents.<sup>34</sup> The *single adult with dependents* category is smaller (at 5 percent); it was included in the analysis as the implications for care responsibilities are significant. A single adult must bear all of the burden, perhaps with some help from older children or elderly members.

Figure 3. Care Categories in Jordan



Source: Rodriguez, Wai-Poi, and Woodham (2022).

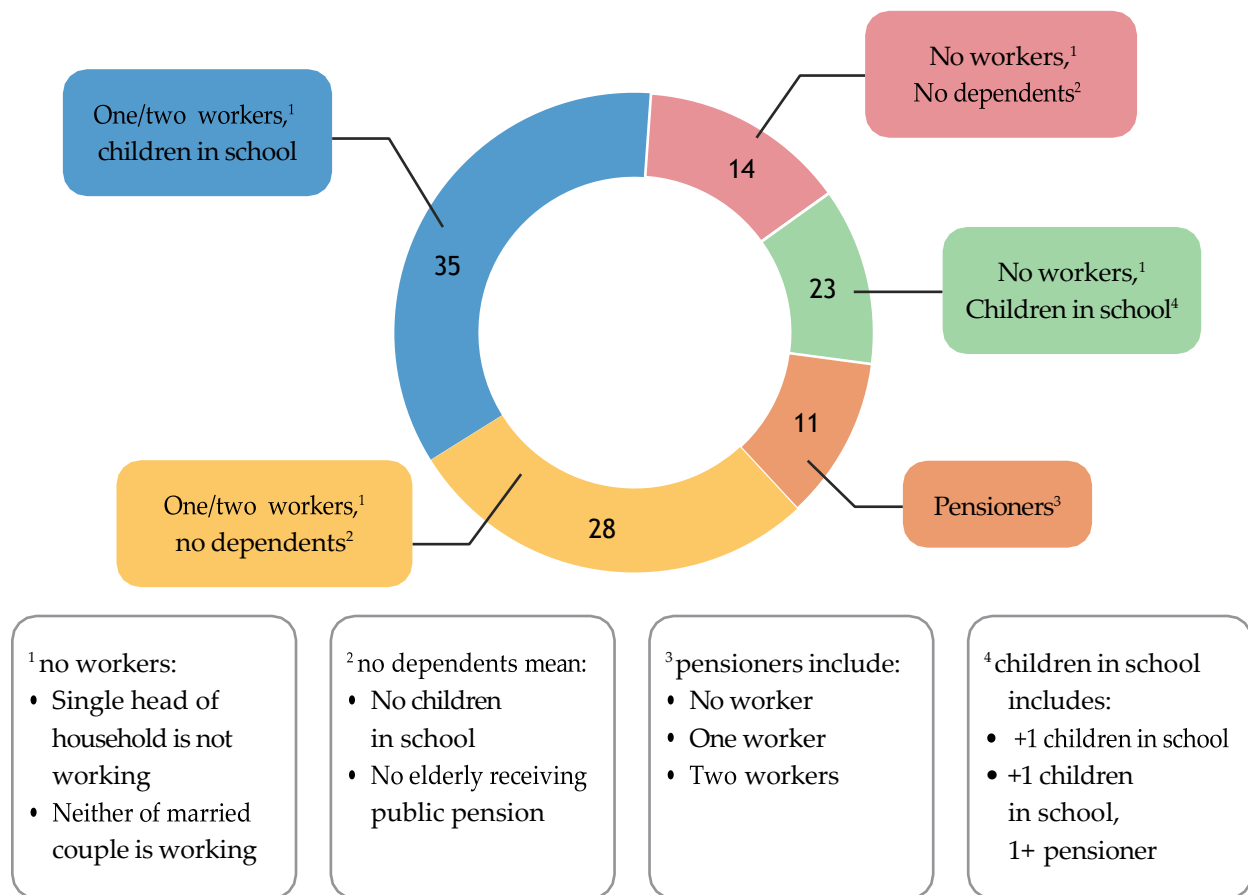
33. The *others* category makes up 11 percent of the population.

The *no dependents* group tends to be richer than average and when married or cohabitating (more frequent than single adults with no dependents), the primary woman is less likely (on average) to be working. *Single adults with dependents* are also richer than average, and single women with a dependent are far more likely to work. *Married couples with dependents* have younger children while *married couples with other adults have older children*; both groups are poorer than average.

The “fiscal” subcategories (Figure 4) consider the same household demographic dimensions, but each dimension is considered from a different perspective:

- Children matter: the amount of education benefits received will depend upon how many children are in the household and whether they are enrolled in a public school (without concern for the child’s age).
- Elderly matters: the amount of pension benefits will depend upon how many elderly members there are in the household and whether they are receiving a public pension.
- The working status of married couples matters: the relative value of dependent-based income tax deduction will depend upon whether both, one, or neither of a married couple are working.

Figure 4. Fiscal Categories in Jordan



Source: Rodriguez, Wai-Poi, and Woodham (2022).

Fiscal and care types are based on the same set of demographic characteristics (number, sex, and age of members, as well as employment and schooling status), thus in principle, overlapping membership is possible, and ideally the categories could have been consolidated for fiscal incidence analysis. However, in Jordan, there is not enough overlap to warrant an integrated categorization for analytical purposes. For example, half of the households in the *married couple with dependents* care category are also classified as *1–2 workers with children in school* (a fiscal category), but at the same time, a third, while also having *one or two workers*, enters in the *no dependents* category (because their children are preschool age or not in school, or because they have no children).<sup>35</sup>

### Impact of taxes and transfers for households in fiscal and care groups

In Jordan, the only fiscal types that are net beneficiaries of the fiscal system – that is, the value of the benefits received is greater than the payments in taxes – are those that have children in school (Figure 5). This reflects the fact that a large part of the benefits, and the progressivity, of the fiscal system in Jordan comes in the form of an in-kind education (Rodriguez, Wai-Poi, and Woodham 2022). Within the care subcategories, net benefits received from the fiscal system are significant only for the *married couple with dependents* category (and close to zero for all other care categories). This group receives large education benefits, and large amounts in indirect subsidies (Figure 5).

When excluding in-kind health and education benefits, none of the care types are substantial net beneficiaries of the fiscal system (Figure 5). Even the *married couple with dependents* household category is made neither better off nor worse off (on average and in cash terms) when in-kind benefits are left out. Though this category receives the largest amount of direct social protection transfers<sup>36</sup> and indirect subsidies for electricity and water, of all fiscal and care groups, they are at the same time the largest payers of direct (personal income tax) and indirect taxes (goods and services tax and streamlined sales tax) in absolute terms.

Taken together, these findings indicate that the fiscal system in Jordan neither supports nor hinders social reproduction activities. Households with dependents access essential basic services in health and education more often, but receipt of an in-kind service does not improve the material well-being or the net cash position of a household in the current period.<sup>37</sup> As the vast majority of Jordanian households have social reproduction responsibilities, this is a missed opportunity for supporting an average Jordanian family.

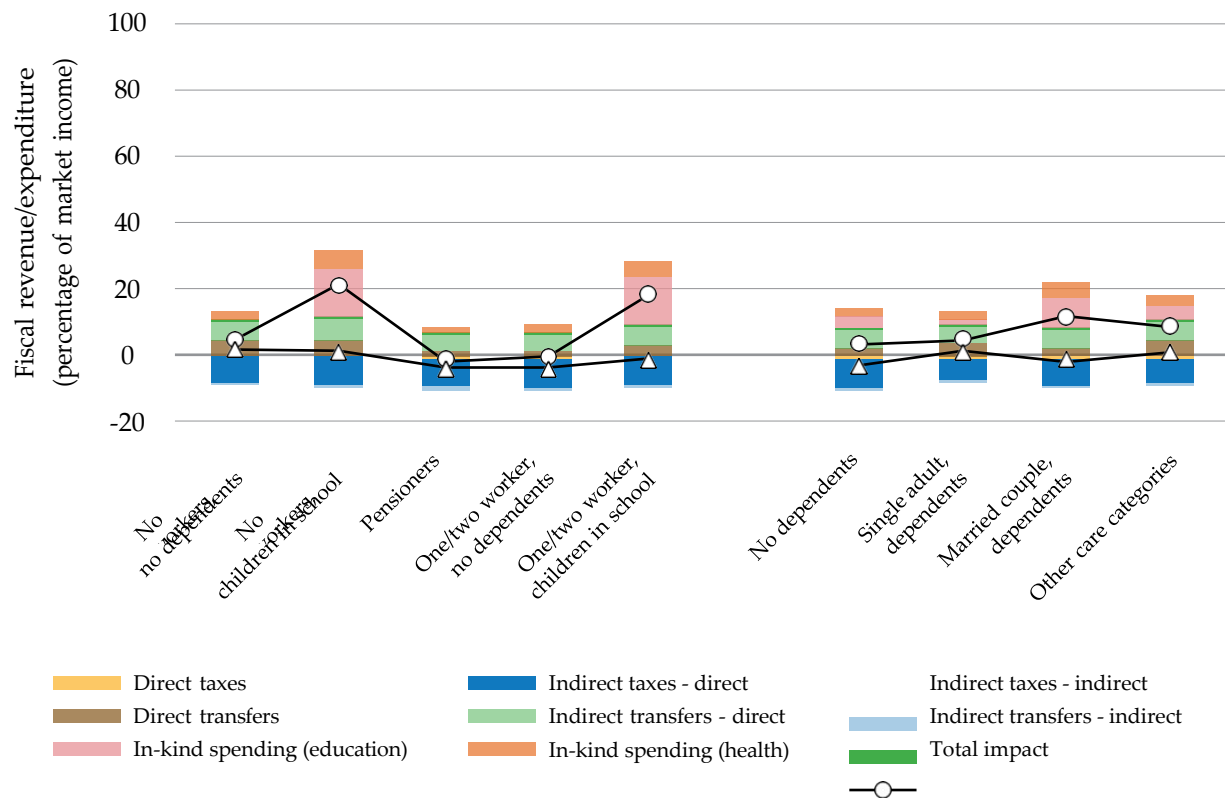
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34. Jordan's demographic structure may be representative of countries with very low female labor force participation.

35. However, much of it comes from the now discontinued bread transfer.

36. The opportunity cost of the acquisition of those services (days in paid employment lost) may in fact contribute negatively to the household's current net cash position while simultaneously raising their expected future net cash position.

Figure 5. Payments of Taxes and Benefits of Public Spending by Household, by Fiscal and Care Categories (Percentage of Market Income)

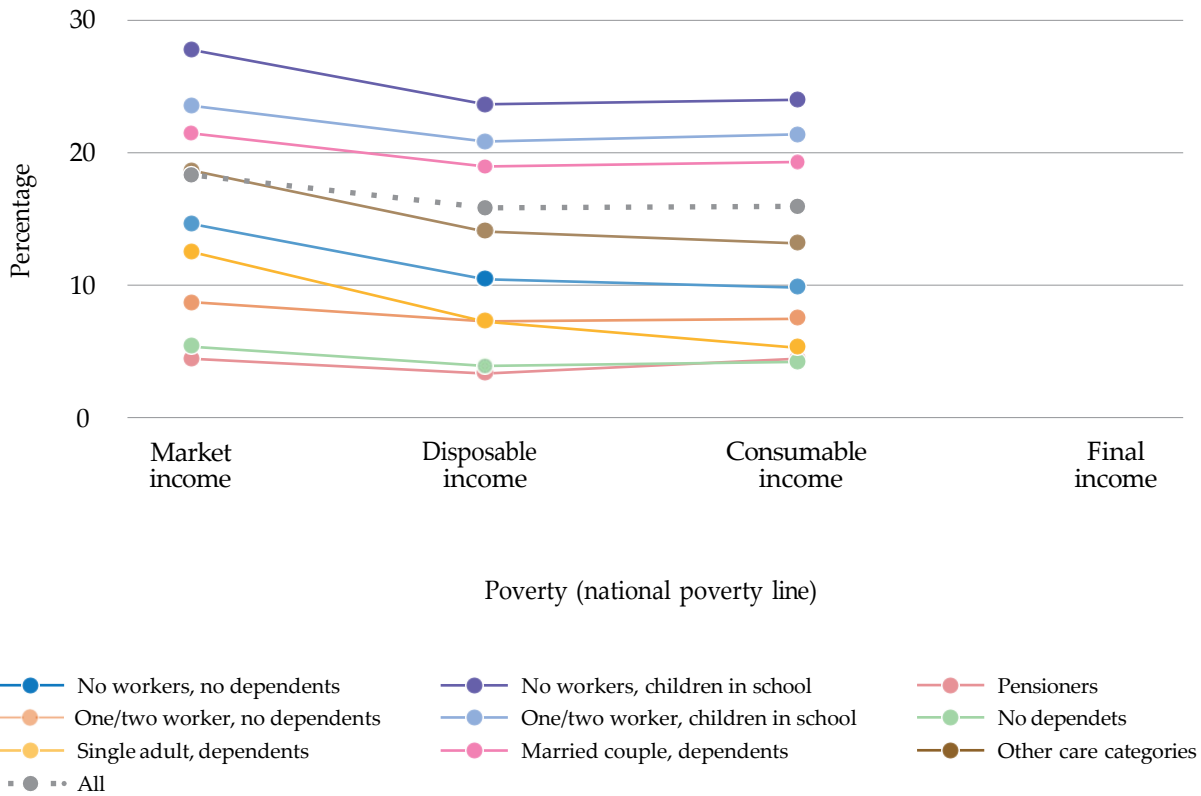


Source: Rodriguez, Wai-Poi, and Woodham (2022).

For households in the *single adult, dependents* care category, fiscal policy through consumable income reduces the poverty headcount by over 50 percent. For most other care and fiscal groups, poverty falls only slightly from market income to disposable income and then plateaus when moving to consumable income, accounting for indirect taxes and subsidies (see Figure 6).<sup>38</sup>

37. Official poverty is measured using the household per capita consumption aggregate and results in a poverty rate for Jordanians of 15.7 percent. As a standard in the CEQ approach, we do not report the poverty impact of in-kind transfers, since these benefits are neither cash (as all the taxes and other spending benefits are), nor are considered when constructing the poverty line.

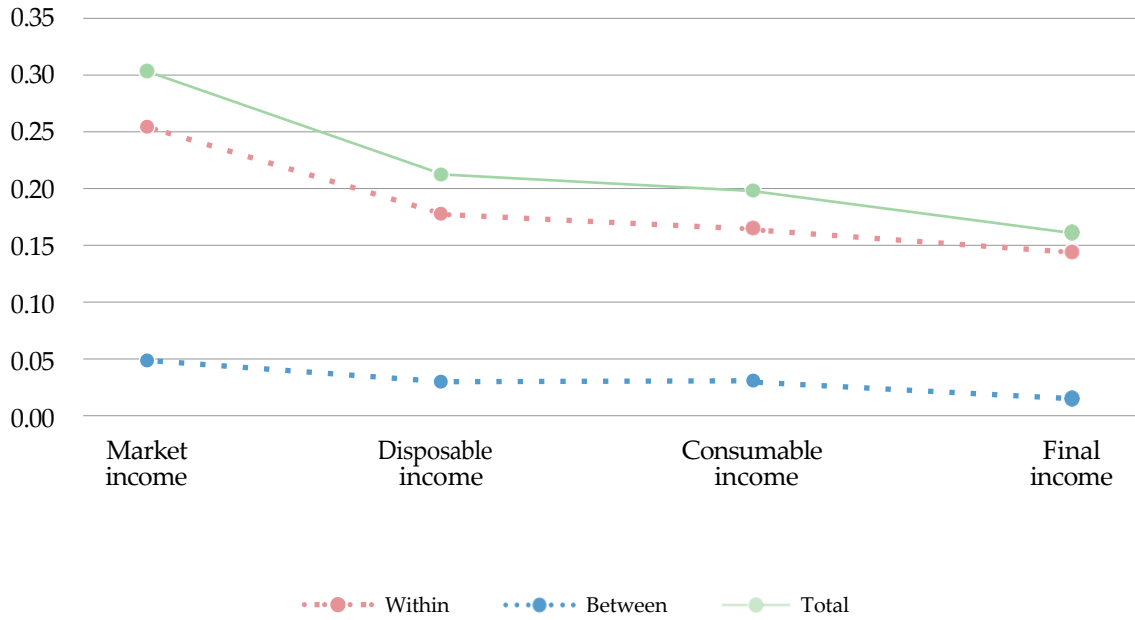
Figure 6. Poverty Impact Change between Income Concepts for Fiscal and Care Groups



Source: Rodriguez, Wai-Poi, and Woodham (2022).

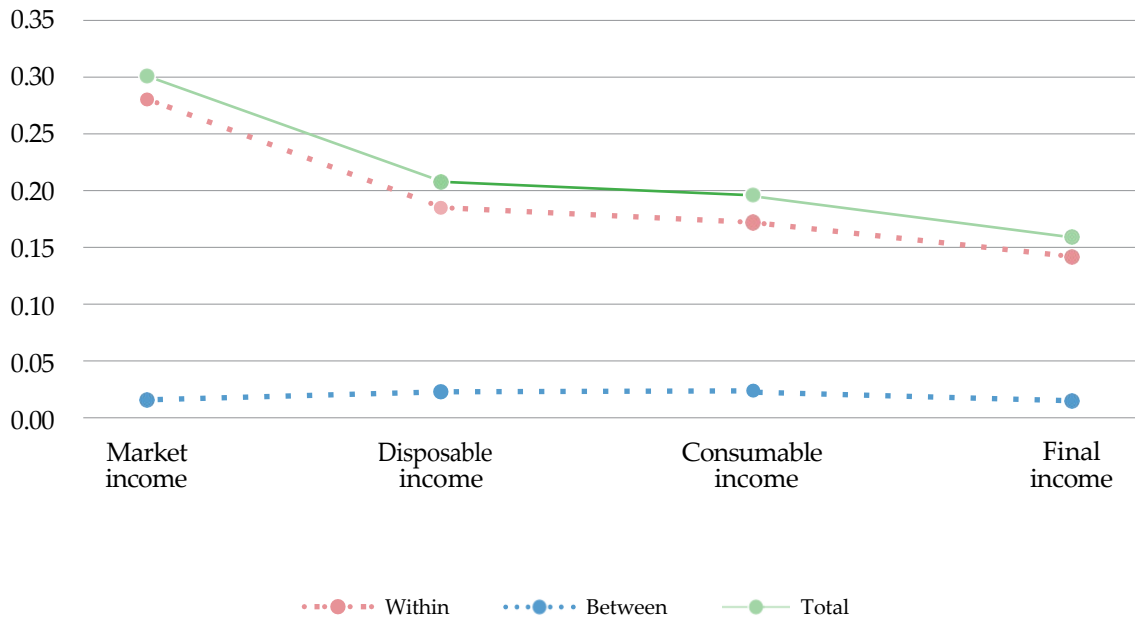
In Jordan, income inequalities across the care and fiscal categories are driven largely by inequality within any one category; this is true whether pre-fiscal or post-fiscal income concepts are used to estimate inequality (Figure 7 and Figure 8). The fiscal group with the highest inequality within its members is the *workers, no dependents* group while the *no workers and children in school* group demonstrates the least (Figure 9). For care categories, the *married couple with dependents* group shows the largest within-group inequality while the *single adult with dependents* category demonstrates the least inequality between its members (Figure 10).

Figure 7. Inequality Decomposition by Fiscal Categories



Source: Rodriguez, Wai-Poi, and Woodham (2022).

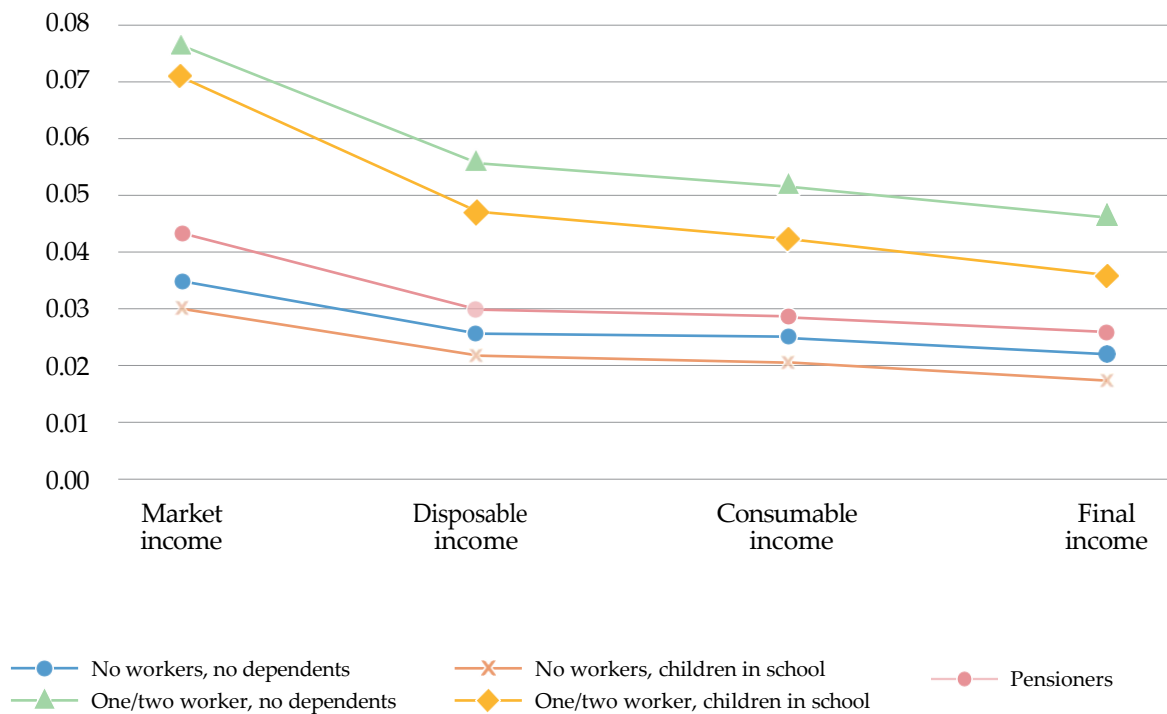
Figure 8. Inequality Decomposition by Care Categories



Source: Rodriguez, Wai-Poi, and Woodham (2022).

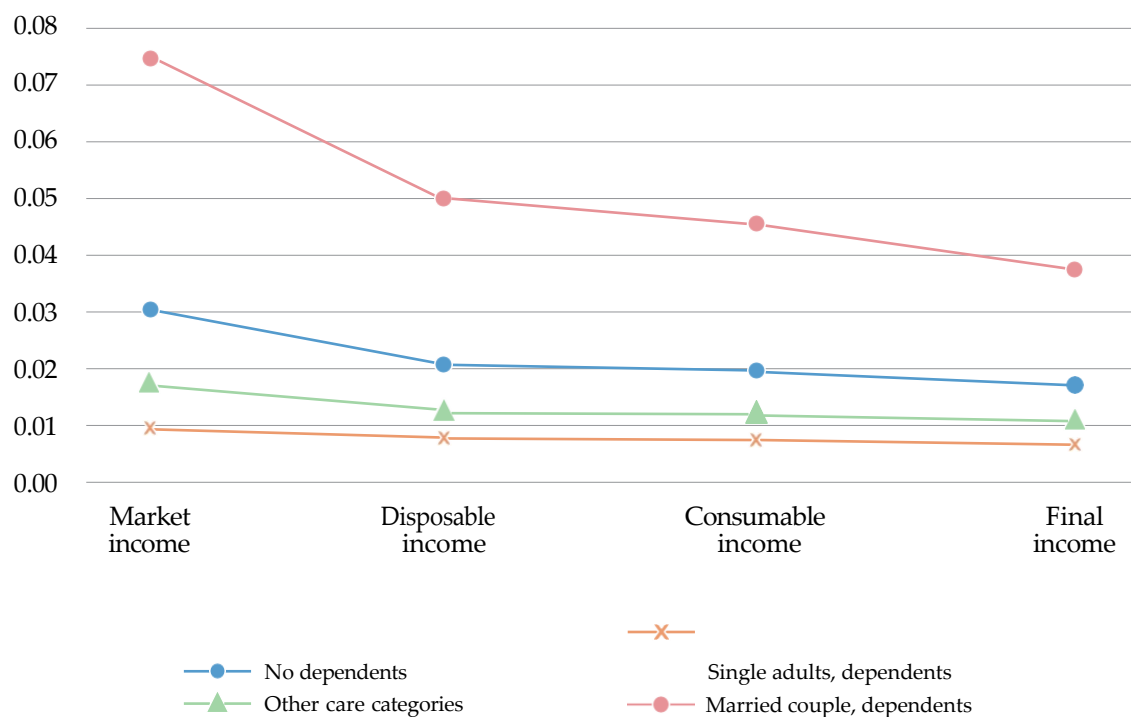
Across fiscal categories, fiscal policy produces the largest reduction in inequality for the *workers, school-age children* group, from market to final income (Figure 9) while each group keeps its market income ranking vis-à-vis within-group inequality. That is, the *workers, no dependents* group shows the most within-group inequality, and the *no workers and children in school* shows the least within-group inequality at either pre-fiscal or post-fiscal income. Across care categories, the *married couple with dependents* group also shows the largest fall in its within-group inequality when moving from market to final income (Figure 10). For the fiscal categories, however, within-group inequality rankings do not change from pre-fiscal to post-fiscal income.

Figure 9. Contribution to Within-Group Inequality by Fiscal Categories



Source: Rodriguez, Wai-Poi, and Woodham (2022).

Figure 10. Contribution to Within-Group Inequality by Care Categories



Source: Rodriguez, Wai-Poi, and Woodham (2022).

All told, in Jordan, the receipt of in-kind benefits, primarily education, determines which fiscal or care groups receive positive net benefits from the fiscal system. When focusing only on cash benefits, the fiscal system is very close to neutral for groups. The Jordanian fiscal system does reduce within-group inequalities but has only a very small impact on inequalities between groups which are very low at the outset. Most of the within-group inequality reduction happens when direct taxes and transfers are added to the fiscal system.<sup>39</sup>

### c. Incorporating Time-Use Data

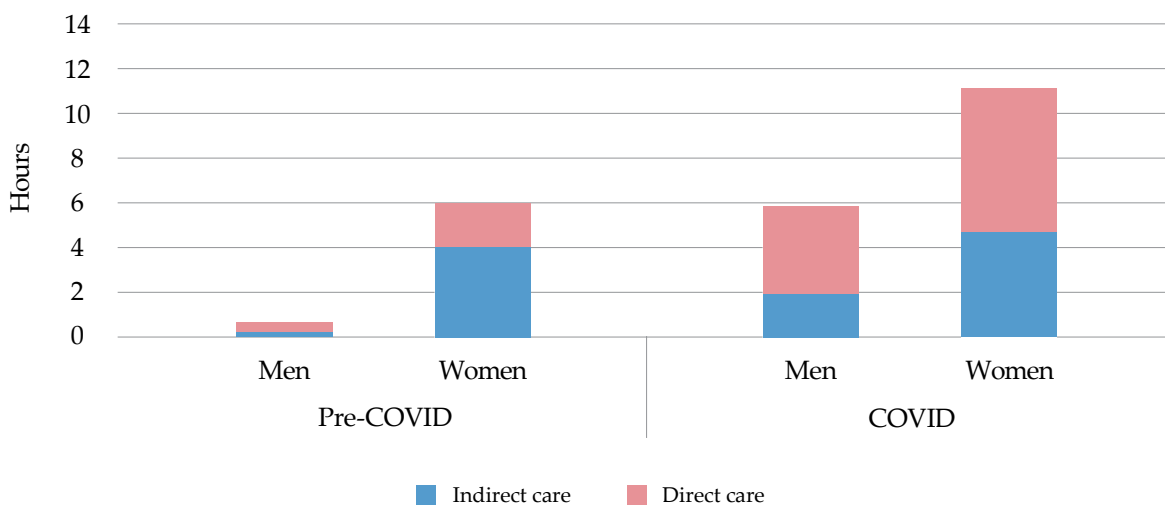
Jordan has one of the lowest rates of female labor force participation in the world at around 15 percent, and during the COVID-19 pandemic, unemployment rates among women rose dramatically. In Jordan, as elsewhere, women bear more responsibility for childcare during school closures as well as care for other family members who have fallen sick. Women ages 15 to 44 spend over thirteen times as much time on chores and nearly five times as much time on childcare as men of the same age group (World Bank 2020).



38. These findings reinforce the general (non-gendered) findings presented in Rodriguez, Wai-Poi, and Woodham (2022) where it was shown that the direct fiscal instruments (direct transfers and direct taxes) were the most cost-effective in reducing overall vertical inequality.

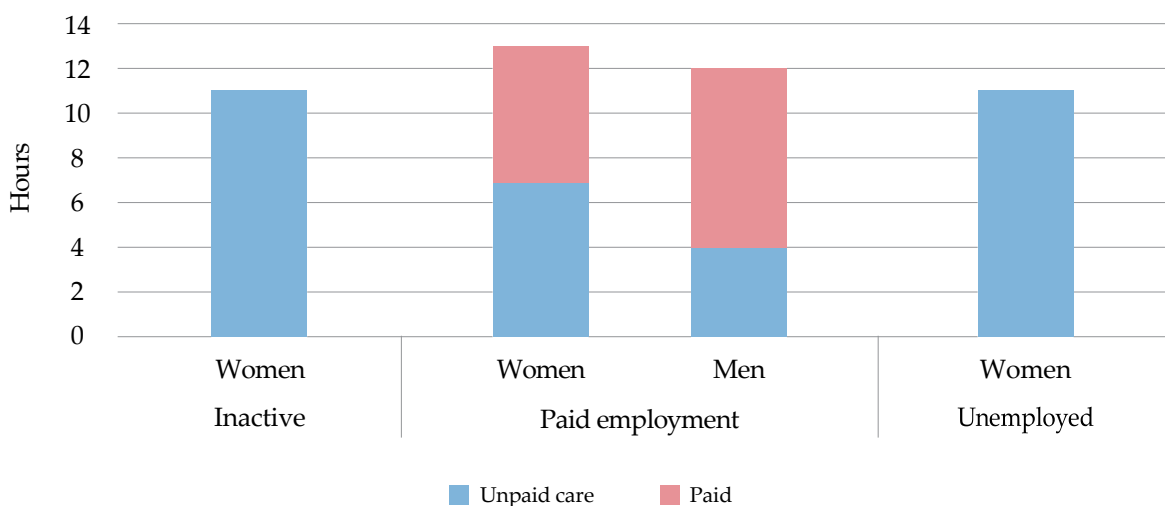
Time-use data from Jordan reveals that time spent in social reproduction activities has not decreased for working women, creating a powerful disincentive to labor force participation (World Bank 2020; Alhwarin and others 2020). Women spend on average four hours a day on household chores and another two hours on childcare; men spend around one hour combined on both (Figure 11). While women in paid employment work fewer unpaid hours around the house, they still do more unpaid work than working men and work more total hours than working men (Figure 12). This means that in addition to spending more time on social reproduction generally, women also spend less time (relative to men) on leisure and self-care activities.

Figure 11. Hours per Day Spent on Household Chores and Childcare, by Gender



Source: Rodriguez, Wai-Poi, and Woodham (2022).

Figure 12. Daily Paid and Unpaid Hours of Work, by Gender



Source: Rodriguez, Wai-Poi, and Woodham (2022).

Married women in Jordan, even with no children, are far less likely to work for pay, indicating that social norms, including those related to fertility expectations, play a role in the household resource allocation process. Women with less housework and fewer care responsibilities are not more likely to be in paid employment than those who do more hours of work at home; however, the presence of other women in the household with paid employment increases the chance of women working themselves. Conversely, having other women in the household who do not work for pay (and therefore could potentially help out with care responsibilities) does not increase the likelihood of women working. These patterns indicate it is likely that social norms and expectations regarding roles that constrain women from accessing labor market opportunities rather than time allocations to unpaid social reproduction activities.

For Jordanian women, being married generates the most extra unpaid work.<sup>40</sup> Young children increase unpaid work modestly; school-aged children do not add to the burden. The presence of another adult woman in the house reduces women's unpaid work, but another adult man increases women's unpaid work. Unsurprisingly, there is high demand in Jordan among working women and women seeking employment for childcare; the hourly rate these women indicate they are willing to pay is similar to that being currently charged in the market. Only 18 percent of Jordanian women who are employed use formal childcare services but a further 69 percent would use those services if they were available, as would nearly half of unemployed Jordanian women. The increased availability of childcare could also help shift childcare expectations of married Jordanian women, potentially reducing barriers to labor force entry.<sup>41</sup>

#### d. Additional Analysis

Figure A1 of the appendix reveals that having dependents – especially younger dependents – creates financial burdens that have not substantially decreased (in cash terms) via fiscal policy. Time-use data (Figure 12) shows that dependents create significant care responsibilities that are met by females whether or not they are working outside the home. Additional analysis in Jordan that places each household type in the pre-fiscal and post-fiscal income distributions would reveal whether and how fiscal policy creates impacts within household types. This is essential in understanding how, for example, households with multiple income earners and multiple dependents could be provided relief from high total tax burdens via tax credits for young dependents.

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39. Single women with dependents spend nearly as much time in unpaid work as married women; however single women can share neither income generating responsibilities nor social reproduction responsibilities with an adult partner and will by necessity be the main contributor in both areas.

40. Current utilization of, and willingness to use childcare services in Jordan is low: only 9 percent of households with children under five years of age use some form of childcare; over half rely upon family, friends, or neighbors (World Bank 2022). Only 36 percent of non-users would be prepared to use formal childcare: 16 percent if it were free care, a further 16 percent if it were either free or paid, and 4 percent only if it were paid.

## 6 Conclusions

National advocates and international frameworks like the Sustainable Development Goals have called upon governments to use the policy tools at their disposal to reduce income inequality and gender inequality. However, development stakeholders do not have a compact, low-cost, and transparent tool for estimating how fiscal policies are ameliorating or exacerbating inequalities in opportunities or outcomes between genders.

This paper has sought to develop such a tool. While our approach cannot illuminate all dimensions of gender inequality, it represents a transparent and low-data-cost way to expand on the well-established and globally prevalent CEQ assessment methodology to help stakeholders determine whether fiscal policy targets gender inequalities in economic production and social reproduction. Our proposal involves no extra data but can incorporate additional data when such data are available. We developed a method for applying FIA to household typologies based on underlying survey information that helps put in focus the different roles men and women play, and the different activities they pursue in paid labor outside the house and in unpaid social reproduction activities inside the house. By bringing social reproduction activities – which are critical for the continued strengthening of social, cultural, legal, and economic institutions – together with economic activities, we can begin to estimate whether and how fiscal policy supports household members in their individual and varied roles.

The application of a gendered perspective in fiscal incidence analysis is revealing in a number of ways. It adds greater richness to the standard analysis of fiscal policy's impact on poverty and inequality by highlighting which male-type or female-type households within a welfare distribution gain or lose from fiscal policy. Because it adds information on the sex, age, and employment status of individual household members, it also reveals the extent to which fiscal policy supports household members in their individual roles and activities.

In Armenia, for instance, the household type defined by the sex of the main wage earner was critical for understanding where and how fiscal policy affects household members differently. The direct tax burdens in households where women accounted for 60 percent (or more) of wage earnings were lower than in households where men accounted for 60 percent (or more) of wage earnings. At first glance, it appears that direct tax policy reduces gender gaps in wage earnings and implicitly encourages women's labor force participation. However, reduced tax burdens in households with women as the primary wage earner might equally reflect more limited opportunities for women, including higher frequency of informal employment, household production for self-consumption, or other economic activities that avoid taxes.

In Jordan, women are overwhelmingly responsible for social reproduction activities including the care of dependents, but fiscal policy supporting social reproduction activities does not lead to greater participation by women in paid labor. That is because, in Jordan, social norms and other cultural features create the expectation that married women with or without children, and in households with or without other dependents, will remain out of the workforce. For this reason, among others, fiscal policy is less effective at reducing income inequality between households with and without dependents and with and without women as income earners. However, fiscal policy could play a role by supporting services for children and others who need care.

The addition of time-use data can make the analysis even richer. Time-use data demonstrated that in both Armenia and Jordan, some children and elders can aid with household tasks and care for family members. This participation in social reproduction from some dependents can reduce gender gaps in labor earnings. In these countries, therefore, a formal extension of affordable and convenient public childcare or elderly care services should positively influence women's labor supply decisions as well as provide access to fiscal policies that support social reproduction.

In sum, the results discussed in this paper from the cases of Jordan and Armenia bode well for the application of the proposed Engendered CEQ methodology in other countries, in different fiscal and socioeconomic settings, and in settings with different cultural expectations regarding the economic and social roles of men and women. In both Armenia and Jordan, richer results were discovered in a contextualized household, in the application of the CEQ assessment methodology across different household types, and in the incorporation of time-use data as a link between household organization and the fiscal policies under examination. The flexibility of the approach should allow analysts and researchers to carry out an engendered analysis, which in turn can help policy makers understand how fiscal policies treat individuals in their different roles and improve reform efforts that benefit men, women, and children.

Going forward, a number of methodological extensions can be explored. We already noted the incorporation of time-use data. Further work can be done to incorporate savings into the notion of income. More granularity can be added to taxes. For instance, it would be interesting to examine in any particular country context the structure of rates and deductions in personal income taxes; for instance, higher marginal rates on secondary income affects women more than men as they are the ones considered to be secondary earners. How can the CEQ be applied to countries with schedular, e.g., different rates for personal income, capital income, and capital gains, as opposed to global rate structures? Other extensions include adding presumptive taxes for small entrepreneurs, land and property taxes, and corporate income taxes, including whether and how dividends are allocated to income. Early work from some countries suggests these other taxes all have different income effects on male and female taxpayers and entrepreneurs (Komatsu and others 2021). Finally, future research can explore a range of policy simulations, for instance, removing subsidies or tax expenditures and replacing them with direct transfers. These extensions can further enrich an already useful tool for understanding fiscal policy.

## Appendix A

Table A1. Example of an Application of Household Types by Quintile in Armenia

| Household typology   |                        | All    | Q1     | Q2     | Q3     | Q4     | Q5     | Bottom-40 | Top-60 | Urban  | Rural  |
|--|------------------------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|
| Gender of household adult members (T1)                                     |                        |        |        |        |        |        |        |           |        |        |        |
| Members are female majority  |                        | 30.1%  | 31.0%  | 28.2%  | 30.8%  | 28.4%  | 31.8%  | 29.6%     | 30.3%  | 32.1%  | 27.1%  |
| Members are male majority  |                        | 20.3%  | 17.5%  | 21.6%  | 18.9%  | 21.6%  | 21.7%  | 19.5%     | 20.7%  | 17.5%  | 24.1%  |
| Equal number of females and males  |                        | 49.7%  | 51.5%  | 50.1%  | 50.2%  | 50.0%  | 46.5%  | 50.8%     | 48.9%  | 50.3%  | 48.8%  |
| Total  |                        | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0%    | 100.0% | 100.0% | 100.0% |
| Gender of household earners (T2)   |                        |        |        |        |        |        |        |           |        |        |        |
| Earners are female only  |                        | 16.5%  | 17.2%  | 12.3%  | 19.0%  | 15.0%  | 19.0%  | 14.8%     | 17.7%  | 18.5%  | 13.6%  |
| Earners are male only  |                        | 28.3%  | 27.2%  | 31.8%  | 29.5%  | 26.6%  | 26.3%  | 29.5%     | 27.5%  | 25.8%  | 31.8%  |
| Earners are both female and male   |                        | 34.0%  | 27.4%  | 33.0%  | 34.3%  | 40.2%  | 35.3%  | 30.2%     | 36.6%  | 37.7%  | 28.8%  |
| No labor earners   |                        | 21.2%  | 28.3%  | 22.9%  | 17.2%  | 18.2%  | 19.4%  | 25.6%     | 18.3%  | 18.0%  | 25.8%  |
| Total  |                        | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0%    | 100.0% | 100.0% | 100.0% |
| Gender sustaining household earnings (T3)                                  |                        |        |        |        |        |        |        |           |        |        |        |
| Female (>60% earnings)   |                        | 20.1%  | 20.0%  | 15.4%  | 23.2%  | 19.0%  | 22.7%  | 17.7%     | 21.6%  | 22.8%  | 16.2%  |
| Male (> 60% earnings)  |                        | 58.7%  | 51.7%  | 61.7%  | 59.6%  | 62.8%  | 57.9%  | 56.7%     | 60.1%  | 59.3%  | 58.0%  |
| No labor earnings  |                        | 21.2%  | 28.3%  | 22.9%  | 17.2%  | 18.2%  | 19.4%  | 25.6%     | 18.3%  | 18.0%  | 25.8%  |
| Total  |                        | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0%    | 100.0% | 100.0% | 100.0% |
| Gender sustaining household earnings + presence of children & elderly (T4) |                        |        |        |        |        |        |        |           |        |        |        |
| Dependents + elderly   | Female (>60% earnings) | 1.2%   | 1.3%   | 0.9%   | 1.2%   | 1.6%   | 1.0%   | 1.1%      | 1.2%   | 1.1%   | 1.3%   |
|  | Male (> 60% earnings)  | 3.4%   | 4.7%   | 4.1%   | 2.7%   | 2.8%   | 2.9%   | 4.4%      | 2.8%   | 3.3%   | 3.7%   |
|  | No labor earnings      | 1.5%   | 3.0%   | 1.6%   | 1.1%   | 1.0%   | 0.9%   | 2.3%      | 1.0%   | 1.2%   | 2.0%   |
| Dependents, no elderly   | Female (>60% earnings) | 3.9%   | 4.8%   | 4.2%   | 3.4%   | 3.9%   | 3.3%   | 4.5%      | 3.5%   | 3.8%   | 4.1%   |
|  | Male (> 60% earnings)  | 19.7%  | 20.0%  | 24.5%  | 20.3%  | 18.6%  | 15.2%  | 22.2%     | 18.1%  | 18.0%  | 22.1%  |
|  | No labor earnings      | 5.6%   | 9.8%   | 6.6%   | 4.4%   | 3.5%   | 3.7%   | 8.2%      | 3.9%   | 4.1%   | 7.7%   |

Table A1 continued

| Household typology   |                        | All    | Q1     | Q2     | Q3     | Q4     | Q5     | Bottom-40 | Top-60 | Urban  | Rural  |
|--|------------------------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|
| Gender sustaining household earnings + presence of children & elderly (T4) |                        |        |        |        |        |        |        |           |        |        |        |
| No dependents,<br>elderly  | Female (>60% earnings) | 4.4%   | 5.0%   | 2.7%   | 6.8%   | 4.4%   | 3.2%   | 3.8%      | 4.8%   | 5.3%   | 3.2%   |
|  | Male (>60% earnings)   | 7.4%   | 7.5%   | 8.6%   | 7.0%   | 6.0%   | 8.0%   | 8.0%      | 7.0%   | 8.1%   | 6.4%   |
|  | No labor earnings      | 7.3%   | 6.3%   | 7.8%   | 6.7%   | 8.0%   | 7.8%   | 7.0%      | 7.5%   | 8.2%   | 6.1%   |
| No dependents,<br>no elderly   | Female (>60% earnings) | 10.5%  | 8.9%   | 7.7%   | 11.8%  | 9.1%   | 15.2%  | 8.3%      | 12.0%  | 12.6%  | 7.6%   |
|  | Male (>60% earnings)   | 28.1%  | 19.6%  | 24.4%  | 29.6%  | 35.4%  | 31.8%  | 22.0%     | 32.3%  | 29.8%  | 25.8%  |
|  | No labor earnings      | 6.8%   | 9.1%   | 6.9%   | 5.0%   | 5.7%   | 7.1%   | 8.0%      | 5.9%   | 4.5%   | 10.0%  |
| Total  |                        | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0%    | 100.0% | 100.0% | 100.0% |

Table A2. Example of an Application of Household Types by Quintile and Other Characteristics, in Armenia

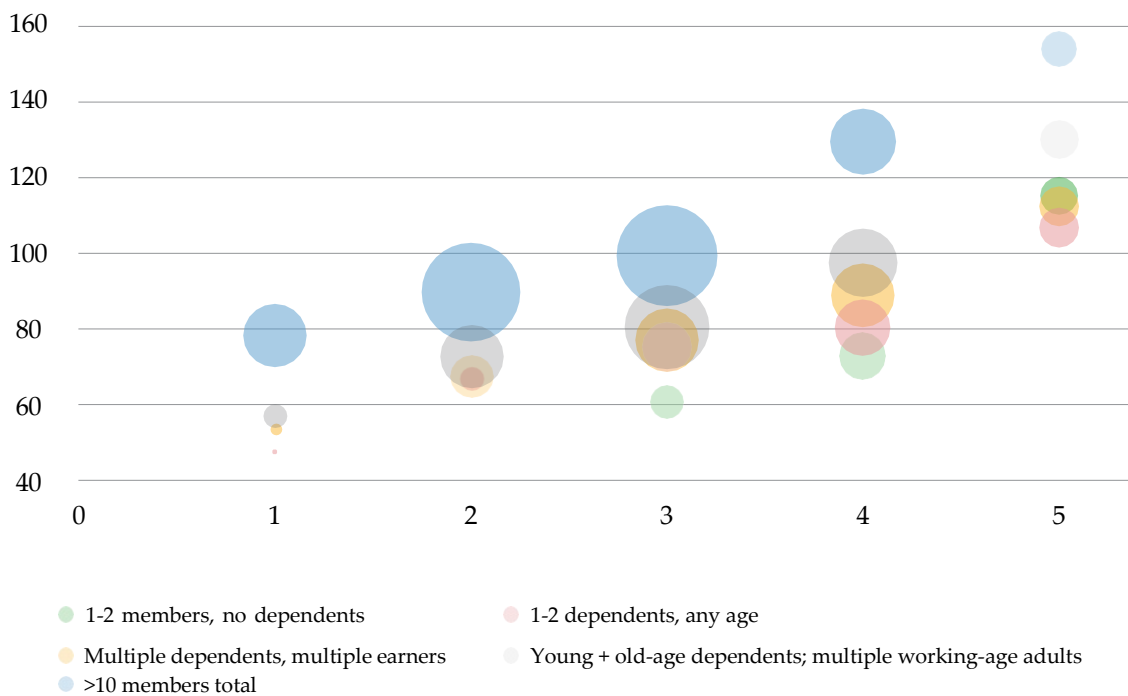
| Household typology   |                        | All    | Q1    | Q2    | Q3    | Q4    | Q5    | Bottom-40 | Top-60 | Urban | Rural |
|--|------------------------|--------|-------|-------|-------|-------|-------|-----------|--------|-------|-------|
| Gender of household adult members (T1)                                     |                        |        |       |       |       |       |       |           |        |       |       |
| Members are female majority  |                        | 100.0% | 20.7% | 18.8% | 20.5% | 18.9% | 21.1% | 39%       | 61%    | 63%   | 37%   |
| Members are male majority  |                        | 100.0% | 17.3% | 21.3% | 18.7% | 21.3% | 21.4% | 39%       | 61%    | 51%   | 49%   |
| Equal number of females and males  |                        | 100.0% | 20.8% | 20.2% | 20.2% | 20.1% | 18.7% | 41%       | 59%    | 60%   | 40%   |
| Gender of household earners (T2)   |                        |        |       |       |       |       |       |           |        |       |       |
| Earners are female only  |                        | 100.0% | 20.9% | 14.9% | 23.1% | 18.2% | 23.0% | 36%       | 64%    | 66%   | 34%   |
| Earners are male only  |                        | 100.0% | 19.3% | 22.5% | 20.9% | 18.8% | 18.6% | 42%       | 58%    | 54%   | 46%   |
| Earners are both female and male   |                        | 100.0% | 16.1% | 19.3% | 20.2% | 23.6% | 20.7% | 35%       | 65%    | 65%   | 35%   |
| No labor earners   |                        | 100.0% | 26.7% | 21.6% | 16.2% | 17.2% | 18.3% | 48%       | 52%    | 50%   | 50%   |
| Gender sustaining household earnings (T3)                                  |                        |        |       |       |       |       |       |           |        |       |       |
| Female (>60% earnings)   |                        | 100.0% | 20.0% | 15.3% | 23.1% | 18.9% | 22.6% | 35%       | 65%    | 67%   | 33%   |
| Male (> 60% earnings)  |                        | 100.0% | 17.6% | 21.0% | 20.3% | 21.4% | 19.7% | 39%       | 61%    | 59%   | 41%   |
| No labor earnings  |                        | 100.0% | 26.7% | 21.6% | 16.2% | 17.2% | 18.3% | 48%       | 52%    | 50%   | 50%   |
| Gender sustaining household earnings + presence of children & elderly (T4) |                        |        |       |       |       |       |       |           |        |       |       |
| Dependents + elderly   | Female (>60% earnings) | 100.0% | 22.3% | 14.8% | 20.6% | 26.2% | 16.1% | 37%       | 63%    | 54%   | 46%   |
|  | Male (> 60% earnings)  | 100.0% | 27.3% | 24.2% | 15.5% | 16.3% | 16.8% | 51%       | 49%    | 56%   | 44%   |
|  | No labor earnings      | 100.0% | 39.7% | 21.3% | 14.6% | 12.9% | 11.5% | 61%       | 39%    | 46%   | 54%   |
| Dependents, no elderly   | Female (>60% earnings) | 100.0% | 24.7% | 21.2% | 17.3% | 19.8% | 16.9% | 46%       | 54%    | 57%   | 43%   |
|  | Male (> 60% earnings)  | 100.0% | 20.3% | 24.8% | 20.6% | 18.9% | 15.4% | 45%       | 55%    | 54%   | 46%   |
|  | No labor earnings      | 100.0% | 35.1% | 23.5% | 15.6% | 12.6% | 13.2% | 59%       | 41%    | 43%   | 57%   |
| No dependents, elderly   | Female (>60% earnings) | 100.0% | 22.4% | 12.2% | 30.7% | 20.0% | 14.6% | 35%       | 65%    | 71%   | 29%   |
|  | Male (> 60% earnings)  | 100.0% | 20.2% | 23.2% | 18.9% | 16.2% | 21.6% | 43%       | 57%    | 64%   | 36%   |
|  | No labor earnings      | 100.0% | 17.4% | 21.2% | 18.2% | 22.0% | 21.2% | 39%       | 61%    | 66%   | 34%   |
| No dependents, no elderly  | Female (>60% earnings) | 100.0% | 17.0% | 14.5% | 22.4% | 17.3% | 28.9% | 31%       | 69%    | 70%   | 30%   |
|  | Male (> 60% earnings)  | 100.0% | 13.9% | 17.3% | 21.1% | 25.1% | 22.6% | 31%       | 69%    | 62%   | 38%   |
|  | No labor earnings      | 100.0% | 26.9% | 20.5% | 14.9% | 16.8% | 20.9% | 47%       | 53%    | 39%   | 61%   |



## Example of an application of household types by quintile and other characteristics, in Pakistan

Another example of how the household typology can be constructed is in Figure A1, based on the Pakistan Household Integrated Economic Survey (HIES). Household types are represented by different bubble colors, and the frequency wherein a household type is represented by the size of the bubble. In this schematic, household types are placed into quintiles of the post-fiscal income distribution to demonstrate which households have access to natural gas subsidies. The figure demonstrates that larger households with multiple dependents and multiple wage earners are much more prevalent among the bottom 40 percent of the population (ranked by post-fiscal income) and very few households overall in the bottom 20 percent of the population have access to natural gas subsidies.

Figure A1. Household Types in Pakistan



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