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Gendered Taxes:

The Interaction of Tax Policy with Gender Equality

Maria Coelho, Aieshwarya Davis, Alexander Klemm, and
Carolina Osorio Buitron

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Gendered Taxes: The Interaction of Tax Policy with Gender Equality**Prepared by Maria Coelho, Aieshwarya Davis, Alexander Klemm, and Carolina Osorio Buitron***

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ABSTRACT: This paper provides an overview of the relation between tax policy and gender equality, covering labor, capital and wealth, as well as consumption taxes. It considers implicit and explicit gender biases and corrective taxation. On labor taxes, we discuss the well-established findings on female labor supply and present new empirical work on the impact of household taxation. We also analyze the impact of progressivity on pay gaps and labor supply. On capital and wealth taxation, we discuss the implications of lower effective capital income taxation on the personal income tax burden gap across genders. We show that countries with relatively low female shares of capital income and wealth also tend to tax property and inheritances particularly lightly. On consumption taxes, we cover taxes on feminine hygiene products and excise taxes, which we assess in relation to externalities and differences in consumption patterns across genders.

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Authors' E-Mail Addresses:	mcoelho@imf.org; adavis3@imf.org; aklemm@imf.org; cosoriobuitron@imf.org

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Glossary

IBFD	International Bureau of Fiscal Documentation
IMF	International Monetary Fund
LIS	Luxemburg Income Study database
OECD	Organisation for Economic Cooperation and Development
TaxBEN	Tax-Benefit Model (OECD)
VAT	Value-Added Tax

I. Introduction

Gender equality in economic opportunities and outcomes is demonstrably critical to inclusive and sustainable economic growth. Though much progress has been made in the last half century, gender gaps remain significant on a global scale, either due to legal restrictions or non-legal barriers to women's access to education, healthcare, financial services, and the labor force. Promoting gender equality along those margins has been shown to play an important role in boosting economic productivity and growth, enhancing economic resilience, and reducing overall income inequality (Hsieh and others 2019, IMF 2013, IMF 2018). Returns to education are higher for women, who are also more likely to invest their resources in the education and health of their children, bolstering human capital for future economic growth (Schultz 2002, Patrinos and Montenegro 2014). The macroeconomic relevance of gender equality stands as especially acute as we begin to turn the page on a pandemic crisis whose economic consequences have been particularly detrimental for women (IMF 2021b).

Motivated by this context, this paper aims to provide an overview of the interactions between tax policy and gender equality, covering both those that have been extensively studied and those that have received comparatively little academic attention.¹ On some issues an extensive literature already exists, such as on the effect of taxes on female labor supply. On these, we report the existing findings and illustrate them with new empirical work. Other issues have received less attention, such as the taxation of capital income or real property, for which we show some illustrative findings, which should be extended in future research. Finally, some issues have attracted a lot of attention from campaigners and policymakers, such as the taxation of female hygiene products, but relatively little academic attention. We summarize the issue and where data limitations do not allow us to go as far as we would like, we point to directions in which more data could allow better assessment.

The paper covers both explicit and implicit bias but pays more attention to the latter, because it occurs more frequently and is more difficult to address. By explicit bias, we mean a tax system that charges a different tax by gender.² Explicit bias in the tax code is getting rarer—though it still exists in some countries. Explicit bias is not difficult to define or resolve (at least conceptually—politically it might be difficult), while implicit biases pose greater difficulties on both fronts. A related issue is differentiation of taxes in favor of women to overcome biases or historical inequities that lie outside the tax system, and these are also discussed. While this paper is focused on gender issues, many of the findings would similarly apply to other disadvantaged groups. Moreover, in cases where the solution is not gender-specific—for instance if progressivity is increased to reduce the gender pay gap—it automatically also addresses other inequalities.

The purpose of the paper is to provide policymakers and researchers an overview of all relevant issues, and inspiration for policy choices and further research. The paper does not aim to answer all questions, but at least to point out to all important tax issues. Regarding policies, the paper points to generally advisable ones, but of course ultimately all policy choices need to reflect country-specific circumstances, and interactions with other taxes, laws, and regulations.

¹ For a previous overview of the issues, see Grown and Valodia (2010), which also includes various valuable country case studies.

² Stotsky (1997, p. 1) defines explicit bias as “specific provisions of the law or regulations that identify and treat men and women differently.” The line between explicit and implicit differentiation is not always clear cut, though. For example, charging a tax only consumed by one gender comes quite close to explicit bias and could be included in broader definitions.

This paper is structured as follows. Section II covers the taxation of labor income, including not only personal income tax and social security contributions, but also the deductibility of relevant costs related to providing labor, such as childcare costs. Section III turns to taxation of capital income and wealth. Section IV covers consumption taxes and Section V concludes.

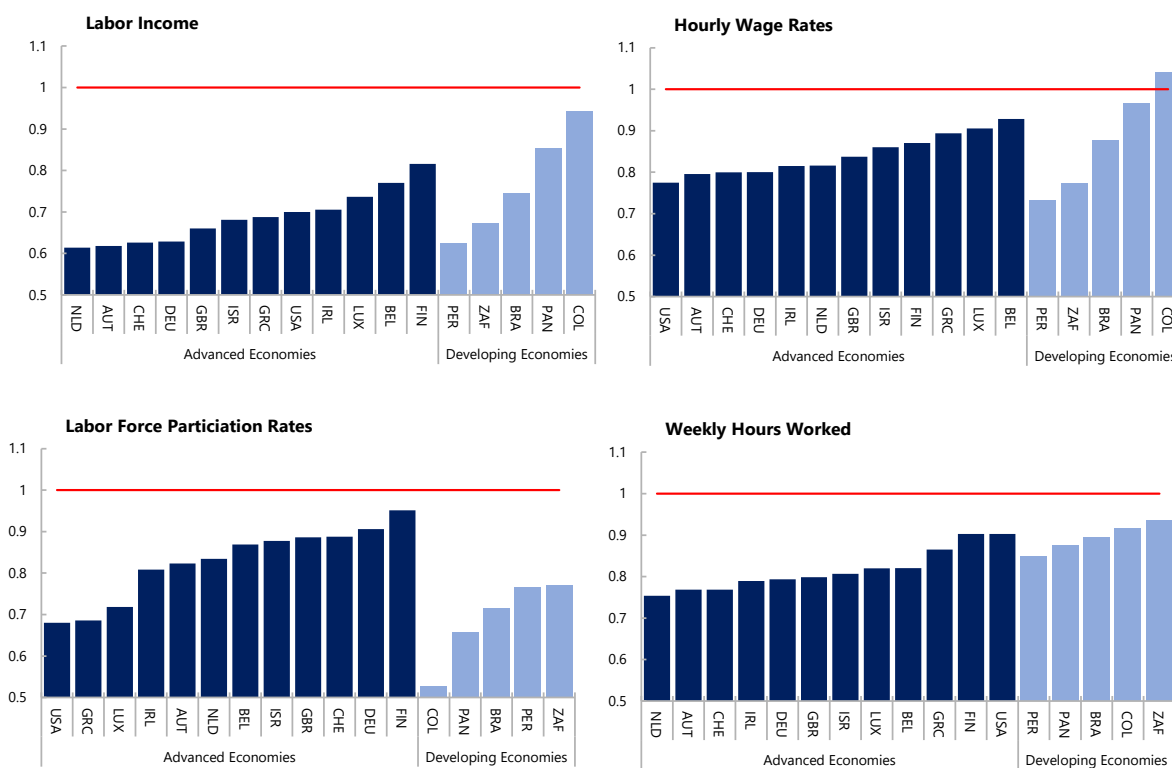
II. Taxation of Labor Income

The taxation of labor income is likely the most important aspect of taxation approached from a gender perspective, because it is most directly linked to family and labor supply decisions, which in turn have a major impact on the incomes and security of women. This section first provides an overview of the most important decision margins that are affected by labor taxation and then goes through common features of tax systems and their impact on these margins.

As is well known, average incomes of women are lower than those of men in most countries, with women earning, on average, 20 percent less than men in gross terms. This shortfall in women's earnings is measured by the distance of the female-to-male ratio of gross incomes to the equality benchmark value of 1, as shown in Figure 1.

Figure 1. Average Gender Gaps in Labor Market Outcomes

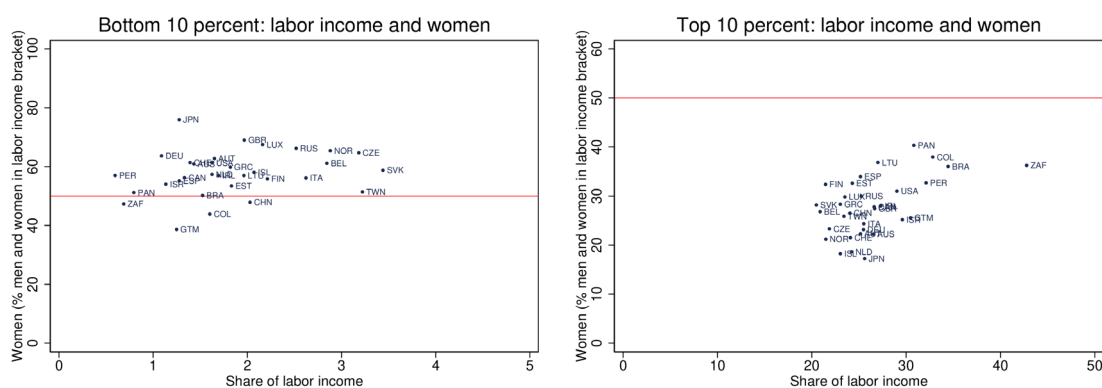
(Female-to-male ratios; 1 = gender equality)



Source: LIS and authors' estimates. Labor income and wage rates are in gross terms. Labor income includes cash payments and value of goods and services received from dependent employment, as well as profits/losses and value of goods from self-employment.

The gender income gap is pervasive, reflecting a variety of factors. Across advanced and emerging economies, women's gross incomes are just 70 percent of men's, on average; although this fraction ranges from 60 to 94 percent in the country sample (top-left chart in Figure 1). The income gender gap is partly explained by wage rate differentials (top-right chart in Figure 1), as women, on average, are paid 15 percent less per hour of work than men. Employment gender gaps are also meaningful. On average, women are 20 percent less likely than men to participate in the labor force (bottom-left chart in Figure 1). And if they are employed, women work an average of 85 percent of the number of hours worked by men (bottom-right chart in Figure 1). The income gap is also reflected in the composition of the workforce across genders and income levels. Irrespective of their marital status, females tend to be overrepresented at the bottom of the labor income distribution, as illustrated in the left-hand side chart of Figure 2. Within the bottom income decile—which represents less than 5 percent of economies' total income, as depicted in the horizontal axis—more than half of that population segment is female (as depicted in the vertical axis). By contrast, in the top decile (right-hand side chart of Figure 2), which accounts for an income share between 20 and 40 percent, women are underrepresented and account for less than 40 percent of that population segment.

Figure 2. Income Share and Share of Women in the Bottom and Top Deciles



Source: LIS and authors' calculations. The horizontal axis captures the gross income share of individuals in the bottom decile, while the vertical axis depicts the share of women in that segment of the population, as a share of men and women in that income decile. The sample corresponds to the following LIS country-year personal surveys, which are collected at the individual level: Australia 2014, Austria 2016, Belgium 2017, Canada 2017, Chile 2017, China 2013, Colombia 2013, Czechia 2016, Estonia 2016, Finland 2016, Germany 2016, Greece 2016, Iceland 2010, Ireland 2017, Israel 2016, Italy 2016, Japan 2013, Lithuania 2017, Luxemburg 2013, Netherlands 2013, Norway 2013, Peru 2016, Russia 2016, Slovakia 2013, Spain 2016, Switzerland 2017, Taiwan 2016, United Kingdom 2017, USA 2018, Brazil 2016, Guatemala 2014, Panama 2016, South Africa 2017.

While the income gap is driven by mostly nontax factors, tax policy has an important role to play in addressing gender gaps by directly reducing post-tax inequality, and—more powerfully—by changing incentives. Gender differences in wage rates, for example, reflect differences in education levels, industry-specific characteristics where men or women tend to be over-represented, experience and longevity in the job, willingness to work long-hours, and outright discrimination. While policy interventions other than tax policy could more directly address these issues, tax policy plays an important role, because it affects the return to working and the returns to education (see for example Polachek and Chiang (2014); Krueger and Ludwig (2013) and Heathcote and others (2020) cover the latter channel in general, without a gender focus). Tax reforms can therefore help by removing any relatively stronger discouragement to working for women, as will be discussed in more detail in the following subsections.

Behavioral Margins Affected by Labor Taxes

Labor income taxes system affect family and labor supply decisions—often in an interrelated manner—with important gender implications. The key features of the tax system that influence decisions by individuals and households include the progressivity of the system, the unit of taxation; and the definition of the tax base, notably with respect to the treatment of costs related to participating in paid employment. While our paper will focus on decisions margins related to labor supply, the decision margins affected by labor income taxes are broader and include the following:

- a. Whether to marry³ or not, since marriage can potentially change the tax liability of the spouses compared to the sum of their tax liabilities as singles.
- b. If married, whether to form or maintain a single or two-earner household. This decision relates to the extensive margin choice by the secondary earner of the household. If their (net of tax) income is not enough to cover the fixed costs of entering employment (such as childcare),⁴ they may choose not to work, forming a one-earner household with their spouse.
- c. If married and the secondary earner works, how many hours to work (or, in a world of limited options, whether to work full or part-time). This relates to the intensive margin decision by the secondary earner, whose decision will depend on how each additional dollar of income is taxed.
- d. Whether to have children or not. The cost of having children is affected on the tax side through child allowances or credits or if children are taken into account under household taxation systems.
- e. Whether to work in the formal or informal sector, notably in developing economies. In countries where enforcement capacity and the social safety net are weak, formal employment decisions that entail a meaningful increase in tax liabilities, may induce individuals to work in the informal sector.

Progressivity

Most tax systems treat people differently depending on how much they earn. In progressive tax systems, the average tax rate rises with income. As discussed earlier, women's average earnings are 20 percent lower than men's. As a result, even in the absence of gender-specific taxes, the impact will differ across genders since their average incomes are not the same.

The gender income gap implies that progressive tax systems can both address general inequality and narrow gender gaps in net incomes. Among countries for which data are available, gender gaps in net incomes (net of taxes and social security contributions) are about 1.5 percentage points narrower than in gross terms in advanced countries. In emerging economies, however, the impact is very small (Figure 3, left panel). In general, these small numbers are also the result of social security contributions—which are often not progressive⁵—and they are affected by household taxation (see following section) where applicable. For some countries, it is possible to disentangle the impact of progressive taxes from social security contributions (Figure 3, right panel). The experience from these countries indicates that it is the tax system, not the social security system, which plays a larger redistributive role across genders. Direct taxes reduce the shortfall in women's income relative to men's by about 1.4 percentage points in advanced economies and about 0.3 in emerging

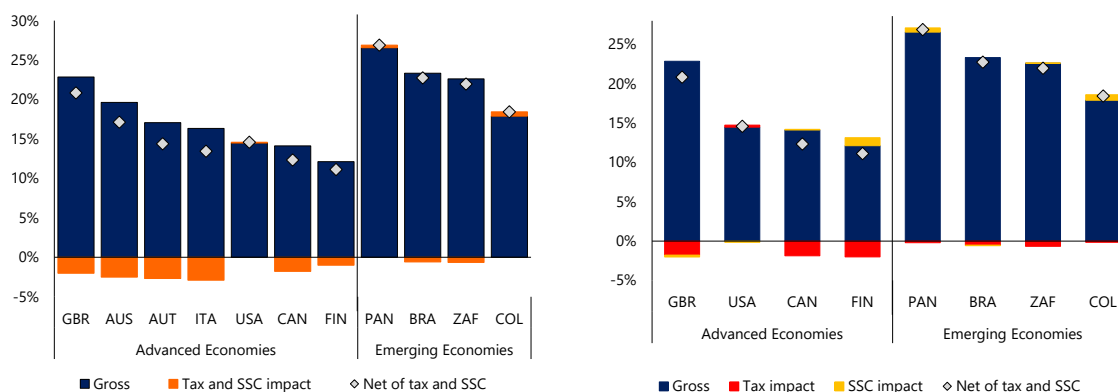
³ We use "marry" and "marriage" to mean any bond between partners that is recognized for tax purposes.

⁴ Such tradeoffs will also reflect any utility or disutility from working the individual experiences.

⁵ Social security contributions are often a flat percent rate with an upper threshold, which makes them regressive.

economies. In most cases, by contrast, social security contributions either widen the gender income gap, or have a small redistributive impact (relative to direct taxes).⁶

Figure 3. Average Shortfall in Women's Income Relative to Men's



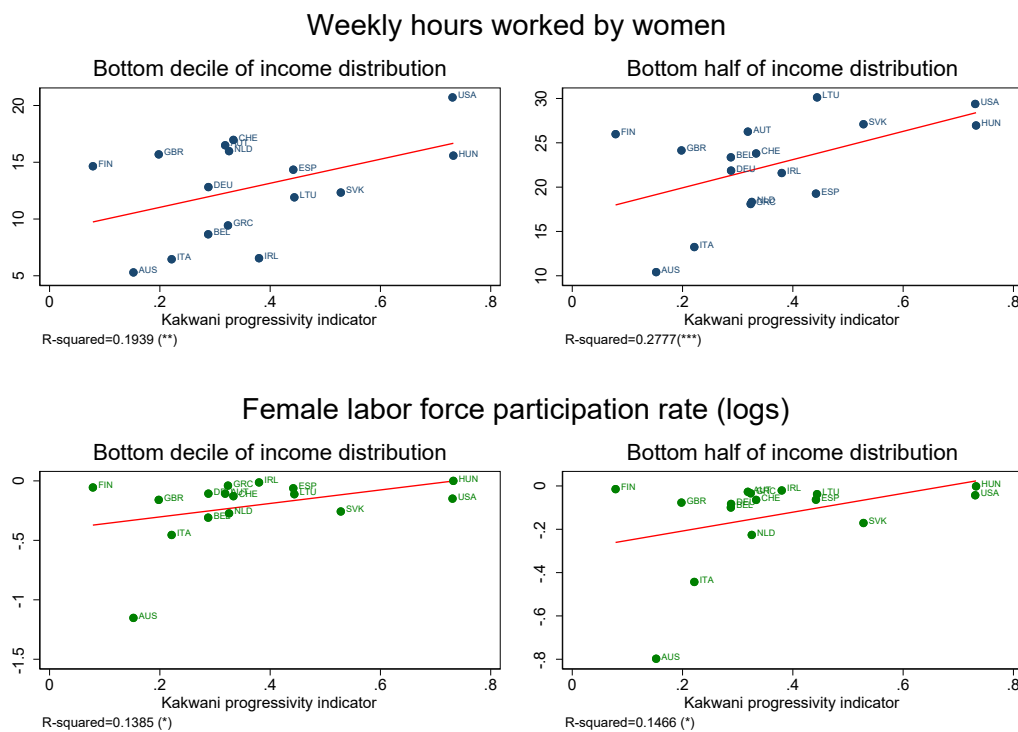
Source: LIS and authors' calculations. The sample corresponds to the following LIS country-year surveys: Australia 2014, Austria 2016, Canada 2017, Colombia 2013, Finland 2016, Italy 2016, United Kingdom 2017, USA 2018, Brazil 2016, Panama 2016, and South Africa 2017.

The progressivity of the income tax system can reduce gender inequality by providing stronger work incentives to women at the low end of the income distribution, at both the extensive and intensive margins. As discussed earlier, women tend to be overrepresented at the bottom of the income distribution. Therefore, with a more progressive system, poorer individuals, the majority of which are women, face lower marginal tax rates and, hence, have stronger incentives to work more (intensive margin). The top charts in Figure 4 show that in countries with more progressive tax systems (higher Kakwani indicators), women in the bottom decile (or half) of the income distribution work more hours.⁷ When entering, or re-entering the workforce after motherhood, women tend to work in lower paid jobs. Hence, the more progressive the tax system, the more likely net earnings from those jobs are sufficient to cover the fixed costs of entering employment, notably childcare. A more progressive system therefore supports female labor force participation at the bottom of the distribution (extensive margin). The bottom charts of Figure 4 show that countries where the Kakwani index is higher, have a higher female labor force participation in the bottom decile and bottom half of the distribution. A more progressive system raises more revenue from the top and can, therefore, afford lower tax rates at the bottom, for the same revenue as a system with a flatter rate schedule.

⁶ The benefits, however, could be progressive, possibly undoing that effect.

⁷ The Kakwani indicator is the difference between the concentration index (Gini coefficient) of tax liabilities and gross incomes. A positive value indicates that taxes are more concentrated than incomes, and the system is progressive. Higher values in the Kakwani index represent a more progressive system.

Figure 4. Progressivity and Female Labor Supply at the Bottom of the Distribution



Source: LIS, TaxBEN 2.3 and authors' calculations.

The horizontal axis corresponds to the Kakwani progressivity indicator, with higher values representing a more progressive system. The sample corresponds to the following LIS country-year surveys: Australia 2014, Austria 2016, Belgium 2017, Canada 2017, Hungary 2015, Finland 2016, Germany 2016, Greece 2016, Iceland 2010, Ireland 2017, Italy 2016, Lithuania 2017, Netherlands 2013, Slovakia 2013, Spain 2016, Switzerland 2017, United Kingdom 2017, USA 2018. The significance level of the correlation in the scatter plots is 85 percent (*), 90 percent (**) or 95 percent (***).

Unit of Taxation

Theory

Taxes can apply at the individual or household level, giving rise to various tax-system options, described below (see Annex Table 1 for examples of countries implementing each type of system).

- *Individual taxation* simply means that each person's tax is determined based on their own income, without regard to their marital status. Any joint income (e.g., from jointly-owned property) will have to be assigned to individual spouses, for example by splitting it.
- *Household-level taxation* aggregates a household's incomes and subjects them to a combined schedule. This combined schedule can be set in many ways. Commonly the same tax rates apply to singles and households, but there are different approaches to setting thresholds. One extreme would be to use the same thresholds. More commonly, thresholds are increased compared to singles to account for the fact the

income covers two people. One approach (used for example in Germany) is to double all thresholds⁸ given that two people are covered by the joined income. But countries may also raise them by less than that⁹ (e.g., United States), which can lead to marriage penalties for some incomes, that is cases in which marrying raises the household's tax rate. In principle they could also be raised by more, but there are no known cases. In some cases, household taxation is optional.

- *Mixed systems.* There are various forms of mixed systems, which combine aspects of individual and household-based taxation. A common approach is for countries to apply individual-based taxation with elements of a family-based system, such as spouse allowances, which are often contingent on the spouse's income not exceeding a threshold. Likewise, there could be child allowances, which might be available at the household level or could be allowed to be chosen among spouses. It is also possible that in countries with household-based systems, tax savings from joint assessments are phased out for couples with higher incomes.

From the perspectives of equality or equal treatment, it is not clear whether individual or household taxation is preferable. On the one hand, household-level taxation ensures equal treatment across households, irrespective of how incomes are distributed among spouses. On the other hand, unless the tax schedule is flat, household-level taxation creates inequalities among individuals with the same earnings level, because their tax liability also depends on whether they are married and their spouse's income. Historically, when the presumption of a family was a working husband with a stay-at-home wife and multiple children, household taxation was seen as way to benefit families, so as to encourage marriage and fertility.

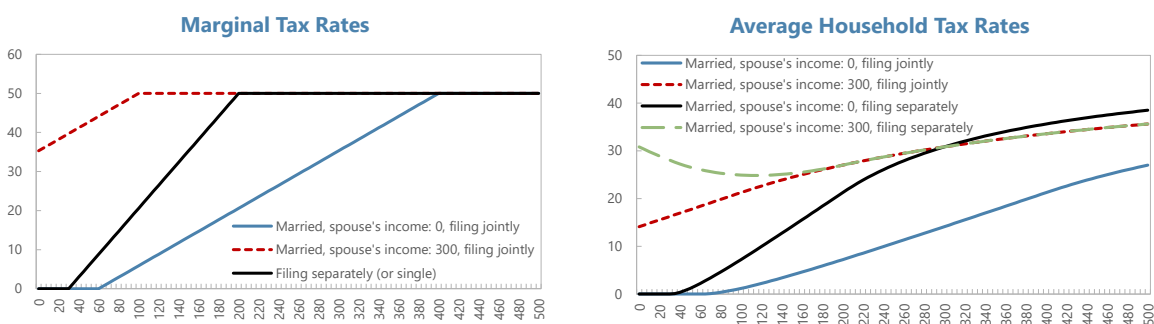
From a labor supply perspective, the key aspect is that household taxation generally raises tax rates for secondary earners and lowers them for primary earners. Exceptions are flat-rate systems or couples in which both partners would be in the same tax bracket even if unmarried. Figure 5 provides a stylized example, for a simple tax system with a tax-free threshold at 30 percent of average income; a rising marginal tax rate that goes from 0 to 50 percent over incomes ranging between 30 and 200 percent of average earnings; and an option for joint filing, in which case all thresholds are doubled. As shown in the left panel, the marginal tax rate faced by someone married to a well-earning spouse (300 percent of average income) increases dramatically compared to a single individual (or someone filing separately).¹⁰ The impact is particularly strong when the secondary earner has no or a very low income, as significant tax has to be paid from the first dollar earned. The opposite occurs for someone married to a spouse earning little or nothing, as in this example. This reduces marginal tax rates, by doubling the tax-free allowance as well as the threshold for the top rate of tax compared to a single. Consistent with this stylized example, Fabrizio and others (2020), for example, provide a cross-country calibrated simulation underscoring the importance of the unit of taxation as a driver of female labor force participation.

⁸ An algebraically equivalent method is to sum up the spouses' incomes and divide the sum by two, which is known as "income splitting," and then apply the unchanged thresholds.

⁹ A theoretical justification for that would be that there are economies of scale in household production and shared durable goods, so that a couple's ability to pay is greater than that of two singles, even if the couple's combined income equals the sum of the singles'.

¹⁰ In a system with a marriage penalty, this effect would be even greater (but the opposite effect on the higher earner would be smaller).

Figure 5. Marginal and Average Tax Rates for Spouses under Household Taxation



Notes: The tax system has an exemption worth 30 percent of average income, with a marginal tax rate that rises steadily from 0 to 50 percent between 30 and 200 percent of average income and then stays fixed. In case of joint filing, all thresholds are doubled.

Source: Authors' assumptions and calculations.

The change in marginal tax rates created by household taxation can be expected to discourage labor supply of the secondary earner, while boosting labor supply of the primary earner. As the secondary earner's marginal tax rate is increased by household taxation, their return to each additional hour of work is reduced. This is known as the substitution effect, and it would have a detrimental impact on the labor supply at the intensive margin (i.e., the decision on how many hours to work). The effect has the same direction at the extensive margin (i.e., the decision to work): for this margin the total additional tax paid by taking up employment counts, and this is also much higher than for a single individual for any job offer paying less than the primary earner's salary (if it paid the same or more, it would turn the secondary into the primary earner and reduce their marginal tax). In addition to the substitution effect, there is also an income effect. As shown in the right panel of Figure 5, household taxation reduces (or in the worst case leaves unchanged) the household's average tax rate, and hence boosts its net income. The household therefore can afford more leisure, which would reduce labor supply for both spouses, reinforcing the negative labor supply impact on the secondary earner and counteracting the positive impact on the primary earner. Moreover, household taxation clearly encourages the formation or perpetuation of one earner families, as the tax benefit of household taxation is greatest when one spouse earns nothing, and because the primary earner's return to labor is boosted, while the secondary's is reduced.

Optional individual filing does not provide a solution to the incentives created by household taxation. While individual filing would address the issue of raised marginal tax rates for secondary earners, it would not be a rational choice, because it would increase the total tax paid by the household (in the cases where household taxation does not reduce tax rate, it also does not discourage labor supply). Hence this option would not be chosen by income-maximizing couples. It is therefore relevant only for specific cases, such as couples that have difficulties sharing resources. Hence allowing joint filing does not effectively address the detrimental impact of household taxation on the labor supply of secondary earners. Similarly, cohabiting without marriage is not a tax-effective choice. While it may be chosen for nontax reasons, it would not be chosen by couples as a solution to higher marginal tax rates.

The unit of assessment for taxes, other charges, or entitlement to benefits goes beyond the issue of joint versus household taxation. Even where the main tax schedule is applied at the individual level, countries often provide family-based provisions, such as allowances in the tax system, household-level social security, or welfare.

- *Tax provisions.* In many countries, governments rely on the family's income to target tax credits, allowances, and deductions. The clearest example is a *dependent spouse tax allowance*, which is designed to support one-earner families. This allowance is withdrawn when the secondary earner becomes employed, hence reducing their incentives to work. *Child tax allowances* are also typically targeted at households. In individual systems this is often achieved by allowing only one spouse to use them, and with the rational choice being the primary earner, such allowances raise marginal tax rates for secondary earners compared to singles with children. *Child tax credits* avoid the problem of being more valuable to the primary earner. But if their level depends on the household's total income, they again raise the secondary earner's tax payment compared to being single.
- *Social security contributions.* Spouses make contributions to the social security system at the individual level (by paying a percent of their individual income), whereas certain benefits (notably health insurance, sometimes also old age insurance through free survivor coverage) are often provided at the family level. Thus, for secondary earners, paying social security contributions provides more limited additional entitlements,¹¹ reducing the incentives for taking up formal employment.
- *Welfare benefits.* Social welfare is typically targeted at the household level. This clearly affects only households where both spouses earn little, but it still may discourage the secondary earner if the primary earner used up most or all allowable income before steep withdrawal rates set in.
- *Fringe benefits.* Employment related benefits, even in case of private employers, may also be given at the family level, such as health insurance and pension coverage with free or subsidized survivor benefits. This becomes a tax policy issue where such fringe benefits are tax favored over standard compensation.

Box 1. The Impact of Tax on Household Formation (Continued)

Marriage

Individual taxation is neutral with regards to marriage, but household taxation may encourage or discourage marriage (or any other bond recognized for tax purposes). Typically, household taxation will be favorable for couples with relatively unequal incomes, because under progressive schedules, the tax saving for the higher earner overcompensates for the additional tax on the secondary earner, as shown earlier. In systems where thresholds for couples are twice those of singles, marriage will always either leave the total tax bill unchanged (if both partners had the same marginal tax rate) or reduce it. In systems where thresholds are increased by less than double, there can be tax increases (i.e., marriage penalties) and these are especially likely where both spouses earn the same or high incomes.

Fertility

Tax systems that provide greater incentives for female labor supply can potentially deter working parents from having children, but the trade-off between employment and childbearing can be mitigated. The empirical evidence on the relationship between female employment and birth rates is ambiguous: *Over time* advanced economies display a negative relationship between female employment and fertility.¹ *Across countries*, however, this correlation has become positive (e.g., Manuelli and Seshadri 2009).

¹¹ The entitlements gained through the spouse are less certain though and can create dependencies if they are lost in case of divorce.

Box 1. The Impact of Tax on Household Formation (Concluded)

One potential interpretation of this is that reforms that only increase work incentives—such as individualizing the income tax—might, by themselves, reduce fertility. Some countries with aging populations have introduced policies to induce women to leave the labor force, such as child-related cash transfers to households (e.g., Italy). This type of policies increases the demand for children without changing the relative prices of parental and bought-in childcare, thereby reducing female labor supply. Reforms that boost female labor supply can, however, also be combined with reforms that ease childcare provision, for example through the provision of public childcare or tax expenditures that reduce the cost of private childcare. Apps and Rees (2004), for example, find that countries with individual taxation, and that support childcare with facilities rather than payments to parents, are marked by both higher female labor supply and higher fertility rates.

¹ A large body of literature has assessed how the tax and transfer system tied to children affects fertility rates. See Gauthier (2007) for an extensive survey.

Empirical Findings

In practice, tax systems are usually mixed and more complicated than the stylized example, but in most cases, they create work disincentives for secondary earners.¹² Data available for OECD members allows for an assessment of the magnitude of these tax disincentives at both the extensive and intensive margins.

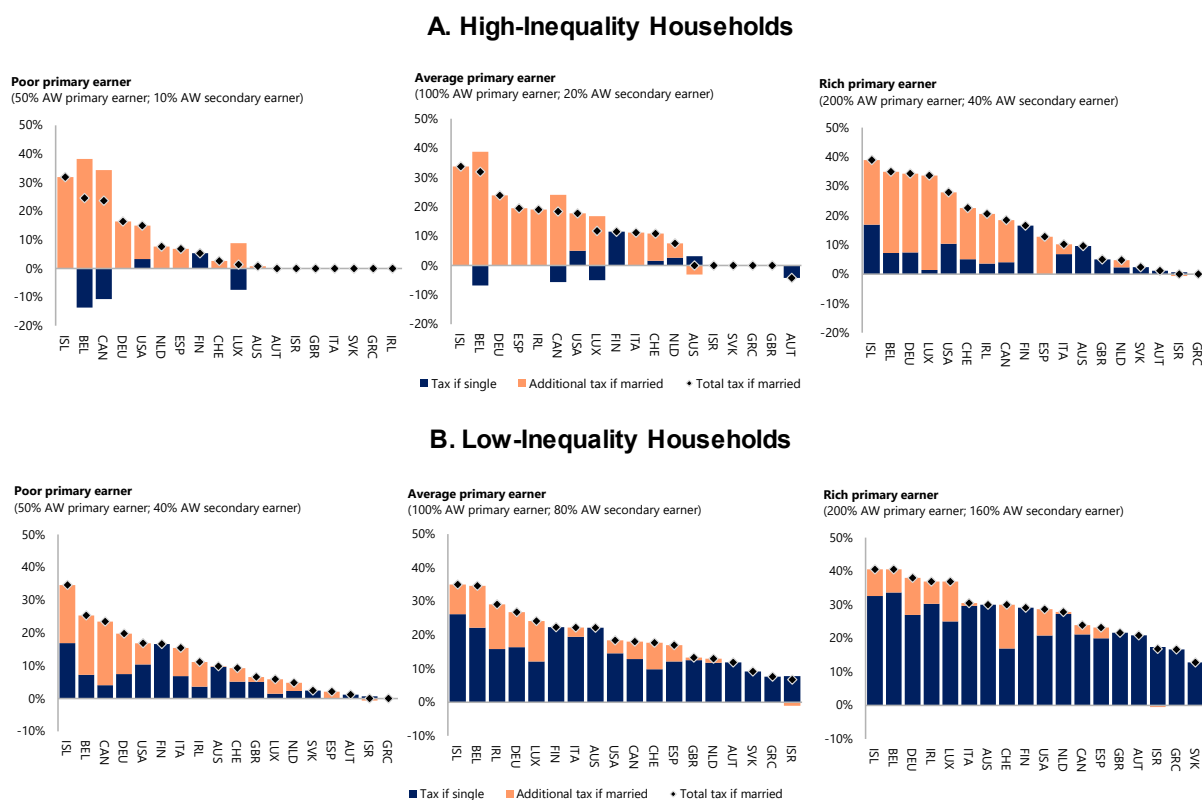
- *Tax disincentives at the extensive margin.* Figure 6 illustrates the tax disincentives faced by secondary earners upon entering employment, assuming they enter full-time jobs. The dark blue bars represent the tax rates secondary earners would face if they were single (τ_i^E), while the orange bars capture the additional tax faced when they are married ($\Delta\tau_{ps}^E$), which is calculated as follows:

$$\Delta\tau_{p,s}^E = \frac{T_{p,s} - T_{p,0}}{Y_s} - \frac{T_i}{Y_i} = \frac{T_{p,s} - T_{p,0}}{Y_s} - \tau_i^E$$

Y denotes the households' gross income, and T its tax liabilities net of deductions, credits, and allowances. The subscripts (p, s) represent the incomes in a couple's household, with p indicating the primary and s the secondary earner's income. The single subscript i denotes a single individual-household with income i . The superscript E simply denotes tax disincentives at the extensive margin. The first term captures the secondary earners marginal tax rate upon becoming employed in a job that pays s : the additional tax she must pay as a percent of the additional income she brings to the household. Panel A focuses on cases of high inequality among spouses, and Panel B on households with low inequality. In most countries, taxes at the extensive margin are higher for secondary earners than for singles, reflecting a host of country specific rules, including full household taxation or family-based tax allowances or credits. The charts indicate that the additional tax burden for married secondary earners is higher among poorer countries and households with high within household inequality in labor earnings.

¹² The charts referenced in the discussion (Figures 5 and 6) focus on households with no children. The tax-induced work disincentives for secondary earners should be viewed as lower bounds, as they are generally stronger in the presence of children.

Figure 6. Tax Rates Faced by Secondary Earners Upon Entering Employment, No Children, 2018



Sources: Authors' calculations based on OECD TaxBEN 2.3. The country sample includes Australia, Austria, Belgium, Canada, Germany, Ireland, Greece, Slovakia, Iceland, Italy, United Kingdom, Israel, Luxemburg, Switzerland, Finland, Spain, Netherlands, and United States.

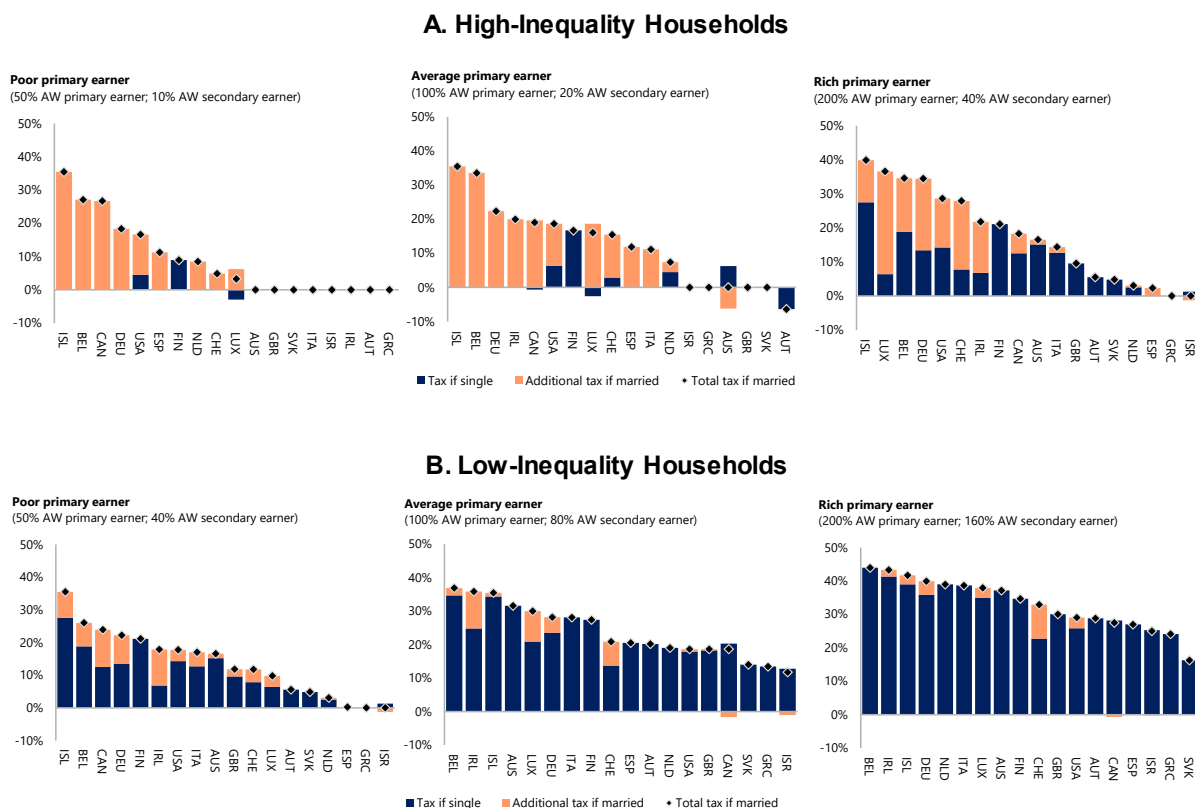
AW = average wage at the country level.

- Tax disincentives at the intensive margin.** Figure 7 shows in orange the additional tax rate faced by married-secondary earners moving from part-time to full-time employment ($\Delta\tau_{p,s}^I$), relative to the blue bars, which capture the tax increase they would face if they were single ($\Delta\tau_i^I$).

$$\Delta\tau_{p,s}^I = \frac{T_{p,s}^F - T_{p,s}^P}{Y_{p,s}^F - Y_{p,s}^P} - \frac{T_i^F - T_i^P}{Y_i^F - Y_i^P} = \frac{T_{p,s}^F - T_{p,s}^P}{Y_{p,s}^F - Y_{p,s}^P} - \Delta\tau_i^I$$

The variables follow the same notation explained above. The calculations assume that the primary earner works full time. However, super-scripts F and P denote households in which the secondary earner works, respectively, full-time, and part-time. The superscript I denotes tax disincentives at the intensive margin. At the intensive margin, tax rates tend to be higher than for singles, if income inequality among spouses is high (Panel A). With low within household inequality (Panel B), it is less common for tax rates to be higher than for singles, but it occurs in countries with joint taxation (e.g., Ireland, Germany, Luxemburg, Switzerland).

Figure 7. Average Tax Rate Increase Faced by Secondary Earner Moving from Partial to Full-Time Employment, No Children, 2018

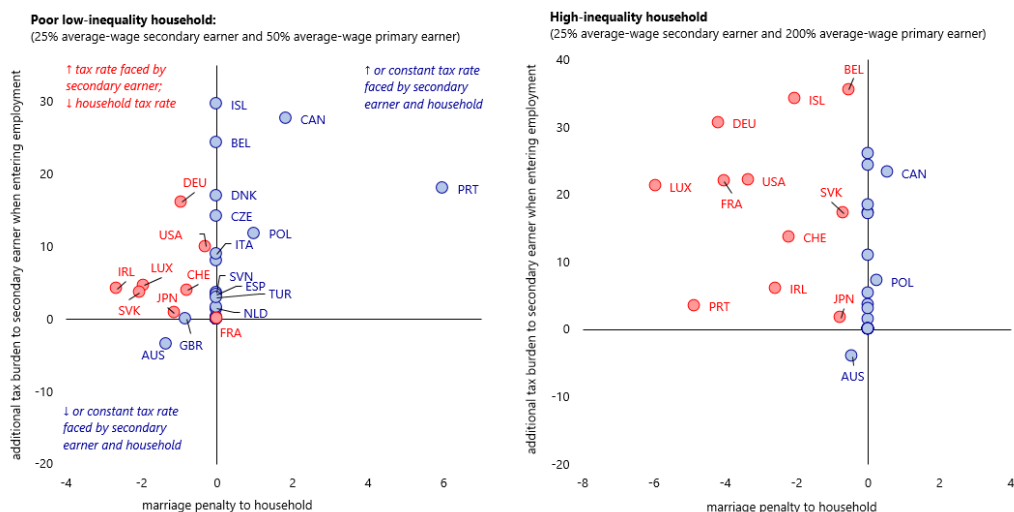


Sources: Authors' calculations based on OECD TaxBEN 2.3. The country sample includes Australia, Austria, Belgium, Canada, Germany, Ireland, Greece, Slovakia, Iceland, Italy, United Kingdom, Israel, Luxembourg, Switzerland, Finland, Spain, Netherlands, and United States.

AW = average wage at the country level.

Joint taxation tends to be equally or more attractive than separate filing at the household level, creating a strong incentive to file jointly, even if it raises the secondary earner's marginal tax rate. As shown in Figure 8, it is quite common (red dots) that lower household taxation is combined with higher secondary earner taxation, with particularly large effect when spouses' earnings are unequal (see right hand panel).

Figure 8. Additional Tax for Secondary Earner versus Marriage Penalty (percentage point difference)



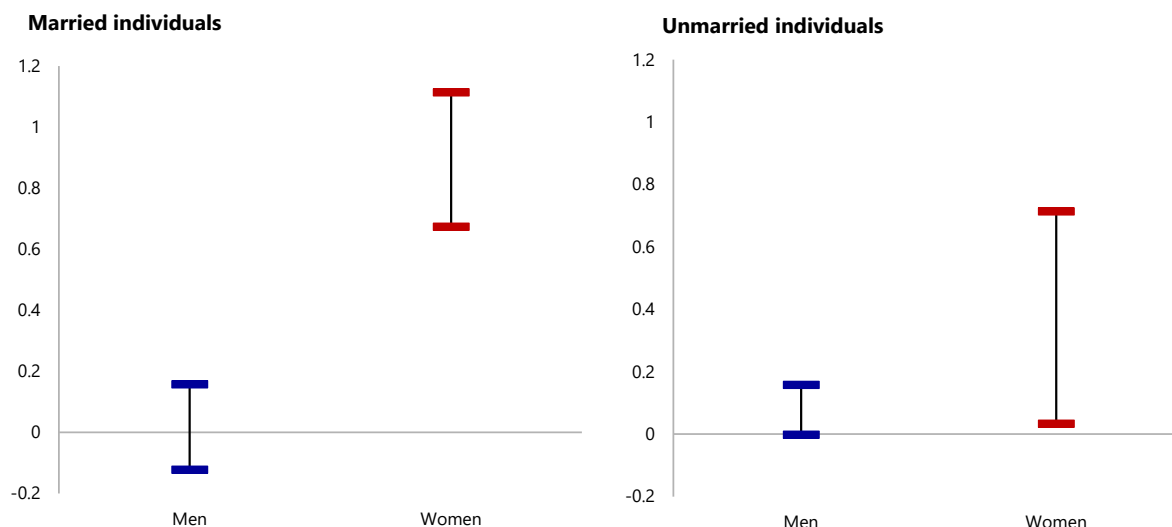
Sources: Authors' calculations based on OECD TaxBEN 2.3.

A negative marriage penalty implies tax-saving. Hence, dots in the upper-left quadrant (in red) represent countries where marriage entails a trade-off: the overall tax liability of the household falls, but the tax rate faced by the secondary earner upon entering employment increases. These countries tend to have family-based taxation or the option for joint-filing. The blue dots represent countries in which marriage increases the tax rate faced by the secondary earner, without tax savings to the household, or even tax increases.

Because secondary earners tend to be female, household-based systems are implicitly biased against women discouraging their labor supply. It is not an explicit bias, because a female primary earner benefits as much as a male primary earner, but it is implicit, given the ample statistical evidence of women's wage gaps, which means that they are far more likely to be secondary earners.

The evidence in the empirical literature suggests that the labor supply of married women is particularly elastic, implying that these higher tax rates on secondary earners have an especially strong impact. Evers et. al (2008) provide a meta-analysis, which summarizes the ample evidence that married women are indeed more responsive to changes in net-of-tax wage rates than men. This might reflect a greater propensity to take on a larger share of home duties (Aguar and Hurst, 2007; Blau and Kahn, 2007; and Alesina et. al, 2011).

Figure 9. Wage Elasticities of Men and Women at the Intensive Margin

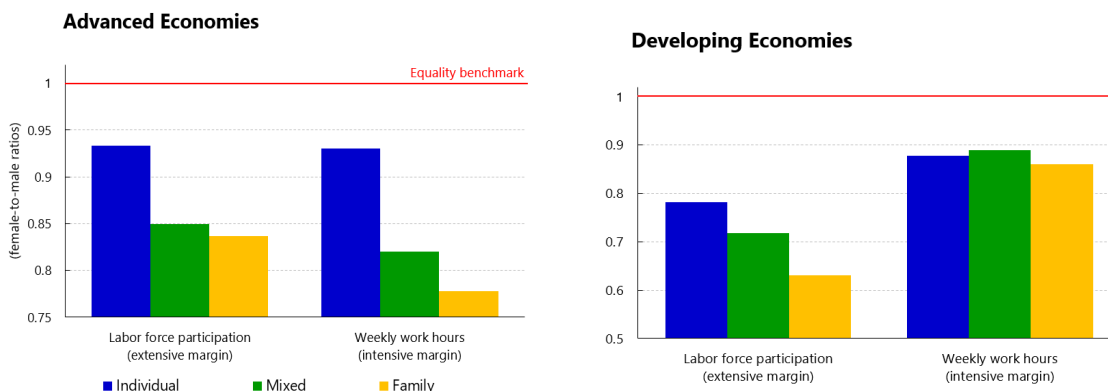


Source: Evers et. al (2008) and authors' calculations. The markers represent deviations of ± 2 standard errors of the baseline elasticity. The deviation estimates correspond to the refereed journal results for a linear specification, and the baseline elasticity corresponds to the average estimate for married individuals in the US (as reported in Evers et. al 2008).

Indeed, countries with household taxation tend to have greater gender gaps within couples. Figure 10 shows how gender gaps at the extensive margin (the ratio of female to male employment probability within couples) and the intensive margin (the ratio of average working hours for couples in which both are employed) relate to features of the tax system. Labor force participation gender gaps are narrower in countries with individual-based tax systems, all else equal. At the intensive margin, gender gaps are also narrower in advanced countries with purely individual-based systems. For developing economies, however, there is not much difference at the intensive margin. Of course, cross-country averages mask important differences related to informality and underreporting (IZA 2014), cultural factors (Besamusca and others 2015) and the more disproportionate burden of unpaid work borne by women, compared to developed countries (Ferrant and others 2014).

Figure 10. Tax Systems and Gender Gaps Within Couples

(country average female-to-male ratios; 1 = gender equality benchmark)



Sources: Authors' calculations based on data from LIS, Schechl (2020, 2021), Thomas and O'Reilly (2016), IDBF, Ernest and Young, and IRS.

Notes: Individual= tax system with individual tax filing and no family-based tax provisions (credits, allowances, and deductions). Family= tax system with (optional) joint filing *and* family-based tax provisions. Mixed= tax system with either (optional) joint filing or family-based tax provisions. See Table 1 in the Annex for more details.

For advanced economies, it is possible to conduct econometric analysis to gauge the importance of the tax system in explaining labor supply gender gaps. In this way, our analysis differs from what is commonly done in the economic literature, which is to estimate labor supply elasticities by gender and marital status (see Bick and others (2018), for example). Gender gaps in labor supply are constructed using the latest household and individual level data from LIS, covering 22 economies. For each country, the household survey of 2017 (or earlier) is used.¹³ The analysis focuses only on married individuals, for whom the labor supply choice of the secondary earner is relevant.

- The extensive margin gender gap* is computed as the difference in the labor force participation rate of women relative to men, such that a negative (positive) value indicates that women are less likely than men to enter the labor force. The participation rate differential ($l_{pskt}^f - l_{pskt}^m$) is computed for 400 household types per country-year (k, t), where (p, s) represents, respectively, the primary and secondary earners' income brackets. Each country-year contains 20 income brackets, ranging from (0-10 percent) of the average wage to 200 percent of the average wage or more. The set of household types is given by all the possible combinations of income brackets between spouses. In other words, l_{pskt}^f (l_{pskt}^m) is the female (male) labor force participation rate in country-year (k, t), for households for which the primary and secondary earner are in the p and s income brackets.¹⁴ The relevant tax rate in this case is $\Delta\tau_{ps}^E$. Other controls that help explain the labor supply gender gap include the hourly wage rates of the primary and secondary earner, w_s and w_p respectively, a dummy c_{ps} , which takes the value of one if the couple has children, and country-year fixed effects (μ_{kt}). Country-year fixed effects interacted with a child-dummy are

¹³ The LIS country-year surveys included in the estimation are Australia 2014, Austria 2016, Belgium 2017, Canada 2017, Czechia 2016, Estonia 2016, Finland 2016, Germany 2016, Greece 2016, Hungary 2015, Iceland 2010, Ireland 2017, Israel 2017, Italy 2016, Lithuania 2017, Luxemburg 2013, Netherlands 2013, Slovakia 2017, Spain 2016, Switzerland 2017, United States 2017, United Kingdom 2017.

¹⁴ Zero income individuals are included in the calculation, as they represent people who are not employed or out of the labor force.

also included to capture institutional arrangements, such as public provision of childcare, to support families with children. The following equation, which includes country and year fixed effects, is estimated:¹⁵

$$l_{pskt}^f - l_{pskt}^m = \beta_0 + \beta_1 \Delta \tau_{pskt}^E + \beta_2 w_{skt} + \beta_3 w_{pkt} + \beta_4 c_{pskt} + \mu_{kt} + \mu_{kt} c_{pskt} + \varepsilon_{pskt}^E$$

- *The intensive margin gender gap* is computed as the log difference in the average number of hours worked by women relative to men ($h_{pskt}^f - h_{pskt}^m$). Again, the differential is computed for 400 household types based on the incomes of the primary and secondary earner per country-year, as explained above. However, the calculations are conducted only for couples for which both partners work, since the intensive margin decision to increase work hours must be conditional on being employed. The equation below is estimated, and the relevant tax rate is $\Delta \tau_{p,s}^F$.

$$h_{pskt}^f - h_{pskt}^m = \alpha_0 + \alpha_1 \Delta \tau_{pskt}^I + \alpha_2 w_{skt} + \alpha_3 w_{pkt} + \alpha_4 c_{pskt} + \theta_{kt} + \theta_{kt} c_{pskt} + \varepsilon_{pskt}^I$$

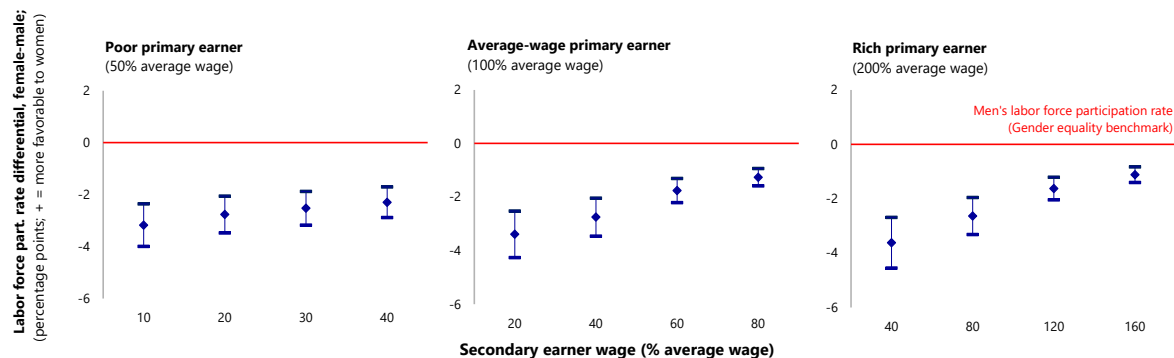
The empirical results suggest that the additional tax burdens faced by secondary earners in non-individualized, progressive systems, help explain labor supply gender gaps. The cross-country average tax increase at the extensive margin ranges between 5 and 18, depending on the primary and secondary earner's incomes. When joining the labor force, the tax increase secondary earners face relative to singles is associated with a reduction in women's labor participation rate relative to men's that ranges between 1 and 3.6 percentage points (Figure 11.A). Tax disincentives play a larger role among lower income families and spouses with high income/ability disparities and, within this group, taxation accounts for 10 to 50 percent of the observed labor force rate differential between women and men. At the intensive margin, cross-country average tax increases are between 2 and 16 percentage points higher than for singles, leading to a shortfall of 2 to 20 percent in the number of hours women work relative to men (Figure 11.B). When considering moving from part-time to full-time employment, tax disincentives help explain between 20 and over 90 percent of the observed gender gap in hours worked among lower income families and families with high within-household inequality.¹⁶

¹⁵ See the regression results and some robustness checks in the annex. The robustness checks focus on testing for non-linearities of tax disincentives along the income distribution of both spouses.

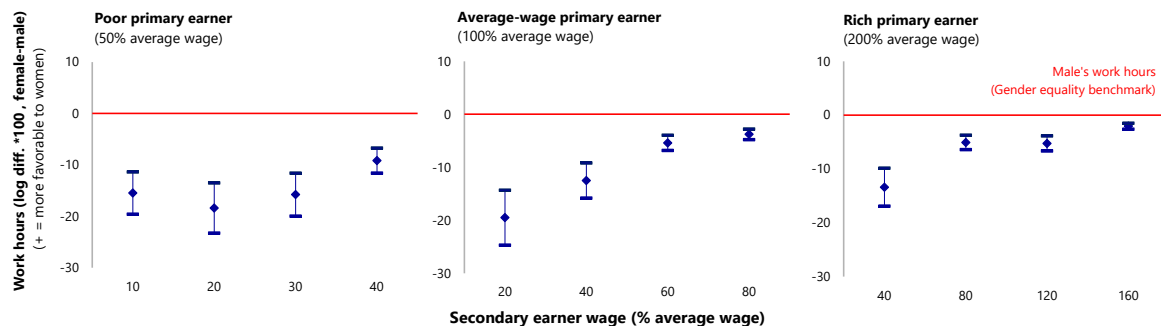
¹⁶ Since the intensive margin regression may be subject to selection bias, a Heckman selection model is also estimated (see the annex). The selection equation in this model assumes that the observed gender differential in work hours, as well as spouses' wage rates, in a given household-type and a given country-year, depend on the female and male labor force participations rates observed for such household-type and country-year. The results of the selection model are qualitatively consistent with the baseline regression. The coefficient on tax disincentives is $\frac{3}{4}$ the size of the one in the baseline specification, but the estimated effects remain economically and statistically significant.

Figure 11. Labor Supply Gender Gaps: Implications of the Personal Income Tax

A. Extensive Margin: Gender gap in labor force participation rates, associated with the average tax rate increase faced by secondary earners upon entering employment (relative to singles)



B. Intensive Margin: Gender gap in work hours, associated with the average tax rate increase faced by secondary earners moving from part-time to full-time employment (relative to singles)



Source: Source: LIS, TaxBEN 2.3, and authors' estimates.

The diamonds represent point estimates of the predicted value implied by the cross-country average tax disincentive of each household type, where the latter is determined by the income level of the primary and secondary earner. The ranges represent the 95 percent confidence interval.

Policy Options

The most obvious tax policy choice countries can take to support female labor supply is to move toward individual taxation. In countries with full household taxation, this means a move to an individualized system. It is insufficient to allow optional separate filing, because under most circumstances it would not be rational for households to choose this option, and hence the negative effects of joint taxation would remain. In countries with only some family-based elements, such as child allowances, minor adjustments, such as replacing a child allowance (which is worth more to the primary earner) with a flat child tax credit will strengthen married women and mothers' incentives to work. Moving to individual taxation also achieves equal treatment across diverse household types, irrespective of whether they are married.

Moving to individual taxation comes at a cost as it raises many households' average tax rates, including those of poor one-earner households, but there are possible remedies. Earned-income tax-credits, for example, can

address poverty, and can be designed in a way that avoids or minimizes negative labor supply effects.¹⁷ They can, for example, be conditional on or rising in hours worked before reaching the threshold for withdrawal. For a proposal on how one could protect the subsistence level of couples while minimizing distortions from joint taxation, see Perry, Klemm, and Hebous (2019). Finally, given that the move to individual taxation would by itself raise revenues, a revenue-neutral reform could include reduction in tax rates, which would further strengthen the positive labor supply impact for secondary earners and mitigate the negative impact for primary earners. An example of a country that moved from household to individual taxation is the United Kingdom, where this occurred in 1990.¹⁸

While reforms toward a more individualized system would only support married women, measures that increase progressivity by reducing the net marginal tax rate at the lower end of the distribution, would support female labor supply regardless of marital or family status. The reason is that females tend to be over-represented at the bottom of the distribution. Policies such as earned-income tax-credits and childcare tax credits lift the poor and raise female labor force participation, including by encouraging single poor women and lone mothers to join the labor force or work more hours.

Tax Base

The definition of the tax base is an important factor in labor supply and family decisions. It determines potential savings from unpaid work at the household level, depending on the tax treatment of business-related expenses, notably childcare. The reason is that work performed by the spouse who stays at home (in most cases the wife) is untaxed. If she decides to enter the labor force, however, the family must pay for the services she provided at home with “after-tax” money. In other words, by performing these services herself, the stay-at-home spouse obtains a tax saving for the family. As such, demand for unpaid work increases with marriage, and rises dramatically with children. Incidentally, gender gaps in the labor market, in terms of wage rates, labor force participation and work hours, also tend to emerge when women become mothers. At that point in their lives, women often choose to exit the labor force (temporarily or permanently) or to take on part-time employment, with the tax treatment of childcare expenses (and other work-related expenses) playing a pivotal role in their decision.

Theoretically, work-related expenses, including childcare, should receive a lenient tax treatment. According to the theory of efficient commodity-taxation, if the income tax system is nonlinear (and set optimally) and agents’ preferences across leisure and consumption are not separable, then commodity taxes and subsidies should be used to encourage the consumption of goods and services that are complements to the labor supply (Atkinson and Stiglitz, 1976). Based on this theorem, it can be argued that childcare and other work-related expenses, which are essential to join the labor force, should be subsidized or receive a lenient tax treatment (Crawford, Keen, and Smith, 2010 and Blomquist, Christiansen, and Micheletto, 2010). Consideration could also be given to measures that reward essential unpaid work, which could help reduce gender income gaps. If paid unconditionally, such policies may reduce labor supply incentives. But if they are linked to incomes, or contributions paid before qualification for such benefits, these policies may induce young women to invest in skills and join the labor force, as they anticipate receiving social security benefits or pension contributions, for example, if they have to stop working to care for a child, elderly or sick family member.

¹⁷ See, for example, Himmelweit’s (2002) discussion of the Working Families Tax Credit in the United Kingdom.

¹⁸ Since then, incomes have been calculated independently, though until 2000, there was a married-couples allowance, later grandfathered only for elder couples (Seely, 2021).

Work disincentives related to childcare costs can be mitigated in different ways, with refundable childcare tax credits proving particularly powerful in supporting low-income parents. Domeij and Klein (2013) show that the most efficient policy tool is to make childcare expenses *tax deductible*. Intuitively, if childcare is not tax deductible (or subsidized), and marginal tax rates do not depend on the number of children, then the labor supply decisions of working parents are distorted: all else equal, working parents would face different lower net wage rates compared to non-parents, inducing some of them to sub-optimally exit the labor force or work fewer hours.¹⁹ But deductibility has the disadvantage of providing little support to low-income families (if they pay low tax rates) or none at all (if they do not pay tax before such deduction). Childcare *tax credits* overcome this problem, by providing full-value tax benefits to individuals in low-income brackets. And if they are *refundable*, tax credits can even support individuals who are not liable to pay tax. While beyond the scope of this paper, there are also many equivalent nontax measures that could be introduced, such as subsidized or free provision of childcare services.

Explicit Differentiation in Tax Policy

Explicit Differentiation in Tax Codes

As noted, explicit forms of gender differentiation through specific provisions of the law or regulations that identify and treat men and women differently are much rarer than implicit biases. There are, however, many historical examples of such explicit differentiation, and there are also some examples in today's tax systems.

When explicit gender differentiation exists, it is most commonly found in labor income taxation. As discussed above, tax codes often have elements of family or household-based taxation with the attendant implicit biases. However, biases can be explicit, when there is outright different treatment of husbands/wives, or when there is reference to a "head of household" and that head is determined by some other laws to be the man under most circumstances.

Explicit gender bias in the tax code may take several different forms. It could be found in the allocation of income, provision of exemptions, deductions, allowances, or credits, as well as in the setting of tax rates, thresholds, or the responsibility for filing and paying the tax (Stotsky 1997). The following provides an overview of examples encountered currently or historically. They are drawn from European Commission (1984), Bettio (2009), Williams (2019), Spencer (1986), Grown and Valodia (2010), with current information from mostly from 2021 IBFD tax guides, unless otherwise noted.

Tax free allowances were differentiated by gender, with both examples of higher and lower allowances for women. The Netherlands, for example, used to grant a higher tax-free allowance to a married man than to a married woman until 1984 (European Commission 1984). In India, however, women had higher basic exemptions than men prior to tax year 2012/13, when they were aligned. Similarly, in Pakistan, the basic exemption threshold for working women was higher than for working men until 2010 (Williams 2019).

Some countries provided different specific tax allowances or credits by gender, which may again either favor or disfavor women. Until 1993, the United Kingdom had a "married man's allowance" (almost 1.6 times a single person's allowance). This was later replaced by a transferable married couple's allowance, and then abolished

¹⁹ Opponents, however, argue that, while deductions for business-related expenses are non-controversial, personal expenses should not be deductible, because they are part of the consumption basket and should be included in the tax base (otherwise, parents would receive special treatment compared to families with no children; McCaffery, 1993).

(except for some grandfathering) (Stotsky 1997). Greece also gave the husband an extra allowance whether or not the wife had income of her own (Spencer 1986).

Some of these gender-specific tax allowances remain to this day. In Gibraltar, an additional allowance is available for women taxpayers over 60 while for men the age limit is 65. In Ukraine, special allowances are granted to single mothers. In Uzbekistan, a monthly allowance is granted to single women with many children. In Indonesia, if the wife derives income and the household opts for joint assessment, the husband is entitled to an additional allowance for his working wife on top of a spousal allowance. In Singapore, married women are entitled to additional allowance for children if they opt for separate assessment and have passed at least three GCEs (General Certificate Examinations) or have a higher education certificate (Williams 2019). In Argentina, a directors' fee has a higher threshold for taxation if the recipient of the fee is a woman (and an even higher one, if the taxpayer is transgender). This measure may also indirectly act as a tax incentive to encourage the appointment of non-male board members. In Israel, female taxpayers get an additional 0.5 credit point on top of the individual taxpayer credit point entitlement of 2.25 credits. The tax code also stipulates differential entitlements for a working father in a single-parent family as opposed to a working mother in a single-parent family in favor of the woman. Time thresholds to be eligible to avail of a tax credit for a soldier discharged from the defense forces is also different for men and women with preferential treatment for the woman. Further, a working wife separately assessed with dependent children have special differential credits. Similarly, in Spain, special additional credits are available for working mothers according to the income tax law. In Martinique, a tax credit is granted to married or single women who return to employment provided certain conditions are satisfied. In Cambodia, resident individuals who are solely occupied as housewives are eligible for a monthly tax rebate. In Tunisia there is a special allowance for the head of the household who based on jurisprudence is by default the man.

Even tax rate schedules differed across gender in some countries. For example, until 1995, South Africa levied higher taxes on "married women" than "married persons" (a woman only exceptionally qualified for the married person treatment, for example in case of widowhood), with the former taxed more and the latter less than an unmarried person.²⁰ The system thus achieved something similar to household taxation, even when married partners were taxed separately, but unlike the typical implicit bias which results from women being more often secondary earners, in this case, it is achieved through an explicitly higher tax payment imposed on married women.

Some countries provide outright tax exemptions under certain circumstances. In Equatorial Guinea, for instance, single women with more than 3 dependents under the age of 18 are exempt from the individual tax (Article 336 of Equatorial Guinea's Tax Code). In Mozambique, municipal personal tax is levied on resident individuals between 18 and 60 but, women in domestic service are exempt from it.

The responsibility for filing taxes was often explicitly the husband's. Until 2018, Greece required that even if spouses were taxed separately on the basis of their respective incomes, they nevertheless had to file a joint tax return. Despite there being individual level taxation, the husband was responsible for submitting the tax return and was the recipient of any refund or any claim for outstanding tax balances. Thus, if the wife was entitled to a refund, she had to claim it from the husband (Bettio 2009, PwC 2021). France placed the responsibility of signing the joint tax return for the couple on the husband, akin to Malaysia in the 1980s (European Commission 1984, Spencer 1986). Similarly, Ireland's tax code required that the man file and sign the joint tax return even if the wife earned the sole income in the household (Bettio 2009).

²⁰ The system was highly complex, for details see Smith (2001)

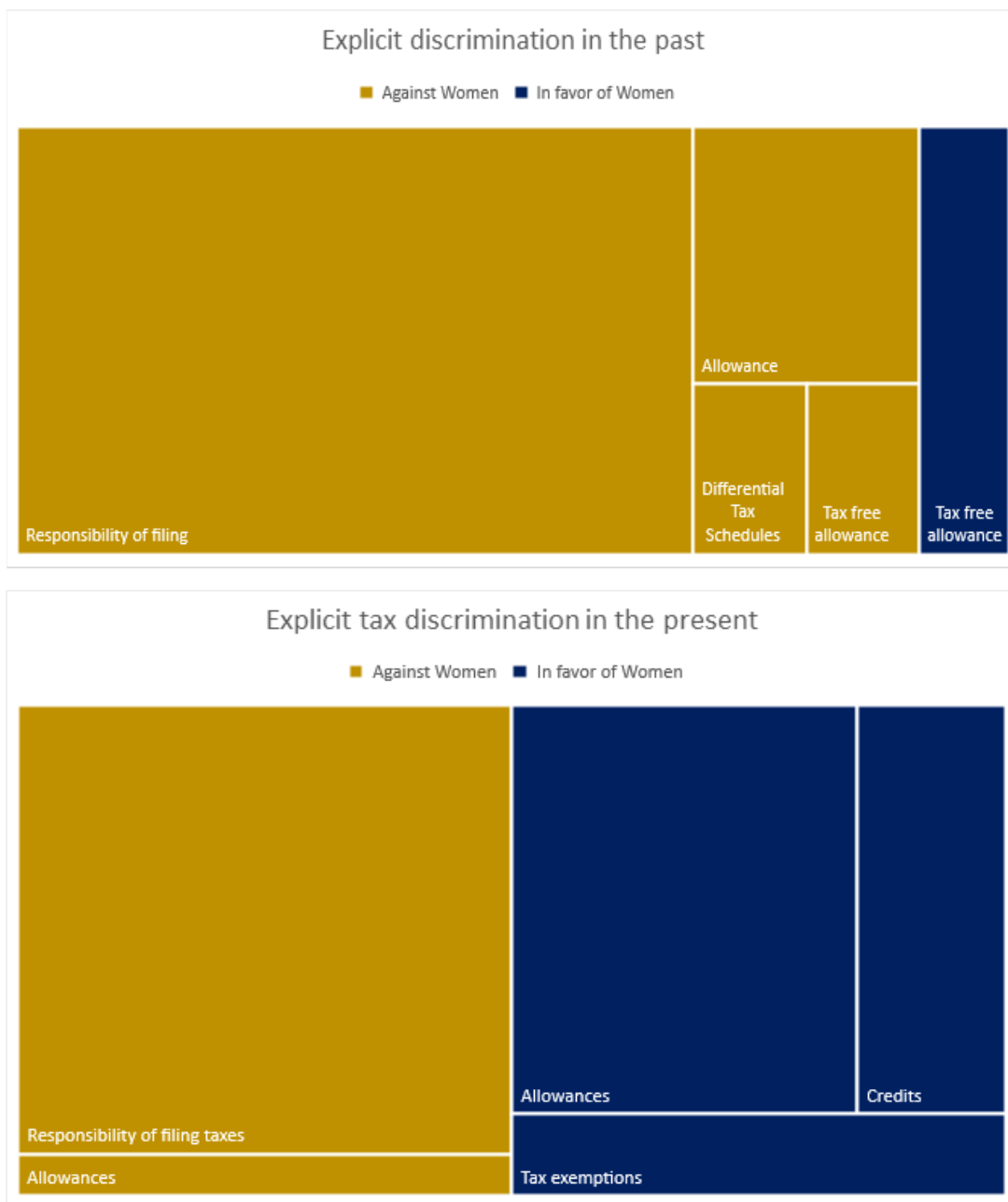
Responsibility of filing taxes remains tied to gender in some countries. In Guernsey, the husband is responsible for filing the joint return of a household and paying the tax. Jamaica also requires that joint assessment of their combined income is in the husband's name. In Kenya and in the Democratic Republic of Congo, the income of a married woman living with her husband is deemed to be the income of the husband's and the tax is assessed on the husband. In Tunisia, there is no joint taxation of spouses, but deductions for children are granted only to the head of the household who is by default the man.

Some countries assign responsibility for filing taxes to a head of household²¹ which could by law or custom be constricted to be the man or at least consider the husband as the default head of household. In the Republic of Congo and in Gabon, income is taxed on the household as a unit and according to the tax code comprises of the head of the family, *his* spouse and dependents with separate assessments being made only in exceptional cases. This is also the case in Comoros, Jersey, and Chad, but exceptions were more broadly available.

There are also examples of tax biases beyond labor taxes. In Argentina, for example, income deriving from joint property is to be considered in the husband's tax filing (Grown and Valodia 2010, Table 1.1). In India, property tax rebates are available for women in municipal corporations in states when the property is registered in the women's name.

²¹ For the scope of this paper, only those laws that were ambiguous on the gender of the "head of household" and those that clearly signified the man, are included as explicit biases. Those that specifically clarified that a head of household could be male or female, for example by using pronouns "he or she" were not counted.

Figure 12. Comparison of Explicit Differentiation in Countries' Tax Codes Over Time



Source: IMF staff compilation using European Commission (1984), IBFD (2021), PwC (2021), Bettio (2009), Williams (2019), Spencer (1986), Grown and Valodia, (2010), and websites from national authorities.

Note: This data is not an exhaustive list of all countries that have historically and today had explicit biases in the tax code but is meant to portray trends from those countries discussed in this section. The data represented in the charts start from 1984.

While explicit tax bias against women still exists, the number of such provisions has been declining, and tax provisions favoring women have proportionally risen. While there is no exhaustive database of tax laws with explicit gender biases throughout history, the examples collected are shown in a treemap both for tax biases

that existed in the past and for existing differentiation (Figure 12). As this figure reveals, while in the past most discriminatory provisions created disadvantages for women, more recently explicit differentiation against and in favor is equally common globally (though there is no balance within countries). Most remaining explicit biases against women today are found in the responsibility of filing taxes and signing them and on whom the taxes are assessed. Apart from a handful instances, most explicit biases in terms of allowances, credits, thresholds, are in favor of women. These might reflect intentions to improve female labor force participation or reduce gender income inequality—a point discussed in the following section.

Explicit Differentiation to Address Gender Inequities

Some economists have made the case for outright gender differentiation in taxation, relying on key principles of public finance theory. Two strands of *optimal taxation* literature have been used to study gender issues. One focuses on tax systems that raise revenue, minimize distortions, and redistribute (*Ramsey or Mirrlees motive*),²² and the other focuses on taxes that correct externalities associated with market failures (*Pigou motive*).²³ In both cases, arguments have been developed for an explicit differentiation in the taxation of men and women, or so-called *gender-based taxation*.

Differences in labor supply behavior across men and women, provide a potential reason for gender-based taxes on both efficiency and (horizontal) equity grounds. Ramsey (1927) argues that optimal taxes should be inversely proportional to the labor supply elasticity of taxpayers. It follows that, since the labor supply of women (especially married ones) is more elastic than men's (Pencavel, 1986; Evers and others, 2008), tax rates for women should be lower. This type of gender-based taxation addresses distortions in the intra-family bargaining process that favor the husband and induce women to pursue home duties relative to men, thus reducing horizontal gender inequality (Alesina and others, 2011 and Apps and Rees, 2011).

A gender-based tax system can mitigate the adverse effects of market failures that, implicitly or explicitly, discriminate against women. Absent radical labor market and childcare reforms that would achieve a first-best outcome, a gender-based tax system can help address gender inequities. As shown by Alesina and others (2011), if women face lower marginal tax rates than men, they will have stronger incentives to work and invest in skills, and they will likely be supported or encouraged to do so by their *male* spouse (or family members). In addition, there may be a case for introducing a gender-based tax system to correct employment and gender wage differentials arising from the market failures described below.

- (*Perceived*) *higher costs of hiring female workers*. Employers may expect women employees to be more costly than men, because they are more likely to interrupt their career for full- or part-time childcare after becoming mothers. This type of implicit bias tends to occur in sectors with high-paid jobs in which permanence in the labor force is highly valued, but it can also spread to other sectors, leading to pervasive employment and gender wage gaps. Moreover, due to *asymmetric information* about workers' intentions to become parents, women who chose not to bear children are also discriminated against. Blau and Kahn (2017) and Cremer and Roeder (2019), show that while explicit gender bias appears to be declining, wage differences across genders cannot be explained by schooling, experience, and job-type differentials alone. Waldfogel (1997) and Kleven and others (2018) show that women who have interrupted their career for childcare suffer from a wage penalty that lingers over the long-term. As shown by Cremer and Roeder

²² This strand of the literature builds on the seminal work by Ramsey (1927), which was generalized to incorporate heterogeneous agents and non-linear income taxation by Mirrlees (1971).

²³ Corrective taxation literature builds on the work of Pigou (1920).

(2019), unwarranted gender wage gaps can be addressed through a gender-based tax system, with lower marginal taxes for women.

- *Incomplete job markets* resulting from non-linearities introduced by family-based features of the tax and social security system. These non-linearities make part-time employment unattractive for both employers and employees, thereby thinning the part-time job market. For employers, part-time jobs tend to be more costly, as fringe benefits generally don't depend on hours worked. On the employee-side, part-time jobs may not be feasible when after-tax earnings are not enough to cover the fixed costs of entering employment, such as childcare. A collective action problem may also arise, because even if some families individually recognize the benefits of having one or both parents work part-time, their individual decision does not help create a market. The absence of part-time opportunities encourages the formation of one-earner households, which tend to favor male over female labor force participation, given women's higher level of readiness to engage in housework. While a gender-based tax system cannot help complete markets, lower marginal tax rates for women compared to men may encourage the formation of one-earner households with stay-at-home husbands and working wives. An increase in the number of such households would reduce aggregate gender gaps in employment and wages.
- *Myopic expectations*. Economic agents may fail to internalize the impact of their choices in a distant future, including through the perpetuation of gender biases across generations. For example, anticipating the possibility of exiting or re-entering the labor force into a low-paid job after motherhood, young women may think that becoming stay-at-home wives is the best option, which in extreme cases, may even discourage investing in education. By making choices which, in one way or another, contribute to the formation of a single-earner family, women may fail to internalize that such decisions do not serve their own interest, notably in the case of widowhood or divorce. That is, (married) women inefficiently discount too much the possibility of widowhood and divorce, and they fail to maximize their own utility. By encouraging female-labor participation, a gender-based tax system, could help offset the work disincentives to women created by myopic expectations.

There are conceptual and practical difficulties in the implementation of gender-based tax systems, however. The influential work by Alesina et. al (2011) advocating for a gender-based tax system with lower marginal rates for women, focuses on a representative husband and wife. In such a setup, the transfers system between rich and poor is irrelevant. Bastani (2013) shows that when individuals differ in their productivities and marital status, optimal taxation must weigh the effects of redistribution across households against the effects of redistribution within households, yielding outcomes in which it is not optimal to tax women less than men. Any gender-based system may be difficult to implement, because it may be perceived as unfair by homosexual couples, and difficult to apply in the case of nonbinary genders. Moreover, a system in which women face lower marginal tax rates creates avenues for tax avoidance, as families could shift income towards the spouse paying the lower rate (Stotsky, 1997 and Grown and Valodia, 2010).

Against this backdrop, while the case for gender-based taxation can be made, it seems less controversial to begin with more neutral reforms that create a more efficient and equitable tax system for women, such as reforms toward individualized and progressive tax systems. Moving from joint to individual taxation powerfully reduces marginal tax rate for women and is in line with the Ramsey taxation principle (Boskin and Sheshinski, 1983; Apps and Rees, 1999; Meier and Wrede, 2013). Individualization also eliminates the non-linearities of the tax and social security systems that make job markets incomplete. To address the market failures associated with the (perceived) higher cost of hiring female employees, the cost of paying salaries during parental leave

could be made tax (or social security) financed²⁴—although this would still not cover any administrative costs (such as from finding and training workers for coverage during absences). A more marginal reform could at least reduce payroll taxes during parental leave.

III. Capital Income, Wealth, and Inheritance

Distributional Background

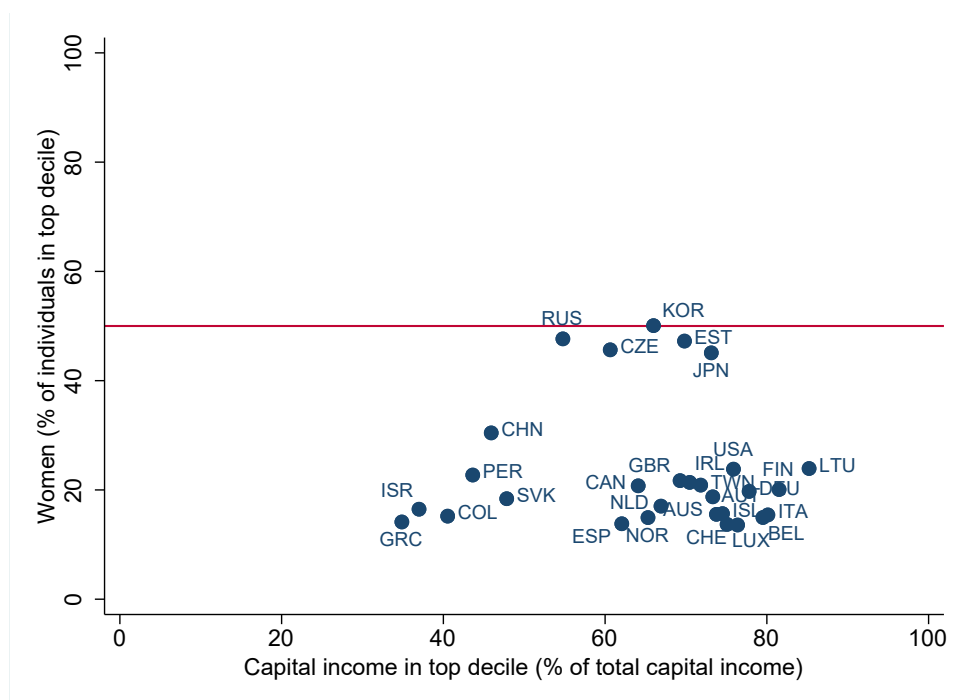
Women are strongly underrepresented at the top tail of the capital income distribution, even more acutely so than for labor income. Measuring gender concentration in capital income within households is challenging due to the frequent joint ownership of underlying assets. To overcome this, Figure 13 focuses on singles, and shows that women represent often much less than 50 percent of the individuals at the top 10 percent of the capital income distribution.²⁵ Although the presence of women at the top 10 and 1 percent of the total income distribution has approximately tripled since the 1980s to short of 30 percent today (Boschini and Roine 2020) the rise is mostly driven by improvements in the distribution of labor income. While since the first half of the 20th century²⁶ women at the top of the income distribution have had a larger share of their income coming from investment and a lower share coming from earnings compared to men, the weight of capital income for women has decreased since the 1960s in most advanced economies studied in the literature (Atkinson and others 2018, Bobilev and others 2020). This contrasts with the rising capital share of income at the top of the distribution for the whole population since the 1980s (e.g., Saez and Zucman 2016).

²⁴ According to Rossin-Slater (2017), in 47 out of 185 countries such costs are borne by employers, in the remainder it is the tax or social security system.

²⁵ To overcome the limited accuracy of gender concentration data for capital income, in addition to focusing on singles as in Figure 13, we conduct a second calculation method which defines households as female or male, depending on the gender of the household's head. Both calculations yield similar results, indicating that capital income is highly concentrated at the top of the distribution, where women are under-represented.

²⁶ For the few countries where data are available.

Figure 13. Share of Capital Income and Women in the Top Decile



Note: Covered household surveys include au14, at16, be17, ca17, cl17, cn13, co13, cz16, eg12, ee16, fi16, fr10, de16, gr16, is10, ie17, il16, it16, ci15, jp13, lt17, lu13, nl13, no13, ps17, pe16, ru17, sk13, si15, kr16, es16, ch17, tw16, uk17, us18, uy16, and vn13. Source: Authors' estimates based on LIS data.

Wealth

Notwithstanding the gradual reduction of explicitly discriminatory legal environments in most countries since the 1970s, the current wealth gender gap is substantial, well documented, and wider than that for income in most countries. In the United States, the gender wealth gap is largest between men and women who have never been married, at 71 cents on the dollar, according to recent work by the St. Louis Federal Reserve Bank (2021) based on the Survey of Consumer Finances, after conditioning on contributing factors unrelated to gender. In Europe, while household finance and consumption survey data do not seem to show a difference in unconditional average net wealth levels between genders, Schneebaum and others (2018) find a large gender gap at the top of the distribution. Labor market characteristics and participation in asset and debt categories are found to explain some differences between male and female single households, but the remaining unexplained gap in gross wealth is still as large as 45 percent in Germany and 48 percent in Greece.

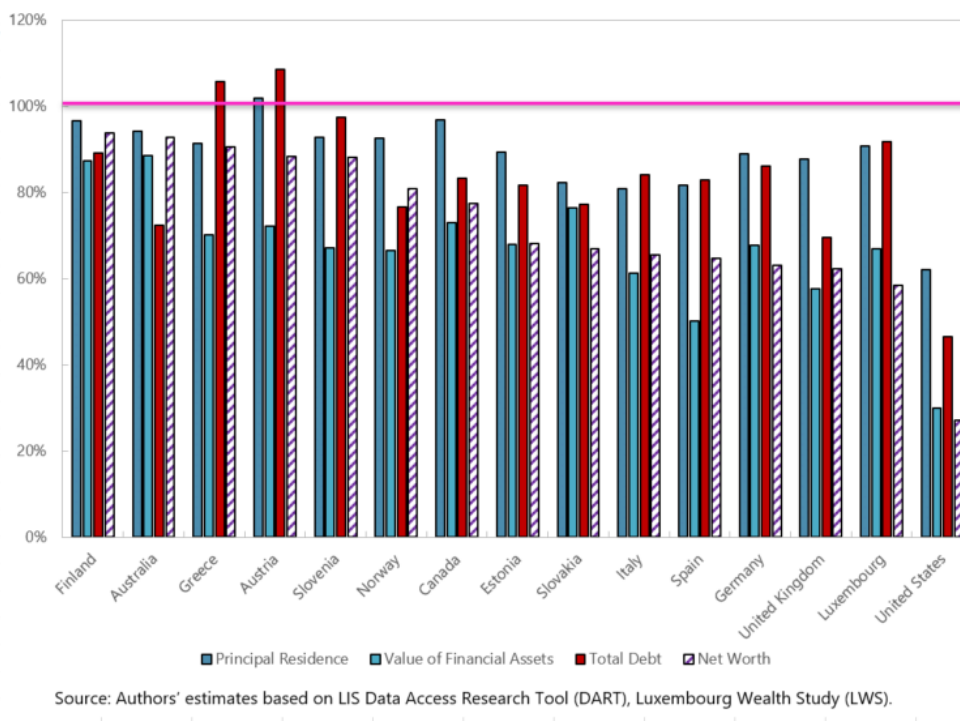
Despite scarcer data on the distribution of wealth by gender in developing countries, there are some limited survey-based studies that find similar gaps across geographical areas and various cultural settings. Deere and Doss (2006) and Deere and others (2013) report such evidence, with some variation across countries. There is some evidence that for single individuals this gap may actually be larger at the lower tail of the distribution in some lower income countries due to the higher correlation with gaps in the return to labor (e.g., Anglade and others, 2017 for Ecuador). Globally, surveys focusing at the top tail of the wealth distribution (e.g., Wealth X, 2019; Credit Suisse, 2019) suggest even in recent years women account for a small minority of the richest

individuals, representing as little as 12 percent of the world billionaire population, with only 16 percent self-made.²⁷

Furthermore, unexplained gaps in asset holdings are found across asset types. For example, with few exceptions globally (such as Malawi),²⁸ women constitute a much smaller share of all landowners, and often acquire that land via inheritance, rather than market purchases. This share is as low as 20 percent in countries such as Nigeria, Tajikistan, and Peru (FAO 2018). In low-income and emerging market economies, women are generally far less likely to own a home (IFC 2019). Even in countries such as the United States where single women are now more likely to be homeowners than single men, men's home values are 10 percent higher and appreciate 16 percent faster than those of women (Guerrero 2020). Finally, in part due to accrual consequences of the gender pay gap over women's lifetime, they tend to be financially underprepared for retirement globally. This is illustrated even in the United States, where women have median retirement savings equal to about two-thirds that of men's (Transamerica Center for Retirement Studies, 2018).

On average, for advanced economies with available household surveys, women have both lower gross wealth and net worth, despite men being more highly leveraged, as illustrated on Figure 14.

Figure 14. Net Worth of Women Relative to Men (latest available year)



²⁷ Note these percentages are most likely illustrative of the broader asymmetry, rather than objectively informative, since the definition of "self-made" billionaire is not transparent in these surveys.

²⁸ Exceptions, when they exist, are driven by households where women are the only adults, as opposed to dual man-woman adult households, as well as specifically in matrilineal communities. Kilic and others (2021) illustrate the challenges in obtaining accurate individual-level data on asset ownership from household surveys.

Tax Policy and Capital Income

The comparatively even more unequal distribution of capital income across genders interacts with the typically lower taxation of capital income (relative to a comprehensive income tax benchmark) increasing gender inequalities. The lower taxation of capital income—which, moreover, has become less progressive in many countries since at least the early 1990s (IMF 2021a)—combined with a rising and more unequal share of capital income has long raised concerns about declining overall progressivity (IMF 2017). When analyzed from a gender perspective, this additional issue arises that such differential taxation of capital income benefits disproportionately men when compared against a neutral benchmark of comprehensive income taxation.

The optimal taxation of capital versus labor income is a long-running debate and the gender perspective provides an additional argument for raising capital income taxes toward those on labor. In the debate some economists argue not to tax capital income—because doing so distorts the choice between consuming and saving. Others argue for taxing capital income along with labor income, because such comprehensive income is the most complete measure of wellbeing, because capital income includes economic rents in addition to a normal return, and because moreover, not all capital income stems from savings, but may also be due to endowments or previously untaxed income. A middle ground view is to tax capital income, but at a lower rate than labor income. This paper is not about this general debate but aims to assess the impact the gender perspective might have on these arguments. Taking into account the additional aspect that lower capital income taxation disproportionately benefits men (relative to a comprehensive income tax benchmark) would then provide an argument for greater capital income taxation than otherwise. For proponents of a consumption tax system, in which capital income should go untaxed, this would be a second-best argument.

Apart from raising tax rates, capital income taxes can also be increased by addressing loopholes so as to increase effective progressivity (with respect to total income) and implicit gender balance. In addition, corporate tax provisions such as generous loss offsets and interest payment deductions are more likely to benefit startups led by men (since they are historically less risk-averse and more likely to have highly leveraged businesses, *ceteris paribus*).²⁹ From this perspective, international agreement on an effective minimum corporate income tax that could help countries to maintain higher rates (OECD 2020a) could collaterally reduce the gap in effective income tax rates between genders, given current asymmetries in corporate ownership structures (UK WBG 2011; Gunnarsson and others 2017). Notwithstanding, it is also possible such existing market failures may be best addressed instead through non-tax instruments, such as financial and labor market regulation. In the short run, tax credits targeted at sectors particularly important for female employment can be effective in supporting labor demand for women. Examples of such measures have increased during the COVID-19 pandemic (see Tang and others 2021).

Beyond tax policy reforms just discussed, strengthened enforcement to prevent tax avoidance and evasion, particularly by high earners, can also play a complementary role in ensuring gender equality in tax compliance and effective tax burden. Multiple cross-country studies based on the World Values Survey attest to significantly greater aversion to corruption and tax evasion by women than men (e.g., Torgler and Valev 2010), suggesting men (and richer men in particular, with greater access to more sophisticated avoidance tools) are more likely to be the modal individual avoiding or evading income taxes. Although the importance of revenue administration measures is beyond the scope of this paper, it is worthwhile noting stronger enforcement capacity, as well as compliance risk management focused on larger taxpayers and high net worth individuals,

²⁹ Furthermore, given the market failure in business credit access for women on average described above, an argument could be made for the introduction of gender-based capital income taxation to partially correct for their average disadvantage in generating such income.

can play a particularly important role in ensuring already lower average effective tax rates paid by men are not even lower due to tax evasion practices that women more often tend to find morally unacceptable. In addition, taxpayer education can assist in leveling the playing field by ensuring financial literacy among female taxpayers is sufficiently high to ensure they understand all of the allowable tax deductions they can rightfully claim.

Finally, since capital income is a return on assets, taxing the underlying asset or wealth can be thought of at least in part in an economically equivalent way (in the sense that a wealth tax is equivalent to a tax on a fixed return to an underlying asset), which prompts the question of gender bias in wealth taxation. While most countries tax the return on capital through income taxes, they sometimes complement—and in rare cases substitute—them with taxes on the stock of wealth (including property taxes) or on asset transfers (such as inheritance taxes). Recent renewed calls for wealth taxation for broader progressivity reasons are not without significant trade-offs (Scheuer and Slemrod 2021).

Since wealth taxes do not adequately tax rents associated with investment returns, wealth taxes are likely to implicitly tax men less than an otherwise similar tax on the capital income flow instead. Men can be expected to earn higher rents on average: with higher average wealth, they can afford to take higher risks and obtain better financial advice, both of which would lead to higher returns (Barber and Odean 2001, Croson and Gneezy 2009). Since a general argument in favor of capital income over wealth taxes is that the richest individuals earn higher rents, the gender perspective provides additional strength to such an argument, as taxes on capital income are moreover likely to be more gender balanced than wealth taxes if men earn higher rents.

Political Economy of Taxation

Legal differences in inheritance, asset ownership or credit access rules between genders are receding, but still far from extinct. As of 2020, nearly 40 percent of all economies still limit women's property rights (World Bank 2021). Though increasingly a minority, as of 2020 23 percent of countries in the world still did not have full equality of inheritance rights between men and women. Most of these countries are in West Africa, the Middle East and Pacific Islands. Additionally, inheritances might be unequally split across genders due to cultural factors, even in the presence of equal legal treatment. For example, the payment of a dowry upon the marriage of a daughter constitutes a transfer of parental property to the men's family and thereby shifting future inheritance from the bride to the bridegroom. In some cases, longstanding custom or social norms favoring men's right to property may lead to lax enforcement by courts of statutory laws protecting gender equality (e.g., Tanzania or Bangladesh, described in Rabenhorst and Bean 2011).

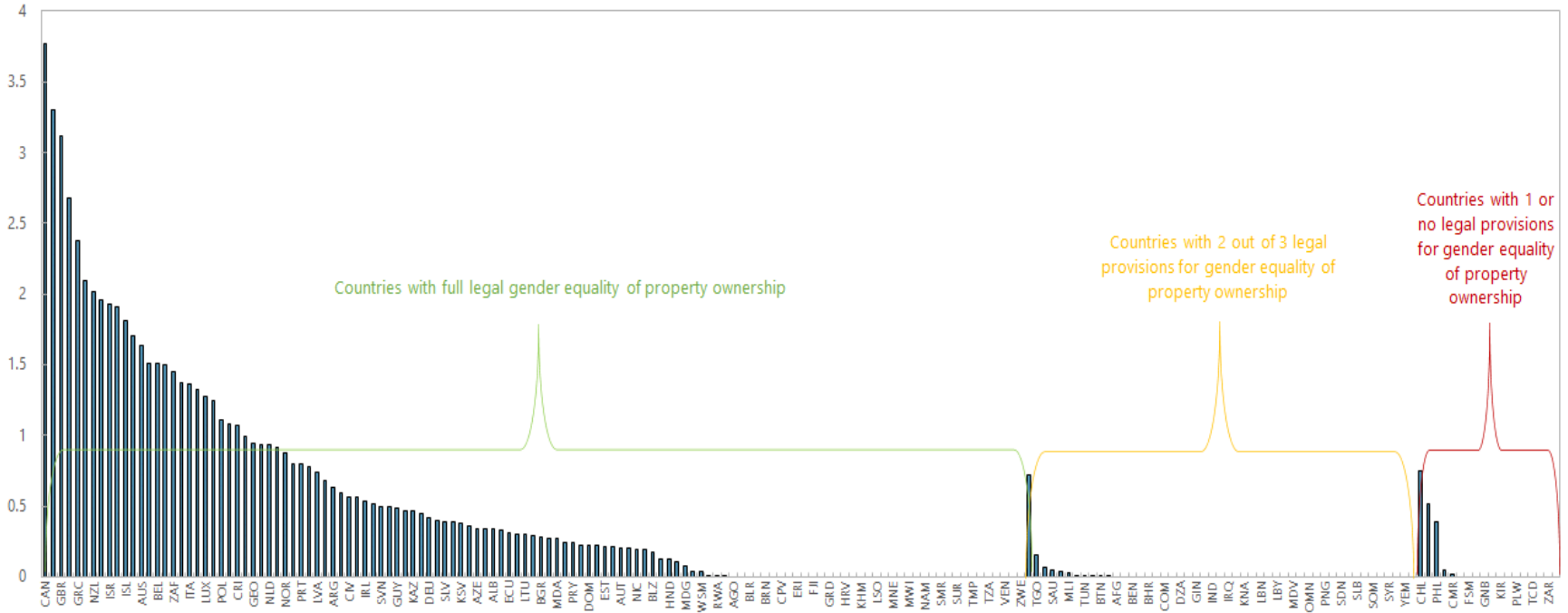
Unfavorable inheritance rights for women are found to be associated with lower inheritance tax revenues. Combining data from the World Bank's 2020 Women, Business and Law score database and the Tax Foundation (2015), we find a positive correlation between the number of legal provisions ensuring equality of inheritance rights for women and the top inheritance or estate tax rate to the lineal heir: averaging under 4 percent in countries with no equal inheritance rights, but nearly 13 percent in countries with full equal rights. This suggests that countries that still discriminate against women from an inheritance rights perspective also tend to tax inheritances received by men particularly lightly on average.

A similar pattern arises with property tax revenues, which tend to be higher where property rights for women are stronger. As shown in Figure 16, there is some correlation between the lack of robust property taxes and equal treatment of gender in terms of property rights. Namely, countries which do not provide equal asset

ownership provisions in their legal framework³⁰ (35 percent of our sample) also frequently do not tax property or other wealth at all, likely because of underlying poor institutional capacity (which explains the disproportionate representation of low-income economies among such countries). Among countries which do, there is some survey-based evidence that the incidence of property taxes may be heavier on female-headed and female-adult-only households (see the example of Ethiopia, analyzed by Komatsu and others 2021). On average, countries with weaker legal gender equality in asset ownership could collect over 0.5 percent of GDP in property tax revenues if approximating the frontier of countries with equal rights. But even among countries which do provide for legal equal property ownership, many collect very little revenues from existing property taxes (excluding inheritance and estate taxes), suggesting more could be leveraged, and in doing so the gap in effective tax rates between genders attenuated.

³⁰ As defined by the WBL's three relevant questions: (i) Do men and women have equal ownership rights to immovable property?; (ii) Does the law grant spouses equal administrative authority over assets during marriage?; and (iii) Does the law provide for the valuation of nonmonetary contributions?

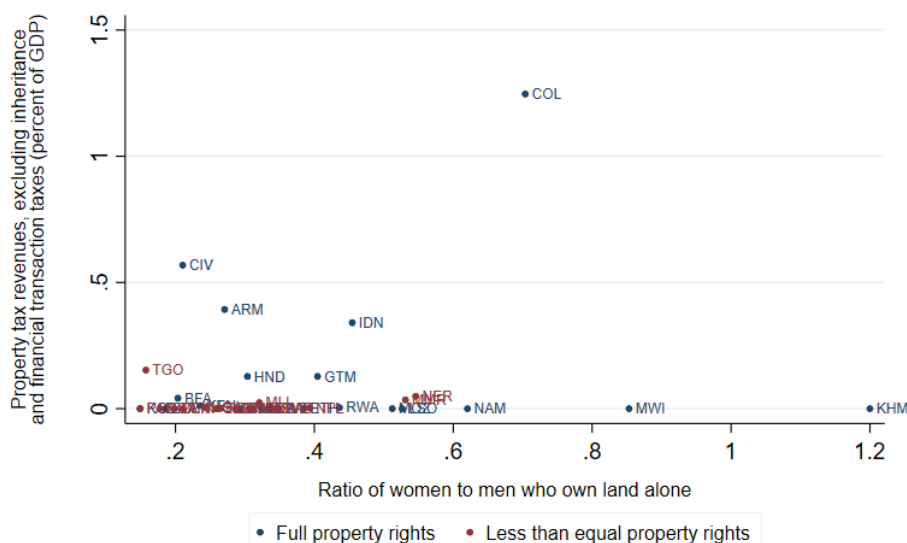
Figure 16. Property Tax Revenue and Women’s Ownership Rights (percent of GDP)



Sources: GFS 2019; OECD Global Revenues Database 2017; World Bank Women, Business and Law, 2020.

Notwithstanding, greater legal equality alone does not necessarily equate to immediate equal property ownership, nor higher tax revenues directly due to that balance, as shown in Figure 16 cross-sectionally among a sample of low-income and emerging market economies. Recurrent property taxes are typically capitalized into property prices, and therefore first-order neutral from a perspective of influencing an increase in property ownership by women. However, high property *transfer* taxes can on the contrary hamper increased property ownership by women even in countries with favorable legal environments. Some local governments in India have explicitly instituted lower stamp duty rates for property purchases by women in order to mitigate that disincentive (e.g., New Delhi and Punjab).³¹ Simultaneously, transitioning to a more gender balanced property ownership system could lead to various second order effects on the economy and fiscal externalities not accounted for in this survey. They include greater property market demand leading to higher market-clearing prices and property values in the short run (especially given evidence of a gender gap in housing returns, where women tend to buy relatively overvalued properties because of differences in the choice of initial list price and negotiated discount relative to the list price (Goldsmith-Pinkham and others 2020)—leading to potential property market bubbles in the short-run, but also higher property tax bases if values are assessed at current levels. However, lower concentration of ownership would have a dampening effect on property values in the long run. In addition, increased availability of collateral in the hands of female entrepreneurs could enable increased corporate productivity, thereby indirectly expanding the potential tax bases for corporate and personal income tax.

Figure 17. Land Ownership Gender Ratio and Property Tax Revenue in Low-Income and Emerging Market Economies



Source: World Bank Gender Statistics, latest years; Women, Business and Law, 2020; IMF staff calculations.

³¹ Measures of this sort are not a panacea, however, and can be abused for tax avoidance by having property only nominally transferred to a female in the household when the transaction happens between two men, for example. Chakraborty and others (2010) identify a related tax avoidance mechanism through which higher income men transferred capital-generating assets to women in the household to benefit from the higher personal income tax exemption allowance that existed in India prior to 2013.

IV. Consumption Taxes

VAT

A single rate VAT without exemptions would likely be gender neutral, but rate differentiation across goods could create implicit biases. With a single rate, gender differences would only occur if the share of income consumed differs permanently (over the lifetime) across genders—which could be addressed through inheritance taxes. With rate differentiation, however, gender bias is much more likely to occur, as differences in consumption patterns could lead to different average tax rates across genders of the goods and services consumed.

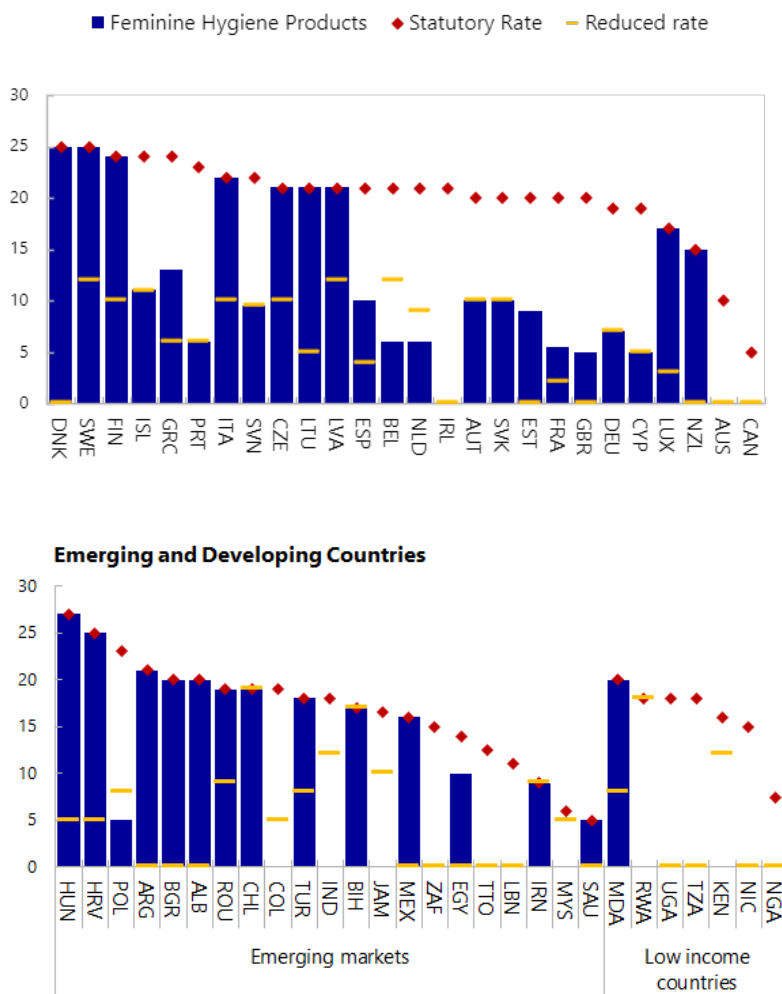
The empirical literature examining the gender-incidence of indirect taxes is scarce, and the evidence is mixed (see Grown and Valodia 2010 and Casale 2012). One of the main challenges in this strand of work is measuring expenditures by gender. Identifying whether goods are consumed by men or women is practically impossible, as spending surveys are conducted at the household level. And even if there are expenditure data at the individual level, measurement error remains. For instance, to obtain more accurate measures of spending by gender, Grown and Valodia (2010) and Casale (2012) compare spending patterns of female-like households (families with a female head or a large share of female employed members) with male-like households. While improving upon earlier studies, their method still fails to account for the fact that decisions made by female-like households may influence, and be influenced by, male members of the household. The purpose of these studies has been to identify goods for which women bear an undue tax burden, thus building the case for exemptions or zero-rating of such goods. Policy simulations in these studies have only found support for zero-rating child-apparel. The benefits of this proposal, which are likely small, should be weighed against potential distortions and complexity it creates.

The general analysis of VAT reductions and exemptions suggests that they are inferior to more targeted measures. The arguments are not new and summarized in detail in Ebrill and others (2001). They include general arguments against too much rate differentiation or many exemptions, which include the increase in tax administration and enforcement costs with the number of goods under reduced rates or exemptions. More importantly for the gender debate, rate differentiation is also unlikely to be the best instrument for addressing inequality. This is because it does not target the needy particularly well. Specifically, a rate reduction for a good consumed by poor people, will also reduce revenues from rich people. And even if poor people spend a greater proportion of their income on a good, the absolute amount spent, and hence the absolute tax benefit, is often greater for better off consumers. If the revenue forgone resulting from reducing a VAT rate is instead used in a targeted measure, such as a subsidy paid to poor people, it can achieve the same poverty reduction at a much lower budgetary cost, or it could provide greater support to the poor at the same cost. Notably, where poor people have limited access to a good, a tax reduction of a few percentage points may not resolve their difficulty in access, which could, however, be achieved through a subsidy or free provision of the good.

The taxation of feminine hygiene products has attracted much attention, but if the aim is to improve access to such goods, there are more effective ways than VAT rate cuts. As in the more general case, scarce resources could be used to provide poor women with free or highly subsidized access to such goods, rather than across-the-board cuts, which would also benefit well-off women, and will disproportionately benefit those purchasing high-cost brands or imported products. Moreover, differences in affordability of these products across countries (Rossouw and Ross 2020: Figure 1) are far greater than what tax differences can explain. Finally, there is mixed evidence of passthrough of any VAT cuts to consumer prices (Rossouw and Ross 2020, Jurga and others 2020).

Most countries do not have single-rate VAT systems, in which case feminine hygiene products—which are clearly necessities—should be taxed at the rate used for other necessities. While reduced VAT rates are not the most efficient tool to improve equity, where they are used to address general poverty, it would be coherent to use them to reduce gender inequities, as well. As shown in Figure 18, practice differs across countries. Most advanced economies tax such goods below the main rate, but there are still exceptions. Emerging markets are more likely to tax at the standard rate. There are few observations in our data for developing economies, but among them zero-rating seems most common. While the logic of treating feminine hygiene products like other necessities is clear, there are nevertheless critical voices regarding the expansion of reduced rates. De la Feria and Walpole (2020), for instance argue that given the ease with which one can argue about the relative fairness of comparable goods, reduced rates tend to proliferate. They propose, instead, base-broadening reforms (bringing more goods into the main rate), with simultaneous measures to protect lower-income households.

Figure 18. VAT on Feminine Hygiene Products and Other Essential Goods



Source: Eurostat, IFBD, Statista, and media reports.

Notes: Where multiple reduced rates exist, the one for food/necessities is shown. Where VAT does not exist, the sales tax is shown. For countries with regionally varying rates, only the federal or main rate is shown.

When VAT is charged on childcare provisions, similar issues arise as in the discussion of the treatment of such services in determining the tax base for the labor income tax. When childcare services are not purchased as a pure consumption good, but to enable access to the labor market, they represent a cost of working and should face lenient treatment as argued above. Where such services are subsidized or income tax credits are provided, VAT does not pose an additional problem, and the subsidy or credit should simply be high enough to achieve the desired cost to those purchasing such service. As a second-best option, where no such subsidies or credits are in place, VAT exemption or zero-rating of such services can be considered. The justification would be that self-provided childcare—which is the obvious alternative to purchased care—is also not subject to VAT, so that VAT adds an additional hurdle to taking up employment, again an argument that is similar to the one used for income tax.

Excises

As in the case of differentiated VAT rates, excises can entail implicit bias as a result of differences in consumption patterns across genders. The analytically simplest case is an excise that is not addressing an externality but is purely imposed to raise revenue. In that case, any difference in consumption patterns across genders would constitute an implicit gender bias. In case of goods only or predominantly used by one gender (e.g., female hygiene products), the bias is arguably almost explicit. Such implicit excises can be avoided by refraining from using excises that do not address externalities. In any case, when the aim is raising revenue rather than externalities, broad-based consumption taxes are preferable to excises on specific goods or services.

In case of goods or services with externalities, gender bias can occur if the excise does not fully internalize them. In the case of an excise that matches the externality (Pigou tax), so that consumers bear the full true cost of good or service, there is no gender bias, even if consumption patterns differ across genders. If, however, the excise is set too low (or even at zero), then it is similar to a subsidy, because the true cost including externalities is not borne by consumers. If, however, the excise exceeds the externality, then the excessive part is effectively a tax that can entail implicit bias as discussed in the previous paragraph.

Tobacco taxes are an example of an excise that is often set below the likely externality and thereby benefits men financially who on average smoke more. Worldwide women consume on average less tobacco (Crawford and Le Nestour 2019) and alcohol than men (Nelson 2014). The World Health Organization recommends that taxes make up at least 75 percent of tobacco retail prices, a level that is often not reached, as shown in Figure 19. Therefore, even though tobacco taxes have a higher incidence on men given their greater smoking rates, they effectively subsidize them, as they are likely undertaxed compared to the externalities/internalities generated. From an optimal commodity taxation perspective (to reduce deadweight loss), one could argue this bias should in fact be the reverse, as men's tobacco consumption is typically less tax elastic (thus justifying a higher tax rate).³²

³² One complication is that the externality/internality may not be independent of gender. Notably, there is some research suggesting tobacco taxation can be particularly effective at reducing smoking during pregnancy for women, which then translates into improved educational outcomes of children from low socioeconomic backgrounds (Settele and van Ewijk 2018). This would argue for a higher excise on cigarettes consumed by pregnant women, but such differentiated excise would not be enforceable. In addition, the optimal commodity taxation argument referenced here is based solely on the Ramsey rule, rather than the Corlett-Hague (1953) rule (for lack of information on the leisure complementarity of tobacco consumption specifically).

Interestingly, the implicit subsidy for tobacco products is highest in countries where relative female smoking rates are lowest. Figure 19 depicts this interesting relationship, which has some similarity to the finding on property taxes shown in Figure 16 above, in that both relationships are marked with high taxation when women are more likely to be liable to such tax. Though determining the source of this correlation is beyond the scope of this paper, it is possible policymakers may be more inclined for socio-cultural reasons to introduce heavier excises when women represent a relatively larger share of the smoker population.

Figure 19. Tobacco Taxation and Relative Gender Smoking Prevalence



Source: World Health Organization and IMF staff calculations.

Of arguably even greater relevance to the policy discussion space today, there is a dearth of literature on carbon footprint by gender, and nothing on the incidence of carbon taxes on women specifically, to the best of our knowledge. There are several channels through which carbon taxes could be borne differentially by gender: consumption of carbon-intensive goods and services, employment in carbon-intensive industries (production-angle), and exposure to negative environmental externalities. There is some evidence men consume relatively more carbon-intensive transportation and food than women—informally termed the “eco gender gap” (e.g., Raty and Carlsson-Kanyama 2010, Hunt 2020, OECD 2020b). In addition, carbon taxes raise the relative price of goods in sectors where more men are employed than women (e.g., mining, oil, and gas, see inter alia Cohen (2015) and Catalyst (2019)), increasing production costs and potentially lowering associated wages. On the other hand, the “green” economy stimulated by climate change mitigation measures (including carbon taxes) creates new jobs in currently male-dominated industries such as renewables, manufacturing, and construction (ILO 2018). Furthermore, mortality rates from environmental-related occupational risks and ambient exposure are higher for men worldwide (OECD 2020b). The true relative net burden of carbon taxes to men should thus offset the associated welfare cost of these premature deaths prevented by the introduction of carbon taxes against any increased tax burden due to higher carbon-intensive consumption and employment. Future research could also helpfully combine existing household consumption survey data across countries with greenhouse gas emission figures and carbon tax data to determine the gender split of the effective tax burden across countries.

V. Conclusions

The aim of this paper was to provide an exhaustive overview of the interactions between tax policy and gender equality. The paper covered both areas that have been much studied and achieved clear results and those where more research is needed, and findings are more preliminary. While explicit biases in the system are discussed, the focus is on the more common and harder to address implicit biases. We also discussed corrective gender-based taxes.

On labor taxation, much is known both in terms of empirical findings and policy prescriptions. The sensitivity of the labor supply of women (notably those in couples) is well established as is the policy advice to move from household to individual taxation to avoid high marginal tax rates on secondary earners that discourage from taking up employment. Our paper has confirmed this, both with stylized examples and new empirical work. More generally, reforms that raise the progressivity of tax systems can be expected to address inequality, not only mechanically through redistribution, but also by encouraging labor supply. More complex reforms aiming to overcome specific hurdles in marginal tax rate schedules are also possible, such as the introduction of well-designed earned income tax credits. These reforms would also benefit other disadvantaged groups.

On capital income and wealth taxation, much less research has been undertaken, even though it is an important topic, given an even greater gender inequality than on labor income. This paper argues that lower capital income than labor income tax rates have an often-overlooked gender angle: not only do low capital income tax rates imply less redistribution across income groups, they also disproportionately benefit men given the greater gender inequality in capital than labor income. The paper also showed tentative empirical evidence that providing stronger property rights to women, increases revenues.

On consumption taxes, even less is known, and policy recommendations are less clear-cut. The research in this area (which includes environmental taxation) faces major difficulties from the fact that consumption data are at the household level. VAT rates for specific products are often the focus of intense debate, but there are often better ways of achieving desirable outcomes. In some tentative empirical work, the paper finds that revenue from tobacco taxes is higher where smoking is less dominated by men—a finding that has some similarity to the one on property taxes, despite covering a very different type of tax.

While it is—as always—true that more research is needed, there are plenty of options for well-justified policy reforms that would contribute to gender equality. Tax policy may not always be the first-best tool to address each source of gender inequality, but as illustrated in this paper, even explicitly neutral tax policy can have first-order effects on important dimensions of inequality. Therefore, it is imperative that gender impact analysis be incorporated in optimal policy design.

Annex

Table 1. Characteristics of Personal Income Tax Systems

Country	Year	Tax filing			Tax provisions	
		Individual	Joint	Optional	Dependent spouse relief	Other
Australia	2014	1	0	0	0	1
Austria	2016	1	0	0	1	1
Belgium 1/	2017	1	0	0	1	1
Canada	2017	1	0	0	1	1
Switzerland	2017	0	0	1	1	1
Czech Republic 2/	2016	1	0	0	1	1
Germany 3/	2016	0	0	1	0	1
Spain 4/	2016	0	0	1	0	0
Estonia 5/	2016	0	0	1	0	0
Finland	2016	1	0	0	0	0
U.K.	2017	1	0	0	0	1
Greece	2016	1	0	0	0	1
Ireland	2017	0	0	1	1	1
Iceland	2010	1	0	0	0	1
Israel 6/	2017	0	0	1	0	0
Italy	2016	1	0	0	1	1
Lithuania 7/	2017	1	0	0	0	0
Luxembourg 8/	2013	0	1	0	0	1
Slovakia	2017	1	0	0	1	1
United States 9/	2017	0	0	1	0	1
South Africa	2017	1	0	0	0	0
Chile 10/	2017	0	0	1	0	1
Colombia 11/	2016	1	0	0	1	1
Brazil 12/	2016	0	0	1	1	1
Hungary	2015	1	0	0	N.A.	1
Mexico 13/	2016	1	0	0	N.A.	0
Netherlands	2013	1	0	0	1	1
Panama 14/	2016	0	0	1	0	1
Peru 15/	2016	1	0	0	0	1

Sources: Schechl (2020, 2021), Thomas and O'Reilly (2016), IBFD, Ernst and Young, IRS.

1/ The income of spouses and registered cohabitants is taxed separately, but they are required to file a joint tax return.

2/ Child tax relief and deductions.

3/ Child deductions and allowances.

4/ On a family tax return, the family members are jointly and separately liable for the payment of tax. If one spouse has a tax liability and the other spouse has a refund, the spouses may offset each other's amounts. Tax allowance depends on individual/joint filing, and there is child allowance.

5/ Joint filing option removed in 2017. A spouse may use the other spouse's basic exemption up to €2,160, depending on the other spouse's taxable income, provided that the sum of the spouses' taxable income does not exceed €50,400.

6/ Married persons, or the tax assessor, may elect one spouse to be the registered spouse in whose name the couple is assessed. For the election to be binding, the registered spouse's income should be at least 25% of the other spouse's income in the year before the election and in the next five years. If the couple does not elect otherwise, the tax assessor nominates the spouse with the higher taxable income over the two years preceding the assessment as the registered taxpayer. Joint tax computations are allowed. However, if the spouses derive employment or self-employment income from unrelated sources, many couples may benefit by opting to compute tax separately on the second spouse's income. Israel has explicitly bias (discrimination based on gender) in tax credits

7/ Single-parent child tax deduction higher than for married.

8/ Childcare tax deduction/allowance.

9/ Married people cannot claim EITC, if filing separately. <https://www.irs.gov/credits-deductions/individuals/earned-income-tax-credit/who-qualifies-for-the-earned-income-tax-credit-eitc>. Child tax credit seems to have been family-based too.

<https://www.forbes.com/advisor/taxes/will-i-receive-the-child-tax-credit-in-2022/> See Also

<https://www.taxpolicycenter.org/briefing-book/what-child-tax-credit>.

10/ There is child tax credit and allowances at family level. With respect to married couples, in general each spouse must submit a tax return separately, reporting their own income. However, married couples may be required to file a joint income tax return, e.g., where they have joint ownership of their property or a spouse administers the goods of the other.

11/ Taxpayers may take a monthly deduction for dependents of up to 10% of the employee's gross income. Dependents include children, college students, disabled adults, and non-working spouses.

12/ Dependent spouse allowance is possible if spouses choose the optional joint filing, which is more advantageous if the dependent spouse has a low income.

13/ Married persons are taxed separately, not jointly, on all types of income. Under the income tax regulations, it may be possible to include a spouse's income in the tax return of the resident spouse with the greater amount of income. However, this does not provide any tax advantage.

14/ Individuals are entitled to a PAB800 deduction when filing jointly with the spouse.

15/ Married persons are taxed separately. However, for income derived from properties held in common, they may elect to be taxed jointly. Taxpayers may also deduct from income derived from independent and dependent personal services (fourth- and fifth-income categories: income from independent personal services; and employment income) seven tax units (UIT) annually.

Table 2. Determinants of Gender Gap in Labor Force Participation

Dependent variable: $l_{ps}^f - l_{ps}^m$	(1)	(2)	(3)
$\Delta\tau_{ps}^e$	-0.1913*** (0.0248)	-0.1953*** (0.0249)	-0.1625*** (0.0235)
w_s	0.0001 (0.0003)	0.0001 (0.0002)	-0.0003** (0.0001)
w_p	-0.0002 (0.0002)	-0.0002 (0.0003)	0.0001 (0.0002)
$\Delta\tau_{ps}^e \cdot w_s$		0.0016 (0.0014)	0.0047** (0.0023)
$\Delta\tau_{ps}^e \cdot w_p$			-0.0019* (0.0011)
Constant	-0.0062** (0.0025)	-0.0057** (0.0025)	-0.0091** (0.0038)
Observations	7,453	7,453	7,453
R-squared	0.160	0.161	0.163

Robust standard errors, clustered at the family-income level, in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 3. Determinants of Gender Gap in Hours Worked

Dependent variable: $h_{ps}^f - h_{ps}^m$

	OLS			Heckman model	
	(1)	(2)	(3)	(4)	(5)
$\Delta\tau_{ps}^F$	-1.2535*** (0.1678)	-1.4531*** (0.1730)	-1.6536*** (0.1883)	-0.8992*** (0.1646)	-0.7404*** (0.2072)
w_s	0.0239*** (0.0048)	0.0214*** (0.0047)	0.0240*** (0.0050)	0.0229*** (0.0037)	0.0296*** (0.0052)
w_p	-0.0114** (0.0042)	-0.0117*** (0.0042)	-0.0143*** (0.0047)	-0.0102*** (0.0031)	-0.0114*** (0.0038)
$\Delta\tau_{ps}^F \cdot w_s$		0.0576*** (0.0199)	0.0220 (0.0197)		
$\Delta\tau_{ps}^F \cdot w_p$			0.0345** (0.0149)		
Constant	-0.3403*** (0.0317)	-0.3311*** (0.0315)	-0.3164*** (0.0319)	-0.7320*** (0.0624)	-0.7474*** (0.0598)
Selection equation					
l_{ps}^f				-4.4939*** (0.7087)	-4.7377*** (0.6581)
l_{ps}^m				2.3546*** (0.4978)	2.3841*** (0.5865)
$\Delta\tau_{ps}^e$					-0.4354 (0.6035)
Constant				1.4538*** (0.4220)	1.4969*** (0.3799)
Observations	7,003	7,003	7,003	9,834	8,754
R-squared	0.284	0.287	0.289		

Robust standard errors, clustered at the family-income level, in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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PUBLICATIONS

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