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The Lock-in Effect of Marriage: Work Incentives after Saying "I Do"

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Abstract: In this paper, we use EUROMOD, the tax-benefit microsimulation model of the European Union, to investigate the impact of marriage-related tax-benefit instruments on the financial incentives to work of married couples. For each spouse, we estimate their individual marginal effective tax rate and net replacement rate before and after marriage. We show that the marriage bonus, which is economically significant in eight European countries, decreases the work incentives for women, particularly on the intensive margin. In contrast, for men the incentives on the intensive margin increase once they are married, pointing to the marriage-biased and gender-biased tax-benefit structures in the analysed countries. Our results suggest that marriage bonuses contribute to a lock-in effect, where second earners, typically women, are incentivised to work less, with negative economic consequences.

Keywords: marriage; cohabitation; marriage bonus; work incentives; gender; tax-benefit system; Europe

JEL Classification: H31; J12; J22

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1. Introduction

Despite showing an increasing trend in recent decades, women's participation in the labour market remains lower than that of men. In 2021, the European Union (EU) employment rate for working-age women was 67.7%, lagging behind that of men by 10.8 percentage points (pp). Moreover, once in employment, many more women than men work part-time–28.8% of women compared with 8.1% of men in 2021. This has severe economic consequences. In 2013, the cost of lower female labour market participation was estimated at 2.8% of the EU's GDP, according to Mascherini et al. (2016). Similarly, Morais Maceira (2017) assessed that the increased female activity rates potentially could lead to GDP per capita increases of 1–2% in 2030 and 3–6% by 2050.[1]

At the individual level, lower women's participation in the labour market also has a severe economic impact. Lower participation is related to limited career prospects, lower current and lifetime earnings and, therefore, lower financial security in old age (lower pensions). As a result, more women than men were at risk of poverty in 2020 (See Eurostat (2022).), both at working age (22.5% and 20.5%, respectively) and especially at pension age (22.8% and 16.9%, respectively).

Reasons for the gender gap in labour market participation are manifold. It is often argued that cultural norms influence the participation of women. Another reason is related to parenthood. With the arrival of a child, the unpaid workload increases immensely for both parents, but women absorb the bulk of unpaid care. For working men with children, weekly unpaid work hours increase by 14 h compared to men without children. Whereas, for working women, having children means spending additional 30 unpaid work hours per week (Eurofound 2018). Therefore, it is most often a woman who reduces their

working hours or drops out of the labour market because of the incompatibility of the acutely increased unpaid care load and the job demands. This substantially contributes to the gender wage gap, which is strongly related to care responsibilities for children (de Quinto et al. 2021; Kleven et al. 2019).

The more children women have, the lower their employment rate, while the opposite is true for men. The employment rate for women with children was almost 5pp lower than for women without children in the EU in 2020. For men with children the employment rate was 9pp higher than for men without children. The employment rates for women with up to two children or without children were similar (around 74% on average) while having three or more children meant an average employment rate of 59.1% (Eurostat 2021). Since women, on average, earn less than men, financial incentives can play an important role within a couple for the individual labour supply decisions. Besides, tax-benefits systems may also contribute to those decisions.

The general tax structure and other tax-benefit components can contribute to patterns of work, marriage, household formation, childbearing, unpaid labour division at home and more (see, e.g., Leroy 2008; McCaffery 2009; Sainsbury 1999). In many countries income tax policies have long been gender biased, explicitly[2] or implicitly treating women and men (wives and husbands) differently. Currently some European countries have explicit reversed bias, which encourage higher participation of women in the labour market (e.g., a tax credit for women returning to employment in Malta; in Spain, a special additional credit is available for working mothers).[3]

Implicit biases in personal income taxation, in contrast, are more difficult to note since they can be present in tax systems that do not differentiate explicitly between men and women. An implicit bias stems from the differences of economic characteristics or behaviours between men and women, such as income levels or the nature of income, paid and unpaid work, consumption, ownership, entrepreneurship, savings, tax compliance, social norms (Bettio et al. 2009; OECD 2022).[4] For example, an implicit bias can be the result of treating a family as one unit for tax purposes.

Having a tax unit which is a family and not an individual is based on the premise that married couples share their income equally.[5] Therefore if a policy increases overall family income (e.g., by assessing spouses' income together and applying more favourable tax schedule compared to a tax schedule applied to separate individuals, despite that it effectively taxes the second earner more than the main one), it is understood as being beneficial for the family. However, the empirical evidence suggests that many married couples do not fully pool and share their income equally (Bonke 2015; Fortin and Lacroix 1997; Kan and Laurie 2014; Ponthieux 2013; Vogler and Pahl 1994). Since women usually earn less than men, they would gain more from being taxed at an individual rather than a joint tax rate (Himmelweit 2002).

The adverse incentive effects of different tax treatment of married and non married couples are well documented in the literature. For example, Bick and Fuchs-Schündeln (2017) quantify the negative labour supply effects of joint taxation (typically a main source of the marriage bonus) for 17 European countries and the US. Kabatek et al. (2014) show that for France, the change from joint to individual taxation would increase female labour supply substantially, while male labour supply would fall. Similarly, Crossley and Jeon (2007) find the positive effects on female labour market participation of reform that reduces the jointness of the income taxation in Canada. LaLumia (2008) finds that the conversion to joint taxation in the US in 1948 led to a decrease in the employment rate of married women of about 2 percentage points. Doorley (2018) shows that the partial individualisation of the Irish income tax system in 2000 increased the participation of married women by 5–6 percentage points. Gustafsson (1992) compares the Swedish tax system, which changed from joint to individual taxation in 1971, with the German joint taxation system and analyses the impact on female labour supply. He argues that joint taxation tends to conserve gender roles and make women more dependent on their husbands. The author

shows that married women in Germany would increase the labour supply substantially within the Swedish tax system.

Tax policies privileging marital relationships over other relationships with economic or emotional characteristics similar to marriage have been under substantial criticism (see, i.e., Bogenschneider and Bogenschneider 2015; Chapman 1984; Dulude 1979; Gubbels 2021; Puckett 2009). Explicit support via tax systems to married couples embodied different social norms and expectation for women and men by supporting the male breadwinner family model, which encouraged husbands to work and wives to be stay-at-home moms. In many respects, this "social engineering" by fiscal policies is the representation of social norms and values that exist in a society, and, at the same time, it further perpetuates those norms by continually applying unequal treatment within the fiscal systems (as shown, e.g., by Elson 2006; Stotsky 1996).

Already in 1984, in its Memorandum on Income Taxation and Equal Treatment for Men and Women, the Commission of European Communities documented income tax systems in the Member States[6] and drew attention to the adverse impact of joint income taxation on women's employment, stressing that "a system of totally independent taxation is to recommended from the point of view of achieving equal treatment"[7]. Since then, some countries have moved from joint to individualised personal income tax structures, or at least they allowed married people to opt for an individual taxation.[8] Nonetheless, at the beginning of 2019, the European Parliament[9] called to move to an individual taxation and to eliminate all tax allowances or credits for a spouse.

According to Christl et al. (2021), in 2019, only four countries had strictly individual income taxation: Bulgaria, Sweden, Austria and Hungary. Another six countries (Finland, Denmark, Lithuania, Greece, Cyprus and the UK) did not apply any tax allowances or credits for a spouse but allow a transfer of unused tax allowances/credits between spouses, and some expenses can be deducted from a partner's tax base/tax liabilities. However, the financial benefits of being married in those countries were negligible. The biggest group of EU countries (Estonia, Latvia, Czechia, Slovakia, the Netherlands, Romania, Croatia, Slovenia, Italy and Spain) had individual tax systems but applied tax allowances or tax credits for a partner with little or no earnings. Seven countries (Poland, Germany, Ireland, Belgium, Luxembourg, Malta and Portugal) have joint income assessments or the allocation of earnings between spouses. Detailed information can be found in Table A1 in the Appendix A.

As Figari et al. (2011) stated, "one of the most interesting aspects is the implication of joint and individual taxation systems for the relative incentives to increase work effort within couples." This is precisely the purpose of our analysis. Different to Christl et al. (2021) who analysed on household level which households benefit from the marriage bonus and what are the distributional consequences, we focus on the impact of the marriage bonus on financial incentives to work for women and men in married couples. In more detail, using EUROMOD, the tax-benefit model of the European Union, we compare labour incentives on intensive and extensive margin of married couples with the hypothetical scenario in which the couple is not married ("before marriage"). We focus om eight countries with economically significant marriage bonuses[10]: Belgium, Czechia, Germany, Spain, Ireland, Luxembourg, Malta and Poland.

We show that "before marriage", women have on average substantially lower METRs than men, and therefore higher financial incentives to increase their working hours. However, this gender gap in METRs is decreased substantially by marriage-related tax-benefit rules. It is completely offset in countries with joint taxation, such as Germany and Luxembourg. We also find that tax-benefit rules have an impact on the extensive margin. Women on average typically face higher NRRs than men. Still, this gender gap in the NRRs is further widened by marriage-related tax rules, indicating that it gets more financially attractive for a married couple if a woman rather than a man leaves the labour market.

Our results point to important policy implications. The unequal treatment of married and non-married couples, especially joint taxation and tax-related allowances and credits

(one of the main drivers of marriage bonuses), might disincentivise second earners, mostly married women, from participating in the labour market as well from working full-time. Therefore, the goal to increase female labour market participation (on both the extensive and intensive margin) might be hindered by gender-biased tax-benefit systems, among other things. This unequal fiscal treatment potentially impacts the reallocation of paid and unpaid work within a family, further perpetuating gendered social norms.

The paper is structured as follows: Section 2 describes the data and the methodology used for the analysis; results are presented in Section 3, while Section 4 discusses the results and concludes.

2. Data and Methods

We base our analysis on previous work by Christl et al. (2021). They analysed the monetary marriage bonuses and penalties across the EU, using EUROMOD, the microsimulation model for the European Union. This model is based on the EU Statistics on Income and Living Conditions (EU-SILC), which aims to collect comparable cross-sectional data on income, poverty, social exclusion and living conditions. While the earlier study analysed on household level which households benefit from the marriage bonus and what are the distributional consequences, we look at the potential impact on work incentives within households.

We focus our analysis on Belgium, Czechia, Germany, Spain, Ireland, Luxembourg, Malta and Poland. These are the countries with economically significant marriage bonuses, defined as a marriage bonus that is above 0.5% of disposable income for working-age households on average.

The most important drivers of the marriage bonuses are different tax treatments (in some countries, there are also some benefits that differ with the marriage status, but in general this is a very minor part). Table 1 highlights the differences in the tax system of the analysed countries. While Germany, Ireland and Luxembourg[11] have a joint taxation regime, in which you can opt for individual taxation in Malta and Poland you can choose between joint and individual taxation. Belgium's tax system is based on individual taxation, but a marital quotient applies. Similarly, in Czechia, taxation is individual, but a substantial tax credit for a married spouse exists. In Spain, even though taxation is individual, a married couple can decide to file the tax returns jointly.

Table 1. Tax treatment of married couples across countries.

Country	Income Taxation	If Individual, Tax Allowance/Credit for Spouse?
BE	individual (marital quotient applies)	-
CZ	individual	Yes (spouse tax credit)
DE	joint (can opt for individual)	-
IE	partly joint (can opt for individual)	-
LU	joint (can opt for individual)	-
MT	joint or individual	-
PL	joint or individual	-
ES	individual, but can file tax returns jointly	Yes (couples can file individual or joint tax return that affects the additional tax allowance)

Notes: BE-In the case of married couples, the tax legislator allows for income sharing between spouses up to a certain limit (the so-called "marital quotient system"). Source: Christl et al. (2021).

For this analysis, we refer to the tax-benefit systems in place in 2019, using EU-SILC data from 2019.[12] EUROMOD simulates tax liabilities and entitlements to benefits at individual and household levels for each Member State and allows for comparative cross-country analysis (Sutherland and Figari 2013). Using EUROMOD, we can simulate the difference in households' income depending on the marital status of a couple. In other words, we can calculate the financial impact of getting married for each household in each Member State.

In our analysis, we focus only on married couples, and we present two scenarios for these households: First, the 'married' scenario, which reflects the status quo of couples that are married, having the tax-benefit system with marriage bonuses in place (baseline). Second, we create a 'before marriage' scenario where all married couples are treated as if they were not married, meaning that the same tax-benefit system will be treating them as cohabiting couples.[13]

Based on these two scenarios, we analyse the impact of tax-benefit systems on the incentives to work for women and men, focusing on the sample of married couples of working age who are not in education. We focus on two measures for labour supply incentives, the METR and the NRR. While the METR is typically a measure for work incentives on the intensive margin, the NRR is a measure for the incentives on the extensive margin. Please note that both measures are calculated for the sub-sample of employed individuals only. We do not calculate these indicators for unemployed or inactive individuals, because we would need to predict their wages which is typically prone to error.

According to Jara and Tumino (2013), the *METR* is an "indicator of the proportion of a marginal increase in earnings that is taxed due to social insurance contributions, taxes and loss of benefit entitlement". We follow the standard approach that defines the *METR* as the marginal tax increase (or benefit loss) at the household level, in case the earnings of an individual in the household increase marginally:

$$METR = 1 - \frac{\Delta Y_{hh}}{\Delta E_i}, \tag{1}$$

where ΔY_{hh} is the change in household disposable income and ΔE_i is the marginal change in earnings of an individual of the household. Following the literature, we simulate an increase in individual earnings by 3%, corresponding to an increase in approximately 1 h of work for a person working 33 h. The higher the value of *METR*, the more additional earnings are taxed, meaning the lower the incentives to increase working hours for an individual.

Then, we calculate the *NRR* as the ratio between the disposable income of a household in unemployment and household disposable income in employment:

$$NRR_i = \frac{Y_{hh}(i \in U)}{Y_{hh}(i \in E)}, \tag{2}$$

where $Y_{hh}(i \in U)$ is the simulated household disposable income when individual i is in work, and $Y_{hh}(i \in E)$ is the simulated household disposable income when individual i is unemployed. Please note that we are referring here to the short-term *NRR*, meaning that the *NRR* includes contributory benefits (such as unemployment benefits, which are typically time limited).

In the case of households with more than one person employed, the *NRR* is calculated for each person, assuming that the other members of the households do not change labour market status. The *NRR* can differ across individuals in the same household. Intuitively, the *NRR* indicates the share of household income protected by the tax-benefit system if an individual becomes unemployed. A value of 1 of the *NRR* means low incentives to work since household income would not change if one partner becomes unemployed. Contrary, a value of 0 indicates high incentives to remain in the labour market.

As indicated, the *NRR* depends not only on the individual choice of participating in the labour market but also on the market income of the partner in the household. Given that work decisions might be taken together in couple households, we argue that the *NRR* is a good indicator of incentives to work at the extensive margin.

In this paper, we only analyse countries with economically significant marriage bonuses for working-age couples, mostly those countries with joint income taxation or other marriage-related components in the tax-benefit system (e.g., tax allowances for spouses). The selection of countries is based on Christl et al. (2021), who have shown that substantial

marriage bonuses and penalties exist across some EU Member States. Figure 1 highlights these financial advantages and disadvantages of marriage.

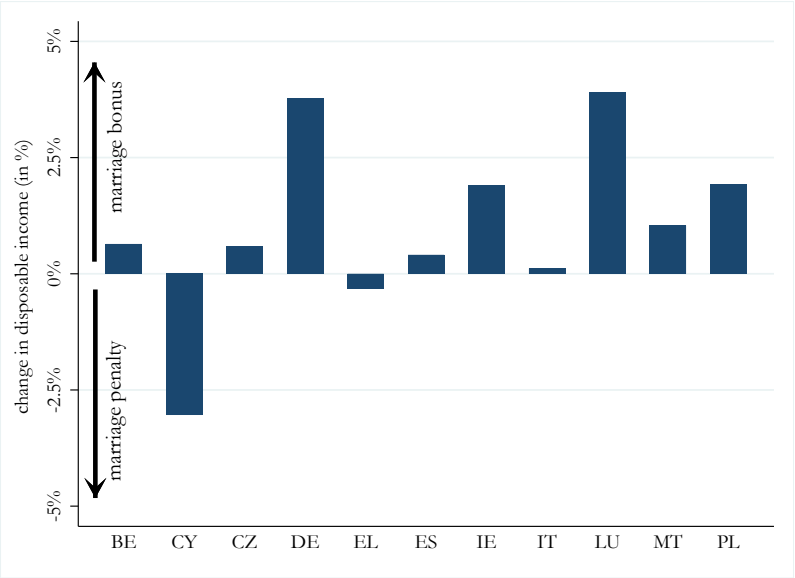

Figure 1. Marriage bonus or penalty for working-age households. Source: Christl et al. (2021).

Economically significant marriage bonuses for working-age households (red bar) were identified in eight countries: Belgium, Czechia, Germany, Spain, Ireland, Luxembourg, Malta and Poland, while in Cyprus and Greece, there is a financial penalty for being married, therefore these two countries are excluded from our analysis. It is noteworthy that the marriage bonus is, on average higher for countries with joint taxation systems, such as Germany and Luxembourg (almost 4%), Ireland and Poland (about 2%, partly-joint systems).

3. Empirical Results

3.1. Labour Market Characteristics of Married and Cohabiting Couples of Working Age

Before analysing the incentives to work for married couples and comparing them to those before marriage (if a couple was cohabiting), we first look at the labour market characteristics of married and cohabiting couples, which might differ in many ways. As shown in Table 2, within married couples where both partners work, it is mostly men having higher earnings. We refer to these households as male breadwinner households. The male breadwinner concept also includes men single earners. The highest share is in Germany, where about 81% of all working-age married couple households are male breadwinner households (66.4% of primary earners plus 14.7% of single earners). The highest share of female breadwinner households is in Luxembourg (27.7%) and Poland (28.3%).

Substantial differences can also be seen in the participation of women and men in the labour market. One-earner male breadwinner households are significantly more common in Poland (25.9%) and Malta (29.3%) than in the other analysed countries. The share of women in part-time work can go above 60% in Germany and is around 50% in Belgium and 40% Luxembourg. In contrast, only 6.2% of married women work part-time in Czechia, and 7.2% in Poland.

The share of men working part-time is generally substantially lower compared to women. Only 1% of men in Czechia and Malta are working part-time. We observe the highest part-time rate among married men in Belgium with 10%. We can also see that only 0.8% of married couples in Czechia live without earnings, while Ireland and Belgium have the highest share of no-earner households (around 5%).

Table 2. Summary statistics of the labour market characteristics of married couples of working age (in %).

Country	Two Earners		One Earner		No Earners	Part-Time		Parents	N Couples Observed
	BW Men	BW Women	Men	Women		Men	Women		
BE	52.8	19.6	18.7	4.8	5.4	10.0	49.3	65.8	1278
CZ	63.6	19.6	15.8	1.9	0.8	1.0	6.2	70.2	2044
DE	66.4	14.7	14.6	3.0	1.3	5.3	60.1	65.2	2422
ES	50.7	21.6	21.0	4.4	3.4	2.4	17.2	69.4	4822
IE	49.6	22.0	19.3	4.1	5.0	6.2	31.0	76.0	1206
LU	49.6	21.7	20.5	6.1	2.5	3.9	38.7	65.2	1682
MT	46.3	22.1	29.3	1.2	1.9	1.0	14.9	63.4	1101
PL	44.4	21.7	25.9	6.6	2.8	2.1	7.2	62.4	6697

Notes: EUROMOD estimations based on EU-SILC 2019. 'BW' stands for to bread winner, 'Parents' refers to couples that have dependent children.

Most of the married couples are parents, as highlighted in the last column of Table 2. Between 62.4% of married couples of working age in Poland and 76% in Ireland have dependent children.

Table 3 focuses on the characteristics of working-age cohabiting couples. Please note that the number of cohabiting couples in these countries is relatively low compared to the number of married couples. In general, there is a lower share of one-earner male breadwinner households among cohabiting people compared to married couples, in particular in Spain (10.5% and 21%, respectively), Luxembourg (7.6% and 20.5%, respectively) and Malta (14.2% and 29.3%, respectively). Hence, more cohabiting women are working in these countries compared to married ones. The only exception is Czechia. Also, there is a tendency for a higher share of two-earner households among non-married couples, especially for two-earner female breadwinner households.

Table 3. Summary statistics of the labour market characteristics of cohabiting couples of working age (in %).

Country	Two Earners		One Earner		No Earners	Part-Time		Parents	N Couples Observed
	BW Men	BW Women	Men	Women		Men	Women		
BE	60.6	24.5	8.7	2.9	4.1	9.9	35.3	57.2	608
CZ	62.1	15.5	20.4	2.0	1.3	1.1	6.0	59.3	620
DE	61.5	23.6	9.1	3.9	2.2	7.7	28.7	33.3	456
ES	53.0	28.6	10.5	6.1	1.9	2.8	16.5	44.6	829
IE	50.3	24.2	14.2	4.5	6.7	5.8	22.1	55.6	167
LU	57.2	27.2	7.6	7.3	2.2	5.7	21.5	47.4	197
MT	54.9	29.2	14.2	2.9	1.1	2.7	6.3	51.6	67
PL	49.5	26.4	17.4	4.6	3.0	1.4	6.1	49.0	853

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. The numbers represent the values for married couples minus those for cohabiting couples. 'BW' stands for to bread winner, 'Parents' refers to couples that have at least one dependent child.

Additionally, a substantially lower share of part-time workers is among cohabiting women compared to married women, in particular in Germany, Luxembourg and Ireland, Belgium and Malta. Although these differences might be related to the changes in family composition, such as the arrival of children, in these countries, as shown by Christl et al. (2021), the marriage bonus is significantly higher when one of the partners has a very low income compared to the other partner.

We can also see that there is an important difference related to children. The share of parents is substantially higher among married couples than among cohabiting couples, especially in Germany and Spain. This highlights the correlation of having children and the decision to marry, which is well documented in the literature (see, e.g., Fisher (2013)).

3.2. Incentives to Work on the Intensive Margin

Empirically, labour supply on the intensive and extensive margin varies substantially with demographic characteristics, such as gender, education, marital status, health status and the presence of young children at home. The reason for these differences can be various. One of them is related to the financial incentives that influence the relative value between leisure (including family commitments) and work, which plays a crucial role in the labour supply decision (see, e.g., Blundell (1995) or Cai et al. (2008)). Other determinants of the labour supply decision are found in the literature, with the presence of children, the cost for child care, the income of the partner being some of the most important ones.

In this section, we focus on the incentives on the intensive margin for married couples and compare the results to the hypothetical scenario in which they would not be married.

Table 4 shows the average METR of couples in all analysed countries by gender.[14] Additionally, the "before marriage" scenario shows the effect on the METR in case a government decides to remove the financial advantages for married couples.[15] In line with the literature, we observe higher METRs for couples in Belgium, Germany, Ireland, and Luxembourg compared to Spain, Malta and Poland. This can be related directly to the different tax systems of the countries, as highlighted by OECD (2021). Additionally, men typically have higher METR than women because of higher average earnings. However, as highlighted already by, e.g., Bick and Fuchs-Schündeln (2017) for several European countries, Doorley (2018) for Ireland, and Doorley (2016) for Luxembourg and Decoster and Haan (2011) for Germany, joint income taxation also influences the METR within couples, and therefore the labour supply decision within a household. As we can see in Germany and Luxembourg, the METRs for women and men in married couples are, on average, very similar. This means both partners would be taxed similar, if they would increase their labour supply, even tough the female partner has on average a lower income. In other countries, the METRs are substantially different across men and women in married couples.

Table 4. The average METR before and after marriage.

Country	Married		Before Marriage		Difference	
	Women	Men	Women	Men	Women	Men
BE	55.2	55.4	54.7	57.7	0.6	−2.3
CZ	27.5	29.1	27.5	29.6	0.0	−0.4
DE	42.1	41.7	37.0	45.3	5.1	−3.6
ES	24.7	30.0	22.6	31.5	2.1	−1.5
IE	40.7	43.3	38.6	45.0	2.2	−1.7
LU	44.6	44.6	41.1	48.1	3.4	−3.5
MT	24.1	27.1	25.6	30.0	−1.5	−2.9
PL	28.3	27.3	27.5	27.5	0.8	−0.2

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. 'Before marriage' refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

Assuming the absence of marriage-related advantages in the tax-benefit systems, we can identify the difference in the average METRs that arises due to specific tax rules related to marriage.[16] As highlighted in Table 4, METRs for the average married women in Belgium would decrease by 0.6 pp in the absence of the marriage bonus, while those for the average married men would increase from 55.4 to 57.7. The biggest change in METRs can be found in Germany, where the average METR for women would be 5.1 pp lower and for men 3.6 pp higher in the absence of marriage-related tax advantages. The same empirical regularity can be found in Spain (women −2.1 pp, men +1.5 pp), Ireland (women −2.2 pp, men +1.7 pp), Luxembourg (women −3.4 pp, men +3.5 pp) and Poland (women −0.8 pp, men +0.2 pp). These results imply that marriage increases the incentives to work more for the average men while substantially decreasing it for the average women in these countries.

Our methodology allows us to calculate the policy impact on the gender gap in METRs that arises due to the special treatment of married couples within the tax-benefit systems.

We define the gender gap in METRs as the difference between the women's average METRs and the men's average METRs. A positive gender METR gap indicates that the average men are more incentivised to work than the average women. On the contrary, a negative gender METR gap indicates that METRs for the average women are lower than for the average men; hence women have higher incentives to increase their time at work.

The policy effect, defined as the difference between the gender gap in the average METR before the marriage and the gender gap in the average METR after marriage, is the highest in Germany (8.7 pp), where the gender gap in METRs for married couples is almost entirely closed by the tax-benefit system (Figure 2). The same holds for Luxembourg, where the gender gap in the average METRs would be 7 pp without marriage-related fiscal benefits in the tax-benefit system. High policy impacts are also found in Belgium (2.9 pp), Spain (3.6 pp) and Ireland (3.8 pp). To put it in context: without marriage-related tax-benefit advantages, a marginal increase in earnings[17] for the average German man would be taxed 8.3 pp higher than the same increase in earnings for the average woman. After marriage, the average METR increases substantially for women. The gender gap in METRs closes entirely due to the joint taxation, resulting in slightly higher METRs for women than married men. Hence, the incentives to increase the number of working hours for women decrease significantly after marriage.

Overall, the results hold also on the subsample of cohabiting couples, but the effect is smaller in size, as highlighted in Table A2 in the Appendix A. Since the subsample is composed of all couples who are observed in our data as cohabiting but not married, they have not changed labour supply due to the marriage bonus or because of other reasons that might be related to the decision to marry. The difference between the "before marriage" and "after marriage" scenarios is larger for married couples than for cohabiting, particularly in Germany and Luxembourg. This result suggests that married couples might have changed labour supply (or decided to marry) because of tax incentives, among other things, after marriage.

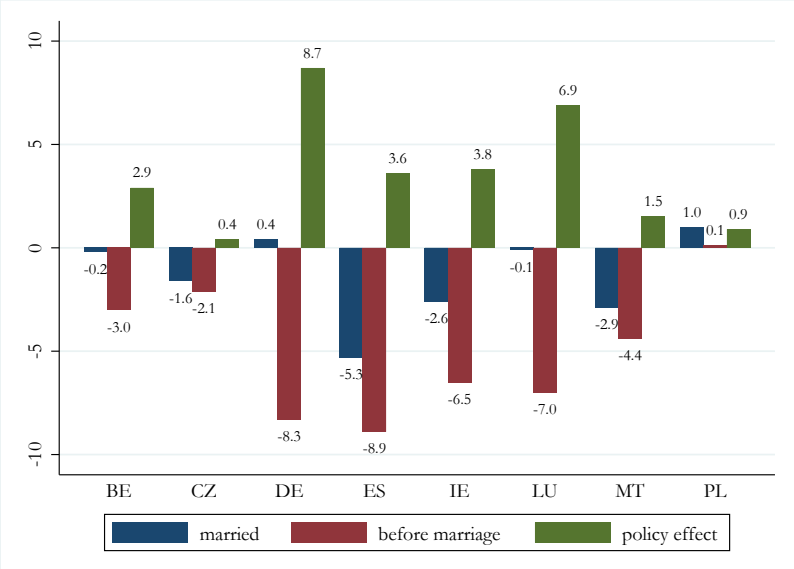

Figure 2. The gender gap in METR before and after marriage. Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. Before marriage refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

To conclude, women generally face substantially lower METRs on average before marriage, while the average METR for men is substantially higher before marriage than after marriage. This highlights the marriage-biased and gender-biased impact of tax-benefit systems on incentives to work on the intensive margin. On the one hand, due to joint income taxation and other marriage-related components of tax-benefit systems, financial incentives to work more hours will increase for the spouse with higher income, typically

a man. On the other hand, financial incentives to work more hours will decrease for the spouse with a lower income (second earner), usually a woman.

3.3. Incentives to Work on the Extensive Margin

To dig further into the impact of the unequal treatment of marriage and gender within the tax-benefit systems, we analyse the changes in the NRRs for men and women, a measure for labour supply incentives for couples on the extensive margin.

Table 5 shows the average NRR of married women and men in all analysed countries.[18] It is then compared to the "before marriage" scenario, which shows the effect on the NRR in case a country decides to abolish the financial advantages for married couples, or, in other words, what would be the NRR for couples in case they were not married.[19] In general, Luxembourg, Germany and Belgium are the countries with very high NRRs for the average married women (well above 80%) and the average married men (well above 70%). The lowest NRRs for both women and men are in Poland and Malta. Women, on average, show substantially higher NRRs than men in case of dropping from the labour market, mainly because their income usually represents a lower share of total households' income. Additionally, benefits in case of unemployment often have top ceilings, implying that the NRR is generally higher for low-income earners (often women) than for high-income earners.

Table 5. The average NRR before and after marriage.

Country	Married		Before Marriage		Difference	
	Women	Men	Women	Men	Women	Men
BE	83.9	72.5	86.0	74.9	−2.2	−2.5
CZ	75.0	63.0	71.8	60.4	3.1	2.6
DE	86.3	76.4	84.7	75.4	1.6	1.0
ES	76.1	62.4	75.2	62.4	0.9	0.0
IE	73.8	62.5	73.2	62.2	0.6	0.3
LU	92.3	86.0	92.1	86.3	0.1	−0.3
MT	68.4	55.8	66.5	54.6	1.9	1.1
PL	69.0	58.9	68.9	59.2	0.2	−0.4

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. 'Before marriage' refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

On average higher NRRs for women than for men might work to the detriment of women when deciding who reduces their labour supply. Financially, a household is on average better off if the second earner–mainly a woman–enters unemployment. The difference if a woman rather than a man becomes unemployed amounts to about 10% of the household's disposable income in most countries.

Looking at the impact of the different treatment of marriage within the tax-benefit systems (Table 5), we find that in most countries, the NRRs are increasing due to the special treatment of marriage, indicating that incentives to move from employment to unemployment increase after a couple is married.[20] Marriage, on average, increases the NRR of both women and men in Germany (1.6 pp and 1 pp, respectively), Spain (0.9 pp and 0 pp, respectively), Ireland (0.6 pp and 0.3 pp, respectively), Malta (1.9 pp and 1.1 pp, respectively) and Czechia (3.1 pp and 2.6 pp, respectively). In Luxembourg and Poland, women before marriage face, on average, slightly lower NRRs, while the opposite is true for men. In Belgium, both married men and women would face higher NRRs in the absence of marriage bonuses.

As mentioned, the gender gap in NRRs among married couples is enormous (see Figure 3). It ranges from 13.7 pp in Spain to 6.3 pp in Luxembourg. To put this in context, in Spain, a average married couple would lose about 13.7 pp more disposable income if the man becomes unemployed compared to if the woman loses her job. However, this gender gap is only marginally affected by the marriage-related tax-benefit policies. In all analysed countries, the policy effect (of treating married couples differently from cohabiting ones)

leads to an increase, although minor (below 1 pp), in the average NRRs, meaning that it slightly decreases labour market incentives for married women on the extensive margin.

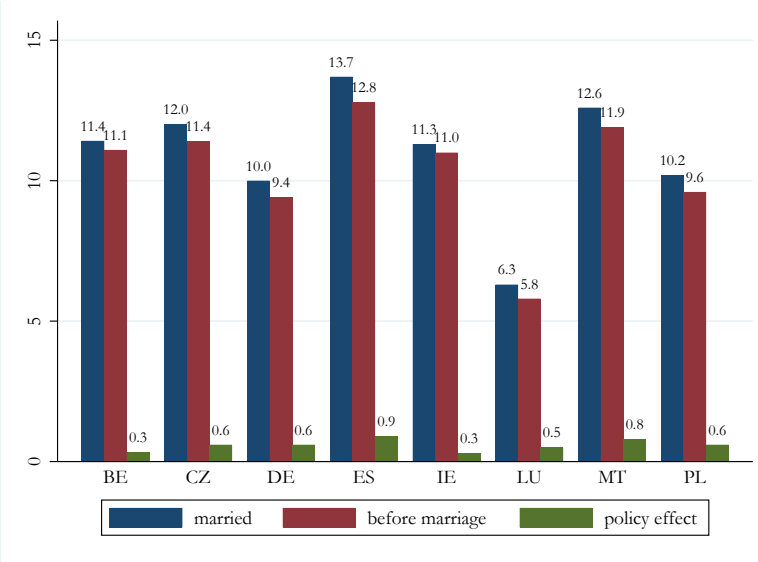

Figure 3. Gender gap in NRR before and after marriage. Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. Before marriage refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

To conclude, different treatment of married and non-married couples within the tax-benefit systems changes the NRRs and influences the labour supply incentives on the extensive margin. It particularly increases the gender NRR gap for married couples. This indicates that the tax-benefit systems further decrease the incentives for married women on the extensive margin, making the impact also gender-biased. However, compared to the reduction in incentives on the intensive margin highlighted in the subsection above, changes on the extensive margin are substantially less significant.

3.4. Tax-Benefit Systems, Incentives to Work and Labour Market Outcomes

In this last subsection, we look at the cross-country dimension of our data to link the labour market characteristics of married couples in our sample countries with the impact of the marriage-related policies. Figure 4 highlights the correlation between the policy effects of the tax-benefit system on both the incentives to work on the intensive margin (METR) and the extensive margin (NRR) and related labour market outcomes. We focus on the relation between the gender inequalities related to our work incentive indicators (METR and NRR) within married couples. As shown in Figure 4 (left panel), in countries with high policy effects on the intensive margin for married women, the share of married women working part-time is substantially higher than in those with a low policy effect. Please note that this result can not be interpreted as causal.

Figure 4 (right panel) highlights that in countries with high policy effects on the extensive margin for married women (in countries where the tax-benefit system increases the incentives to drop from the labour market for women to a larger extent compared to men), the share of male single-earner households is higher than in those with a low policy effect. The correlation, however, seems to be weak, and in general, the impact of the tax-benefit system on the NRR is relatively small in our set of countries compared to the impact on the METR. Again, please note that in any case, this result can not be interpreted as causal.

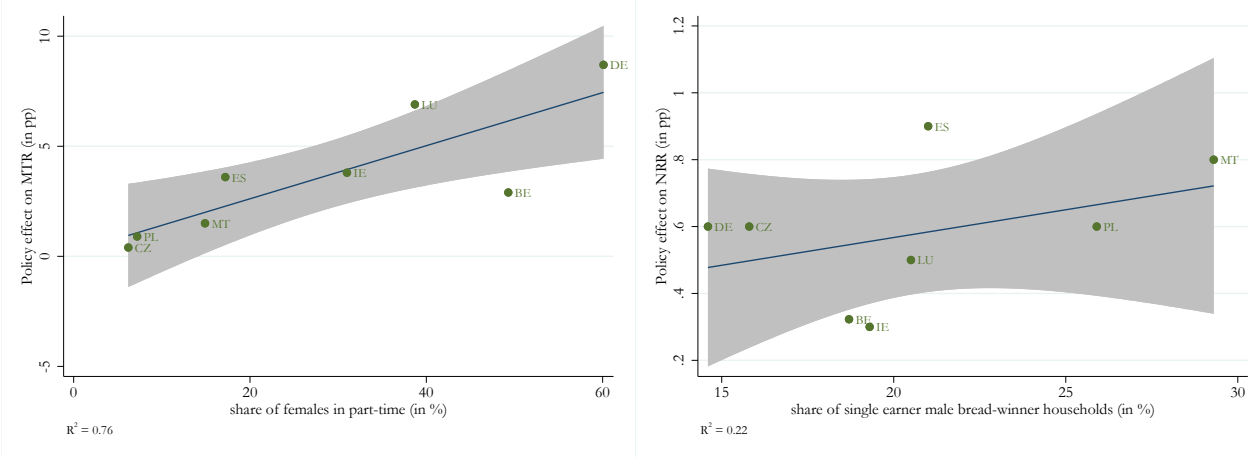

Figure 4. Correlation between policy effects (PE) and labour market outcomes: (**left panel**) PE on METR vs. share of women in part-time (**right panel**) PE on NRR vs. share of male single-earner households. Notes: EUROMOD estimations for 2019 based on EU-SILC 2019.

4. Conclusions

Tax-benefit systems across the EU vary in respect how they treat married and cohabiting couples. Marriage does not provide (substantial) gains in more than half of the Member States, however in the other countries couples are treated unequally. Depending on the country, the strength of the unequal treatment varies substantially. In Luxembourg, Germany, Ireland, Spain, Poland, Czechia, Malta and Belgium, married couples of working age have significant financial advantages compared to cohabiting couples, mostly due to joint taxation or tax allowances and credits that offer married couples the opportunity to share the tax burden. The distributional and budgetary impact of this unequal treatment was shown by Christl et al. (2021).

In this paper, we take a step further and investigate the tax-benefit systems' impact on the financial incentives to work of married couples by estimating the METR and NRR of each employed individual in married couples. We show that the marriage bonus decreases the work incentives both on the intensive margin (measured by the METR) as well as on the extensive margin (measured by the NRR) for women within married couples, and especially so on the intensive margin. In contrast, for men, the incentives increase once married, pointing to the marriage-biased and gender-biased tax-benefit structures in the analysed countries. Our findings are in line with some previous studies that found causal evidence that joint income taxation has a negative impact on work incentives and therefore on labour supply of married women in Canada (Crossley and Jeon 2007), the US (LaLumia 2008) and Ireland (Doorley 2018).

We show that, in general, there is a substantial gender gap in METRs before marriage, meaning that men in couples face higher marginal effective tax rates than women on average. However, after marriage, tax-benefit systems almost completely offset these gaps by reducing METRs for men while increasing them for women. We also see a strong correlation between the impact of the marriage-related policies on the gender gap in METRs (policy effect) and the share of married women in part-time employment. In countries with high-impact marriage-related policies on the gender gap, METRs align with a high percentage of married women working part-time. Additionally, the gender gap in the NRRs for couples before marriage is quite high: the NRRs for women in couples is about 10pp higher than for men. After marriage, tax-benefit rules further increase this gender gap, although slightly and not in all countries, indicating that the financial incentives to work on the extensive margin are decreasing for married women but increasing for married men on average.

Although joint income tax filing or other marriage-related financial incentives may result in financial gains for household, the second earner will not necessarily benefit from

it. First and foremost, the assumption that financial gains are shared equally within a married couple was contested by many studies (Bonke 2015; Fortin and Lacroix 1997; Kan and Laurie 2014; Ponthieux 2013; Vogler and Pahl 1994) and since women usually earn less than men, they would gain more from being taxed at an individual rather than a joint tax rate (Himmelweit 2002), not to mention that this would increase their financial independence.[21] Coupled with the fact the METRs and sometimes also NRRs increase once women are married, joint income taxation might look like an important hindrance to the usual goals of policymakers to increase female labour market participation, especially on the intensive margins.

With this evidence at hand, we contribute to the ongoing debate and support for the initiatives calling to move to an individualised taxation of incomes of married women and men. To put this into context, at the beginning of 2019 the European Parliament[22], voted for a handful of actions calling to move to an individual taxation and to eliminate all tax allowances or credits for a spouse with little income while maintaining financial and other benefits linked to parenthood. It was stressed that personal income structures should be designed to actively promote equal sharing of paid and unpaid work, income and pension rights. Similarly, the Gender Equality Strategy 2020–2025[23] underlines that taxation and social protection systems should not perpetuate structural gender inequalities based on traditional gender norms so that both women and men can thrive in a gender-equal economy. Furthermore, both the OECD and IMF recently published papers analysing tax policies through the gender lens and pointing to the need to re-assess explicit and implicit gender bias in tax systems (see, i.e., Coelho et al. 2022; OECD 2022).

To conclude, from a gender equality point of view, having marriage-related tax-benefit components financially disincentivise the second earners–mostly women–from (fully) participating in the labour market and, therefore, it might contribute to further perpetuating traditional gender norms and unequal sharing of paid and unpaid work. Furthermore, this lock-in effect of marriage, where the second earner is incentivised to work less, also leads to severe economic consequences in the future, ranging from strong economic dependence on the partner to lower pension entitlements. For these reasons, abolishing marriage bonuses could help to narrow both, the gender gap in participation and the gender gap in income, leading to increased financial freedom. Furthermore, it would better reflect the changing trends in family formation[24] and changing gender norms in our societies.

Future research could investigate further whether there is a causal relationship between the monetary incentives related to marriage and the labour market outcome of married women using our novel methodology.

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Conflicts of Interest: The authors declare that there is no conflict of interest with respect to the publication of this article. The content of this article does not reflect the official opinion of the European Commission. Responsibility for the information and views expressed in the article lies entirely with the authors.

Abbreviations

The following abbreviations are used in this manuscript:

EU	European Union
METR	Marginal effective tax rate
NRR	Net replacement rate
PE	Policy effect

Appendix A. Additional Tables

Table A1. Tax treatment of married couples across countries.

Country	Income Taxation	If Individual, Tax Allowance/Credit for Spouse?	If Individual + No Tax Allowance/Credit for Spouse, Deductions Shared Together
AT	individual	No (single earners' tax credit) *	No
BE	individual (marital quotient applies **)	-	-
BG	individual	No	No
HR	individual	Yes (supported spouse allowance)	-
CY	individual	No	Yes (life insurance)
CZ	individual	Yes (spouse tax credit)	-
DK	individual	No	Yes (tax allowance can be shared; net capital income)
EE	individual	Yes (tax allowance for spouse)	-
FI	individual	No	Yes (unused deficit tax credit can be transferred)
FR	joint	-	-
DE	joint (can opt for individual)	-	-
EL	individual	No	Yes (tax allowances can be shared)
HU	individual	No ***	No
IE	partly joint (can opt for individual)	-	-
IT	individual	Yes (dependent)	-
LV	individual	Yes (dependent) ****	-
LT	individual	No	Yes (deductible expenses can be transferred)
LU	joint (can opt for individual)	-	-
MT	joint or individual	-	-
NL	individual	Yes (low/zero income), also for fiscal partners	-
PL	joint or individual	-	-
PT	joint (also for cohabiting couples, under conditions)	-	-
RO	individual	Yes (dependant)	-
SK	individual	Yes (dependant) *****	-
SI	individual	Yes (dependant)	-
ES	Individual, but can file tax returns jointly	Yes (couples can file individual or joint tax return that affects the additional tax allowance)	-
SE	individual	No	No
UK	individual	No	Yes

Notes: * AT-Single earners' tax credit is paid to a spouse or a partner cohabiting at least 6 months. It is also conditional on having children. Therefore, it could be also treated as a tax credit for children. ** BE-In the case of married couples, the tax legislator allows for income sharing between spouses up to a certain limit (the so-called "marital quotient system"). If one of the spouses earns less than 30% of the couple's total net taxable income, income between spouses is shared as if the higher earning spouse earned 70% of the total household income from professional activity and the other spouse earned 30%. The amount transferred is limited and may not exceed 30% of the total household professional income. After this income sharing, the rate structure is applied to both individuals as if the income was their own individual income. This implies that the transferred part of the income is taxed against a much lower marginal rate than if it had remained part of the income of the higher earning spouse. *** HU-Family tax credit can be shared among parents and is conditional on having children. Therefore, it could be also treated as a tax credit for children. **** LV-Non-working spouse allowance is applied if the spouse has a child below 3-years-old or the spouse has three or more children below 18-years-old. However, if a parent of the kids is not a spouse, this allowance cannot be granted for the other parent (different from AT and HU). ***** SK-Spouse tax allowance can be deducted from the positive tax base of each taxpayer living with a spouse under one of following conditions: takes care of a child up to 3-years-old, receives a caring benefit, is disabled, or is registered unemployed at Labour office. Source: Christl et al. (2021).

Table A2. The average METR before and after marriage for cohabiting couples, and policy effect on the gender gap in METR.

Country	Cohabiting		After Marriage		Difference		Policy Effect
	Women	Men	Women	Men	Women	Men	
BE	56.4	57.5	56.6	56.5	0.3	−1.1	1.3
CZ	26.9	31.5	27.0	30.5	0.1	−1.0	1.1
DE	39.8	45.5	40.8	42.4	1.0	−3.2	4.2
ES	23.2	28.4	24.3	27.6	1.1	−0.8	2.0
IE	38.4	45.8	40.4	44.3	2.0	−1.5	3.5
LU	42.8	44.7	44.1	43.6	1.3	−1.2	2.5
MT	26.7	27.7	26.7	27.3	0.0	−0.3	0.3
PL	27.2	28.6	27.7	29.0	0.4	0.4	0.0

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. 'After marriage' refers to the scenario where cohabiting couples are treated as married by tax-benefit systems.

Table A3. The average METR before and after marriage for all EU countries.

Country	Married		Before Marriage		Difference	
	Women	Men	Women	Men	Women	Men
AT	35.9	43.8	35.9	43.8	0.0	0.0
BE	55.2	55.4	54.7	57.7	0.6	−2.3
BG	21.8	21.6	21.8	21.6	0.0	0.0
CY	21.3	22.0	25.4	23.4	−4.1	−1.4
CZ	27.5	29.1	27.5	29.6	0.0	−0.4
DE	42.1	41.7	37.0	45.3	5.1	−3.6
DK	44.7	48.2	44.6	47.9	0.2	0.3
EE	24.0	25.0	23.8	25.0	0.2	0.1
EL	30.8	37.8	31.1	37.7	−0.3	0.1
ES	24.7	30.0	22.6	31.5	2.1	−1.5
FI	39.9	43.6	39.9	43.6	0.0	0.0
FR	33.5	34.6	32.6	36.3	0.9	−1.7
HR	24.1	24.1	24.5	24.2	−0.4	−0.1
HU	30.1	31.7	30.1	31.7	0.0	0.0
IE	40.7	43.3	38.6	45.0	2.2	−1.7
IT	38.9	45.9	39.5	46.6	−0.6	−0.7
LT	39.1	39.1	39.1	39.1	0.0	0.0
LU	44.6	44.6	41.1	48.1	3.4	−3.5
LV	29.1	29.6	29.2	29.7	0.0	−0.1
MT	24.1	27.1	25.6	30.0	−1.5	−2.9
NL	32.3	47.1	32.3	47.1	0.0	0.0
PL	28.3	27.3	27.5	27.5	0.8	−0.2
PT	31.6	31.9	31.6	31.9	0.0	0.0
RO	38.2	37.5	38.2	37.4	0.0	0.1
SE	34.8	40.6	34.8	40.6	0.0	0.0
SI	37.9	38.1	37.9	38.1	0.0	0.0
SK	32.0	34.3	32.1	34.3	−0.1	−0.1

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. 'Before marriage' refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

Table A4. The average NRR before and after marriage for all EU countries.

Country	Married		Before Marriage		Difference	
	Women	Men	Women	Men	Women	Men
AT	85.0	69.9	85.0	69.9	0.0	0.0
BE	83.9	72.5	86.0	74.9	−2.2	−2.5
BG	81.3	78.0	81.5	78.2	−0.2	−0.2
CY	75.2	62.9	78.8	67.7	−3.5	−4.9
CZ	75.0	63.0	71.8	60.4	3.1	2.6
DE	86.3	76.4	84.7	75.4	1.6	1.0
DK	84.2	76.0	84.5	76.1	−0.3	−0.1
EE	79.6	74.6	79.5	74.5	0.0	0.0
EL	75.3	62.7	76.9	63.2	−1.6	−0.5
ES	76.1	62.4	75.2	62.4	0.9	0.0
FI	82.3	74.9	82.3	74.9	0.0	0.0
FR	87.9	80.9	88.0	81.0	−0.1	−0.1
HR	76.1	65.9	76.2	66.1	−0.1	−0.2
HU	69.9	60.3	69.9	60.3	0.0	0.0
IE	73.8	62.5	73.2	62.2	0.6	0.3
IT	78.2	64.8	77.4	64.4	0.8	0.4
LT	81.6	74.1	81.6	74.1	0.0	0.0
LU	92.3	86.0	92.1	86.3	0.1	−0.3
LV	76.7	68.5	76.7	68.6	0.0	0.0
MT	68.4	55.8	66.5	54.6	1.9	1.1
NL	84.9	74.3	84.9	74.3	0.0	0.0
PL	69.0	58.9	68.9	59.2	0.2	−0.4
PT	87.8	81.4	87.8	81.4	0.0	0.0
RO	72.2	61.8	72.6	61.7	−0.3	0.1
SE	78.2	71.9	78.2	71.9	0.0	0.0
SI	77.5	72.9	77.5	72.9	0.0	0.0
SK	75.0	68.0	74.0	67.4	1.0	0.6

Notes: EUROMOD estimations for 2019 based on EU-SILC 2019. 'Before marriage' refers to the scenario where married couples are treated as cohabitants by tax-benefit systems.

Appendix B. The Distribution of METRs and NRRs

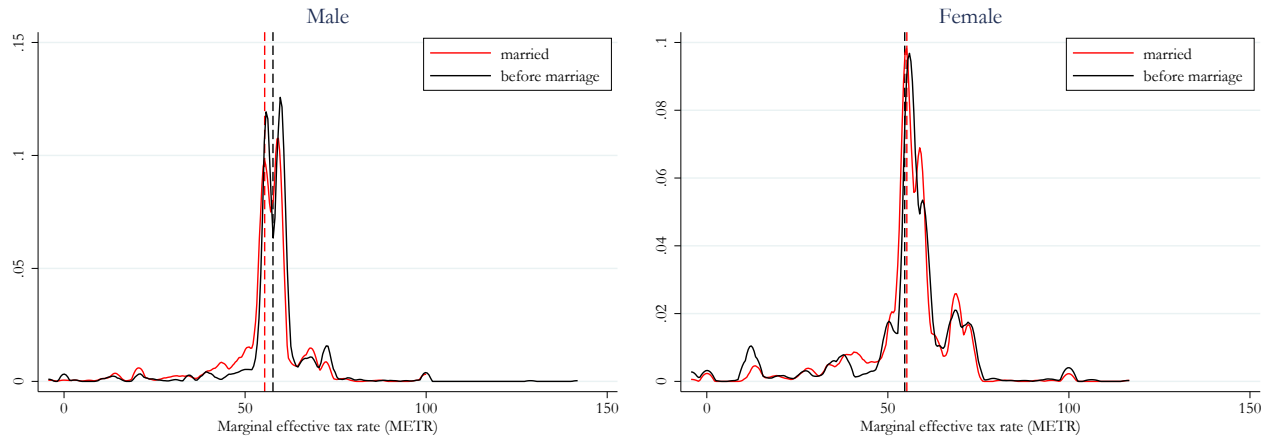

Figure A1. METRs in Belgium.

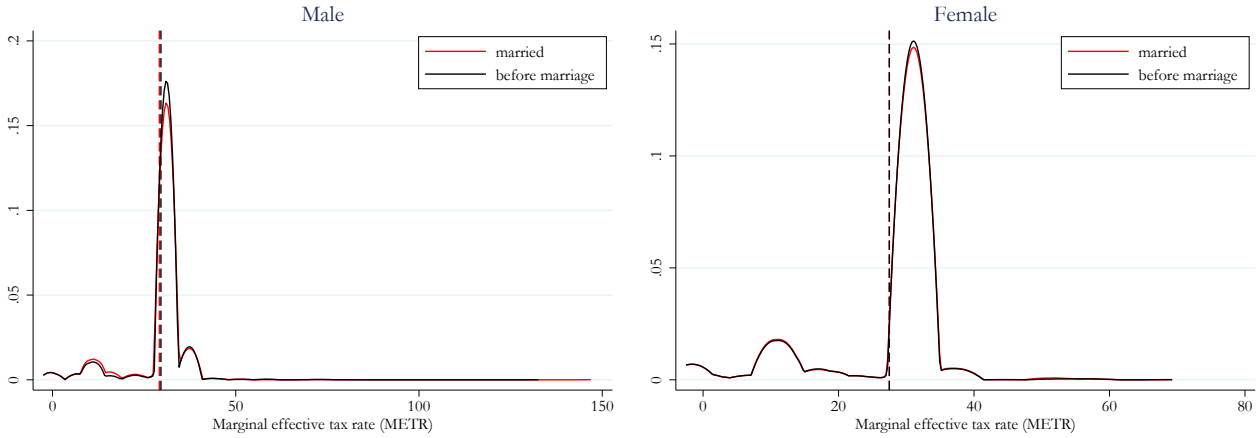

Figure A2. METRs in Czechia.

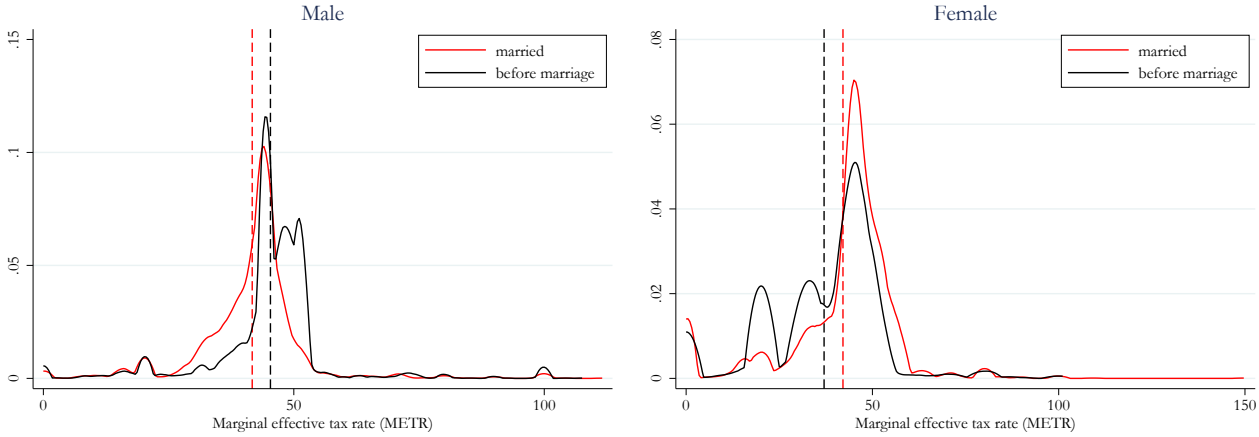

Figure A3. METRs in Germany.

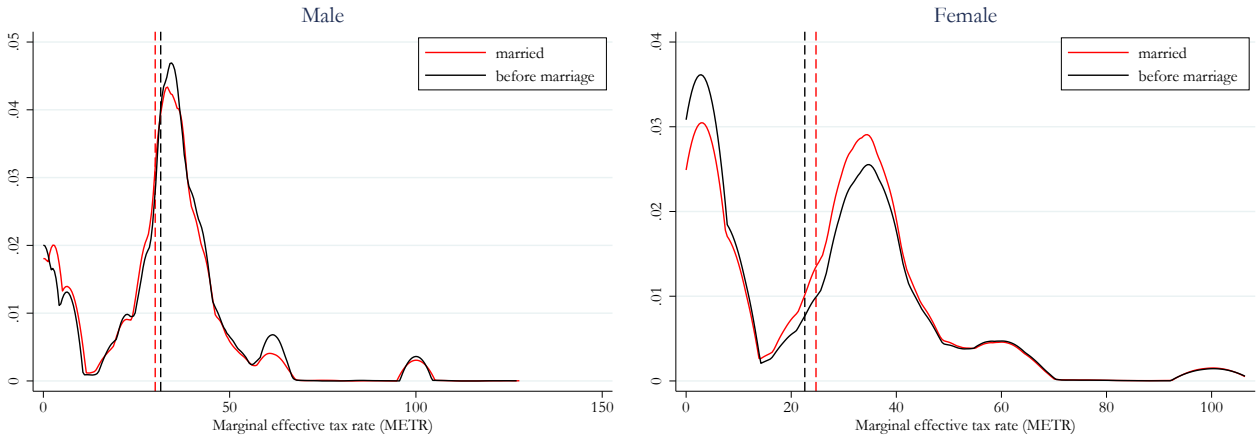

Figure A4. METRs in Spain.

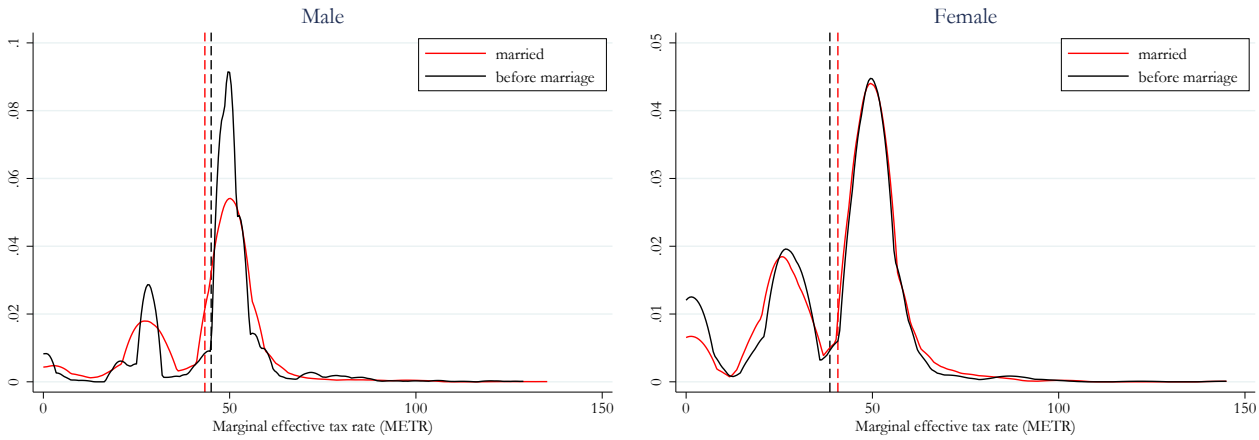

Figure A5. METRs in Ireland.

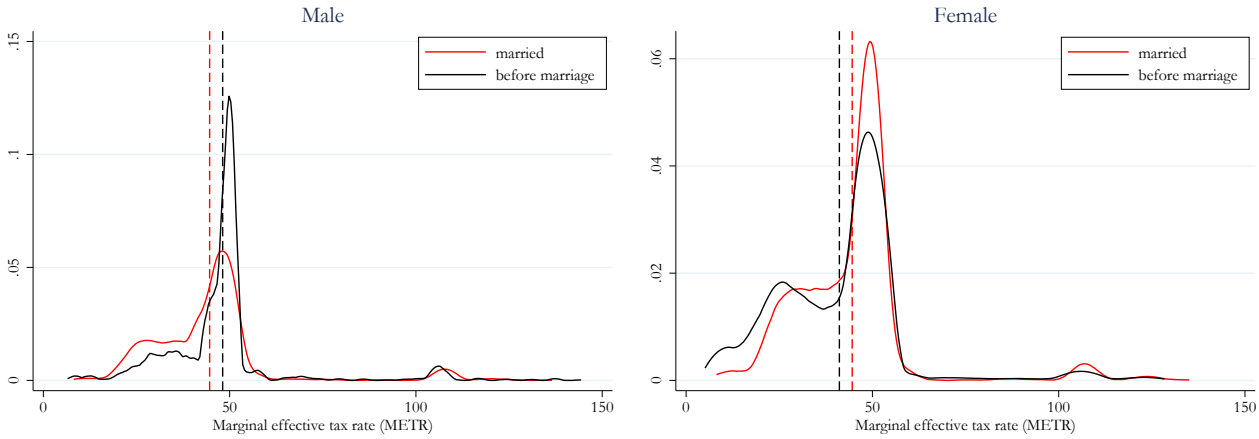

Figure A6. METRs in Luxembourg.

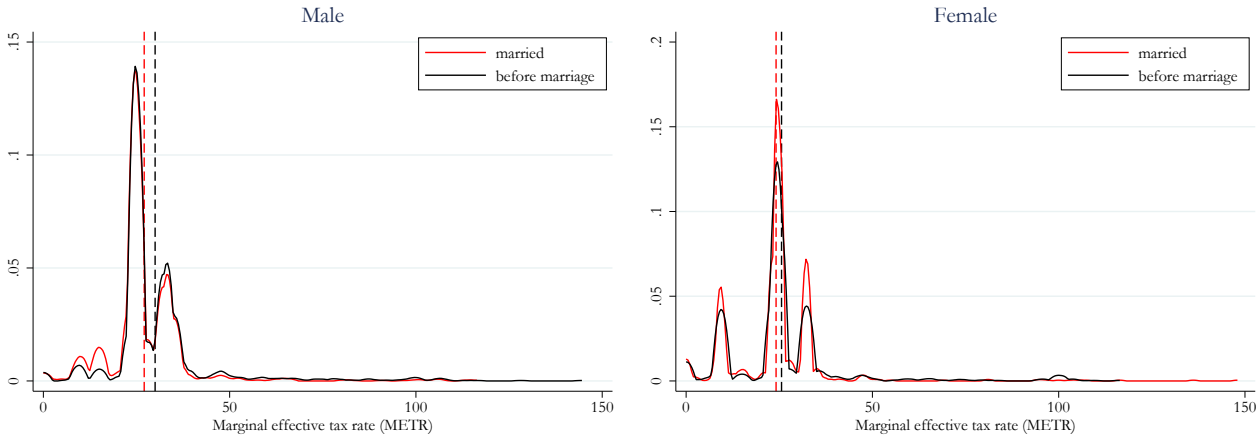

Figure A7. METRs in Malta.

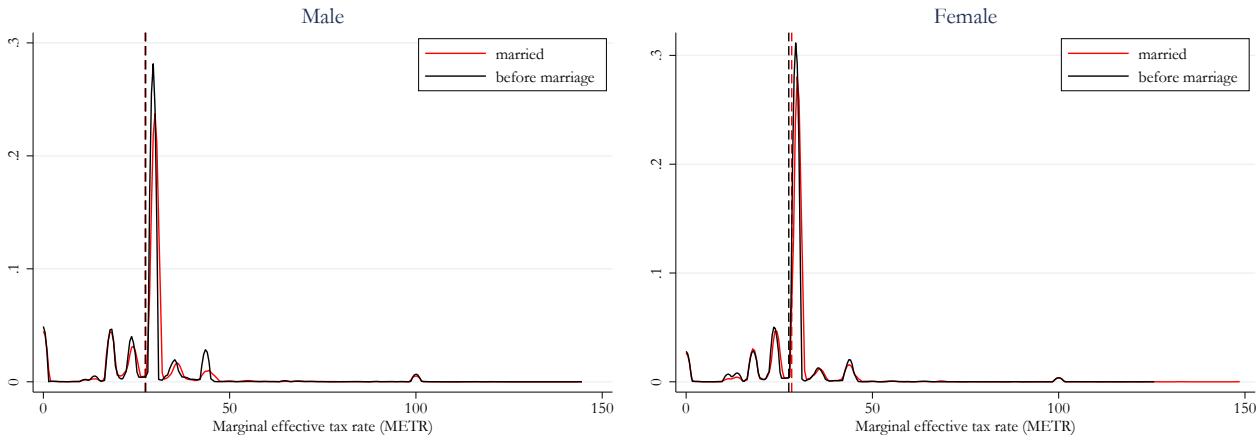

Figure A8. METRs in Poland.

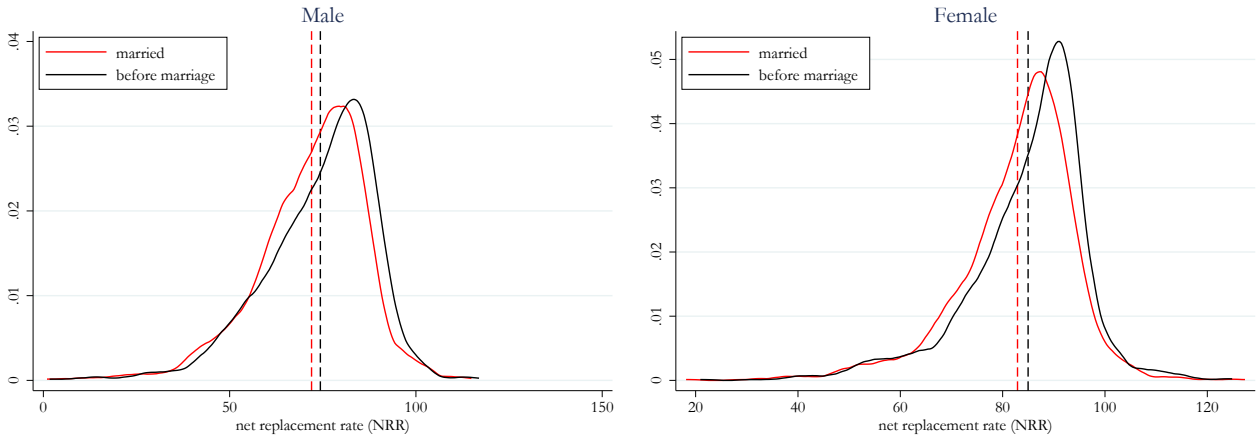

Figure A9. NRRs in Belgium.

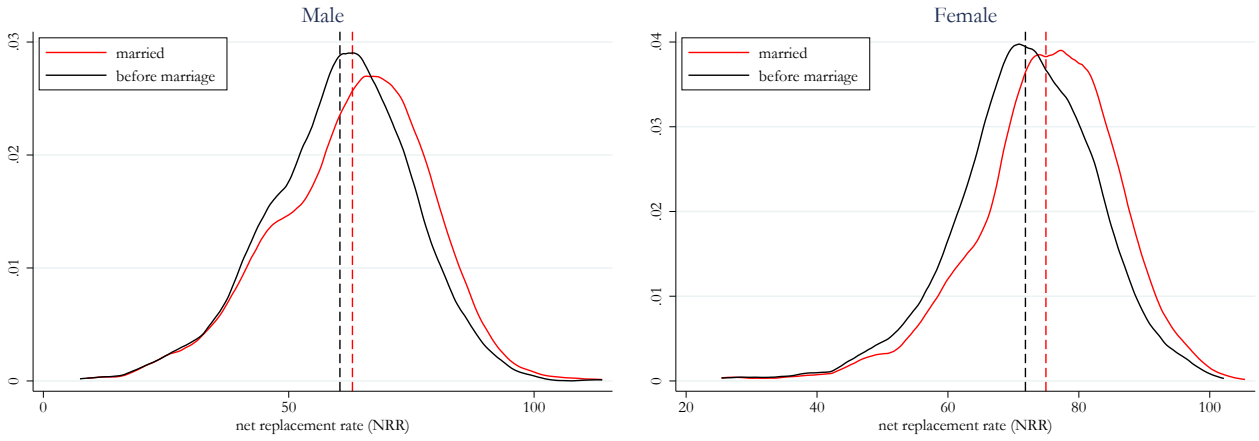

Figure A10. NRRs in Czechia.

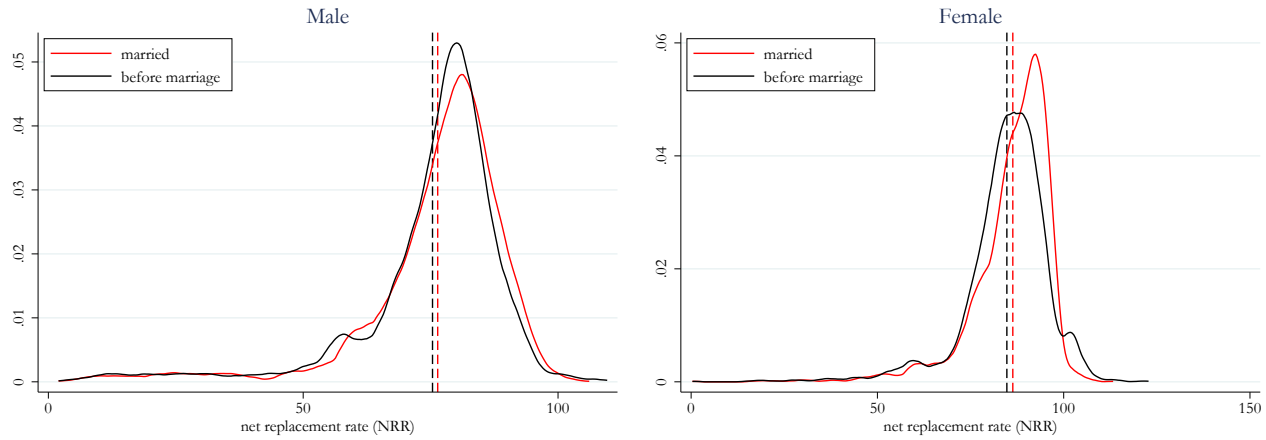

Figure A11. NRRs in Germany.

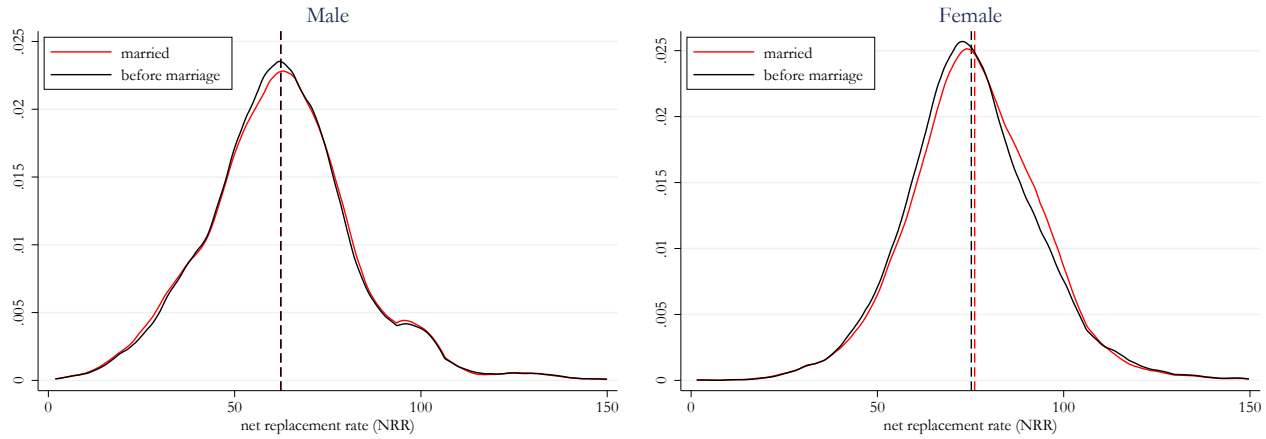

Figure A12. NRRs in Spain.

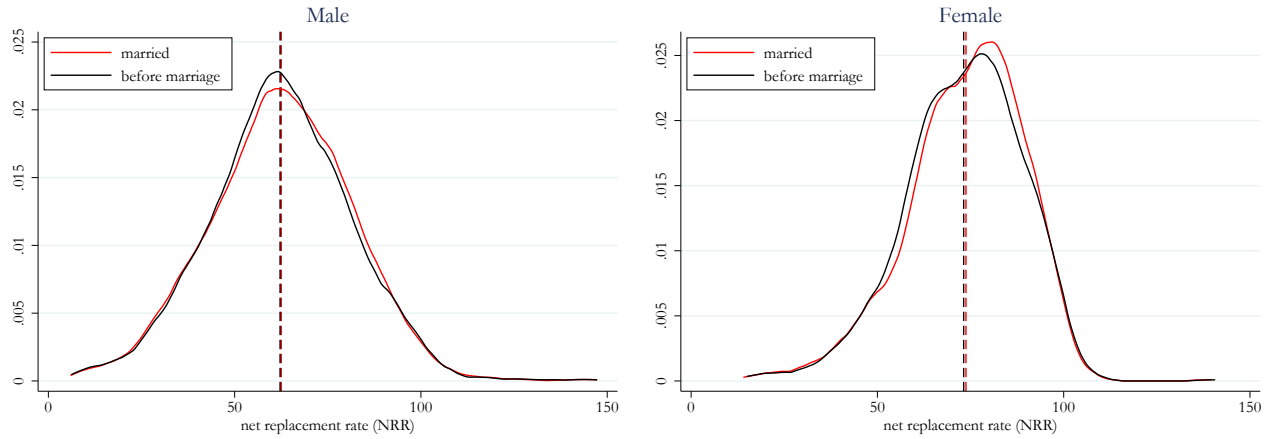

Figure A13. NRRs in Ireland.

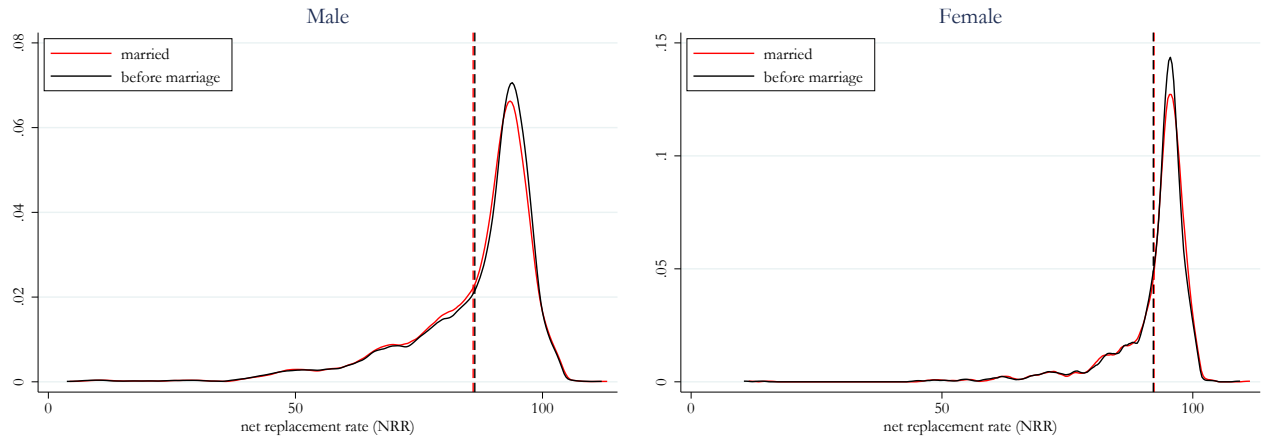

Figure A14. NRRs in Luxembourg.

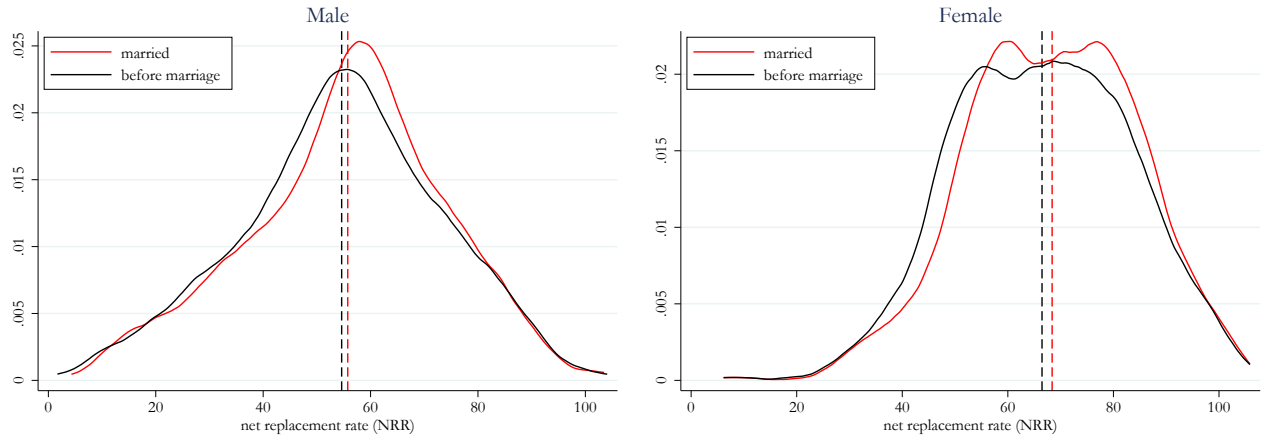

Figure A15. NRRs in Malta.

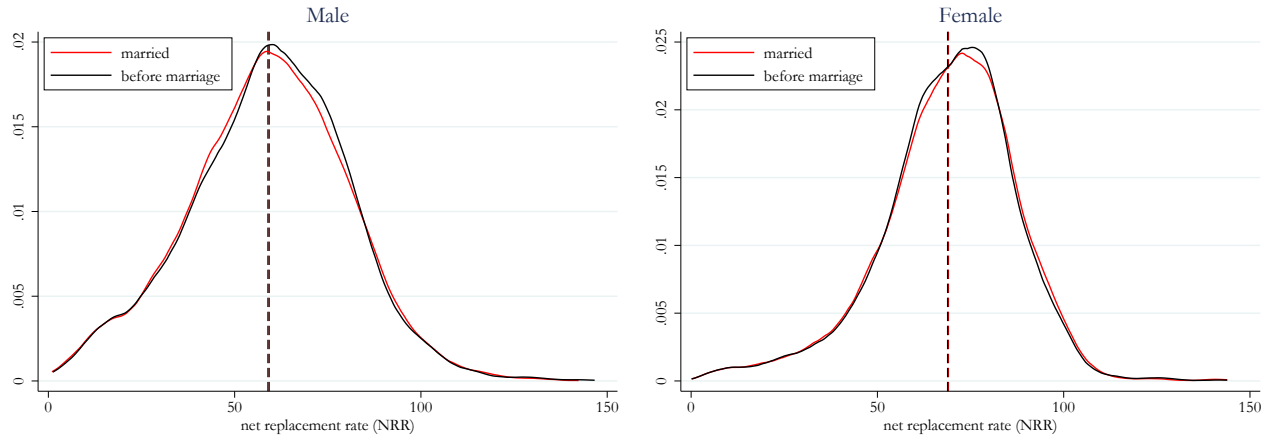

Figure A16. NRRs in Poland.

Notes

1 At the global level, the estimations tend to be much higher. i.e., Madgavkar et al. (2016) estimate that if women were to participate in the economy identically to men, they could add as much as 26% to the annual global GDP in 2025.

2 Explicitly, for example, until 1993, in the UK there was a "married man's allowance"; Greece gave a husband an extra allowance irrespective of wife's income; until 1984, in the Netherlands married men were granted a higher tax-free allowance compared to

married women. When filing a joint tax return, for instance, in France (until 1983), UK (until 1990), Ireland (1993), Greece (until 2018) it used to be a husband who had to submit the tax declaration (Coelho et al. 2022; McCaffery 2009; Stotsky 1996).

[3] Nowadays globally there are less examples (an less so in Europe) of explicit different treatment of women and men and this treatment seems to have shifted from favouring men to being more equally balanced across countries, but not within countries (Coelho et al. 2022).

[4] The OECD report notes that more than half of 23 countries surveyed in 2021 indicated that there was a risk of implicit bias in their tax systems, although only 16 countries reported having assessed this.

[5] In addition, it was viewed that a traditional family has an intrinsic and extrinsic value both to individuals and the society, therefore it should be encouraged and supported also by the tax system.

[6] Separate taxation was in three out of ten Member States: Denmark, Greece and Italy. However all three countries had allowances or reductions for spouses (in Denmark only if one spouse had no income; in Italy if a spouse had income below a certain threshold and in Greece irrespective of spouse's income).

[7] see Commission of the European Communities, Memorandum Memorandum on Income Taxation and Equal Treatment for Men and Women of 14 December 1984 (COM(84) 95 final).

[8] In Ireland, married couples were automatically jointly assessed before 2000 but could elect for single assessment. Some reforms were enacted between 2000–2002 to transition to individual taxation, however the transition was halted before it finished, leaving with a hybrid partly-joint system. A married couple can share a portion of their standard rate band but not all of it (Doorley 2018). In Luxembourg before 2018, married taxpayers were compulsorily taxed collectively with their spouses, but now married taxpayers can choose between either a pure individual taxation, an individual taxation with reallocation of income, or a collective taxation. In Estonia before 2017, a married couple had an option to file a joint tax report, which was beneficial if one had unused tax allowances. Since 2017, joint declarations were abolished, although a few tax allowances can still be shared between spouses. In the Netherlands, partners with low or no taxable income may be entitled to tax credits depending on the income of a higher earning partner. Starting in 2009, the payment of the general tax credit to a spouse with a low or no income is being reduced to zero within 15 years. In 2020, the general tax credit to a spouse was reduced by 80 percent compared to 2009. Until 2013 in Slovakia, the only condition to get a spouse allowance was income below the basic tax allowance. Currently, it is also conditioned on taking care of small children, having a disability or the obligation to register at Labour office (Christl et al. 2021).

[9] see European Parliament resolution of 15 January 2019 on gender equality and taxation policies in the EU.

[10] Following the methodology of Christl et al. (2021).

[11] Since fiscal year 2018, married taxpayers can opt either for joint or individual taxation. In EUROMOD it is assumed that married taxpayers opt for joint income taxation because it is more beneficial.

[12] The only exception is Belgium, where we used EU-SILC data from 2018. The monetary values of market incomes are uprated to 2019 using specific uprating factors.

[13] It should be noticed that the "before marriage" scenario does not reflect the real situation before marriage, because it is built based on all the individual characteristics (e.g., labour market status, number of working hours) observed after marriage. Hence, it already includes potential adjustments to the labour supply due to change in work incentives after marriage.

[14] Table A3 shows the average METR for all countries. In countries with very minor differences related to the tax-benefit system between married and cohabiting couples, the difference in the average METR before and after marriage is close to 0. In Cyprus, where marriage leads to a reduction in means-tested benefits Christl et al. (2021), we observe a quite large reduction in the average METR both for men and women.

[15] For more details on the METR distribution in the two scenarios by gender, please see Figures A1–A8 in Appendix B.

[16] The only exception is Malta, where the average METR is higher before the marriage. This is due to the means-tested social assistance, which is more generous for cohabiting couples with children than married couples with children (see Christl et al. (2021)).

[17] The METR calculated by the MTR Add-on in EUROMOD assumes an increase of 3% of gross earnings.

[18] Table A4 shows the average NRR for all EU countries. Similarly to the METR, in countries with a minor differences in the tax-benefit system between married and cohabiting couples, we do not find a large change in the NRR in case of marriage. In Cyprus and Greece, which are countries characterized by a marriage penalty (see Figure 1), we find that marriage would reduce NRR both for men and women.

[19] For more details on the NRR distribution in the two scenarios by gender, please see Figures A9–A16 in Appendix B.

[20] This result is in line with Christl et al. (2021), who show that the marriage bonus is higher in couples with only one earner or couples with two earners and a very different amount of income between the two partners. In the presence of a two-earners couple, the NRR shows the replacement rate in case one partner is still employed, while the other partner is unemployed and so will receive unemployment benefits if eligible. Hence, in the couple there will be only one earner, while the partner will have either a lower income level or no income. This effect is particularly strong in Czechia, where taxation is at individual level, but there is a tax credit in case the spouse have a low income level (see Table 1).

[21] If remain unemployed for longer, lower contributory periods to social security schemes may leave women with reduced entitlements to pension rights and increased risk of poverty in older age. In addition, in case of a divorce, women may find themselves in a precarious situation since their position in the labour market can be strongly limited by the decisions that were taken while married.

[22] See European Parliament resolution of 15 January 2019 on gender equality and taxation policies in the EU and the analysis from the Committee on Women's right and Gender Equality (Gunnarsson et al. 2017)

[23] In this strategy, the European Commission pledges to develop guidance for the Member States on how national tax and benefit systems can incentivise or disincentivise second earners. See A Union of Equality: Gender Equality Strategy 2020–2025.

[24] In most Western societies, household formation has changed rapidly over the past centuries. The traditional form of marriage that has been the dominant form of family households for decades, is losing it's importance and cohabitation is on the rise in many countries (Perelli-Harris and Gassen 2012). The crude marriage rate has declined by close to 50% since 1964, while the crude divorce rate more than doubled in the same time (ESTAT Marriage Indicators).

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