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Gender-data expansion project

Work stream 3 – item 4. How taxation and income support policies shape the payoff from full-time employment for single mothers and partnered women.

This note examines how tax and benefit policies combined with existing gender wage disparities shape the financial rewards of full-time work. The analysis uses output from the OECD tax-benefit model (Annex 1) to calculate the financial gain from full-time employment for selected model-type families, e.g. a couple with two children aged 4 and 6. Results are based on the latest-available policy library of the OECD tax-benefit model and database, and the most recent gender-based statistics on full-time earnings from the OECD Earnings Distribution Database.

Section 1 summarises the main findings and proposes possible directions for future work. **Section 2** describes the gender wage gaps for full-time employees at low and median earnings levels. **Section 3** examines the financial disincentives to take up full-time employment for single and partnered women at selected earnings levels of their gender-specific earnings distributions. **Section 4** extends the results presented in Section 3 to families with pre-school children using centre-based childcare.

The **Excel file** "*Gender-specific-PTR-OECD-TaxBEN.xlsx*" provides direct access to all the data and figures described in this note.

All outputs of the Gender-data expansion project are available at www.oecd.org/gender/gender-data-expansion.htm

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1 Summary and way forward

1. Wages and employment intensity differ systematically between men and women. In consequence, transfers between individuals and governments that are defined based on these characteristics result in different outcomes for men and women, even though there are few or no aspects of taxes or social benefits that discriminate based on gender.

Methodology

2. This note uses output from the OECD tax-benefit model (TaxBEN – Annex 1 for details) to study how the characteristics of tax and benefit policies combined with existing gender earnings inequalities shape the financial disincentives to full-time employment for selected model-type families. Financial disincentives are measures through the so-called Participation Tax Rate indicator (PTR), i.e. the fraction of earnings that the selected family loses due to higher taxes and lower benefits when one of the jobless family member takes up employment at a certain level of earnings. Box 3.1 provides additional details on the PTR indicator.

Main findings

3. Participation tax rates to full time employment are generally higher for women than for men when measured at equivalent points of the respective gender-specific earnings distributions. This gender difference is particularly large for low-earnings single persons in **Latvia**, **Japan** and **Switzerland**, and in **Latvia**, **Spain** and **Estonia** for single parents. This is primarily the consequence of the withdrawal of safety net benefits, which offset more of the lower woman's earnings base. On the contrary, progressive and individual-based tax systems have an equalising effect on the gender pay gaps, especially when moving further up in the earnings distribution, for example in the **Netherlands** and **Israel**.

4. Partnered women with a working partner face, on average, weaker participation incentives than single women. For instance, one-earner couples may be entitled to means-tested benefits that are lost when the woman takes up full-time employment (**Australia**. **Denmark**, **Poland**, and **Slovenia**). Similarly, in-work benefits assessed at the household level can diminish work incentives for second earners, especially for low-earning women (**France**). The impact of these mechanisms is larger in families with children, as the more generous benefits received before the in-work transition further reduce the woman's payoff from full-time work.

5. Joint income taxation is another typical driver of lower financial incentives to full-time employment for second earners, as the couple's joint tax rate is pushed up by the higher-earning partner (**Belgium**, **France**, **Germany** and **Ireland**). However, financial incentives may sometimes be weakened when incomes are taxed individually. This can be the result of high effective tax rates across the income distribution, or high social security contributions that reduce take-home pay (**Belgium**, **Germany** and **Iceland**). Specific tax advantages, such as a single-earner credit or allowance, that are lost once both adults are in employment can also reduce the income gains for second earners (**Italy**).

6. In-work benefits are an important policy tool for strengthening employment incentives for specific target groups, e.g. low-skilled workers. However, the withdrawal of these benefits at somewhat higher earnings levels as well as the calculation of benefit entitlements as a function of the household income (**France**, **Ireland**, **Korea** and the **United States)** instead of taxpayers'

individual incomes (**Italy**, **Israel** and **Sweden**), may reduce the payoff from full-time work for second earners.

7. **Childcare costs** can be a major barrier to employment for families with young children. On average across OECD countries, when a single mother takes up full-time employment using full time childcare for her children, she loses about 64% of her gross earnings through the joint effect of lower benefits, higher taxes and positive childcare costs. Childcare cost contribute to this result by about 8-10 percentage points of the overall indicator (depending on the selected earnings levels). Financial disincentives are particularly high in **Austria, Japan, Slovenia** and **Switzerland**. In these countries, the financial gain to full-time employment when including childcare costs can be zero or even negative. High work incentives for single mothers using childcare occur in countries where the generosity of out-of-work benefits is relatively low (**Slovak Republic**) and/or some benefits are not means-tested in a given earnings range (**Hungary**), or where in-work benefits provide additional income support when the mother is in employment (**United States**).

8. Married women entering employment and using formal childcare services face, on average, lower work disincentives than single mothers. This is often due to the contribution of the father's earnings the overall household income, with the associated lower benefit amounts when the mother is out of work and the lower impact of benefit withdrawal when she takes up employment. The average participation tax rate indicator when married mothers tasks up employment is 57% at low earnings levels and 48% at median earnings levels. The contribution of childcare costs to the financial disincentive indicator is larger for partnered mothers than single mothers (15 percentage points on average versus 8-10 percentage points for single mothers). This is mainly the result of means testing of childcare assistance, especially in countries with relatively high gross fees (**Switzerland**, **Ireland**, **Australia**, the **United Kingdom** and the **Netherlands**). The contribution of childcare costs remains low in countries where gross fees are relatively low (**Germany**, **Austria**) or where childcare benefits cover most or all of the cost despite the combined family income (**Latvia** and **Italy** as well as **Estonia** and **Greece** for low-earnings).

Main findings for the United States

9. In the **United States**, disincentives to full-time work are similar for single women and single men. This contrasts with the majority of OECD countries, where disincentives are on average higher for single women. Opposite results are observed for lone mothers, who in the **US** face lower disincentives to full-time employment than lone fathers. In fact, lone mothers taking up full-time employment in the **US** receive higher in-work benefit entitlements (EITC) and pay lower taxes compared to single fathers working full time at an equivalent point of the gender-specific earnings distribution.

10. Work disincentives for married women without children in the **US** are slightly lower compared to the other OECD countries. However, the main drivers of the financial disincentives for this family type are similar to the other OECD countries, i.e. higher income tax liabilities and social security contributions when the second earner takes up full-time employment. At low earnings levels, an additional source of financial disincentive in the US is the EITC withdrawal.

11. When looking at married low-earnings women with children, financial disincentives in the **US** are among the highest. The mother's additional earned income causes the withdrawal of both social assistance benefit (SNAP) and the EITC received by the family before the in-work transition. For this family type, the reduction of social transfers, combined with the increase in tax liabilities and social security contributions, make almost 95% of the additional earnings. Disincentives for median-earnings couples with children are instead close to the OECD average, as this family type is not eligible for the SNAP and the EITC even before the mother's in-work transition. As a result, similarly to many other OECD countries, work disincentives for median-

earnings mothers in couple are mainly driven by the higher tax liabilities paid when they take up employment.

12. When considering families using formal centre-based childcare, **US** (Michigan) single mothers with children entering employment manage to retain all of their earnings plus an additional 16%. This is due to the mother being eligible in employment for both the EITC and Child Tax Credit, which are both refundable and paid at higher rates in 2021 through temporary COVID-19 measures. The contribution of net childcare costs in the **US** is about 5 percentage points at low-earnings, as childcare fees are largely offset by the (Michigan's) childcare assistance benefit and the Child and Dependent Care Tax Credit (refundable in 2021). The impact of net childcare costs is much higher for single mothers at median earnings levels. The work disincentive indicator for this family type in the **US** is about 30 ppts higher when including the impact of net childcare costs. This is mainly due to the means testing of the Michigan's childcare assistance, which is withdrawn when the mother takes up employment at median earnings levels, although childcare fees are still partially offset by the (refundable in 2021) Child and Dependent Care Tax Credit.

13. The work disincentive indicator for **US** (Michigan) mothers in low-earnings couples is the highest in the OECD. These couples are eligible for both the EITC and the Child Tax Credit when the mother is out of work. However, differently from the single mother scenario, the additional earnings when the mother takes up employment decrease the family's entitlement to these credits, as well as their social assistance payment (SNAP). Moreover, the family loses eligibility also for the Michigan childcare assistance. Overall, **US** mothers entering employment at low earnings levels would lose all of their earnings plus a further 51% due to higher taxes, childcare costs and lower benefits. In contrast, **US** mothers taking up employment at median-earnings have a much lower participation tax rate of only 59%, as the father's (higher) earnings means that the family receives less income support already before the mother takes up employment.

Way forward

14. A possible direction for future work could examine how taxation, income support policies and childcare costs have contributed to shape the payoff from full-time work over time, disentangling the impact of policy reforms from changes in the observed gender wage gaps.

15. Another possible direction for future work could analyse the incentives provided by tax and benefit systems to share work "more equally" within working partners, suggesting concrete reform proposals for the US and other selected OECD countries where these incentives are particularly low.

16. Finally, an additional direction for future work could be the extension of the analysis for the United States to other states. Results for the US, which currently refer to Michigan, showed the relevance of state-level policies, e.g. the Michigan's childcare assistance benefit, in shaping the financial gain to full-time employment for both single and partnered women.

2 Gender wage gaps for full-time employees

17. This section describes the most-recent data available in OECD Earnings Distribution Database on the gender wage gaps for full-time employees. The average gap across OECD countries is 10% for "low" earners (i.e. for earnings equal to the 10th percentile of the gender-specific earnings distribution), 13% for median earners, and 20% for "high" earners (9th percentile of the gender-specific earnings distribution).

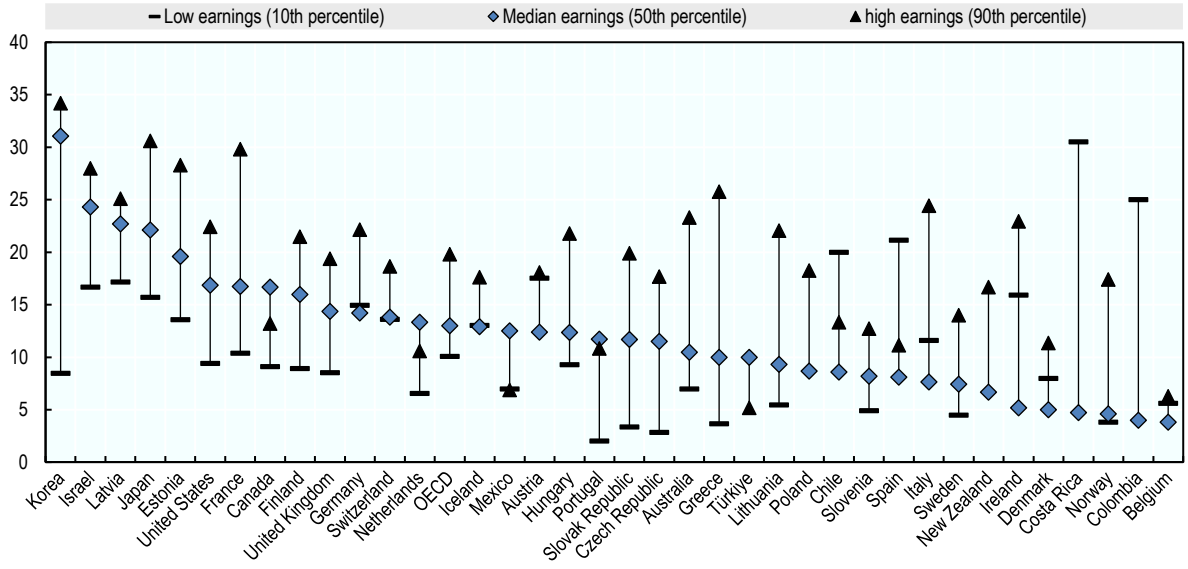
18. Gender pay gaps vary widely across OECD countries (Figure 2.1). In **Korea**, **Latvia**, **Israel** and **Japan**, the gap at the median earnings is above 20%, whereas it is below 5% in **Belgium**, **Colombia**, **Norway**, **Costa Rica** and **Denmark**. The existence of minimum wages and non-statutory wage floors produce more compressed earnings distributions at the bottom and, in turn, smaller gender wage gaps at lower earnings, especially in the **Czech Republic**, **Greece**, **Portugal, Slovak Republic, Slovenia** and **Sweden**.

19. Gender wage gaps are typically bigger at the top of the earnings distribution, a finding that is consistent with the existence of "glass ceilings".[1] This produces particularly high gender wage gaps even in countries where gaps at median earnings are moderate (e.g., **Australia**, **Greece**, **Hungary** and **Lithuania**) or low (e.g. **Ireland, Italy** and **Norway**). In some Latin American and Southern European countries, gender wage gaps are bigger at the bottom of the earnings distribution, a finding that is consistent with the existence of "sticky floors" (**Colombia**, **Costa Rica**, **Chile**, **Italy** and **Spain**).

20. The gender wage gap at median earrings in the **United States** is 4 percentage points higher than the OECD average (17% versus 13%). In other words, a woman working full-time with median earnings earns 83 cents for every dollar paid to an equivalent median-earnings man. At low earnings levels, the wage gap in the United States is comparable with the OECD average (9.5% versus 10.1%) whereas is slightly higher for higher earners (22.4% versus 19.8%).

[1] There is a "glass ceiling" when the upper half of the men's earnings distribution is more skewed than the women's, suggesting that women in upper-income brackets have lower pay than their male counterparts. In contrast, a "sticky floor" refers to a scenario where women at the bottom of the distribution are at a greater disadvantage, resulting in wider gaps.

Figure 2.1. Gender wage gaps vary significantly across OECD countries



Note: 2020 data for Austria, Chile, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Latvia, Lithuania, the Netherlands, Poland, Portugal, Spain, Sweden, and Switzerland. Data for Colombia, Ireland, Israel, and Italy refer to 2019. Data for Costa Rica, Iceland, Slovenia, and Turkey refer to 2018.
Source: Secretariat estimates based on data from the OECD Earnings Distribution Database.

3 Gender differences in the financial incentives to take up full-time employment

21. Wages and employment intensity differ systematically between men and women. As a result, tax liabilities and benefit entitlements calculated using these characteristics necessarily result in different outcomes for men and women, even though the legal provisions underlying most of the tax and benefit provisions do not explicitly discriminate based on sex or gender. For example, in view of existing gender gaps in earnings, a progressive individual income tax redistributes from men to women, on aggregate. As this will reduce the tax burden on women, it will tend to improve their financial work incentives, partly offsetting their disadvantage in terms of work incentives due to their lower wages. Conversely, earnings-replacement benefits that women are more likely to receive (e.g., child-raising allowances for stay-at-home parents) also redistribute towards women but, when withdrawn against earnings, worsen their incentives to earn an independent income.

22. This section uses the OECD tax-benefit model (TaxBEN – Annex 1 for details) to examine how tax and benefit rules, combined with de-facto gender earnings disparities, affect the financial dis-incentives to take up full-time employment of men and women. The first subsection describes the financial work (dis-)incentives for single men and women, both with and without children, whereas the second part examines the disincentives of married/cohabiting women when the partner works full-time.

23. Financial work disincentives are measured as the proportion of earnings that are lost to lower benefits and higher taxes when an individual makes a transition into work. This measure is also known as "**Participation Tax Rate**" (PTR – see **Box 3.1** for details). The indicators considered in this note are calculated under the assumption that, before the labour market transition, the person does not receive unemployment benefits but claims safety net benefits, i.e. mainly cash social assistance and housing benefits, where available.

2.1 Financial incentives to full-time work for single adults

24. **Figure 3.1** shows the *difference* in the PTR indicators of single men and women without children calculated at equivalent points of the gender-specific earnings distribution. **Panel A** shows results for 'low' earnings levels, i.e. for earnings equal to the 1st decile of the gender-specific full-time earnings distribution. **Panel B** shows results for median earners, i.e. at the 5th decile of the gender-specific earnings distribution. **Figure 3.2** shows similar results for single parents.

25. On average, the difference in the PTR indicator of single men and women without children is -2.2 percentage points for low earners (black marker - Panel A), and -2.1 percentage points for median earners (black marker - Panel B). A negative average difference denotes that women's PTRs are typically higher than men, i.e. that their payoff from full-time employment is relatively lower.

26. Looking at the results for low-earnings women (Panel A), **Latvia**, **Japan**, **Switzerland** and **Austria** are the countries where a larger fraction of women's earnings is absorbed by benefit reductions and higher taxes when moving into work. Only in a few countries, notably **Belgium**, **France**, **Poland** and the **UK**, low-earnings single women without children retain a proportionally higher fraction of their earnings.

27. The PTR differences shown in **Figure 3.1** are predominantly shaped by the gender earnings gaps. This is particularly evident for countries such as **Japan**, **Korea** and **Latvia**, i.e. for countries where the gender pay gaps at median and low earnings are particularly high (Figure 2.1). However, tax and benefit policies also play a role. This can be seen by the decomposition of the PTR differences (bars in Figure 3.1), which highlights the policy mechanisms driving the overall gender differences.

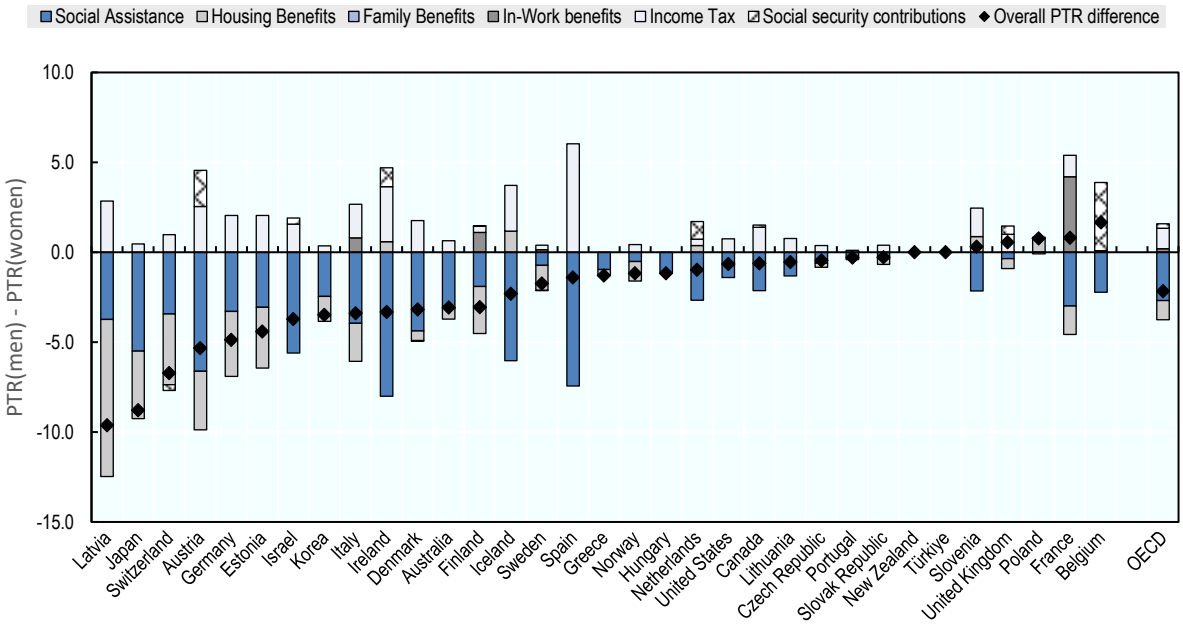
28. The PTR differences are predominantly a consequence of the withdrawal of safety net benefits - mainly social assistance (dark blue bars) and housing benefit entitlements (grey bars) - when moving into work. In other terms, benefit withdrawal offsets a greater part of women's full time earnings when compared with the men's full-time earnings at the equivalent point of the gender-specific distribution.

29. Lower social security contributions (white bars with diamond pattern) and income tax payments (white bars) for women can counteract some of these negative incentives. This is particularly the case for low-earnings women in **Austria**, **Ireland** and **Spain**. For median earners, social security contributions and income tax payments are proportionally higher for men especially in **Israel**, **Estonia** and the **Netherlands**.

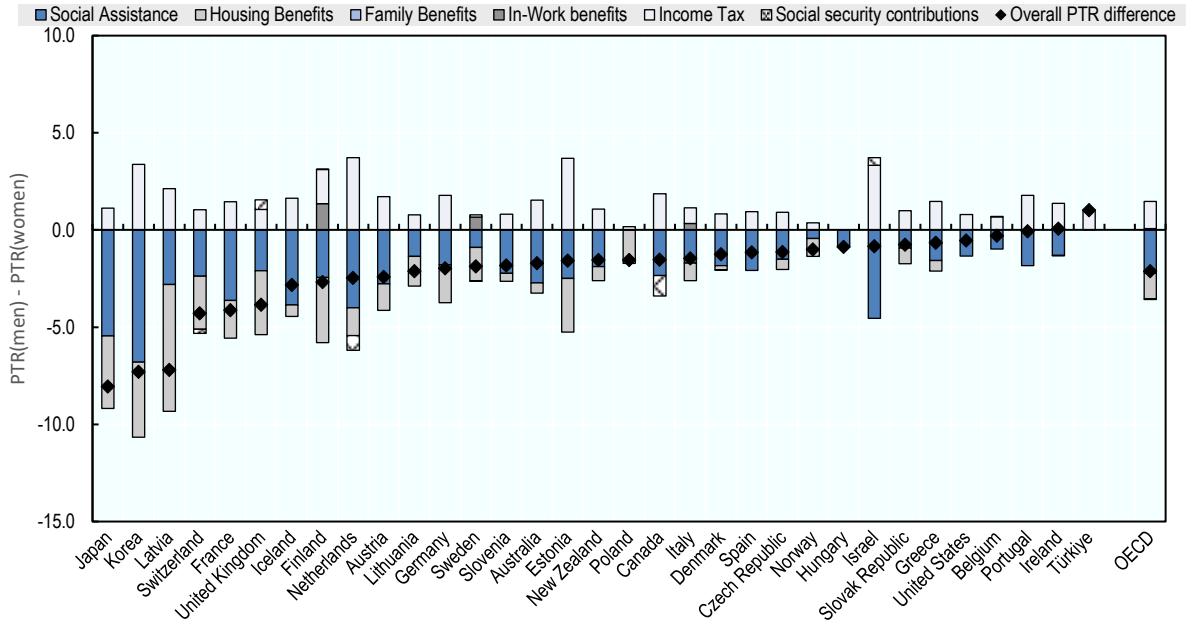
30. For the **United States**, single women and men without children face similar work disincentives (less than 1 percentage point difference). This applies to both low and median earnings levels. The slightly higher PTR for the women is due to their lower earnings levels compared to men, which is only partly compensated by the lower tax liabilities.

Figure 3.1. Differences in the participation tax rates of men and women taking up full-time employment – single persons without children

Panel A: Low earners



Panel B: Median earners



- Policy rules refer to 2021. See Annex 1 for an overview of the OECD tax-Benefit model and Box 3.1 for details on the Participation Tax Rate indicator.

- Gender-specific earnings for "low" and "median" earners are derived from the OECD Earnings Distribution Database (EDD). Earnings for "low earners" (Panel A) refer to the 1st decile of the full-time gender-specific earnings distribution. Earnings for "median earners" (Panel B) refer to the 5th decile of the full-time gender-specific earnings distribution. The raw EDD data in NCU have been made consistent with the OECD Average Wage (AW) measure, i.e. the measure that is used by the OECD Tax-Benefit model (see here for more details on this measure), through the statistical technique described in D'Addio and Immervoll (2010). When the latest available EDD data refer to a year before 2021, earnings amounts are uprated to 2021 using the latest-available estimates of the AW measure.

- All calculations refer to 40-years-old adults. Results assume that unemployment benefits are not available, e.g. because they have expired. Social assistance and housing allowances are assumed to be available subject to relevant income conditions. Where benefit rules are not determined on a national level but vary by region or municipality, results refer to a "typical" case (e.g. Michigan in the United States, the capital in most of EU countries). When receipt of safety-net benefits is subject to activity tests, e.g. active job-search and availability to take up employment, these requirements are assumed to be met. Cash housing benefits are calculated assuming private market rent, plus other charges, amounting to 20% of the full-time wage for all the model-type families considered in this note.

Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-benefit model (TaxBEN) version 2.5.0.

2.2 Financial incentives to full-time work for single parents

31. Results for single parents are shown in **Figure 3.2**. The calculations refer to single parents with two children aged four and six receiving as needed informal child care.[2] Similarly to **Figure 3.1**, **Figure 3.2** also shows PTR differences for men and women calculated at "low" and "median" earnings levels (see the note to Figure 3.1 for details).

32. Compared to single persons without children, the average PTR difference for single parents is much smaller (in absolute terms), both at low (-0.1ppts) and median (-0.5ppts) earnings levels. This implies that, on average, single fathers and single mothers face similar financial disincentives when they take up full-time employment at equivalent points of the gender-specific earnings distribution.

33. The cross-country average masks sizeable country differences. Low-earning single mothers face higher work disincentives than single fathers especially in **Latvia**, **Spain**, **Estonia** and **Switzerland**. For median earners, higher PTRs for single mothers are observed in

[2] Section 4 shows results younger children (2 and 3 years old) using centre-based childcare care.

Switzerland, **France**, **Austria** and **Germany**. As shown by the blue and light grey bars in **Figure 3.2**, the higher disincentives for single mothers are typically driven by the full or partial withdrawal of safety-net benefits, especially social assistance (**Japan, France** and **Austria**) and housing benefits (**Latvia**).

34. Compared to single adults without children, the payoff from full-time employment is higher for single mothers than single fathers in several countries. Examples include low-earning single mothers in **Ireland** and **Germany** as well as median-earning single mothers in **Korea**, the **Netherlands**, **Israel** and the **United States**.

35. Several policy mechanisms can explain this result. The availability of family benefits, which generally have a lower withdrawal rate compared to other safety net benefits, means that some entitlements are still available after the in-work transition. In addition, the combined effect of the gender wage gaps and the income test of the family benefits may result in single mothers retaining a higher share of these benefits when they take up employment.

36. This is particularly evident in **Korea** (Panel B), where single mothers taking up full-time employment with median earnings retain the full amounts of both the housing and family allowances (light blue and light grey bars), whereas median-earning single fathers lose their entitlements.[3] A similar mechanism operates in **Ireland** (Panel A) where low-earning single mothers retain the single parent benefit when moving into work, whereas low-earning single fathers lose their entitlements. However, because in **Ireland** the single parent benefit is included in the means test of the in-work benefit (dark grey bars), women do not receive the in-work benefit when moving into work (as they receive the more generous single parent benefit), whereas men do. Because of this interaction, the in-work benefit in **Ireland** reduces work incentives for single mothers and increases incentives for single fathers (dark grey bar).

37. In-work benefits provide stronger financial work incentives for single mothers in **France**, **Finland, Israel**, **Korea** and the **United States**. In the **Unites States**, the joint impact of higher in-work benefits (the “Earnings Income Tax Credit” - dark grey bars) and lower income tax liabilities (white bars) of low-earnings women compared to what men would receive/pay when they move into work at the equivalent point of their earnings distribution, help explain the lower PTRs for single mothers compared to single fathers.[4] For median earners, the PTR difference is slightly lower as in this case single mothers lose the social assistance benefit (the “SNAP” - blue bar) when taking up employment at this earnings level.[5]

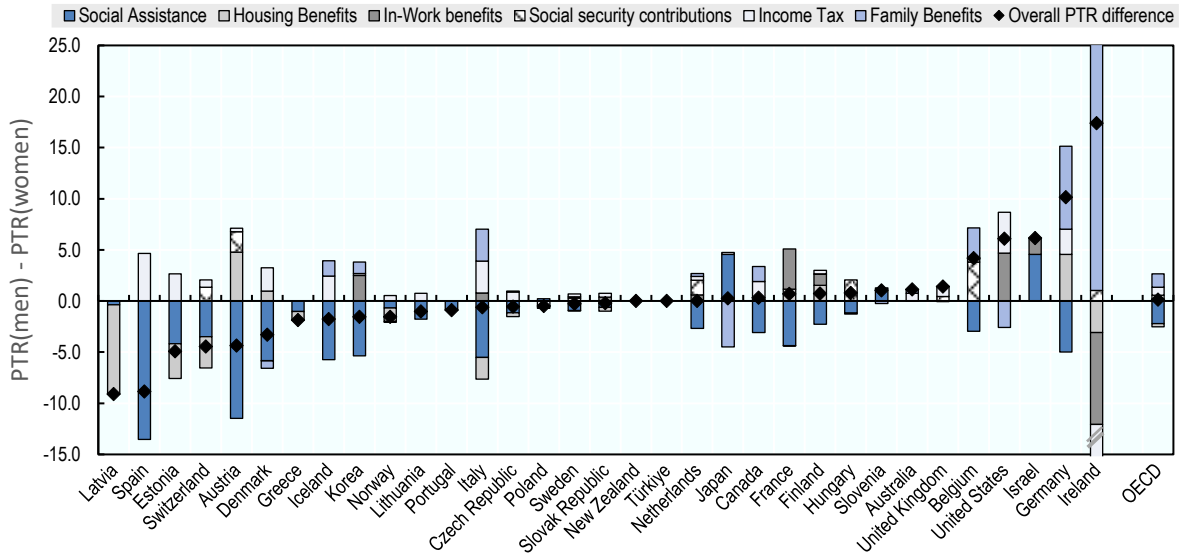
[3] In Korea, housing and family benefits do not decrease progressively with income. Instead, after a certain income threshold, the claimant loses the full benefit amount. Because the median earnings of the single father are above these income eligibility thresholds, single fathers face much higher disincentives to take up employment at median earnings.

[4] The tax base of low-earnings women is lower than the men’s tax base calculated at an equivalent point of the male earnings distribution. Consequently, the tax liability is higher for men. Similarly, because of the observed earnings gap *and* the structure of the EITC, EITC entitlements received by a low-earnings women are higher than men’s entitlements when assessed at an equivalent point in the male earnings distribution.

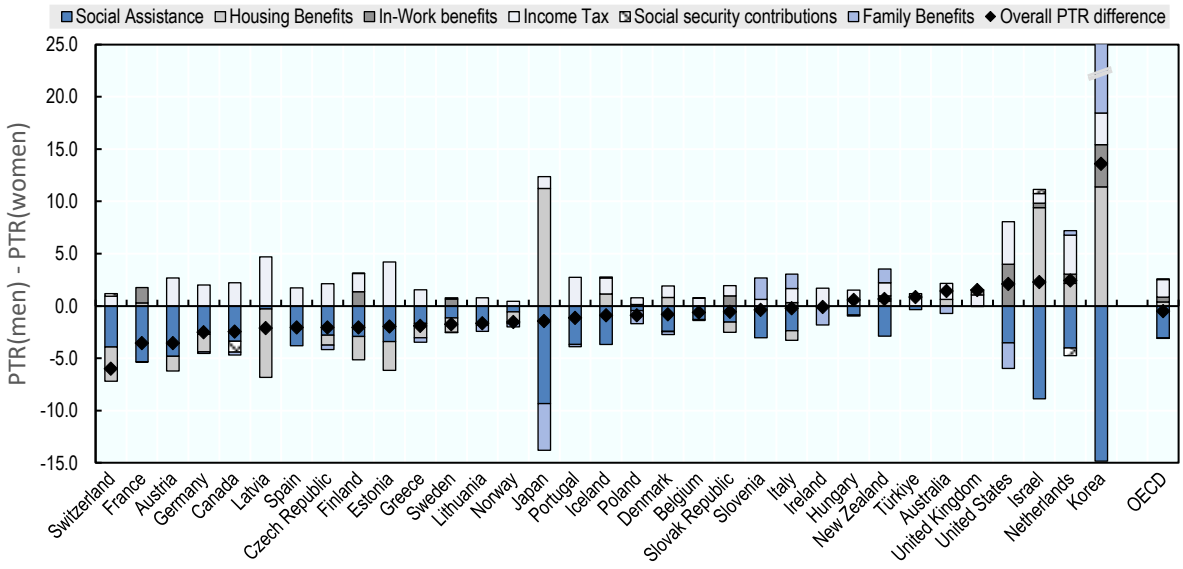
[5] At low earnings levels, both men and women maintain positive entitlements to the social assistance benefit when moving into work.

Figure 3.2. Differences in participation tax rates of men and women taking up full-time employment – single parents with two children

Panel A: Low earners



Panel B: "Median earners"



Notes:
- See the notes to Figure 3.1 for details on the earnings levels and the calculations of tax liabilities and benefit entitlements.
- Calculations for families with children assume two children aged 4 and 6 receiving informal childcare. Childcare costs associated with the use of centre-based childcare are excluded. Results also exclude 'childcare benefits', i.e. benefits whose eligibility depends on the formal use of centre-based childcare. The calculations include benefits whose eligibility depends on *not* using formal centre-based childcare (e.g. home-care and child-rising allowances). Calculations also include single parent benefits calculated under the assumption that the absent parent does not or cannot provide alimony child support payments.

Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-Benefit model (TaxBEN) version 2.5.0.

2.2 Financial incentives to full-time work for second earners without children

38. Most working-age men work and most do so on a full-time basis, regardless of family situations, wage level, or tax burdens. A wealth of studies on labour supply behaviour have established that men's labour supply varies very little, while women react much more strongly to changing family situations or financial incentives from working at all, or working more. The inelastic labour supply of men is one symptom, and possibly a cause, of a persistently gendered distribution of market and non-market work within households. For many women considering whether and how much to work, the partner's employment status is given. With that constraint, adjustments of family work patterns – to respond to changing economic incentives or family responsibilities – still predominantly fall on women.

39. This section examines the financial work disincentives of married/cohabiting women whose partners work full-time. Similarly to the previous section, financial work incentives for second earners are measured through the OECD Participation Tax Rate (PTR) indicator (**Box 3.1**). A useful property of the PTR indicator for second earners is the possibility to quickly calculate the percentage gain in net household income relative to an equivalent one-earner couple where only one of the partners works. This can be done by taking the complement to 100% of the PTR indicator.[6] For instance, a PTR value of 30% means that, after the labour market transition, the net household income increases by 70% relative to an equivalent one-earner couple.

40. The calculations shown in this section assume that, after the woman's transition into work, both partners work at the same decile point of their respective full-time earnings distributions. **Figure 3.3** shows results for couples without children. **Figure 3.4** shows results for couples with children aged 4 and 6.

41. Results for both figures show that full-time work of partnered women brings sizable income gains to the family's net income, even at the lowest earnings levels, and after accounting for relevant taxes and benefits. Across the 33 countries considered in this note, the average earnings gain that is lost to higher taxes and lower benefits (i.e. the PTR) when the woman takes up full time employment is about 30% for both low- and median- earnings couples without children. This means that the average net income gain when partnered women takes up full-time employment is about 70%.

42. The gender gap in gross earnings only partially explains why the net income gain at equivalent points of the earnings distribution is less than 100%. In addition to differences in gross earnings, tax and benefit policies shape the family income gains from working. For instance, one-earner couples may be entitled to benefits that are lost when the woman starts working. In addition, progressive income taxes combined with elements of joint taxation, mean that a family's effective tax rates go up as earnings increase. Unless the tax system is fully individual, the effective tax rate faced by two earners will then exceed the rate a single earner would pay.

43. At low earnings levels, financial disincentives to full-time work for partnered women without children (Figure 3.3 – Panel A) are relatively higher in **Denmark** (60%), **Poland** (51%), **Slovenia** (51%) and **Australia** (50%). The main policy mechanisms behind these results are the full or partial withdrawal of safety net benefits (social assistance in **Denmark** and **Australia**; housing benefits in **Poland** and **Slovenia**) and increases in taxes (income tax payments in **Denmark**; social security contributions in **Poland** and **Slovenia**).

44. In-work benefits (dark-grey bars) increase financial work incentives for second earners in **Finland**, **Italy** and **Sweden**. In these countries, in-work benefit entitlements depend on the

[6] This can be seen more clearly when looking at the PTR formula in Box 3.1.

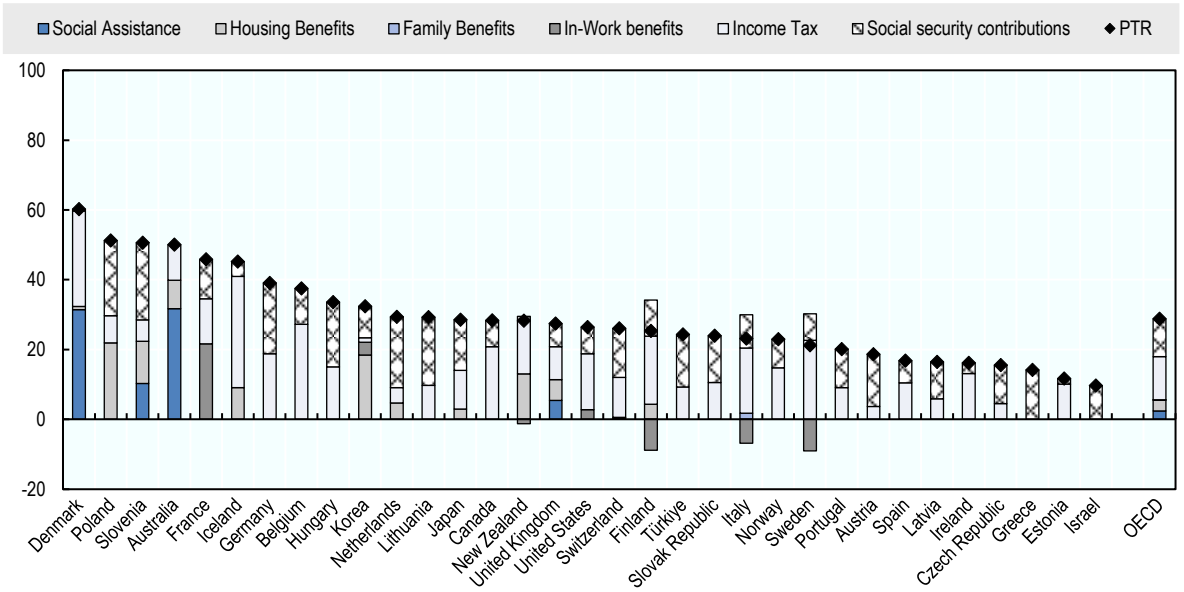
individual earnings without any reference to the household income. As a result, when the woman takes up employment, the man's entitlements do not change whereas in-work benefit entitlements for the woman become positive. On the contrary, the in-work benefit in **France** ("*prime d'activité*") contributes positively to the financial disincentives for second earners. This result is driven by two characteristics of the French benefit. First, the income test applies to the joint income of the two partners. Second, the benefit features a phase-out region with decreasing benefit entitlements for higher earnings levels. As a result, the additional earnings of the woman increase the reference income further up in the phase out region, thus reducing benefit entitlements when both partners work.

45. In countries with a joint income taxation system, second earners may have a lower incentive to take up employment as the additional earnings would be taxed at a marginal rate that is pushed up by the higher-earning partner. This can be seen in **Figure 3.3**-Panel A through the relatively high contribution of the income tax liability (white bars) to the overall indicator in countries operating a joint income tax system, e.g. **Belgium**, **France**, **Germany** and **Ireland**.

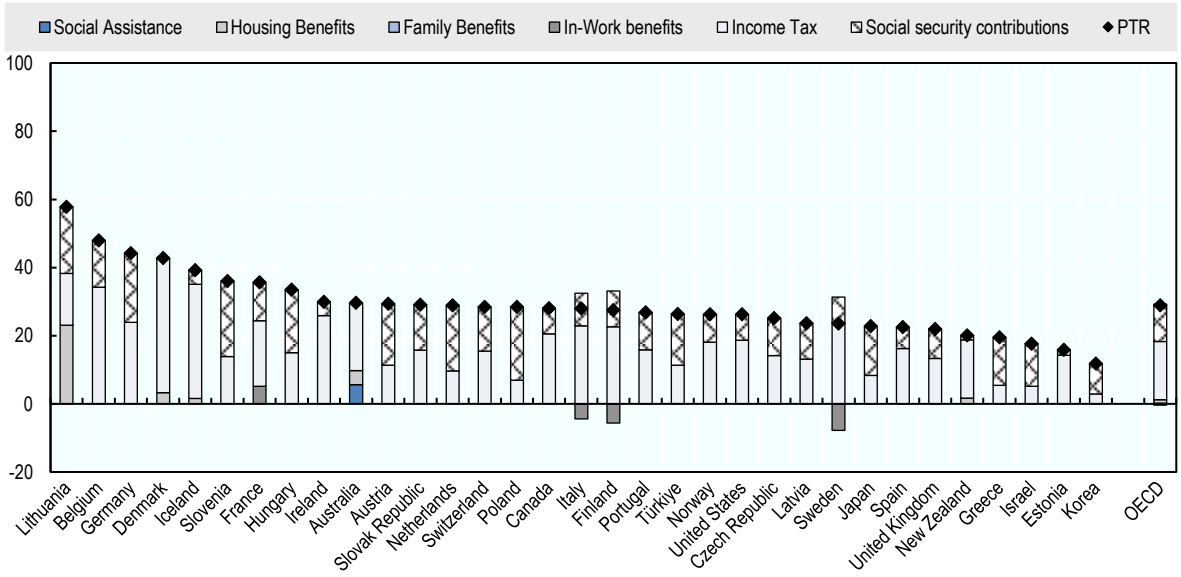
46. In the **United States**, married women without children have stronger work incentives compared to other OECD countries. This finding holds both at low and median earnings levels. The work disincentives observed for the United States is mainly driven by the household's higher income tax liabilities once the woman takes up employment. When women take up employment at low earnings levels the household may lose eligibility to the in-work benefit (the EITC – dark-grey bar), which may further increase to the financial disincentive to take up employment.

Figure 3.3. Participation tax rates for second earners – couples without children

Panel A: low-earnings couples



Panel B: median-earnings couples



Note: see the notes to Figure 3.1 for details. Differently from Figure 3.1, in this case the simulation considers a couple. The calculations for married/cohabiting couples assume that the man works full time and the woman moves into work. After the woman's transition into work, the calculations assume that both partners work at the same decile point of their respective full-time earnings distributions (1st and 5th decile points).
Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-Benefit model (TaxBEN) version 2.5.0

2.3 Financial incentives to full-time work for second earners with children

47. The average PTR indicators for mothers taking up full time employment are higher when compared to women without children (42% for low-earning couples with children and 32% for median-earning couples with children - Figure 3.4).

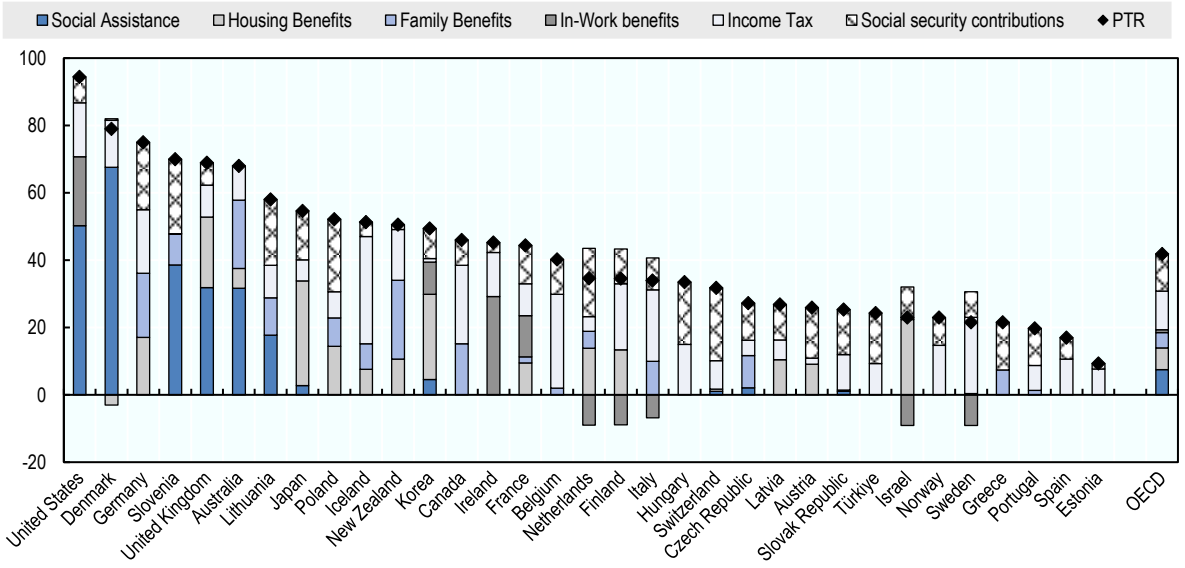
48. For low-earning couples (Panel A), the lowest income gains from the women's full-time work are observed in the **United States**, **Denmark**, **Germany**, **Slovenia**, **United Kingdom** and **Australia**. In the **United States**, the full withdrawal of both social assistance (dark-blue bars) and in-work benefits (dark-grey bars) explain most of the financial disincentives to full-time work of married women. In **Germany**, the relatively high PTR is driven by the withdrawal of family benefits (light-blue bars) and the increase in both social security contributions (white bars with black diamond pattern) and income tax liabilities (white bars). In **Australia**, financial disincentives are caused by the increase in income tax liabilities (white bars) and the withdrawal of social assistance (dark blue bars), housing benefits (light-grey bars) and family allowances (light-blue bars).

49. In-work benefits (dark-grey bars) increase work incentives for married women with children in **Finland**, the **Netherlands**, **Italy**, **Israel** and **Sweden**. On the contrary, in-work benefits increase disincentives for married women in **Ireland**, **France**, **Korea** and the **United States**. Several policy mechanisms are behind these different outcomes. In **Ireland**, the in-work benefit (*Working Family Payment*) is means-tested against the household income. As a result, when only the man works at low earnings levels, the couple is eligible for this benefit, but when both partners work, even at the lowest earnings levels (the 1st decile of the respective earnings distributions), the family is no longer eligible. A similar mechanism applies for **Korea** and, to some extent, **France** and the **United States**. However, the more generous amounts of the in-work benefits in **France** and the **United States**, combined with the relatively longer phase out region, mean that a two-earner couple with low earnings may still receive some benefit entitlements,

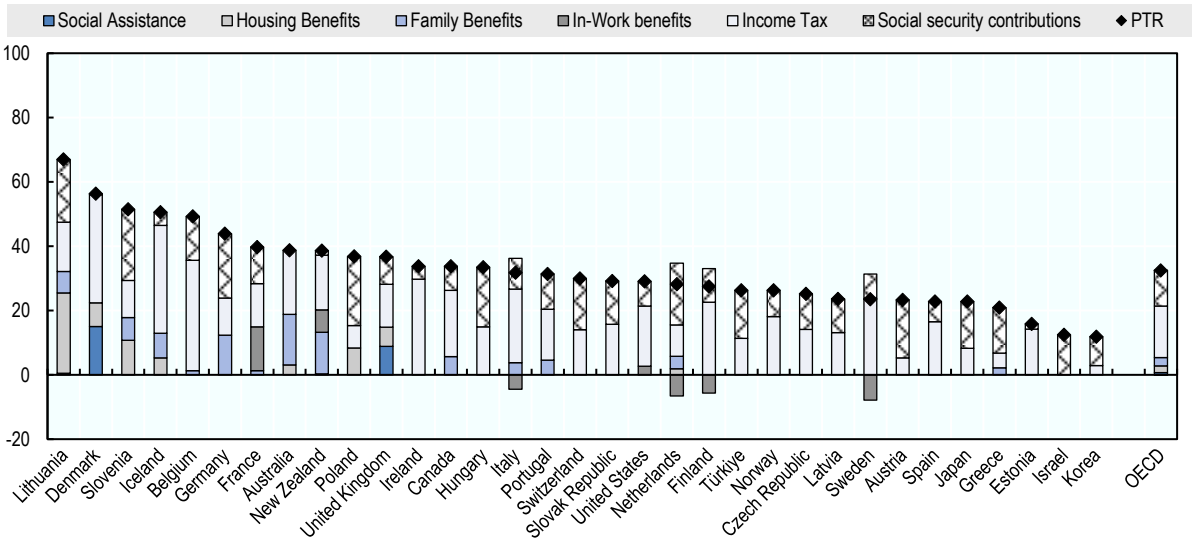
although the amount is lower compared to a one-earner couple where only the man works. In **Italy**, **Israel** and **Sweden**, the in-work benefit is assessed on the incomes of the individual taxpayers whereas in the **Netherlands** only single parents and two-earner couples are eligible for the in-work benefit. As a result, the in-work benefits in all these countries increase work incentives for second earners.

Figure 3.4. Participation tax rates for second earners – couples with children

Panel A: low earners



Panel B: median earners



Note: see the notes to Figures 3.1 and 3.2 for details. Like Figure 3.2, the simulation here considers a couple. Calculations for married/cohabiting couples assumes that the man works full time and the woman moves into work. After the woman's transition into work, the calculations assume that both partners work at the same decile point of their respective full-time earnings distributions (1st and 5th decile points).
Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-Benefit model (TaxBEN) version 2.5.0

Box 3.1. Extensions to the OECD Participation Tax Rate (PTR) indicator to examine the impact of tax-benefit systems on de-facto gender pay gaps.

The Participation Tax Rate indicator (PTR) measures the fraction of gross earnings that a family loses to higher taxes and/or lower benefits when a family member makes a transition from out-of-work to in-work. Formally, the indicator is calculated as 1 minus the change in the net family income (*N*) relative to the change in the gross family employment income (G) before (*b*) and after (*a*) the employment transition:

$$PTR = 1 - \frac{N_a - N_b}{G_a - G_b}$$

The equation above is equal to zero when $(N_a - N_b) = (G_a - G_b)$, i.e. when the family keeps 100% of the additional gross earnings that occur after the employment transition. On the other hand, when the family loses 100% of the additional earnings to either higher taxes and/or lower benefits, the indicator is equal to 1. Hence, *lower* values are associated with *stronger* financial work incentives.

A useful property of the PTR indicator is the additive decomposition into policy levers. Let us rewrite the net family income as $N = G + B - T$, where B denotes benefit entitlements and T the tax liabilities. In this case, the indicator can be rewritten as follows:

$$PTR = 1 - \frac{N_a - N_b}{G_a - G_b} = 1 - \frac{(G_a + B_a - T_a) - (G_b + B_b - T_b)}{G_a - G_b} = \frac{T_a - T_b}{G_a - G_b} - \frac{B_a - B_b}{G_a - G_b}$$

Each additive component measures the contribution of the selected policy lever to the overall indicator. For instance, higher tax liabilities (i.e. $T_a > T_b$) and lower benefit entitlements (i.e. $B_a < B_b$) after the transition into employment increase the indicator, and therefore decrease financial work incentives.

This note extends the standard PTR indicator to enable a gender-based analysis of the financial work incentives induced by tax and benefit systems. The extension consists in a new indicator, DPTR, that considers the absolute difference in the PTR of men and women calculated at equivalent decile points of the gender-specific earnings distribution:

$$DPTR = PTR_{m|d} - PTR_{w|d}$$

Where "*m*" means "men", "*w*" means "women" and "*d*" identifies the selected decile of the gender-specific earnings distribution (e.g. median earnings). A negative value of the DPTR denotes a higher disincentive for women to take up employment. This may happen, e.g., when (i) there is a positive gender wage gap at the selected point of the earnings distribution and (ii) there are earnings replacement benefits that decrease linearly with the earned income. As a result, a woman will retain a higher fraction of the out-of-work benefit compared to a man when both work at, e.g., median (gender-specific) earnings.

The additive property of the of the PTR's income components applies also to the DPTR indicator. This allows a quick identification of the policy lever causing the observed differences in the gender-based work incentive indicator.

4 Impact of childcare costs to the financial incentives of full-time maternal employment

50. Employment decisions of mothers of young children, particularly those with low earnings potential, are known to be particularly responsive to financial work incentives. As childcare costs can be a major expenditure item for families with young children, childcare affordability is critical to the employment decisions of low-income mothers reliant on childcare to work. Whether, or not, childcare is affordable may also compromise parents' ability to actively look for work in the first place. In consequence, these costs should be included in the analysis when assessing the financial work incentives of both lone mothers and second earners with young children.

51. This section describes the financial disincentive indicator (**Box 3.1**) for mothers in single and couple families who use centre-based childcare services when they start working full-time. Differently from the results discussed in Section 3, the focus is on families with two children aged two and three years old, i.e. ages characterised by lower participation rates in ECEC programmes and lower participation of mothers in the labour market.[7]

52. The use of formal childcare is typically associated with higher family expenditure, e.g. on childcare fees and meals consumed during the day. On the other hand, parents using formal childcare may be eligible for target income support measures designed explicitly to reduce the costs of childcare. These measures may take the form of direct cash transfers, higher amounts of other benefits, or lower tax liabilities through e.g. tax credits for selected childcare expenditures. The final 'net' childcare cost is thus the sum of the amounts that parents have to pay for formal childcare less any direct childcare-related transfer, plus any impacts of childcare use on other benefits and taxes, e.g. the loss of homecare allowances provided to parents who start using formal childcare. More details about the methodology for the calculation of the 'net' childcare costs discussed in this section is available in the online manual of the OECD tax-benefit model (here, sections 3.5.9 and 5.3.5).

4.1 Financial incentives to full-time work for single mothers

53. On average across OECD countries, when a single mother takes up full-time employment at low- (1st decile) or median-earnings, she loses about 64% of her gross earnings through a combination of lower benefits, higher taxes and positive net childcare costs (**Figure 4.1** – black diamond marker). Financial disincentives at low earnings levels are particularly high in **Slovenia** (PTR 104%), **Switzerland (Zurich)** (PTR 102%) and **Austria** (PTR 98%). At median-earnings levels, employment offers very little or no financial reward in **Slovenia** (PTR 104%) and **Japan** (PTR 97%).

[7] Results for families with children in Section 3 assume two children aged 4 and 6 *not* using formal childcare.

54. High PTRs typically depend on the joint effect of different policy mechanisms. In **Slovenia**, one of the countries with the highest PTR for single mothers, withdrawal of social assistance and family benefits contribute to about 60% of the overall disincentive indicator (blue and light grey bars of **Figure 4.1**). Higher tax and social security payments increase the disincentive indicator by another 22 ppts (27 ppts at median earnings). Finally, childcare costs (dark grey bars) increase the overall indicator by a further 95 ppts at low earnings levels (59 ppts at median earnings). However, the impact of childcare cost is largely offset by the effect of childcare-related benefits (white bars), which reduce the indicator by 75 ppts at low earnings levels (47 ppts at median earnings).

55. Low PTRs for single mothers occur in countries where the generosity of out of work benefits is low and/or benefits are not means-tested at the selected income levels (**Hungary**), or where in-work benefits provide additional income support when the mother is in employment (**Slovak Republic**). In the **United States** (Michigan) these effects combine to produce a negative PTR for low-earnings single mothers (-16%). This means that single mothers entering employment retain all of their earnings plus an additional 16%. This is due to the mother being eligible in employment for the Earned Income Tax Credit (classified as an in-work benefit in the OECD tax-benefit model) and Child Tax Credit, which are both refundable and paid at higher rates in 2021 through temporary Covid-19 measures. The contribution of childcare costs in the US is only 5 percentage points at low-earnings (30 percentage points at median-earnings, see next paragraphs), as childcare fees are largely offset by Michigan childcare assistance and the (refundable in 2021) Child and Dependent Care Tax Credit.

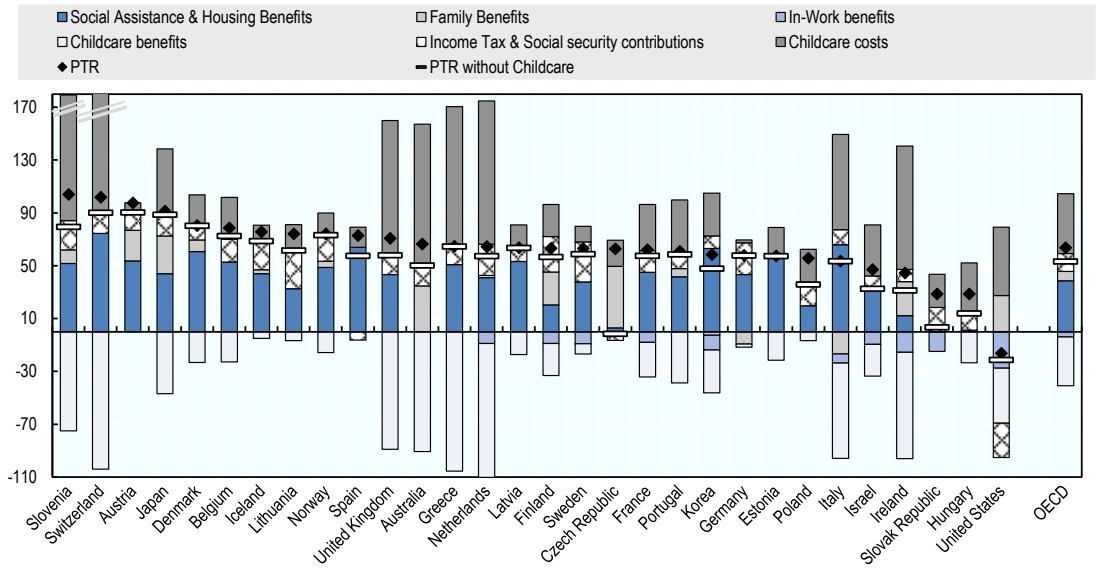
56. On average across OECD countries, the contribution of net childcare cost to PTRs for single mothers is 10 percentage points for low-earnings mothers and 8 percentage points for median-earnings mothers. This can be seen in **Figure 4.1** by the difference between the horizontal and the black-diamond markers.[8]

57. Large differences in the PTRs with and without use of formal childcare are apparent in **Slovak Republic** (25 percentage points at low-earnings, 19 at median-earnings), **Poland** (20 percentage points at low-earnings), **Czech Republic** (64 percentage points at low-earnings, 36 percentage points at median-earnings), and the **United States** (Michigan) (30 percentage points at median-earnings). Several mechanisms explain these differences. Childcare-related benefits are low relative to the childcare fees in **Slovak Republic** and **Poland**, while a mother using full time childcare loses a generous home care allowance in the **Czech Republic**. The 30 ppts PTR difference observed in the **United States** (Michigan) at median-earnings is due to means testing of Michigan's childcare assistance, though childcare fees are still partially offset by the (refundable in 2021) Child and Dependent Care Tax Credit. In other countries, the contribution of net childcare costs is small due to no or low fees and/or generous childcare benefits that largely or completely offset the costs. The contribution of net childcare costs to the overall PTR is zero in **Denmark**, **Greece**, **Latvia**, **Germany**, **Estonia** and **Italy** for low-earnings single mothers.

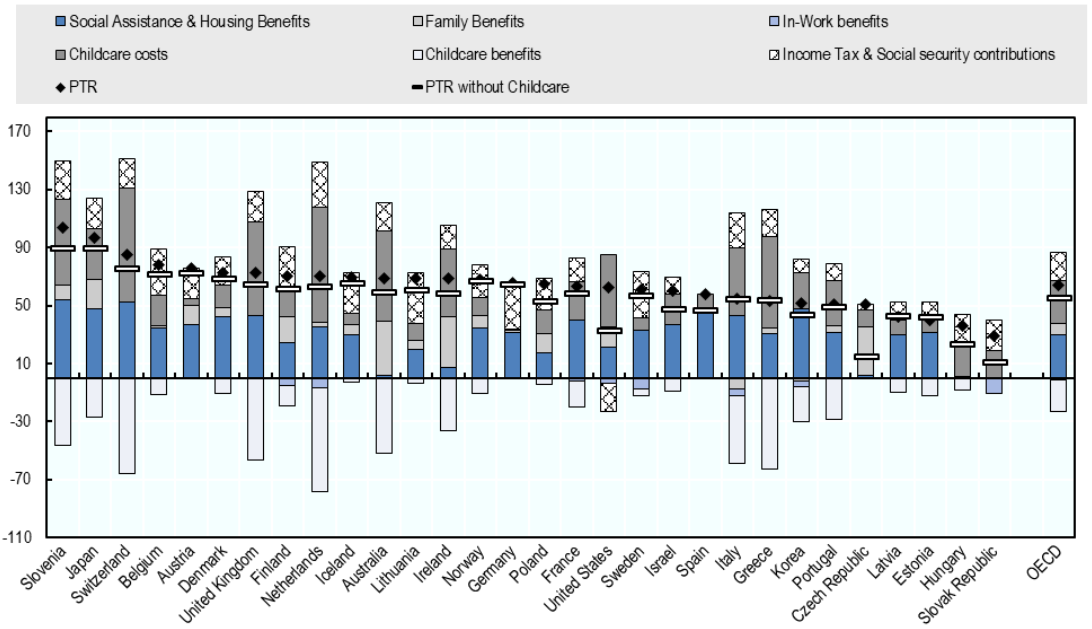
[8] The PTR indicator "without childcare" (the horizontal marker in the figures shown in this section) assume that families have access to free and informal childcare for their 2 and 3-year old children.

Figure 4.1. Participation tax rates for single mothers using formal childcare services

Panel A: Low earners



Panel B: Median earners



Note: see the notes to Figures 3.4 for details. Results in Section 4.1 assume a single mother with two children aged 2 and 3 years old using formal childcare services when the mother takes up employment. The bars shown in the figure quantify the contribution of each policy lever to the overall indicator. The horizontal markers show the PTR indicator computed for an otherwise-identical family *not* using formal childcare for their children.

Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-Benefit model (TaxBEN) version 2.5.0.

4.2 Financial incentives to full-time work for mothers in couple families using centre-based childcare

58. Mothers entering employment in couple families have, on average across OECD countries, a lower PTR indicator compared to single mothers (**Figure 4.2**). This is typically the effect of higher household income in both the out-of-work and in-work scenarios, with the associated lower impact of benefit withdrawal on the overall disincentive indicator when the wife starts working.[9] For low-earnings couples (both adults earning the 1st decile of their gender's earnings distribution), the average PTR is 57% when including childcare use (**Panel A**). For median-earnings households, the average PTR is lower again at 48% when including childcare use (**Panel B**).

59. Low PTRs occur when a single earner couple is not eligible for means-tested benefits, and so the additional income when the mother enters work does not reduce these income sources (countries including **Spain**, **Portugal**, **Greece** and **Estonia** in **Panel A**). PTRs are lower in more countries for median-earnings households due to the spouse's higher earnings (also **Korea**, **Latvia**, **and Sweden** in **Panel B**). Conversely, high PTRs occur when the single earner couple receives means-tested benefits that are significantly reduced or lost completely with the addition of the mother's earnings (**United States** (Michigan), **Denmark**, **Slovenia**, **Australia** and the **United Kingdom**).

60. Due to means-testing thresholds, the PTR of mothers can be much higher in low-earnings couples than in median-earnings couples in the same country. In the **United States** (Michigan) the PTR of mothers in a low-earnings couple is 151%, meaning that if such a mother were to enter work she would lose all of her earnings plus a further 51% (**Panel A**). As a single earner couple, this family was eligible for the in-work benefit (the Earned Income Tax Credit) and the Child Tax Credit even when the mother was out of work. Instead of being newly eligible for these credits when she enters work (as is the case for the single mother, **Figure 4.1**), her additional earnings actually decrease the family's entitlement to these credits, as well as their social assistance payment (SNAP). Moreover, the family is not eligible for the Michigan childcare assistance. In contrast, mothers in a median-earnings couple face a PTR of only 59% (**Panel B**) as they receive less income from benefits and tax credits when out of work due to the working spouse's higher income.

61. Differently from **France**, **Ireland**, **Korea** and the **United States**, in-work benefits increase work incentives for married women with children in **Finland**, **Italy**, **Israel** and **Sweden** (**Figure 4.2**). The main reason behind this difference is the reference income that enters the calculation of benefit entitlements. In **Italy**, **Israel** and **Sweden** the assessment base for the in-work benefit is the taxpayer's individual income, whereas in the **United States** as well as **France**, **Ireland** and **Korea**, the assessment base is the household income. As a result, the in-work benefit in these countries has a negative effect to the financial work incentive of the second earner.

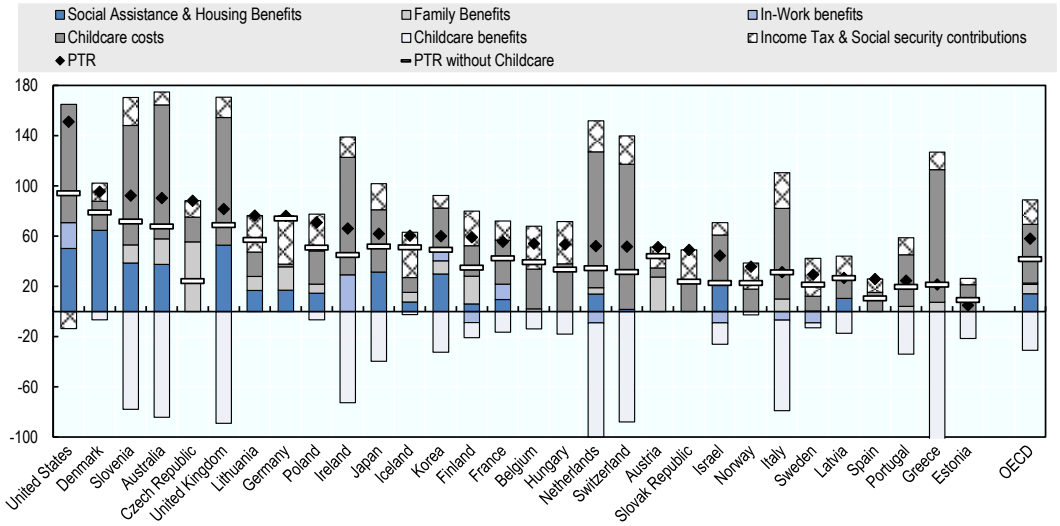
62. The contribution of childcare costs to the PTR, (the difference between the horizontal marker and the black diamond marker) is larger for mothers in couple families compared to single mothers. The difference is 15 percentage points on average for mothers in couples compared to a difference of 8-10 percentage points for single mothers. This is mainly the result of means testing of childcare assistance, especially in countries with relatively high gross fees (**Switzerland**, **Ireland**, **Australia**, the **United Kingdom** and the **Netherlands**). The contribution of childcare costs remains low in countries where gross fees are low (**Germany**, **Austria**) or

[9] Results for "low earnings" couples assume that the male partner works full time at the 1st decile point of the male earnings distribution both before and after the wife's in-work transition. For "median earnings" couples, the calculations assume that the male partner works full time at the 5st decile point of the male earnings distribution.

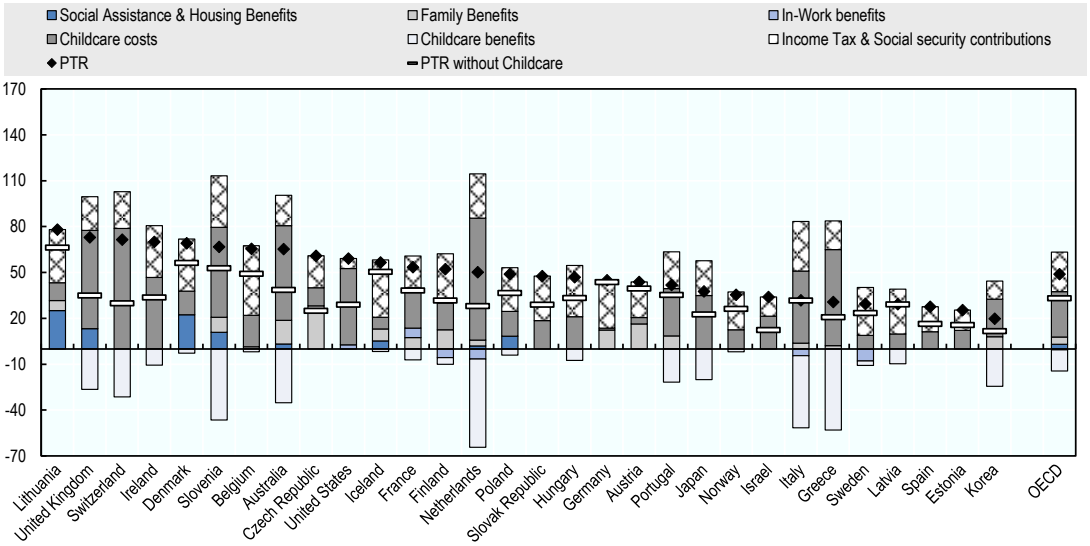
where childcare benefits cover most or all of the cost despite the combined family income (**Latvia**, **Italy** at both income levels, **Estonia**, **Greece** for low-earnings).

Figure 4.2. Participation tax rates for couples with two children where the mother takes up employment using formal childcare

Panel A: Low-earnings couples



Panel B: Median-earnings couple



Note: see the notes to Figures 3.4 for details. Results in Section 4 assume a married/cohabiting couple with two children aged 2 and 3 years old using formal childcare services when the mother takes up employment. The bars shown in the figure quantify the contribution of each policy lever to the overall indicator. The horizontal markers show the PTR indicator computed for an otherwise-identical family *not* using formal childcare for their children. Results for low-earnings couple assume that the man works full time at the 1st decile of the male earnings distribution. Results for median earnings couples assume that the man works full time at the 5th decile of the male earnings distribution.
Source: Secretariat estimates based on data from the OECD Earnings Distribution database and output form the OECD tax-Benefit model (TaxBEN) version 2.5.0.

Annex 1

The OECD Tax-benefit model – overview and main assumptions

63. The tax-benefit model **TaxBEN** (TaxBEN) is essentially a large cross-country calculator of tax liabilities and benefit entitlements for a broad set of hypothetical model-type families ("vignettes"), e.g. a married couple of 40-years-old adults with two children aged 4 and 6. TaxBEN incorporates rules on the main taxes on employment income, social contributions paid by employees and employers, as well as the main cash and near-cash benefit programmes for working-age individuals, including unemployment benefits, family and childcare benefits, guaranteed minimum-income benefits, cash housing benefits, and employment-conditional benefits.[10]

64. The main purpose of the TaxBEN model is to provide a trusted and internationally accepted set of indicators of benefit generosity, childcare costs and financial work incentives. The model produces a long and uninterrupted time series of indicators (since 2001 for most countries) relying on a consistent, well-documented and accepted set of methodological assumptions.

65. A key strength the TaxBEN model is the use of official information on policy rules and parameters provided and validated directly by the country delegates of relevant OECD Committees and Working Parties. These characteristics, combined with the number of policies incorporated in the model, make TaxBEN a unique tool for exploring and comparing the mechanics of tax-benefit policies and reforms. They also make the model particularly well-suited for policy monitoring and benchmarking exercises as well as for analytical studies focusing on tax and benefit policies and reforms.

66. TaxBEN calculates tax liabilities and benefit entitlements using the rules that are in force on a particular reference policy date (the 1st of January or the beginning of the fiscal year for individual taxpayers, where this differs from the calendar year).[11]

67. TaxBEN makes a number of assumptions to enhance understanding of the outputs and facilitate cross-country comparisons:

- Families are assumed no to use "itemized" tax deductions and / or specific tax credits that may be available for specific expenditures, such as commuting costs or health-related expenses. However, standard tax deductions and credits that depend e.g., family composition, hours of work, earnings levels, etc. are calculated where available;
- In cases where the extended family or a former spouse is expected to provide financial support to those with no resources of their own, it is assumed that such support is not forthcoming.

[10] Disability benefits, maternity and parental leaves benefits are included in the model for a sub-set of countries and years. The main policy instruments that are currently not included in the TaxBEN model are taxes on wealth (e.g. taxes on immovable and unmovable properties), indirect taxes (e.g. VAT), early-retirement benefits, short-time work compensation schemes, sickness benefits, and in-kind benefits (e.g. subsidised transport and free health care).

[11] In a few countries, the fiscal year for individual taxpayers differs from the calendar year. For instance, since 2018, calculations for New Zealand and for the United Kingdom refer to April. Details are documented in the country policy descriptions available online.

- For working family members, calculations assume employment in the private sector with a ‘standard’ open-ended contract. In addition, the model assume full-year employment throughout the year without interruptions and with constant earnings and working hours.
- Where benefit receipt is subject to activity tests (such as active job-search or being “available” for work), these requirements are assumed to be met.
- In countries where there are regional differences in the way the tax and benefit system operates, the model uses the default scheme set by central government where that exists, or else takes the scheme operating in a “typical” region or state.
- Tax liabilities and benefit entitlements for a particular month of the selected policy year. Monthly income and policy parameters are then annualised, in order to include the effect of the tax-benefit policies that depend on annual incomes (e.g. final taxes after filling in the tax return). The annualization process assumes five working days per week and 52 weeks per year.