Secondary earners and fiscal policies in Europe

Olga Rastrigina and Alina Verashchagina
(supervision of Francesca Bettio)

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Table of Contents

Table of Figures

List of Tables

Country Abbreviations

AT	Austria	**FR**	France	**NL**	Netherlands
BE	Belgium	**GR**	Greece	**NO**	Norway
BG	Bulgaria	**HU**	Hungary	**PL**	Poland
CY	Cyprus	**IE**	Ireland	**PT**	Portugal
CZ	Czech Republic	**IS**	Iceland	**RO**	Romania
DE	Germany	**IT**	Italy	**SE**	Sweden
DK	Denmark	**LT**	Lithuania	**SI**	Slovenia
EE	Estonia	**LU**	Luxembourg	**SK**	Slovak Republic
ES	Spain	**LV**	Latvia	**UK**	United Kingdom
FI	Finland	**MT**	Malta		

Executive Summary

Secondary Earners

Secondary earners are a specific group of individuals who are employed and earn less than their partners. They represent the majority of working women in married or cohabiting couples. Women in the European Union earn on average about one third of a couple's joint income. The share they earn is highest in Denmark and Lithuania (44%) and lowest in Italy (25%). The income share earned by women in couples has tended to increase over the past decade. This is due to a stronger presence of women in the labour market alongside a weakening of men's labour market status due to the economic crisis.

The identified characteristics of secondary earners provide tentative explanations as to why their earning capacity may be lower than that of their partners. Three factors that may lead to these lower incomes are:

- The intensity of work. This can be due to special circumstances such as unemployment, sickness and care responsibilities, or due to work arrangements such as part-time work.

- The low level of skills, occupation or sector of employment of the secondary earner.

- The presence of children for the couple, in particular dependent children. The age of such children also matters.

A common policy agenda is made more difficult by the heterogeneity of situations across the EU Member States. Some countries have low levels of labour force participation by women coupled with low shares of part-time work, others have high participation rates coupled with high shares of part-time work for women, and others are situated between these two extremes. Women secondary earners are often in part-time jobs in the old Member States while full-time workers are the majority of this group in the Eastern part of Europe.

Non-employed women in one-earner couples can be viewed as potential secondary earners. In this report they are referred to as potential entrants.

The Scope of the Report

Women's labour market participation is known to be responsive to fiscal (dis)incentives. The effects of different fiscal policies can be seen in increased hours worked, income earned or labour force participation rates for women. For potential entrants the effects can be seen in increased numbers starting work. This report examines work incentives and disincentives for secondary earners created by tax-benefit systems. Its aim is to identify potential work disincentives created by fiscal systems for secondary earners in couples.

The conventional measures of disincentives are the Marginal Effective Tax Rate (METR), which is expected to influence decisions about how much to work, and the Participation Tax Rate (PTR) which is expected to affect decisions whether to work or not.[1] Statistical techniques and EU-SILC data comparable across the EU Member States are used to obtain the values of METR and PTR by means of EUROMOD and the OECD tax-benefit models.

EUROMOD is a static tax-benefit microsimulation model used to estimate work incentives for the real population based on the EU-SILC microdata. This makes it possible to account for the socio-economic differences found within the population. It is used to analyse the actual distribution of METR across the population of secondary earners, as well as to disentangle the impact of taxes, social contributions, and benefits on particularly high METR.

The OECD tax-benefit model is used to calculate work-related fiscal incentive effects on family types. This uses 'synthetic' household types with pre-defined characteristics and earnings rather than being based on actual data. This provides an illustrative way to understand the mechanisms built into tax-benefit systems. In this report the standard OECD model is modified by feeding in 'actual' levels of earnings of secondary earners drawn from the EU-SILC 2011 data. The results, due to this innovation, correspond better to the actual distribution of earnings within the target group. They are also more comparable to the results from EUROMOD as they use the same data on earnings.

The two models are used together to estimate and check the robustness of the findings on work disincentives for people in employment (the METR) obtained by means of EUROMOD. The OECD model is also used to estimate disincentives for potential entrants into employment (the PTR).[2] The effect of out-of-pocket childcare costs on work disincentives is taken into account by using OECD figures for 2012.

These indicators are suitable for inter-country comparisons of the treatment of secondary earners. Within each country, however, a benchmark is needed to assess whether the tax burden on secondary earners is to be considered high or low in relative terms. The benchmarking exercise in this report compares the fiscal treatment of women secondary earners in a couple to that of women working and earning roughly as much as their partner (i.e. women in 'equally earning' couples). The report thus provides estimates of absolute disincentives across countries as well as relative disincentives within countries, taking out-of-pocket childcare costs into account where appropriate.

Context

Fiscal stimuli designed to encourage women's employment have not been used extensively in Europe in recent decades. Bettio and Verashchagina (2013) showed that in eight European countries, belonging to the group with middle-to-low em-

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1 The *Marginal Effective Tax Rate* is a measure of work disincentives for a person who is already in employment. It shows the percentage of a marginal increase in gross earnings that will be taxed away due to an increase in taxes and social insurance contributions, and a reduction in benefits. The *Participation Tax Rate* measures the share of earnings that are taxed away when a person enters work due to the increase in taxes or benefits withdrawal. This is different from METR, where it is assumed that the person was already working and is facing a marginal increase in earnings (due to increased hours of work or greater workload for example). For more details see Box 2.

2 The task of calculating PTR with EUROMOD involves estimation of potential wages with econometric techniques and is outside the scope of this report.

ployment rates for women, the tax burden for secondary earners and lone mothers (the groups of female workers most at risk of labour market exclusion) diminished only marginally over the period 2001-2008.

The OECD (2012) in a study covering 30 countries over the period 1980-2007, confirmed that higher tax rates on secondary earners reduce women's labour-force participation. The European Commission (EC, 2013b: p. 45) has recently reiterated that secondary earners often face specific disincentives to returning to work from inactivity or to increasing their work hours.

Empirical studies find that labour supply elasticity is higher for low-income earners, in particular women with children (Meghir and Phillips 2009). A higher tax-burden on secondary workers may therefore have a disproportionate negative effect on their employment outcomes.

Tax-Benefit Systems

Joint or individual taxation, transferable tax credits, dependent spouse allowances or credits, and individual or family unit income test for means-tested benefits are all important characteristics of tax-benefit systems from a gender perspective. The degrees of progressivity and joint taxation are the key features of the design of tax-benefit systems impinging on work incentives for secondary earners. Another important factor considered in this report is the level of out-of-pocket childcare costs. Strictly speaking out-of-pocket childcare costs are not intrinsic components of tax-benefit systems, but they actually operate as an implicit tax for women with children and need to be taken into account.

The unit of taxation in most EU Member States is the individual. Several countries adhere to the joint taxation system: Germany, France, Ireland, Luxembourg, and Portugal. However, there are some elements of joint taxation in the tax codes of about half of the countries considered in this report: Belgium, Bulgaria, Estonia, Spain, Greece, Hungary, Iceland, Italy, Lithuania, Malta, the Netherlands, Norway, and Poland.

Benefits are either non means-tested or means-tested. The latter option allows for the redistribution of resources between couples by affecting the eligibility to receive benefits. However, it cannot be assumed that such redistribution is necessarily consistent with the goal of strengthening work incentives. Other features of the tax-benefit system are also relevant. For example, about one third of Member States still have a dependent spouse allowance that tends to encourage home-making.

The economic crisis has seen unemployment benefits undergoing significant change. Changes include reduced levels of payment, shorter duration of payment and stricter eligibility criteria. These changes may affect women disproportionally. The economic reasons for women with small children to return to work are likely to have been weakened. This is the group of secondary earners at greatest risk of exclusion.

Work Incentives

Marginal Effective Tax Rates for secondary earners (Using EUROMOD)

The 2012 estimations suggest that the top ten countries in which women secondary earners are subject to particularly high METR are Belgium, Germany, Denmark, Ireland, Luxembourg, Finland, Italy, the Netherlands, Portugal, and Hungary. The me-

dian METR in these countries ranges from 34.5% in Hungary to 54.2% in Belgium.

However, the distribution of METR within the countries differs considerably and focusing on the median for policy purposes might fail to address some less typical cases at either end of the distribution. The distribution is quite wide in countries like Ireland, Austria, Spain, the Netherlands, Luxembourg, Finland, and France. There is very little variation in Bulgaria, the Czech Republic, Latvia, Slovakia, and Estonia, due to a 'flat tax' system. The lack of variation in Sweden, Poland and Denmark could be explained by a quite homogenous population of secondary earners.

The report assesses which are the tax-benefit instruments that lie behind these figures. In most of the countries examined, the largest component of the average METR is the increase in taxes paid by the household resulting from a marginal increase in the earnings of a secondary earner. The highest values are in Belgium and Denmark, both of which have highly progressive tax systems where the average tax rate is high. The exceptions are the Netherlands, Greece, Austria, Bulgaria, Cyprus, Slovenia, Hungary, and France, where the social insurance contribution component is somewhat larger than the tax component. The social contribution component is quite high in Germany but still lower than the tax component.

The reduction in benefits due to an increase in the income of a secondary earner is the smallest component in all countries. It is, however, relatively large in the United Kingdom, France, Finland, Luxembourg, Ireland, Lithuania, and Slovenia. Three of these countries (France, the United Kingdom, and Ireland) have key means-tested benefits and a high benefit component in METR for the population at large (Jara and Tumino, 2013).

In a single country context, an assessment as to whether secondary earners are particularly disadvantaged with respect to work incentives can be made through comparison between secondary earners and equal earners, the two non-overlapping groups by definition. The report highlights that when it comes to decisions about employment it is the relative tax outcomes within the country that exert influence. The absolute level of METR in the international context is likely to be of lower importance.

There are a number of countries in which secondary earners women have higher work disincentives (METR) than the equally earning partners. Fiscal disincentives are sufficiently high to discourage female secondary workers from increasing work intensity in five countries: Belgium, Germany, Slovenia, Portugal, and Luxembourg (Germany, Portugal and Luxembourg operate a joint taxation system). Belgium, Germany and Luxembourg evidence a high proportion of part-time work, while this is not the case in Portugal and Slovenia. The evidence that strong disincentives in the low and medium income groups may partly account for relatively high part-time rates is not conclusive for the Netherlands and Ireland because of small sample size.

In the majority of countries there is no association between incentives to increase work intensity and presence of children in the family. Exceptions are Belgium, Finland, Greece, Ireland, Luxembourg, and the United Kingdom where women secondary earners with children face higher median METR than those without children. These results vary in the different countries by children's age.

It should be noted that EUROMOD estimates of work incentives do not account for changes in out-of-pocket childcare costs under the assumption that they should not be exceedingly important for marginal increase in earnings. Childcare costs may be an important obstacle in case of entry into work and are, therefore, referenced below.

The report finds a fair degree of consistency between the estimates of METR from the two models despite some inherent differences between the OECD tax-benefit model and the EUROMOD that hinder full comparability. This is an indicator of the robustness of the findings.

Participation Tax Rates for potential entrants (Using the modified OECD Tax-Benefit Model)

Belgium, Germany, Denmark, Iceland, Hungary, Latvia, and Slovenia have the highest PTR for women potential secondary earners without children in 2012. More than one third of additional earnings are forgone on entry into work. Large PTR values may be indicative of the so-called inactivity trap. The lowest PTR values for women potential secondary earners without children are found in Greece, Ireland, the United Kingdom, Spain, Lithuania, Portugal and Finland (less than 20%).

Out of the 16 countries featuring relatively high PTR for women potential secondary earners without children (greater than 25%) 8 report employment rates below the (European) average: Belgium, Hungary, Italy, Luxembourg, Malta, Poland, Romania, and Slovakia. In most of these countries, disincentives for secondary earners are in fact higher than elsewhere at any level of entry income, except for low-income earners in Luxembourg and Italy and medium-to-high income earners in Malta.

PTR values augmented by out-of-pocket childcare costs reach more than 66% for women potential secondary earners with children in the United Kingdom, Ireland, Germany, Slovakia, Luxembourg, Slovenia, and the Czech Republic. They remain low for this group in Greece, the Netherlands, Austria, Portugal, Spain and Sweden (less than 33%).

Large PTR may simply be indicative of heavy taxation, high progression or even generous means-tested benefits. They may reflect large differences between countries while individual decisions are more influenced by comparisons with other tax-payers within a person's own country. PTR values for women potential secondary earners were therefore compared with those for women potential equal earners in each country. 'Potential' means a hypothetical situation of entry into work that turns a person into either a secondary or an equal earner.

PTR values are found to be generally higher for equal rather than secondary earners without children. This suggests the existence of disincentives to enter work on equal grounds with the male partner.

The disincentives are found to be higher for women with children, especially when out-of-pocket childcare costs and child benefits are taken into account. In 19 out of the 26 countries considered, women potential secondary earners fare worse than (potential) equal earners when childcare costs are factored in. The gap ranges from about 4 p.p. in Bulgaria up to almost 50 p.p. in the United Kingdom. Only in three countries, Spain, Sweden and Belgium is the gap almost negligible, at below 3 p.p.

Ireland and the United Kingdom stand out as countries where women potential secondary earners with children are penalized. Childcare is very expensive in those countries and it is relatively expensive in Slovakia and Luxembourg. Taking out-of-pocket childcare costs into account results in considerably larger PTR. Out-of-pocket childcare costs are likely to influence employment decisions as much as, if not more than, 'explicit' fiscal (dis)incentives.

13

Conclusion

The evidence gathered in this report is consistent with the presumption that the design of the tax-benefit system, or out-of-pocket childcare costs, or both affect to various degrees the choice of working hours or the choice of entering employment by secondary earners.

Ten of the countries considered feature shares of part-time employment higher than the European average for women workers. Eleven of the countries feature employment rates below the European average. Most of these countries are found to exhibit comparatively higher tax-burdens on secondary earners – METR, PTR or PTR augmented with out-of-pocket childcare costs. This gives cogency to the findings. However, neither the design of the tax-benefit system nor childcare costs suffice on their own to account for country-specific employment outcomes, as several counterexamples in both cases are found.

When out-of-pocket childcare costs are added to the traditional entries of the tax system, PTR values for secondary earners in five countries considered exceed benchmark values (those for equal earners) by at least 20%. Mothers of children in these countries envisaging entry into the labour market in a secondary earner position face considerably higher fiscal disincentives than do those envisaging entry as equal earners. In five other countries potential secondary earners are also penalized with respect to the benchmark group, but to a lesser extent (relative PTR is 10 p.p. higher).

The degree of progressivity in the tax code and of joint taxation are found to be among the most important elements of system design impinging on work incentives for secondary earners. The pros and cons of a joint versus individual tax-benefit system might need careful reassessment if the primary goal is to remove disincentives for groups of women in paid work at risk of labour market exclusion.

1. Introduction

Closing gender gaps remains an important policy issue. Despite certain progress made in recent decades there is still a long way to go before equality in male and female earnings is achieved. Understanding what lies behind persisting gender gaps has proved to be a complicated task and has prompted abundant academic research.[3]

With this report we aim to contribute to the debate by considering a specific group of women: those who are employed and earn less than a male partner.[4] It is to these women that we refer in this report as *secondary earners*, and they actually represent the majority of working women in couples. Our unit of analysis is thus a woman living in a couple, married or cohabiting.

Currently, European women earn on average about one third of the joint couple's income. This share is the highest in Denmark and Lithuania (44%) and the lowest in Italy (25%). At the same time, there has been a tendency for the income share contributed by women to increase over the past decade (Bettio and Verashchagina 2013). There are two reasons for this:

- entrenchment of the female presence in the labour market during recent decades;

- the weakening of the male's labour-market status in the wake of the recent economic crisis, which is known to have hit men more than women (Bettio et al. 2013).

It would be interesting to consider cases where men earn less than a female partner, which are not so rare in today's Europe.[5] However, in this report we can only provide a brief description of who those men are. Our main concern will be with couples where the woman earns less.

What is so special about being a *secondary* earner,[6] and why does this term generally apply to women? A semantic clarification is necessary before addressing this question. From a strictly fiscal perspective, it is often appropriate to speak of <u>second</u> rather than <u>secondary</u> earners. In joint, progressive taxation systems, for example, the partner who enters employment <u>after</u> his/her spouse has already done so is likely to face a higher tax rate whether or not s/he is a low earner. In practice, however, the vast majority of second earners are the women that this report calls 'secondary earners'. Our main reason for choosing 'secondary' instead of 'second' is that data do not record the sequence of entry into employment, whilst they record the level of earnings.

To return to the question of why secondary earners are feminised, women on ave-

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3 See for example OECD (2013) and, for a survey on the gender pay gap, Blau et al. (2012).

4 A detailed definition of 'secondary earner' as used in the report will be given in Chapter 3.

5 Typified by more than 20% of couples in BG, DK, FI, HR, LT, LV, PL and SI, the majority being Eastern European countries (see Table 2 for more details).

6 This does not only concern low-earners, although the policy instruments to be used in order to incentivize low-/middle- and high-paid secondary-earners would be different.

rage earn about the same as men at the start of their working careers. Differences emerge with career interruptions, mainly due to motherhood, that drive down relative wages and earnings among women (Smith and Solera 2011). This is how they become secondary earners. Whether women will be able to close the gap in the future depends on many factors: how rapidly they will return to work, whether it will be to a full- or part-time job, and so forth. The issue is nevertheless also relevant to women without children. Why do they earn on average less than a male partner? Is it because of shorter working hours, fewer days or months worked over the year, or something else? These are the first set of questions that we shall address.

Another set of questions concerns disincentives to work more. If we assume that the level of earnings is indicative of job quality, for individuals with otherwise similar characteristics, earning less means having fewer chances of a professional career and income growth. Moreover, it is likely that secondary earners have a heavier burden of unpaid house work because of their lower bargaining power. As a result, being a secondary earner may turn into a trap whereby a woman invests less effort and time in increasing her earnings potential.

An external factor that may impinge on gainful female employment is the way in which fiscal systems operate. Women, especially married ones, are known to be more sensitive to fiscal (dis)incentives. A high tax burden and the withdrawal of means-tested benefits may make increasing hours or (re)entry into work a losing strategy for a woman. If she obtains little more in terms of pay, and with this money cannot even afford to pay for child-care, then it is unlikely that she will be able to change the prevailing arrangement whereby a male partner works longer and earns more.

With many factors at work, for this report we choose to concentrate on the work disincentives for secondary earners explicitly or implicitly created by tax-benefit systems in Europe. The main question that we want to answer is whether it is possible for fiscal policies to create incentives for female labour by reducing the tax burden.

Female labour is generally known to be more responsive to fiscal (dis)incentives; and the employment effects of different fiscal policies may show up in the form of increased work hours for women, higher earnings for women as a result of increased intensity of work (with fixed hours)[7], or higher female labour-force participation whereby *potential entrants*[8] start working. Reducing the tax burden on secondary earners may be part of the solution but cannot represent the entire solution. Labour demand considerations may be important as well, however, analysis of the demand side of the labour market is outside the scope of this report.

Other societal factors are also at work and may give rise to trade-offs. For example, a higher paid work-load for women means not only less leisure but also less possibility to do unpaid work (e.g. care or household work).[9] The issue therefore also concerns the redistribution of bargaining power within households. We expect there to be some resistance, especially in the context of countries with low female employment or high shares of part-time female employment.

At the time of publication of the 2013 Annual Growth Survey, three countries had

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7 he latter can be achieved e.g. via participation in training programmes as a result of career promotions, and thus higher wages paid for skills already possessed.

8 Here we refer to two groups of secondary earners: actual and potential. The former are called *secondary earners* and the latter *potential entrants*. To be more precise, by 'potential entrants' we mean predominantly women who are out of work and whose earnings potential is lower than that of a male partner, so that they are expected to earn less when they start working.

9 There is also an issue of fertility, but in this report we can only allude to it.

already received country-specific recommendations on this matter (Germany, Italy and the Netherlands), with fiscal measures seen as the main tool.[10] More countries are likely to be concerned by this issue. We aim to identify those countries by investigating the existing tax-benefit systems in the EU and the burden that they impose on secondary earners.

It is important to stress that secondary earners are not necessarily low earners, although this is often the case. As it will be shown later, a typical female secondary earner gets about half the average wage in the country.[11]

Table 1. Who are secondary earners?

Earnings / Dominance within the couple	Low-earning couple	Medium	High-earning couple
Male-dominance dual-earner couple	**F < M 50+100=150 (I)**	**F<M 75+125=200 (II)**	F < M 100+150=250 (III)
Equal-dual-earner couple	F = M 75+75=150 (IV)	F = M 100+100=200 (V)	F = M 125+125=250 (VI)
Female-dominance dual-earner couple	F > M 100+50=150 (VII)	F > M 125+75=200 (VIII)	F > M 150+100=250 (IX)

Note: Arbitrary levels of earnings have been used in this table for illustrative purposes, which can be conceived as percentage shares of the average wage in the country.

For purely illustrative purposes, Table 1 typifies couples by the level of earnings and the within-couple dominance using arbitrary level of earnings that range from 50 to 250. Our main focus will be on male-dominance dual-earner couples, and in particular types I and II, which best approximate the real distribution of earnings within couples.

Two complementary tools will be used to examine financial (dis)incentives to work:

i. the EU tax-benefit microsimulation model EUROMOD;

ii. the OECD tax-benefit model for family types.

The two models are already being used in parallel for policy prescriptions, but to our knowledge no attempt has been made to compare their results. This double-check is expected to increase the robustness of our findings, but it can also be a useful exercise to improve the models.

10 Germany was advised to take measures to improve incentives to work for second earners by removing disincentives (high taxes and social security contributions, especially for low-wage earners) and increasing the availability of full-time childcare facilities. Reduction of tax disincentives on labour, including the phasing-out of transferable tax credits for second income earners, was recommended to the Netherlands (European Commission, 2012).Italy was advised to reduce financial disincentives for second earners to work and improve the provision of care and out-of-school services.

11 Here we refer to the OECD average wage. For the level of reference earnings used throughout the report see Table 6A in the Appendix.

2. Literature review

Women nowadays play a non-marginal income role. Interest in taking couples as a unit of analysis has grown considerably in recent years.

Stancanelli (2007) was among the first to pinpoint the growth in dual-earner couples in European countries by considering the labour-market behaviour of French couples over the period 1990-2002. Not so long ago, married women were categorized as true secondary earners with an attachment to the labour market weaker than that of their partners. The literature on the added worker effect has brought the role of women to the fore, as they started entering the labour force on a temporary basis in order to substitute for the loss of a male partner's income. The added worker effect first appeared in the economic literature in the 1940s, and it continued to influence research on female employment long after the paradigm had lost salience.

Times have changed to such an extent that nowadays some commentators talk of 'Toyboys and Supergirls', the latter being women who out-earn their partners (Bloemen and Stancanelli 2013). 'Toyboys' and 'supergirls' indicate real change in the income role of women and predict an increase in the role of women as tax-payers, but they are still minority groups. How able are tax-benefit systems to fuel ongoing change and draw more women into the labour force? Or are they being used to inhibit change? In what follows we provide a brief overview of the growing body of studies dealing with the effects of fiscal policies on female employment.

Bettio and Verashchagina (2013) show that fiscal stimuli designed to encourage female employment have not been used fully in Europe in recent decades. By considering eight European countries belonging to the group with middle-to-low female employment rates, and focusing on the groups of female workers most at risk of labour market exclusion (lone mothers and secondary earners), the authors show that the tax burden diminished only marginally over the period 2001-2008.

Part of the explanation may lie in the controversy surrounding appropriate instruments. The so-called Negative Income Tax programmes with a substantial guaranteed income level and high phasing-out rates are considered to be optimal when labour supply responses are concentrated along the intensive margin, i.e. wherever women work in fairly large numbers but tend to work short hours. At the extensive margin, the optimal scheme appears to be of the Earned Income Tax Credit type (Saez 2002), which is of primary interest for countries in which women do not work in large numbers but tend to work full time.

The observed heterogeneity across European countries – with some exhibiting low female labour-force participation rates coupled with relatively low shares of part-time work (e.g. Italy and other Mediterranean countries), others having high participation rates coupled with high part-time work rates (e.g. the Netherlands or Scandinavian countries), and still others in between the two extremes – makes it difficult to work out a common policy agenda. Attempts are being made nevertheless. One of them is the recent proposal by Alesina et al. (2011) to lower the tax burden on women by reducing tax rates for female workers, which received the name of

gender-based taxation. The idea is not a new one (see e.g. Rosen 1977), but it has apparently been discarded in the USA for equity reasons. Nevertheless, it has stimulated the academic debate (see e.g. Colombino and Narazani 2012, Colonna and Marcassa 2013).

Overall, policy-makers have paid scant attention to gender-based taxation, and one of the reasons may be that, in some countries, economic and labour market differences among women are increasingly becoming as large as those between men and women. This justifies the selective approach that has been adopted for this report: we will concentrate on a selection of countries and on specific groups of women.

This approach is also consistent with the recent findings of Econpubblica (2011), which investigated the labour supply impact of tax reforms in Europe over the period 1990-2008. The study concluded that tax policies have played a minor role in determining labour market outcomes. Positive results accrued to those policies that were targeted on specific groups of workers (like married women, lone mothers, low-educated workers). The report also showed that tax policies are more efficient in increasing work hours than in affecting the participation decision.

The issue of secondary workers is of special importance in joint taxation systems, owing to the so-called 'secondary earner bias'. While it is well understood that joint systems of taxation may impose excessive tax burdens on secondary earners, there are still countries in Europe which adhere to the joint system and justify their choice with equity considerations. There have also been relatively recent attempts to switch from individual to joint taxation, as in the Czech Republic in 2005.

Bettio and Verashchagina (2009) point out that the secondary earner bias can also be found in tax-benefit systems where the unit of taxation is the individual rather than the household. There may be some elements of jointness, e.g. the option of joint filing is allowed under some circumstances, or there may be forms of means-tested benefits provided against the total family income.

The OECD (2012) has recently reconsidered the factors determining female labour-force participation in 30 OECD countries over the period 1980-2007. The findings confirm that higher tax rates on secondary earners reduce female labour-force participation. The European Commission (EC, 2013b: p. 45) has recently reiterated that secondary earners often face specific disincentives to returning to work from inactivity or to increasing their work hours. Disincentives have been found to be high for potential entrants in Belgium, Germany and the Netherlands and for actual secondary earners in Belgium, Germany, Italy and Denmark. The female employment rates are generally above the EU average in countries with high disincentives, but at the same time work hours are relatively low (ibid.). This may be taken as an indication that, in these countries, fiscal policies geared to secondary workers should first of all be concerned with labour supply at the intensive margin (that is, increasing working time).

The focal question in the latest academic research on how to tackle fiscal disincentives regards the composition of the optimal policy mix; and the preferred analytical tool is the microsimulation model. Immervoll (2002) and Jara and Tumino (2013) are examples of the use of microsimulation tax-benefit models to compute marginal effective tax rates across the household population of EU countries. Recent applications of microsimulation models to analyse the effects of hypothetical policy changes on employment and/or social welfare outcomes for women include Colombino and Narazani (2013), De Luca et al. (2012), Figari (2010), and Kleven et al.

(2009) (for a brief summary of their findings see Box 1).

In this type of research, trade-offs are typically encountered between income redistribution (e.g. with a view to protecting families with children from poverty) and work incentives (for secondary earners as well). Unsurprisingly, the answer seems to depend on both the country context and the local policy priorities. Again, this supports the case-by-case approach that we take in this report.

Box.1 Available evidence from microsimulation studies

Using EUROMOD

Immervoll (2002) analysed the distributions of average and marginal effective tax rates. They appeared to depend on incomes, labour-market situations and family circumstances. Using single averages or macro-based indicators therefore provides an inappropriate picture of the tax burdens on large parts of the population.

Bargain and Orsini (2006) simulated the effects of a reform similar to the British Working Families' Tax Credit in three EU countries with rather different labour market and welfare institutions: Finland, France, and Germany. The first round effects on income distribution were found to be considerable, but the interaction of the new instrument with the structural characteristics of the economy and the population may lead to counterproductive second round effects (i.e. changes in economic behaviour). Implementation of the reform, in this case, could only be justified if the social inclusion of some specific groups of workers (e.g. single mothers) is valued more than a rise in employment *per se*.

Immervoll et al. (2007) compared the effects of increasing traditional welfare versus introducing in-work benefits in 15 old EU Member States. Increasing traditional welfare was found to be undesirable unless the redistributive tastes of the government are extreme. Conversely, the in-work benefit was found to be desirable in a wide set of cases.

Figari (2010) modelled the effect of family-based and individual in-work benefits in Southern European countries. The results suggested that family-based in-work benefits are more redistributive, but the presence of extended families does not enable them to be well targeted on the poorest. By contrast, individual in-work benefits create better incentives to work, especially for Italy and Spain.

Figari et al. (2011) analysed the effects of tax and benefit systems on differences in income and fiscal incentives within couples in nine EU countries. They established the relative effects of different policy regimes, given the characteristics of each national population. Within-couple equalizing effects varied across countries and depended on whose market income was larger – the male's or the female's.

Jara and Tumino (2013) studied the impact of tax-benefit systems on income inequality and work incentives in EU27 and highlighted the presence of a trade-off between income redistribution and work incentives.

Colombino and Narazani (2013) analysed gender-based taxation (GBT) in comparison to subsidies on low wages and unconditional transfers in relation to their effect on female employment in Italy. GBT ranked first in terms of welfare effects among single women; but for the whole population the best policies were subsidies on low wages, unconditional transfers, or a combination of the two.

Figari (2014) analysed possible effects from introducing either a family based or an individual in-work benefit, financed through the abolition of the existing tax credit targeted at dependent adults in Italy. Both the redistributive and the incentive effects were in focus. The results show an increase in the labour supply of both women in couples and lone mothers, in particular among the poorest with important redistributive effects.

Using other microsimulation models

De Luca et al. (2012) used EconLav, a tax-benefit microsimulation model developed by ISFOL[12], to study the labour supply and redistributive effects of in-work benefits for Italian married couples. The standard design was augmented with a benefit premium for two-earner households in order to overcome the disincentive effects that these instruments may generate on secondary earners. The proposed in-work benefits were financed through the abolition of Italian family allowances for dependent employees and contingent workers, thus ensuring tax revenue neutrality. The Earned Income Tax Credit (EITC)- and Working Tax Credit (WTC)-type of reforms were found to have strong positive effects on the labour supply of wives, weak negative effects on the labour supply of husbands, and strong positive effects on equity.

Colonna and Marcassa (2013) estimated a structural labour supply model for women, and used the estimated parameters to simulate the effects of alternative revenue-neutral tax systems. Joint taxation was found to reduce the participation rate. Conversely, working tax credit and gender-based taxation were found to boost it in particular for low-educated women.

Kleven et al. (2009) used TAXBEN (at the Institute for Fiscal Studies) to analyse the general non-linear optimal income tax for couples. If second-earner participation is a signal that the couple is better (worse) off, they proved that optimal tax schemes display a positive tax (subsidy) on secondary earnings and that the tax(subsidy) on secondary earnings decreases with primary earnings and converges to zero asymptotically. The authors presented calibrated microsimulations for the United Kingdom showing that decreasing tax rates on secondary earnings is quantitatively significant and consistent with actual income tax and transfer programmes.

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12 ISFOL (*ital. Istituto per lo sviluppo della formazione professionale dei lavoratori*) is a public research institute operating at the national level in Italy. The main scope of it is to develop Vocational Training, Social and Employment policies.

3. A brief overview of tax-benefit systems in the European countries

Empirical studies find that labour supply elasticity is higher for secondary earners, in particular women with children (Meghir and Phillips 2009). Thus, a higher tax-burden on secondary workers may have a disproportionate negative effect on their employment outcomes. What are the possible sources of such distortions?

This chapter maps the main features of the tax-benefit systems operating in the Member States. It draws on the most recent information about European tax-benefit systems available from the OECD tax-benefit model[13] and EUROMOD.[14] The reference year is 2012. The national tax-benefit systems are classified according to their most important features from a gender perspective: joint or individual taxation, transferable tax credits, dependent spouse allowances or credits, joint or individual benefits, individual or family unit income test for means-tested benefits, and other characteristics potentially impacting on biases. The information is summarized in Table 2 (which updates Table 2 in Bettio and Verashchagina, 2009). Comparison between the two tables shows that not many changes have actually taken place over the five-year span.

The degrees of progressivity and jointness inherent in the tax codes are the most important factors that impinge on work incentives for secondary earners. They are also important for redistributing resources within couples (Figari et al. 2011). In the majority of European countries, the unit of taxation is the individual, although there are several countries which adhere to the joint taxation system: Germany, France, Ireland, Luxembourg, and Portugal. Moreover, there are some elements of jointness in the tax codes of about half of the countries considered: Belgium, Bulgaria, Estonia, Spain, Greece, Hungary, Iceland, Italy, Lithuania, Malta, the Netherlands, Norway, Poland. In particular, benefits can be either non means-tested or means-tested. The latter option allows for redistribution of resources between couples by affecting the eligibility to receive benefits. But it cannot be assumed that such redistribution is necessarily consistent with the goal of strengthening work incentives.

Other features of tax-benefit systems may be less consequential for work incentives but they matter nevertheless. For example about one third of EU Member countries still feature a dependent spouse allowance, which tends to encourage homemaking. It is therefore worth spending a few remarks on how these features may have been affected by the recent crisis, though we already noted that few major changes occurred. Unemployment benefits underwent significant changes in several countries

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13 Policy description used for OECD tax-benefit models: http://www.oecd.org/els/soc/benefit-sandwagescountryspecificinformation.htm

14 Policy description used for EUROMOD: https://www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports

often involving a reduction in the maximum amount, shorter duration, and stricter eligibility conditions. All this may hit women disproportionally, especially in countries where illegal practices are widespread, such as so-called 'blank dismissal' in Italy.[15]

Restrictions also resulted in the reductions of key benefits for female workers in some of the countries most exposed to the financial crisis. Hungary (since 2008) and Latvia (since 2010) provide examples: parents caring for children under 1 year of age can no longer pursue a gainful activity in order to be eligible for childcare allowances. Iceland saw the abolition in 2012 of benefits to parents who care for their children at home between six months of age and pre-school entry (cash-for-care). In Lithuania, on 1 March 2009, an income test was introduced for child benefits, thus restricting availability to low-income families.

Overall, the economic reasons for returning to work are likely to have been weakened among women with small children, who make up the segment of secondary earners at highest risk of labour-market exclusion. This does not bode well for the expansion of labour-force participation in the near future, unless measures are taken to counteract these negative spillover of the crisis.

15 Forced dismissal due to e.g. pregnancy. This is often done on the basis of a resignation letter which the woman is asked to sign at the moment of hiring. The date is left blank and filled in when the employer fires the woman.

Table 2. Tax and benefit systems in Europe

Country	Individual taxation (1)	Joint filing/ assessment (2)	Transfer-ability of own income allowance (3)	Dependent spouse allowance/ credit (4)	Benefits assessed against family income						
					Universal social assistance (5)	Own income allowances/ credits (6)	Child allowances/ credits or benefits (7)	Childcare allowances/ credits or benefits (8)	Housing benefits (9)	In-work benefits (10)	Unemploy-ment benefits (11)
AT	+			+	+		+	+	+	+	+
BE	+	+[1]	+	+	+	+	+	+	+[21]		+[23]
BG	+	+[2]			+	None	+	None	+	None	+
CY	+			+[18]	+		+		+	None	†‡
CZ	+	2005-07		+	+		+		+	+	+
DE	+[3]	+			+	+		+	+		
DK	+		+	+	+				+	None	+
EE	+	+[4]	+		+	+			+	None	+
EL	+	+[5]			None		+	+	+		+
ES	+	+[6]		+	+	+	+	+	+	None	+[24]
FI	+				+		+	+	+	None	
FR		+[7]			+	+			+	+	
HU	+	+[8]			+		+	+	+		+
IE	+[9]	+			+			+	+	+	†‡
IT	+	+[10]		+	None[20]	+	+	+	+	+	
LT	+	+[11]			+		+		+	None	

	1	2	3	4	5	6	7	8	9	10	11	12
IE	+[9]	+			+			+	+	+		†‡
IT	+	+[10]		+	None[20]	+	+	+	+	+		
LT	+	+[11]			+		+			+	None	
LU		+			+			+		+	None	‡
LV	+	+[12]					+			+	None	
MT	+	**+[13]**			+		+	None		+		+†
NL	+	+[14]	+	+[19]	+		+	+		+		
PL	+	+[15]			+		+			+	None	
PT		+			+	+	+	None		+		
RO	+				+					+	None	
SE	+				+			+		+		
SI	+				+			+		+	+[22]	
SK	+			+	+					+	None	
UK	+				+		+	+		+	+	
IS	+	+[16]	+		+	+	+			+	None	+
NO	+	+[17]	+		+			+		+	None	‡

Note: '+' means Yes (column 1-4)/Assessed against family income (column 5-11); 'blank' means No/ Not assessed against family income; 'None'– there is not this type of benefit.

[1] **BE:** The tax calculation system is individual, but in order to apply the correct credits and allowances, the level at which the tax return is to be filed is the nuclear family (including dependants); moreover, the marital quotient system applies, so that the tax burden on a single earner in the family can be reduced; [2] **BG:** when the standard child deductions are assessed, the family tax unit is used; [3] **DE:** married couples are taxed jointly with full income splitting, i.e. the tax function is applied to half of the sum of the spouses' taxable incomes, and then the resulting tax amount is doubled; they have the right to be taxed individually when this is more advantageous to them; [4] **EE:** married couples can file a joint return; [5] **EL:** spouses file a joint income tax return, but their incomes are entered separately and taxed individually. Some tax allowances and/or tax credits are assessed jointly; [6] **ES:** family units have the option of filing their tax returns on a joint basis; [7] **FR:** the tax unit for income taxation consists of one taxpayer plus the persons who fiscally depend on him/her (known as *'foyer fiscal'*, "fiscal household"); [8] **HU:** family tax credits are jointly assessed; [9] **IE:** either spouse may opt for separate assessment; [10] **IT:** the size and composition of the family are taken into account by means of tax allowances and tax credits; [11] **LT:** some tax allowances are based on a family tax unit; [12] **LV:** for tax allowance purposes, an extended family unit is defined, including a partner, dependent children and dependent parent; [13] **MT:** individual and joint taxation coexist; each person is considered individually for tax purposes unless married and living with his/her partner and opting for a married rate tax computation; [14] **NL:** income of other members of the household is taken into account in the calculation of the income tax credits; [15] **PL:** couples have the option of filing a joint tax return; [16] **IS:** non-wage income of married couples is taxed jointly; [17] **NO:** joint taxation is also possible, and is more favourable if one of the spouses has little or no own income; [18] **CY:** only in the case of unemployment or receipt of social assistance; [19] **NL:** from 2009, the payment of the general tax credit to a spouse with a low or zero income will be reduced to zero in 15 years (i.e. by 6.67% per year); [20] **IT:** available only in the form of social assistance for people aged over 65 without other sources of income (*assegnosociale*, "social allowance"); [21] **BE:** in the form of housing deduction; [22] **SI:** only for disabled workers; [23] **BE:** depends on family status; [24] **ES:** if the worker is not entitled to receive contributory benefits, a non-contributory means-tested benefit is available; †/‡ supplement for dependent spouse/children.

Source: OECD policy description (the reference date is July 1st 2012) and EUROMOD country reports (the reference date is June 30st 2012).

4. Profile of secondary earners in today's Europe

This chapter provides the background information for analysis of work incentives for secondary earners. How prevalent are secondary earners in the European countries, and who are they? We start by describing prevalent household types in Europe, focusing, in particular, on households with couples. Then, the characteristics of secondary earners are examined. The analysis is based on the 2011 EU-SILC microdata.[16] The EU-SILC 2011 provides information on characteristics of households as of 2011. For the majority of countries, however, the information on income collected in 2011 refers to the previous year (2010).

4.1. Household structure and couple types

The structure of households differs significantly across Europe. These differences may reflect cultural norms, demographic trends (e.g. fertility), financial well-being, availability and affordability of housing, as well as tax-benefit policies which affect individuals' decisions to form household units. Households with at least one working-age couple (with or without dependent children)[17] constitute 35-57% of all households (see Figure 1). Interestingly, the percentage of working-age couples without children is relatively similar across countries: between 15-26%. However, the percentage of working-age couples with dependent children is more volatile: from 18% in Denmark to 37% in Romania.

The proportion of couples with dependent children is low in Scandinavian countries (Denmark, Finland, Norway, Sweden), as well as in Germany, Austria, the Netherlands. This is off-set by a relatively large share of one-person households. The situation is the reverse in the south of Europe (Spain, Greece, Cyprus, Malta), as well as in Poland, Romania and Croatia. In these countries, working-age couples living together with their children are more common. By contrast, the proportion of one-person households is relatively low. The difference in the structure of households across Europe is partly explained by how early children become independent, leave the parental home, or start to earn their livings. This is also likely to influence the role of women in couples as care providers, and therefore their financial contribution to the family's budget.

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16   We use the second version of UDB SILC 2011 released on 1 August 2013. This is the latest EU-SILC micro-data available in time of writing this report. Because this dataset does not include IE, throughout this section the data on IE refer to the fourth version of UDB SILC 2010.

17   It should be noted that these households can contain other household members, such as adult children or parents or other members of households.

Figure 1. Household types prevalent in Europe, SILC 2011
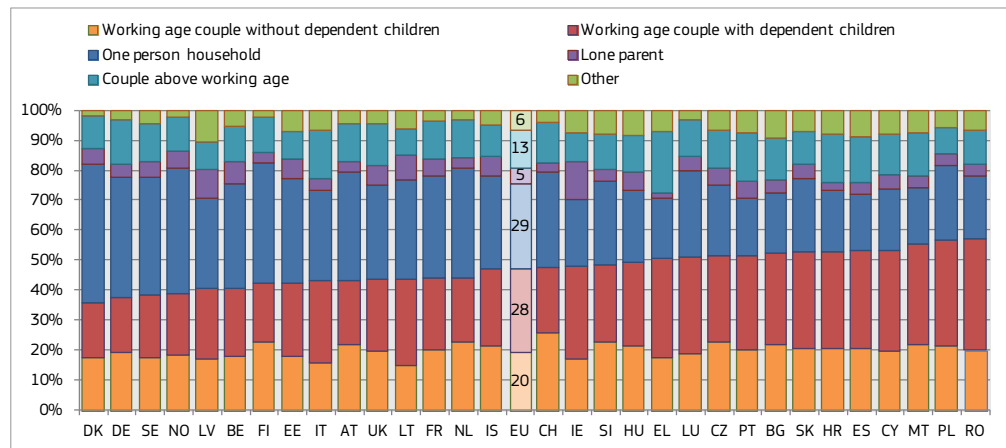
Notes: Countries are sorted according to the proportion of households with working-age couples (both with and without dependent children). In working-age couples both partners are under 65 years old. In couples above working age at least one partner is 65 or above. Dependent children are defined as children under 16 or 16-24 if they live together with one of parents and do not have their own employment income. EU refers to the simple arithmetic average among EU 28 country indicators.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

The aim of this report is to identify potential work disincentives created by fiscal systems for secondary earners in couples. In order to exclude couples where one of the partners is constrained with respect to his or her involvement in paid work for other reasons, we focus on couples where both partners are of working age (16-64) and do not receive old-age or disability benefits or private pensions. We also exclude couples where at least one of the partners receives self-employment income.[18] Couples where both partners do not work fall outside the scope of this report and are excluded.

The final sample size ranges from about 1,000 households in Greece to more than 4,000 in Spain. In relative terms the target sample contains from around 15% of all the households in Denmark to almost 40% in Luxembourg. Table 1A in Appendix 1 shows descriptive statistics of working-age couples and the proportions of couples excluded from the analysis for one of the above-mentioned reasons. The final sample size is provided in Table 1B.

The contribution of each partner to the combined earnings of a couple is at the centre of analysis in this report. Table 3 classifies couples according to the share of earnings that the woman contributes to the couple's total earnings. Five categories are distinguished[19]:

1. One-earner couples where the woman does not work;

2. Dual-earner couples where the woman contributes less than 45% of the combined earnings;

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18 There are several reasons for this. First, the reliability of the data on self-employment income in SILC is questionable. Second, self-employed individuals are likely to have different behavioural responses to taxation. Third, self-employed persons have larger scope for tax evasion and tax avoidance.

19 The classification is the same as that used in Bettio and Verashchagina (2009). The results, however, differ slightly due to stricter definition of the sample.

3. Dual-earner couples where both partners have roughly similar earnings (betwe-
    en 45% and 55% of the combined earnings);

4. Dual-earner couples where the woman contributes more than 55% of the com-
    bined earnings;

5. One-earner couples where the man does not work.

Women in the couples of the 2nd type and men in the couples of the 4th type are
considered to be secondary earners. In the majority of the countries, dual-earner
couples with a secondary earner-woman constitute the largest group. The excep-
tions are Malta and Greece, where one-earner couples with a male breadwinner
prevail. The proportion of couples with a secondary earner-woman ranges from
around 30% in Malta to more than 60% in Switzerland. Dual-earner couples with
a secondary earner-man are much less common: from around 6% in Romania to
26% in Lithuania. Couples with roughly equal earnings are relatively widespread in
Norway, France, Belgium, Hungary, Slovenia, Slovakia, Sweden, Romania, Denmark.
They make up around 1/5 of all couples considered in Table 3.

In this report, partners with roughly equal earnings are defined in the following
way. The earnings of both partners are considered to be 'roughly equal' if deviation
from an absolutely equal situation (50/50%) is not more than 5%. This means that
individual's earnings in a couple can range between 45% and 55% of the combined
earnings. It is assumed that differences in earnings within this interval are spora-
dic and do not indicate inequality with respect to the partner's position within the
couple and in the labour market. The threshold of 5% is also convenient because it
splits the sample of dual-earner couples into three sufficiently large groups, so that
each of them can be analysed on its own. If a deviation larger than 5% is allowed,
the sample of couples where men earn less than women shrinks considerably. Con-
versely, if a stricter threshold for equal earnings is imposed, the sample of couples
with roughly equal earnings becomes very small.

Table 3. Percentage distribution of working age couples by share of female earnings, SILC 2011

Country	Woman has no earnings	Woman earns less than man	Roughly equal earnings*	Woman earns more than man	Woman is the only earner
	(1)	(2)	(3)	(4)	(5)
AT	22.0	54.3	13.6	7.2	2.9
BE	17.8	46.2	20.8	9.2	6.0
BG	16.8	44.3	17.8	14.8	6.4
CY	21.6	48.8	17.8	9.5	2.3
CZ	24.2	47.5	18.7	7.4	2.3
DE	19.8	54.1	12.0	9.7	4.4
DK	6.7	44.4	28.4	14.6	5.9
EE	19.4	44.9	16.6	13.0	6.1
EL	37.0	32.1	17.2	7.9	5.8
ES	32.4	33.6	15.3	9.5	9.2
FI	11.0	50.2	18.2	15.4	5.3
FR	12.8	50.1	20.4	13.5	3.2
HR	28.9	31.4	18.2	12.1	9.5
HU	24.9	37.0	21.2	13.3	3.6
IE	30.1	32.4	12.6	12.5	12.4
IT	38.4	37.4	13.7	6.8	3.7
LT	19.5	32.4	12.3	26.1	9.7
LU	25.1	46.9	15.8	8.9	3.4
LV	18.2	38.1	12.5	21.9	9.3
MT	49.5	29.8	11.2	7.8	1.8
NL	15.2	59.4	13.8	7.9	3.7
PL	25.1	39.1	16.0	15.4	4.3
PT	21.9	41.0	18.6	11.6	6.9
RO	29.8	33.9	27.1	5.9	3.3
SE	7.4	52.8	22.5	13.2	4.1
SI	9.1	43.7	22.2	20.3	4.7
SK	16.8	46.3	22.3	10.4	4.2
UK	18.6	48.3	16.4	10.4	6.3
CH	16.6	61.5	12.7	7.1	2.0
IS	6.6	56.3	19.6	15.2	2.3
NO	6.2	60.5	20.1	10.5	2.9
EU AVERAGE	22.2	42.8	17.6	12.0	5.5
TOTAL AVERAGE	21.0	44.4	17.6	11.9	5.2

Note: * A woman is considered to have earnings roughly equal to her partner's if her share constitutes 45-55% of the combined earnings. The calculations are based on the annual gross employee cash or near cash income (PY010g). The sample size for each group is reported in Table 1B in Annex 1. EU AVERAGE refers to the simple arithmetic average among EU28. TOTAL AVERAGE refers to the simple arithmetic average among all countries shown in the table.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

4.2. Characteristics of secondary earners

In this section we consider the characteristics of secondary earners (mainly women) and provide tentative explanations as to why their earning capacity may be lower than that of their partners.

The first factor that may lead to low income is the intensity of work across the year. Income in the SILC data is recorded on an annual basis. When we compare the contribution by each partner in a couple to the combined earnings, it may happen that one of the partners has contributed less than the other because of special circumstances (e.g. unemployment, sickness, studies, care responsibilities) or work arrangements (e.g. part-time work). Table 4 shows the percentages of secondary earners-women involved in different activities in the income reference period (i.e. 2010).

Interestingly, quite high proportions of secondary earners-women in the Eastern part of Europe work in full-time jobs throughout the year. Thus, their capacity to contribute to the couple's combined earnings is likely to be low because of relatively low wages (as compared to their partners), type of job, or sector of employment, rather than low working hours or other circumstances. In the EU13 (except Cyprus and Malta), median working hours equal 40 for both secondary earners-women and for their partners. Some of the countries where this is the case have relatively wide (unadjusted) gender pay gaps: e.g. Estonia, the Czech Republic, Slovakia, Hungary.[20] By contrast, in many of the EU15 countries, relatively high proportions of women work part-time (especially in the Netherlands, but also in Luxembourg and Germany). The exceptions are Finland and Portugal, where part-time employment among women is not common in general.

Unemployment is likely to have affected women's earning capacity in EE, HU, BG, CY, HR, ES, EL and LV. Greece, Spain, and Latvia were heavily affected by the economic crisis and recorded the highest unemployment rates for women in the EU in 2010.[21] Estonia and Croatia were only slightly below them. While Hungary suffered much less from the crisis, it still had a relatively high unemployment rate: above 10% (higher than the EU average). In the Scandinavian countries, about 10% of secondary earners-women spent at least one month studying (which may also include training or unpaid work experience). Considerable proportions of women fulfilling domestic tasks and care responsibilities are found in such diverse countries as Malta, Finland and Switzerland.

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20 EUROSTAT [earn_gr_gpgr2].

21 For more details on the impact of the crisis on men and women in Europe see Bettio et al. (2013).

Table 4. Percentages of secondary earners-women by main economic activities, SILC 2011

Country	12 months are spent in:			At least 1 month is spent:				
	Full-time work	Part-time work	Combination of both	In un-employ-ment	As dis-abled or unfit for work	Studying	Fulfilling domestic tasks	In other activity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AT	28	45	1	12	1	1	10	3
BE	29	46	6	9	5	2	1	4
BG	68	2	-	17	-	1	13	1
CY	68	8	1	17	-	1	5	2
CZ	75	3	1	11	-	1	10	-
DE	23	59	1	5	-	3	2	8
DK	57	19	1	9	1	10	1	3
EE	56	9	6	17	-	2	13	-
EL	59	18	1	19	-	-	2	-
ES	50	25	1	18	-	-	3	3
FI	45	5	3	16	2	14	21	1
FR	40	30	5	14	2	5	5	1
HR	79	2	-	18	-	-	-	1
HU	64	5	1	17	-	1	9	5
IE	35	46	2	6	1	1	8	3
IT	44	32	2	12	-	-	8	3
LT	79	3	2	8	-	1	3	4
LU	25	50	5	6	-	1	13	1
LV	63	5	-	20	-	1	5	7
MT	56	25	1	-	-	-	18	-
NL	10	79	2	5	2	2	-	-
PL	67	6	1	14	-	1	5	7
PT	71	8	2	15	-	1	1	3
RO	97	-	-	1	-	-	1	-
SE	44	28	5	5	2	9	4	4
SI	75	4	4	13	-	3	1	2
SK	81	4	1	10	-	-	-	6
UK	42	49	3	2	1	1	3	-
CH	12	46	5	6	1	3	20	11
IS	45	24	7	8	-	10	4	4
NO	52	29	2	2	1	7	3	4
EU AVERAGE	55	22	2	11	1	2	6	3
TOTAL AVERAGE	53	23	2	11	1	3	6	3

Note: Proportions close to zero are shown as '-'. Percentages in rows do not sum up to 100% as individuals may be involved in multiple activities over year. Column (8) includes individuals in (early) retirement, compulsory military activity, other (unclassified) inactivity or with missing information.

EU AVERAGE refers to the simple arithmetic average among EU28. TOTAL AVERAGE refers to the simple arithmetic average among all country shown in the table.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

The presence of children in the family is another factor that traditionally decreases the earning capacity of women. Table 5 shows the percentages of couples with dependent children among the five couple types identified at the beginning of this Section. In the majority of the countries, couples where the woman does not work account for the largest proportion of families with dependent children. This result still holds even if couples with children under one are excluded. In dual-earner couples where the woman earns less than the man, the share of families with children is also high. Only in Greece, Portugal, and Cyprus is there a considerable share of couples with children among dual-earner couples where the woman earns more than the man. This result should be viewed with caution as it is based on relatively small sample size. In practically all countries, the percentage of families with children among couples with roughly equal earnings is lower than among couples where the woman earns less than the man. The largest discrepancy is for Germany and Switzerland.

The age of children also matters. Childcare facilities for older children are usually more available and affordable.[22] This makes it easier for both parents (and especially for women) to combine work and family life. Table 6 sets out the mean shares of female's earnings in couples with no dependent children (column 1). In columns 2 to 5 this is compared to the woman's earnings share in couples with children, distinguishing by the age of the youngest child. Negative numbers indicate a decrease in the share of female earnings.

In most countries, the mean share of female's earnings in couples without children is larger than 45% or close to this threshold (with the lowest mean shares observed in Austria, the Netherlands and Switzerland, countries characterized by high part-time employment). Having small children under 3 years old reduces women's earnings capacity the most. In 14 countries (out of 31), the female's earnings share in couples with children under 3 is at least 10 percentage points lower than in couples with no children. This still holds in 9 countries (except Croatia) if women with children under one are excluded from estimation. In couples with older children, the mean share of the female's earnings usually increases. In many countries (e.g. in FI, SE, HU, SI, BG, CZ, LT, LV, SK, NO), the difference between women's and male's earnings notably reduces as the age of the youngest child increases. However, this is not the case in Austria, Germany, Croatia and Switzerland, where the women's earnings share is persistently lower in all couples with dependent children regardless of their age.

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22 See for example European Commission (2013a).

Table 5. Couples with dependent children as percentage of all couples, by share of female earnings, SILC 2011

Country	Woman has no earnings	Woman earns less than man	Roughly equal earnings*	Woman earns more than man	Woman is the only earner
AT	**75**	56	38	28	35
BE	61	**67**	59	52	43
BG	**69**	66	61	51	45
CY	62	70	64	**74**	38
CZ	**85**	65	48	44	33
DE	**68**	57	29	30	36
DK	50	**59**	53	51	45
EE	**79**	65	55	56	55
EL	76	75	77	**85**	76
ES	65	**68**	64	68	66
FI	**59**	56	47	37	26
FR	**71**	65	61	59	53
HR	69	**83**	79	73	57
HU	**87**	67	57	56	48
IE	**76**	71	42	58	74
IT	**75**	71	66	66	61
LT	**75**	75	59	61	69
LU	**75**	75	57	62	63
LV	**69**	68	63	58	56
MT	**70**	70	52	66	39
NL	51	**58**	46	45	32
PL	**76**	73	65	66	48
PT	69	72	71	**73**	49
RO	**76**	74	63	64	63
SE	57	**62**	54	47	38
SI	64	**69**	66	60	45
SK	**81**	66	64	60	67
UK	**72**	61	47	46	53
CH	**63**	53	26	31	52
IS	**67**	57	50	51	48
NO	44	**61**	57	41	33
EU AVERAGE	70	67	57	57	51
TOTAL AVERAGE	69	66	56	55	50

Note: * A woman is considered to have earnings roughly equal to her partner's if her share constitutes 45-55% of the combined earnings. Dependent children are defined as children aged under 16 or 16-24 if they live together with one of parents and do not have their own employment income. Numbers in bold indicate the couple type where the percentage of couples with children is the highest for a given country. EU AVERAGE refers to the simple arithmetic average among EU28. TOTAL AVERAGE refers to the simple arithmetic average among all countries shown in the table.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Table 6. Shares of female earnings in couples with and without children, SILC 2011

Country	Mean share of female's earnings in a couple with no children	Change in the mean share of female's earnings if her youngest child is:			
		Below 3 years old	From 3 to mandatory school age	From mandatory school age to 12	12 years old or above
	(1)	(2)	(3)	(4)	(5)
AT	43	-17	-7	-10	-8
BE	49	-5	-5	-6	-7
BG	51	-19	-8	-6	-4
CY	44	-3	-2	-4	-3
CZ	46	-18	-14	-6	-5
DE	45	-14	-13	-13	-12
DK	49	-4	-1	-1	0
EE	48	-7	-10	-5	0
EL	47	3	6	2	0
ES	50	-2	-3	0	0
FI	49	-18	-8	-5	-4
FR	44	0	-3	-3	-3
HR	59	-12	-13	-9	-10
HU	50	-19	-10	-6	-3
IE	53	0	-3	1	-5
IT	45	-5	-5	-3	-2
LT	58	-19	0	-1	-2
LU	46	-9	-7	-7	-8
LV	55	-20	-5	-3	-2
MT	46	-8	-9	-7	-9
NL	41	-4	-5	-6	-9
PL	50	-10	-5	-4	-3
PT	51	-6	-8	-4	-6
RO	49	-4	-1	-3	-3
SE	47	-12	-4	-4	-2
SI	51	-15	-5	-1	-1
SK	47	-11	-10	-3	1
UK	46	-4	-5	-10	-4
CH	38	-9	-10	-8	-8
IS	44	-9	-4	-2	-2
NO	44	-15	-5	-4	-4
EU AVERAGE	48	-9	-6	-4	-4
TOTAL AVERAGE	48	-10	-6	-4	-4

Note: Couples where a woman does not work are excluded. Dependent children are defined as children aged under 16 or 16-24 if they live together with one of parents and do not have their own employment income. Mandatory school age is defined according to country-specific information; see http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/ilc_ca_esms.htm EU AVERAGE refers to the simple arithmetic average among EU28. TOTAL AVERAGE refers to the simple arithmetic average among all countries shown in the table.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Finally, the woman's earnings capacity may be low because of low skills or the specific occupation or sector in which she works. Education and career choices tend to be consistent with family choices. For example, a woman who chooses (or is pushed) to follow a traditional role of domestic care provider may also study less and choose a less ambitious career.

Figure 2 sets out the highest levels of education attained by secondary earners-women. The percentage of women with tertiary education is relatively high in the Baltic countries, in Scandinavian countries, as well as in Belgium and the United Kingdom. Some Southern European countries (Greece, Spain, Italy, Portugal, and Malta), and surprisingly Iceland and Luxembourg, stand out with the high proportion of women with a lower-secondary education or below. In most countries (except Hungary, Lithuania, Bulgaria, Slovakia), the proportion of women with a lower-secondary education or below is higher among secondary earners-women than among women whose earnings are similar to those of their partners. It is therefore plausible that secondary earners-women are disadvantaged in terms of their skills compared with women in equal earning couples.

Figure 2. Highest levels of attained education of women as secondary earners, SILC 2011
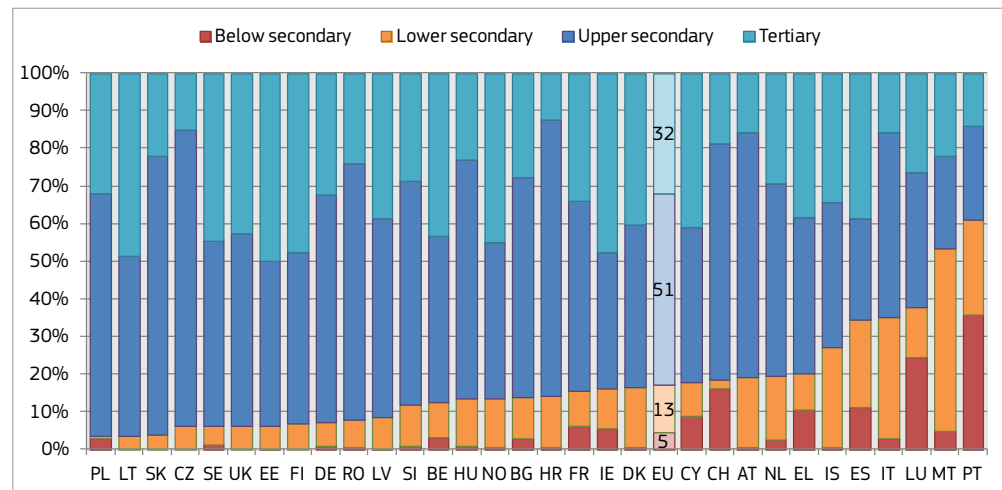
Note: Education levels are defined according to ISCED (variable PE040 in the EU-SILC). 'Below secondary' includes pre-primary and primary education. Countries are sorted according to the proportion of women with a lower-secondary education or below. EU refers to the simple arithmetic average among EU28.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Figure 3 depicts the composition of secondary earners-women by occupation. A relatively high proportion of managers and professionals is observed in the Scandinavian countries, Baltic States, Ireland and Belgium: more than 1/4. This is consistent with the relatively high educational attainment of secondary earners-women in these countries. Whilst it is less likely that women in these occupations are disadvantaged in terms of their hourly earnings, it might be that access to part-time jobs is easier for them (Eurofound 2013). It should be noted, however, that the proportion of managers and professionals among equally earning women is higher in all countries (except Lithuania). Elementary occupations are common among secondary earners in Spain,

Portugal and Luxembourg: more than 20%. In almost all of the countries considered, secondary earners-women are more likely to have elementary occupations or to be service workers than are women in couples with equal earnings.

Figure 3. Occupations of secondary earners-women, SILC 2011
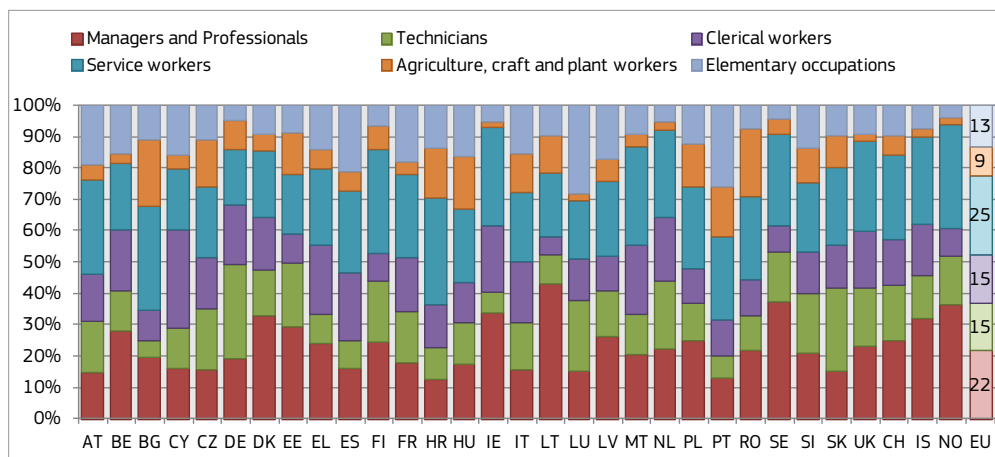
Note: Occupations are defined according to ISCO08 (variable PL051 in the EU-SILC). EU refers to the simple arithmetic average among EU28.
Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

The main sectors providing employment to secondary earners-women are wholesale and retail trade, education, health and social work. In many of the Eastern European countries (as well as in Italy and Portugal), also manufacturing and utilities employ a high share of women as secondary earners. Women in couples with roughly equal incomes are relatively more often employed in public administration. This may imply that the public sector is more likely to provide 'standard' jobs (i.e. full-time ones) with more competitive pay (i.e. a smaller pay gap between men and women).

Table 1C in Appendix 1 summarizes the demographic characteristics of secondary earners-women and their partners. The median age of women ranges from 36 in Finland and Poland to 42 in Austria, Germany, the Netherlands, Slovakia and Switzerland. The median age difference between partners is 1–3 years. The proportion of married couples is higher than 90% in Poland, Cyprus, Slovakia, Croatia, Malta, Greece, and Romania, and it is relatively low in France, Finland, and Sweden. In all countries, at least half of the couples have dependent children, but the proportion is particularly high in Greece and Croatia (more than 75%). In Scandinavian countries, Switzerland, Austria, Germany, the Netherlands, and the United Kingdom, the percentage of couples with dependent children is relatively low.

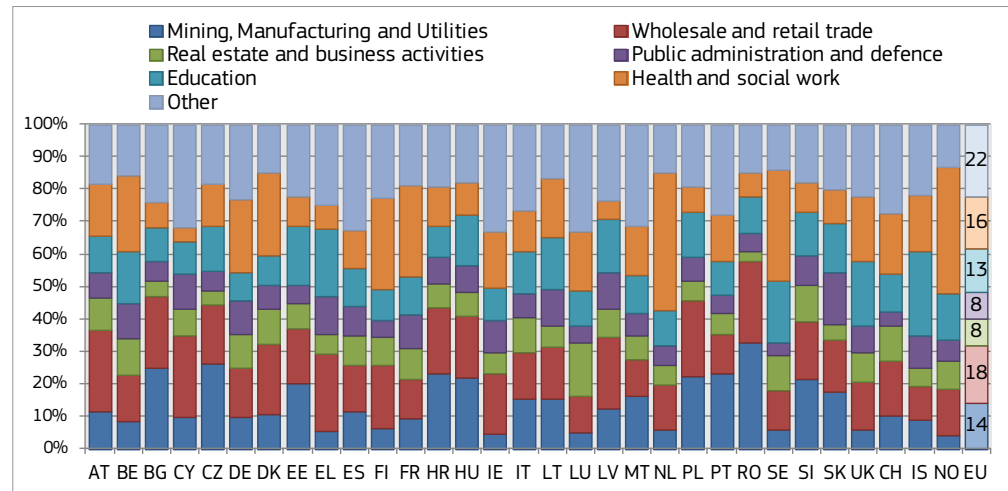**Figure 4. Economic sectors where secondary earners-women work, SILC 2011**

Note: Economic sectors are defined according to NACE Rev.2 (variable PL111 in the EU-SILC). EU refers to the simple arithmetic average among EU28.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Table 1D shows the same list of demographic characteristics of couples as in Table 1C, but this time for couples where both partners earn roughly the same wage. The differences between the characteristics of the two types of couples are country-specific. For example, in Belgium, Ireland, Luxembourg, the Netherlands, the United Kingdom, Malta and Switzerland, the median age of partners in couples with similar earnings is lower than in couples where the woman earns less. This implies that, in these countries, earning patterns for partners start to diverge later in the life cycle (perhaps when couples have children) or that there is a tendency towards more equal earnings in the younger age cohorts. By contrast, in Finland, Sweden, Hungary, Slovenia, Lithuania, partners with unequal earnings tend to be younger. This is in line with the previous findings (Table 6), suggesting that inequality in earnings is a temporary phenomenon for mothers of small children. In many countries the proportion of married couples is considerably higher among couples with a secondary earner-woman, e.g. in Belgium, Ireland, Germany, the Netherlands, Switzerland, as well as in Austria, Frances, and Luxembourg. In practically all countries (except Greece), the percentage of couples with dependent children is lower among couples with equal earnings.

The share of couples with secondary earners-men is relatively low. However, it has been growing in recent years given the adverse effect of the crisis on men (Bettio et al. 2013). Small sample size prevents detailed analysis of the group of male secondary earners. However, there is no doubt that the characteristics of couples with secondary earners-women and secondary earners-men are very different, and so are the reasons for the low earning capacity of one of the partners. Table 1E in Appendix 1 shows the distribution of secondary earners-men according to their activity status during the income reference period. The share of male secondary earners working part time and performing domestic tasks is lower than the respective shares among secondary earners-women in practically all countries. Conversely, the

percentage of men experiencing at least one month of unemployment is considerably higher. Given substantial differences between secondary earners-men and women, the next chapter considers them separately.

5. Work incentives for secondary earners

This chapter analyses work incentives for secondary earners by estimating two static indicators: the Marginal Effective Tax Rate (METR) and the Participation Tax Rate (PTR) defined in Box 2.

Section 5.1 uses EUROMOD to estimate work incentives for the real population based on the EU-SILC microdata. This approach makes it possible to account for the socio-economic differences found within the population. EUROMOD is used to analyse the actual distribution of METR across the population of secondary earners, as well as to disentangle the impact of benefits, taxes, and social contributions on particularly high METR.

Sections 5.2 and 5.3 uses a modified version of the OECD tax-benefit model to calculate work-related fiscal incentive effects on family types. The *standard version* of the OECD tax-benefit model is the one currently adopted by both OECD and EC (see e.g. OECD 2013 and EC 2013b). It considers 'synthetic' households with characteristics and earnings defined a-priori rather than being based on actual data, e.g. 'his' earnings are fixed at 67% of the national wage and 'her' earnings are fixed at 33% of the national wage. Analysis based on 'synthetic' households provides an illustrative way to understand the mechanisms built into tax-benefit systems, but the prevalence of such households in the population may differ across countries. Our *modified version* uses actual earnings figures drawn from EU-SILC 2011 data thus reflecting the actual distribution of households types. For example, figures for the earnings of female secondary earners are the average, actual, earnings of female employees in the country who contribute less than 45% of the joint labour income of the couple. The key message is that some of the real-life complexity is put back into the calculations with OECD models. Also, by feeding into the model the same data on earnings that the EUROMOD exploits we enhance comparability between the estimates that the two modes yield.

Our modified OECD model will in fact be put to a double use: (i) checking the robustness of the current METR estimates obtained by means of EUROMOD, and (ii) estimating current PTR for individuals considering entry or re-entry into the labour market (potential secondary earners).

Box 2. Definition of work incentive indicators used in the report

METR (Marginal Effective Tax Rate) is the indicator that can be used to measure the extent to which taxes, social insurance contributions and benefits affect the financial gain from work. It measures the share of additional earnings 'taxed away' through the combined effect of increasing taxes, social insurance contributions and decreasing benefits. It is defined as:

$$METR = 1 - \frac{\Delta Y_h}{\Delta E_i}$$

where ΔE_i - change in individual gross earnings, ΔY_h - change in household disposable income after all the taxes and benefits have been applied.

Estimation of METR in EUROMOD and in OECD tax-benefit model is based on the same formula. However, there are little differences in how the formula is applied.

In EUROMOD METR is estimated by increasing individual gross earnings (observed in the input data) by 3%. This corresponds to approximately one additional hour of work per week for a full-time worker. The values of METR are estimated for each individual with positive earnings. The result is the distribution of METR that approximates the true distribution in the population. It can be summarized by looking at the mean, median value of METR or other summary statistic.

In the OECD tax-benefit model the level of earnings at which METR is estimated is defined by the user (e.g. 100% of the average wage). The increase in gross earnings is equal to 1% of the average wage. The model can produce METR estimates at the chosen points in the interval of earnings, e.g. from 0 to 200% of the average wage (with a step of 1%). The result is a 'synthetic' (uniform) distribution of METR covering an interval of plausible earnings. It also can be characterized by its mean or median values.

PTR (Participation Tax Rate)* is the indicator that measures how the transition of an individual from non-employment to employment affects household disposable income. It is defined in a similar way as METR, however the initial earnings are zero and the increase is equal to earnings in a new job:

$$PTR = 1 - \frac{\Delta Y_h}{\Delta E_i} = 1 - \frac{Y_{h\,IW} - Y_{h\,OW}}{E_{i\,IW} - E_{i\,OW}}$$

where indices IW and OW stand for 'in-work' and 'out-of-work', and $E_{i\,OW}$ is zero.

Calculation of PTR involves some assumptions regarding the level of wage at which a non-employed person enters employment. In EUROMOD this requires estimation of individual wages for potential entrants using, for example, a wage equation. As this is outside the scope of this study, EUROMOD estimates of PTR are not available in this report. In OECD model the wage is defined by the user in the same way as it is done for the estimation of METR. Unlike METR, PTR are calculated for a single point (i.e. for the assumed level of wage). In this report we present PTR values calculated at three different levels of wages (low, medium and high).

* Note that in OECD publications the same measure is referred to as AETR (Average Effective Tax Rate) (see e.g. OECD 2007, p.107), whereas Carone et al. (2004) call it METR*it* (the index stands for inactivity trap). In this report we choose to call it PTR which is the name usually used in academic publications (see e.g. Adam et al. 2006) and which better reflects the meaning of this indicator.

5.1. The estimates of Marginal Effective Tax Rates based on EU-ROMOD

This section analyses work incentives for secondary earners using the EU tax-benefit microsimulation model EUROMOD. EUROMOD is a static tax-benefit microsimulation model that estimates, in a comparable manner, the effects of taxes and benefits on income distribution, work incentives, and public budgets for each of the EU Member States and the EU as a whole. EUROMOD operates on anonymized EU-SILC cross-sectional microdata. Technical information about EUROMOD and its design can be found in Appendix 3.

Unlike the OECD tax-benefit model for family types, EUROMOD estimates work incentives for a representative sample of the actual population based on the EU-SILC microdata. The advantage of this approach is that the diversity of secondary earners in each country can be taken into account: the structure of households in which secondary earners live, and the precise level of employment income, and income from other sources of all household members. The use of microdata makes it possible to look at the distribution of work incentives within the target group.

This section reports estimation of the METR for the pool of secondary earners-women as they are defined in Chapter 4. Estimates for other population groups are provided in Section 5.1.1. to assess work incentives for secondary earners within the country's context.

Figure 5 shows the distribution of the METR for secondary earners-women: the mean, the median, and the distance between the 25th and the 75th percentiles. The highest median METR (above 40%) are observed in Belgium, Germany, and Denmark. These are also the countries characterised by high METR for the population at large (Jara and Tumino, 2013). The lowest median METR are in Cyprus and Austria: below 20%.

The values for the 25th and the 75th percentiles provide insight into the variation of METR within the respective population groups. For example, in Cyprus and Austria the median METR are quite low. However, the METR for the 75th percentile are considerably higher. This implies that a substantial proportion of secondary earners-women in these countries have relatively high METR (e.g. as high as 40% in Austria). Conversely, in Spain a sizable proportion of women have relatively low METR (close to 10%). In Ireland, the distribution of METR is quite wide, with both low and high values present.

Figure 5. Distribution of Marginal Effective Tax Rates for secondary earners-women, 2012
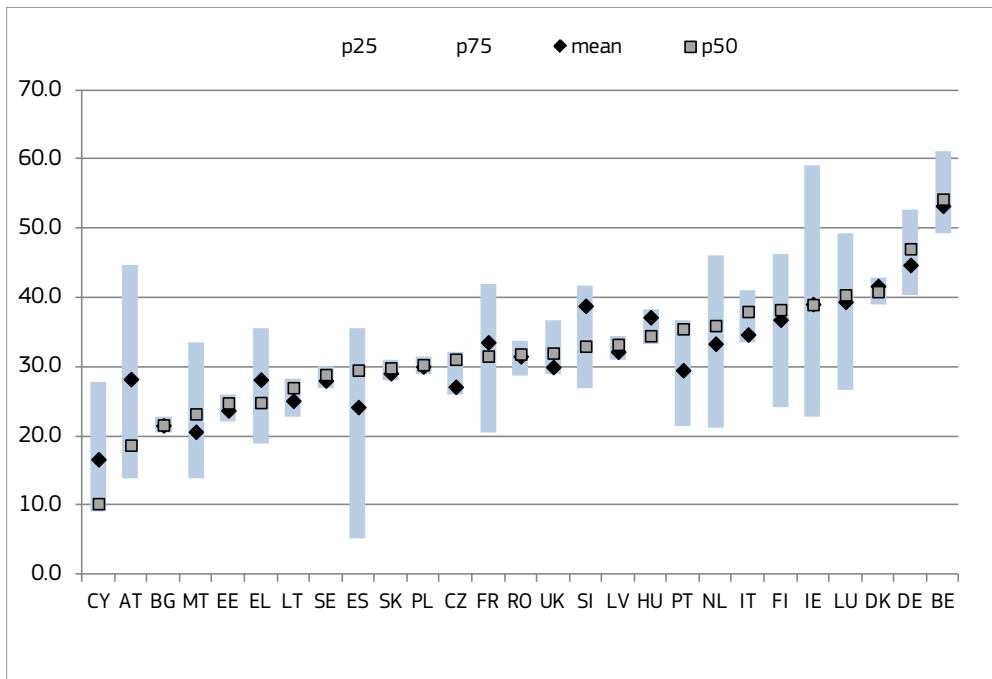
Note: The countries are sorted according to the median METR.

Source: EUROMOD simulations for 2012 income.

In order to understand which instruments of tax-benefit systems lie behind the estimated METR in different countries, we disentangle the impact of benefits, taxes and social insurance contributions. Figure 6 sets out the decomposition of the average METR into three components. The first component shows the average increase in taxes paid by the household resulting from a marginal increase in the earnings of a secondary earner. The second component provides the same information for social insurance contributions. The last component shows the reduction in benefits due to increased income and loss of eligibility. All three components are expressed as a percentage of the increase in earnings.

In most of the countries in Figure 6, the largest component of the average METR is the increase in taxes. The highest values are in Belgium and Denmark, both of which have highly progressive tax systems where the average tax rate is high. The exceptions are the Netherlands, Greece, Austria, Bulgaria, Cyprus, Slovenia, Hungary and France, where the social insurance component is somewhat larger than the tax component. Social contributions are also quite high in Germany, but still lower than the tax component. The reduction in benefits is the smallest component in all countries, though relatively large in the United Kingdom, France, Finland, Luxembourg, Ireland, Lithuania, and Slovenia. Three of these countries (France, the United Kingdom, and Ireland) are characterised by important means-tested benefits in general and have a high benefit component in METR for the population at large (Jara and Tumino, 2013).

Figure 6. Decomposition of the average Marginal Effective Tax Rates for secondary earners-women, 2012
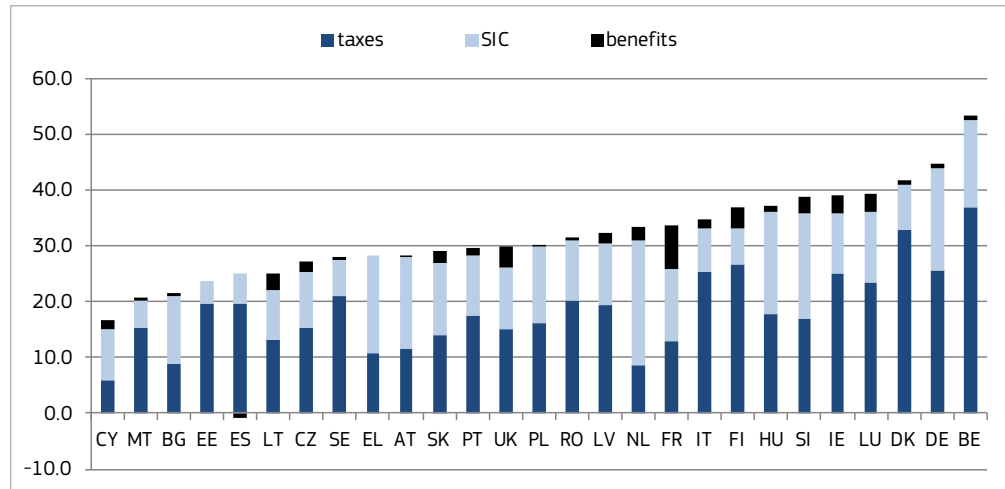
Note: Countries are sorted according to the total average METR.

Source: EUROMOD simulations for 2012 income.

According to Figure 5, the top 10 countries in which secondary earners-women are subject to particularly high median METR are Belgium, Germany, Denmark, Ireland, Luxembourg, Finland, Italy, the Netherlands, Portugal, and Hungary. The median METR in these countries ranges from 34.5% in Hungary to 54.2% in Belgium. However, the distribution of METR within the countries differs considerably. It is quite wide in countries like Ireland, Austria, Spain, the Netherlands, Luxembourg, Finland, and France. By contrast, in Bulgaria, Sweden, Poland, the Czech Republic, Latvia, Slovakia, Denmark and Estonia, there is very little variation. In Bulgaria, the Czech Republic, Latvia, Slovakia, and Estonia, the lack of variation is due to a 'flat tax' system, while in Sweden, Poland, and Denmark it is likely to be explained by a quite homogenous population of secondary earners.

Because the distribution of METR proves to be quite wide in some countries, it is not enough to consider only median or mean values; rather, it makes sense to consider the upper tail of the distribution. In Figure 7 we take a closer look at the secondary earners subject to particularly high METR (e.g. more than 50%). This means that at least half of the increase in earnings is taxed away. Only few countries have a considerable proportion of such women. Unsurprisingly, Belgium, Ireland, Germany and Luxembourg have a large proportion of women with METR of more than 50%. However, also countries that do not appear among the top 10 median METR (e.g. France, Slovenia, Austria, and the United Kingdom) have more than 5% of secondary earners subject to substantial work disincentives.

Figure 7. Proportion of secondary earners-women facing Marginal Effective Tax Rates above 50%, 2012
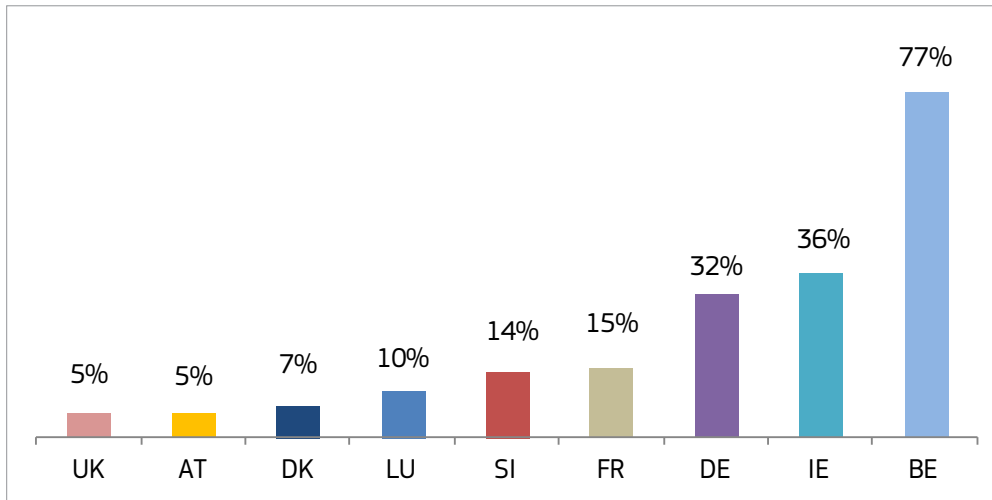
Note: Only countries with proportions higher or equal 5% are shown.

Source: EUROMOD simulations for 2012 income.

In many of the countries considered, high METR are related to a generally high tax burden on earned income (e.g. in Belgium or Denmark, as noted). In this case, it is relevant to ask how the METR of secondary earners-women compare with the population of the country in general. Can we claim that secondary earners-women in Belgium or Denmark are at particular disadvantage with respect to the work incentives that they face? The next section addresses this issue.

5.1.1. Size of Marginal Effective Tax Rates: what is the relevant benchmark?

The analysis reported in the previous section showed that secondary earners-women in some countries are subject to particularly large METR. This is especially true of Belgium, Germany, and Denmark. However, this is mainly related to generally high levels of taxation in these countries. Does this mean that secondary earners in these countries are particularly disadvantaged with respect to work incentives provided by the tax-benefit system? How do work incentives faced by secondary earners compare with those for other population groups? Moreover, which population group is a relevant comparison for secondary earners?

Since one of the important steps towards economic independence of women is equal sharing of paid and unpaid work between partners, we suggest that couples with roughly equal earnings represent the most relevant and adequate comparison group for couples with secondary earners. Figure 8 sets out this comparison.

Figure 8. Median Marginal Effective Tax Rates for secondary earners and individuals with roughly the same earnings as their partners, 2012
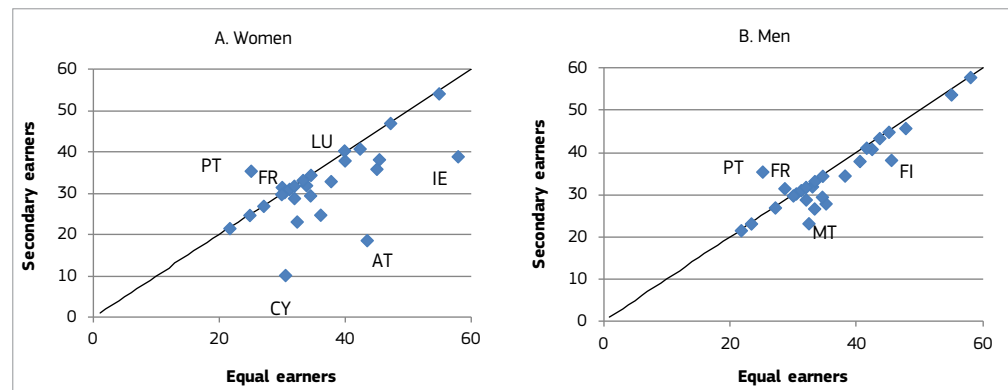
Source: EUROMOD simulations for 2012 income.

Figure 8 is split into two panels. Women are presented in panel A and men in panel B. Median METR for secondary earners are shown on the vertical axis. The horizontal axis shows the same for equally earning partners. The solid diagonal line in each figure is 'the line of perfect equality'. Along this line, the median METR for secondary earners and for equally earning partners are the same. Each dot represents one of the EU-27 countries. In the countries above the diagonal secondary earners have higher METR and thus lower work incentives compared with the equally earning individuals.

Panels A and B reveal that there is only one country in which secondary earners have a METR considerably higher than the equally earning partners. This is Portugal with 10 percentage point difference between the METR for two groups. In France, the difference is also to the disadvantage of secondary earners, but the difference is minimal. Luxembourg shows the same, but only for women. It should be pointed out that all three countries have joint taxation. The results for Portugal and France hold for both secondary earners-men and women, suggesting that in these cases gender does not play a role, but rather inequality in earnings. Nevertheless, in both Portugal and France women are still predominantly in the position of secondary earners, and only a small proportion of men experience the same.

The comparison presented in Figure 8 may hide some of the differences between secondary earners and equal earners. On average, the earnings of the former are lower than the earnings of the latter (see Table 2A in Appendix 2). In countries with progressive individual-based taxation this would mean that equal earners pay proportionally more taxes than secondary earners simply because they tend to be higher earnings individuals.

One way to account for differences in earnings is to compare secondary earners and equal earners within the same (narrowly defined) income group. The income groups we consider are: low earnings (1st tertile), medium earnings (2nd tertile) and high earnings (3rd tertile). This largely reduces the variation in income between secondary earners and equal earners. The disadvantage is that samples of 'similar income' individuals are necessarily smaller, which invites caution in interpreting the results. Figure 9 sets out the comparison.

Figure 9. Median Marginal Effective Tax Rates for secondary earners and individuals with roughly the same earnings as their partners, by tertile, 2012
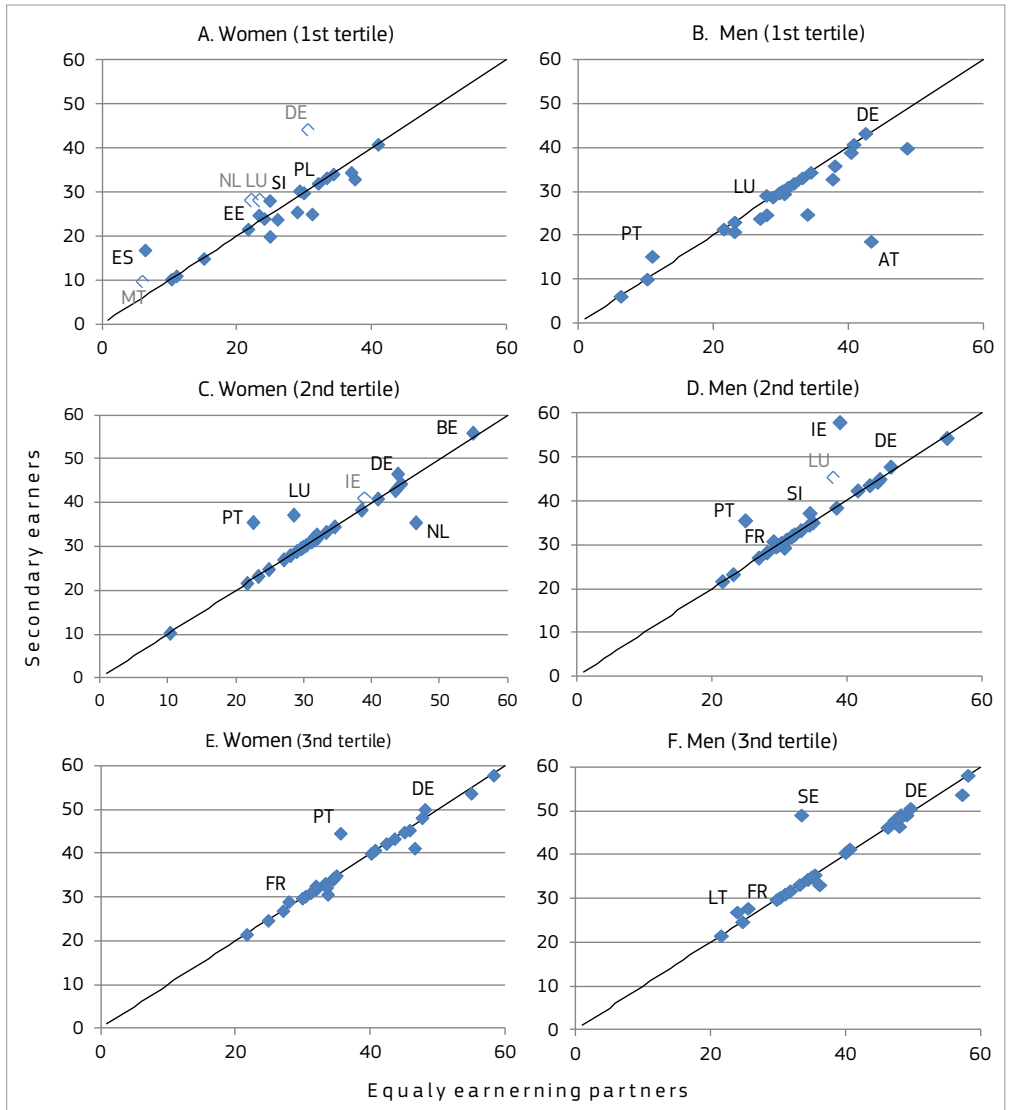
Note: Estimates for countries shown by white dots are based on the small sample size (<30 observations) and should be treated with caution.

Source: EUROMOD simulations for 2012 income.

Box. 3 Choosing the relevant benchmark

In Section 5.1.1 women who are secondary earners are compared to women in couples where partners earn roughly the same. This comparison is complicated by the fact that in reality secondary earners are likely to earn less than equally earning individuals. In order to account for this, we select women with roughly similar level of earnings from the two groups of interest and compare them to each other (Figure 9, panels A, C, E).

In a stylized way this comparison can be shown as follows:

	Couple with a secondary earner		Couple with equally earning partners
(1)	She earns X He earns Y (X< Y)	→	She earns X He earns X
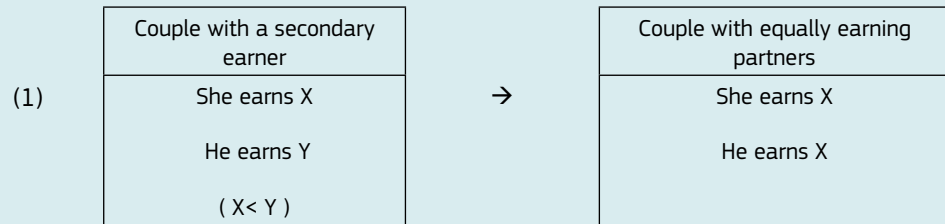
In individual taxation systems this type of comparison largely removes the effect of progressivity. In a joint taxation system the disadvantage that secondary earners face is intrinsically due to progressivity and it is thus aptly captured by the comparison. The drawback is that, by construction, balanced couples have lower joint earnings than unbalanced couples. This means that at low levels of earnings balanced couples are more likely to receive means-tested benefits than couples with secondary earners. Withdrawal of these benefits from equally earning couples (due to a marginal increase in her earnings) may offset some of the otherwise important differences between the two groups.

An alternative option is to choose a benchmark that keeps couple's joint earnings at the same level:

	Couple with a secondary earner		Couple with equally earning partners
(2)	She earns X He earns Y (X< Y)	→	She earns Z He earns Z (Z+Z) = (X+Y)
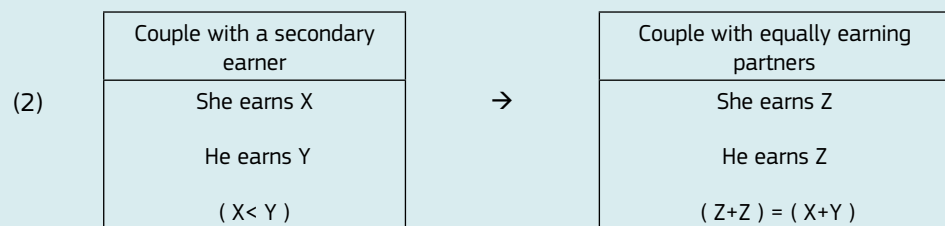
This benchmark, however, removes the effect of taxation progressivity in individual taxation systems only partially. And in case of joint taxation (in its pure form where the income of both partners is pooled and assessed together) this type of comparison will not show higher work disincentives for the secondary earner because joint income does not change. The advantage of using this benchmark is that couples in joint taxation systems would be affected similarly to those in individual systems by reductions or withdrawals of means-tested benefits based on family income. It can also capture some non-linearities in joint taxation that penalize secondary earners.

The third possible option is to keep the earnings of the main earner constant:

(3)	Couple with a secondary earner
	She earns X
	He earns Y
	(X< Y)

→

Couple with equally earning partners
She earns Y
He earns Y
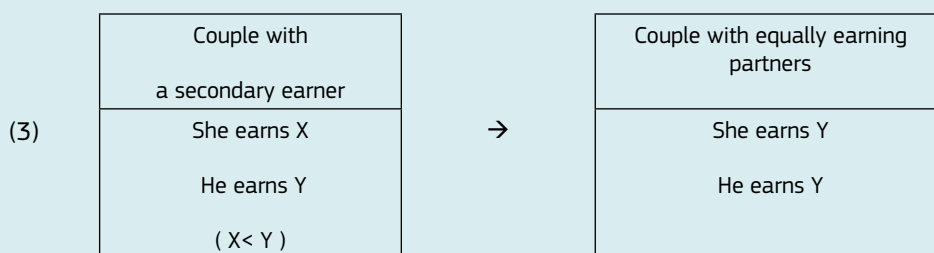
This case represents the 'natural' benchmark. Here a couple becomes balanced when the secondary earner moves up to the position of equal earner. Though this is what one would expect to happen in reality it implies, by construction, that couples with a secondary earner have lower income and are likely to be exposed to withdrawal of means-tested benefits more than balanced couples. This clouds the interpretation of results. In individual taxation systems, moreover, results are further clouded because they also reflect progressivity.

Joint taxation is supposedly one of the main elements of tax-benefit systems that affects negatively work incentives for secondary earners. The first benchmark is well suited to capture such cases. This is why we give preference to the first benchmark. For comparison, we also provide the results which rely on benchmarks 2 and 3 (see Appendix 4).

The main finding is that secondary earners face higher METR than equal earners in twelve countries compared to the three identified in Figure 8. Portugal, France, and Luxembourg are still in the picture. For Portugal, the largest differences are observed in the middle-income group (i.e. the 2nd tertile). In France, the disadvantages faced by secondary earners are still marginal, and are likely to show up in the top income group (and also in the middle-income group for men). Disincentives for secondary earners-women in Luxembourg appear more clearly after the split in the middle-income group. Similar disincentives may occur for men as well; however, the sample is too small to reach a confident conclusion.

The new countries above the diagonal are: Belgium, Germany, Estonia, Spain, Ireland, Lithuania, Poland, Sweden, and Slovenia. Germany, with small discrepancies in favour of balanced couples, appears in almost all panels of the figure. In Spain, Estonia, Poland and Slovenia, secondary earners-women in the low-income group are likely to face higher METR than women in balanced couples. The difference is especially large in Spain. However, despite being at a disadvantage, secondary earners in Spain still face the 5th lowest METR among the EU27 (16.8%). Small differences (around 1 p.p.) to the disadvantage of secondary earners are also observed for women in Belgium (2nd tertile).

When we compare men, Ireland, Lithuania and Sweden show up as countries where male secondary earners have substantially lower work incentives than those partnered with equal earnings spouses. Although this is an interesting result, it deserves further investigation as the sample size for men is just above the critical threshold, especially in the case of Sweden and Ireland where discrepancies are relatively large.

The comparison in Figure 9 is an attempt to account for difference in earnings between secondary earners and individuals in balanced couples. But it does not account for differences in other characteristics between the two groups. Couples with a secondary earner-woman or man will be somewhat different from couples with both partners earning equally (as was shown by descriptive analysis in Chapter 4). Different characteristics imply differing eligibility for benefits and liability for taxes. Thus, the analysis presented above does identify differences in work incentives that we observe in real world, but it does not claim that the differences are due solely to imbalance between the earnings of the partners.

Box. 4 Comparison of our findings to existing studies

Previous research by OECD and EC (OECD 2012, EC 2013) identified France and Germany as countries where secondary earners women are penalized by marginal effective taxation. Results presented in this section support these findings partially. We also find that secondary earners in Germany and France face higher work disincentives than women in couples with balanced earnings. However, the discrepancies between the two groups are not substantial. Moreover we find that several other countries show similar or larger disadvantages for secondary earners (Portugal, Belgium, Estonia, Greece, Spain, Ireland, Lithuania, Poland, Sweden, and Slovenia).

Such discrepancy in results is due to differences in methodology. Our estimates consider households as they are actually observed in the population whereas estimates from both the OECD and EC refer to 'synthetic' households. To the extent that the characteristics of synthetic households differ from those of actual households the respective results are bound to differ.

The benchmark used for comparison is also different. The studies by OECD and EC (see for example, OECD, 2012: Tab. III.A5.1, p. 253) assume that the combined earnings of partners are the same for unbalanced and balanced couples. This corresponds to benchmark 2 in Box 3, whereas we use benchmark 1.

5.1.2. Marginal Effective Tax Rates for women with and without children

In many countries, tax-benefit systems are designed to support families with children and to prevent poverty among children through child-related benefits or child-related tax reliefs. Eligibility for these elements of tax-benefit systems is often linked with the level of income of an individual or a family. While providing financial support, such policies may at the same time create additional work disincentives for parents (or for one of the parents). To see whether in some countries the competing objectives of child support and stimulating labour force participation of women conflict with each other, we compare METR for secondary earners-women with and without children in Table 7.

Column 1 in Table 7 shows the median METR for secondary earners-women without children. The differences between the latter and the median METR for women with children (distinguishing by the age of the youngest child) are shown in columns 2, 3, 4, and 5. In the majority of countries, the median METR for all five groups are quite similar. However, in Belgium, Finland, Greece, Ireland, Luxembourg, and the United Kingdom, secondary earners-women with children face higher median METR than do women without children (by more than 1 p.p). In Ireland and the United Kingdom, slightly higher work disincentives seem to arise only for mothers with children below

the mandatory school age. In Finland, by contrast, relatively high median METR are only for women with children above the mandatory school age.

In Austria secondary earners with dependent children (of any age) face considerably lower METR than women without children. The same applies to the Netherlands, but the discrepancy is smaller. In France lower median METR are observed only for children below mandatory school age, and in the Czech Republic only for children under 3. The decomposition (not presented here) suggests that these differences are mainly due to the lower tax component, and in the Netherlands also to lower social security contributions.

Table 7. Median Marginal Effective Tax Rates for secondary earners–women with and without children, 2012

Country	Median METR for women without children	Change in the median METR if the youngest child is:			
		Below 3 years old	From 3 to manda-tory school age	From manda-tory school age to 12	12 years old or above
	(1)	(2)	(3)	(4)	(5)
AT	42	-25	-23	-27	-4
BE	54	0	2	0	2
BG	22	0	0	0	0
CY	10	0	(0)	0	0
CZ	31	-20	0	0	0
DE	47	-3	-1	0	1
DK	41	0	0	0	0
EE	25	0	0	0	0
EL	25	3	(0)	0	3
ES	30	0	0	0	0
FI	38	-7	-1	6	6
FR	32	-7	-10	0	0
HU	35	(0)	0	0	0
IE	39	4	4	-4	0
IT	37	1	1	1	1
LT	27	0	0	0	0
LU	40	2	(-6)	-4	3
LV	33	0	(0)	0	0
MT	23	(0)	–	0	0
NL	39	-5	-7	-7	-3
PL	30	0	0	0	0
PT	36	0	0	-11	-1
RO	32	(-2)	0	-2	0
SE	29	0	0	0	0
SI	33	-2	1	0	1
SK	30	(2)	0	0	0
UK	32	1	2	0	0

Note: Dependent children are defined as children aged under 16 or 16–24 if they live together with one of the parents and do not have their own employment income. Mandatory school age is defined on the basis of country specific information http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/ilc_ca_esms.htm.#.

Numbers in brackets are estimated on a sample size below 50 observations and should be viewed with caution; – No observations in the respective cell.

Source: EUROMOD simulations for 2012 income.

It should be clarified that the results presented in Table 7 (as well as other results based on EUROMOD simulations presented in this report) do not consider the increase in out-of-pocket childcare costs when the secondary earner's wage increases. Calculations of METR in EUROMOD are based on a marginal increase in earnings (by 3%).[23] This is a small increase that is better conceived as an increase arising from exerting more effort, increased productivity, promotion, or moving to a better paid job. In this case, it is reasonable to assume that the childcare choices of individuals will not be affected by a small increase in the wage. Of course, when more substantial increases in earnings are considered, e.g. when a part-time worker moves to a full-time job, it is important to take childcare into account, because the associated cost may be an important obstacle to an increase in working hours. The next chapter, based on the OECD tax-benefit model, will address this issue.

5.2. Comparing the estimates of Marginal Effective Tax Rates from EUROMOD and the OECD tax-benefit model

In order to assess robustness of the above findings this section will compare estimates from the EUROMOD to those from the OECD model. Should the two model yield fairly similar results, we'll take this to indicate robustness. Recall that we shall be using here the modified version of the OECD model which relies on the same source of data for earnings as the EUROMOD (i.e. EU-SILC 2011).

Table 8 sets out the values of METR for secondary earners obtained from EUROMOD and the OECD model. Table 8.1 stands for childless couples, table 8.2 for couples with children. For each of these two family types we report mean and median values of METR. The values of median METR are either the same or differ by less than 1 p.p. for 15 out of the 26 countries covered by both of the models. For six countries, the differences are minor, within 5%. Only for Greece and the Netherlands (Malta and Portugal only for couples without children) do we find higher differences in the values of METR, but they do not exceed 10 p.p.

The key message to emerge from the above comparison is that the two models yield fairly consistent results for METR values once both sets of calculations use real earnings from the same data source. Having ascertained (broad) comparability, in the next section we further exploit the (modified) OECD model in order to compute the tax burden on potential entrants.[24]

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23 If the hourly wage is fixed, this increase would roughly correspond to an increase in working time by 1 hour per week for a full-time employee.

24 In EUROMOD calculation of PTR requires estimation of individual wages for potential entrants using, for example, wage equation. As this is outside the scope of this study, EUROMOD estimates of PTR are not available in this report.

Table 8. Comparison between Marginal Effective Tax Rates for secondary earners obtained using EUROMOD and the OECD tax–benefit model, 2012

8.1. Couples without children

Country	EUROMOD		OECD	
	Mean	Median	Mean	Median
	(1)	(2)	(3)	(4)
AT	30.6	42	32.2	44.4
BE	51.7	53.8	51.1	53.8
BG	21	21.6	21.6	21.6
CY	15.4	10.3	-	-
CZ	27.8	31.1	24.5	31.1
DE	45.5	47.3	46.1	47.9
DK	42.4	40.9	44.8	40.9
EE	23.6	24.8	24.8	24.8
EL	27.1	24.9	19.8	17.3
ES	24.7	29.5	25.7	29.5
FI	38.9	38.5	30.9	36.7
FR	35.1	31.6	31.1	31.8
HU	37.9	34.5	35.8	34.5
IE	37.3	39	32.5	31
IT	34.2	37.4	34.7	39.3
LT	23.2	27	22.2	27
LU	38.3	40.4	41.7	43.2
LV	31.8	33.3	32.1	33.3
MT	20.9	23.2	26.1	32.3
NL	35.7	39.4	38.4	47.7
PL	30.2	30.3	29.8	30.3
PT	31.2	35.5	26.8	25
RO	31.4	31.9	29.4	29.9
SE	27.4	28.9	26.3	28.7
SI	37.7	33.2	35.6	34.6
SK	28.2	29.9	29.9	29.9
UK	28.6	32	23.5	32
IS	-	-	41.7	42.6
NO	-	-	32.8	35.8

8.2. Couples with children

Country	EUROMOD		OECD	
	Mean	Median	Mean	Median
	(1)	(2)	(3)	(4)
AT	26.5	15.1	29.1	16.1
BE	54.1	54.9	51	53.8
BG	21.9	21.6	22.5	21.6
CY	17	10.3	-	-
CZ	26.7	31.1	24.2	31.1
DE	44.1	46.9	44.7	47
DK	41.2	40.9	46.2	40.9
EE	23.8	24.8	24.8	24.8
EL	28.6	28.0	16.7	18.8
ES	24	29.5	25.7	29.5
FI	35	38.3	30.3	35.9
FR	32.6	31.6	31.3	31.8
HU	36.8	34.5	35.9	34.5
IE	39.8	39	34.6	31
IT	34.9	38.3	34.7	40.6
LT	25.9	27	22.7	27
LU	39.9	41	36.2	36.6
LV	32.4	33.3	32	33.2
MT	20.5	23.2	22.9	22.3
NL	31.5	33.1	31.7	39.4
PL	30	30.3	29.8	30.3
PT	28.9	35.5	28.9	35.5
RO	31.6	31.9	29.9	29.9
SE	28.5	28.9	24.5	28.7
SI	39.3	32.9	41.4	34.6
SK	29.5	29.9	29.9	29.9
UK	31	32	22	32
IS	-	-	46.8	44.8
NO	-	-	31.9	35.8

Note: '–' Results are not available.

Source: Authors' calculations using EUROMOD and the OECD Tax–Benefit model, 2012.

5.3 The estimates of Participation Tax Rates based on OECD tax-benefit model

Women who are out of work may be willing to enter gainful employment or to return to it. Do taxes and benefits encourage or discourage this decision? The Participation Tax Rates (PTR) is used to answer this question as it measures the share of additional earnings which is taxed away when a person enters work[25] due to the increase in taxes or benefits withdrawal (see Box 2 for more details).

Figure 10 shows the values of PTR distinguishing between potential entrants without children (panel A) and potential entrants with two children (panel B). Two sets of estimates are displayed for households with children (panel B), respectively marked by bars and 'triangles'. The bars account for child-related benefits that are strictly part of the fiscal systems such as child allowances, but do not factor in out-of-pocket childcare costs (which are not formally part of the system). Triangles also account for out-of-pocket childcare costs as estimated by the OECD.[26] Following the OECD we treat out-of-pocket childcare costs as an additional, if implicit, component of the tax system.

Belgium, Germany, Denmark, Iceland, Hungary, Latvia, Slovenia are the countries imposing the highest PTR on secondary earners without children where more than one third of additional earnings will have to be forgone on entry into work. Large PTR values may be indicative of the so-called *inactivity trap.*[27] The higher the tax-burden is, the lower is the probability that the person enters work. The lowest PTR values for women without children are observed in Greece, Ireland, the United Kingdom, Spain, Lithuania, Portugal and Finland and amount to less than 20%.

Both the ranking of countries and PTR values change considerably once we consider potential entrants with children. The largest changes, however, are observed for participation tax rates 'augmented' by out-of-pocket child care costs. Such augmented rates reach above 66% (two thirds on additional earnings!) in seven countries, the United Kingdom, Ireland, Germany, Slovakia, Luxembourg, Slovenia, and the Czech Republic, though in another six countries the values stay relatively low (less than 33% in Greece, the Netherlands, Austria, Portugal, Spain and Sweden).

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25 Differently from METR calculations, where it was assumed that the person was already working and facing an increase in earnings (e.g. due to the increased hours of work or greater effort).

26 Out-of-pocket childcare costs figures used for the calculations correspond to the latest round of OECD estimates which we reproduce in Appendix 8.

27 The *'inactivity trap' is a situation when transition into employment does not bring any (or little) financial gain* (see e.g. Carone et al. 2004).

Figure 10. Participation Tax Rates for female potential entrants, 2012

A. Without children
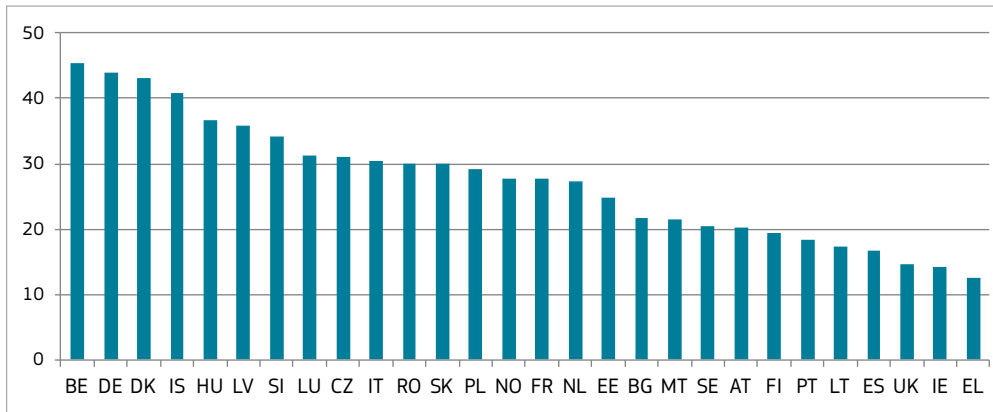
B. With two children
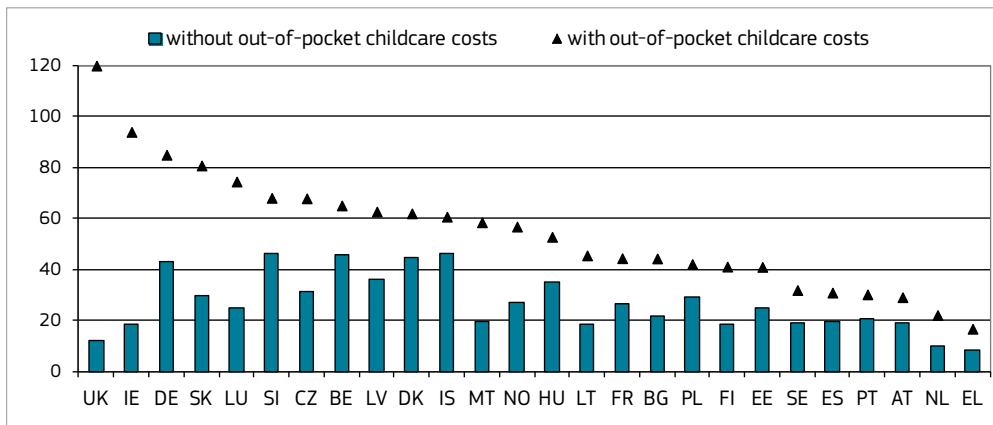
Note: Child-care costs could not be taken into account for Italy and Romania, thus the two countries are missing in panel B.

In panel A countries are sorted in descending order of the level of PTR for potential entrants without children. In panel B countries are sorted in descending order of the level of PTR for potential entrants with two children, when out-of-pocket childcare costs are taken into account.

Source: Authors' calculations using the OECD Tax-Benefit model, 2012 [19.03.2014 release].

Absolute PTR values clearly reflect absolute disincentives. Hence they may simply be indicative of high taxation, high progression, or even high benefit fiscal systems. What is needed is some relative, intra-country benchmark. By analogy with the analysis performed on METR values (Figure 8 above), we compare the PTR values for (potential) secondary earners with those for (potential) equal earners (Figure 11). Here 'potential' means that the figure applies to a hypothetical situation of entry into work which turns a person into either a secondary or an equal earner. Note, however, that we use type (3) benchmark for the exercise on PTR, as explained in Box 3. The calculations are based on the reference earnings reported in Table 6A of the Appendix.

Figure 11. Participation Tax Rates for female potential entrants and equal earning women without children, 2012
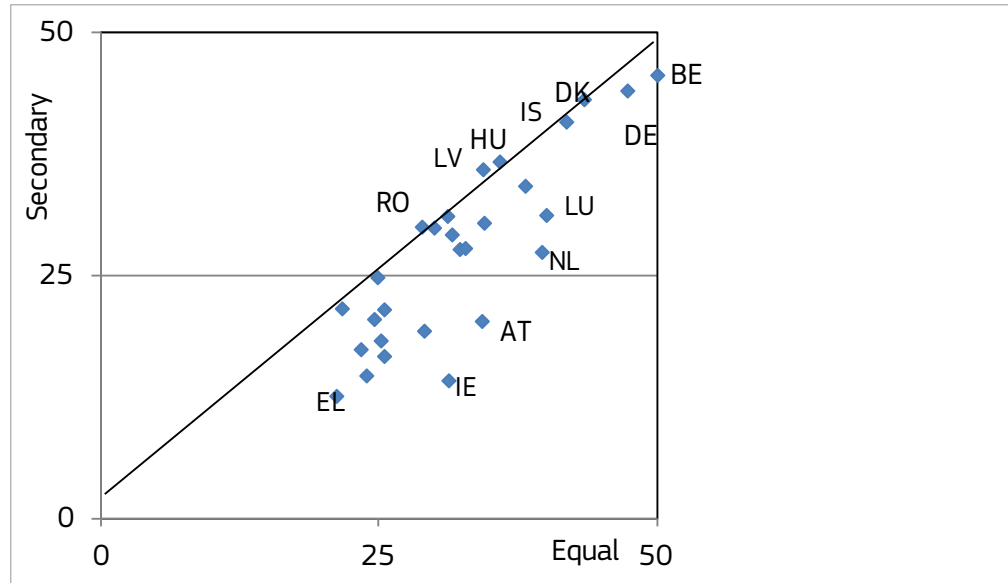
Source: Authors' calculations using OECD Tax-Benefit model, 2012.

Visual inspection of Figure 11 suggests that PTR values are generally higher for equal earners without children. This indicates the existence of disincentives to enter work on equal grounds with the male partner. In order to delve deeper into disincentives at different level of earnings, the PTR was estimated for entry at low, medium and high earnings, again for couples without children (Figure 12).

Figure 12. Participation Tax Rates for female potential entrants at low-medium-high levels of earnings, no children, 2012
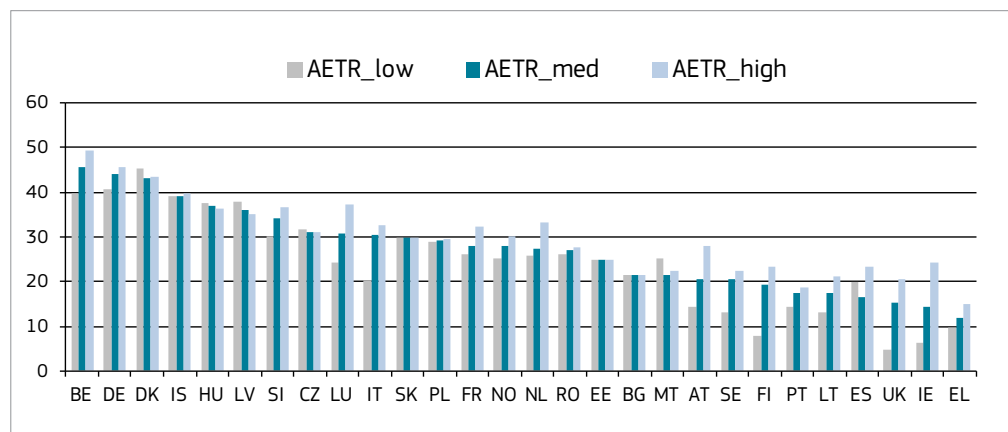
Note: Countries are sorted by the level of AETR_med which corresponds to the median earnings of female secondary earners by country (see Table 6A in the Appendix).

Source: Authors' calculations using OECD Tax-Benefit model, 2012.

There is a tendency for PTR to grow with the level of earnings, except for Denmark and Eastern European countries like Bulgaria, Hungary, Latvia, the Czech Republic, Slovakia, Poland, Estonia. This partly reflects the extent of income tax progressivity.[28] However, differences between top and bottom values are generally contained, except for Luxembourg, Italy, Austria, Finland, Ireland and the United Kingdom. These are the countries where entry into work at higher levels of earnings is less convenient.

Figure 13 compares potential secondary earners with children *to* potential equal earners with children. Panel A shows the results of simulations without out-of-pocket childcare costs, whereas panel B takes such costs into account.

In panel A, only Latvia appears to penalize secondary earners, but to a marginal extent since the PTR values for the latter are only slightly higher than for equal earning women. Once out-of-pocket childcare costs are taken into account, however, the picture changes completely. The majority of countries move above the diagonal line, implying that secondary earners face a higher participation tax compared to equal earners. The largest gap (more than 20 p.p.) is observed in the United Kingdom, Ireland, Germany, Slovakia, and the Czech Republic, where moreover, PTR levels are among the highest. Still penalized, but to a lesser extent, are secondary earners with children in Latvia, Lithuania, Estonia, Malta, and Luxembourg (in some other countries the gap is minor, less than 10 p.p).

There are only two clear instances where the combination of taxes and out-of-pocket childcare costs amounts to stronger disincentives for equal earners in comparison to secondary earners, namely the Netherlands and Austria (panel B, Figure 13). In both cases this can contribute to explain strong attractiveness of part-time work in the respective countries. The cases of Hungary, Greece and Portugal are less easy to read in the light of employment patterns although here too entry as secondary earner is somewhat favoured and may partly account for the recent growth in part-time employment. We will come back to the possible links between PTR and employment in the next chapter.

Overall, what do these findings suggest? Figure 10 is suggestive of how strong fiscal disincentives can be for women considering entry into the labour market once out-of-pocket childcare costs are factored in as implicit taxes. Figure 13 adds that in 19 out of the 29 counties considered potential secondary workers with children fare worse than potential equal earners as they enter work.

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28 Note that many Eastern European countries have recently adopted the flat income tax rate.

Figure 13. Participation Tax Rates for female potential entrants and equal earning women with children, 2012

A. Secondary earners women versus equally earning women, two children, no out-of-pocket childcare costs
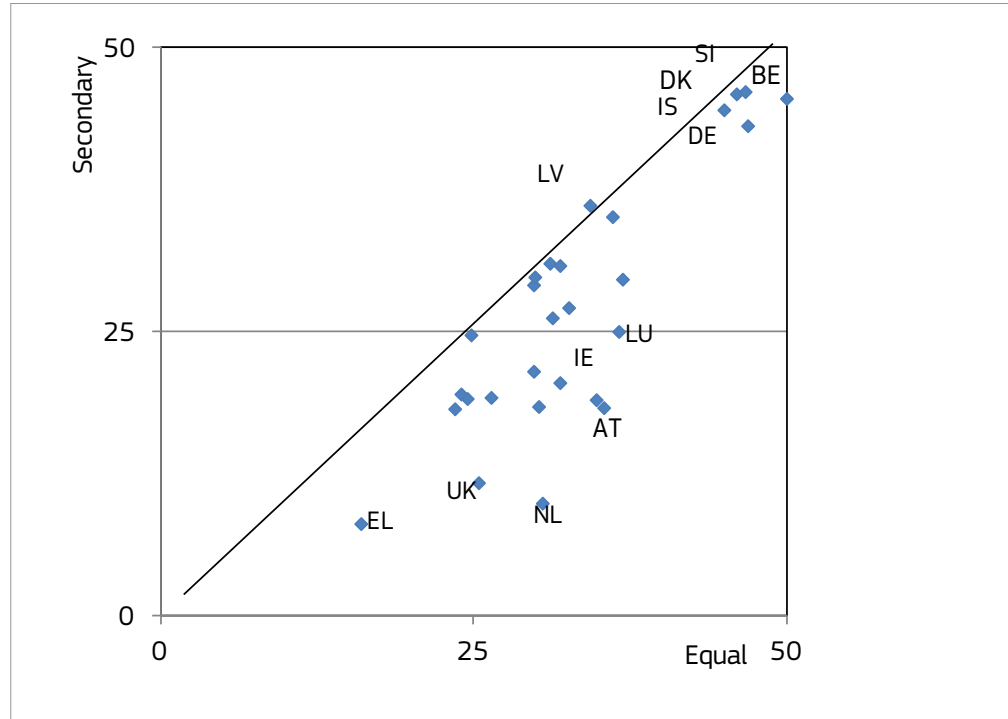
B. Secondary earners women versus equally earning women, two children, with out-of-pocket childcare costs
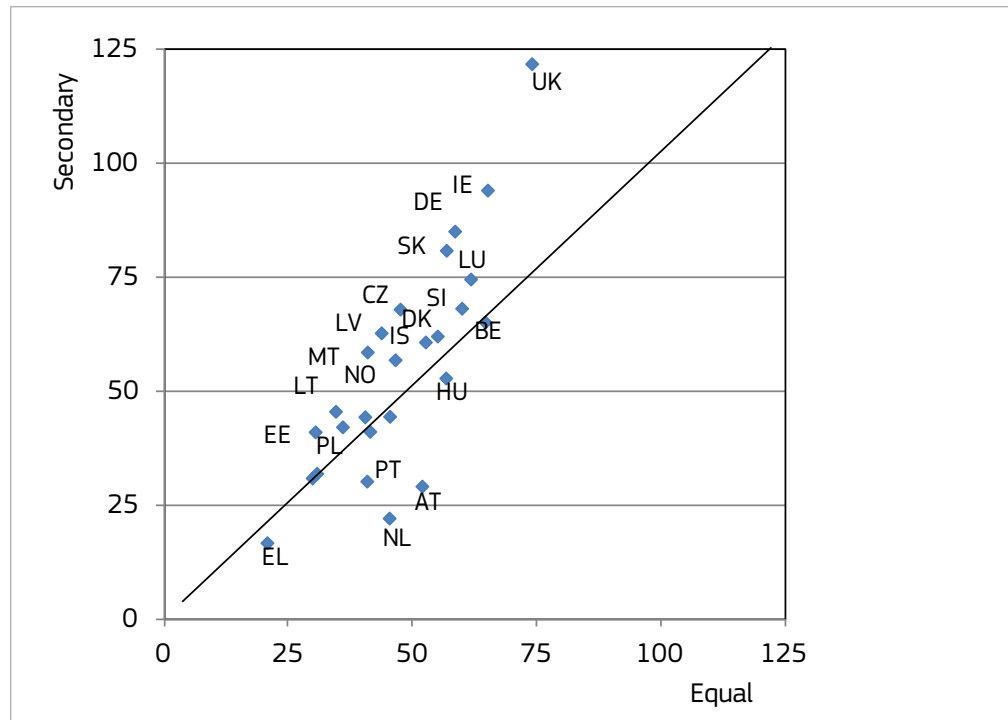
Source: Authors' calculations using OECD Tax-Benefit model, 2012 [19.03.2014 release].

Ireland and the United Kingdom stand out as the countries where potential secondary earners are penalized the most. Childcare is very expensive in these countries and it is relatively expensive also in Slovakia and Luxembourg, though to a lesser extent. However, the findings for Germany send a different message. Here potential secondary earners continue to be penalized with respect to equal earners despite evidence of a considerable reduction in out-of-pocket childcare costs over the recent years (see Table 8A in the Appendix).

The findings for Germany are somewhat puzzling, but so are those for the United Kingdom, if the expectations are that high PTR hinder participation.[29] This sends a warning about how we should gauge the evidence in Figure 13. The estimates of PTR which factor in out-of-pocket childcare costs are a sophisticated exercise. Gross childcare costs fed into the model are generally fixed for a country (or region) while net childcare costs – those that matter for the PTR - are allowed to vary with income and in response to the specific design of the national tax-benefit system. To see this note how, for example, secondary earners in Austria and the Netherlands are less penalized than equal earners by the introduction of childcare costs, whereas the opposite happens in Ireland and the United Kingdom. However, the initial assumption of fixed, gross childcare costs per country may not do full justice to the dispersion of such costs within as well as between countries (regions). Gathering accurate information on out-of-pocket childcare costs and modelling their interaction with the tax-benefit system is still fraught with difficulties.

All this boils down to a simple message. Out-of-pocket childcare costs are likely to influence employment decisions as much as, if not more than, other 'explicit' fiscal (dis)incentives. But the robustness of this finding is inevitably conditional on the quality of OECD out-of-pocket childcare costs estimates.

However one may assess the suggestions from the above simulations, validations of these suggestions and, more generally, solid policy inference requires analysis which is outside the scope of this report. In gathering the threads of our investigation in the chapter that follows we shall nevertheless draw some plausible, albeit speculative and general implications from our findings for policies targeting the design of the taxation system and the growth of labour supply.

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29 UK records female employment rates higher than the EU average, see Table 9A in the Appendix.

6. Discussion: fiscal disincentives and employment patterns

In this chapter we make a very rough attempt to link the findings on METR and PTR to the employment patterns by country. We first ask to what extent a clear link is discernible between high marginal tax rates and low work intensity among actual secondary earners. We then repeat the question for participation tax rates and actual decisions to enter work among potential entrants. Several attempts to identify such links exist in the literature and some use rather sophisticated econometric methodology (see e.g. Jaumotte 2003, Thévenon 2013). However some of the results we obtained for METR and PTR are relatively new, making it worthwhile to take a fresh, if cursory, look at the issue.

6.1 Marginal Effective Tax Rates and work intensity

High METR are expected to discourage work intensity, as repeatedly noted. In this section we take part-time to epitomize low work intensity, although a finer analysis should go beyond the part-time full-time dichotomy.

Table 9 classifies countries using the METR estimates from EUROMOD. It includes all the countries above the diagonal in Figure 9, namely countries where secondary earners are 'penalized' with respect to equal earners in terms of METR values. The table distinguishes between large and small fiscal disincentives for secondary earners (based on the distance from the diagonal) at low, medium and high levels of earnings, respectively. The bold font in the table denotes countries with an average share of part-timers above the EU28 average (31.4%)[30], while countries with small sample sizes are shown in light grey.

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30 This level corresponds to the average share of part-time among working women in the EU28 in 2012 (see Table 9A in the Appendix).

Table 9. Work intensity and fiscal disincentives for female secondary earners (relative to women in balanced couples) by level of earnings, 2012

Income / Disincentives	Low	Medium	High
Small	EE, PL	**BE, DE**, IE	FR, **DE**
Large	ES, SI, **DE**, LU, **NL**, MT	**LU**, PT	PT

Note: Income groups are based on earnings tertiles as in Figure 9.

Disincentives are expressed as the differences between METR for female secondary earners and women in balanced couples. Large disincentives:> 3 p.p., Small disincentives: 1-3 p.p., Minor disincentives: <1p.p. (not included).

Source: EUROMOD simulations for 2012 income.

Belgium, Germany and Luxembourg are the countries where disincentives (as captured by METR) are higher for secondary earners-women and where the share of women in part-time employment is correspondingly high. In Germany and Luxembourg, male secondary earners also face some disincentives (Table 10A in the Appendix), but the extent of the phenomenon is rather limited as only about 9% of couples in these countries have men in the secondary earner position.

Germany and Luxembourg operate joint taxation systems, which is likely to penalize partners on lower earnings. In the Belgian taxation system there are some elements of jointness (e.g. partial transfer of income from the main earner to the partner) that may lead to a similar result. Low or part-time coverage of formal childcare probably adds to disincentives in all three countries.[31]

The Netherlands and Ireland are two additional countries where secondary earners women appear to be penalized, respectively at low and medium income levels. Again, the share of part-time is high in both countries, but the findings about the METR must be treated with caution due to small sample size.

In Portugal secondary earners face substantially higher disincentives to work compared to partners with equal earnings, both men and women. Moreover, decomposition of METR (which we do not show here) suggests that the disincentives arise from substantially higher taxes that secondary earners face even if their level of earnings is relatively similar to those of a partner in a balanced couple. As in Germany and Luxembourg, in Portugal joint taxation penalizes women or men who earn less that their partners. As elsewhere, moreover, women are much more likely than men to be in a position of a secondary earner (only 12% of couples have the woman as the dominant earner).

Yet employment outcomes for Portugal do not match expectations. Part-time is low (13.9% of all employed in 2012 compared to 31.4% in the EU28 on average) despite the fact that the national tax-benefit system apparently encourages unequal sharing of paid and unpaid work. Moreover, the employment rate of women (20-64) in full-time equivalents is 58.8% in 2012 (higher than in the EU27: 53.6%).

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31 In DE, coverage of formal childcare for toddlers is still below the EU27 average. In DE, LU and (to a lower extent) in BE, the proportion of under school age children who are covered on a less than full-time basis (30 hours per week) remains high.

Other countries where secondary earners women may face substantial disincentives to increasing work intensity are Spain and Slovenia. But this has not resulted in high shares of part-time. For Spain the qualification is that, despite being at a disadvantage relative to individuals in balanced couples, secondary earners still face one of the lowest METR in the EU27. Slovenia, on the other hand, has inherited low part-time from the socialist era.

In Estonia, Poland, France, and Lithuania, disadvantages are comparatively small and none of these countries displays large part-time share.

In sum, the evidence we garnered suggests that fiscal disincentives are high enough to discourage female secondary workers from increasing work intensity in five countries: Belgium, Germany, Slovenia, Portugal, and Luxembourg (Germany, Portugal and Luxembourg operate a joint taxation system[32]). Three of the countries show a high proportion of part-time work: Belgium, Germany and Luxembourg, while this is not the case in Portugal and Slovenia. Because of small sample size the evidence that strong disincentives in the low and medium income groups may (partly) account for relatively high part-time is not conclusive for NL and IE. In the remaining countries disincentives are small enough not to exercise a strong influence, which is broadly consistent with a share of part-time below the EU average. Overall, the weight of the evidence supports some but not overwhelming influence of fiscal incentives on work intensity.

6.2 Participation Tax Rates and levels of employment

Here we take the female employment rate as the outcome variable that should capture the influence of participation tax rates. Table 10 classifies countries by the level of PTR and by the level of income upon (re-)entering employment. The black and bold font indicates countries where the disincentives to enter work are medium-to-high and the current employment rates for women are below the EU28 average (62.4%).[33] The table refers to women without children but we shall recall discursively the difference that children make.

Our previous simulations indicate that out of the 16 countries featuring relatively high participation tax rates for female secondary earners without children (PTR>25%) 8 report employment rates below the (European) average: Belgium, Hungary, Italy, Luxembourg, Malta, Poland, Romania, and Slovakia (Figure 10). In most of these countries, disincentives for secondary earners are in fact higher than elsewhere at any level of entry income, except for low income earners in Luxembourg and Italy and medium-to-high income earners in Malta (Figure 12).

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32 With an option to be taxed individually in DE.

33 This level corresponds to the average employment rate for women in the EU28 in 2012 (see Table 9A in the Appendix).

Table 10. PTR for potential entrants without children, by level of income (OECD tax-benefit model 2012)

Income / Disincentives	Low	Medium	High
Small	CZ, SI, **SK, PL,RO,** FR, NL, **MT,** NO	CZ, **LU, IT,SK, PL,** NO, FR, NL, **RO**	**IT,** FR, CZ, NO, **SK, PL,** AT, **RO**
Large	DK, DE, **BE,** IS, LV, **HU**	**BE,** DE, DK, IS, **HU,** LV, SI	**BE,** DE, DK, IS, **LU,** SI, **HU,** LV, NL

Note: We use black and bold to denote countries where the disincentives to enter work are found to be medium-to-high and the levels of employment rates for women are below the average for EU28 in 2012. We treat disincentives as high if a person would have to give away more than 33% of the additional earnings, Small if the rate varies from 25% to 33%, Minor – below 25% (not included).

As noted, Belgium, Hungary, Italy, Malta and Poland retain some elements of joint-ness in the filing of tax returns, while Luxembourg is a country operating joint taxation. Weakening the elements of jointness may be an option for these countries. The problem with Slovakia is likely to be more specific. Here, in fact, the withdrawal of the dependent spouse allowance may create pressure on earnings when the female partner enters work.

As documented in Section 5.2, perhaps the largest 'tax' hindering entry into employment among secondary earners is out-of-pocket childcare costs. Figure 10 provided evidence that, once out-of-pocket childcare costs are treated as part of tax burden, fiscal disincentives for women considering entry into the labour market <u>are strong in the majority of Member States</u>. And Figure 13 reinforced this finding with evidence that in 19 out of the 26 counties examined potential secondary workers with children fare worse than potential equal earners as they enter work. Ireland and the United Kingdom were found to be especially penalized, less so Slovakia, Germany, and the Czech Republic.

It is tempting to conclude that, for women with children, 'explicit' participation tax rates influence decisions whether to work or not over the life cycle to some extent while (out-of-pocket) childcare costs matter a great deal. However, there are important exceptions such as the UK where female employment is relatively high despite one of the highest out-of-pocket childcare costs in Europe. An explanation could be that the UK is a high part-time country and part-time helps saving on childcare costs. There clearly are factual reasons why childcare costs matter in one country less than in others, but there also are residual uncertainties about the quality of childcare costs data. Data limitations in fact may be one of the reasons why childcare costs were only selectively used in the OECD publications (see e.g. OECD 2007, chapter 4). We have made an attempt to use the latest figures referring to 2012 (and released in 2014), but there might still be room for improvement.

7. Concluding summary

In today's Europe, women no longer play a marginal income role within couples. However, the contribution of male and female partners to common earnings remains very unequal. In more than half of working age-couples in European countries women earn less than men or do not work at all.

The factors that affect women's earning capacity differ across countries. In the EU15, the low contribution of women to couples' earnings is likely to be related to widespread part-time jobs. This is not the case in the majority of the Eastern European countries or even in part of Southern Europe, where such jobs are either not available or not financially attractive.

Labour market choices and outcomes are strongly influenced by the family situation, most importantly the number and age of dependent children. In many countries, having children under 3 years of age considerably reduces the share of women's earnings. In most countries this is a temporary effect, in part related to career interruptions while on maternity leave. But there are countries where the decrease in women's earning capacity is more persistent because it is observed in all couples with dependent children regardless of their age. Countries like Austria, Germany, Croatia, and, outside the EU, Switzerland, are clearer instances of persistent decrease.

In this report we have investigated the extent to which formal tax-benefit policies and implicit taxes such as out-of-pocket childcare costs inhibit women from working to their full capacity. We have utilized two tax-benefit simulation models (EUROMOD and a modified version of the OECD tax-benefit model) to estimate common measures of work incentives: the Marginal Effective Tax Rate which is expected to influence decisions about how much to work, and the Participation Tax Rate which is expected to affect decisions whether to work or not. We have also brought into play the Participation Tax Rate augmented by the latest OECD estimates of out-of-pocket childcare costs in the different countries.

Work Intensity

Once real earnings (from the same data source) are used for estimation in both models, the values of the median METR estimated by the two models are largely consistent and point to the robustness of the results.[34] In particular, the countries with the highest METR for secondary earners appear to be Belgium, Germany and Denmark. However, this finding is largely driven by high tax burden in these countries compared to others (see OECD 2013 and the results of the decomposition analysis presented in Figure 6). Within these countries secondary earners might not feel particularly penalized since everybody faces high taxation. We thus chose a benchmark against which to assess the comparative treatment of secondary earners within each country, namely: members of couples with roughly equal earnings.

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34 Differences are observed for two countries (EL, NL) and need further investigation.

The comparison of METR obtained for secondary and equal earners identified five countries, Belgium, Germany, Portugal, Luxembourg and Slovenia, where secondary earners appear to be at a considerable disadvantage. However, only Belgium, Luxembourg and Germany combine high disincentives to work longer with high part-time employment among women. In Slovenia and Portugal other factors are at work that counteract such disincentives.

An important qualification is in order. Simulations using EUROMOD (and EU-SILC data) revealed a wide distribution of METR among secondary earners in several countries, specifically in Ireland, Austria, Spain, the Netherlands, Luxembourg, Finland, and France. Hence focussing on median values for policy purposes may ignore some problematic non-typical cases at the tails of the distribution.

To work or not to work?

Simulations by means of the OECD model suggest that, among couples without children, disincentives to enter or re-enter employment as measured by the Participation Tax Rate are generally higher for equal rather than secondary potential earners. As expected, in the absence of children PTR values tend to grow with earnings, although this does not hold for countries like Denmark and, in Eastern Europe, countries like Bulgaria, Hungary, Latvia, the Czech Republic, Slovakia, Poland, Estonia. However, differences between the PTR at higher and lower levels of earnings are limited across countries, except in Luxembourg, Austria, Finland, Ireland and the United Kingdom.

The picture is markedly different among couples with children. When out-of-pocket childcare costs are added to the traditional entries of the tax system, PTR values for secondary earners in the United Kingdom, Ireland, Germany, the Czech Republic, and Slovakia exceed benchmark values (those for equal earners) by at least 20%. In plain words, mothers of children in these countries envisaging entry into the labour market in a secondary earner position face considerably higher fiscal disincentives than do those envisaging entry as equal earners. In Latvia, Lithuania, Estonia, Malta, and Luxembourg potential secondary earners are also penalized with respect to the benchmark group, but to a lesser extent. In all these cases penalization is primarily the result of accounting for out-of-pocket childcare costs. The clearest examples in this regard are Ireland and the United Kingdom where childcare costs are the highest in Europe according to OECD 2014 estimations.

Yet it would be hasty to conclude that explicit participation taxes weakly influence women's decision to (re)enter employment while the implicit childcare costs 'tax' matters more. There are cases such as the UK where female employment is relatively high despite one of the highest out-of-pocket childcare costs in Europe. However, the UK is a high part-time country and part-time helps saving on childcare costs. Also, we have used sophisticated OECD child-care costs estimates for our exercises – and the latest available – but childcare costs vary tremendously between and within countries adding uncertainty to any such exercise.

Overall the evidence that we have gathered is roughly consistent with the presumption that either the design of the tax benefit system or out-of-pocket childcare costs, or both, affect the choice of working hours or the choice of entering employment among secondary earners. Out of the countries considered in this study, 10 feature shares of part-time higher than the European average among female

workers (Denmark, Ireland, Luxembourg, Sweden, Norway, the United Kingdom, Belgium, Germany, Austria, the Netherlands] and 11 feature employment rates below the European average [Greece, Malta, Italy, Spain, Romania, Hungary, Slovakia, Poland, Ireland, Bulgaria, Belgium). Most of these countries were found to exhibit comparatively higher tax-burdens on secondary earners – METR, PTR or PTR augmented with out-of-pocket childcare costs – which gives cogency to our findings.

However, neither the design of the tax-benefit system nor child-care costs suffice on their own to account for country-specific employment outcomes, as we found several counterexamples in both cases. More importantly, this report focused on estimating disincentives while their influence on employment pattern was given only brief attention and warrants further investigation.

With specific reference to the tax system design, our findings are broadly consistent with some widely held tenets in the literature, namely that the degrees of progressivity and jointness inherent in the tax codes are the most important factors impinging on work incentives for secondary earners. According to the updated overview of tax-benefits system that this study provides (Chapter 3) the unit of taxation is the individual in the vast majority of Member States. However a non-negligible subgroup of countries adhere to the joint taxation system: Germany, France, Ireland, Luxembourg, and Portugal. Moreover, there are some elements of jointness in the tax codes of about half of the countries considered. The pros and cons of a joint versus individual tax-benefit system might thus need careful reassessment if the primary goal is to remove (dis)incentives for groups of working women at risk of labour market exclusion.

In regard to progressivity, our findings that countries like Denmark, Norway and Sweden do not feature among those penalizing secondary earners may seem at odds with some studies in the literature that stress the discouraging effect of high taxes in these countries. Let us reiterate, however, that what counts for a subgroup of the population such as secondary earners is the relative rather than the absolute level of taxation. To measure relative taxation, we chose to compare secondary earners with individuals in 'earnings balanced' couples. Whilst our specific choice of benchmark may be open to question, that of looking at relative taxation is unassailable.

One specific limitation of the simulations that we carried out is small sample size.[35] Due to this problem, uncertainties remain in several cases (see, for example, the discussion on the findings for Germany, the Netherlands and Ireland in Table 9).

A more general concern is the multiplicity of policy objectives that should be addressed when focusing analysis on female secondary earners. In this report we have concentrated on employment choices – whether or not to work and how much – while neglecting fertility, child well-being, child poverty, and so on. Trade-offs between different policy objectives inevitably complicate the analysis but cannot be ignored if policies aim to be welfare improving.

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35 This only regards calculations based on EUROMOD.

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Secondary earners
and fiscal policies
in Europe

Appendices

Appendix 1: Heterogeneity among couples in Europe

Table 1A. Descriptive statistics of working-age couples, SILC 2011

Country	Number of working age couples	Out of working age couples (%):				
		Couples where at least one partner receives..				Couple where both partners have no employment
		..old-age benefits	..disability benefits	..private pensions	..self-employment income	
AT	2,693	10.3	6.5	0.3	25.5	6.5
BE	2,644	6.8	8.4	0.4	16.0	11.9
BG	3,222	16.3	10.5	0.4	16.6	7.0
CY	2,182	6.3	5.0	0.5	29.7	3.7
CZ	4,004	13.0	12.9	1.6	28.0	7.5
DE	5,628	6.1	6.5	1.5	11.9	5.4
DK	3,008	0.0	13.1	0.0	47.2	3.1
EE	2,553	9.4	14.8	0.6	12.2	6.2
EL	2,686	14.6	2.5	0.3	36.4	13.3
ES	6,490	6.7	4.2	0.7	15.3	12.8
FI	5,198	6.5	15.0	6.3	22.2	3.7
FR	5,387	19.2	2.7	0.1	14.9	7.2
HR	3,056	13.9	19.8	0.0	22.6	18.5
HU	5,639	14.4	14.4	0.0	19.4	10.2
IE	1,879	5.9	22.0	1.5	21.4	13.9
IT	8,595	15.0	6.9	0.4	33.2	8.3
LT	2,331	7.4	22.1	0.0	19.6	8.8
LU	3,158	9.9	6.4	0.0	9.4	8.7
LV	2,507	8.8	10.3	0.0	11.9	5.6
MT	2,133	12.3	5.1	1.2	21.8	11.7
NL	5,563	24.3	7.9	1.4	22.0	5.0
PL	7,520	15.1	11.0	0.0	28.1	10.3
PT	2,673	9.5	5.3	0.7	21.0	10.3
RO	3,484	12.4	9.3	0.0	25.6	12.1
SE	3,359	12.0	10.0	5.8	21.7	2.4
SI	5,810	15.4	14.4	0.4	26.2	7.8
SK	2,931	12.9	11.3	0.8	16.7	8.5
UK	3,323	13.2	7.5	2.7	19.2	8.0
CH	3,540	4.0	6.7	1.1	15.8	2.2
IS	1,896	2.8	8.1	0.0	19.5	1.0
NO	2,555	10.9	21.2	1.2	17.1	1.6

Notes: Working age couples are in the age 16-64. Sources of income are defined by the standard EU-SILC variables: old-age benefits (PY100g), disability benefits (PY130g), private pensions (PY080g), self-employment income (PY050g). Employment income includes self-employment income (PY050g) and employee cash or near cash income (PY010g).

Source: EU-SILC 2011 (EU-SILC 2010 for Ireland), own calculations.

Table 1B. Sample size, SILC 2011

Country	Total sample (number of house-holds)	As percentage of:		Sample size by couple type:				
		all house-holds	house-holds with couples	male bread-winner	female earns less than male	roughly equal earnings*	male earns less than female	female bread-winner
AT	1,615	26.4	47.2	335	913	216	107	44
BE	1,680	26.2	50.2	307	767	350	152	104
BG	1,960	34.9	52.9	311	832	352	302	163
CY	1,296	33.2	49.9	288	616	226	135	31
CZ	2,166	26.8	41.8	478	1,055	423	164	46
DE	4,047	28.0	53.7	836	2,166	457	373	215
DK	1,245	15.2	32.7	65	553	388	183	56
EE	1,568	28.9	55.8	292	695	260	214	107
EL	1,088	23.1	32.8	441	324	175	72	76
ES	4,238	35.7	52.2	1,444	1,392	623	390	389
FI	2,542	25.6	47.6	250	1,321	445	383	143
FR	3,539	28.2	50.0	458	1,810	707	454	110
HR	1,347	25.4	37.0	406	408	248	158	127
HU	3,337	28.4	45.8	825	1,281	686	431	114
IE	958	23.9	41.4	286	332	105	105	130
IT	3,943	21.7	37.0	1,397	1,559	560	272	155
LT	1,184	24.7	47.0	171	412	161	317	123
LU	2,211	38.2	60.5	612	1,006	324	193	76
LV	1,647	28.3	57.3	283	621	208	369	166
MT	1,256	34.0	48.6	647	368	133	83	25
NL	3,270	24.8	43.6	456	2,068	424	231	91
PL	3,592	30.3	46.1	970	1,348	544	554	176
PT	1,589	32.8	48.5	358	617	296	199	119
RO	1,758	33.0	48.5	512	593	481	113	59
SE	2,266	26.0	51.2	160	1,197	517	294	98
SI	2,866	25.9	42.9	266	1,228	645	597	130
SK	1,776	32.8	51.6	258	858	419	183	58
UK	2,010	27.2	47.6	381	975	318	211	125
CH	2,562	35.2	57.5	435	1,628	285	166	48
IS	1,332	33.5	58.5	82	753	265	201	31
NO	1,764	26.5	52.8	105	1,066	366	177	50

Note: The sample includes heterosexual couples with both partners in the working age (16-64) and at least one of them working. Couples where at least one of the partners receives old-age benefits, disability benefits, or self-employment income are excluded. Couples where at least one partner has missing age or gender information are excluded.

* It is considered that a woman has roughly equal earnings with her partner if her share constitutes 45-55% of the combined earnings.

Source: EU-SILC 2011 (EU-SILC 2010 for Ireland), own calculations.

Table 1C. Demographic characteristics of couples with women as secondary earners, SILC 2011

Country	Woman's median age	Man's median age	Median age difference	Percentage of married couples	Percentage of couples with dependent children	Median age of the youngest child
AT	42	45	3	82	56	8
BE	40	42	2	72	67	8
BG	38	42	3	89	66	9
CY	37	41	3	93	70	6
CZ	39	42	2	82	65	9
DE	42	44	2	84	57	8
DK	39	41	2	73	59	4
EE	38	40	2	68	65	6
EL	39	41	3	99	75	6
ES	39	42	2	88	68	7
FI	36	38	2	64	56	4
FR	38	41	2	64	65	6
HR	41	44	3	97	83	11
HU	39	42	3	80	67	9
IE	41	43	1	88	71	7
IT	41	44	3	90	71	7
LT	40	43	2	100*	75	10
LU	39	42	2	83	75	6
LV	38	40	2	79	68	6
MT	38	42	2	98	70	8
NL	42	44	2	82	58	6
PL	36	38	2	91	73	7
PT	39	41	2	85	72	8
RO	39	42	2	100	74	11
SE	39	41	2	65	62	4
SI	37	40	3	73	69	4
SK	42	45	2	95	66	12
UK	41	43	1	80	61	7
CH	42	44	2	83	53	6
IS	40	42	1	67	57	4
NO	39	42	2	69	61	5

Note: * In Lithuania all individuals who have a partner are coded as married.

Source: EU-SILC 2011 (EU-SILC 2010 for Ireland), own calculations.

Table 1D. Demographic characteristics of couples with roughly equal earnings, SILC 2011

Country	Woman's median age	Man's median age	Median age difference	Percentage of married couples	Percentage of couples with dependent children	Median age of the youngest child
AT	42	44	2	72	38	12
BE	37	39	2	59	59	7
BG	40	44	3	89	61	11
CY	38	40	2	91	64	7
CZ	42	44	2	81	48	13
DE	40	42	2	68	29	10
DK	41	44	1	77	53	6
EE	39	41	1	66	55	9
EL	40	42	2	99	77	8
ES	40	41	1	86	64	7
FI	42	43	1	63	47	8
FR	37	38	2	56	61	5
HR	44	47	3	97	79	12
HU	43	46	3	84	57	13
IE	34	35	2	67	42	5
IT	40	42	2	86	66	9
LT	45	47	1	100*	59	13
LU	36	38	2	74	57	8
LV	40	41	2	81	63	10
MT	34	37	2	94	52	6
NL	38	39	2	65	46	4
PL	37	39	2	91	65	8
PT	38	41	2	86	71	7
RO	39	41	2	100	63	12
SE	42	43	2	69	54	6
SI	40	43	3	75	66	7
SK	44	46	2	93	64	15
UK	37	40	1	75	47	7
CH	35	38	2	51	26	3
IS	43	44	1	69	50	6
NO	40	42	2	64	57	7

Note: * In Lithuania all individuals who have a partner are coded as married.

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Table 1E. Percentage of men as secondary earners by main economic activities, SILC 2011

Country	12 months are spent in:			At least 1 month is spent:				
	Full-time work	Part-time work	Combination of both	In unemployment	As disabled or unfit for work	Studying	Fulfilling domestic tasks	In other activity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AT	38	12	-	37	5	8	1	1
BE	52	9	2	25	9	4	-	2
BG	60	3	1	33	1	-	1	2
CY	64	1	-	32	1	1	-	1
CZ	71	2	-	23	-	3	1	1
DE	60	14	1	14	-	7	1	4
DK	54	3	-	20	5	20	-	3
EE	48	2	9	36	-	1	2	4
EL	51	3	-	46	-	-	-	1
ES	59	5	1	32	-	-	-	2
FI	36	2	4	34	6	22	2	7
FR	57	6	2	29	-	5	1	2
HR	82	-	-	16	1	1	-	1
HU	60	4	-	34	1	-	1	1
IE	40	13	2	42	-	3	-	1
IT	71	4	-	19	-	1	1	6
LT	74	1	3	20	-	-	1	1
LU	66	5	4	19	1	-	3	2
LV	50	3	1	40	-	1	-	4
MT	89	2	-	4	1	-	2	3
NL	39	25	5	19	6	7	-	1
PL	63	2	-	18	-	1	-	16
PT	65	3	1	30	-	-	-	2
RO	89	-	-	8	-	-	-	2
SE	54	11	3	13	3	12	1	7
SI	80	1	1	16	-	2	-	1
SK	69	1	-	28	-	-	-	1
UK	82	12	2	3	-	1	-	1
CH	35	13	6	19	2	5	2	19
IS	48	7	5	25	-	16	2	5
NO	60	6	1	13	4	8	-	13
EU AVERAGE	61	5	2	24	1	4	1	3
TOTAL AVERAGE	60	6	2	24	2	4	1	4

Note: Proportions close to zero are shown as "-".

Source: EU-SILC 2011 (EU-SILC 2010 for IE), own calculations.

Appendix 2: Couples' earnings

Table 2A. Median earnings in couples with a secondary earner (as a proportion of median earnings in balanced couples), 2012

Country	Couple with a secondary earner woman			Couple with a secondary earner man		
	Her earnings	His earnings	Couple's earnings	His earnings	Her earnings	Couple's earnings
AT	48	118	87	65	117	88
BE	69	126	96	76	117	98
BG	66	136	105	59	109	85
CY	51	107	78	73	133	105
CZ	66	125	97	79	125	104
DE	41	125	86	53	100	76
DK	75	125	100	60	109	82
EE	65	148	109	73	126	99
EL	62	123	89	68	120	91
ES	48	105	78	56	99	79
FI	67	127	97	51	99	72
FR	66	125	95	65	114	89
HU	73	148	111	66	122	94
IE	45	119	81	64	110	88
IT	65	120	93	71	113	90
LT	47	132	92	51	118	86
LU	56	130	98	72	132	100
LV	53	148	107	51	119	89
MT	58	131	97	80	126	99
NL	52	132	94	59	114	87
PL	58	126	91	60	120	90
PT	74	145	114	84	148	118
RO	77	131	106	83	118	97
SE	67	120	93	60	105	79
SI	67	133	98	79	146	112
SK	74	125	104	67	115	84
UK	54	134	96	70	131	101
EU AVERAGE	61	128	96	66	119	92

Source: EUROMOD simulations for 2012 income.

Appendix 3: Tax-benefit microsimulation model EUROMOD. Design, inputs and assumptions

EUROMOD is a static tax-benefit microsimulation model that estimates, in a comparable manner, the effects of taxes and benefits on income distribution, work incentives and public budgets for the EU Member States. EUROMOD operates on anonymized EU-SILC cross-sectional microdata.

EUROMOD is a static model in a sense that it does not capture changes in demographic or labour market characteristics of the population between the data baseline year and the analysed policy year[36]. However, it captures changes in the average levels of market incomes and in tax-benefit policies.

Changes in market income and other non-simulated sources of income (e.g. pensions or disability benefits) are modelled via uprating. Uprating is carried out using country and income specific updating factors based on available administrative or survey statistics. These factors reflect the change in the average amount of income from a particular source per recipient between the income data reference period and the target year. Whenever possible uprating factors are computed separately for different population groups, e.g. by sector for employment income or by pension bracket for old-age pensions.

EUROMOD simulates taxes, social security contributions and benefits based on their rules each year and information on characteristics of households and market incomes updated as described above. Tax-benefit policy elements simulated by EUROMOD include income taxes (national and local), social contributions (paid by the employees, self-employed and employers), family benefits, housing benefits, social assistance and other income-related benefits. Exceptions are those benefits and taxes that cannot be simulated due to the lack of necessary information in the underlying data. This mostly concerns benefits for which entitlement is based on previous contribution history (e.g. pensions) or unobserved characteristics (e.g. disability benefits). In these cases the values recorded in the data are uprated. All simulations are carried out on the basis of the tax-benefit rules in place on the 30th of June of the given policy year.

The results presented in this report are calculated using the latest available release of the model: EUROMOD G1.0+ (released in August 2013).[37] This version of the model contains policy systems updated up to 2012. The input datasets, with some exceptions, are based on the EU-SILC 2008 (with 2007 incomes) and EU-SILC 2010 (with 2009 incomes). Table 3A provides a comprehensive list of the datasets used.

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36 Attempts to incorporate employment changes in EUROMOD are described in Navicke et al. (2013).

37 For Hungary and Greece the results are obtained using EUROMOD G2.0+ (July 2014).

Documentation and validation of EUROMOD for each of the 27 Member States is available in EUROMOD Country Reports.[38]

Detailed information on the EUROMOD baseline results, the main reasons for differences between these and EU-SILC based indicators are reported in Jara and Sutherland (2013). The paper also highlights potential of EUROMOD as a tool for policy analysis and the caveats that should be borne in mind when using it and interpreting results. For to the current state of the art of EUROMOD development and its applications see Sutherland and Figari (2013).

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38 https://www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports

Table 3A. EUROMOD input datasets

Country	Input data
Belgium	EU-SILC version 2010-1
Bulgaria	EU-SILC version 2008-2
Czech Republic	EU-SILC version 2008-2 (+ additional national variables)
Denmark	EU-SILC version 2008-1
Germany	EU-SILC version 2010-1
Estonia	EU-SILC version 2008-2
Ireland	EU-SILC version 2008-2
Greece	EU-SILC version 2010-1 (+ additional national variables)
Spain	National SILC 2010
France	EU-SILC version 2010-1
Italy	National SILC 2010
Cyprus	EU-SILC version 2008-2
Latvia	EU-SILC version 2010-1
Lithuania	EU-SILC version 2010-1 (+ additional national variables)
Luxembourg	EU SILC version 2008-2 (+ additional national variables)
Hungary	EU-SILC version 2010-1
Malta	EU-SILC version 2009-1
Netherlands	EU-SILC version 2008-2
Austria	National SILC 2008
Poland	EU-SILC version 2008-2 (+ additional national variables)
Portugal	EU-SILC version 2008-2
Romania	EU-SILC version 2010-1
Slovenia	EU-SILC version 2010-1
Slovakia	National SILC 2010
Finland	EU-SILC version 2008-2
Sweden	EU-SILC version 2008-2
United Kingdom	National non-SILC data (Family Resources Survey 2009/10)

Source: Jara and Sutherland (2013)

Appendix 4: The estimates of Marginal Effective Tax Rates by tertile

Table 4A. Difference between the median METR for secondary earners women and women in balanced couples, by tertile, 2012

Country	Benchmark 1			Benchmark 2			Benchmark 3		
	1st tertile	2nd tertile	3rd tertile	1st tertile	2nd tertile	3rd tertile	1st tertile	2nd tertile	3rd tertile
AT	(-0.13)	-0.64	-2.26	-27.97	-2.26	-4.23	-28.38	-15.62	(-4.12)
BE	(-10.14)	1	0	-10.94	0	-2.31	-4.52	0	-1.55
BG	0	0	0	0	0	0	0	0	0
CY	0	0	-17.95	0	-17.95	-7.94	-0.82	-22.96	-11.15
CZ	-6.06	0	0	0	0	0	0	0	0
DE	(13.58)	2.73	0.05	-1.08	0.05	1.7	-2.64	-2.21	1.99
DK	(0)	0	-1.44	0	-1.44	-11.8	0	-1.44	-15.18
EE	1.58	0	0	0	0	0	0	0	(0)
EL	-4.9	-0.01	-7.12	-4.9	-7.12	-2.07	-7.41	-11.52	-8.54
ES	10.52	0	0.47	0	0.47	-0.29	-23.18	-4.16	-0.29
FI	-2.14	0	-7.1	-14.1	-7.1	-3.74	-13.24	-7.11	-4.68
FR	-4.46	-0.02	3.06	-0.05	3.06	1.34	4.99	3.06	3.19
HU	-2.41	0	0	0	0	-4.32	2.32	0	-4.32
IE	(-44)	(2.07)	-8.1	(-13.84)	-8.1	-0.89	-3.66	-19.92	-0.89
IT	-0.12	-0.12	-0.27	-3.93	-0.27	-8.75	-1.42	-2.73	-9.34
LT	(0)	0	0	-3	0	3	0	0	3
LU	(4.59)	8.71	-0.14	-1.91	-0.14	-0.04	-3.18	-11.44	0.33
LV	(0)	0	0	0	0	0	0	0	(0)
MT	(3.64)	-0.03	-9.09	-8.21	-9.09	-2.69	-8.25	-9.12	(-3.06)
NL	(5.82)	-11.02	-5.9	-14.74	-5.9	-2.12	-13.03	-5.57	-12.61
PL	1.08	0	0	0	0	0	0	0	0
PT	(0)	13	8.27	0	8.27	-7.1	-11.5	-10.5	-11
RO	0	0.8	0	0	0	0.8	0	-2	0.8
SE	-3.39	0	-0.71	-2.29	-0.71	-17.14	0	-2.99	-22.99
SI	3.28	0.59	-4.67	-3.26	-4.67	-3.02	-2.2	-7.56	-11.02
SK	0	0	0	0	0	0	0	0	0
UK	0	0	-1.24	0	-1.24	-1.36	0	-1.77	-9.01

Note: Coloured cells mark cases when METR for secondary earners women are higher than METR for women in balanced couples. Estimates shown in brackets are based on the small sample size (<30 observations) and should be treated with caution. Benchmarks are defined in Box 3.

Benchmarks 1,2 and 3 reflect different concepts and aim to capture the effects of different elements of tax-benefit systems.

Therefore in general one should not expect the same outcomes for each benchmark. Yet, independently of the choice of benchmark, there are three strong cases where female secondary earners appear to be penalized: DE, FR and PT.

Source: EUROMOD simulations for 2012 income.

Table 4B. Difference between the median METR for secondary earners men and men in balanced couples, by tertile, 2012

Country	Benchmark 1			Benchmark 2			Benchmark 3		
	1st tertile	2nd ter-tile	3rd tertile	1st tertile	2nd ter-tile	3rd tertile	1st tertile	2nd ter-tile	3rd tertile
AT	-24.61	(0.08)	0.63	-25.26	(-0.08)	0.03	(-28.38)	(-0.63)	-3.84
BE	-10.74	-0.59	(-3.56)	-11.21	0.64	-3.56	-11.4	0	-2.46
BG	0	0	(0)	0	0	0	0	0	0
CY	0	(0)	(-2.99)	0	-3.7	(-4.07)	(-0.82)	(-6.45)	-9.81
CZ	0	0	(0)	0	0	0	-6	0	0
DE	0.76	1.18	0.97	-1.84	-0.46	0.84	-5.74	-2.69	0.49
DK	0	0.64	0.96	0	(-1.44)	-6.9	0	(-1.44)	-13.07
EE	0	0	0	0	0	0	0	0	0
EL	-3.08	(0)	(0.49)	-8	(-5.56)	(0)	(-8)	(-10.05)	-2.08
ES	0	0	-0.01	-23.18	0	-0.01	-23.18	-4.63	-0.29
FI	-9.07	-0.31	0	-14.61	-1.09	-3.74	-20.46	-10.41	-3.74
FR	-4.78	1.54	2.25	0.8	3.9	1.74	4.38	6.71	1.99
HU	0	0	0	1.97	0	-4.32	2.53	0	-4.32
IE	(-1.46)	18.9	(-0.01)	-4	0	-0.3	(-6.68)	0	-0.3
IT	-2.08	-0.12	-1.48	-3.42	-0.88	-7.02	-6.99	-1.6	-8.97
LT	-3	0	3	-3	0	3	0	0	3
LU	1.34	(7.6)	(0.34)	-5.08	-2.1	-0.5	-5.38	-12.08	-0.07
LV	(0)	0	0	0	0	0	0	0	0
MT	(-2.19)	(-0.01)	(0)	-8.22	(-9.05)	(0)	(-13.7)	(-9.14)	(-2.68)
NL	-8.8	0	0	-7.35	-0.03	-1.39	-4.34	-0.05	-1.39
PL	0	0	0	0	0	0	0	0	0
PT	4.41	10.5	0	0	0	-7.1	(0)	0	-11
RO	0	0	(0)	0	0	0.8	(0)	0	0
SE	0	-1.55	15.62	-1.17	-2.99	-19.99	-1.17	-2.99	-20.61
SI	-0.97	2.62	0.73	-3.1	-3.86	-6.8	-2.94	-5.75	-11.22
SK	0	0	-0.01	-0.15	0	0	-5.02	0	0
UK	0	0	-0.18	0	0	-2.4	0	-0.62	-5.45

Note: Coloured cells mark cases when METR for secondary earners men are higher than METR for men in balanced couples. Estimates shown in brackets are based on the small sample size (<30 observations) and should be treated with caution. Benchmarks are defined in Box 3.

Source: EUROMOD simulations for 2012 income.

Appendix 5: OECD Tax-benefit model: design, inputs and assumptions

The OECD Tax-Benefit models[39] are available for 33 OECD countries and 6 additional EU countries[40] for the period 2001-2012. They provide basis for analysis of the effects of taxes and benefits on the incomes of working age individuals and their families both in and out of work. These data reveal country-specific trends in the generosity and incentive effects of tax and benefit regimes. More specifically, the models allow calculating the net in-work and out-of-work incomes on a comparable basis across countries. Net incomes are equal to gross earnings, plus cash benefits, minus income taxes and own social security contributions.

The models are designed for different types of families (single with/without children, one-earner couples with/without children, two-earner couples with/without children). There is a standard set of family types, with income levels fixed at 33/67/100/167% of the OECD estimated Average Wage in the country. The interactive variant of the model allows using control files in order to change the parameters of the model. We used that option in order to get closer to the real wage of specific category of workers. In particular, we set the level of income shares for the male and female partner based on the EU-SILC calculations for the specific group, in percentage of OECD AW (for more details on this approach see Bettio and Verashchagina 2009).

In our estimates based on OECD model we used the latest EU-SILC 2011 release for all countries, with income data for the end of 2010, differently from EUROMOD which for a large set of countries relies on projected values of income in 2012.[41]

An advantage of the OECD model is that it allows calculating both METR and PTR, the latter being an incentive indicator for potential entrants (see Box 2). The procedure for calculating PTR is more complex in EUROMOD, thus we could only report PTR values calculated with OECD models.

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39 The Models are available for download from http://www.oecd.org/els/soc/Models.zip

In addition, OECD has an open access database with description of tax-benefit system for each country covered by this project: http://www.oecd.org/social/benefitsandwagesoecdindicators.htm

40 Including Cyprus, Lithuania, Latvia, Malta (2005+), Bulgaria, Romania (2008+).

41 We use the version of Tax-Benefit models made available by the 19th of March 2014, with the latest tax-benefit rules for the 1st of July 2012.

Appendix 6: Reference earnings, EU–SILC 2011

Table 6A. Reference earnings used in the simulation with OECD model (median for the group, Euro 2011)

Country	Two-earner couples where she earns less than 45% of joint income, *without children*		Two-earner couples where she earns less than 45% of joint income, *with children*		OECD Average Wage (AW)
	Male	Female	Male	Female	
	(1)	(2)	(3)	(4)	(5)
AT	40,600	18,160	37,800	13,578	39,693
BE	39,075	21,366	44,100	22,064	44,636
BG	4,273	2,344	4,925	2,276	4,323
CY	23,403	11,856	28,340	13,778	na
CZ	12,408	6,368	13,156	6,170	11,996
DE	41,865	16,400	42,000	11,742	43,681
DK	56,028	33,219	58,400	35,299	51,873
EE	10,722	4,678	13,511	4,617	10,368
EL	21,111	10,155	24,440	13,271	21,449
ES	22,600	12,000	24,400	11,211	25,515
FI	38,607	21,580	41,931	20,716	39,936
FR	29,180	14,520	31,470	16,320	35,928
HU	8,155	4,414	7,792	3,746	9,468
IE	40,748	18,135	45,211	17,657	32,264
IT	30,023	16,288	31,479	14,436	28,820
LT	8,463	3,298	8,958	3,641	6,955
LU	60,295	27,600	52,950	20,138	50,549
LV	9,241	3,766	9,640	3,413	8,523
MT	23,774	12,765	22,284	9,671	19,705
NL	49,383	20,247	47,015	19,036	45,898
PL	10,086	5,017	10,182	4,817	9,111
PT	13,623	8,093	15,242	7,917	16,208
RO	4,416	2,880	4,635	2,697	5,958
SE	39,794	22,187	39,287	19,149	41,673
SI	21,300	11,525	21,700	11,175	17,373
SK	10,800	6,255	9,996	5,300	9,592
UK	35,950	16,703	38,051	12,444	40,193
IS	36,475	16,981	38,610	15,708	34,853
NO	67,966	33,832	67,677	31,727	63,160

Source: Authors' calculation using EU–SILC 2011.

Appendix 7. The estimates of Participation Tax Rates

Table 7A. Participation Tax Rates for women who enter work and turn out to be secondary earners or equal earners (with and without children, 2012)

Country	No children		Two children (without out-of-pocket child-care costs)		Two children (with out-of-pocket childcare costs)	
	Secondary earner	Equal earner	Secondary earner	Equal earner	Secondary earner	Equal earner
AT	20.3	34.2	19.1	34.8	29.1	51.9
BE	45.6	50.8	45.6	51.0	65.1	64.6
BG	21.6	21.6	21.6	29.8	44.3	40.4
CY	-	-	-	-	-	-
CZ	31.1	31.1	31.1	31.1	67.9	47.5
DE	44.0	47.3	43.2	46.9	85.0	58.5
DK	43.1	43.4	44.6	45.0	62.0	55.0
EE	24.8	24.8	24.8	24.8	41.0	30.4
EL	12.6	21.1	8.2	16.0	16.7	20.7
ES	16.7	25.4	19.3	26.4	30.9	29.8
FI	19.3	29.0	18.5	30.2	41.1	41.4
FR	27.7	32.2	26.3	31.3	44.4	45.4
HU	36.7	35.8	35.2	36.1	52.8	56.7
IE	14.2	31.2	18.4	35.4	94.0	65.1
IT	30.4	34.4	29.7	36.9	-	-
LT	17.4	23.3	18.3	23.5	45.5	34.5
LU	31.2	40.0	25.1	36.6	74.5	61.7
LV	35.9	34.3	36.2	34.3	62.7	43.7
MT	21.5	25.4	19.6	24.0	58.5	40.9
NL	27.4	39.6	10.0	30.5	22.1	45.3
PL	29.2	31.5	29.2	29.8	42.1	35.9
PT	18.3	25.1	20.6	31.9	30.2	40.8
RO	30.0	28.8	30.9	31.9	-	-
SE	20.5	24.5	19.2	24.5	31.9	30.7
SI	34.2	38.1	46.0	46.0	68.1	59.9
SK	29.9	29.9	29.9	29.9	80.8	56.8
UK	14.7	23.8	11.8	25.4	121.7	74.0
IS	40.8	41.8	46.2	46.7	60.7	52.6
NO	27.8	32.7	27.2	32.6	56.8	46.5

Note: By *secondary earner* here we mean female partner who enters into work at the level of reference earnings as specified in columns (4) and (2) of Table 6A above (respectively for couples with and without children). At the same time, male partner would earn the level of earnings which corresponds to columns (3) and (1) of the same table. By *equal earner* we mean female partner who enters into work at the same level of earnings as male partner, i.e. we use information in columns (3) and (1) as indicative of the level of earnings for both partners (respectively for couples with and without children). This corresponds to type (3) benchmark as explained in Box 3

Source: Authors' calculation using OECD tax-benefit model 2012.

Appendix 8. Out-of-pocket childcare costs in Europe

Table 8A. Out-of-pocket costs of childcare† (as % of the OECD national average wage: AW), 2004, 2008 and 2012

Country	He earns 67% of AW, she earns 50% and both work full-time			Both partners earn 100% of AW and work full-time		
	2004	2008	2012	2004	2008	2012
AT	10	18	3	10	18	3
BE	7	9	7	19	19	13
BG	-	11	12	-	11	12
CZ	28	27	18	31	27	18
DE	6	23	11	8	22	11
DK	9	9	11	11	11	12
EE	-	7	7	-	7	7
EL	5	5	5	5	5	5
ES	10	8	8	10	8	8
FI	23	23	21	24	21	22
FR	10	8	8	18	16	16
HU	8	6	5	8	6	5
IE	48	57	42	48	57	42
IS	16	6	7	16	6	7
LT	-	12	14	-	12	14
LU	6	6	11	8	9	26
LV	-	11	11	-	11	11
MT	-	22	22	-	19	19
NL	11	6	7	22	13	14
NO	24	17	15	24	17	15
PL	6	7	7	6	7	7
PT	2	2	4	5	5	7
SE	6	6	5	7	7	6
SI	-	9	10	-	20	14
SK	19	29	28	19	29	28
UK	30	21	23	42	41	46
EU AVERAGE	13.6	14.2	12.5	16.8	16.7	15.3

Note: These values refer to the **standard** OECD model with partner's income measured in terms of the national average wage estimated by the OECD.

† The out-of-pocket cost of centre-based childcare (or net cost of childcare) is calculated as the difference in "family net income" of a family that uses centre-based childcare and a an otherwise identical family that does not use such childcare. "Family net income" is the sum of gross earnings plus cash benefits minus taxes and social contributions. This methodology takes into account childcare-specific benefits designed to reduce the cost faced by parents, as well as the interaction between childcare-specific policies and other tax and benefit policies. Results are for two children, aged two and three. All fee reductions, including free pre-school or childcare for certain age-groups, are shown as rebates where possible. In-work incomes do not include any time limited benefits paid on taking up employment.

Source: OECD database.

Appendix 9. Selected labour market indicators

Table 9A. The share of part-time and employment rates for women (age 20–64), 2012

Country	Part-time employment as percentage of total employment	Employment rates
AT	45.4	70.3
BE	43.3	61.7
BG	2.5	60.2
CY	12.8	64.8
CZ	8.5	62.5
DE	45.4	71.5
DK	31.9	72.2
EE	13.1	69.4
EL	11.7	45.2
ES	23.7	54.6
FI	17.6	72.5
FR	29.9	65.1
HR	7.5	50.2
HU	9.3	56.4
IE	34	59.4
IT	30.9	50.5
LT	10.6	67.9
LU	35.9	64.1
LV	10.9	66.4
MT	25.1	46.6
NL	75.4	71.9
PL	10.3	57.5
PT	13.9	63.1
RO	9.3	56.3
SE	37.2	76.8
SI	11.8	64.6
SK	5.4	57.3
UK	41	68.4
CH	62.4	76.0
IS	27.9	79.1
NO	38.8	77.3
EU28	31.3	62.4

Source: Eurostat online database.

Appendix 10. Work disincentives for male secondary earners

Table 10A. Work disincentives for secondary earners men (relative to men in balanced couples), by level of earnings, 2012

Income Work disincentives	Low	Medium	High
Small	LU	FR, DE, SI	FR, LT, DE
Large	PT	IE, PT, LU	SE

Note: Income groups are based on earnings tertiles as in Figure 9.

Disincentives are expressed as the differences between METR for male secondary earners and men in balanced couples. Large disincentives:> 3 p.p., Small disincentives: 1-3 p.p., Minor disincentives: <1 p.p (not included).

Source: EUROMOD simulations for 2012 income.