



Invisible gaps: Women's individual poverty risks and the gendered failings of the adult worker model

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ARTICLE INFO

JEL classification:

D13 household production and intrahousehold allocation

I32 measurement and analysis of poverty

J16 economics of gender non-labor discrimination

Keywords:

Individual poverty risk

Adult worker model

Gender gap

Employment

Tax-benefit systems

ABSTRACT

Since the early 2000s, welfare states in Europe have shifted their primary focus from providing social protection against labour market risks to the activation of all individuals into employment. As a way to limit poverty risks, this strategy ignores the 'care penalties' many women face in the labour market. Official poverty statistics ignore intrahousehold inequalities in resource allocation, thereby possibly overestimating the economic resources of women. This study contributes to the literature on the gendered consequences of welfare policies by estimating poverty risks for men and women using individualised incomes and assessing the extent to which observed gender gaps in poverty risk can be linked to the adult worker model. Additionally, the role played by taxes and social transfers in mitigating the gender gap in individual poverty risk is examined. Results show that only around one third of women in Europe fit the standard full-time, year-round employment model. Inactive and unemployed women have particularly high individual poverty risks, but even women who work fulltime and are continuously employed are more prone to poverty than men, highlighting the role of gender pay gaps. Social transfers cushion some of the gendered gap in poverty risk, while direct taxes and social insurance contributions have a dis-equalizing effect at the bottom of income distribution, especially for workers in atypical employment.

1. Introduction

In recent decades, welfare states in Europe have shifted their primary focus from sheltering individuals from labour market risks to activating them into employment. Initially targeted at male breadwinners (Annesley, 2007), active labour market policies gradually evolved to encompass all individuals, in alignment with the adult worker paradigm (Lewis, 2001). The overarching aim has been to ensure that work is financially rewarding thereby fostering a sustainable welfare state (Esping-Andersen et al. 2002) and promoting the financial independence of its population. Central to this strategy is the assumption that sustained full-time employment for most of the working-age life guarantees everyone a satisfactory standard of living and reduces reliance on social protection.

This broad assumption equates jobs with good working conditions and fair pay. However, research indicates persistently high poverty rates among the working-age population (Nolan, 2018) and among workers (Hick and Marx, 2022), despite increased employment rates. Almost every tenth working-age individual in the EU is working poor and this level has remained rather stable in the

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<https://doi.org/10.1016/j.ecosys.2025.101363>

Received 13 June 2025; Received in revised form 18 November 2025; Accepted 18 November 2025

Available online 19 November 2025

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last 20 years.¹ The focus on activation also ignores many women's reality of extended periods out of paid work, reduced working hours and lower wages due to unpaid care responsibilities at home (Daly, 2011). Close to every third woman in employment in the EU is working part-time, with at least one third of them providing family duties as the main reason, and every fourth woman of working-age is inactive.² Rather than acknowledging women's unpaid contributions to society, the activation paradigm assumes that all working-age adults should adjust their life-courses to the stereotypical male breadwinner model (Saraceno, 2015). Finally, the focus on individual financial independence through employment has resulted in social support gaps for some individuals and weakened the redistributive power of the welfare states (Atkinson, 2010; Cantillon, 2011).

Our research contributes to the above social policy debate by assessing the relevance of the adult worker model from a gender perspective. We document the *individual* poverty risks of working-age women in Europe, contrasting them to the benchmark of a 'male reference worker', i.e. a non-disabled, prime-aged man in full-time employment. We first establish to what extent women's labour market characteristics and labour market histories resemble those of male reference workers and then investigate how variations in labour market participation, working hours and job characteristics contribute to the heightened individual poverty risks that many women may face. Finally, we assess the efficacy of the tax-benefit systems in mitigating adverse outcomes for women diverging from the male reference worker model.

Previous research using conventional measures of poverty has identified a significantly higher poverty risk for some groups of women, such as lone mothers and older women living alone (Harkness, 2022; Zaidi and Gasiot, 2011). However, the size of the gap is likely to be even larger, as conventional poverty measures commonly used by researchers tend to obscure intra-household inequality. These conventional measures assume that resources are pooled and equally distributed among all household members (Becker, 1974) and overlook the fact that access to income and decision power can vary significantly by gender, age, or social status (Bonke and Browning 2009, Chiappori 1992). As a result, these measures can mask the deprivation experienced by specific individuals within the household, especially those who are economically dependent on income sharing (Guio and Van den Bosch, 2020).

A limited number of studies employing individual income measures have indicated a sizable gender gap in disposable incomes (Avram and Popova, 2022; Doorley and Keane, 2023), especially among the low educated, one earner couples and couples with children. We contribute to this evolving literature by focusing on the gender gap in poverty risk rather than the gender gap in disposable income. Compared to previous studies which used measures of individual poverty based on individual earnings (e.g. Filandri and Struffolino, 2019), we re-construct all components of disposable income at the individual level, including earnings, other market incomes, taxes and social transfers, using microsimulation techniques. This allows us to assess the role of the tax-benefit system in cushioning the gender gap in poverty risk resulting in more nuanced policy conclusions.

While our analysis covers all 27 EU member states and the UK, we focus on European level results and leave examination of cross-national variation to future research. We do so for two reasons. First, our aim is to examine the gender implications of a European wide turn to activation that was promoted at the EU level through the Lisbon agenda (European Council, 2000) and subsequent EU policy initiatives. Second, a meaningful analysis of cross-national variation focusing on how country level variation in policies might be expected to affect observed gender gaps in poverty risk would require a separate paper. Here, our aims are more modest, namely, to showcase how the individual income methodology developed by Avram and Popova (2022) can be adapted to examine individual poverty risks from a gender perspective.

We use the 2019 European Union Statistics on Income and Living Conditions (EU-SILC, EUROSTAT, 2021) data covering all 27 EU member states and the 2019/20 Family Resources Survey (FRS, DPW and NatCen 2021) covering the UK, in combination with the tax-benefit microsimulation models EUROMOD and UKMOD. This approach allows for a more nuanced allocation of family-level income sources to different members of the household, a critical step for correctly measuring individual poverty risks. This level of individualisation of different income and contribution types is not possible with the original datasets. The remainder of the paper proceeds as follows. We first review the evidence on female life-courses and their interaction with social policy and discuss the measurement of individual poverty risks in a context of intra-household inequality. We then detail our methodological approach and introduce the underlying data. Finally, we present our findings and draw conclusions.

2. Literature

2.1. The heterogeneity of female life-courses and the role of social policy

Fully understanding the factors behind women's higher poverty risks requires examining the intricate interplay between family dynamics, the labour market and welfare policies (Daly, 1992). In the adult worker model, precedence is clearly given to the labour market over the other two dimensions (Saraceno, 2015). This is evident in the advocacy for work-family reconciliation policies, such as childcare services. The prevailing narrative encourages women to adhere to traditional male life-courses of full-time continuous employment, despite many women still bearing a disproportionate burden of unpaid care.

While gender inequality typically reduced in younger cohorts, significant disparities persist (Korpi et al. 2013). Women today have diverse labour market participation patterns. This is evident in the rise of both work-centric career paths and part-time or sequential employment (Berger et al., 1993). Non-standard career paths hold significant implications for women's labour market security. As labour markets become dualized and the share of less protected atypical outsider positions rises (Emmenegger et al. 2012), men

¹ EUROSTAT database [ilc_iw01], last accessed 22 May 2025.

² EUROSTAT database [lfsi_pt_a, lfsa_epgar, lfs_ipga], last accessed 22 May 2025.

predominantly occupy traditional roles (as insiders), while women are more likely to take up non-standard forms of employment, such as part-time, flexible or temporary jobs (Ferragina, 2020). The non-standard work arrangements often yield negative outcomes in terms of earnings, job mobility, job satisfaction and career prospects (Schwander and Häusermann, 2013).

Within the household, women's low earnings may be offset by their partner's or other members' financial support, mitigating the impact of career breaks or non-standard employment on women's living standards. This dynamic can prevent women from falling into poverty if household resources are shared. Conversely, the loss of a partner's income, particularly in cases of union dissolution with dependent children, significantly heightens the risk of poverty for women compared to men (Popova and Navicke, 2019). Single mothers face significantly increased poverty risks (Harkness, 2022). As family structures evolve and union dissolution becomes much more common, household-based income measures are becoming less relevant for assessing individual economic situations.

The welfare state plays a crucial role in determining what living situations receive support, in setting the criteria for entitlement, as well as determining the most appropriate forms of assistance, such as cash versus in-kind benefits such as childcare provision. While policies may aim to effect societal change, they must also consider the diverse realities that individuals face, which may diverge from the socially desired life-course of a typical male worker. For example, the lack of decent social support after childbirth can push women into different types of outsider jobs (Seo, 2023). As a result, higher participation as promoted in the adult worker might be achieved but at the cost of an increase in working-poor women. This underscores the necessity of examining how tax-benefit systems accommodate women's diverse life trajectories, diverging from the conventional adult worker model, and shape their behaviour in the labour market.

2.2. Individual poverty risks and household pooling of resources

The conventional way of measuring poverty, rooted in Becker's unitary model (1974), assumes that all household resources are pooled and equally shared among all household members. Intrahousehold inequality and conflict is disregarded (Daly, 1992). The use of equivalised household income as a living standard measure is partly based on practical considerations, given the lack of individual consumption data, the complexity of measuring individual sharing preferences, and the presence of family-level income sources (Karagiannaki and Burchardt, 2020). Yet, existing data on pooling suggests only a minority of households fully pool their incomes (Ponthieux, 2013). The level of pooling varies by household characteristics, with full pooling more common in married or family households, and less so in dual-earner couples.

Early studies on individual poverty used crude assumptions to split married couples' incomes by multiplying household incomes with different factors based on gender (see for example Findlay and Wright, 1996). Others utilized subjective well-being indicators to compare the utility of individuals living alone versus as a couple (Browning et al. 2013). Subsequent work sought to measure individual poverty based on earned income (Ponthieux, 2017, Filandri and Struffolino, 2019), with some studies going further by estimating poverty using individual disposable incomes (Meulders and O'Dorchai 2010, Peña-Casas and Ghailani, 2011, Corsi, Fabrizio et al. 2016).

This latter approach assumes minimal income pooling: individuals retain earnings, and any benefits received in a personal capacity, while shared household resources are split among household members according to predefined rules. Such a method provides more nuanced insights into the financial (in)dependence of men and women in couples – thereby including a substantial segment of the population that was previously overlooked in analyses of gender income inequality. A key limitation of these studies is that they relied on survey data in which many income components are not reported at all (for instance, taxes and tax credits and allowances) and/or reported only at the household level (for instance, family benefits). The use of tax-benefit microsimulation models overcomes this constraint by enabling a more precise reconstruction and attribution of various income sources to individuals within households (Sutherland 1997, Avram and Popova, 2022, Doorley and Keane, 2023).

The assumption of minimal income pooling – central to this strand of research – may look quite extreme but it is supported by empirical evidence on household decision making processes and resource sharing. Studies have found that household decision-making is heavily influenced by individual resources, particularly the income contribution of an individual (Pahl, 1983). More recent findings also highlight the strong correlation between individual's share of earnings or income and their consumption and living standard (Bonke, 2015, Cantillon, 2013, Himmelweit et al. 2013, Guio and Van Den Bosch, 2020). On a theoretical level, minimal income pooling is consistent with non-cooperative bargaining models which view bargaining power as a function of resources controlled when the relationship fails (Woolley, 2024).

From a practical perspective, measuring individual poverty under the assumption of minimal income pooling can be understood as capturing a form of latent poverty – that is, the potential economic position of individuals in the event household resource sharing fails. In addition, individual poverty measures reflect such dimensions of individual well-being, as economic autonomy and financial independence, which are not adequately captured by consumption-based indicators. Taken together, conventional (household-based) and individualised poverty measures can be interpreted as lower and upper bounds of gender disparities in poverty. While the gap between the two may be reduced by assuming partial income pooling within the household, the data required to reconstruct such arrangements are rarely available (Avram and Popova, 2024).

The research evidence highlights the importance of assessing the risks of falling into poverty at the individual level, especially in the current context of rising family instability when it is common for individuals to belong to several households during their lifetime.

This leads to the following research questions: (1) How does the individual poverty risk of women differ compared to male reference workers? (2) How do variations in women's labour market participation and job characteristics affect their individual poverty risks, compared to male reference workers? (3) How effective are tax-benefit systems in mitigating gendered poverty risks, particularly for women whose work patterns deviate from the male breadwinner model?

3. Methodology

3.1. Data and sample

The analysis is based on the 2019 EU-SILC and 2019/20 FRS, combined with EUROMOD and UKMOD, two open-access tax-benefit models which use information on market incomes and the compositional characteristics of household members to simulate disposable household income (Sutherland and Figari, 2013). EU-SILC is available for all EU countries and includes detailed, harmonized information on the income situation of households and the characteristics of their members. FRS data was the source for EU-SILC while the UK was still a member of the European Union and is thus, the most comparable data source for the UK.

In both EUROMOD and UKMOD, taxes and benefits are simulated based on the policy rules of the current year (as of 30 June). These simulations rely on current demographic characteristics (e.g. household size, age, number of children, disability status, marital status, and education level) and current labour market information (e.g. firm size, usual weekly hours, employment status, and civil service employment), as well as on data from the calendar of activities module. While in the FRS, income, demographic and labour market information all refer to the current year, in the case of EU-SILC, the simulations draw on market income data referring to the previous calendar year, which are then mechanically updated to the current policy year.

It is therefore not possible to entirely eliminate the inconsistency between the reference period for income data and the demographic and labour market characteristics required for policy simulations. Previous studies using EUROMOD have acknowledged this limitation but generally regard the resulting bias as minor, as most households tend to maintain relatively stable employment and demographic characteristics across the two reference periods (Figari, Levy et al., 2007). In Tables S8-S10 in the Supplementary material, we show that the main employment status in the current year coincides with the main employment status in the previous year (derived from the calendar variables) for around 80–90 % of our sample. The exception is represented by unemployment, where this holds true for only around 68 % of our sample.

The data years were selected because they reflect a period before the significant economic and social disruptions caused by the COVID-19 pandemic, allowing for a focus on ‘business as usual’. Moreover, data collection processes became more difficult during and after the pandemic, raising concerns about data quality in later years. Our analysis uses a pooled sample of all European Union countries and the UK, with country fixed effects. All results focus on individuals aged 25–55 to capture the core working-age population due to cross-country differences in university attendance and early retirement.

3.2. Constructing individual incomes

Measuring an individual’s poverty risk requires calculating their individual disposable income. Disposable income is defined as gross market incomes minus direct taxes and social insurance contributions (SIC) plus individual and family-level transfers within the household. We adopt the methodology by Avram and Popova (2022) to attribute different income sources to household members in the following steps (for detailed information on our income-splitting procedure see Table S1 in the Supplemental Material).

First, individual gross market incomes and replacement incomes (such as earnings or private pensions or unemployment benefits) are attributed to their actual recipients, assuming they control these income sources. Investment and property income is attributed to the oldest person/couple in the household. This decision has been made based on the life-cycle hypothesis (Modigliani, 1966) which stipulates that wealth requires long periods to accumulate and increases over the lifetime up to retirement. Income from private transfers is split equally among all adult household members. Even though this is a strong assumption given that Sierminska (2017) finds a strong gender gap in wealth, the importance of such incomes is comparably small for most households.

Second, using EUROMOD and UKMOD, taxes and benefits are attributed to their actual recipients, a task that is unattainable using the micro data alone, as the information is presented either at the household level or in an aggregated format. Joint taxes are split between couple members in proportion to their gross earnings. Family-level benefits are intended for sharing within the benefit unit, but due to a lack of information on how they are actually distributed, three attribution scenarios are used.

- In the primary earner scenario (PE), we assume, based on the household decision-making literature mentioned above, that the person with the highest earnings/replacement income has the highest bargaining power in the household and can unilaterally decide how benefit income is spent.
- In the secondary earner scenario (SE), we assume that family-level benefits act as replacement income for the partner with lower or no earnings, so they are the ones making decisions on how this income is spent.
- In the equal sharing scenario (EQ) all family-level benefits are split equally between all adults in the benefit unit. It is a scenario that is based on the normative view point that family-level benefits should benefit all members equally.

For comparison, we also show results using the conventional equivalised household income measure based on the unitary model (U).

3.3. From household to individual: adjusting equivalence scales

To account for economies of scale in consumption and compare the incomes of households of different sizes and/or compositions, researchers conventionally use the modified OECD scale, which assigns a weight of 1 to the first adult, 0.5 to subsequent adults, and 0.3 to children under 14. This scale, however, has been designed for use with household income.

To make it suitable for use with individual income, we employ a revised version of this scale. In line with the original OECD equivalence scale, we retain its total weighting structure (first adult = 1.0, each additional adult = 0.5, and each child under 14 = 0.3). We first sum the weights of all adults in the household and divide this total by the number of adults. This approach is equivalent to assuming that all adults in the household benefit equally from the implied economies of scale.

Secondly, we assign the weights associated with children under 18 to their parents, on the assumptions that parents are responsible for the financial cost of their children. When both parents are present, each is assigned half of the child-related equivalent weight. We acknowledge that this assumption may not always hold, as the financial burden of childrearing may more heavily impact on one parent. However, given the absence of information on how the cost of children is being shared, we consider this equal division to be a transparent and parsimonious approach.

Our adaptation does not alter the economies of scale implied in the OECD scale; rather, it translates these assumptions from the household to the individual level. At the same time, the assumption of equal benefits from economies of scale among adults and equal sharing of children's costs between parents may have implications for the measurement of gender income inequality. If women are less able to benefit from economies of scale or bear a disproportionate share of child-related expenses, our approach may lead to an underestimation of gender gaps in poverty risk. Nevertheless, it provides a clear, consistent, and comparable framework for analysing individual incomes across households and countries, while avoiding the need for additional country-specific assumptions about intra-household resource allocation.

3.4. Measuring the individual poverty risk

Poverty is usually measured in relative terms by using a poverty line that is set at 60 % of the national median equivalised household disposable income. Individuals with income below this threshold are defined as being at risk of poverty. We use this definition of a poverty threshold across all our individual income scenarios. This is to use the same benchmark for women's economic situation in all the scenarios. Since our individual disposable income measures assume minimal income pooling, individual poverty measures can be seen as a higher bound of poverty estimates, or a projection of potential poverty in the event of household breakdown, while the conventional poverty measure (assuming full income pooling) will represent the lower bound of poverty estimates. The true poverty estimate is expected to fall between these two extremes (see for ex., [Avram and Popova, 2024](#)).

We compare the individual poverty risk of different groups: all women (P_w), all men (P_m), reference male workers (P_{mrw}), and female reference workers (P_{frw}). Reference workers (RW) are defined as individuals who are in employment or self-employment for the whole survey year, working at least 35 h a week and having worked at least two-thirds of their adult life. Work experience is defined relative to age by dividing the overall number of years in employment to the number of years aged 20 or older. Age-standardised values of at least 0.666 classify as high work experience.

The comparison of poverty risk levels is carried out in two ways. First, the classic gender poverty gap (GPG) index denoted as 't' is used to capture differences between the poverty headcounts of women (w) and men (m). The index denoted as 'r' captures the gap in poverty risk between female reference workers (wrw) and male reference workers (mrw). The GPG is based on two population subgroups defined using the same criteria and shows how much more likely women are to be poor than men and how much more female reference workers are likely to be poor than male reference workers. Results are presented in absolute terms and expressed in percentage point difference.

$$GPG_t = P_w - P_m$$

$$GPG_r = P_{wrw} - P_{mrw} \quad (1)$$

The main focus and contribution of the paper is the reference worker poverty gap (RWPG) which compares the poverty risk of a group (i) to the benchmark situation of male reference workers. It is not based on two population subgroups defined using the same criteria but compares the poverty risk of one specific group to the poverty risk of male reference workers. Thus, it highlights how the situation of the group differs from that of 'ideal' working-age individuals as defined in the adult worker model, i.e. workers in employment or self-employment for the whole survey year, working at least 35 h a week and having worked at least two-thirds of their adult life. Results are presented in absolute terms and expressed in percentage point difference.

$$RWPG_i = P_i - P_{mrw} \quad (2)$$

3.4.1. Heterogeneity in poverty risks by labour market characteristics

Next, we analyse how the female RWPG varies by labour market characteristics. Four logit regression models are fitted to calculate the probability of being at risk of poverty for subgroups of men and women, defined by employment status, working hours, work experience and job skill level. The outcome variable (i.e. the probability of being at risk of poverty) is calculated using individual disposable income under the equal sharing scenario. We then use results from these logit models to obtain predicted probabilities of being at risk of poverty for women with different labour market characteristics. In the final step, we calculate the gap between the probability of being at risk of poverty between women with particular labour market characteristics and male reference workers.

The main model assesses differences by employment status. It uses information on the self-declared current main activity status and differentiates between employment, self-employment, unemployment, and inactivity (in education, retired or other reasons for

inactivity including maternity leave). To check the sensitivity of our results to the mismatch between the reference period for income and labour market characteristics, we reconstructed respondents' main activity status over the past calendar year, classifying as the main status the activity with the highest number of months. The correspondence between this reconstructed measure and the self-reported current activity status is presented in Tables S8–S10. The match between the two measures is high – approximately 93 % for employees, 74 % for the self-employed, 68 % for the unemployed, and 87 % for the inactive. Nonetheless, some mismatch is present and appears more pronounced among the self-employed and unemployed groups. Recognising this mismatch, we consider that, in our context, the potential bias is unlikely to materially affect our findings for two reasons. First, as noted earlier (see Section 3.1), although the SILC input data combine variables with different reference periods, disposable income simulated in EUROMOD represents income in the current policy year rather than the calendar year preceding the interview. Consequently, using the current employment status for subgroup analyses is conceptually more consistent. Second, our analysis focuses on gender differences rather than absolute levels of poverty or income; unless the mismatch affects men and women very differently, the estimated gender gaps likely remain unaffected.

The additional three models include employment status but interact being employed with job characteristics. Separate logistic regressions are fitted to assess the probability of being poor for those in employment with different working hours (employed is interacted with marginal part-time of less than 20 h per week, substantial part-time of 20–34 h, full-time of 35 h or more following the ILO statistical definition), different job skill-levels (employed is interacted with low-skilled, medium-skilled, high-skilled jobs³) and different levels of work experience (employed is interacted with low -less than one third-, medium -less than two thirds- and high work experience -at least two thirds of the adult working life).

All models are run for men and women separately and control for differences in age, education (low educated, middle educated, highly educated⁴), citizenship, partnership (with and without partner), household types (one adult, two adults, lone parent, 2 adults with one child, 2 adults with 2 children, 2 adults with 3 or more children, other households), whether there is a young child aged 0–5 in the household and the number of earners in the household. All models furthermore include country-fixed effects. The average marginal effects of each model by gender are available in Table S2–S5 in the Supplemental Material.

Finally, the average predicted probability of being poor by employment status (s) and job characteristic (c) is assessed for each group (men and women) against the benchmark of male reference workers, to assess the differences in RWPG by labour market characteristics:

$$RWPG_{is} = P(P_i|s) - P_{mrw}$$

$$RWPG_{ic} = P(P_i|s = emp, c) - P_{mrw} \quad (3)$$

3.4.2. The poverty-reducing impact of the tax-benefit system

The final section of the empirical analysis focuses on the welfare impact of taxes (including SIC) and benefits, on RWPGs. This is done by calculating RWPGs for different income concepts. The income concept used in all other empirical sections is disposable income (dY), i.e. market incomes (m) net of taxes (t) and SIC (s) plus benefits (b). This is compared to RWPGs based on gross market incomes only (mY) as well as two intermediary income concepts, one excluding benefits (bY) and one excluding taxes and SIC (tY). We assess the diversity of the welfare impact by fitting logit models for each of these income concepts and comparing these results to the ones based on disposable incomes.

Comparing RWPGs based on each of the three additional income concepts with the standard disposable-income based RWPGs allows for an assessment of the extent to which tax-benefit systems reduce poverty overall (WI), as well as the separate role of benefits (BI) and taxes and SIC (TI). The applied benchmark poverty risk level of male reference workers is income concept specific. The RWPG for benefits and the RWPG for taxes and SIC do not add up to the overall welfare impact due to the non-additive nature of the poverty risk indicator. Below, subscripts refer to groups (w -women, mrw -male reference workers) and superscripts to income concepts.

$$WI_w = (P_w^{mY} - P_{mrw}^{mY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{mY} - RWPG_w^{dY} \quad BI_w = (P_w^{bY} - P_{mrw}^{bY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{bY} - RWPG_w^{dY} \quad TI_w = (P_w^{tY} - P_{mrw}^{tY}) - (P_w^{dY} - P_{mrw}^{dY}) = RWPG_w^{tY} - RWPG_w^{dY} \quad (4)$$

The heterogeneity of the welfare impact is calculated by fitting logit models for each of the income concepts and following the same logic for calculating the welfare impacts as for the overall results of women.

4. Results

4.1. Descriptive overview

Table 1 provides an overview of the characteristics of women in comparison to men as well as female and male reference workers, i.

³ Based on the ISCO skill level classification: low-skilled refers to elementary occupations; medium-skilled refers to clerks, service and sale workers, skilled agriculture, craft and trades worker, plant and machine operators; high-skilled refers to senior officials and managers, professionals, technicians and associate professionals

⁴ Based on ISCED standard classification of education: low educated refers to less than primary, primary and lower secondary education, middle educated refers to upper secondary education, highly educated refers to post-secondary and tertiary education.

e. those in-work for the whole year, working at least 35 h a week and having worked at least two-thirds of their adult life. While 64 % of men can be characterised as reference workers, only 36 % of women fit this description. Instead, women are more likely to be inactive (19 vs. 7 %), to work part-time (5 vs. 1 % for marginal part-time and 19 vs. 5 % for substantial part-time) and to have disrupted careers (34 vs. 22 % have no, low or medium work experience).

Partnership and household composition play a significant role. While women with partners are less likely to be reference workers, the opposite is true for men. Especially women with young children in the household are substantially less likely to be reference workers compared to men (14 vs. 22 %).

In addition, the educational gradient of full-time labour market participation is important. Female reference workers are more likely to be highly skilled than the overall sample of women which is not the case for men. This is also reflected in the skill-level of jobs. Half of the female reference workers work in high-skilled jobs compared to 42 % of male reference workers.

This overview demonstrates that a significant number of women do not conform to the stereotype of the adult worker model and may struggle to maintain a standard of living above the poverty threshold based on their individual income alone.

4.2. Gender differences in poverty risks using household and individual disposable incomes

The poverty risk of male reference workers in each scenario is used as the benchmark for the RWPGs in the following sections. This benchmark refers to a poverty rate of 6.8 % using conventional equivalised household incomes (see Table 1). When individual incomes are used the poverty rate of male reference workers drops to 4.4 % in the primary earner scenario, 4.5 % in the equal sharing scenario and 4.9 % in the secondary earner scenario.

Gender disparities in individual disposable income contribute to a considerable gender gap in poverty risk (panel A) and a notable

Table 1

Descriptive overview.

	Women		Men	
	Total	Reference worker only	Total	Reference worker only
Personal characteristics				
Average age	41	42	41	42
Low educated	20.7	12.7	24.0	19.7
Middle educated	36.0	38.3	40.2	43.8
Highly educated	43.3	49.0	35.9	36.5
With partner	56.0	52.9	50.7	58.5
Labour market characteristics				
Reference worker	36.2	100.0	63.6	100.0
Employed	67.0	90.3	73.5	85.1
Self-employed	7.7	9.7	13.4	14.9
Unemployed	6.7	0.0	6.2	0.0
Inactive	18.6	0.0	6.9	0.0
Civil servant	9.5	12.2	8.2	9.0
Marginal part-time work (<20 h)	4.7	0.0	1.0	0.0
Substantial part-time work (20-34 h)	19.0	0.0	5.4	0.0
Full-time work (35 + hours)	57.8	100.0	84.9	100.0
No work experience	6.2	0.0	2.4	0.0
Low work experience (less than a third)	10.1	0.0	6.8	0.0
Medium work experience (less than two-thirds)	18.1	0.0	12.5	0.0
High work experience (at least two-thirds)	65.6	100.0	78.3	100.0
Low-skilled job	6.5	6.4	6.9	6.9
Medium-skilled job	32.8	43.2	43.6	51.1
High-skilled job	35.4	50.4	36.4	42.0
Secondary earner	50.0	39.9	15.2	13.5
Household characteristics				
1 adult	10.7	14.0	15.7	13.5
2 adults	20.0	24.6	20.5	20.0
Lone parent	7.2	6.8	1.4	1.5
2 adults, 1 child	16.7	16.0	15.5	17.5
2 adults, 2 children	18.7	16.4	18.2	21.8
2 adults, 3 + children	6.0	3.4	5.8	6.3
Other households	20.7	18.9	22.9	19.3
Young child (0-5) in household	21.6	13.5	20.3	22.0
Number of earners	1.8	1.9	1.8	1.9
Poverty risk				
Unitary model	14.6	4.8	13.6	6.8
Primary earner scenario	32.6	7.0	14.7	4.4
Equal sharing scenario	31.6	6.5	14.9	4.5
Secondary earner scenario	29.9	6.2	15.3	4.9
Sample size	118,470	47,041	111,419	70,055

Note: Weighted results. Sample restricted to men and women aged 25–55. Source: Own calculations based on EUROMOD and UKMOD.

RWPG for women (panel C), as illustrated in Fig. 1. The overall gap in poverty risk between women and men (panel A) is between 15 and 18 %age points, while the individual risk of women in comparison to male reference workers (panel C) is over 25 %age points higher. In contrast, the gender gap in poverty risk (panel A) is significantly lower when conventional equivalised household incomes are used: a 1 %age point higher poverty rate for women compared to men and an 8 %age points higher poverty rate for women compared to male reference workers (panel C).

Comparing the RWPG of women (panel C) to the RWPG of men (panel D) shows that the gap for women is significantly higher, potentially influenced by the higher share of men who can be described as reference workers. However, this is not the sole factor, as the differences in labour income between female and male workers also play a role. When poverty is measured using equivalised household income these differences are concealed. In fact, the poverty risk of female reference workers is lower than that of male reference workers (see Table 1). This effect has been noted in previous studies and has been labelled as ‘the gender paradox’ of in-work poverty (Ponthieux, 2018). This highlights the importance of using individual incomes to measure gender differences in poverty correctly.

4.3. The role of gendered labour market differences

This section focuses on the heterogeneity of women’s RWPG by labour market characteristics. It disaggregates the results from Panel C in Fig. 1 by employment status, working hours, work experience and skill-level of job, using individual incomes and assuming equal sharing of family-level benefits (EQ scenario). Results using the household income measure and the other two individual income scenarios are available in the Supplemental Material (Figures S1 and S2). Results of the equal sharing scenario are in between those of the secondary and the primary earner scenario and are in most cases not significantly different from those that use the primary earner assumption.

The RWPG for employed women is smallest compared to other employment statuses, yet it still stands at 14 %age points (see Fig. 2). Simply being employed does not guarantee an economic independence level similar to that of male reference workers. Notably, even highly skilled women, working full-time and with considerable work experience, are still disadvantaged compared to male reference workers, highlighting the significance of the gender pay gap.

Although the share of women in employment is only 7 %age points lower than the corresponding share of men, only 36 % of women can be characterised as reference workers, compared to 64 % of men (see Table 1). Thus, gender differences in factors that constitute a ‘typical’ worker such as full-time work and undisrupted working careers together with gender differences in the skill-level of the job provide further insights.

Differences are most pronounced between different working hour arrangements. In marginal part-time employment (less than 20 h a week), women face a 55-percentage point higher risk of poverty compared to male reference workers. In substantial part-time employment (between 20 and 34 h a week), women still face a 23-percentage point higher risk compared to male reference workers. Part-time employment is by far more prevalent among women than men and thus, an important contributor to the RWPG.

Another group of atypically employed women are self-employed women. They have an alarmingly high RWPG, with an individual poverty risk around 40 % higher than that of male reference workers. Even though they participate in the labour market, being self-

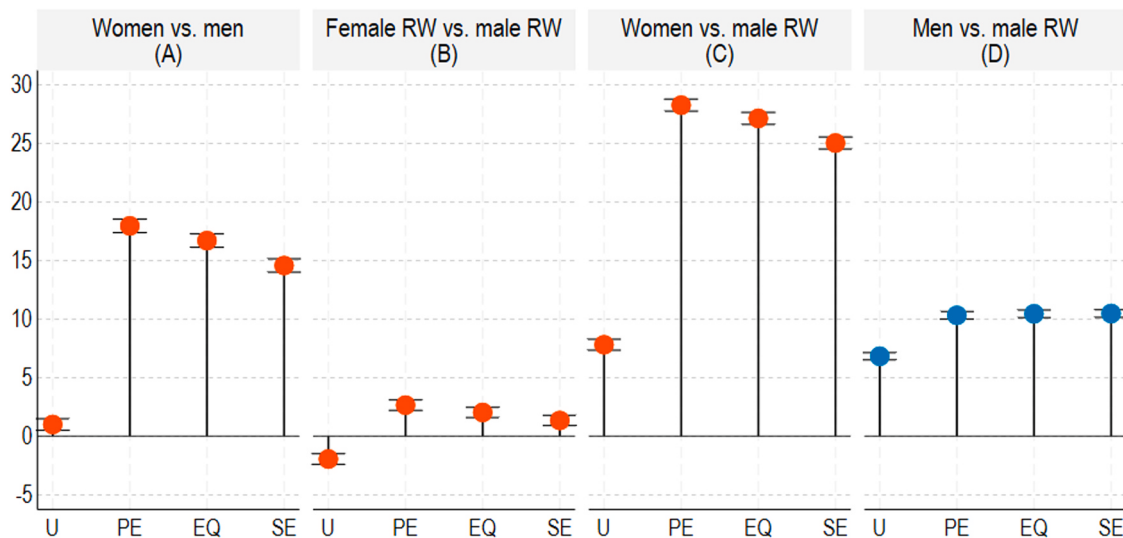


Fig. 1. Gaps in poverty risk by sharing assumption in percentage points *Note:* Weighted results. Sample restricted to men and women aged 25–55. Based on disposable incomes. RW refers to reference workers. U refers to unitary model scenario (equivalised household income), PE refers to the primary earner individual income scenario, EQ to the equal sharing individual income scenario, SE to the secondary earner individual income scenario. The circles represent the point estimates while the horizontal lines show the 95 % confidence interval. Results above 0 indicate a higher poverty risk while results below 0 indicate a lower poverty risk. *Source:* Own calculations based on EUROMOD and UKMOD.

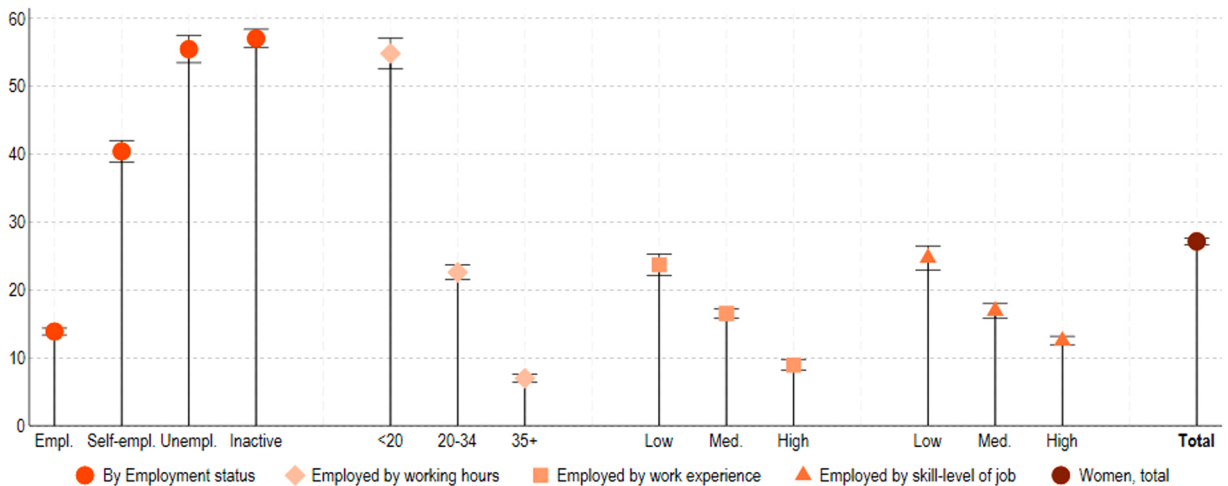


Fig. 2. Women's reference worker poverty gap (differences in poverty risk between women and male reference workers) by employment status and job characteristics in percentage points. *Note:* Weighted results. Sample restricted to women aged 25–55. Women's probability of being at risk of poverty compared to the risk of male reference workers, controlling for personal and household characteristics, incl. country-fixed effects. Job characteristic-related results are based on the interaction of the shown job characteristic with employment. The categories for working hour refer to marginal part-time work (<20 h), substantial part-time work (20–34 h) and full-time work (35 + hours). The categories for work experience refer to low work experience (less than a third), medium work experience (less than two-thirds) and high work experience (at least two-thirds). The categories for skill-level of job refer to low-skilled job, medium-skilled job and high-skilled job. Results are based on the individual income scenario assuming equal sharing of family-level benefits. See Fig. S1 and S2 in Supplemental Material for results on other scenarios. See Fig. S3 for men's reference worker poverty gap by employment status and job characteristics. The symbols represent the point estimates while the horizontal lines show 95 % confidence intervals. *Source:* Own calculations based on EUROMOD and UKMOD.

employed does not necessarily lead to an individual standard of living equal to the situation of male reference workers. This again highlights the gap between the broad ideal of the adult worker model and women's lived reality.

Both groups of non-employed women, the unemployed and inactive, face an individual poverty risk that is at least 55 %age points higher than the risk of male reference workers, underscoring the very precarious individual situation of a significant number of women.

Figure S3 in the Supplemental Material presents the same results for men's reference worker poverty gap, i.e. men versus male reference worker. It shows that although the same patterns by employment status and job characteristics exist among men, the

Table 2

Women's reference worker poverty gap based on different individual income concepts and the poverty-reducing impact of the tax-benefit system.

Indicator:	RWPG based on		Gap-reducing impact	Role of:	
Income concept:	Gross market income	Disposable income		Taxes, SIC	Benefits, total
By employment status					
Employed	17.0	13.9	-3.1	2.7	-6.1
Self-employed	39.4	40.4	1.0	7.3	-5.8
Unemployed	66.0	55.4	-10.5	3.9	-14.7
Inactive	74.3	57.0	-17.3	3.8	-20.2
Employed women by working hours					
Marginal part-time work (<20 h)	60.0	54.8	-5.2	8.1	-13.2
Substantial part-time work (20-34 h)	26.0	22.6	-3.4	6.5	-10.5
Full-time work (35 + hours)	11.6	7.0	-4.6	1.0	-6.0
Employed women by work experience					
Low work experience (less than a third)	29.9	24.7	-5.2	3.5	-7.9
Medium work experience (less than 2/3)	23.9	16.9	-7.0	1.8	-9.7
High work experience (at least 2/3)	18.2	12.5	-5.7	2.1	-7.9
Employed women by skill-level of job					
Low-skilled job	28.2	23.7	-4.5	3.3	-8.3
Medium-skilled job	21.7	16.5	-5.2	2.5	-8.0
High-skilled job	15.4	8.9	-6.5	1.4	-7.9
Total	31.3	27.1	-4.2	2.7	-7.1

Note: Weighted results. Sample restricted to men and women aged 25–55. Gap-reducing impact = RWPG gross market income - RWPG disposable income. Role of benefits = RWPG disposable income excl. benefits - RWPG disposable income. Role of taxes and SIC = RWPG disposable income excl. taxes and SIC - RWPG disposable income. Results are based on the individualised-income scenario using the equal sharing assumption for family-level benefits. See Table S6 in the Supplemental Material for results on other scenarios. *Source:* Own calculations based on EUROMOD and UKMOD.

magnitude is substantially different. The penalty for working less hours or having lower work experiences and thus, for diverging from the 'ideal' male reference worker, is lower for men.

4.4. The poverty-reducing impact of the tax-benefit system

This section illustrates the level of support provided via the tax and benefit system to working-age women whose working lives deviate from the 'ideal' worker. As above, we focus on individual poverty under the assumption of equal sharing of family-level benefits. Additional results for the household income measure and the other two individual income scenarios are available in the Supplemental Material (see Table S6).

Table 2 compares women's RWPG based on gross market incomes with their disposable income-based RWPG. The difference between the two represents the total poverty-reducing impact of the tax-benefit system. This impact is further broken down into the impact of benefits and the impact of taxes and SIC. The poverty line is fixed across all income concepts.

The tax-benefit system reduces the RWPG for women: while the poverty rate of women decreases when moving from gross market to disposable incomes, the poverty rate for male reference workers remains the same (see poverty rates in Table S7 in the Supplemental Material). Male reference workers are by definition full-time employed and thus, less likely to receive means-tested benefits compared to women with a different employment status. At the same time, poverty levels of male reference workers are less affected by taxes and SIC, while the poverty levels of women increase significantly once taxes and SECs are deducted. However, benefits counterbalance this effect. This leads to an overall poverty-reducing impact of the entire tax-benefit system on the RWPG of 4 %age points.

The impact varies based on the employment status of women. It is most significant for unemployed and inactive women, resulting in reductions of 11 and 17 %age points, respectively. In comparison, the reduction in RWPG for employed women is 3 %age points. Benefits support the living situation of women who are furthest from the 'ideal' of the male reference worker (see last column), flattening differences by employment status. Still, the magnitude of support is not sufficient to replace the lack of earnings.

Conversely, the poverty-reducing impact of the tax-benefit system for women in atypical employment (part-time work and self-employment) is less noticeable, with a modest 3 %age point reduction for women in substantial part-time employment, a 5-percentage point reduction for women in marginal part-time employment, and even a 1 %age point increase for women in self-employment. This indicates that the tax-benefit system does not fully compensate for the large earnings gap experienced by these women who are in principle closer to the profile of male reference workers.

The last two columns of **Table 2** show that self-employed women indeed do not benefit from transfers to the same degree as other groups of atypical working women, highlighting gaps in welfare state support for the self-employed. Additionally, women in atypical employment face a stronger gap increasing effect of taxes and social insurance contributions than those in standard employment.

5. Conclusion

In recent decades, social policy discourse in Europe has focused on the activation of individuals into employment. The adult worker model assumes that consistent full-time employment throughout most of one's working-age life guarantees a good standard of living, guards against the risk of poverty and reduces reliance on social protection. Yet, this approach overlooks the reality of women's part-time work, unpaid care work, and the gender pay gap; and has often led to the erosion of traditional social protection systems.

This study aimed to empirically examine how women across Europe fare within the context of the adult worker paradigm. It assesses the individual poverty risk of working-age women in comparison to the benchmark of male reference workers, i.e. men who have worked full-time throughout most of their working-age years.

It makes a significant empirical and methodological contribution to the literature on gendered poverty and welfare design by measuring individual-level poverty risks rather than relying on household-level aggregates. While earlier studies (e.g., [Avram and Popova, 2022](#); [Filandri and Struffolino, 2019](#)) have highlighted gender gaps in income, our work shifts the focus to gender gaps in poverty risk, a more acute and policy-relevant dimension of economic vulnerability.

Following the approach of [Avram and Popova \(2022\)](#), the analysis employed a novel methodology to calculate the individual incomes of women and men, including those living in couples, using EUROMOD and UKMOD, two tax-benefit microsimulation models for EU-27 and UK respectively, together with EU-SILC and FRS data. This departure from the conventional approach to measuring poverty based on household incomes, allows us to account for intra-household inequality between women and men.

Our findings indicate that women are significantly less likely to fit the archetype of the adult worker model. While 64 % of men can be characterised as reference workers, this is only true for 36 % of women. This overall smaller share of women fitting the model results in an at least 25 % higher individual poverty risk of women compared to male reference workers. This higher poverty risk is influenced not only by the higher likelihood of women being unemployed or inactive, but also by women being more likely to have atypical employment.

Using a measure of individual poverty risk highlights gender disparities in poverty driven by the different employment characteristics of women and men, which are not visible when poverty is measured using equivalised household income. A similar effect has been found in previous studies using individual income measures ([Avram and Popova, 2022](#), [Doorley and Keane, 2023](#), [Filandri and Struffolino, 2019](#)). While [Jara and Popova \(2021\)](#) show that secondary earners are better off being employed than being unemployed, our analysis reveals that women in marginal part-time employment are as economically dependent as unemployed women. Only full-time employment guarantees women financial independence, even though they are still slightly more likely to be individually poor compared to male reference workers. This potential vulnerability to poverty of full-time employees is overlooked in the adult worker model, a finding which is consistent with results from the literature on working-poor women in the EU ([Schwarz, 2023](#)).

In terms of policy impact, our results show that while the tax-benefit system reduces the poverty gap by 4 %age points overall, its redistributive effects are uneven: benefits provide substantial support to inactive or unemployed women but offer far less protection to women in atypical or self-employment. Taxes and social insurance contributions have a disequalizing effect at the lower end of the income distribution - contrasting with earlier findings that emphasized their equalizing role for average incomes (Avram and Popova, 2022).

Our findings underscore the need for further research into the design of tax-benefit systems from a gendered perspective. More in-depth knowledge is needed on how the design of income taxes and SIC penalizes atypical workers. Additionally, our results show that the framing of social support is important. It is thus essential to examine whether family benefits are presented as replacement income for unpaid care work and paid to the individual carrying out the work or are simply perceived as family-level benefits for households with children in general.

Currently, the achievement of full-time employment for all women in the EU is a challenging ideal to attain. Around one in four working-age women in the EU are currently working part-time hours. Encouraging part-time employed women to conform to the life trajectory of a 'typical' worker fails to recognise the lived reality of women and their diverse reasons for working fewer hours, such as for example childcare responsibilities. Instead, there is a need to reimagine the adult worker model by reducing the gender-blind spots inherent in the paradigm. More concretely, this concerns the role of in-work benefits and the extent to which they are available to self-employed workers, the role of taxation systems in penalising part-time workers and the availability of policies that directly compensate for unpaid care work.

Data statement

Both EUROMOD and UKMOD are open access and available either through the Joint Research Centre of the European Commission and the Centre for Microsimulation and Policy Analysis at the University of Essex. The underlying input datasets are available through these two institutions but require access to EU-SILC from Eurostat and access to FRS from the UK Data Service.

CRedit authorship contribution statement

Silvia Avram: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Daria Popova:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Katrin Gasior:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Conceptualization.

Acknowledgements

This work was supported by the Economic and Social Research Council, via the ESRC Centre for Micro-Social Change (MISOC), grant ES/S012486/1. We would like to thank Amy Clair and Renee Reichl Luthra for their continuous support and feedback. We are also grateful for comments from Neli Demireva and Karin Heitzmann as well as comments received at ESPAnet, INEQ Research Seminar and ECINEQ. The results presented here are based on EUROMOD version H1.62 and UKMOD version B1.07. We are indebted to the many people who have contributed to the development of EUROMOD and UKMOD. The results and their interpretation are the authors' responsibility.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.ecosys.2025.101363](https://doi.org/10.1016/j.ecosys.2025.101363).

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