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Abstract

We examine the evolution of the gender income gap in UK and Ireland between 2008 and 2019 by income decile and decompose it to evaluate the relative importance of gender differences in working hours, self-employment, and hourly pay, as well as the redistributive effect of the tax-benefit system. We find that the biggest driver of the gender income gap in both countries is gender differences in employment/self-employment and working hours. These differences are especially large in the lower half of the income distribution, but their gradual reduction over the period we study led to a closing of the income gap in both countries. In contrast, the gender gap in hourly wages is more important in the middle and upper middle part of the income distribution, especially in the UK. The redistributive effect of the tax-benefit system by gender has fallen in the UK due to austerity measures but slightly increased in Ireland, primarily as a result of increased taxation. Further policy initiatives to align the employment rate and work hours of men

[1] The results presented here are based on EUROMOD and UKMOD models. For Ireland we use EUROMOD with EU-SILC data made available by Eurostat. For the UK we use UKMOD with FRS data made available by the Department for Work and Pensions via the UK Data Archive. Having been originally maintained, developed and managed by the Institute for Social and Economic Research (ISER), since 2021 EUROMOD is maintained, developed and managed by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and national teams from the EU countries. UKMOD is maintained, developed and managed by the Institute for Social and Economic Research (ISER) at the University of Essex. 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.

and women in both countries could substantially reduce the gender gap in income in the future.

JEL codes: J16, J31

Keywords: Gender inequality, Decomposition, Tax-benefit system, Ireland, United Kingdom

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1. Introduction

The gender gap in income is large and well documented across Europe. Its size has wide reaching consequences for the financial independence of men and women (EIGE, 2024), household consumption patterns (Lise & Seitz, 2011) and the macroeconomy (Elborgh-Woytek et al., 2013).

Previous research has shown how the gender gap in income is driven by three main elements: the gender gaps in wages, the difference in work patterns of men and women and redistribution by the tax and welfare system (Avram & Popova, 2022; Karina Doorley & Keane, 2023; Figari, Immervoll, Levy, & Sutherland, 2011). There is extensive research on the evolution of the gender wage and the gender work gap over time - these have been closing in many countries (Bryson, 2021; Olivetti & Petrongolo, 2016). However, there is less evidence on how redistribution between men and women by the tax-benefit system has changed over time. While redistribution between men and women decreases gender income inequality, it can also exacerbate the gender income gap at source by disincentivising female labour market attachment. The cumulative impact of developments in gender wage and work gaps and their interaction with the tax and welfare system have not yet been examined in a historical context.

This research investigates how the gender gap in income has changed over time in Ireland and the UK, neighbouring countries with different histories of gender segregation and legislative pushes for gender equality. Both the UK and Ireland have a residual type of welfare state with a strong focus on targeting, and labour markets with significant shares of low-paid and part-time employment, both of which disproportionately affect women (Pascall & Lewis, 2004). Our study period encompasses the years 2008-2019, taking in the effect of the financial crisis, which increased female labour supply compared to male (Barrett, Doorley, Redmond, & Roantree, 2022) but which was also associated with strong austerity measures, with differing impacts for men and women (Browne, 2011; K. Doorley, Bercholz, Callan, Keane, & Walsh, 2018). Our approach to measuring disposable income at the individual level, developed and tested in previous work, allows us to estimate population-wide gender income inequality, including among those living in couples.

Using microsimulation models for the two countries (UKMOD and EUROMOD), in a novel contribution to this literature, we estimate the gender income gap between 2008 and 2019 by income decile. This time period includes all years before the Covid-19 pandemic for which harmonised datasets and microsimulation models are available for the UK and Ireland. We do not analyse the pandemic years as there was much temporary change to employment, wages and tax-benefit systems between 2020 and 2022 which would be difficult to disentangle from structural shifts in gender income inequality. Another reason for not excluding the pandemic years from our analysis is low quality of the survey data obtained during the pandemic, as the interviews were mainly conducted via telephone, and the sample sizes are considerably smaller. Future work could consider the post-pandemic period once more recent data is incorporated into EUROMOD and UKMOD.

We first show that previous estimates of the average gender income gap in each country mask significant variation across the income distribution. Second, we decompose the total gender

income gap in each time period into the relative contributions of gender gaps in work, wages and demographics. This historical perspective shows how the contribution of each component to gender income inequality has changed over this time period and points to policy lessons for the future. Third, we go beyond the standard decomposition used in this literature and separate the gender gap in work into employee and self-employment components. The gender gap in self-employment is well documented (Teignier Baque, Cuberes, & Priyanka, 2019) but its relative contribution to gender income inequality has not yet been estimated in this way. Finally, we show how the cushioning effect of the tax and welfare system on the gender income gap has changed over time. Our results have implications for policy makers interested in balancing the objectives of gender budgeting with maintaining incentives for gender equality in labour market participation and remuneration.

2. The components of the gender gap in income

A variety of factors influences the gender gap in income. Since take-home or 'disposable' income is composed of earned or 'market' income plus social transfers, less tax liabilities, gender differences in any of these components influence the gender gap in disposable income. It is worth noting that the gender gap in disposable income is not straightforward to measure. Unlike earnings, which are measured at the individual level, disposable income is usually a household level concept. Conventional measures of disposable income assume that household income is fully pooled and equally shared among all household members. As a result, men and women living in couples have the same income. This assumption masks the contribution of within household income inequality to individual living standards. This has been shown to create a substantial bias in assessing gender income inequality and the impacts of taxes and benefits on men and women (Himmelweit, Santos, Sevilla, & Sofer, 2013; Lundberg, Pollak, & Wales, 1997; Ponthieux & Meurs, 2015; H. Sutherland, 1997). We discuss how we define individual level disposable income in Section 3.1.

2.1 Gender gaps in wages and work

Gender differences in wages and employment patterns are the primary drivers of the gender gap in market income (Karina Doorley & Keane, 2023). Table 1 shows the hourly gender pay gap[2] in the UK and Ireland. The gap is significantly higher in the UK, at more than 20% for 2008-2017 with a slight fall to just under 20% in 2018. Ireland has also seen a decline in the gender pay gap in the latter period of our analysis with significant falls from a high of 14.4% in 2007 to under 11% in 2019. Both countries experienced an increase in the gender pay gap in 2010 (marking the middle of the financial crisis) while Ireland experienced another increase in 2014, during the recovery period from the financial crisis.

[2] This is EUROSTAT's gender pay gap in unadjusted form i.e. it measures the difference between average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees. All employees working in firms with 10+ employees are included.

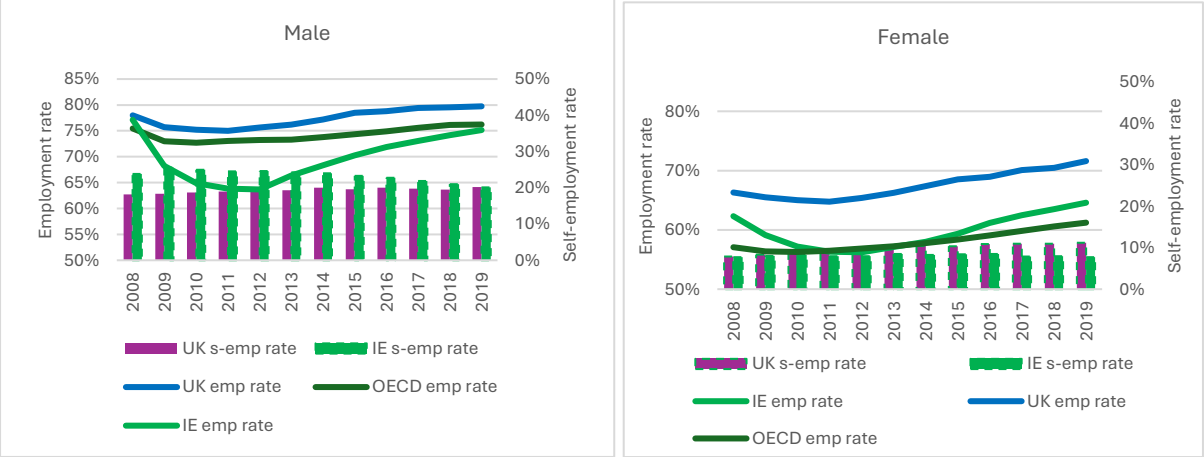
Table 1: The gender gap in hourly pay

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ireland	12.6	12.6	13.9	12.7	12.2	12.9	13.9	13.9	14.2	14.4	11.3	10.8
U.K.	21.4	20.6	23.3	21.8	22.6	21.0	20.9	21.0	20.7	20.8	19.8	n/a

Source: EUROSTAT, Gender pay gap in unadjusted form. Online data code:sdg_05_20 DOI:10.2908/sdg_05_20

While the hourly gender pay gap receives much attention, Karina Doorley and Keane (2023) show that the gender 'work gap' i.e. gender differences in employment rates and work hours, drives most of the gender gap in market income both in the UK and Ireland. Figure 1 shows how employment and self-employment rates have evolved for women and men since 2008. A sharp drop in the employment rate of both men and women is observable from 2009 to 2013, corresponding to the financial crisis. The employment rate of women in both countries recovered more quickly than that of men. Despite a steady pattern of increased female employment rates in Ireland and the UK since that recovery period, these continue to be well below male employment rates.

Figure 1 Male and Female Employment and Self-Employment Rates since 2008



Source: OECD

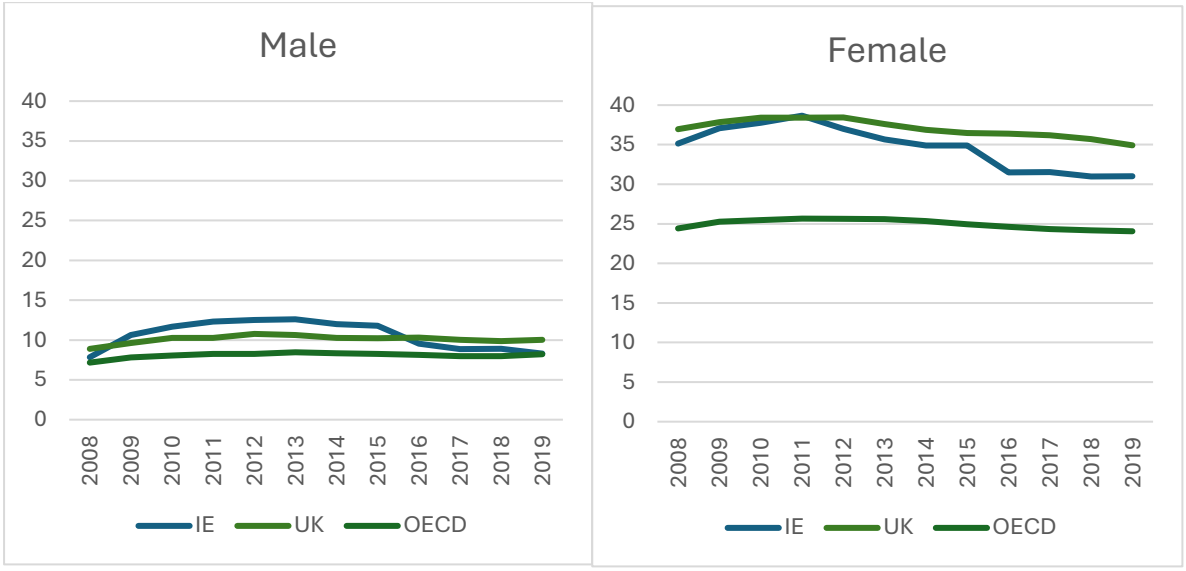
Notes: s-emp denotes self-employment and this rate shows the proportion of employment that is self-employment.

Self-employment is also higher for men than women – in Ireland nearly one-quarter of male employment between 2008 and 2014 was self-employment. There has been a decline since then so that by 2019 around one-fifth of male employment was self-employment. Female self-employment only accounted for around 8% of total female employment over this time period. Self-employment among men was relatively lower in the UK than Ireland in the early years of our analysis while self-employment among women in the UK was very similar to Ireland. In recent years however, there has been some convergence between the self-employment rates of

men in the two countries (around 20% in 2019) while self-employment among women is now higher in the UK (11%) than in Ireland (8%).

In addition to lower employment rates, women are much more likely to work part-time, as shown in Figure 2. Only around 10% of male employment is part-time in the UK. Ireland saw a rise in male part-time employment during the financial crisis but it still remained below 13% of total male employment and has been below 10% since 2017. While female part-time employment in Ireland and the UK has fallen from above 35% since 2008 it remains close to one-third of female employment in 2022. This is significantly higher than the OECD average of 23%.

Figure 2 Male and Female Part-time Employment Rates



Source: OECD

Notes: This graph shows the incidence of part-time employment i.e. the proportion of all employment that is part-time. Part-time employment consists of those people in employment (whether employees or self-employed) who usually work less than 30 hours per week in their main job.

2.2 The gender impact of tax and welfare

Although tax-benefit polices are not typically targeted at either gender, in practice, tax and benefit policies can affect women and men differently due to gender differences in many characteristics relevant to tax liabilities and benefit entitlements, especially earnings and care responsibilities.[3] As a result of a gender-based division of labour, women spend more time engaged in caregiving duties and earn, on average, lower wages. Higher wages result in higher taxes for men, especially in progressive tax systems, while shorter contribution histories for women usually lead to lower entitlements to contributory benefits such as pensions. At the same time, lower income makes women more dependent on means-tested benefits, while their caregiving responsibilities make them more reliant on public services.

[3] See Sologon, Doorley et al. (2023) for an overview of how microsimulation can be used to estimate the gender impact of tax and welfare.

It follows that changes, including nominal freezes, to either the tax or welfare systems may affect men and women differently (Browne, 2011; K. Doorley et al., 2018; Portes & Reed, 2018). The period of our analysis is characterised by austerity measures enacted during the financial crisis, followed by a recovery period in which some welfare cuts were reversed, and tax increases tempered. Table 2 and Table 3 in Appendix A illustrate how specific instruments in the tax-benefit system changed over this period.

In Ireland, there were a number of tax increases enacted during the financial crisis. A new tax was introduced in 2010: the Income Levy/Universal Social Charge (USC). A tax on property was introduced in 2012. There was also an increase in social insurance liabilities for higher earners with the abolition of the Pay Related Social Insurance (PRSI) ceiling. There was a nominal cut to tax credits and the point at which earners became liable for the top rate of income taxation was reduced. The two rates of income tax were unchanged during the financial crisis but the top rate fell from 41% to 40% in 2018.

On the welfare side, there were nominal cuts to most welfare payments from 2009 onwards and freezes (or real cuts) to most welfare payments between 2010 and 2015. While there have been some nominal welfare increases since then, they have not recovered their real pre-crisis value. K. Doorley et al. (2018) showed that these changes disproportionately affected women negatively.

In the UK, austerity has been characterized by a more gradual yet enduring approach, primarily motivated by ideology rather than the fiscal deficit. The UK has heavily relied on reducing or restricting eligibility for working-age benefits. Starting from 2013, child benefit was withdrawn for high earners, and the working hours required for claiming Working Tax Credit were increased. The benefit freeze resulted in the rates of various means-tested benefits falling in real terms. The Benefit Cap imposed a limit on the total amount of welfare benefits that individuals or households could receive in one year. This measure was meant to ensure that the total amount of transfers received by any recipient household did not surpass the average weekly earnings of working households.

The introduction of Universal Credit (UC) and its gradual rollout since 2016 represented a significant change in the UK's welfare system. It combined several means-tested benefits into a single monthly payment, aiming to streamline the benefit system and improve work incentives. Since 2017, the two-child limit affects the amount of Child Tax Credit and Universal Credit that families can receive. If a family has a third or subsequent child born on or after April 6, 2017, they may not receive additional financial support for that child through these benefits.

On the tax side, an additional income tax rate of 50% for top earners was introduced between 2010 and 2012, which was subsequently reduced to 45% from 2013 onward. The income tax personal allowance was increased, and simultaneously, an upper income limit for claiming personal tax allowance was introduced. At the same time, the threshold for the higher rate of income tax (40%) fell in real terms over the period as a whole, consequently pushing more individuals into the higher income tax bracket of 40%. National Insurance Contributions (NICs) were increased by 1 percentage point from 2011 onwards.

The distributional impacts of changes to taxes and benefits between the UK general elections of May 2010 and May 2015 were examined by De Agostini and Hills (2018). The study shows that the main gains were in the upper-middle of the income distribution, and the main losers were at the bottom and those close to, but not at, the very top. Across most of the distribution, the tax-benefit changes were regressive. Certain benefit cuts were reversed in 2020 to alleviate the adverse impact of COVID-19 lockdown measures on the incomes of the population. Nevertheless, Brewer and Tasseva (2021) show that the 2020 pre-COVID tax-benefit policies in the UK were less effective in supporting vulnerable households compared to what the policies in 2011, pre-austerity, would have achieved.

3. Models, Data and Method

3.1 EUROMOD and UKMOD

We use two tax-benefit microsimulation models: UKMOD for the UK and EUROMOD for Ireland. EUROMOD is the harmonised microsimulation model for the EU (Holly Sutherland & Figari, 2013) and UKMOD is based on the EUROMOD platform (Richiardi, Collado, & Popova, 2021). Both models are therefore harmonised in terms of simulation structure. The models numerically simulate tax-benefit rules, allowing the computation of all social contributions, direct taxes, and transfers to yield household disposable income, information which is not typically available at such a granular level using household survey data. EUROMOD is linked to EU-SILC data, the most recent and important source of microdata for comparative studies on income distribution in Europe. UKMOD is linked to the Family Resources Survey. The FRS is an annual cross-sectional survey of the living standards and circumstances of people living in the UK, used to calculate official income statistics. Since our focus is on the composition of gender gaps in market and disposable income, we restrict the sample studied in each country to the working age population, aged 20-65 to avoid including pensioners. This group, along with other segments of the population, are studied in depth by EIGE (2024). In both models, hourly wages are calculated as monthly employee or self-employed income divided by monthly hours of work[4]. Work hours are reported directly in the surveys.

Any analysis of income at an individual level must involve assumptions about how family members share their resources. Standard analyses of income distribution are generally carried out at the household level, assuming that income is fully shared or 'pooled' so that all

[4] In the FRS data which underlies UKMOD, current income is available and corresponds to the current hours of work reported. In the EU-SILC data underlying the Irish component of EUROMOD, income is reported on an annual basis (based on the 12 months preceding the interview) and current monthly income is calculated as annual income divided by the reported months of work. A variety of papers (see Bönheim and Jenkins (2006), and Jenkins (2010)) show that measures of current and annual income are very similar. They attribute this to two main factors – that income sources classified as 'current income' often refer to usual rather than current income, and secondly, that within-year income volatility appears to be low for most individuals. Tomlinson (2018) does find relatively high volatility in monthly income for employees in the UK. The work hours variable in the Irish data, however, is based on 'usual' hours worked, therefore using annual income divided by months worked may actually smooth this issue.

household members enjoy the same standard of living. This approach however ignores any intrahousehold inequality and conflict. Non-unitary models of family behaviour, which imply some form of bargaining or negotiation within the family, have been shown to be valid (Browning, Chiappori, & Lechene, 2010; Cantillon & Nolan, 2001; Lundberg et al., 1997). For example, it has been found that the distribution of cash income across household members can have a strong influence on their individual consumption (Browning, Bourguignon, Chiappori, & Lechene, 1994; Lundberg et al., 1997) and material deprivation (Guio & Van den Bosch, 2020; Karagiannaki & Burchardt, 2020), with implications for individual economic independence and bargaining power. In this paper, we rely on an individual-level measure of disposable income, which enables us to account for gender inequality among individuals within couples/multi-person households. Our use of microsimulation models facilitates the construction of such a measure because it allows us to simulate all the components of disposable income at the individual level, a task not possible using survey data alone.

We assign each household member their individual market income, tax liability and benefit entitlement. One exception is family benefits, such as child benefit, and household level benefits, such as housing benefits, which we assume to be shared equally among members of the benefit unit. In Ireland, which employs partly joint income taxation, we split the income tax liability between members of a couple in proportion to their earned income. All other income sources and deductions are retained by the individual who receives or is liable for them. This approach is in line with much of the related literature aiming to assess the differential impact of tax and welfare policies on individuals in couples (Avram & Popova, 2022; Karina Doorley & Keane, 2023; Figari et al., 2011). The individual approach can be considered to represent an upper bound of the gender gap in income by assuming minimal income pooling in the household, as opposed to the conventional approach representing a lower bound of the gender income gap by assuming full income pooling and no intrahousehold inequality. Our individual income is a useful measure in that it represents potential income (consumption, bargaining, etc) inequality. For instance, adults who have no or small individual incomes may be in a vulnerable position as withdrawal of financial support can leave them economically deprived, as attested by the large negative economic consequences that union dissolution can have for some women (Popova & Navicke, 2019). It also allows us to focus on inter-household redistribution performed by the tax-benefit system rather than a mix of inter- and intra-household redistribution, the latter representing income sharing between spouses. For the purposes of the distributional analysis, however, income deciles are always defined using the conventional household income measure, to aid interpretation and maintain comparability with the existing inequality literature.

We analyse the years 2008 to 2019 – covering the onset of the financial crisis and subsequent recovery up to the beginning of the COVID pandemic. The datasets (containing data on population characteristics and market incomes) underlying policy simulations in EUROMOD and UKMOD are not available for all years during this period. For Ireland they are available for the years 2008, 2010, 2012, 2015, 2018, and 2019; for the UK they are available for all the years between 2008 and 2019 excluding 2010/2011.

3.2 Method

Doorley & Keane (2023) set out a method to estimate and decompose the gender gap in income which builds on the wider income inequality decomposition literature(Bargain & Callan, 2010; Sologon et al., 2023). The resulting index of the "cushioning" effect of the tax-benefit system on gender income inequality, C has parallels with the Reynolds-Smolensky index, which is used to measure the effect of tax-benefit systems on income inequality.[5]

$$C = Gap_M - Gap_D$$

where Gap_M is the gap in monthly market income between men and women, as a proportion of male disposable income and Gap_D is the gap in monthly disposable income between men and women as a proportion of male disposable income.

Looking beyond the mean, we estimate this cushioning effect at specified quantiles, τ, of the disposable income distribution:

$$C(\tau) = Gap_M(\tau) - Gap_D(\tau)$$

3.2.1 Decomposing the gender gap in market and disposable income

To understand the drivers of the gender gap in market and disposable income, we decompose each into several components.

Market income, M, is calculated at the individual level (i) as the sum of employee income – itself, the product of hourly employee wages, w, and monthly employee hours of work, h - self-employment income, s, and non-labour income, y. Excluding gender and quantile superscripts for conciseness:

$$M_i = w_i * h_i + s_i + y_i$$

Disposable income, D, is calculating by applying a tax-benefit function, d, to market income:

$$D_i = d(w_i * h_i, s_i, y_i, X_i)$$

d which calculates individual disposable income based on wages, w, hours of work, h, self-employment income, s, non-wage income, y and household characteristics, X.

To understand how changes in the gender gap in hourly wages, the gap in hours worked and the tax-benefit rules have contributed to the evolution of the gender income gap, we estimate several counterfactual market income distributions in which we simulate a wage and employment structure for women which is similar to that of men. The difference between these counterfactual distributions and the observed distribution for women indicates the contribution of wage and employment differences to the gender gap in income. To do this, we use Propensity Score Matching (PSM) to match women aged 20-65 years to similar men by

[5] This measures the redistributive impacts of the tax-benefit system by estimating the Gini coefficient before and after tax-benefit policy interventions.

education, work history and decile of hourly wage[6]. We then construct the following counterfactual income distributions for women:

a) Counterfactual hourly wage distribution: We assign the male-matched employee hourly wage to women who we observe to be working, resulting in a counterfactual wage distribution, w_i^m. The resulting counterfactual market income distributions and disposable income distributions are denoted:

$$M_i^{\mathrm{w}} = w_i^m * h_i + s_i + y_i$$

$$D_i^{\mathrm{w}} = d(w_i^m, h_i, y_i, s_i, X_i)$$

The contribution of the unexplained hourly wage gap between men and women to the gender gap in market income is:

$$\mathrm{Gap}_M^w = \left(M_i^m - M_i^f\right) - (M_i^m - M_i^w)$$

b) Counterfactual hours distribution: We assign the male-matched employee work hours to women, resulting in a counterfactual hours distribution, $h1_i^m$. This is converted into employment income using the actual hourly wage (for female workers) and the imputed hourly wage for women who do not work[7], jointly denoted w_i^f.

$$M_i^{\mathrm{h}} = w_i^f * h_i^m + s_i + y_i$$

$$D_i^{\mathrm{h}} = d\left(w_i^f, h_i^m, y_i, s_i\, X_i\right)$$

The contribution of the work hours gap between men and women to the gender gap in market income is:

$$\mathrm{Gap}_M^h = \left(M_i^m - M_i^f\right) - \left(M_i^m - M_i^h\right)$$

c) Counterfactual self-employment distribution: We assign the male-matched self-employment status and income to women, resulting in a counterfactual self-employment income distribution, s_i^m.

$$M_i^{\mathrm{se}} = w_i \ * h_i + s_i^m + y_i$$

$$D_i^{\mathrm{se}} = d\left(w_i\ , h_i, y_i, s_i^m, X_i\right)$$

The contribution of the self-employed income gap between men and women to the gender gap in market income is:

[6] We use the Stata psmatch2 package. Firstly, females and males aged 20-65 are matched on covariates including age, age squared, education (number of years and the highest status), work history (length of time in months), region and disability status, using one-to-one nearest neighbour matching with replacement. Then we repeat the matching process for employed men and women only, using the same set of variables.

[7] Imputed wages are available in the data underlying EUROMOD and UKMOD. They are based on a Heckman selection model where marital status, the number and age of children and a polynomial in non-labour income provide the exclusion restriction.

$$\text{Gap}_M^{se} = \left(M_i^m - M_i^f\right) - (M_i^m - M_i^{se})$$

d) Interaction effects: We assign both male matched hourly wages, employee hours and self-employment status and income to women, as there is a measurable interaction between the counterfactual wage distribution, w_i^m, the counterfactual hours distribution, $h1_i^m$ and the counterfactual self-employed income distribution, s_i^m:

$$M_i^{int} = w_i^m * h_i^m + s_i^m + y_i$$

$$D_i^{\text{int}} = d(w_i^m, h_i^m, y_i, s_i^m\, X_i)$$

The interaction between the gender wage gap and the gender work gap contributes to the gender gap in market income as follows:

$$\text{Gap}_M^{int} = \left(M_i^m - M_i^f\right) - \left(M_i^m - M_i^{int}\right) - \text{Gap}_M^{se} - \text{Gap}_M^h - \text{Gap}_M^w$$

The interpretation of the interaction effect is as follows: if women are more positively selected into the labour market than men, the potential wages of those who do not work/ work fewer hours are lower than observed (female) wages. The interaction effect will be negative in this instance. On the contrary, if men are more positively selected into the labour market than women the interaction effect will positively contribute to the observed gender income gap.

Figure 9 in the Appendix shows how the distribution of female hourly wages, work hours and self-employment shifts once women are matched to similar men using the PSM method. Using counterfactual values for each of these and employing microsimulation to recover the resulting disposable income distribution, the gender gap in market income can then be decomposed into the contribution of gender differences in (a) employee wages, (b) hours of work, (c) self-employment income, (d) the interaction between these three factors and (e) other factors (demographic differences and investment income).

$$Gap_M = \underbrace{\text{Gap}_M^w}_{wage} + \underbrace{\text{Gap}_M^h}_{hours} + \underbrace{\text{Gap}_M^{se}}_{self-employment} + \underbrace{\text{Gap}_M^{int}}_{interaction} + \underbrace{\left(M_i^m - M_i^f\right) - \left(M_i^m - M_i^{int}\right)}_{other}$$

3.2.2 Isolating the contributions of tax and welfare

The difference between the gender gap in market and disposable income is attributable to the tax and welfare system. We can isolate the contributions of tax and welfare separately by applying a benefit function, $b(.)$, which transforms market income into post-transfer, pre-tax income, giving us:

$$D_i^b = b(w_i * h_i, s_i, y_i, X_i)$$

and by introducing a tax function, $t(.)$, which transforms market income into post-tax pre-benefit income (D_i^t) in a similar fashion.

$$D_i^t = t(w_i * h_i, s_i, y_i, X_i)$$

We compute these transformations using EUROMOD and UKMOD respectively. Using these tax and benefit functions separately allows us to decompose the cushioning effect of the tax-benefit system on the gender gap in income across the income distribution as follows:

$$C(\tau) = \underbrace{(Gap_M(\tau) - Gap_{D^b}(\tau))}_{benefits} + \underbrace{(Gap_M(\tau) - Gap_{D^t}(\tau))}_{tax}$$

4. Results

4.1 The gender gap in market income

Figure 3 shows the average gender gap in market income in Ireland and the UK for selected years of the analysis.[8] This overall average income gap is decomposed into the relative contributions of the gender gap in wages, work hours and self-employment with an interaction term for these three components also included. The final component isolated in this analysis is termed "other" and is made up of gender gaps in income that can be attributed to demographic characteristics, non-labour income and unobservables.

In Ireland, the average gender gap in market income fell from 43% in 2008 to 34% in 2012. The composition of the gap also changed over this time period. While gender differences in work hours remained the most significant contributing factor to the gender gap in market income the importance of these fell significantly between 2008 and 2012 as did the contribution of self-employment. The contribution of 'other' factors (which often reduce the gender gap in income in Ireland) was almost eliminated in this time period, potentially reflecting the changing composition of the 'stayers' in the labour force during the Great Recession. The contribution of the gap in hourly wages decreased slightly during the middle of the period before recovering, largely reflecting the evolution of the gender pay gap. The result was a decrease in the overall gender gap in market income during the financial crisis. This is in line with the sharper fall in employment experienced by men during the Great Recession (- 13 p.p./17%) compared to women (-6 p.p/10%). During the recovery period, from 2015 onwards, the contribution of the gender gap in work hours to the gender income gap remained lower than in 2008. While the contribution of the gender gap in self-employment increased from its 2012 level it was still less of a factor in explaining the gender gap in market income than it was prior to the financial crisis. The gender gap in market income returned to its 2008 levels by 2015 and has remained close to this level in more recent years.

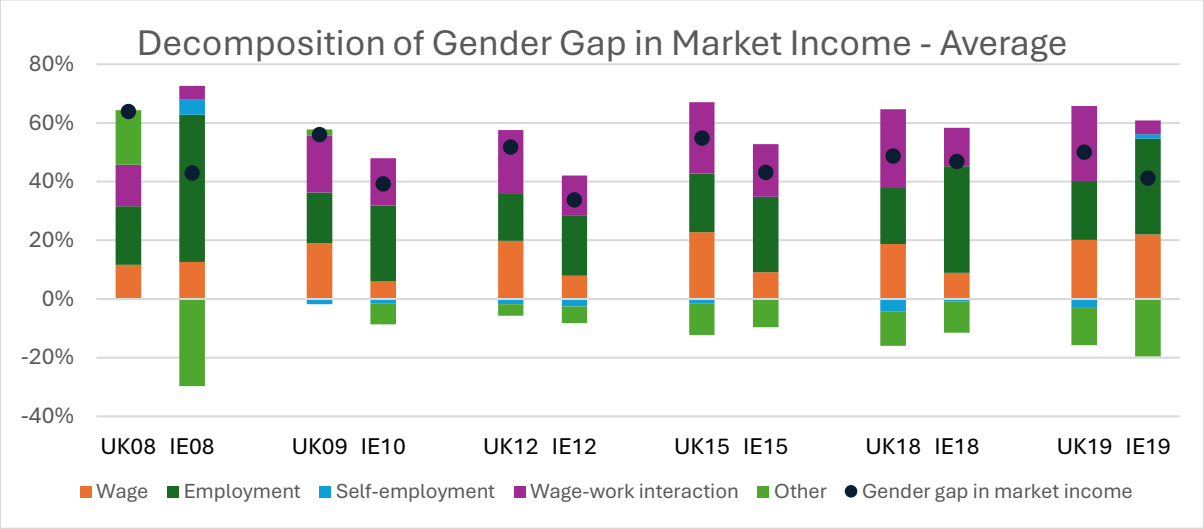
At the onset of the Great Recession the gender gap in market income was substantially larger in the UK compared to Ireland, at 64% in 2008. While, in Ireland, gender inequality in market income rose as the economy recovered, the UK has experienced a more consistent fall in market income inequality between men and women over time, apart from a small rise in 2015. By 2019, the gender gap in market income stood at 50%, substantially below its 2008 level, but

[8] While more data years are available for the UK, for comparison purposes this graph shows the results for 2008, 2009(UK)/10(IE), 2012, 2015, 2018 and 2019. The full table of results for all available years for the UK is shown in the appendix, Table 4.

still higher than the level in Ireland (41%). In terms of composition, the contribution of the gender gap in work hours to the gender income gap has remained relatively constant over time in the UK. The contribution of the gender gap in self-employment was negligible in 2008 in the UK and, though small, has consistently been negative since 2009 i.e. reducing the gender market income gap. This is in line with the trend in Figure 1: while, in Ireland, female self-employment rates have remained constant over time, in the UK, female self-employment rose from 8% to 11% of all female employment by 2019.

Since 2009 the hourly wage gap is of more importance in the UK than in Ireland with an equalisation in 2019. This is in line with the consistently higher raw wage gap between men and women in the UK compared to Ireland (Table 1) and with results from a similar exercise by Karina Doorley and Keane (2023) who found that, in 2017, the gender wage gap contributed almost twice as much to the gender gap in income in the UK compared to Ireland.

Figure 3: Decomposition of the Gender Gap in Individual Market Income – UK and IE



Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. The gender gap in average market income as a proportion of male disposable income (Gap_M) is split into the relative contributions of gender gaps in wages, employment (work hours), self-employment, the interaction between these three and "other" factors.

Figure 4 shows the gender gap in market income in each year and for each country by income decile.[9] The gender gap in market income in both countries is generally smallest in the lowest household income decile (10-20%) and increases as we move up the income distribution, with a particularly large gap in the highest household income decile in both the UK and Ireland. A change in pattern over time is clear in the two countries, however. In Ireland gender inequality in market income in the highest income decile dropped between 2008 and 2012 with the onset of the financial crisis before increasing to significantly above the 2008 level in more recent years. By contrast, in the UK, the overall decline in the gender gap in market income is driven

[9] Deciles are defined by equivalised household income, constructed using the modified OECD equivalence scale.

by the highest income decile, which witnesses a consistent fall in gender inequality in market income, from 80% in 2008 to 54% in 2019.

Figure 4: Gender Gap in Individual Market Income by Household Income Decile

Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. The gender gap in market income is expressed as a proportion of male disposable income at each income decile.

Figure 4 (and Figure 9 in the Appendix) shows the composition of the gender gap in market income across the income distribution. While gender gaps in market income are low in the bottom decile, we show that this is a result of countervailing forces. Gender differences in work hours and, to a lesser extent, self-employment are more important drivers of gender inequality in market income at the lower end of the income distribution, particularly in the lowest income decile. This is driven by lower female participation rates and higher prevalence of part-time work at the bottom of the income distribution[10]. The impact of these larger gender differences in work hours/self-employment are counteracted by 'other' factors such as demographics, non-labour income and unobservables. This suggests that those women in lower income deciles working no or few hours have relatively favourable labour market characteristics compared to men in the same income deciles. So, while the gender gap in wages, hours and self-employment increases the overall gender income gap substantially at the bottom of the income distribution, this is mitigated by the gender gap in labour market characteristics which is in favour of women, rather than men. This is also confirmed by the positive interaction coefficient, which indicates that women out of the labour market have relatively high potential wages and which is particularly large in the lowest two deciles.

[10] For example, given deciles are constructed using household income, couples with only one earner (usually the male) will be more likely to fall into lower income deciles than two-earner couples. It is also clear from Figure 5 that employment and self-employment gaps contribute significantly more to the gender gap in market income in the bottom decile.

As shown in Figure 5, the gender gap in market income increases as we move up the income deciles. The 'other' factors have less of a role to play in closing market income gaps in the middle of the income distribution, with gender differences in employment and self-employment continuing to be an important driver of the market income gap right up to decile 7.

Gender gaps in employee hourly wages play a relatively smaller role in Ireland but are important in the UK. They tend to be of significance especially for those in the middle-income and upper middle income deciles, with the exception of the 10th decile where the contribution turns negative and where capital income tends to contribute more to overall household income.[11] The contribution of the gender gap in hourly wages to the gender gap in market incomes remained relatively constant throughout the period, with small increases in the middle of the distribution.

The 'other' category, which captures demographic differences, differences in other income such as investment income, and the explained wage gap actually serve to substantially increase the gender market income gap at the very top of the income distribution in both countries. This pattern may be driven by non-labour income as international evidence on the gender wealth gap (which generates this type of income) shows that men tend to have significantly higher wealth holdings than women. These holdings are strongly correlated with employment and labour income, suggesting that they would be more substantial at higher income deciles (Merikuell, Kukk, & Room, 2021; Schneebaum, Rehm, Mader, & Hollan, 2018).

Figure 4 illustrated that, while in Ireland, the gender market income gap dipped in Decile 10 during the Great Recession, in the UK there has been a consistent decline in the gap in decile 10. Figure 5 shows that this is due to a strenthening of the countervailing effect of gender gaps in wages, work hours and self employment, likely driven by the rise in female employment and self-employment rates, and work hours between 2008 and 2018/19.

[11] This is likely a result of the matching procedure that we use to construct counterfactual income distributions. As individuals stay in their baseline decile, there is some reversion to the mean in the predicted wage of women in high income deciles.

Figure 5: Decomposition of the Individual Market Income Gap by Household Income Decile

Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. The gender gap in market income as a proportion of male disposable income at each income decile ($Gap_M(\tau)$) is split into the relative contributions of gender gaps in wages, employment (work hours), self-employment, the interaction between these three and "other" factors.

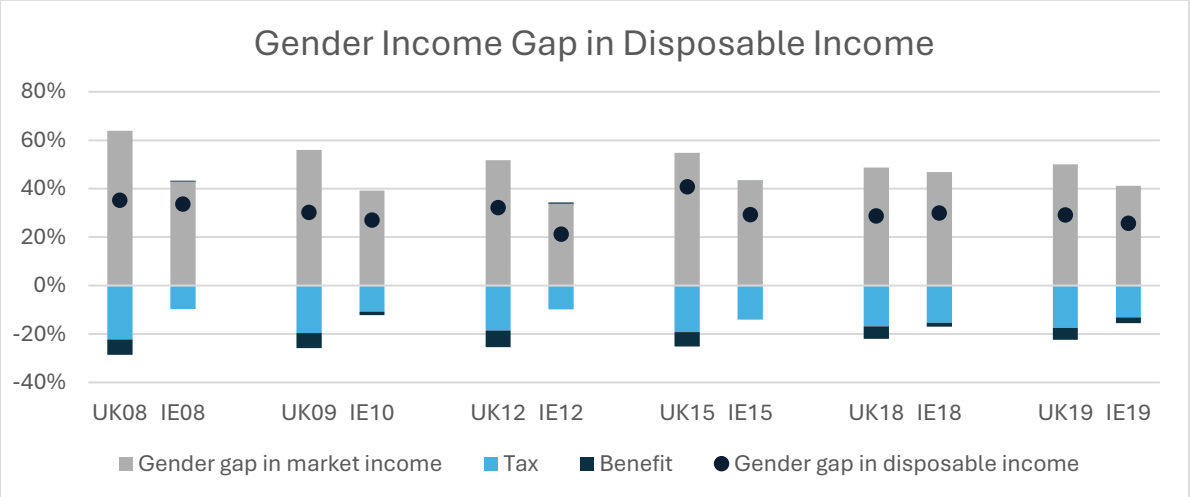
4.2 Redistribution between men and women by the tax-benefit system

We next examine the extent to which the tax-benefit system cushions the gender gap in market income.[12] The gender gap in disposable or post-tax and transfer income is smaller than the market income gap (see Figure 6) due to redistribution between men and women carried out by the tax-benefit system. While the gender gap in market income is larger in the UK than in Ireland (excluding 2018 when they are roughly equal), the cushioning effect of the tax-benefit system is larger in the UK so that in 2008, 2009/10, 2018 and 2019, the gender gap in disposable income in both countries is similar. In 2019, the gender gap in disposable income was 29% in the UK and 26% in Ireland, compared to market income gaps of 50 and 41% respectively, indicating that the tax-benefit system cushions the gender gap in market income by around two-fifths in both countries.

In the UK, the falling gender gap in disposable income is attributable to a downward trend in the gender market income gap, as the tax-benefit cushioning effect gradually weakened in the years following 2008. Overall, between 2008 and 2019, the gender gap in disposable income narrowed from 35% to 29%.

In Ireland, as with the gender gap in market income, the gender gap in disposable income fell during the financial crisis, from 34% in 2008 to a low of 21% in 2012. The recovery period following the financial crisis has been characterised by a slight rise in the gender gap in disposable income, driven mainly by a corresponding increase in the gender gap in market income but slightly mitigated by increased redistribution carried out by the tax and welfare system.

Figure 6: Gender Income Gap in Individual Disposable Income and the Cushioning Effect of the Tax-Benefit System

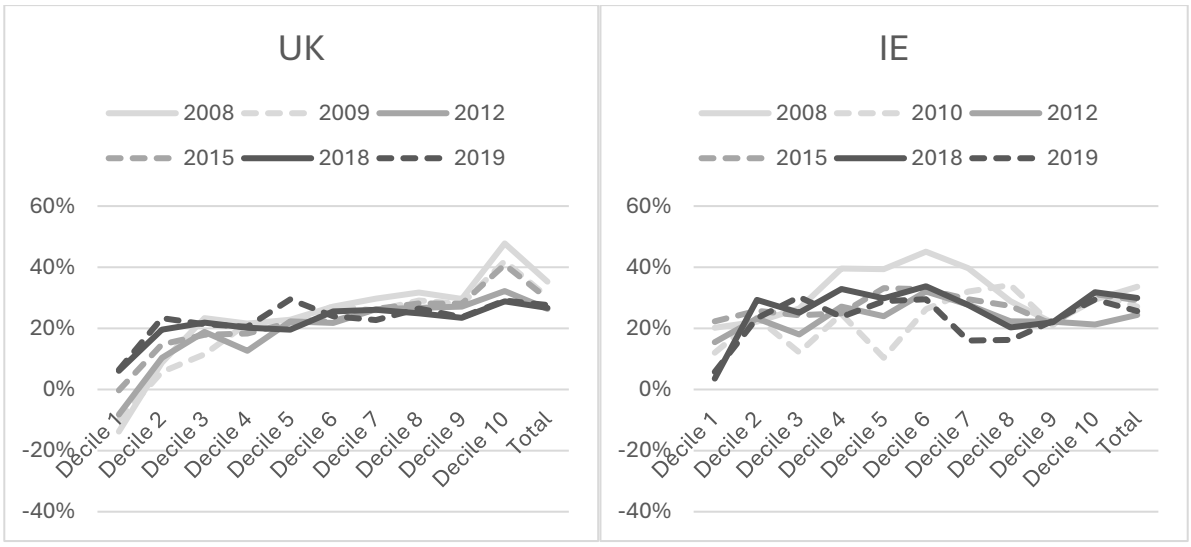


Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. The gender gap in disposable income as a proportion of male disposable income (Gap_D) is split into the relative contributions of the gender gap in market income, tax liabilities and benefit entitlement.

[12] While more data years are available for the UK, for comparison purposes this graph shows the results for 2008, 2009(UK)/10(IE), 2012, 2015, 2018 and 2019. The full table of results for all available years for the UK is shown in the appendix, Table 4.

As shown in Figure 7, and in line with market income patterns (see Figure 4), gender gaps in disposable income tend to be higher at the upper end of the income distribution in the UK. In Ireland, gender gaps in disposable income tended to be more even across middle and higher income deciles. The UK has seen a flattening of the income gradient of gender income inequality in 2018 and 2019 however, driven by a fall in the gender gap in disposable income in the 10th decile. This effect in the UK is driven mainly by a similar 'flattening' of the gradient of gender inequality in market income (see Figure 10).

Figure 7: Gender gap in individual disposable income by household income decile



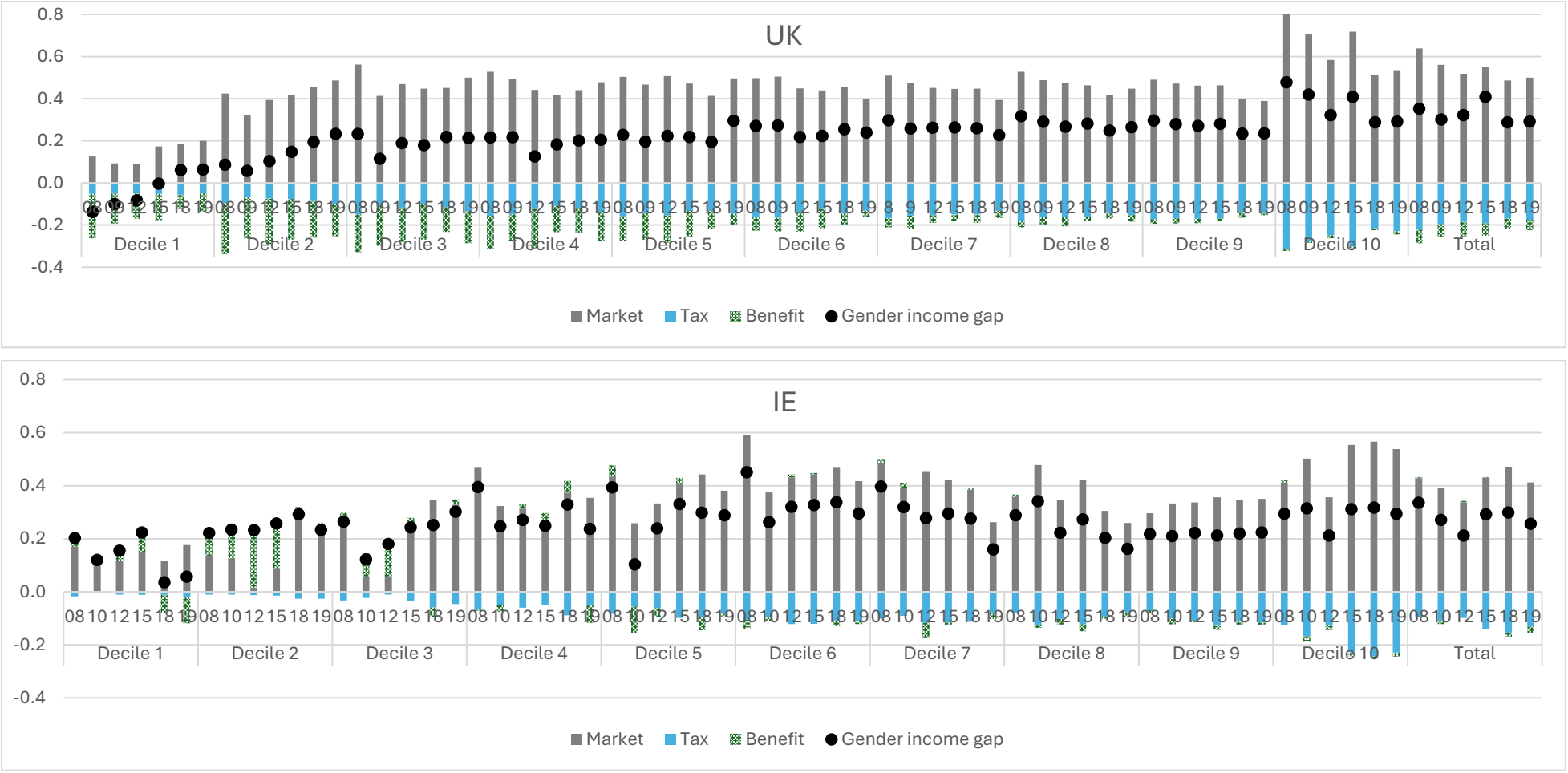
Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. The gender gap in disposable income is expressed as a proportion of male disposable income at each income decile.

Figure 8 (and Figure 10 in the Appendix) show the role that the tax and welfare system in each country plays in shaping gender income inequality across the income distribution. In both countries, the tax system has a more important role to play in closing the gender income gap than welfare. Given the progressive nature of the income tax systems in both countries, the role of taxation becomes more important in reducing gender income inequality as we move up the income distribution. This pattern, however, has changed over time. In Ireland the tax system has become more redistributive between men and women given the range of increases in taxation discussed in Section 2 (and visible in Figure 6). In the UK, by contrast, the role of the tax system in cushioning gender income differences weakened post-2008 and, for the highest income decile, after 2015.

The role of the welfare system in the gender gap in disposable income is stronger at the bottom of the income distribution but the direction of the effect differs in the two countries– in the UK the welfare system reduces the gender income gap and its effect is substantial up to the middle of the income distribution. Notwithstanding this, the cushioning nature of benefits has fallen in the UK over time as a result of various cuts and freezes to means-tested benefits implemented

since 2008/2009 (see Section 2). For instance, in the bottom decile it fell from 21% in 2008 to 9% in 2019. In Ireland the welfare system tends to increase the gender gap in disposable income in lower income deciles, particularly in the early years of our analysis. This is in line with findings from Avram and Popova (2022) and EIGE (2024) which show that the benefit systems in many EU countries do not reduce the average gender income gap as married and cohabiting women often have low entitlement to welfare if it is means-tested based on household (rather than individual) income. The effect is more muted or reversed in the later years of our analysis when austerity cuts and freezes to welfare began to be relaxed in Ireland.

Figure 8 Decomposing the cushioning effect of the tax-benefit system on the gender gap in individual disposable income



Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. The gender gap in disposable income as a proportion of male disposable income at each income decile ($Gap_D(\tau)$) is split into the relative contributions of the gender gap in market income, tax liabilities and benefit entitlement.

5. Discussion

This paper has examined the gender gap in income in a historical and cross-country perspective. First, we have estimated the components of the gender gap in market – or pre-tax and transfer – income, distinguishing between income differences attributable to employee work hours, hourly wages, self-employment and other factors for men and women. Second, we have estimated the role of the tax and welfare system in closing this gap. In each part of the analysis, we have provided a distributional perspective, enhancing previous work which focused on average income gaps.

Despite significant convergence between the employment structure and wages of men and women, the gender gap in market income is substantial in both Ireland and the UK. There has been a downward trend in the market income gap in the UK over time: it fell from 64% to 50% between 2008 and 2019. The gender gap in market income in Ireland, while systematically lower, has changed less over this time period, falling from 43% to 41% between 2008 and 2019. In both countries, the gender gap in market income tends to be higher at higher income deciles.

Gender differences in employee work hours and self-employment are the most important drivers of gender inequality in market income at the lower end of the income distribution, particularly in the lowest income decile. This is likely to be driven by lower female participation rates and higher rates of part-time employment at the bottom of the income distribution. In the top income decile, 'other' factors such as demographic differences, differences in capital income, and the explained gender wage gap are much more significant contributors to the market income gap.

While the gender gap in market income is generally larger in the UK than in Ireland (excluding 2018 when they were roughly equal), the cushioning effect of the tax-benefit system is larger in the UK so that the gender gap in disposable income in both countries is similar. In 2019, the gender gap in disposable income was 29% in the UK and 26% in Ireland, indicating that the tax-benefit system reduces the gender gap in income by around 40% in both countries.

The degree to which the tax-benefit system cushions the gender gap in income has changed over time. In the UK, the cushioning effect gradually weakened in the years following 2008. In Ireland, the opposite is true as there has been increased redistribution carried out by the tax and welfare system. In both countries, the tax system has a more important role to play in closing the gender income gap than welfare. Given the progressive nature of the income tax systems in both countries, the role of taxation becomes more important in reducing gender income inequality as we move up the income distribution. This pattern, however, has changed over time. In Ireland the tax system has become more redistributive between men and women, given the range of increases in taxation enacted during the financial crisis while, in the UK, the role of the tax system in cushioning gender income differences weakened from 2009 onwards and, for the highest income decile, after 2015. This effect may be directly related to the reduction in gender inequality in market income which occurred at the same time and the austerity measures.

The role of the welfare system in the gender gap in disposable income is stronger at the bottom of the income distribution but the direction of the effect differs in the two countries – in the UK it helps to slightly close the gender income gap in market incomes while in Ireland it actually increases it. EIGE

(2024) in a study of the EU-27, estimate that while benefits cushion the gender gap in income among singles, they provide little cushioning of the gender income gap for married and cohabiting women if they are means-tested based on household (rather than individual) income. This suggests that the (negative) effect of benefits on the gender income gap among married individuals dominates the (positive) effect among singles in Ireland, but not in the UK.

An examination of the financial incentive to work reveals that these are similar in each country in 2019 (Figure 11). Participation tax rates (PTRs), which measure the financial incentive to join the labour market, have decreased in both countries (substantially so in Ireland) between 2008 and 2019, indicating an increase in the financial incentive to enter work. Marginal Effective Tax rates, which measure the financial incentive to work or earn more, increased during the financial crisis. They fell to pre-crisis levels in the UK by 2019 but remained elevated in Ireland. This indicates a similar incentive to increase work effort in the UK but a lower incentive to do so in Ireland, compared to 2008. The strong increase in financial incentives to join the labour market over time is consistent with the fall in the gender gap in market income in each country.

These findings provide useful historical context for how gender gaps in income can be reduced. Most of the progress achieved on this front in the UK and Ireland between 2008 and 2019 was achieved through reductions in the market income gap rather than through increased redistribution by the tax-benefit system. While the hourly wage gap receives much attention, the gender gap in employment structure contributes as much (in the UK) or more (in Ireland) to gender income inequality. This is in line with the results for similar Western-European countries provided in De Poli and Maier (2022). Additionally, the fall in the gender gap in market income experienced in the UK and Ireland between 2008 and 2018 was mainly driven by decreasing gender gaps in work hours and self-employment. These trends coincided with a period of increasing financial incentives to work through tax-benefit reform. Given the stubbornly high gender gaps in hours worked and self-employment in the UK and Ireland and elsewhere, policies that seek to align the employment rate and work hours of men and women (for example a full move to individual taxation in Ireland and increased childcare supports in both countries) may continue to have a substantial impact on the gender income gap in the future. Measures such as these, along with continued cultural shifts in attitudes towards female employment and caregiving, will also decrease the gender wage gap through increased female labour market attachment, which will have knock-on effects on the gender income gap, particularly in the UK.

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Appendix 1

Table 2: Main Tax-Benefit Parameters 2008-2019 – UK

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CPI (2008=100%)	100.0	102.2	105.5	110.3	113.5	116.3	118.1	118.1	118.9	122.1	125.0	127.3
Wage index (2008=100%)	100.0	101.8	103.7	105.6	106.9	108.4	109.7	112.3	115.1	117.8	121.5	125.3
Minimum Wage, per hour (1)	£5.7	£5.8	£5.9	£6.1	£6.2	£6.3	£6.5	£6.7	£7.2	£7.5	£7.8	£8.2
Tax												
Rates												
Personal allowance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Basic rate	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Higher rate	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Additional rate	N/A	N/A	50%	50%	50%	45%	45%	45%	45%	45%	45%	45%
Tax allowances												
Personal Allowance - under 65 years old, per year (2)	£6,035	£6,475	£6,475	£7,475	£8,105	£9,440	£10,000	£10,600	N/A	N/A	N/A	N/A
Standard Personal allowance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	£11,000	£11,500	£11,850	£12,500
Upper income limit	N/A	N/A	£100,000	£100,000	£100,000	£100,000	£100,000	£100,000	£100,000	£100,000	£100,000	£100,000
Taper rate	N/A	N/A	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Bands												
Higher rate threshold (3)	£34,800	£37,400	£37,400	£35,000	£34,370	£32,010	£31,866	£31,785	£32,000	£33,500	£34,500	£37,500
Additional rate threshold	N/A	N/A	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000	£150,000
Social Insurance												
Class 1 (employee)												
Primary Threshold (PT), per week	£105	£110	£110	£139	£146	£149	£153	£155	£155	£157	£162	£166
Upper Earnings Limit (UEL), per week	£770	£844	£844	£817	£817	£797	£805	£815	£827	£866	£892	£962
Rates:												

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Below PT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Between PT and UEL:												
Non contracted out	11%	11%	11%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Contracted out	9.4%	9.4%	9.4%	10.4%	10.6%	10.6%	10.6%	10.6%	12.0%	12.0%	12.0%	12.0%
Above UEL	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Class 2 (self-employed)												
Small Earnings Exception, per year	£4,825	£5,075	£5,075	£5,315	£5,595	£5,725	£5,885	£5,965	£5,965	£6,025	£6,205	£6,365
Flat rate, per week	£2.30	£2.40	£2.40	£2.50	£2.65	£2.70	£2.75	£2.80	£2.80	£2.85	£2.95	£3.00
Class 4 (self-employed)												
Lower Profits Limit (LPL) / annual	£5,435	£5,715	£5,715	£7,225	£7,605	£7,755	£7,956	£8,060	£8,060	£8,164	£8,424	£8,632
Upper Profits Limit (ULP) / annual	£40,040	£43,875	£43,875	£42,475	£42,475	£41,450	£41,865	£42,385	£43,000	£45,000	£46,350	£50,000
Rates:												
Rate between LPL and UPL	8%	8%	8%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Rate above UPL	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Employer SIC												
Secondary Threshold (ST)	£105	£110	£110	£136	£144	£148	£153	£156	£156	£157	£162	£166
Rates:												
Non contracted out rate above ST	12.8%	12.8%	12.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%
Contracted out rate between ST and UEL	9.1%	9.1%	9.1%	10.1%	10.4%	10.4%	10.4%	10.4%	13.8%	13.8%	13.8%	13.8%
Contracted out rate above UEL	12.8%	12.8%	12.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%

Social Welfare

Non means-tested benefits												
Winter fuel allowance, per year												
60-79 years	£200	£250	£250	£200	£200	£200	£200	£200	£200	£200	£200	£200

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
80+ years	£300	£400	£400	£300	£300	£300	£300	£300	£300	£300	£300	£300
Contributory Jobseeker's Allowance, per week												
25 or over	£60.5	£64.3	£66.5	£67.5	£71.0	£71.7	£72.4	£73.1	£73.1	£73.1	£73.1	£73.1
Maternity Allowance / Statutory Maternity Pay standard rate, per week									£139.6	£141.0	£145.2	£148.7
Child benefit, per week (4)												
only (eldest) child	£18.8	£20.0	£20.3	£20.3	£20.3	£20.3	£20.5	£20.7	£20.7	£20.7	£20.7	£20.7
other children	£12.6	£13.2	£13.4	£13.4	£13.4	£13.4	£13.6	£13.7	£13.7	£13.7	£13.7	£13.7
Means-tested benefits												
Working tax Credit (WTC), per year												
basic element	£1,800	£1,890	£1,920	£1,920	£1,920	£1,920	£1,940	£1,960	£1,960	£1,960	£1,960	£1,960
Child Tax Credit (CTC), per year												
family element	£545	£545	£545	£545	£545	£545	£545	£545	£545	£545	£545	£545
child element	£2,085	£2,235	£2,300	£2,555	£2,690	£2,720	£2,750	£2,780	£2,780	£2,780	£2,780	£2,780
Income support (IS) / income based JSA / Income-based Employment and Support Allowance (ESA), per week												
single 25 or over	£60.5	£64.3	£65.5	£67.5	£71.0	£71.7	£72.4	£73.1	£73.1	£73.1	£73.1	£73.1
couple both over 18	£95.0	£101.0	£102.8	£106.0	£111.5	£112.6	£113.7	£114.9	£114.9	£114.9	£114.9	£114.9
Pension Credit Minimum Guarantee, per week	£124.0	£130.0	£132.6	£137.4	£142.7	£145.4	£148.4	£151.2	£155.6	£159.4	£163.0	£167.3

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
single person	£189.4	£198.5	£202.4	£209.7	£217.9	£222.1	£226.5	£230.9	£237.6	£243.3	£248.8	£255.3
couple												
Housing Benefit (5), per week												
Single pensioner 65 or over	£143.8	£150.4	£153.2	£157.9	£161.3	£163.5	£165.2	£166.1	£168.7	£172.6	£176.4	£181.0
Pensioner couple one or both 65 or over	£215.5	£225.5	£229.5	£236.8	£241.7	£245.0	£247.2	£248.3	£252.3	£258.2	£263.8	£270.6
Universal Credit standard allowance, per month												
single claimant over 25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	£317.8	£317.8	£317.8	£317.8
joint claimants (couples) either over 25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	£498.9	£498.9	£498.9	£498.9
Benefit cap (6), per year												
singles	N/A	N/A	N/A	N/A	N/A	£18,200	£18,200	£18,200	£18,200	£23000 / £20000	£23000 / £20000	£23000 / £20000
Couples	N/A	N/A	N/A	N/A	N/A	£26,000	£26,000	£26,000	£26,000	£15410 / £13400	£15410 / £13400	£15410 / £13400

(1) Hourly rate for 22+ years (2008/09), 21+ years (2010/15), 25+ years (2016/19)

(2) Since 2013, additional age allowance are phased out by restricting then to current beneficiaries by increasing the age thresholds by one year each year.

(3) Since 2017, the Scottish Government has had the ability to set different income tax rates and thresholds from those in the rest of the UK.

(4) Means-tested from 2013

(5) The rates for personal allowances and premia are mainly the same as for IS/income-based JSA for claimants under 60.

(6) From 2017 different caps apply to London and out of London areas

Table 3: Main Tax-Benefit Parameters 2008-2019 - Ireland

	2008	2009(1)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CPI (2008=100%)	100	95	96.3	98.8	100	100.2	99.9	100	100	100.4	101.1	102.4
Wage index (2008=100%)	100.0	100.1	98.7	97.5	98.1	97.8	98.0	99.2	100.5	102.4	105.7	109.6
Minimum Wage, per hour	€8.65	€8.65	€8.65	€8.65 (2)	€8.65	€8.65	€8.65	€8.65	€9.15	€9.25	€9.55	€9.80
						Tax						
Rates												
Lower rate	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Higher rate	41%	41%	41%	41%	41%	41%	41%	41%	40%	40%	40%	40%
Tax Credits												
Personal tax credit (single - doubled if married)	€1,830	€1,830	€1,830	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650
Employee/PAYE tax credit	€1,830	€1,830	€1,830	€1,830	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650	€1,650
Widowed tax credit	€600	€600	€600	€540	€540	€540	€540	€540	€540	€540	€540	€540
Widowed child tax credit	€1,230	€1,230	€1,230	€1,100	€1,100	€1,100	€1,100	€1,100	€1,100	€1,100	€1,100	€1,100
Home carer tax credit (max)	€900	€900	€900	€900	€900	€900	€900	€900	€1,200	€1,500	€1,200	€1,500
Age tax credit	€325	€325	€325	€245	€245	€245	€245	€245	€245	€245	€245	€245
Bands												
Single	€35,400	€36,400	€36,400	€32,800	€32,800	€32,800	€32,800	€33,800	€33,800	€33,800	€34,550	€35,300
One-earner couple	€44,400	€45,400	€45,400	€41,800	€41,800	€41,800	€41,800	€42,800	€42,800	€42,800	€43,550	€44,300
Two-earner couple	€70,800	€72,800	€72,800	€65,600	€65,600	€65,600	€65,600	€67,600	€67,600	€67,600	€69,100	€70,600
Lone Parents	€39,400	€40,400	€40,400	€36,800	€36,800	€36,800	€36,800	€36,800	€37,800	€37,800	€38,550	€39,300
Other:												
Universal Social Charge (Income Levy in 2009/2010)	-	2-6%	2-6%	2-10%	2-10%	2-10%	2-10%	2-11%	1-11%	0.5-11%	0.5-11%	0.5-11%
USC exemption limit (annual)	-	€15,028	€15,028	€4,004	€10,036	€10,036	€10,036	€12,012	€13,000	€13,000	€13,000	€13,000
Property Tax (annual) % of May 2013 value	-	-	-	-	€100 (flat rate)	.09% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m	.18% <€1m/ .25% >€1m

	2008	2009(1)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
						Social Insurance (PRSI)						
Class S (Self Employed)												
Rate	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Exemption limit (annual)	€3,174	€3,174	€3,174	€5,000	€5,000	€5,000	€5,000	€5,000	€5,000	€5,000	€5,000	€5,000
Employee (Class A)												
Rate	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Exemption limit (weekly)	€352	€352	€352	€352	€352	€352	€352	€352	€352	€352	€352	€352
Ceiling	€50,700	€75,036	€75,036	-	-	-	-	-	-	-	-	-
Credit (3)	-		-	-	-	-	-	-	12	12	12	12
Employer SI:												
Rate 1 < threshold)	8.50%	8.50%	8.50%	8.50%	4.25%	4.25%	8.50%	8.50%	8.50%	8.50%	8.60%	8.70%
Rate 2 (> threshold)	10.75%	10.75%	10.75%	10.75%	10.75%	10.75%	10.75%	10.75%	10.75%	10.75%	10.85%	10.95%
Threshold (weekly)	€356	€356	€356	€356	€356	€356	€356	€356	€376	€376	€376	€386
						Social Welfare						
Pensions:												
State Pension (contributory)	€223.30	€230.30	€230.30	€230.30	€230.30	€230.30	€230.30	€230.30	€233.30	€238.30	€243.30	€248.30
State Pension (contributory) - Increase for a qualified adult (>/< retirement age)	€148.80/200	€153.50/ 206.30	€153.50/ 206.30	€153.50/ 206.30	€153.50/ 206.30	€153.50/ 206.30	€153.50/ 206.30	€153.50/ 206.30	€155.50/ 209	€158.80/ 213.50	€162.10/2 18	€165.40/ 222.50
State Pension (non-contributory)	€212	€219	€219	€219	€219	€219	€219	€219	€222	€227	€232	€237
State Pension (non-contributory) - Increase for a qualified adult	€140.10	€144.70	€144.70	€144.70	€144.70	€144.70	€144.70	€144.70	€146.70	€150	€153.30	€156.60
Aged 80 increase (4)	€10	€10	€10	€10	€10	€10	€10	€10	€10	€10	€10	€10
Living Alone Increase (5)	€7.70	€7.70	€7.70	€7.70	€8	€8	€8	€8	€9	€9	€9	€9
Working-Age:												
Main Payments (6) - Personal Rate	€197.80	€204.30	€196	€188	€188	€188	€188	€188	€188	€193	€198	€203

	2008	2009(1)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Main Payments - Increase for a qualified adult	€131.30	€135.60	€130.10	€124.80	€124.80	€124.80	€124.80	€124.80	€124.80	€128.10	€131.40	€134.70
Main Payments - Increase for a qualified child (8)	€24	€26	€29.80	€29.80	€29.80	€29.80	€29.80	€29.80	€29.80	€29.80	€31.80	€34/€37
Working Family Payment (in-work benefit) - *60% difference between families income and the income limit*												
Minimum Payment	€20	€20	€20	€20	€20	€20	€20	€20	€20	€20	€20	€20
Income limits (varies with number of children)	€465-905	€465- 905	€465- 905	€465 -905	€506-1,298	€506-1,298	€506-1,298	€506-1,298	€511-1,308	€511-1,308	€511-1,308	€511-1,308
Child Related												
Child benefit (monthly) - 1st/2nd child	€166	€166	€150	€140	€140	€130	€130	€135	€140	€140	€140	€140
Child benefit (monthly) -3rd child	€203	€203	€187	€167	€148	€130	€130	€135	€140	€140	€140	€140
Child benefit (monthly) -4th child +	€203	€203	€187	€177	€160	€140	€130	€135	€140	€140	€140	€140
Maternity Benefit (9)	€221.80-€280	€230.30-€280	€225-€271	€225-€271	€217.80-€262	€217.80-€263	€230	€230	€230	€235	€240	€245

1) There were multiple Budgets in 2009, rates as at June.

(2) The minimum wage was briefly cut from €8.65 to €7.65 in February 2011 but was reinstated at €8.65 in July 2011

(3) A tapered PRSI credit for Class A contributions was introduced in 2016. It is equal to €12 less one-sixth of weekly earnings above the exemption limit

(4) This is the increase in pension payment for those aged 80 or above

(5) This is the increase in payment to those in receipt of certain social welfare payments if living alone

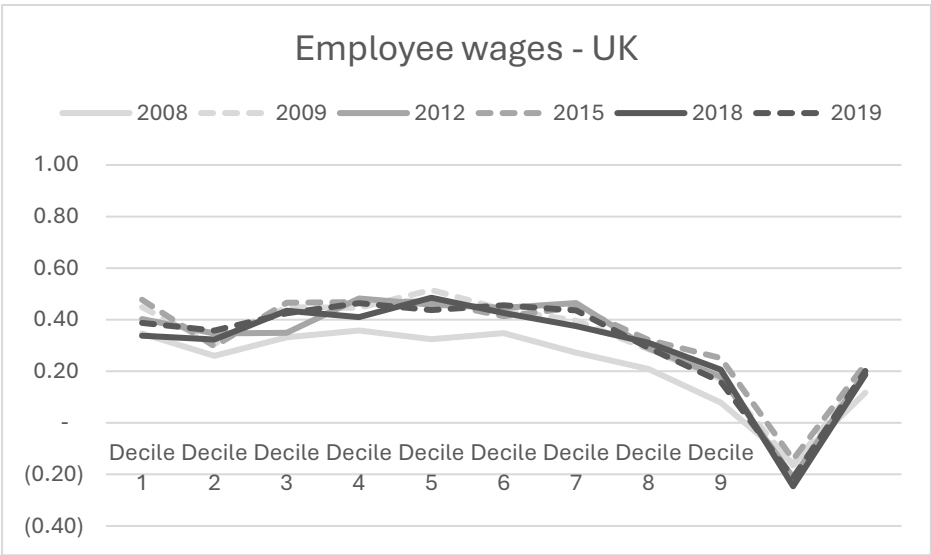
(6) Disability Allowance; Injury Benefit, Jobseeker's Allowance (7); Jobseekers Benefit; One-Parent Family Payment;

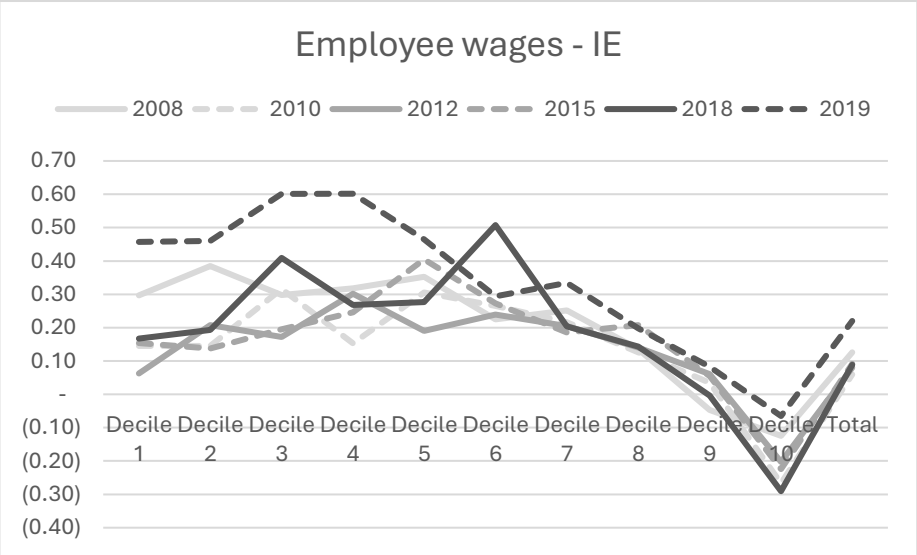
(7) These are the rates for those aged 25+ - in 2009 lower rates were introduced for those younger than this.

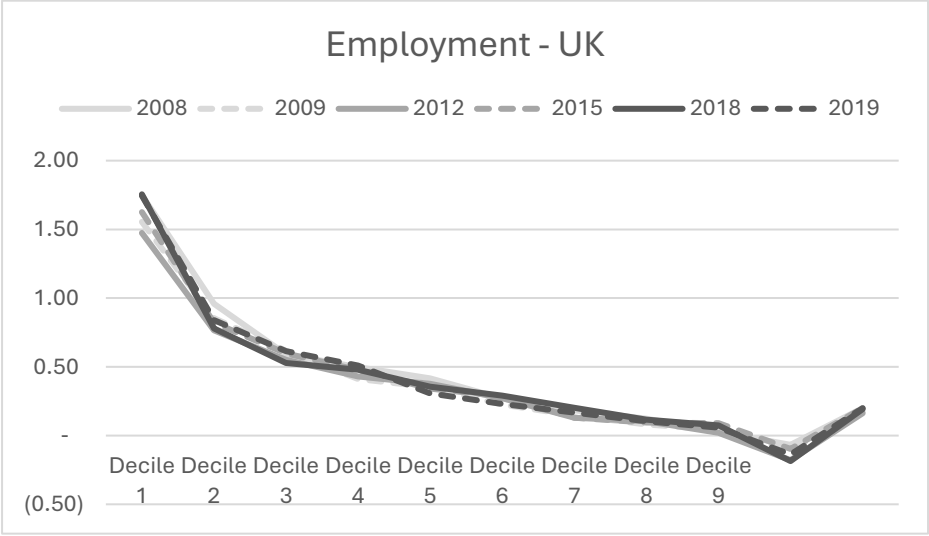
(8) In 2019 different increases for quaified children were introduced for those </>12.

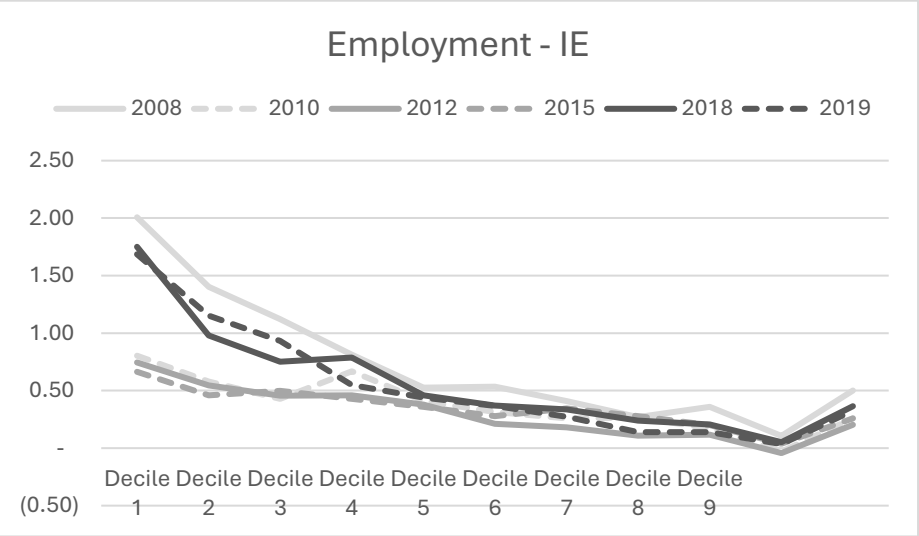
(9) Up to 2013 Maternity Benefit was 80% of pre-birth salary subject to these minimum/maximums. The rate was then harmonised to a flat-rate.

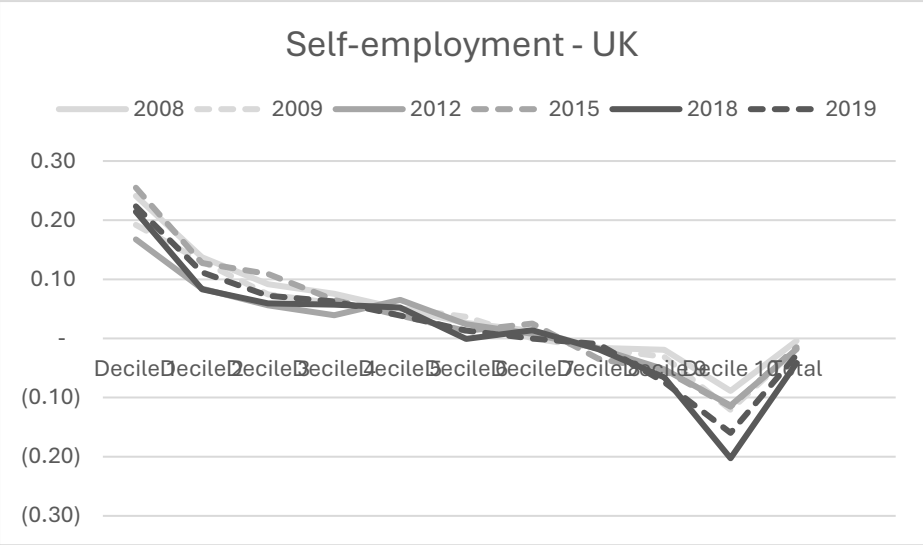
Figure 9 Decomposing the gender gap in individual market income across the income distribution and over time

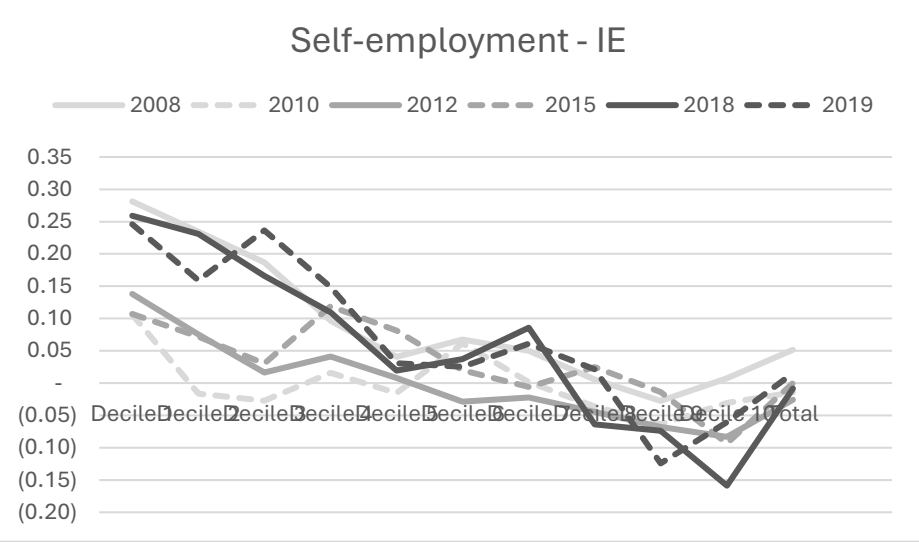


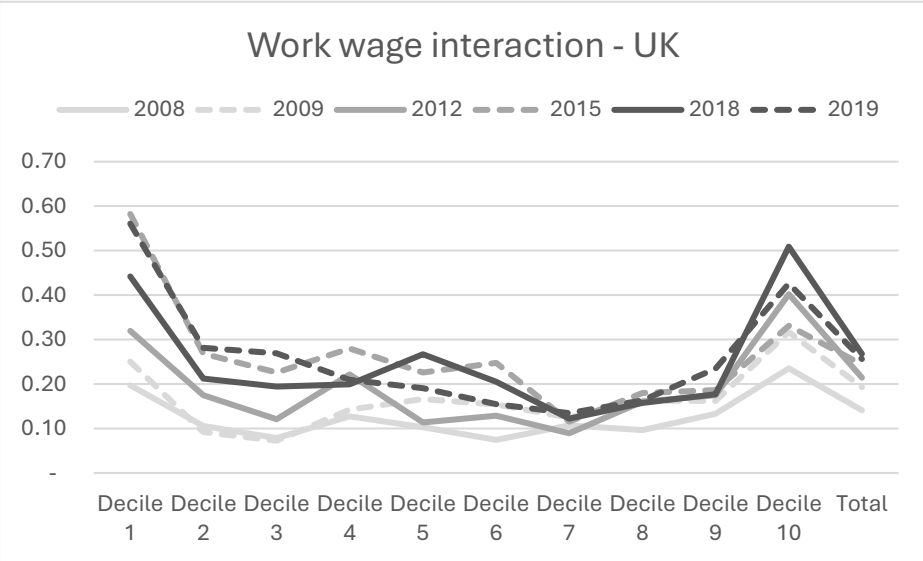


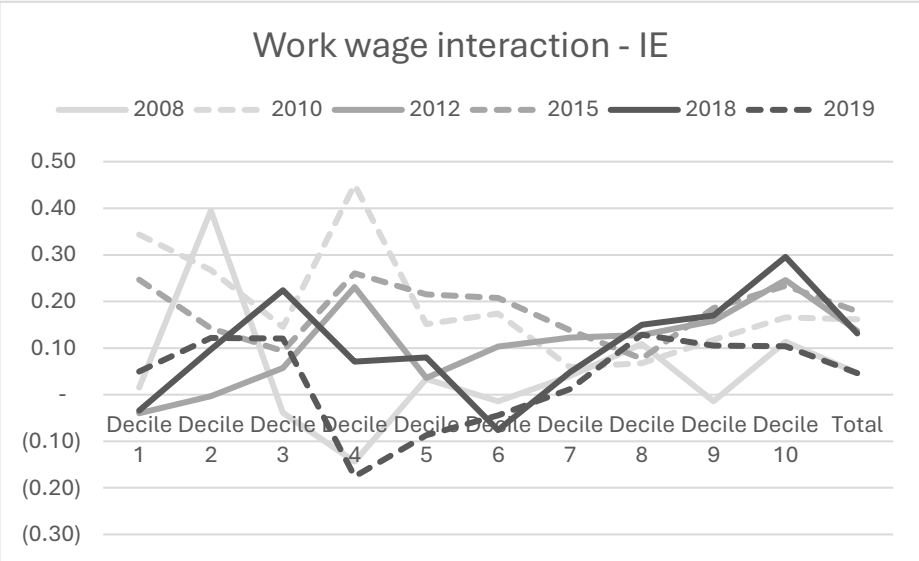


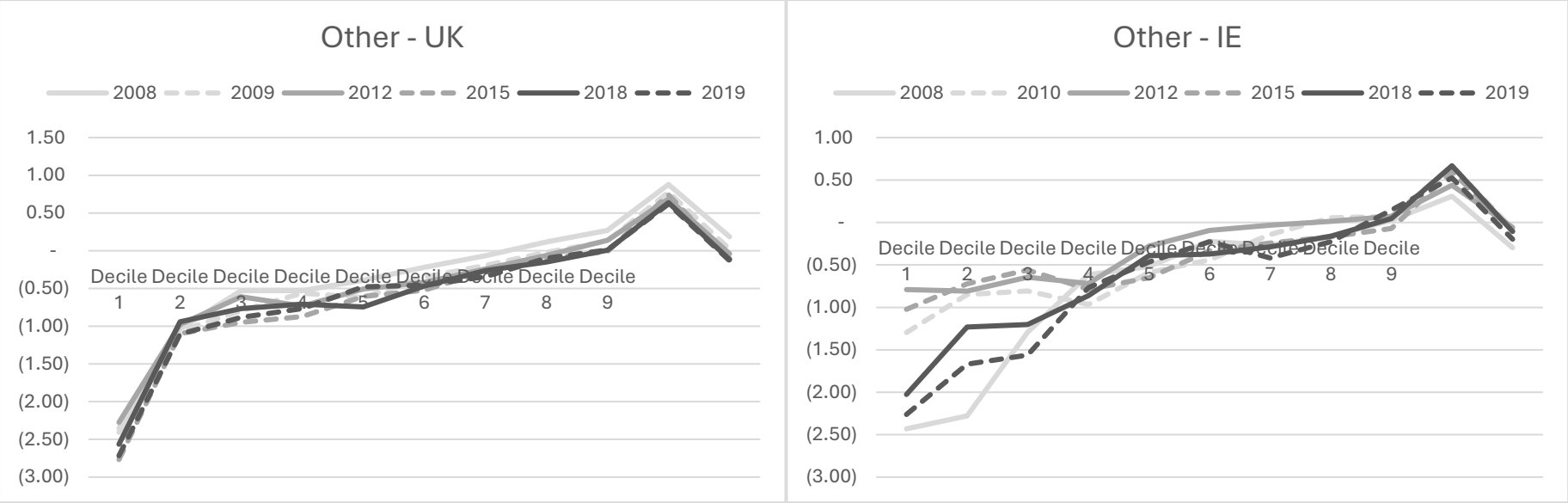



Self-employment - UK
2008
2009
2012
2015
2018
2019
0.30
0.20
0.10
-
(0.10)
(0.20)
(0.30)
Decile 1
Decile 2
Decile 3
Decile 4
Decile 5
Decile 6
Decile 7
Decile 8
Decile 9
Decile 10
Total


Self-employment - IE
2008
2010
2012
2015
2018
2019
0.35
0.30
0.25
0.20
0.15
0.10
0.05
-
(0.05)
(0.10)
(0.15)
(0.20)
Decile 1
Decile 2
Decile 3
Decile 4
Decile 5
Decile 6
Decile 7
Decile 8
Decile 9
Decile 10
Total

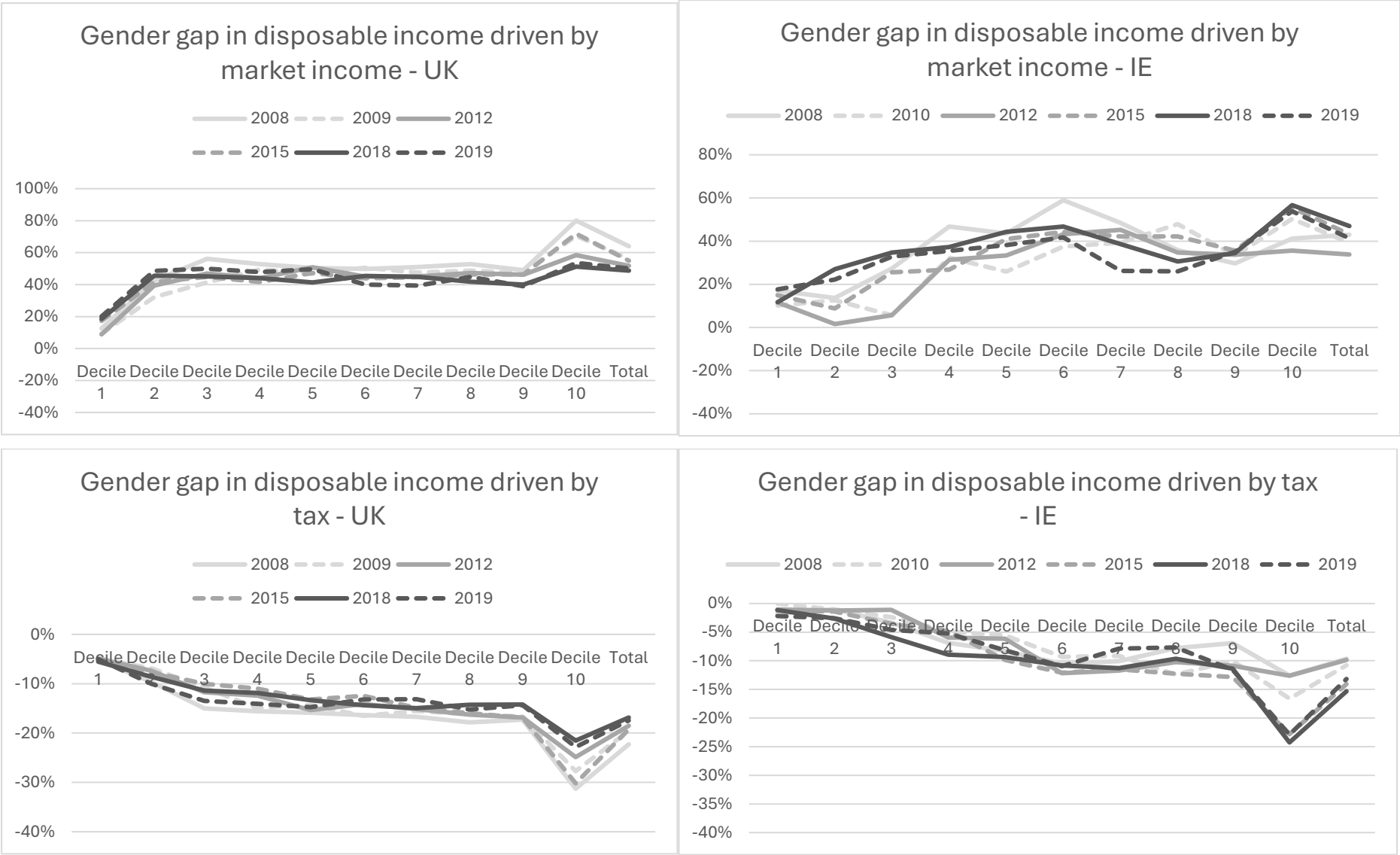

Work wage interaction - UK
2008
2009
2012
2015
2018
2019
0.70
0.60
0.50
0.40
0.30
0.20
0.10
-
Decile 1
Decile 2
Decile 3
Decile 4
Decile 5
Decile 6
Decile 7
Decile 8
Decile 9
Decile 10
Total

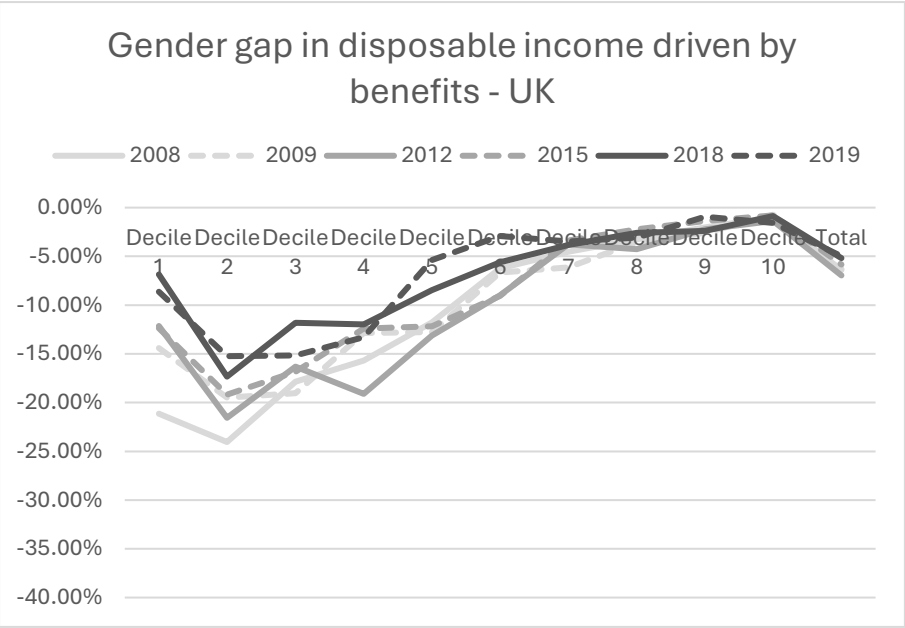

Work wage interaction - IE
2008
2010
2012
2015
2018
2019
0.50
0.40
0.30
0.20
0.10
-
(0.10)
(0.20)
(0.30)
Decile 1
Decile 2
Decile 3
Decile 4
Decile 5
Decile 6
Decile 7
Decile 8
Decile 9
Decile 10
Total

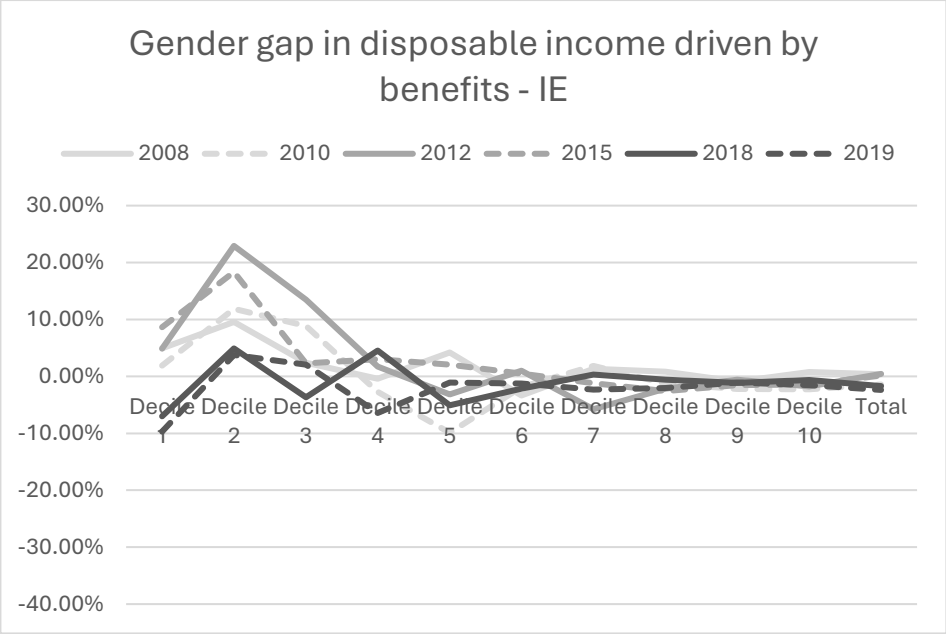


Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. Graphs show the relative contributions of gender gaps in wages, employment, self-employment, the interaction between these three and "other" factors to the gender gap in market income as a proportion of male disposable income at each income decile ($Gap_M(\tau)$) .

Figure 10 The gender gap in individual disposable income across the income distribution - tax-benefit role







Notes: Own calculations using EUROMOD for Ireland and UKMOD for the UK. Income deciles are defined by equivalised household income using the modified OECD equivalence scale. Graphs show the relative contributions of gender gaps in market income, tax liabilities and benefit entitlement to the gender gap in disposable income as a proportion of male disposable income at each income decile ($Gap_D(\tau)$).

Table 4: Gender Gap in Disposable and Market Incomes, UK

	Gender gap in market income	*Wage*	*Employment*	*Self-employment*	*Wage-work interaction*	*Other*	Gender Gap in Disposable income	*Market*	*Tax*	*Benefit*
2008	64%	*12%*	*20%*	*0%*	*14%*	*19%*	35%	*64%*	*-22%*	*-6%*
2009	56%	*19%*	*17%*	*-2%*	*19%*	*2%*	30%	*56%*	*-20%*	*-6%*
2012	52%	*20%*	*16%*	*-2%*	*21%*	*-4%*	32%	*52%*	*-18%*	*-7%*
2013	51%	*21%*	*19%*	*-2%*	*24%*	*-11%*	32%	*51%*	*-18%*	*-7%*
2014	53%	*19%*	*19%*	*-2%*	*23%*	*-6%*	35%	*53%*	*-19%*	*-6%*
2015	55%	*23%*	*20%*	*-1%*	*24%*	*-11%*	41%	*55%*	*-19%*	*-6%*
2016	52%	*11%*	*18%*	*-3%*	*22%*	*5%*	36%	*52%*	*-18%*	*-6%*
2017	52%	*19%*	*19%*	*-2%*	*25%*	*-9%*	31%	*52%*	*-18%*	*-6%*
2018	49%	*19%*	*19%*	*-4%*	*27%*	*-12%*	29%	*49%*	*-17%*	*-5%*
2019	50%	*20%*	*20%*	*-3%*	*26%*	*-13%*	29%	*50%*	*-17%*	*-5%*

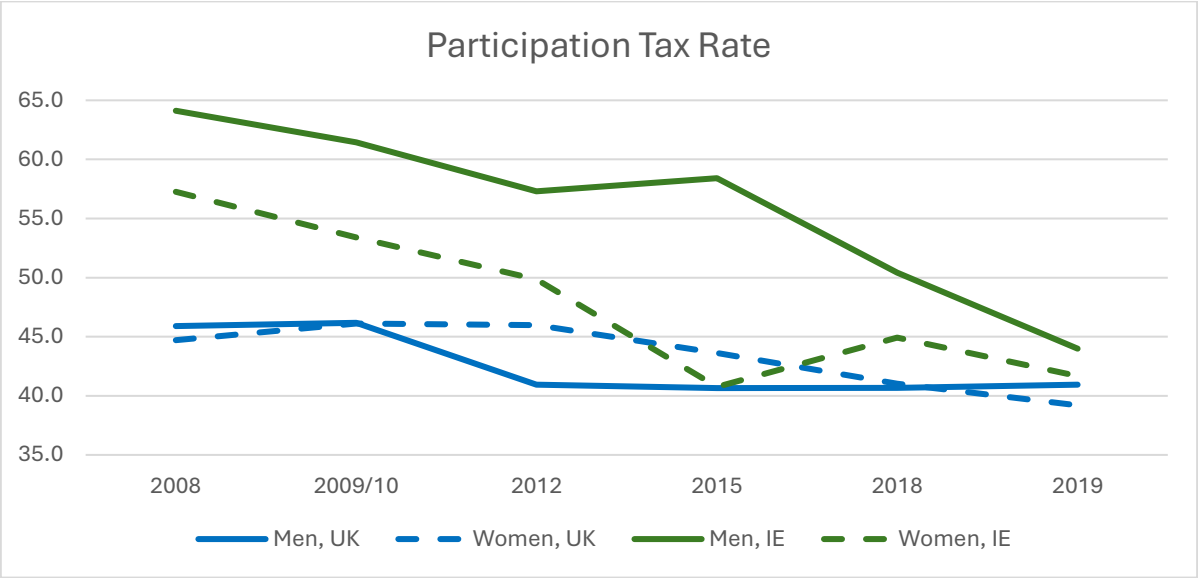
Notes: Own calculations using UKMOD. The gender gap in market income, Gap_M, is split into the relative contributions of gender gaps in wages, employment, self-employment, the interaction between these three and "other" factors. The gender gap in disposable income is split into the relative contributions of gender gaps in market income, tax liabilities and benefit entitlement.

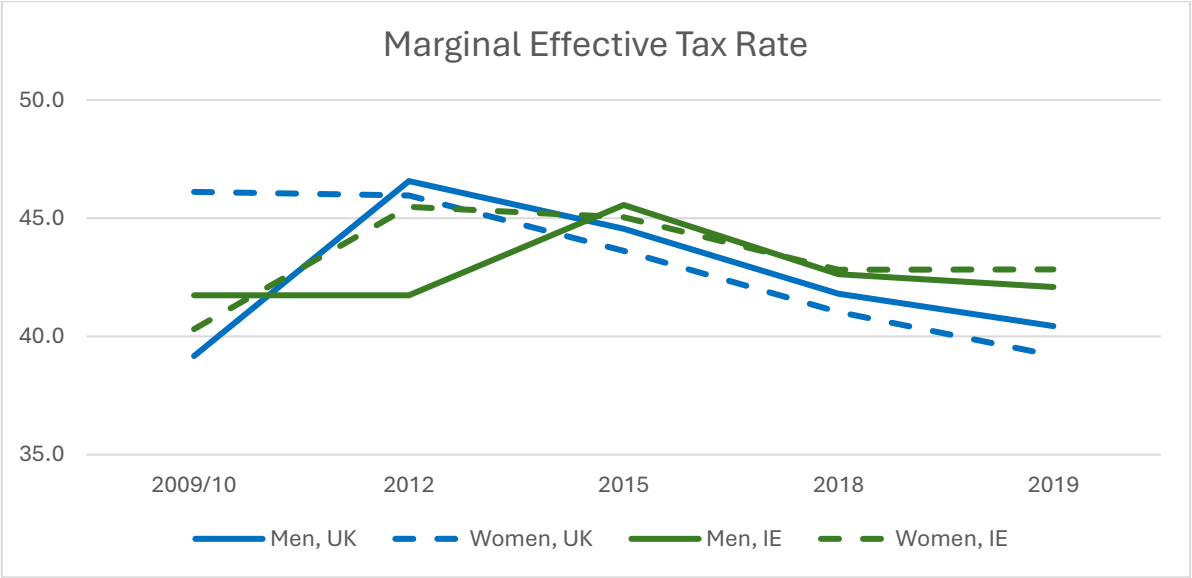
Table 5: Gender Gap in Disposable and Market Incomes, IE

	Gender gap in market income	*Wage*	*Employment*	*Self-employment*	*Wage-work interaction*	*Other*	Gender Gap in Disposable income	*Market*	*Tax*	*Benefit*
2008	34%	0%	21%	-7%	17%	5%	22%	34%	-11%	-1%
2010	35%	8%	14%	-12%	11%	15%	22%	35%	-12%	-1%
2012	35%	8%	14%	-12%	11%	15%	20%	32%	-11%	-1%
2015	41%	-12%	11%	1%	11%	31%	29%	41%	-13%	1%
2018	50%	-27%	-3%	-3%	17%	66%	31%	50%	-17%	-2%
2019	36%	-20%	-4%	-8%	25%	44%	21%	36%	-13%	-2%

Notes: Own calculations using EUROMOD. The gender gap in market income, Gap_M, is split into the relative contributions of gender gaps in wages, employment, self-employment, the interaction between these three and "other" factors. The gender gap in disposable income is split into the relative contributions of gender gaps in market income, tax liabilities and benefit entitlement.

Figure 11 Financial Incentives to work over time





Notes: Own calculations using EUROMOD. The METR is calculated by simulating a 3% increase in each worker's earnings. The PTR is calculated by simulating the withdrawal from the labour market of each worker. The analysis marked 2009/10 corresponds to 2009 in the UK and 2010 in Ireland.