Inequality and Assortative Mating in Iceland

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ÚTDRÁTTUR: Í þessari grein er fjallað um tekjuójöfnuð og makaval á Íslandi á árunum 1981–2022 með því að nota skattagögn og menntaskrá Hagstofu Íslands. Þótt tekjuójöfnuður einstaklinga hafi haldist tiltölulega stöðugur hefur tekjuójöfnuður heimila og sambúðarfólks aukist. Á sama tímabili jókst makaval, þ.e. aukin tilhneiging fólks til að velja sér maka með svipaðar tekjur. Val á maka eftir menntun jókst einnig á heildina litið, þrátt fyrir að þróunin hafi verið mismunandi eftir menntunarstigi. Makaval einstaklinga með grunn- og framhaldsmenntun jókst en dróst saman meðal þeirra sem hafa háskólamenntun.
LYKILORÐ: Paraval – Tekjuskipting – Menntun

ABSTRACT: This paper examines income inequality and assortative mating in Iceland between 1981 and 2022, using administrative microdata. While individual income inequality has remained relatively stable, household and couple income inequality have increased. Over the same period, we document a rise in assortative mating. We estimate trends in the association between partners' incomes and find a significant increase in sorting over time. Assortative mating by education increased among individuals with primary and secondary education, whereas it declined among those with a college degree. Although sorting declined among college graduates, the population-weighted measure shows an overall rise in educational assortative mating.
KEYWORDS: Assortative mating – Income Inequality– Education

1. Introduction

During the past few decades, income inequality has increased in many developed and developing countries. This trend is well documented in the literature, with scholars identifying technological change, globalisation, changes in labour market institutions, and increased capital accumulation as key drivers (Piketty, 2014; Atkinson, 2015; Autor, 2014). Among OECD countries, inequality in both pre- and post-tax incomes have generally increased since the 1980s. These developments have spurred a growing interest in the underlying mechanisms that shape income distributions, including the role of household formation patterns.

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Iceland, historically characterised by high equality and compressed wage structures, has seen relatively stable individual income inequality over the past four decades, especially compared to other OECD countries. Although there were fluctuations around the 2008 financial crisis, longer-term trends in individual earnings inequality have remained subdued (Ólafsson & Kristjánsson, 2017). In contrast, inequality at the household level has increased, reflecting not only changes in income sources and labour market attachment, but also shifts in household composition and partner matching patterns. During the same period, Iceland has undergone profound demographic and social transformations. Female educational attainment has increased dramatically, and women's labour force participation is now among the highest globally. These developments reflect both institutional support for gender equality and broader shifts in social norms and economic opportunities.

These developments raise important questions about the interaction between household formation and income inequality. One potential channel through which educational and demographic changes can affect income distribution is assortative mating—the tendency for individuals to cohabit with partners of similar socioeconomic status. If high-earning individuals increasingly pair with similarly educated partners, income may become more concentrated within households, contributing to rising inequality between households, even if individual income inequality remains unchanged.

This paper documents the evolution of household income inequality and changes in educational assortative mating in Iceland between 1981 and 2022. Drawing on comprehensive administrative microdata covering the full population, we document trends in marital sorting by education and income and evaluate their implications for the distribution of household income. Our analysis focusses on sorting by education, disaggregated both by level and field of study, and is complemented with evidence on income correlations within couples. We investigate whether assortative mating may have led to increased household inequality using two complementary methods. First, we analyse the correlation between spouses' income using the rank-rank slope. Second, we simulate counterfactual household income distributions under random partner matching to isolate the effect of observed sorting patterns.

Our findings show that inequality in employment income among individuals remained relatively stable over the period. However, there was a significant increase in inequality among men, while it was much more stable among women and among all employees combined. The results also indicate that assortative mating by income was limited in 1981—that is, the association between male and female incomes within couples was weak. On average, a higher male income was not associated with a higher female income. This association increased substantially over time. By 2022, a one–percentage point increase in a male partner's income rank was associated with a 0.2 percentile point increase in the female partner's rank. We also show that this increase in assortative mating by income contributed to the increase in household income inequality.

Finally, assortative mating by education has increased overall. Individuals with primary or secondary education are now more likely to partner with someone with the same educational level than they were four decades ago. In contrast, assortative mating among college-educated individuals has declined over the same period.

The remainder of the paper is organised as follows. Section 2 reviews the most closely related literature. Section 3 describes the administrative data sources and the construction of key variables. Section 4 outlines the methodological approach. Section 5 documents trends in income inequality and labour market structure in Iceland from 1981 to 2022, highlighting gender-specific patterns and changes in educational attainment. Section 6 presents the empirical results on the evolution of assortative mating in income and education. Finally, Section 7 concludes.

2. Related Literature

Schwartz (2013) provides an overview of the literature on the causes and consequences of trends and variations in assortative mating, the non-random matching of individuals into (romantic) unions.[1]

1 See Kalmijn (1998) and Blossfeld (2009) for other review articles.

There is a long tradition of studying assortative mating using a marriage-market framework in which individuals search for partners based on preferences and constraints (Becker, 1974; Mortensen, 1988; Oppenheimer, 1988). In Becker's (1974; 1981) model, each individual has a perception of the quality of a match based on the traits of each partner, a household production function for market and non-market goods, and joint time constraints. The models predict positive assortative mating in complementary traits (e.g., lifestyle or religion), but negative assortative mating—and specialisation—when traits are substitutes (e.g., market work vs. home production). Other mechanisms also generate homogamy: according to the matching hypothesis, individuals prefer partners similar to themselves, while the competition hypothesis holds that both sides prefer partners with higher levels of valued characteristics (Kalmijn, 1994; DiMaggio & Mohr, 1985). In contrast, exchange theory (Davis, 1941; Merton, 1941) predicts that heterogamy occurs when individuals offset their disadvantages by matching with partners who possess compensating advantages.

Explanations for changes in assortative mating require that some of the factors leading to match change (preferences or the environment). Modernisation theory argues that as societies develop, ascribed attributes, such as race, ethnicity, or religion, become less important in partner choice, while achieved attributes, such as education and occupation, become more important (Schwartz, 2013; Blau & Duncan, 1967; Goode, 1970; Kalmijn, 1991a,b; Smits et al., 1998; Rosenfeld, 2008). A related perspective holds that as marriages become more egalitarian, with both partners sharing paid work and domestic responsibilities, the central goal of partner selection has shifted toward finding a compatible companion rather than seeking a partner for traditional gender-specialised roles (Cherlin, 2004; Gerson, 2010; Oppenheimer, 1994, 1997). Mare's (1991) time-gap hypothesis predicts that the shorter the interval between leaving school and marrying, the stronger assortative mating should be. It therefore implies that if a larger share of stable unions is formed during the college years, assortative mating by education may increase. Other frameworks highlight different forces: economic inequality theory predicts that as inequality grows, the social distance between groups widens, leading to fewer marriages across those groups (Blau, 1977; Rytina et al., 1988; Smits et al., 1998), while assimilation theory argues that as groups become culturally similar, social boundaries weaken, and marriage between groups becomes more common (Gordon, 1964; Park & Burgess, 1921).

We focus on the segment of the empirical literature on assortative mating that aligns most directly with our analytical framework.[2] Greenwood et al. (2014, 2016) estimate a sorting parameter for the U.S. and document substantial positive assortative mating among college graduates, increasing from 1960 to 2005. Their methodology is closely related to ours, though our specific parameter (equation (3)) follows Eika et al. (2019), who additionally study sorting by academic major. Using data from Denmark, Germany, Norway, the United Kingdom, and the United States, they show that educational assortative mating accounts for a substantial share of cross-sectional household income inequality, while changes in sorting contribute little to inequality trends.

Other recent evidence aligns with this. Using data for 21 countries, Boertien & Permanyer (2019) show that changes in educational assortative mating since the 1970s have had minimal effects on income inequality, largely because high female employment weakens the link between sorting by education and sorting by income. For Finland, Erola & Kilpi-Jakonen (2022) also find that shifts in assortative mating explain little of the rising inequality; instead, trends in partnership formation, including more adults living alone, play a dominant role. In France, Frémeaux & Lefranc (2020) find that the effect of assortative mating on earnings inequality is modest when measured using observed annual earnings but substantially larger when using potential earnings. In the United States, Hirschl et al. (2024) document rising positive assortative mating until about 1990, followed by a decline driven by the growing share of couples where women are more educated. Finally, Qian (2018) shows that assortative mating also shapes earnings trajectories within marriage, with wives' earnings growth especially sensitive to the couple's educational pairing.

2 The theoretical frameworks above motivate why assortative mating may arise and why it may change over time. A large and diverse empirical literature examines these whys, but covering this body of work lies beyond our scope.

3. Data

We use administrative tax return data from the Icelandic tax authorities, covering the entire population from 1981 to 2022. The data includes detailed information on income composition, wealth, liabilities, and demographic characteristics such as age, number of children, and cohabitation status. Cohabitation status is based on registration in the National Registry. Married couples are automatically registered as cohabiting, while unmarried individuals may register a cohabiting relationship at Registers Iceland. Cohabitation rates have declined in recent decades, particularly for younger individuals.

Statistics Iceland combines tax return data with other administrative sources, such as information on parental links and the educational registry. The educational registry includes both the level of education, based on ISCED classifications (e.g., elementary, secondary, college), and detailed information on the field of study. Statistics Iceland collects data on all graduates from Iceland. Coverage of graduates from other Nordic countries is high, though not complete, while coverage for graduates from other countries is less complete. In addition, Statistics Iceland imputes educational levels for individuals with missing information. All individuals employed in the public sector are required to report their education to public authorities, and this information is included in the dataset. Information on the educational background of immigrants is less reliable, as they are more likely to have graduated from a non-Nordic institution abroad and are less likely to work in the public sector. As a result, their educational level is most likely imputed to a greater extent than that of natives.

The share of individuals with missing information on educational level is generally below 1%, and below 0.1% among those with no foreign background. The share of individuals with missing information on the field of education is around 2% for those with no foreign background, but is 19% on average in our database.

Employment income is defined as the sum of wages, self-employment income, foreign income, net vehicle allowance, and net per diem. Individuals with negative employment income are excluded, although such cases are rare.[3] We focus on individuals of working age, defined as those aged 25 to 65. Couples are classified as being of working age if at least one partner falls within this age range. We restrict the analysis to heterosexual couples consisting of one male and one female. In 2022, 0.8% of couples were same-sex, and a very small number of individuals were registered as non-binary.

4. Methodology

This section discusses the main methodological approaches used in this paper. First, we discuss the shortcomings of the regression slope coefficient for estimating assortative mating. Next, we introduce the rank–rank coefficient, which we use to analyse assortative mating in income, and finally, we present the measure used to capture assortative mating in education.

4.1. The issues of general regression slopes

Suppose we are interested in assortative mating with respect to an outcome X, where X_i^W and X_i^H denote the wife's and husband's values of X in household i. This could, for example, be income measured in monetary terms or a binary variable equal to one if the individual holds a college degree and zero otherwise. A seemingly natural starting point is to estimate an OLS regression of the form

$$X_i^W = \alpha_0 + \gamma X_i^H + \varepsilon_i.$$

3 Negative income can arise when the net vehicle allowance or net per diem is negative, for example, when vehicle costs exceed allowances or when per diem deductions exceed reimbursements.

However, this approach is not standard in the assortative mating literature. Even though the correlation between X_i^W and X_i^H is unchanged, the OLS regression coefficient γ, will be affected by changes in the marginal distributions of *X*. To see this, note that the OLS estimator for γ can be written as

$$\gamma = \rho_{HW} \frac{\sigma_W}{\sigma_H}, \qquad (1)$$

where ρ_{HW} denotes the correlation coefficient between wives' and husbands' levels of *X*, and ρ_W and ρ_H are the standard deviations of *X* for wives and husbands, respectively.

Since ρ_W and ρ_H can evolve differently over time, for example, with rising educational attainment or increased female labour force participation, the trend in γ may reflect shifts in how spread out women's and men's outcomes are rather than genuine changes in assortative mating (Greenwood et al., 2014, 2016). In other words, the regression slope may change because of changes in the variation of women's or men's values of *X*, even if the underlying strength of sorting between spouses remains unchanged. A higher slope, therefore, does not necessarily mean that couples are matching more strongly; it may simply reflect that one group has become more or less dispersed in terms of education or income.

4.2. Rank-rank correlation

The limitations of level-based slopes discussed above motivate the use of measures that are invariant to changes in the distributions of *X* for men and women. For income, a natural choice is to work with percentile ranks rather than levels, since the rank transformation fixes the distributions by construction and ensures that movements in the estimated slope capture only changes in sorting. In this setting, assortative mating is summarised by the rank–rank slope, denoted by β_{rr}, which is obtained by regressing the wife's income percentile rank on the husband's income percentile rank,

$$IR_i^W = \alpha + \beta_{rr} IR_i^H + \varepsilon_i, \qquad (2)$$

where IR_i^W and IR_i^H are the income percentile ranks of the husband and wife in couple *i*, respectively, indicating each spouse's position in the men's and women's income distributions. The rank-rank slope (β_{rr}) indicates how much the wife's income percentile increases, on average, when the husband's income percentile increases by one point. The rank-rank slope isolates pure sorting on income positions, eliminating effects of changes in distributions and general changes in levels. Since the rank-rank slope is estimated using OLS, it can be represented in terms of the correlation coefficient and standard deviations, as shown in equation (1). However, a crucial difference is that ranks have a fixed distribution, and therefore, changes in β_{rr} will not be due to changes in standard deviations, but due to changes in the correlation between the two income ranks.

4.2. Marital Sorting Parameter

While the rank–rank slope is well suited for income – where individuals can be placed on a common, ordered scale – the same approach is not appropriate for education. Although education levels are ordinal, they are far more granular than income ranks, and education fields are inherently non-ordinal. Taken together, this mix of ordered and unordered categories makes a percentile-based regression uninformative for capturing educational sorting. To quantify assortative mating in this multidimensional setting, we therefore turn to a measure based on deviations from random matching: *the marital sorting parameter*. The marital sorting parameter captures the extent to which individuals with specific educational levels marry others with the same level more or less frequently than would be expected under random matching, and is defined as

$$s(e_W, e_H) = \frac{P(E_W = e_W, E_H = e_H)}{P(E_W = e_W)P(E_H = e_H)}, \qquad (3)$$

where E_W and E_H denote the education levels of the wife and husband, respectively. When both are defined as binary indicators for having a college degree, the numerator in equation (3) corresponds to the observed share of couples in which both partners have a college degree. The denominator reflects the expected share of such couples under random matching, i.e., in the absence of assortative mating in education, which is equal to the product of the marginal probabilities. Under random matching, the parameter takes the value 1, $s(e_W, e_H) = 1$, while $s(e_W, e_H) > 1$ indicates positive assortative mating, and $s(e_W, e_H) < 1$ indicates negative assortative mating. The parameter indicates how much more likely one is to marry someone with the same level of education than if partners were randomly assigned.

5. Trends in Income Inequality and Labour Market Structure, 1981–2022

To understand the potential impact of assortative mating on household income inequality, it is essential to first examine broader trends in individual and household income distributions, as well as major structural changes in the labour market. This section documents the evolution of employment income inequality in Iceland between 1981 and 2022, with particular attention to differences by gender and household structure. It also describes shifts in the composition of the labour force, including the rise in female labour market participation and educational attainment. These trends provide context for the subsequent analysis of assortative mating in education and income.

5.1. Individual Income Inequality

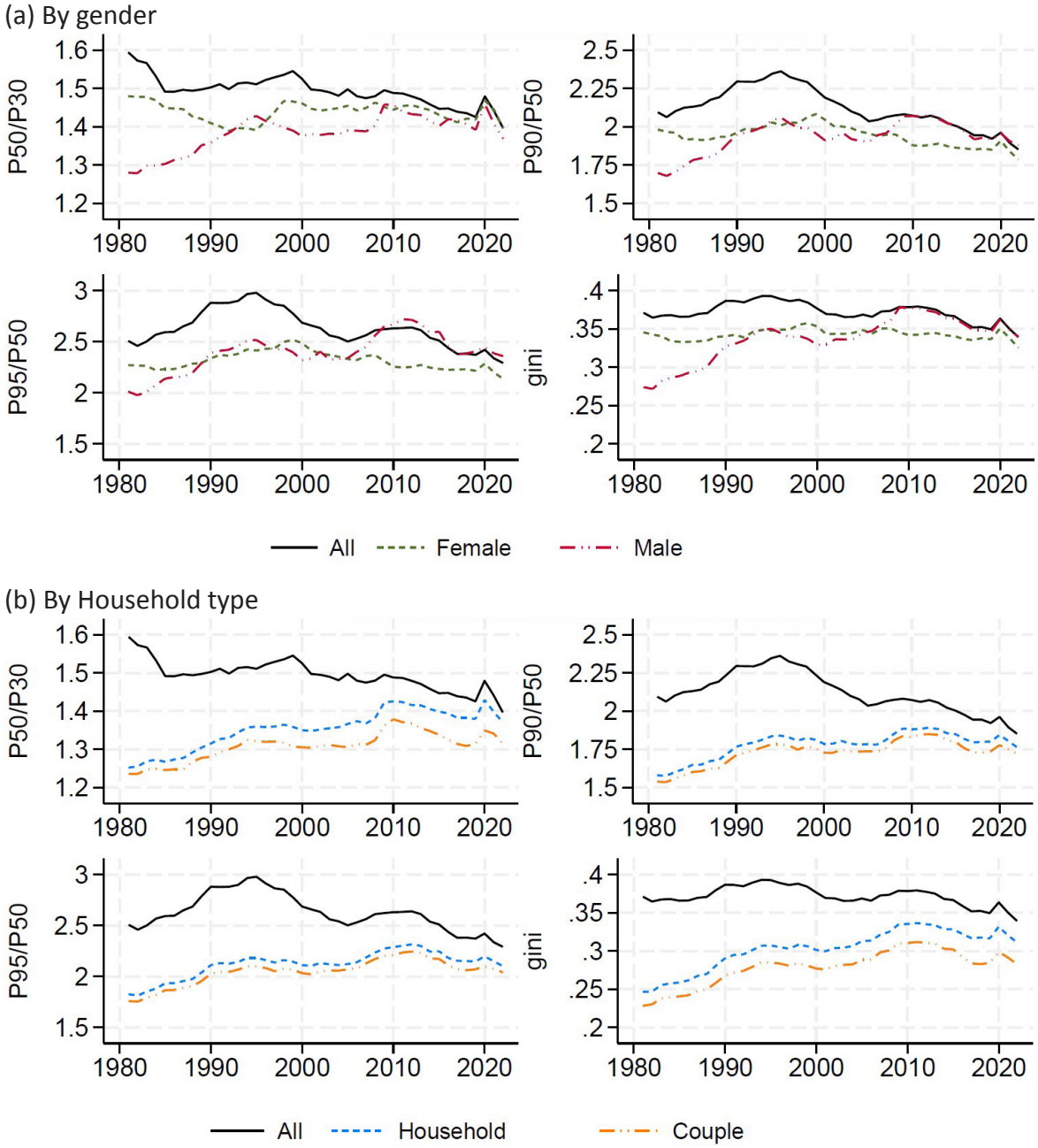
Figure 1 shows the distribution of employment income for all individuals aged 25–65 with positive employment income over the entire calendar year. There were cyclical variations in inequality, but overall inequality decreased between 1981 and 2022, and the Gini coefficient fell by about 0.03. This reflected equalising changes in both the bottom and the top halves of the income distribution. An increase in the Gini coefficient by 0.03 or more is often considered economically significant.[4]

As all individuals who file a tax return in Iceland, irrespective of work intensity, are included in our data, the business cycle directly affects the measured inequality through changes in employment and hours worked. Therefore, expansions are associated with a decrease in inequality.[5] Inequality increased during the economic downturns of the mid1990s, late 2000s, and in 2020 during the pandemic. The cyclical variations are, however, also visible in the upper half of the income distribution: the ratio of the 90th to the 50th percentile shows the same cyclical pattern as the Gini coefficient. This indicates that it was not only unemployment, which should mainly affect the bottom half of the distribution, that explained the cyclical variations in inequality.

4 Atkinson (2003) illustrates this by showing that a 5 percentage-point increase in the tax rate, redistributed equally, would reduce the Gini by about 0.03.

5 Regressing the Gini coefficient on per capita GDP growth yields: $G_t = 0.43 - 0.10g_t + 0.003t - 6.4 \cdot 10 - 5t^2$, where G_t is the Gini coefficient, g_t is GDP growth per capita, and t is the year, the coefficient for g_t is significant at the 1% level of significance.

Figure 1. Distribution of employment income, 1981-2022



Notes: All refers to the income distribution for the full population, i.e. both men and women. Sample: Individuals, households and couples where at least one member is aged 25–65. All series exclude observations with zero annual employment income (for households and couples: zero total household employment income). P: percentile.

When including individuals with zero income for the full calendar year, we see a slight increase in inequality; the Gini coefficient increased by 0.01 due to low wages lagging behind (see Appendix Figure 11).[6] We believe that excluding those with zero income over the whole calendar year is a more meaningful way of measuring inequality in the labour market. No long-run time series on the wage distribution among full-time employees exists for Iceland. However, by combining two datasets, we are can construct the decile ratio for full-time employees over the period 2002–2024 (see

6 There was a significant increase in the share of individuals reporting zero employment income. This increase was concentrated among single men and was particularly pronounced among those with an immigrant background. The rise was broadly uniform across the age distribution.

Figure 12). Overall, the wage distribution has become more equal, although its evolution over the business cycle differs from the inequality trends observed in the tax return data.

5.2. Gender Differences in Inequality Dynamics

The distribution of men's income was much more compressed than that of women's in 1981. The Gini coefficient was 0.27 for men compared with 0.35 for women (see Figure 1). This was due to a more compressed income distribution at both the top and bottom halves of the distribution for men. There were substantial gender differences in the evolution of employment income inequality. Among women, the income distribution remained relatively stable over the period. The Gini coefficient decreased by approximately 0.01–0.02. This slight income compression was more pronounced at the top.

Employment-income inequality for men, however, increased significantly. The Gini coefficient increased by 0.07 between 1981 and 2022, due to increased inequality at both the bottom and the top of the income distribution. Inequality increased even more when including those with zero income, as the bottom half of the distribution fell behind due to the increasing share of individuals with zero income.

5.3. Household and Couple Income Inequality

Household and couple income inequality increased markedly over the period. Household income is defined as average household income, where couples' total employment income is divided by two, and singles retain their individual income. Couple income refers to the combined income of both partners in a married or registered cohabiting couple. The Gini coefficient for household income increased by 0.06, driven by both rising top incomes and stagnation at the bottom, though the increase at the top was more pronounced. Inequality in couple income, i.e., excluding singles, evolved similarly to household income inequality.

The development of couple and household income inequality closely mirrors the evolution of men's individual inequality: in all three cases, inequality increased substantially over the period, whereas women's income inequality remained comparatively stable. This pattern is not unexpected, given that male earnings dominated household income, particularly in the earlier decades of the period.

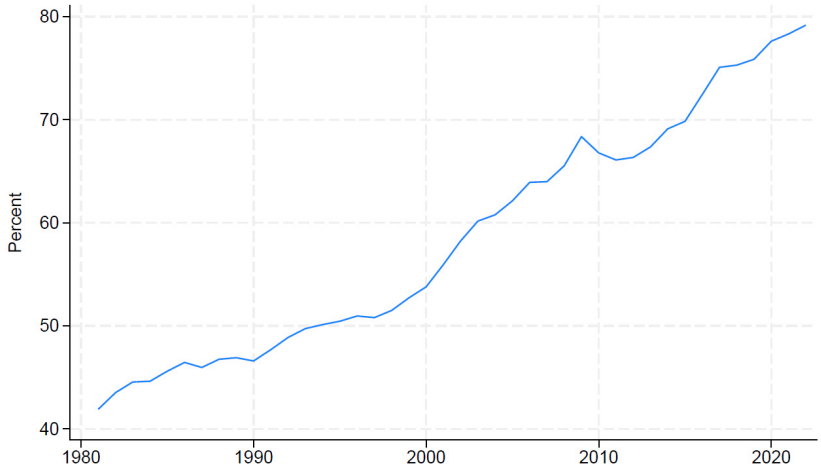
The distribution of individual-level employment income inequality remained relatively stable, even though male inequality increased. A reduction in inequality between genders, as discussed below, therefore had an equalising effect on overall employment income inequality. While individual income inequality has remained stable or declined, household and couple inequality have increased. These diverging trends between individual and household level inequality suggest that assortative mating contributed to increased employment income inequality at the couple and household levels in Iceland.

5.4. Gender gap in the labour market

Historically, women played a more limited role in the labour market, a situation that has changed substantially over time. In 1960, female labour market participation was 34% and 87% for men. This participation gap narrowed substantially until 2000. Then the rate was 79% for women and 88% for men. Since then, the gap has remained largely unchanged. In addition, the share of women working part-time has declined, particularly in the 21st century. In 1998, almost half of working women were employed part-time, whereas today the share is roughly one third.[7] In addition to an increase in female labour market participation, the gender wage gap narrowed in the last several decades.

7 Labour market participation rates for 1960 are from (Jónsson & Magnússon, 1997, p. 216). All other participation figures are from the Statistics Iceland Labour Force Survey, which began in 1991.

Figure 2. Median female to male income ratio



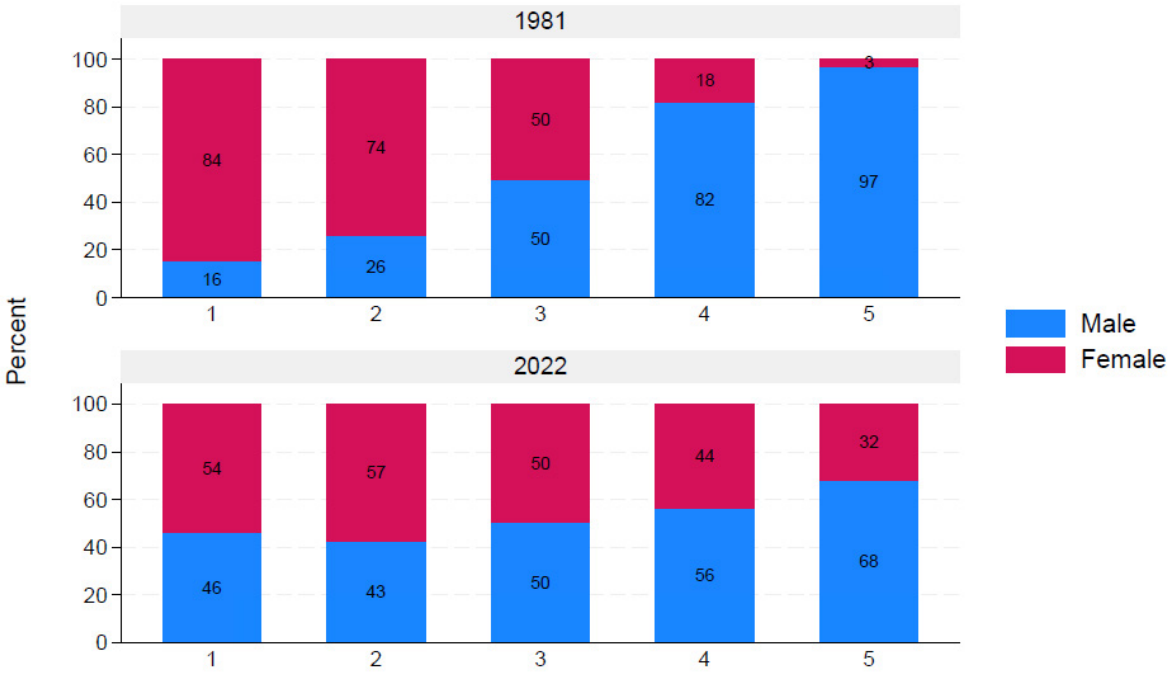
Notes: Employment income of working age (25-65 years) females and males, excluding individuals with zero annual employment.

During our period, there were several significant institutional changes. One of the most important was the expansion of publicly funded childcare. From the early 1990s, Iceland shifted from limited, targeted childcare to rapid municipal expansion that made preschool widely accessible. By 2010, the enrolment rate was beyond 90% for 2–5-year-olds (Gíslason & Eydal, 2011). Another major change was the parental leave reform in 2000, which granted each parent three months of non-transferable leave and three additional months that parents could allocate between them. The reform led to a substantial increase in paternity leave and higher fathers' participation in care beyond the child's first year, as intended by the legislation, and it appears to have reduced the gap in employment rates and hours worked between mothers and fathers (Arnalds et al., 2025). Financial incentives for labour-force participation had been strengthened by 1958, and in 1978 Iceland introduced individual taxation (Eydal, 2005).

Figure 2 shows the average female-to-male employment income ratio for working-age individuals from 1981 to 2022. In 1981, average female income was approximately 40% of average male income; by 2022, this ratio had doubled to 80%. The increase in relative income is due to higher employment and hours worked by women relative to men, as well as a reduction in the gender wage gap.

The relative position of women in the income distribution has changed significantly. In 1981, the labour market was highly segmented by gender. At that time, almost no women were in the top two quintiles, while the bottom two quintiles were dominated by women (see Figure 3a). This pattern changed gradually between 1981 and 2022, with steady improvements in women's relative position across the distribution. Women remain underrepresented at the top of the income distribution, e.g., they make up only 28% of those in the top quintile. Although the labour market is now less segmented by gender, women are still disproportionately represented in the bottom half of the income distribution (see Figure 3b).

Figure 3. Gender shares by income quintiles



Notes: Employment income of working age (25-65 years) females and males, excluding individuals with zero annual employment.

5.5. Educational Attainment

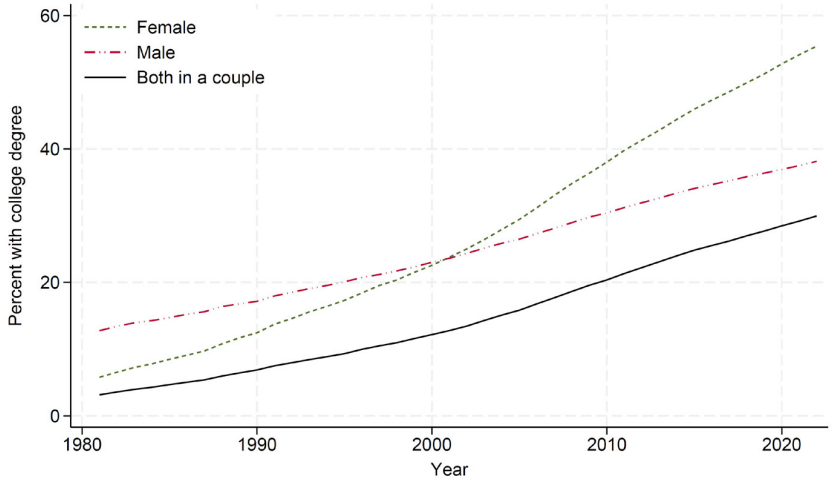
A major transformation in the Icelandic labour market has been the rise in educational attainment, particularly among women. In 1981, less than 10% of women in the labour market had a college degree, and a little over 10% of men did as well. Now, the share is around half for women and around a third for men (see Figure 4). For men, the rise was gradual over the period. For women, the increase in the share with a college degree was most pronounced in the 2000s. This trend is similar to that in other OECD countries, where there has been a substantial increase in the share of people with a college degree, particularly among women.

Figure 5 shows the share with college degrees by field and gender. For women, the share in all fields shown increased. The largest increase was in business studies, particularly in the 2000s.[8] The share increased from 0.4% to 9.8%. The second-largest increase was in educational studies, teaching, secondary-school teaching, and early-childhood education. This share is now around 10% of working-age women, compared with 1.4% in 1981. In humanities and arts, social science, and health studies (particularly nursing), the increase in the share was approximately 5 percentage points between 1981 and 2022.

Among men, the largest increase was in business studies, with a rise of 5 percentage points, followed by science and engineering, where the shares increased by 3.1 and 2.5 percentage points, respectively. There was a slight decline in the share of men with a degree in medicine.

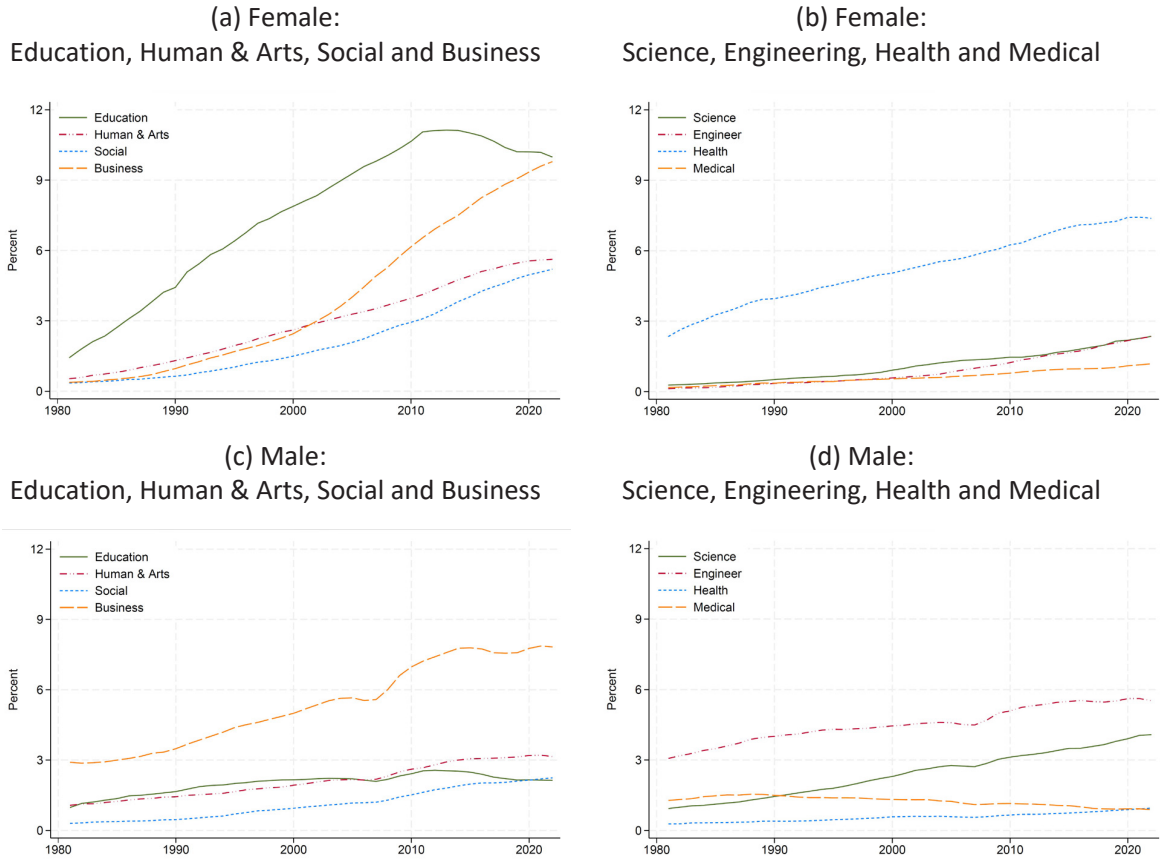
8 Business studies include law and economics.

Figure 4. Share with college degree



Notes: Share of working age (25-65 years) females and males.

Figure 5. Share by field of education



Notes: Share of working age (25–65 years) females and males.

This section has documented a divergence between individual- and household-level income inequality in Iceland from 1981 to 2022, alongside pronounced shifts in gender roles and educational attainment. While inequality among individuals remained stable or declined slightly, particularly for women, household and couple income inequality rose considerably. These patterns point to assortative mating as a potential driver of rising household inequality, a topic to which we return to in Section 6.

6. Empirical Results

Having documented key trends in income inequality and labour market composition, we now turn to the structure of household formation—specifically, the extent and evolution of assortative mating in Iceland. Assortative mating, defined as the tendency for individuals to partner with others who share similar characteristics, can amplify household income inequality, particularly when based on traits strongly associated with earnings, such as education and income. In this section, we document patterns of assortative mating over the period 1981–2022, focussing first on income and then on educational attainment. We distinguish between different dimensions of sorting, including levels and fields of education, to shed light on the potential mechanisms through which assortative mating contributes to the distribution of household income.

6.1. Assortative Mating in Income

As documented above, income inequality among individuals was relatively stable, or even declined somewhat, between 1981 and 2022. In contrast, household income inequality increased substantially over the same period. We now turn to the effect of assortative mating on household income inequality. Within couples, there is a positive correlation between male income and the income of their female partners. This relationship holds in most years, though there are a few exceptions where the correlation is weaker or absent. A more intuitive way to illustrate the relationship is through the so-called rank-rank estimation, which is widely used in the literature on intergenerational mobility (see, e.g., Chetty et al., 2014).

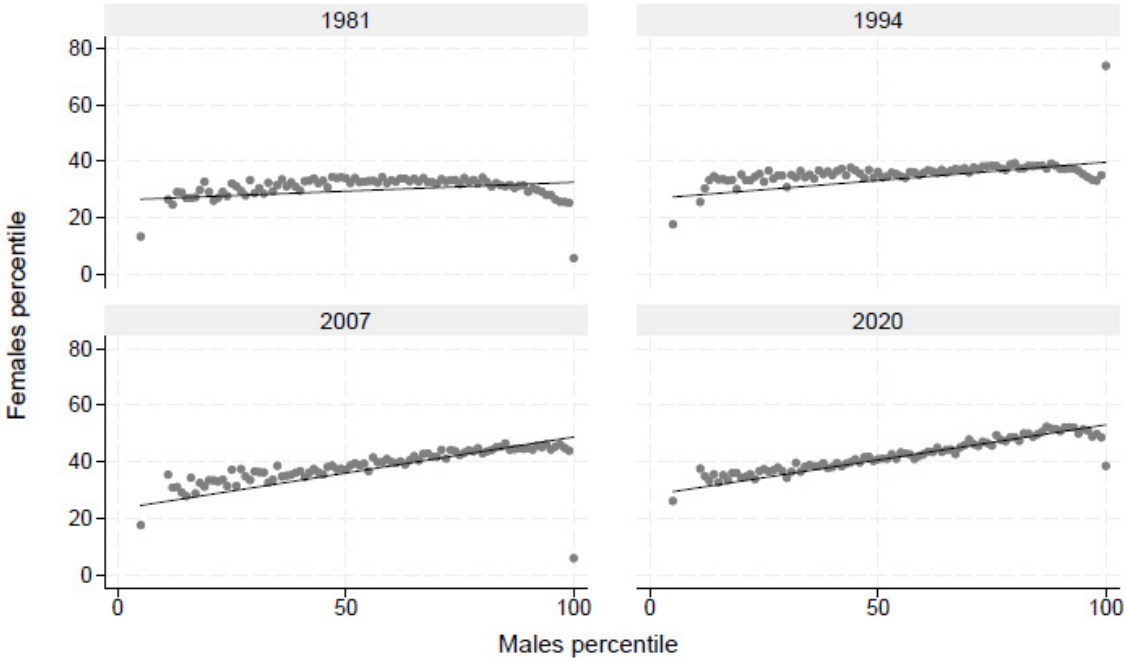
We construct income percentiles using three different approaches. First, we calculate each individual's rank among all working-age individuals within a given year, including those with zero income (who are included in all specifications). Second, we calculate percentile ranks within gender, so that women are compared to the female distribution and men to the male distribution. Third, we estimate ranks within both gender and age groups.

It is important to note that these different ranking definitions reflect conceptually distinct measures of assortative mating. For example, consider a simplified thought experiment. In the first year, suppose that spouses are perfectly rank-matched within gender: the poorest man is married to the poorest woman, the richest man to the richest woman, and so forth. Assume further that in the overall population distribution, each wife's rank is exactly half of her husband's. This would imply a rank-rank slope of 0.5 when ranking is done over the full population, but a slope of 1 when ranking is done within gender. Now imagine a second year in which within-gender ranking remains unchanged (perfect sorting), but wives' incomes rise to equal those of their husbands. This change would increase household income inequality, and the slope based on population-wide rankings would rise to 1, even though sorting within gender is unchanged. This illustrates how changes in marginal income distributions can affect the interpretation of rank-rank slopes, depending on the ranking method used.

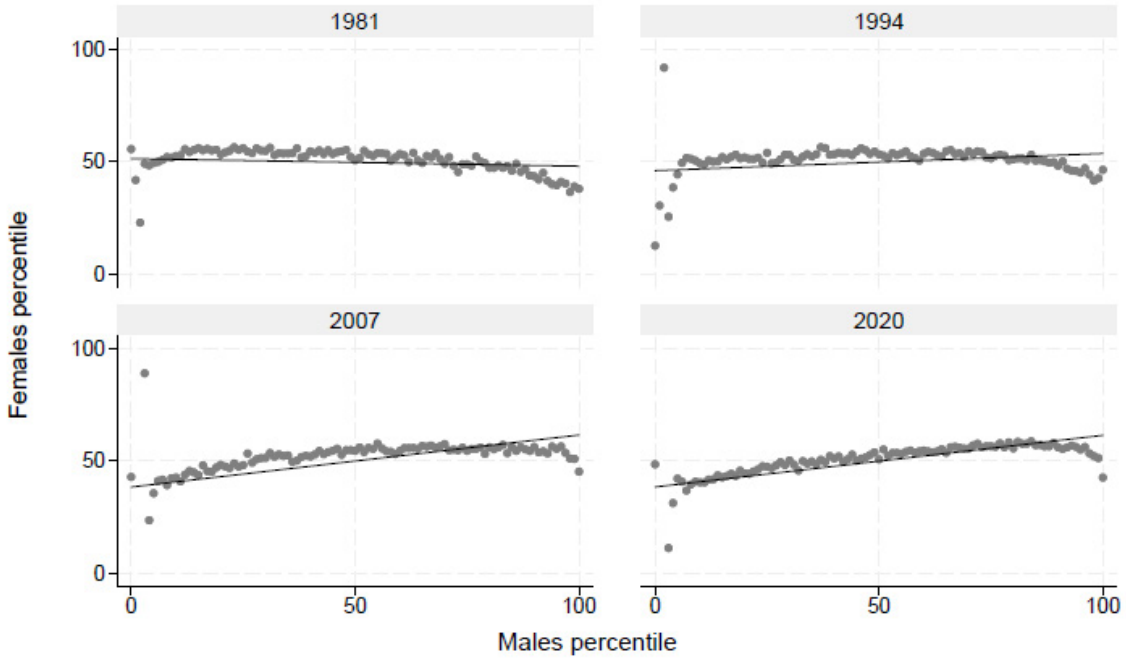
The rank-rank slope for the first and third approaches for estimating percentiles is presented in Figure 6. The figure presents a binned scatter plot of females' mean income rank against their spouses' income rank for the years 1981–2020.

Figure 6. Rank-rank scatter plots in 1981, 1994, 2007 and 2020

(a) Percentiles by year only



(b) Percentiles by year, gender and age



Notes: Individuals with zero income are included in the distribution. When percentiles are calculated within year-gender-age groups, those with no income are assigned the average percentile among them. For example, if 5% of individuals in a given group have zero income, they are all assigned the 2.5th percentile. The share of households with no income fluctuates around 5% with no visible trend. The straight lines are fitted values of equation (2) for the corresponding year.

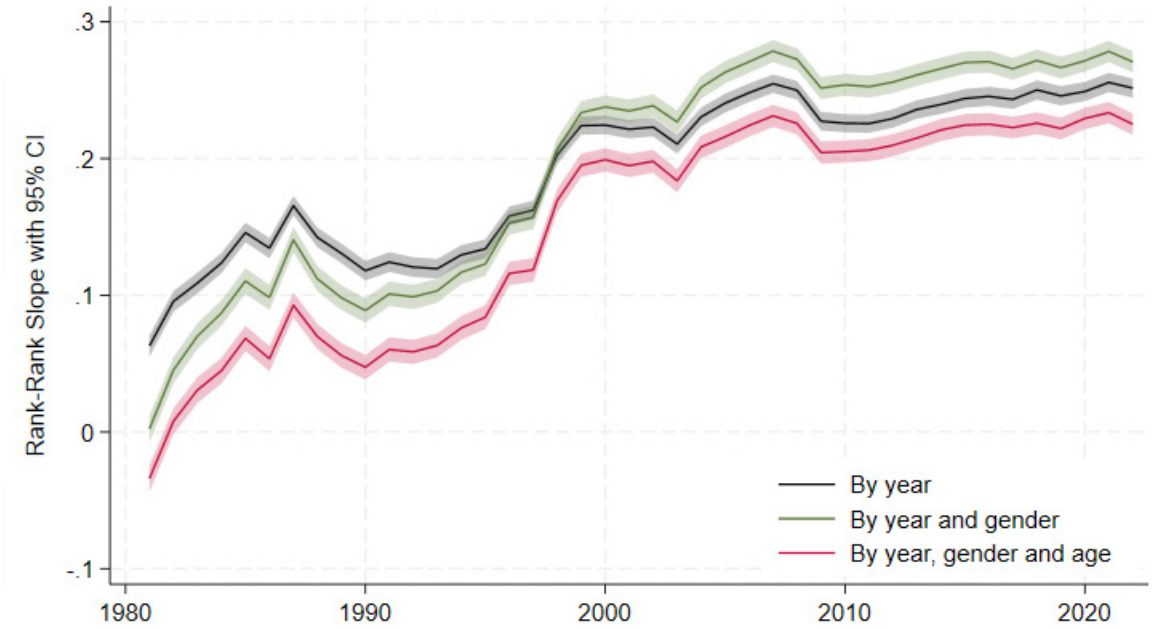
Based on the OLS regression line in Figure 6a, a one–percentage point increase in a male's rank is associated with a 0.25 percentage point increase in the female partner's mean rank in 2020. Comparing women cohabiting with men in the 10th percentile to those with partners in the 90th percentile, the average female percentile is 20 points higher. The rank-rank relationship is approximately linear from the bottom to the 99th percentile in 2020, while the female rank among top male earners falls

slightly below what the slope would predict. The linearity of the rank-rank scatter plot suggests that assortative mating does not reflect high income men systematically cohabiting with lower-income women. This pattern is observed only to a limited extent among the very highest male earners. Note that the observations in Figure 6a mostly lie below the 50th percentile on the vertical axis, reflecting that women generally earn less than men.

When percentiles are estimated within gender and age groups, the rank-rank slope is 0.23 in 2020 (see Figure 6b). This indicates that a one–percentage point increase in a male's position within the male income distribution (conditional on age) is associated, on average, with a 0.23 percentage point increase in the female partner's percentile within the corresponding female-age distribution. The relationship is approximately linear from the bottom to the 95th percentile, where the female rank among top male earners falls slightly below what the slope would predict.

We are not aware of any study estimating the rank-rank estimation between males and females among couples. Estimations of intergenerational income mobility, comparing children with parental income, generally find estimates in the range of 0.15-0.34 (Chetty et al., 2014), with an estimate of 0.14 for Iceland (Dagsson & Kristjánsson, 2025). That is, a one–percentage point increase in parental rank is associated with an average increase of 0.14 percentage points in the child's rank in Iceland.

Figure 7. Rank-rank slopes 1981-2022



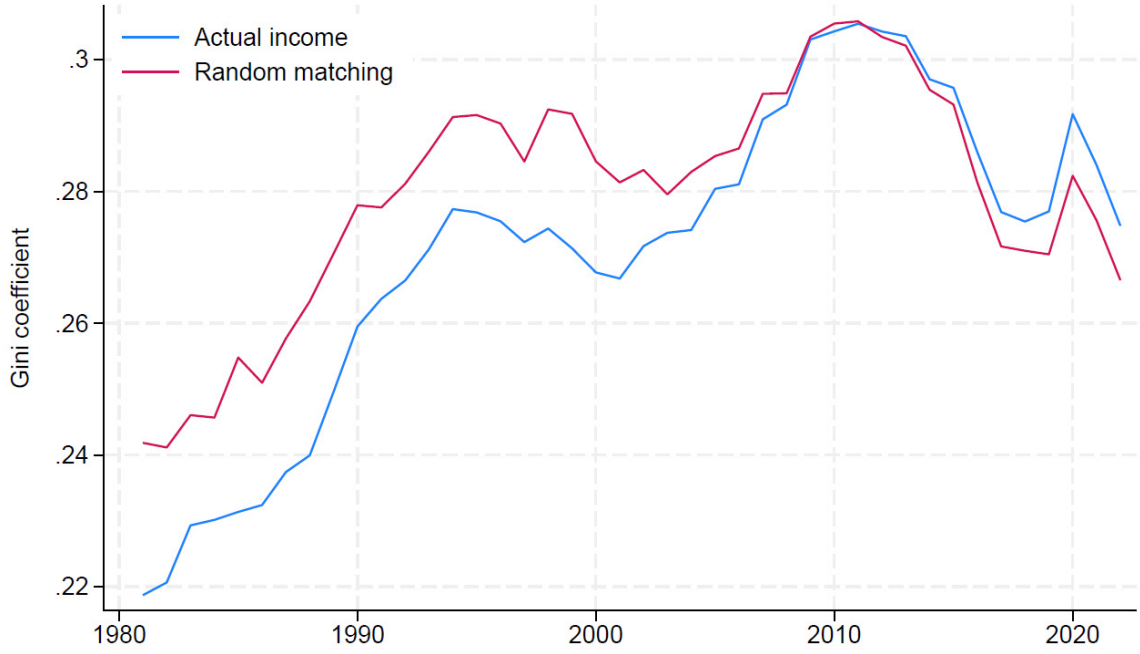
Notes: Year-on-year estimates of β_{rr} from equation (2), shown with 95% confidence intervals.

Figure 7 shows the development of the rank-rank slopes for the three specifications from 1981 to 2022. Throughout the period, the three specifications yield very similar estimates, with only minor differences. All rank-rank slopes exhibit a substantial upward trend over time. In 1981, the slope within gender and age was slightly negative, indicating that, conditional on gender and age, higher male income was associated with a slightly lower income rank for their female partners. The slope was modestly negative at –0.03 in 1981 but became positive in all subsequent years. In total, the rank-rank slope increased by 0.19 percentage points for the specification based on year only, and by 0.27 and 0.26 for the specifications based on gender, and gender and age, respectively.[9]

9 We have also computed Figure 7 excluding immigrants. This has little effect before 2000, but lowers the rank–rank slopes somewhat in 2000–2022 as the immigrant share rises. Our main conclusion remains unchanged: assortative mating in income, as measured by the rank–rank slope, increased substantially over the period.

Finally, Figure 8 presents a simple illustration of the effect of assortative mating on income inequality. The figure shows the income distribution among couples with positive employment income (labelled "actual"), alongside a counterfactual distribution in which couples are randomly matched. In this random matching scenario, each woman (or man) in a cohabiting relationship is randomly paired with a man (or woman) who is also cohabiting. This counterfactual is constructed by randomly forming couples based solely on individuals' income levels, while holding the income distributions of men and women fixed.

Figure 8. Gini coefficient for couples employment income, the actual distribution and with random matching



Notes: Couples where at least one is of working age (25-65 years), excluding individuals with zero annual employment. Random matching assigns each male (female) a random individual from females (males).

At the beginning of the period, the randomly matched distribution was more unequal than the actual distribution, as the correlation between partners' incomes was negative—meaning that assortative mating initially reduced inequality. Over the period 1981–2022, the actual income distribution among couples became more unequal, with the Gini coefficient increasing by 0.06. In contrast, under random matching, inequality increased by only 0.02. The difference between these two increases (0.06 vs. 0.02) suggests that assortative mating accounts for a substantial share of the rise in income inequality among couples.

All approaches consistently point to a substantial rise in assortative mating by income. When income is ranked by year and sex (male/female), high- and low-income husbands were roughly equally likely to have a high-income wife at the beginning of the period. By 2022, however, a high-income husband was substantially more likely to have a high-income wife than a low-income husband. This trend supports the conclusion that changes in marital sorting on income have contributed to the rise in household income inequality. The increase is highly statistically significant and, given its magnitude, should also be considered economically meaningful.

6.2. Assortative Mating in Education

We now turn to assortative mating in education. As documented in Section 5, income inequality among individuals was relatively stable, or even declined somewhat, between 1981 and 2022. In

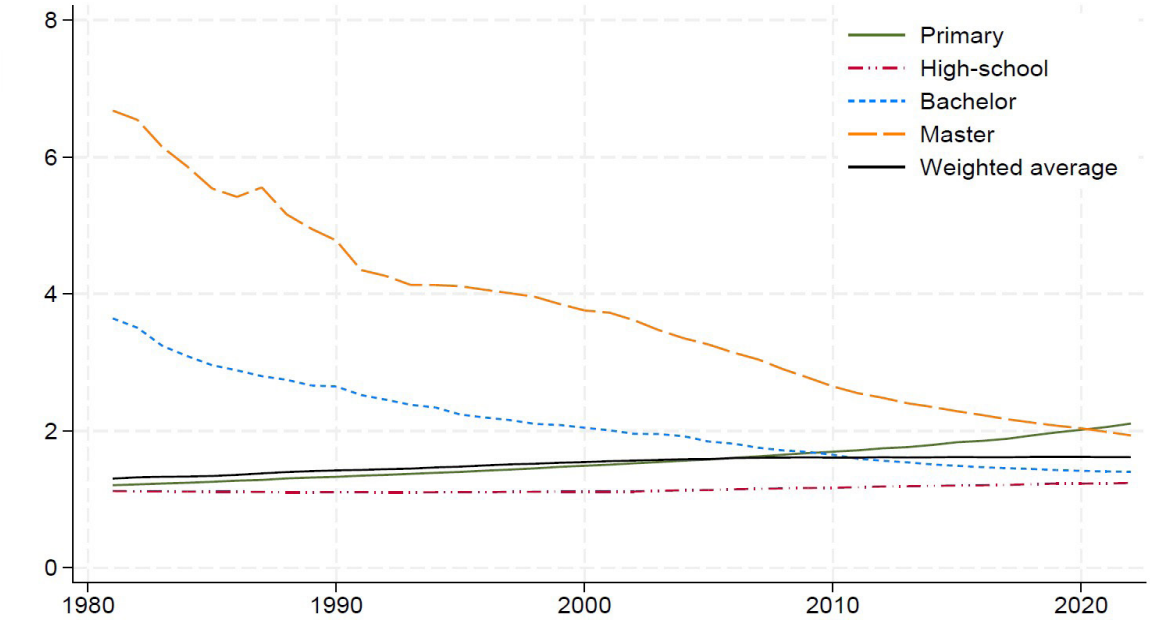
contrast, household income inequality increased substantially over the same period. Furthermore, as documented in Section 6.1, the rank-rank slope between spouses' income increased during the same period, which means that assortative mating in income has increased during the period. Put differently, in 2022, husbands with relatively high incomes were more likely to be married to wives with relatively high incomes than was the case in 1981. This can arise for various reasons. One reason may be that assortative mating in education has increased. In other words, the increase in household inequality that we see during this period may partly be driven by highly educated women being more likely to marry highly educated men in 2022 than they were in 1981.

6.2.1. Assortative Mating by Level of Education

As discussed in Section 5.5, education levels increased substantially for both men and women. The share of individuals with a college degree increased substantially, this led to an increase in the share of couples where both individuals have a college degree (see Figure 4). This indicates the general expansion of education, but may not need to indicate increased assortative mating, as we measure that if individuals are more likely to marry someone with a similar educational level or field compared to random matching.

Figure 9 presents estimates of assortative mating by educational attainment for the period 1981 to 2022. These parameters indicate how much more likely individuals are to form unions with partners of the same educational level than would be expected under random matching.

Figure 9. Assortative mating in level of education



Notes: Year-on-year calculations of equation (3) for the corresponding groups. Working age (25-65 years) females and males.

For individuals with only primary education, the assortative mating parameter increased from 1.2 in 1981 to 2.0 in 2022. That is, in 1981, individuals with primary education were 1.2-times more likely to marry someone with the same level of education than if partners were randomly assigned. By 2022, this likelihood had risen to 2-times. The increase was more pronounced in the latter part of the period.

A similar trend is observed for individuals with upper-secondary (high school) education: the sorting parameter increased from 1.1 to 1.2 over the same period. The sorting parameter remained relatively stable between 1981 and 2003, and increased slightly thereafter. In contrast, for those

with tertiary education, marital sorting declined. Among individuals with a bachelor's degree, the parameter fell from 3.5 in 1981 to 1.4 in 2022. A similar decline is observed for those with a master's degree, from 6.3 to 2.0. The sorting parameter for bachelor's and master's degree holders decreased more in the first half of the period.

To capture the overall trend in assortative mating by education, we calculate a weighted average of the assortative mating parameters across all education groups, using the population shares of each group as weights. The resulting average increased from 1.3 in 1981 to 1.6 in 2006, and has remained stable since. This indicates a general rise in educational assortative mating: individuals were increasingly likely to partner with someone of the same education level over time. Even though assortative mating among those with college education decreased, assortative mating among those with primary and secondary education increased, and this latter effect dominated the former.

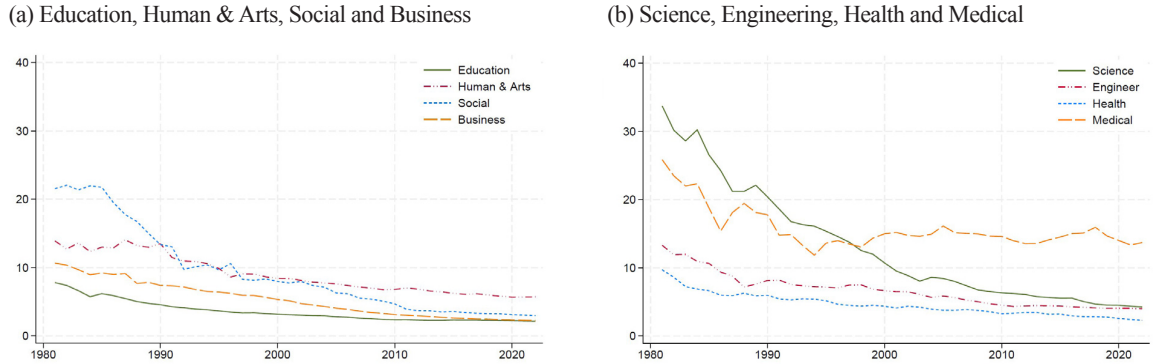
6.2.2. Assortative Mating in Education by Field

In the previous section, we documented how assortative mating by education level has evolved over time, potentially contributing to rising household income inequality given persistent income differences across educational tiers. However, income does not vary solely by education, it also differs substantially by field of study.[10]

To examine assortative mating by field of study, we disaggregate the tertiary education category (bachelor's and master's degrees) into eight mutually exclusive fields. Figure 10 presents the estimated marital sorting parameters for couples who completed degrees in the same field.

Although assortative mating by field has declined somewhat over the period, it remains substantial. In 1981, assortative mating was strongest among graduates in the natural sciences. A science graduate was about 28 times more likely to be married to another science graduate than would be expected under random matching. By 2022, this parameter had declined to 4.2. This was the largest decline among all fields in Figure 10.

Figure 10. Assortative mating by college fields



Notes: Year-on-year calculations of equation (3) for the corresponding groups. Working age (25-65 years) females and males. Education: Teacher education and educational science. Human & arts: Humanities and arts. Social: Social science (excluding business studies, economics and law). Business: Business studies and economics. Science: Science, mathematics and computer science. Engineer: Engineering, manufacturing and civil engineering. Health: Health and well-being (excluding medicine and dentistry). Medical: Medicine and dentistry.

By 2022, the highest degree of assortative mating was observed among medical graduates. A graduate in medicine was around 15 times more likely to be married to another medical graduate than under random matching—with a substantial decrease from 26 in 1981, when medicine ranked second in assortative strength. The second highest degree of assortative mating was among humanities and arts, where it was 5.2 in 2022. It was lowest among educational studies and business studies, where it was 2.3 in 2022.

10 See, for example, Altonji et al. (2012) and Kirkeboen et al. (2016).

These patterns suggest that assortative mating by field of study—like assortative mating by education level—can substantially influence the joint income distribution of couples and, hence, overall household inequality. Given the often large and persistent earnings differentials across fields, sorting by educational field may reinforce income inequality at the household level.

7. Conclusion

This paper examines how assortative mating has contributed to the rise in household income inequality in Iceland over the period 1981 to 2022, using administrative microdata covering the full population.

We document differences in the development of inequality in employment income among the working-age population for individuals, couples, and households. Inequality among men increased substantially, whereas inequality among women and among all employees combined changed only modestly. In contrast, inequality at the household and couple levels rose markedly.

We show that assortative mating by income was limited in 1981, with almost no association between the incomes of partners within couples. On average, higher male income was not associated with higher female income. From 1981 to 2022, however, this association increased considerably. By 2022, a one–percentage point increase in a male partner's income rank was associated with a 0.2 percentile point increase in the female partner's rank. We also find that this increase in assortative mating by income contributed to the rise in household income inequality, as shown by counterfactual simulations under random matching.

In addition, we document a general increase in assortative mating by education. Individuals with primary or secondary education have become more likely to partner with someone with the same level of education compared to four decades ago. However, assortative mating among college-educated individuals declined over the same period. As an overall measure, individuals in 1981 were 1.3 times more likely to marry someone with the same education level; by 2022, this had risen to 1.6.

Taken together, our findings suggest that changes in assortative mating patterns contributed to increased income disparities across households.

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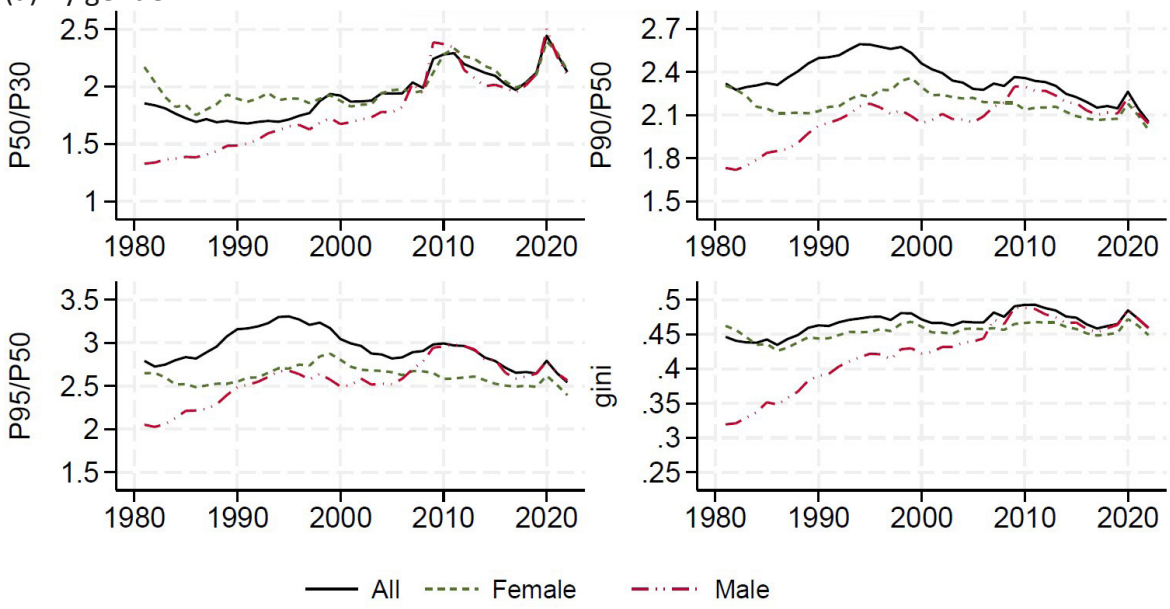
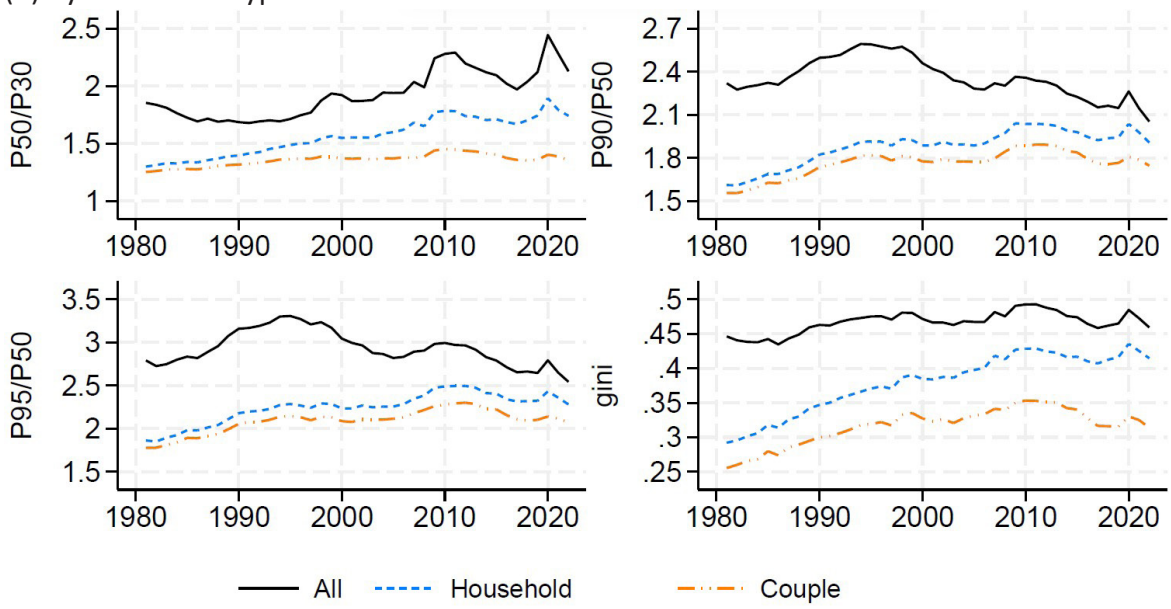
Appendix – Additional Figures

Figure 11. Distribution of employment income, 1981-2022, including observations with no employment income

(a) By gender

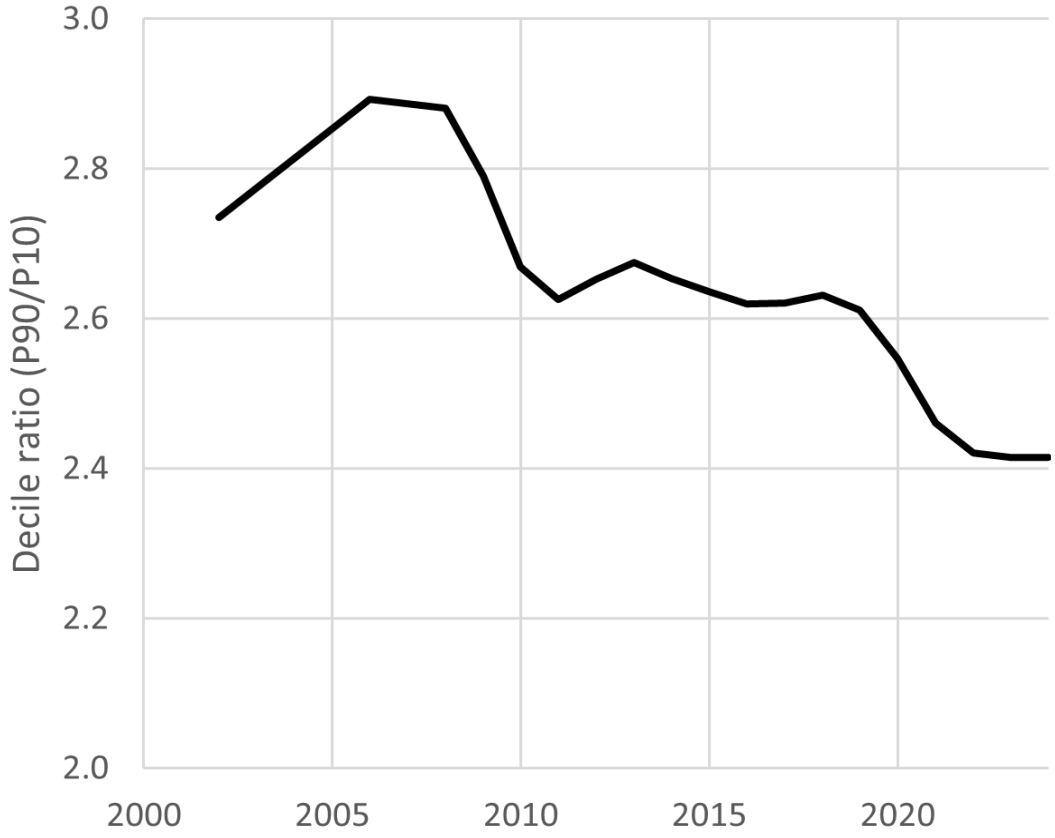


(b) By Household type



Notes: All denotes the income distribution for the full population, i.e. both men and women. Sample: Individuals, households and couples where at least one member is aged 25–65. All series include observations with zero annual employment income (for households and couples: zero total household employment income). P: percentile.

Figure 12. Decile ratio of full-time employees



Notes: Combines data from structure of earnings survey and Statistics Iceland earnings database.

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