The Evolution of the Earnings Distribution in a Sustained Growth Economy: Evidence from Australia*

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Abstract

We study the evolution of the earnings distributions in Australia from 1991 to 2020, a prolonged period of sustained economic growth without recession. Using a 10% sample of Australian taxpayer records, we document key trends in labour earnings inequality, mobility and risk for workers aged 25 to 55. Our findings reveal strong upward earnings mobility for both men and women. Earnings inequality rose modestly until the early 2010s, driven by top earners, but has since declined. The gender gap in earnings inequality has narrowed, and even reversed in recent years, mainly due to a sharp reduction in inequality among women at the lower end of the earnings distribution. Early-life disparities also play an increasingly important role in shaping later-life inequality, particularly for younger cohorts. This reversal in inequality trends has emerged over the past decade, coinciding with a slowdown in economic growth. Moreover, although aggregate macroeconomic conditions have been relatively stable, idiosyncratic earnings risk—captured by dispersion, skewness, and kurtosis—remains persistent, with greater volatility at both the top and bottom percentiles. Women continue to face higher risk and lower mobility than men, despite experiencing stronger average earnings growth over the entire period. Hence, our findings provide new insights into how prolonged economic expansion shapes the dynamics of earnings across different demographic and income groups.

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1 Introduction

Widening income and wealth disparities between rich and poor households pose unprecedented challenges for many countries. How are workers' labour earnings linked to economic growth? How do earnings distributions evolve across socioeconomic and demographic groups? What do these dynamics reveal about the progression of income inequality over time? Understanding these questions is crucial for assessing long-run welfare and designing effective policy interventions. This paper contributes to these debates by documenting trends in earnings inequality, dynamics, and mobility in Australia during the three decades of sustained economic growth without recession.

Australia offers a unique empirical setting for at least two reasons. First, from the 1990–91 recession until the onset of the COVID-19 pandemic, the country experienced uninterrupted economic expansion. This provides a rare opportunity to study the evolution of earnings distributions in the absence of disruptive effects of major recessions. Second, Australia's tax and transfer system is highly progressive, with transfer payments subject to extensive means-testing. Although major tax reforms, including a series of cuts beginning in the early 2000s, were implemented, the system retained strong redistributive features. Studying how earnings inequality and mobility evolve under active fiscal redistribution, a feature common to many OECD countries, can offer insights with relevance well beyond Australia.

To analyse these issues, we use a 10% sample of administrative tax records from the Australian Taxation Office (ALife) and document the evolution of earnings levels and growth (or changes) from 1991 to 2020.[1] Following the methodology proposed in Guvenen, Pistaferri and Violante (2022), we focus on male and female workers aged 25-55, allowing international comparability of key findings on earnings inequality, dynamics, and mobility.[2] Our main results are as follows.

First, we find an upward trend in real earnings across the distribution over the study period. By 2020, median real log earnings were 25 log points higher for men and 35 log points higher for women compared to 1991. However, earnings growth stagnated during the post-2008 macroeconomic slowdown, particularly among the top decile and among male workers more generally.

Second, overall earnings inequality rose modestly, contrasting sharply with the large increase observed in the U.S. and many other OECD countries (e.g., see Piketty and Saez 2003; Krueger et al. 2010; Piketty, Saez and Zucman 2018; Guvenen et al. 2023). The first two decades were characterized by widening inequality, driven largely by a pronounced divergence in earnings growth between the bottom and top ends of the distribution, particularly among men. The top 10% of earners experienced growth rates nearly twice as fast as the rest of the distribution, with even steeper gains for the top 1%, 0.1%, and 0.01%. However, the 2010s marked a turning point: overall earnings inequality began to decline due to (i) stalled growth at the top and (ii) sustained and robust growth among women, particularly low-income women. In contrast, lower-income men faced significant earnings stagnation during economic downturns, followed by a prolonged and sluggish recovery compared to their higher-income and female counterparts. These divergent trajectories led to a reversal in gender inequality in

[1] The Person Level Integrated Data Asset (PLIDA) is another administrative dataset that covers the entire population of Australian taxpayers. However, PLIDA only has data from 2000 onward.

[2] The Global Repository of Income Dynamics (GRID) is an open-access international database that provides micro-level statistics on income inequality and income dynamics. Currently, the GRID project has data from 13 countries: Argentina, Brazil, Canada, Denmark, France, Germany, Italy, Mexico, Norway, Spain, Sweden, the UK, and the US. All statistics are derived from administrative earnings records and harmonized for cross-country comparability. Note that, this project is not officially associated with the GRID project. For comparison, we provide similar micro-level statistics for Australia on our project website.

the latter half of the 2010s.

Third, early-life disparities—rooted in initial conditions such as education and parental background—have become increasingly important in determining lifetime inequality. Older cohorts experienced substantial changes in inequality over the course of their working lives, suggesting a significant role for adult income shocks. Conversely, for younger cohorts entering the labour market in the 2010s, lifetime inequality increasingly reflected initial disparities. Similar to the trends in earnings growth and overall inequality, this shift aligns with the broader deceleration in aggregate GDP growth.

Fourth, we assess the extent of idiosyncratic earnings risk by computing the second- and higher-order moments of the residualized log earnings growth (i.e., earnings shocks). Our investigation reveals that the distribution of earnings shocks deviates substantially from Gaussian assumptions. Residualized log earnings changes exhibit positive skewness, excess (leptokurtic) kurtosis, and thick double-Pareto tails. These features remained relatively stable over time and exhibit cyclical features. During macroeconomic slowdowns, earnings shock volatility increases markedly for low-income earners while decreasing for higher earners. Downturns also elevate tail risks, amplifying both the severity and probability of extreme negative shocks.

Furthermore, vulnerable groups continue to experience higher earnings risk relative to median and high-income individuals. Low-income earners, especially young women, face elevated earnings shock volatility. Men encounter extreme shocks more frequently, while women experience more severe negative shocks. This persistent nature of earnings risk across income levels and demographic groups underscores the unequal burden of earnings risk, even during a prolonged period of aggregate expansion.

Fifth, we analyze earnings mobility using average rank-rank mobility of permanent earnings over a 10-year horizon. We find strong upward mobility, particularly at lower permanent income ranks, which remained significant and stable throughout the observed period. For men, the rank-rank measure indicates that workers at the 25th percentile (approximately the poverty line) can reach near-median income within a decade. Although women are generally less mobile, the 10-year rank-rank profiles intersect the 45-degree line at the 70th percentile for men and the 50th percentile for women, suggesting mobility levels higher than those observed in countries that have experienced major recessions, such as the US, the UK, and Canada (McKinney, Abowd and Janicki 2022; Bell, Bloom and Blundell 2022; Bowlus et al. 2022), or long-term stagnation, such as Italy (Hoffmann, Malacrino and Pistaferri 2022).

Finally, we extend our analysis to broader income definitions that incorporate capital income, taxes, and transfers. We find that market income—defined as the sum of labour and capital earnings—closely tracks labour earnings, with capital earnings contributing modestly to top-end growth and exerting little influence on inequality, mobility, or idiosyncratic risk. In contrast, post-government income—which adjusts market income for taxes and transfers—substantially compresses inequality and reduces earnings shock volatility, particularly for low-income and younger workers. However, redistributive policies do not fundamentally alter the structure or dynamics of the income distribution, underscoring the dominant role of labour earnings in shaping long-term income trajectories. Additionally, we find that the tax and transfer system has supported income growth and stability for low-income women, while low-income men have experienced stagnation in both market and post-government income. These findings highlight the limits of current fiscal policy in addressing the enduring influence of labour market institutions and demographic factors in shaping economic outcomes.

In summary, our analysis identifies two distinct episodes in Australia's earnings inequality trends.

From 1991 to 2010, strong earnings growth at the very top led to rising inequality, while the following decade's economic slowdowns saw reduced top-end growth and a modest decline in inequality. During the three decades, women and top earners maintained growth advantages, while low-income men faced stagnation, even after accounting for the effects of redistributive policies. Earnings risk remained relatively unchanged, with heightened risk for low-income earners and young women persisting despite some improvement. Nonetheless, Australia maintained stronger upward mobility than many other OECD countries, although mobility itself remained largely unchanged over the growth period. Lastly, while fiscal policies helped mitigate inequality and cushion income volatility at the bottom of the distribution, it did not substantially alter the trends in growth, inequality, or mobility, nor the underlying market-driven structure of earnings dynamics.

Our paper proceeds as follows. Section 2 provides a description of the data and policy settings in Australia. Section 3 presents core statistics on labour earnings inequality, dynamics and mobility. Section 4 presents additional statistics using different income measures that incorporates capital earnings, taxes and public transfers. Section 5 concludes. We provide additional results and supporting information in the Appendix.[3]

Related studies. Our paper is closely related to studies from the Global Repository of Income Dynamics (GRID) project by Guvenen, Pistaferri and Violante (2022). Adopting a similar methodology, we present a range of comparable statistics on earnings inequality, dynamics and mobility in Australia over three decades of sustained economic growth (1991–2020). By adding the unique case of Australia to this literature, our study enhances international comparison and provides new insights from Australia's distinct experience. This work also contributes to the broader literature on income inequality in advanced economies (e.g., see Piketty and Saez 2003; Krueger et al. 2010; Piketty, Saez and Zucman 2018; Guvenen et al. 2023; Saez and Zucman 2020; Heathcote, Storesletten and Violante 2020; Lippi and Perri 2023; Karahan, Ozkan and Song Forthcoming) and to the body of studies documenting income dynamics and inequality trends in the U.S. (e.g., see Guvenen et al. 2021; De Nardi et al. 2021; Guvenen et al. 2023; Heathcote et al. 2023; Auten and Splinter 2024).

There is a large literature documenting income inequality and dynamics in Australia (e.g., see Leigh 2005; Wilkins 2015; Chatterjee, Singh and Stone 2016; Kaplan, Cava and Stone 2018; Productivity Commission 2018; Fisher-Post, Herault and Wilkins 2022; Tin and Tran 2023*b*). Our paper is also related to empirical studies on the redistributive and social insurance roles of the Australian tax and transfer system (Herault and Azpitarte 2015; Tran and Zakariyya 2021; Tran and Zakariyya 2023). Tran and Zakariyya (2023) highlight the critical role of Australia's progressive tax and transfer system in mitigating the distributional effects of uneven gains from economic growth, using a sample of individual records from 10% of Australian taxpayers. In contrast, this paper focuses on the evolution of earnings distribution over the long period of sustained economic growth, using the same data source but restricting the samples to Australian taxpayers aged from 25 to 55 (i.e., workers) as in Guvenen, Pistaferri and Violante (2022). This approach allows us to provide directly comparable statistics to those of other economies in the GRID project. We therefore connect the Australian inequality literature to the global research on earnings inequality and mobility trends (e.g., see Guvenen, Pistaferri and Violante 2022; McKinney, Abowd and Janicki 2022; Bell, Bloom and Blundell 2022; Bowlus et al. 2022; Hoffmann, Malacrino and Pistaferri 2022).

[3]We also provide more statistics in our online Technical Appendix.

2 Data and the Australian context

This section provides an overview of the data and the economic and policy settings in Australia between 1991-2020.

2.1 Data and variable construction

Our primary data source is the Australian Tax Office (ATO) Longitudinal Information Files (ALife), which contains tax records of individual tax filers drawn from the ATO's 2016 client register, covering the period 1991-2020. Each year, a 10% random sample of new tax filers is added to the dataset.[4] In the Australian income tax system, there is no joint filing of tax returns. Thus, our unit of measurement is the individual. This means our cross-sectional sample provides a point-in-time snapshot of annual earnings, income, tax payments, and public transfers at the individual level between 1991-2020. We use the Consumer Price Index (CPI) to convert all monetary variables to 2020 Australian dollars.

Sample selection. To enable meaningful comparisons between Australia and other countries, we follow the GRID project methodology, restricting our sample to those workers aged from 25 to 55 whose annual earnings exceed a minimum threshold $\underline{y}$. This threshold is equal to what a worker would earn if they were to work part-time for one quarter at the national minimum wage.[5] We construct the following three samples for our analysis:

1. *Cross-sectional (CS) sample*: All individuals who satisfy the aforementioned age and earnings criteria in a given year t form the cross-sectional (CS) sample for that year. The CS sample covers the period 1991-2020 and is used to compute cross-sectional inequality statistics.

2. *Longitudinal (LX) sample*: The longitudinal sample (LX) is a subset of the CS sample, constructed to study the distribution of residualized log earnings growth/changes (*earnings shocks*). This requires that we restrict our CS sample to those individuals with 1-year and 5-year forward earnings changes, forming the LX sample that spans the years 1991-2015.

3. *Heterogeneity (H) sample*: The heterogeneity (H) sample further restricts the LX sample to individuals for whom a permanent earnings measure can be constructed (see below). Specifically, it requires individuals to have been in the sample for the three previous consecutive years. The H sample, which includes the years 1993-2015, is used to study earnings mobility across demographic groups.

Variable construction. Our main earnings variable is real total labour earnings, indexed to 2020 Australian dollars using the CPI. Based on this variable, we construct the following earnings measures for worker i in year t:

1. *Raw real earnings*: in levels, y_{it}, and in logs, $\log(y_{it})$.

[4] For more information on the ALife data and its compilation, see the ALife website and Abhayaratna, Carter and Johnson (2021).

[5] Specifically, the formula for the minimum threshold is $\underline{y}$ = part-time adjustment × minimum wage per week × 12. We obtained historical minimum wage per week data from Hamilton (2022). The part-time adjustment factor is the average weekly hours of part-time work divided by 38 hours (full-time equivalent). The average weekly hours of part-time work were sourced from the Australian Bureau of Statistics (ABS) Labour Force Survey.

2. *Residualized log earnings*, ε_{it} : Computed by regressing log real earnings on a full set of age dummies, separately for each year and gender. It controls for trends in earnings across workers at different stages of their life or business cycle.

3. *Permanent earnings*, P_{it-1}: Defined as the average earnings over the previous three years, $P_{it-1} = \left(\sum_{s=t-3}^{t-1} y_{is}\right)/3$. We compute percentiles of permanent earnings.

4. *Residualized permanent earnings*, ε_{it}^{P}: Computed from P_{it-1} by applying the same method used to compute ε_{it}.

5. *1-year change in residualized log earnings*, g_{it}^{1}: Denoted as $g_{it}^{1} = \Delta\varepsilon_{it} = \varepsilon_{it+1} - \varepsilon_{it}$, this represents the 1-year forward change in the residualized log earnings, ε_{it}. This measure is also referred to as the *1-year earnings shocks*.

6. *5-year change in residualized log earnings*, g_{it}^{5}: Denoted as $g_{it}^{5} = \Delta^{5}\varepsilon_{it} = \varepsilon_{it+5} - \varepsilon_{it}$, this represents the 5-year forward change in the residualized log earnings, ε_{it}. This measure is also referred to as the *5-year earnings shocks*.

Throughout the paper, we refer to percentiles of the distributions of these earnings measures using the notation px, where x $\in [0, 100]$. For instance, p50 denotes the median, while p10 represents the 10th percentile. Similarly, p50-p10 refers to the difference between the median and the 10th percentile.

Descriptive statistics. Table 1 presents the sample sizes for the three samples. After imposing restrictions on age and minimum earnings for cross-sectional analysis (CS sample), we are left with approximately 55% of the original dataset. Further restricting the sample for longitudinal analysis (LX sample)—which requires observations with 1- and 5-year forward earnings changes—reduces the sample to around 40% of the original dataset. The proportion of women in the original dataset ranges between 44% and 49% and remains virtually unchanged in the CS sample. However, it slightly decreases after additional sample selections to allow for the computation of 1- and 5-year changes (LX sample) and permanent earnings (H sample).

Table 1: **Sample size and percentage of women in ALife (Original), CS, LX and H samples by year.**

	Number of individuals				Percentage of women			
Year	Original	CS	LX	H	Original	CS	LX	H
1991	983,476	530,283	378,260	-	44.92	43.14	41.76	-
1995	1,012,618	562,889	409,693	331,145	45.4	44.31	43.23	41.99
2000	1,076,253	626,512	446,972	372,791	46.31	45.48	44.34	43.28
2005	1,205,964	666,143	477,674	395,078	47.89	46.14	44.97	44.06
2010	1,340,228	739,348	528,695	439,966	48.05	46.7	45.53	44.81
2015	1,432,924	798,600	564,879	470,454	47.99	47.01	46.57	45.67
2020	1,557,642	854,916	-	-	49	48.22	-	-

Table 2 provides a snapshot of our cross-sectional data sample from 1991 to 2020, reported at five-year intervals. The number of workers in the sample increased from 0.983 million to 1.557 million over

the 30-year period. Average earnings increased by almost 30%, while the standard deviation doubled. The fraction of female workers increased, as did women's average earnings relative to men. Over the same period, the age distribution of taxpayers shifted, reflecting an aging demographic structure.[6]

Table 2: **Descriptive statistics for selected cross-sectional samples.**

		Earnings (both)			Mean earnings		Age shares (%)		
Year	Obs. (mill.)	Mean	SD	Women (%)	Men	Women	[25,35]	[36,45	[45,55]
1991	0.53	49,965	35,630	43	59,420	37,504	42.86	35.01	22.13
1995	0.56	52,237	39,003	44	61,797	40,223	40.69	34.27	25.05
2000	0.63	58,983	315,590	45	69,881	45,921	38.31	34.06	27.63
2005	0.67	60,630	56,026	46	71,519	47,922	37.07	33.46	29.47
2010	0.74	65,355	63,158	47	77,544	51,441	37.18	32.55	30.28
2015	0.80	69,091	71,117	47	82,165	54,353	39.20	31.61	29.20
2020	0.85	71,609	65,723	48	83,375	58,974	39.90	31.76	28.34

Note: Annual earnings reported in $2020 Australian dollars.

Table 3 reports summary statistics for the annual real earnings distribution in the cross-sectional sample over time. There is a wide dispersion in earnings, with the 2.5th and 99th percentiles corresponding to approximately 14% and 460% of the median earnings, respectively. As detailed in subsequent sections, overall real earnings rose over the period, but the growth rate also increased monotonically with earnings percentiles. Specifically, between 1991 and 2020, real earnings at the 10th percentile grew by 44%, while earnings at the 95th, 99th and 99.9th percentiles increased by 59%, 75%, and 94%, respectively.

Table 3: **Selected percentiles of the annual earnings distribution (men and women combined).**

Year	P2.5	P10	P25	P50	P75	P90	P95	P99	P99.9
1991	5,715	12,943	27,630	46,245	65,455	85,308	102,138	158,569	329,159
1995	5,667	12,905	27,909	47,460	68,148	90,141	109,753	177,090	389,598
2000	6,251	14,516	30,667	51,612	75,125	101,548	126,235	218,811	524,217
2005	6,492	14,824	30,947	52,634	77,531	106,029	132,339	234,469	567,601
2010	6,558	15,379	31,863	55,145	83,494	117,280	148,549	261,924	651,935
2015	7,289	16,720	33,471	57,124	87,325	126,514	162,127	279,898	659,699
2020	8,463	18,646	36,121	60,078	91,190	129,915	162,151	277,957	637,429

Note: Annual earnings reported in 2020 Australian dollars.

2.2 Economic and policy background in Australia

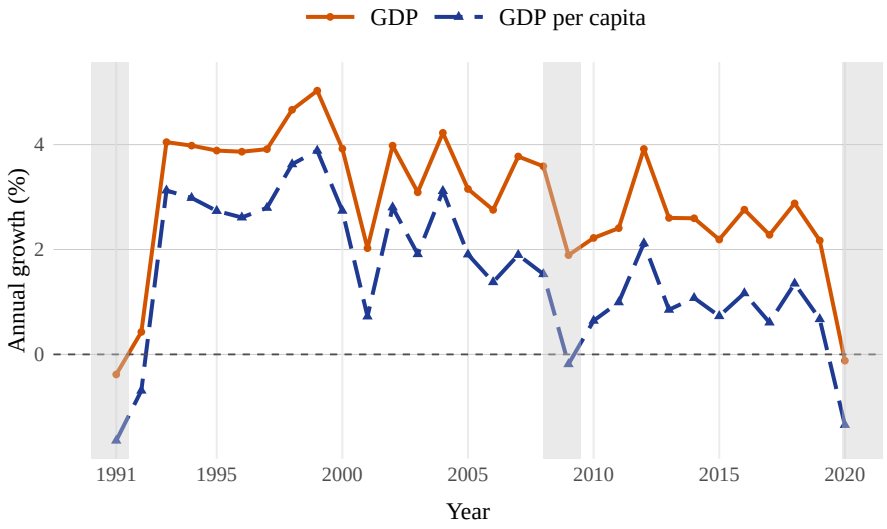
Australia has undergone various economic and policy developments that shape the evolution of earnings distribution over time. Below, we provide a brief discussion of some salient features of the

[6] Appendix Tables present more information on selected percentiles of the annual earnings distribution over time for all samples.

macroeconomic changes during the study period.

First, Australia has experienced several significant mining booms, which were primarily driven by global demand for its natural resources. Two major booms occurred within this period: the China-led mining boom of the 2000s and the lithium and rare earths boom of the 2010s. These booms played a crucial role in shaping macroeconomic conditions by boosting investment, employment, and terms of trade. During this period, the Australian economy has relied heavily on skilled immigrants to fill labour shortages.

Figure 1: **Annual growth trends of GDP and GDP per capita in Australia (1991–2020).**



Note: The figure illustrates the annual growth rates of both GDP and GDP per capita in Australia over the period 1991–2020. Grey shading marks major economic downturns: the domestic recession of 1990–91, the Global Financial Crisis of 2008, and the COVID-19 pandemic beginning in 2020.

Second, Australia experienced 30 years of sustained economic growth from late 1991 until the onset of the COVID-19 pandemic in early 2020. Figure 1 plots the growth of real GDP and real GDP per capita from 1991 to 2020. As shown, although the early-1990 to late-1991 recession led to significant drops in output and living standards, the following three decades were characterized by uninterrupted growth. While annual GDP growth fluctuated, it remained positive throughout the period. The 1990s were a period of rapid economic growth, with annual GDP increasing at 4% or higher, while the 2000s saw a moderation to approximately 3%. The 2008-09 Global Financial Crisis (GFC) had a notable impact but did not push Australia into a recession. The negative GDP per capita growth in 2018 was primarily driven by a surge in immigration. However, the 2010s marked a gradual secular decline in growth, reflecting an economic slowdown.[7]

Third, substantial changes to labour laws and industrial policies took place during this period. Notably, Enterprise Agreements became part of the industrial relations system in the early 1990s and have evolved considerably over time. Enterprise Agreements are designed to suit the needs of individual enterprises, allowing them to negotiate employment conditions—such as wages and other terms—tailored to their specific circumstances, therefore providing greater flexibility than the traditional industry-wide awards system.

[7]We provide additional information on income growth across groups and over time on our website for the Growth and Inequality in Australia Project.

Fourth, the progressive income tax schedule is not indexed automatically to nominal income. Instead, the Australian government adjusts income tax brackets through discretionary changes, often leaving them unchanged for extended periods.[8] Income thresholds and marginal tax rates remained virtually unchanged during the 1990s, despite strong economic growth. In the 2000s, the government actively increased income tax thresholds and reduced marginal tax rates, but no significant adjustments were made in the 2010s. As a direct consequence, the growth in nominal income has gradually pushed more tax payers into higher marginal tax brackets, leading to implicit and uneven tax increases. This phenomenon, known as "bracket creep", contributes to income inequality and may influence work incentives and earnings differently across income groups.

3 Core statistics

This section presents our main findings on the evolution of earnings inequality, mobility, and risk in Australia from 1991 to 2020, using administrative tax data from ALife. We begin by examining the percentiles of log earnings levels across years. Next, we analyze income inequality, both in cross-sectional data and by cohort over the life cycle. We then explore measures of idiosyncratic earnings risk, focusing on the dispersion, skewness, and excess kurtosis of 1-year changes in residualized log earnings (i.e., 1-year earnings shocks). Finally, we assess income mobility. Most statistics are reported separately for men and women to highlight gender-specific patterns.

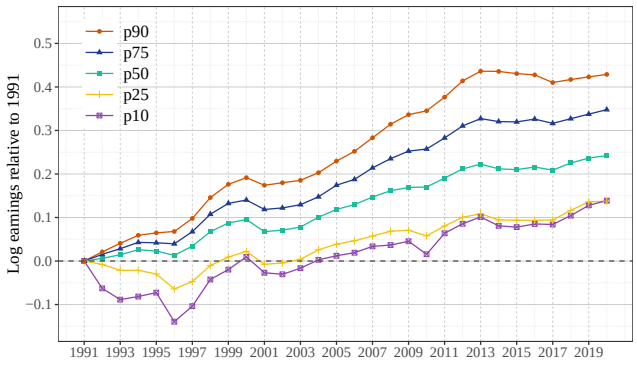
3.1 Earnings inequality over time

To understand how inequality evolved over time, we begin by examining key trends in earnings levels in Australia. For men and women separately, we compute annual statistics for the 10th, 25th, 50th, 75th, and 90th percentiles of the cross-sectional distribution of various earnings measures between 1991 and 2020. We also compute similar statistics for the top of the distribution—specifically, the 95th, 99th, 99.9th, and 99.99th percentiles. To capture inequality more broadly, we report multiple measures, including the Gini coefficient, to ensure robustness and facilitate comparison with other studies. We conclude this subsection by presenting earnings levels and inequality measures over time for selected cohorts to explore how inequality evolves over the life cycle during the period of analysis.

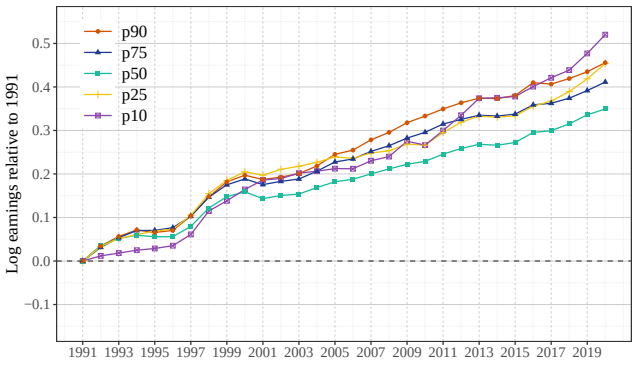
[8] The introduction of the New Tax System (Goods and Services Tax) Act 1999 led to a series of changes in the personal income tax code in the 2000s.

Figure 2: **Changes in log real annual earnings across the earnings distribution (men and women, 1991-2020).**

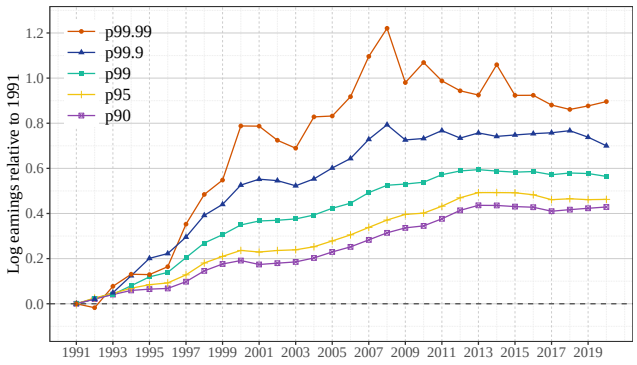
(a) Men: p10-p90



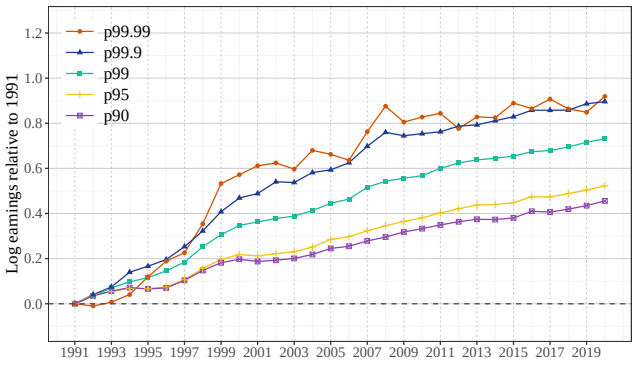
(b) Women: p10-p90



(c) Men: p90-p99.99



(d) Women: p90-p99.99



Note: The figure shows changes in selected percentiles of log real annual earnings ($\log y_{i,t}$) for men and women from 1991 to 2019, with 1991 normalized to zero. Each line traces the evolution of a specific percentile relative to its 1991 level. Panels (a) and (b) present changes across the 10th to 90th percentiles for men and women, respectively, capturing broad distributional shifts. Panels (c) and (d) focus on the right-most tail of the distribution, plotting changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles.

Trends in earnings across groups. Figure 2 shows the evolution of log real annual earnings across selected percentiles for both men and women, normalized to their levels in 1991. Panels (a) and (b) of Figure 2 reveal a general increase in earnings over the period. For instance, median log real earnings in 2015 were 20 log points higher for men and 30 log points higher for women relative to 1991. However, the magnitude of earnings growth varied across the distribution, with significant divergence between top and bottom percentiles, leading to a widening earnings gap.

As shown in Panel (a), male earnings exhibit distinct episodes of divergence, coinciding with key economic events, including the early 1990s recession, the 2000s mining boom, and the post-2008 GFC period. Higher-percentile male earners—such as at p75 and p90—experienced consistently higher growth starting from the early 1990s. In contrast, those in lower earnings percentiles (p10 and p25) experienced greater fluctuations, with stagnant real earnings until 2003, followed by only modest growth thereafter. This pattern implies that male workers at the lower end of the distribution were disproportionately affected by adverse economic conditions, such as the 1990-91 recession and the 2008 GFC, and exhibited slow and incomplete post-crisis recoveries.

The trends for women present a contrasting story. Panel (b) shows a relatively stronger upward

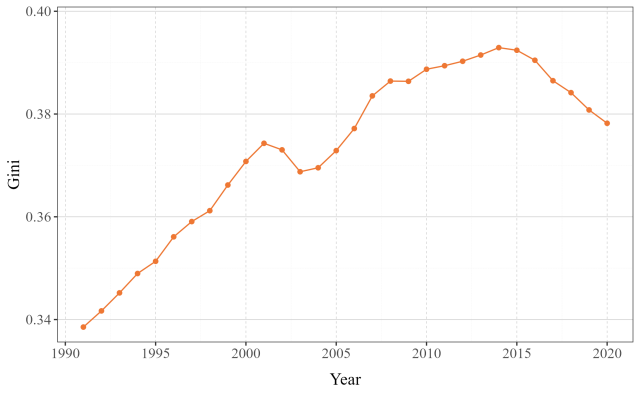
trajectory for female earnings across percentiles. Earnings gap among women only became more notable in the upper half of the distribution from the early 2000s. Furthermore, unlike men, women in the lower percentiles (p10 and p25) experienced the highest earnings growth. Their earnings increased by 50 log points over the period, approximately three times the growth rate of men in the same income bracket.

Panels (c) and (d) of Figure 2 display trends within the top decile. For both men and women, the very top percentiles (p99, p99.9, and p99.99) exhibit a steep upward trajectory from the early 1990s onward. This acceleration was more pronounced for men, especially the top 0.01% (p99.99) who experienced substantial growth. Women followed a similar pattern, albeit with less extreme growth at the highest percentiles.

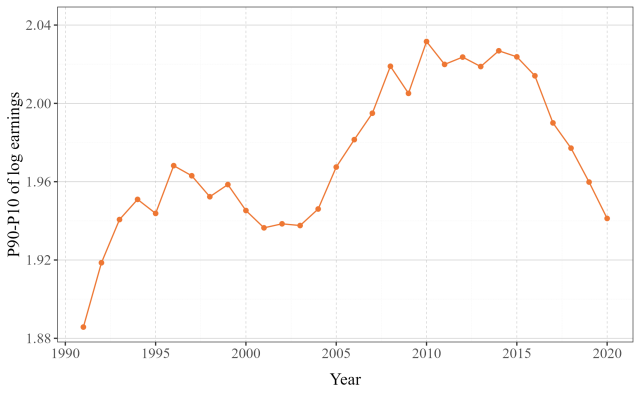
Overall, earners in the top 10% saw earnings grow at nearly twice the rate of the rest of the distribution. These divergent trends reflect an increasing concentration of earnings at the very top, driving up overall inequality and inequality within the upper echelons of the earnings distribution. However, in the last decade, earnings growth slowed for women and stagnated for men. Peak earnings growth for the male group, especially the very top 0.01%, occurred during the 2000s mining boom and levelled off following the GFC. Among women, growth rates remained steadier across the selected percentiles, though at a slower pace.

Trends in earnings inequality. We now turn to an analysis of earnings inequality throughout the observed period, using two complementary measures presented in Figure 3. First, we include the Gini index for comparability with broader academic and policy studies. Second, to ensure the robustness of our results across inequality measures, we present the p90-p10 differential—a non-parametric metric that captures the difference between the 90th and 10th percentiles of the log earnings distribution. Additional inequality metrics, such as the standard deviation, are also reported in the subsequent analysis and in Appendix Figure B.5.

The two measures in Figure 3 exhibit consistent patterns, revealing that the evolution of earnings inequality in Australia can be divided into two epochs. In the first epoch, spanning from 1991 to the late 2000s, inequality rose significantly. This was followed by a period of relative stability in the early 2010s, before inequality declined sharply starting around 2015. This downward trend coincides with the prolonged macroeconomic slowdown that began after the 2008 Global Financial Crisis (GFC).



(e) Gini coefficient



(f) P90-P10

Figure 3: **Trends in earnings inequality.**

Note: The figure plots two measures of earnings inequality in Australia from 1991 to 2020. Panel (a) shows the Gini coefficient calculated on real annual earnings (y_{it}), providing a summary measure of overall inequality. Panel (b) displays the p90-p10 differential in log real earnings, capturing the spread between the 90th and 10th percentiles as a non-parametric measure of dispersion. Both measures suggest similar inequality trajectories over three decades of sustained economic growth.

To understand the underlying drivers of these trends, we refer to Figure 2, which underscores a strong positive correlation between earnings growth rates and income percentiles. During the period of rising inequality, earnings growth was disproportionately concentrated at higher earnings ranks, particularly among the top decile. By the late 2010s, the top 0.1% of earners had experienced growth of up to 100 log points, whereas the bottom of the distribution grew merely 5 log points for men and 20 log points for women. The second phase, marked by declining inequality, aligns with a deceleration in top-end earnings growth. While earnings growth stagnated for top-income men, the rest of the income distribution registered modest gains. Women, in particular, saw the strongest and most consistent growth, whereas men's growth was more gradual and uneven.

Hence, these findings indicate that the trajectory of earnings inequality in Australia over the past three decades, including the recent reversal, has been largely driven by divergent growth between the top 10% and the lower 90% of earners, alongside strong and sustained earnings gains among women.

The results thus far highlight significant differences in earnings growth paths by gender and income group over the past three decades. For deeper insights, we next analyze inequality trends separately for men and women and examine how inequality has evolved across different segments of the earnings distribution.

Distinct patterns in earnings inequality by gender. Figure 4 illustrates the dispersion of earnings for both genders. Panels (a) and (b) show trends in two measures of log earnings inequality for men and women, respectively: the p90-p10 differential and the standard deviation, scaled by a factor of 2.56 (corresponding to the p90-p10 differential of a Gaussian distribution).

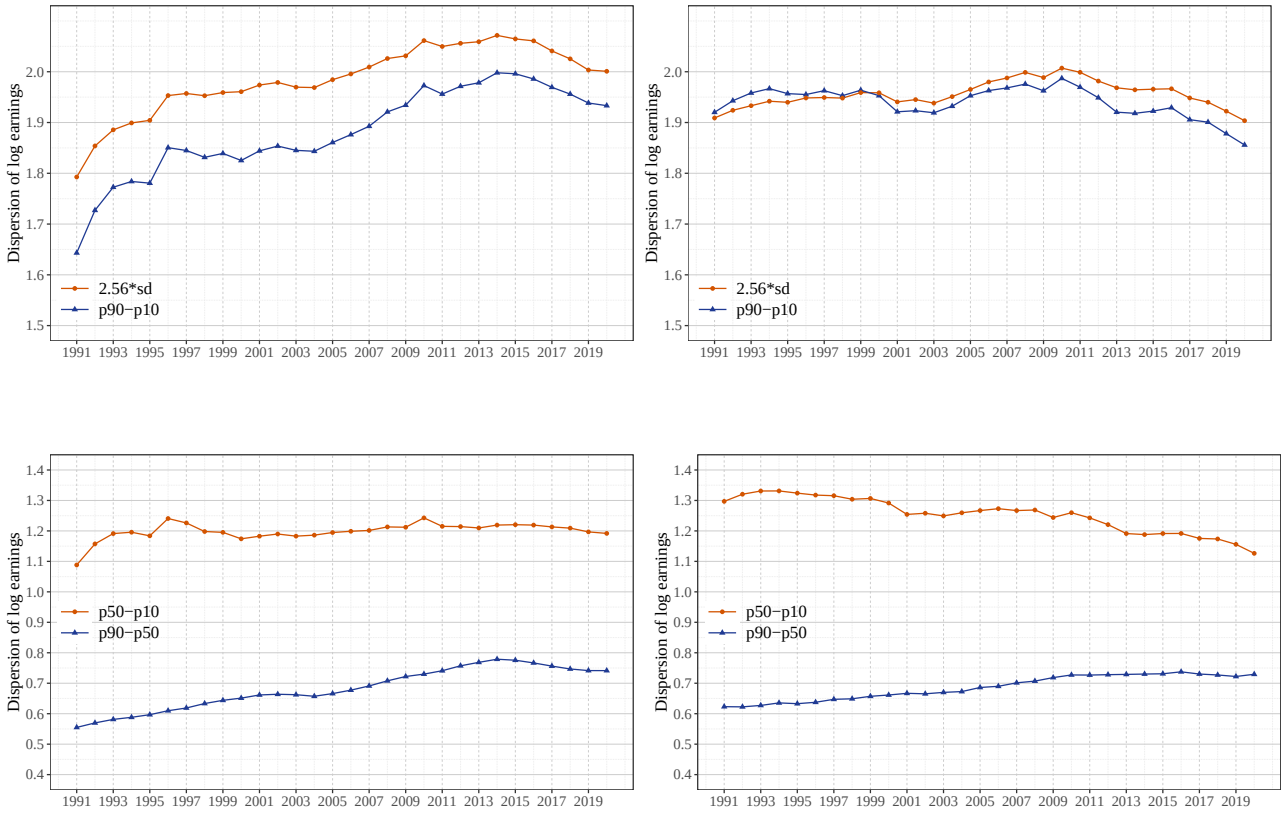
The trends in male and female earnings inequality exhibit distinct patterns, consistent with their earnings trajectories shown in Figure 2. Panel (a) for men demonstrates an upward trend in both inequality metrics until the early 2010s, followed by a decline that returns inequality to its late 2000s level. The rising dispersion during the first two decades underscores widening inequality across the male earnings distribution, primarily driven by stronger earnings growth at the very top. The subsequent decline reflects stagnant growth rates among top male earners and gradual improvements

among low-income men.

Figure 4: **Trends in overall earnings inequality and top/bottom inequality.**

(a) Men: Overall inequality

(b) Women: Overall inequality



(c) Men: Top/bottom inequality

(d) Women: Top/bottom inequality

Note: The figure shows trends in the dispersion of log real earnings ($\log y_{i,t}$) for men and women from 1991 to 2019. Panels (a) and (b) display overall inequality, measured by the p90–p10 differential and 2.56 times the standard deviation (the latter is scaled by 2.56 to match the p90-p10 differential under a Gaussian distribution). Panels (c) and (d) decompose inequality within the distribution, plotting the p90-p50 differential (top-end inequality) and the p50–p10 differential (bottom-end inequality). Both overall and within-group measures highlight distinct trends by gender and across the distribution.

In contrast, Panel (b) for women shows a more stable trend in earnings inequality, with only modest fluctuations. The decline in inequality among women that began in the last decade is pronounced, with inequality dropping by around 10 log points between 2010 and 2020. Conversely, the reduction in inequality for men is less consistent over time, amounting to just a 5 log point decrease over the same period. This pattern aligns with the relatively stronger and more uniform growth trajectories among women across earnings percentiles, including in recent years.

Top and bottom-end inequality. To better understand the contributions of different earnings groups to overall inequality trends, we decompose inequality into top and bottom components using the p90-p50 and p50-p10 differentials, respectively. For men, Panel (c) indicates a relatively stable p50-p10 spread, suggesting minimal changes in bottom-end inequality. Meanwhile, the p90-p50 spread increased until 2010, indicating a rising top-end inequality, before falling in the following decade.

For women, Panel (d) reveals a different pattern. The p50-p10 measure displays a declining trend, reflecting a reduction in bottom-end inequality. In contrast, the p90-p50 measure shows a modest

increase relative to that of men, signaling stability in top-end inequality. These results reinforce earlier findings on female earnings trajectories, indicating that the sustained and robust earnings growth among low-income women, coupled with a slowdown among top female earners, significantly contributed to the decline in overall female earnings inequality.

From these findings, two key takeaways emerge. First, male earnings inequality trends closely mirror the overall inequality patterns, particularly during the first two decades. This suggests that the period of rising inequality in Australia was largely driven by increasing inequality among men—specifically, the expanding disparities in earnings growth between the top 10% and the lower 90% of male earners. Second, while both male and female inequality contributed to the decline in overall inequality during the 2010s, the sharper reduction in female inequality played a more significant role. Faster and consistent earnings growth among women at the lower end of the distribution, combined with stagnation at the top, was a critical factor in driving down overall inequality.

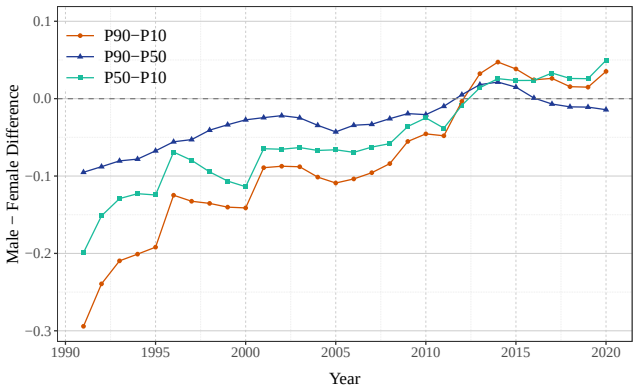
These patterns underscore the heterogeneous impact of economic growth across different segments of the population. It also reflects a unique dynamic in which women, particularly low-income female workers, continued to make gains even as broader macroeconomic conditions weakened. However, since our analysis is based on individual earnings data, it remains unclear whether these gains translated into improvements in household welfare or merely offset declines in earnings elsewhere within families, especially among households whose male earners were at the bottom of the income distribution. Future research utilizing household-level data is needed to assess the extent to which female earnings growth contributes to overall family income stability and to deepen our understanding of intra-household earnings dynamics.

Gender gap in earnings inequality. Figure 5 delves deeper into gender differences in earnings inequality by plotting the gap in dispersion measures—p90-p10, p90-p50, and p50-p10—between men and women. Negative values indicate that the distribution of earnings for women is more dispersed than that for men, reflecting higher earnings inequality for women. In the early 1990s, the p90-p10 measure shows that overall inequality was initially higher for women, but this gap narrowed substantially over time. Notably, there is a convergence in gender differences across all three inequality measures, with values crossing into positive territory in the early 2010s. This shift indicates that, in recent years, earnings inequality has become relatively larger for men, a result that aligns with the rising top-end inequality among men and the strong compression at the lower end of the earnings distribution for women. The reversal in the gender gap in earnings inequality is a distinctive Australian feature, setting it apart from other advanced economies (see Figure 4 in Guvenen, Pistaferri and Violante 2022).

Earnings inequality over the life cycle. The evolution of earnings inequality may stem from differences in labour market conditions over the life cycle. To understand whether overall inequality trends are shaped by initial conditions upon labour market entry, we first examine trends in earnings inequality among 25-year-olds in Australia, focusing on changes at the lower and upper ends of the distribution.

Figure 6 displays the dispersion of initial earnings at age 25 over time, disaggregated by gender. Each panel presents two time series: one for the upper-end inequality (p90-p50) and one for the

Figure 5: **Trends in gender differences in earnings inequality.**

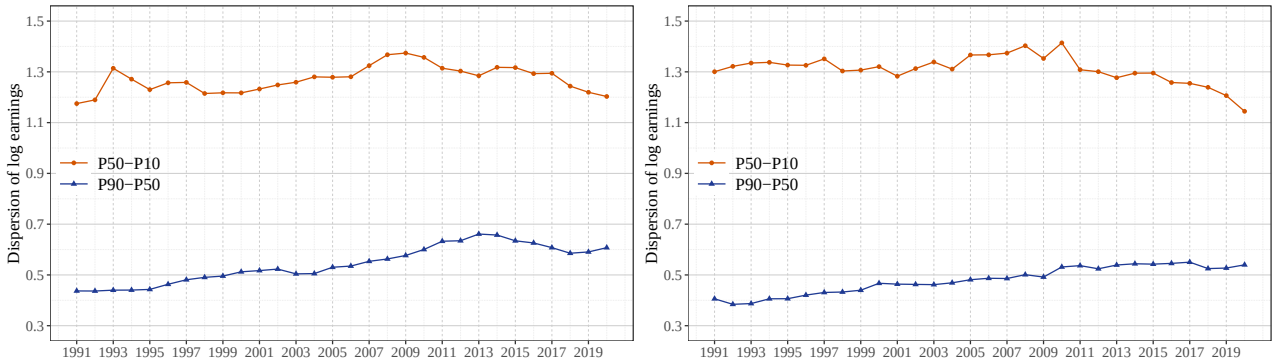


Note: The figure plots gender differences in three measures of earnings inequality—p90–p10 (overall dispersion), p90–p50 (top-end inequality), and p50–p10 (bottom-end inequality)—based on log real earnings ($\log y_{i,t}$) from 1991 to 2019. A negative value indicates that the corresponding inequality measure is higher for women than for men, and a positive value indicates higher inequality among men.

lower-end inequality (p50-p10). Remarkably, there is virtually no difference between the aggregate inequality patterns shown previously and those observed among young workers.

Specifically, Panel (a) shows a modest upward trend in upper-end (p90-p50) dispersion for young men between 1991 and 2013, followed by a slight decline in later years, while lower-end (p50-p10) dispersion remains steady throughout the period. Panel (b) depicts trends for women, illustrating a stronger tendency toward convergence in dispersion between the top and bottom of the earnings distribution. Overall, these findings suggest that the dynamics of aggregate earnings inequality were already present at the early stages of individuals' working lives, indicating a strong role for initial labour market conditions in shaping long-run inequality.

Figure 6: **Initial earnings inequality among 25-year-olds.**



(a) Men (b) Women

Note: The figure shows initial earnings inequality among 25-year-olds from 1991 to 2020, separately for men and women. Panels (a) and (b) plot the dispersion of log real earnings ($\log y_{i,t}$), using two measures: the p50–p10 differential (bottom-end inequality) and the p90–p50 differential (top-end inequality). These metrics capture changes in earnings dispersion at the lower and upper parts of the distribution for young workers at labour market entry.

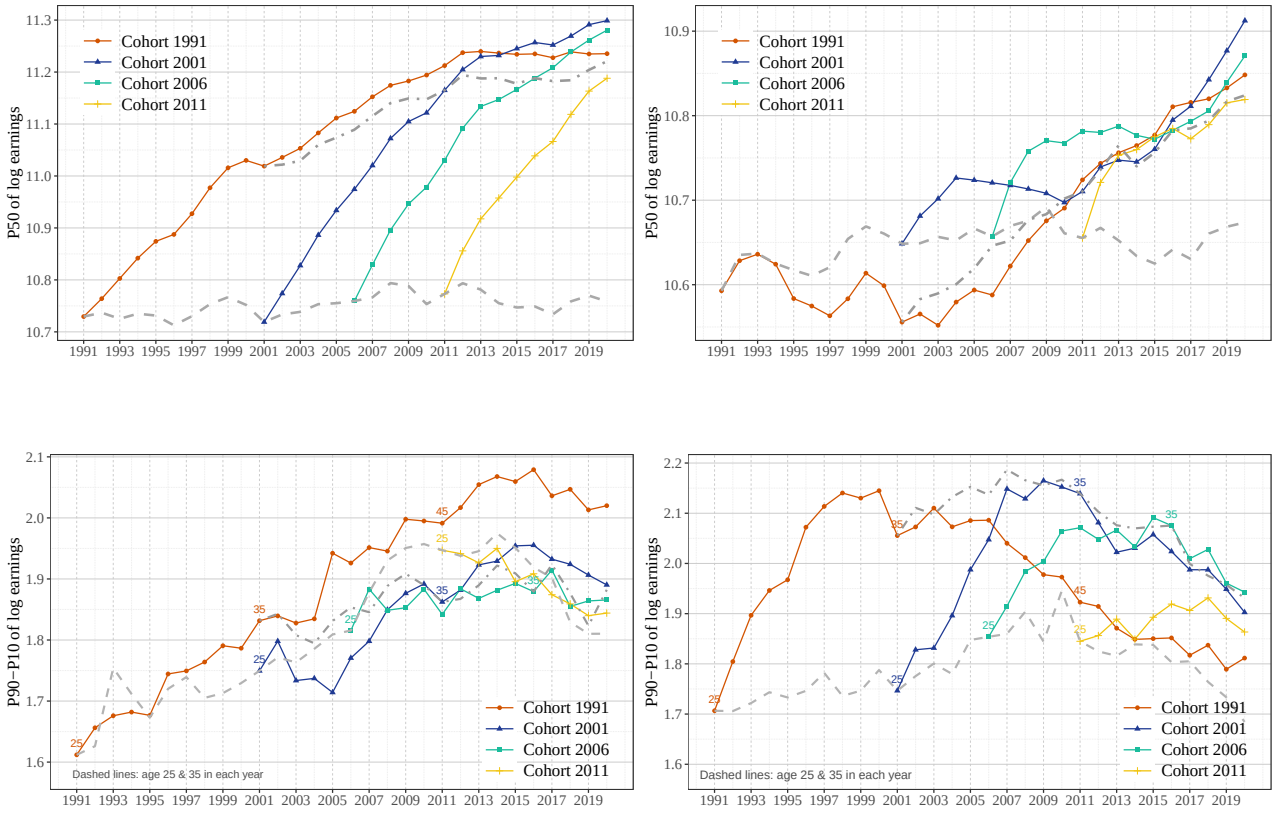
Next, we investigate how initial earnings inequality evolves over the life cycle for different cohorts. Figure 7 traces the evolution of median log earnings (Panels a and b) and the p90-p10 differential (Panels c and d) for 4 different cohorts: workers who turned 25 years old in 1991, 2001, 2006 and 2011.

In each panel, the gray dashed and dash-dotted lines show the time paths of corresponding statistics for workers at ages 25 and 35 from 1991 to 2020, respectively. By following cohorts over time, we can disentangle the effects of initial conditions from changes that occur throughout individuals' careers.

Figure 7: **Life-cycle profiles of median earnings and earnings inequality by cohort.**

(a) Men: Median earnings

(b) Women: Median earnings



(c) Men: Earnings inequality

(d) Women: Earnings inequality

Note: The figure illustrates life-cycle earnings profiles across different cohorts for men and women. Panels (a) and (b) plot the evolution of median log real earnings ($\log y_{i,t}$) by age for four cohorts—individuals who entered the labour market in 1991, 2001, 2006, and 2011. Panels (c) and (d) display earnings inequality within each cohort, measured by the p90–p10 differential. Grey dashed and dash-dotted lines mark corresponding statistics for ages 25 and 35 for every cohort between 1991 and 2020, respectively. These panels capture cohort-specific patterns in median earnings growth and within-cohort dispersion over the life cycle.

Panel (a) of Figure 7 shows that median earnings for young male workers at age 25 did not improve despite the uninterrupted GDP growth for 30 years. While the older 1991 and 2001 cohorts display lower initial earnings, these differences are minor. Across all cohorts, median earnings grow rapidly during the first 10 to 20 years of working life, increasing by 35 to 60 log points before leveling off. For example, the 1991 cohort's median earnings grew by 50 log points over 20 years, plateauing after 2011.

For women, shown in Panel (b), the pattern is markedly different. Unlike their male counterparts, median earnings of 25-year-old women saw modest growth of approximately 7 log points. In contrast, their increases over the life cycle came to only 20 to 30 log points, a relatively slower growth compared to men. Moreover, female earnings growth patterns exhibit greater variation across cohorts. The 1991 and 2001 female cohorts experienced minimal or even negative real earnings growth in their first 10 years in the labour market. Conversely, those in the younger 2006 and 2011 cohorts saw more

consistent growth as they aged. Additionally, while periods of earnings stagnation still present for the younger cohorts, these periods cover a significantly shorter time frame. The sluggish initial growth, especially among older female cohorts, likely reflects persistent influence of early-career factors, such as family responsibilities, on female labour supply. Nonetheless, the faster recovery and stronger upward trajectories among younger women may also signal structural changes—such as improved educational attainment and career opportunities, delayed marriage and childbearing, evolving household dynamics, more flexible work arrangements, and strengthened policy support for working women.

Panels (c) and (d) of Figure 7 show how earnings inequality—measured by the P90–P10 differential—evolves over the life cycle, highlighting both gender-specific patterns and shared cohort dynamics. Specifically, the older 1991 and 2001 cohorts display different inequality trajectories by gender. For men, earnings inequality rises steadily throughout the early and mid-career stages, suggesting that factors such as seniority, experience, and career-related shocks contributed significantly to widening lifetime disparities. In contrast, women in the same cohorts follow a hump-shaped trajectory. As shown in Panel (d), earnings inequality among women peaks around age 34—approximately a decade into their careers—before declining thereafter. This pattern implies that life-cycle inequality for women is more variable and subject to reversal, potentially reflecting influences such as occupational sorting, career interruptions related to childbearing or caregiving, and structural barriers like glass ceiling. These dynamics stand in contrast to the more persistent, monotonic rise in inequality observed among older male cohorts.

On the other hand, the younger cohorts who entered the labour market in 2006 and 2011 exhibit a markedly different pattern compared to their predecessors. Over the observed life cycle, for both men and women, deviations in inequality relative to their initial levels at age 25 were modest. That is, the steep increases in dispersion characteristic of earlier cohorts are largely absent among younger workers. This consistent pattern across genders and across both initial and life-cycle dispersion points to a broader macroeconomic shift. The prolonged post-GFC slowdown of the 2010s appears to have dampened both the inequality present at labour market entry and the accumulation of inequality over time. In particular, for younger cohorts, adult income shocks—such as those arising from promotions, industry transitions, or differential returns to experience and seniority—play a diminished role in shaping lifetime earnings inequality. Instead, disparities rooted in early-life conditions—such as educational attainment, cognitive and non-cognitive skills, and parental background—are increasingly decisive in determining long-term outcomes.

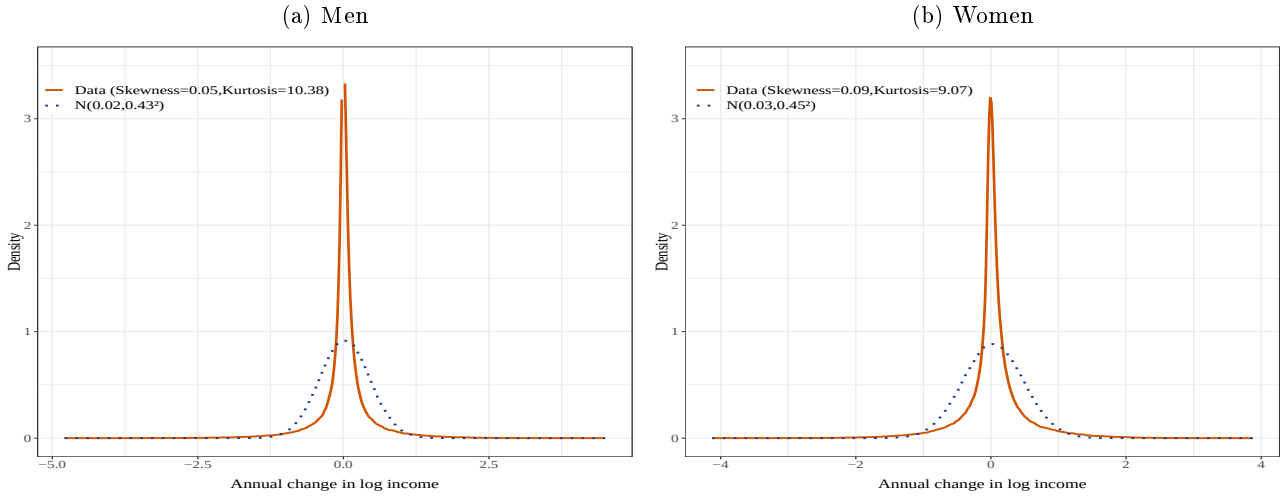
This shift signals a rise in persistent, early-life inequality and carries important implications for intergenerational mobility and labour market policy in Australia. In particular, the findings point to the value of further research into policies that support more equitable foundations at the start of individuals' working lives, including education and family support policies, to mitigate the long-term consequences of entrenched inequality.

3.2 Earnings dynamics

In this section, we examine key properties of the distribution of residualized earnings growth, focusing on its second- and higher-order moments. While the distribution of earnings levels provides insights into the cross-sectional dispersion (inequality), the distribution of residualized earnings growth/changes—which removes age effects related to experience, seniority, and work hour variations over the life cycle—offers a deeper understanding of how earnings evolves for the same individuals

over time. These changes, referred to as shocks, serve as proxies for *idiosyncratic earnings risk*. Negative shocks represent earnings declines due to idiosyncratic factors unrelated to age, while positive shocks indicate the opposite. Therefore, its moment properties are crucial for understanding earnings dynamics.

Figure 8: **Empirical vs. Gaussian density of one-year changes in residualized log earnings by gender**.



Note: This figure compares the empirical distribution of one-year changes in residualized log earnings with a Gaussian (normal) distribution of identical mean and standard deviation for men and women. Residualized earnings remove age-related effects (including experience and seniority) to isolate idiosyncratic income shocks. The empirical density exhibits a sharper peak, thinner shoulders, and thicker tails than the Gaussian benchmark, reflecting a higher concentration of small earnings changes and greater probabilities of extreme shocks. This comparison highlights the non-Gaussian features of earnings shocks, namely positive skewness, leptokurtosis, and heavy tails, that persist across genders.

To explore these properties, we compute the density of one-year changes in residualized log earnings (or one-year earnings shocks), as reported in Figure 8. The standard deviation is 0.43 for men and 0.45 for women, indicating a slightly higher earnings shock volatility for women. These values are comparable to estimates for Sweden and Spain, as well as to findings based on Australian household survey data (HILDA) by Tin and Tran (2023*b*), but they are lower than the average values reported in the cross-country sample of Guvenen, Pistaferri and Violante (2022).

If earnings shocks followed a Gaussian (normal) distribution, these values would imply that approximately 68% of annual shocks fall within ±0.43 log points for men and ±0.45 log points for women. In other words, most earners experience annual earnings shocks in the range of 50-60%. However, the empirical distribution of residualized log earnings growth deviates significantly from normality. As demonstrated in Figure 8, relative to a Gaussian distribution of identical mean and standard deviation, the empirical distribution exhibits three distinct features: (i) a very sharp peak, representing a much larger probability of small shocks; (ii) thin shoulders, indicating a significantly lower probability of moderate shocks; and longer and thicker tails, revealing a greater likelihood of extreme shocks compared to a Gaussian distribution.

To quantify these deviations, we compute higher-order moments of the one-year earnings shock distribution, including Kelly skewness and Crow-Siddiqui kurtosis.[9] Our results reveal that the distri-

[9]Kelly skewness measures asymmetry in the distribution, with positive values indicating a rightly-skewed distribution (larger extreme positive changes than extreme negative changes). Crow-Siddiqui kurtosis measures the "tailedness" of the distribution, with higher values indicating a greater frequency of extreme earnings changes.

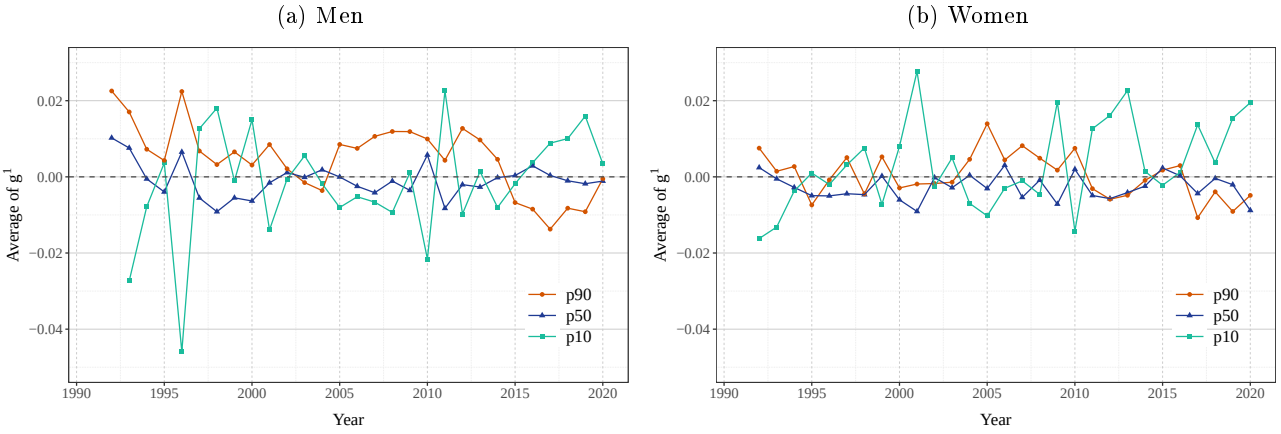
bution displays positive (right) skewness, excess (leptokurtic) kurtosis, and thick double Pareto tails. The peakedness and thick tails are reflected in a very high kurtosis in excess of 10.38 for men and 9.07 for women, relative to 3 for a Gaussian distribution.

These empirical properties are broadly consistent with prior findings. Similar distributional shapes—characterized by peaked centres, skewed and fat tails—have been documented in Australia by Tin and Tran (2023*b*), in the US by Guvenen et al. (2021), and across a wide range of countries in Guvenen, Pistaferri and Violante (2022).

3.2.1 Earnings shocks over time

We begin by examining how average shocks evolve over time. Figure 9 illustrates the one-year change in residualized log earnings for men (left panel) and women (right panel) across different percentiles of the income distribution, highlighting notable differences in earnings dynamics by income level and gender.

Figure 9: **Average one-year changes in residualized log earnings for selected percentiles of the income distribution.**



Note: This figure plots the average one-year changes in residualized log earnings ($\triangle\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$) across selected percentiles of the earnings distribution. Residualized log earnings remove age-related effects (including experience and seniority) to isolate idiosyncratic earnings shocks. The figure highlights differences in average earnings growth trajectories driven by factors unrelated to age across the earnings distribution over time.

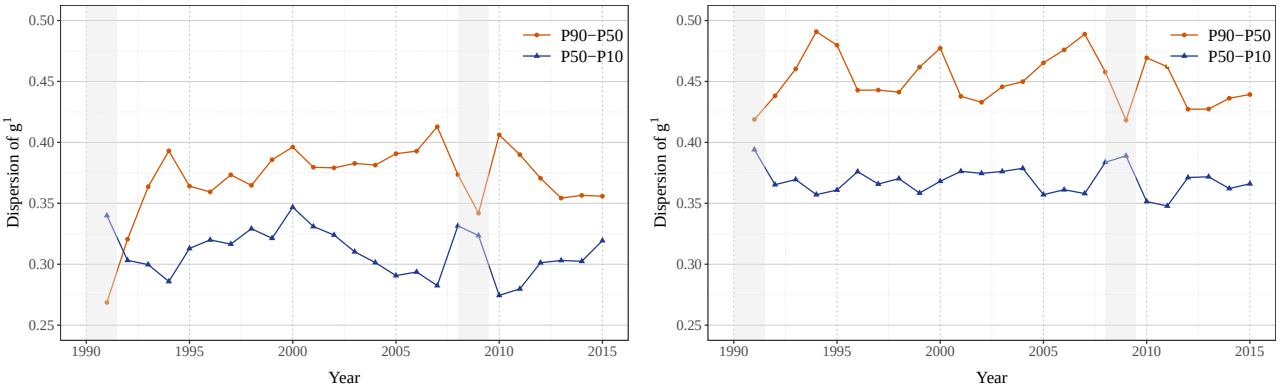
In particular, average earnings shocks for low earners (p10) display substantial volatility throughout the period for both men and women, indicating greater earnings risk at the lower end of the distribution. In contrast, median earners (p50) experience relatively modest year-over-year shocks, reflecting more stable earnings trajectories. High earners (p90), especially among men, generally experience positive earnings shocks up to 2015, consistent with their strong average earnings growth during this period.

These patterns suggest that the growth observed at the top of the distribution—central to rising inequality in Australia—is not mainly driven by life-cycle factors such as experience accumulation or changes in work hours. Rather, it reflects idiosyncratic or structural trends beyond those typically associated with age-related factors.

Moreover, although average earnings shocks fluctuate over time, the magnitude of these fluctuations in Australia is considerably smaller than in comparable countries in the GRID database, including

Canada, Mexico, Spain, and Argentina. This indicates that average earnings shock in Australia is comparatively low.

Figure 10: **Dispersion of one-year changes in residualized log earnings by gender.**



(a) Men (b) Women

Note: This figure displays the dispersion of one-year changes in residualized log earnings (i.e., earnings shocks) for men and women from 1990 to 2015. Panel (a) shows the dispersion for men, and panel (b) for women. Two measures are reported: the p90–p50 differential captures dispersion at the upper end of the earnings shock distribution, while the p50–p10 differential captures dispersion at the lower end. Together, these measures highlight differences in earnings shock volatility across the distribution and over time.

Cyclical features. Figure 10 presents the dispersion of one-year growth in residualized log earnings (one-year earnings shocks) for men and women in Australia, measured by the upper-end (p90-p50) and lower-end (p50-p10) percentile differences. First, we find that earnings shocks exhibit greater dispersion among higher-income earners (p90-p50) across both genders. Women, however, experience higher shock volatility compared to men. Nonetheless, despite broader macroeconomic changes, the volatility of individual earnings shocks—a key feature of idiosyncratic earnings risk—has remained relatively stable over time across both the upper and lower segments of the distribution and for both men and women. This suggests a more predictable earnings trajectory for workers throughout the period.

Second, despite relative stability over the long horizon, there is a noteworthy pattern. The lower-end (p50-p10) dispersion is countercyclical, spiking during the early 1990s recession and the 2008 GFC, whereas the upper-end (p90-p50) dispersion is procyclical. This suggests that even when aggregate indicators, such as GDP growth, remain positive during economic downturns, earnings risk—particularly at the lower-end of the earnings distribution—heightens. Given their greater dependence on labour earnings and limited financial buffers, low-income individuals are thus disproportionately exposed to macroeconomic shocks—exposures that may not be apparent when examining earnings levels in isolation.

Next, we turn to the higher-order moments of earnings shocks. Figure 11 presents the dynamics of Kelly skewness and Crow-Siddiqui kurtosis of one-year changes in residualized log earnings, disaggregated by gender.

Figure 11: **Higher-order moments (Kelly skewness and excess Crow-Siddiqui kurtosis) of one-year changes in residualized log earnings by gender.**

Note: This figure shows the higher-order moments of one-year changes in residualized log earnings (i.e., earnings shocks) by gender from 1990 to 2015. Panel (a) shows Kelly skewness, which measures the asymmetry of earnings shocks: positive skewness indicates a distribution with a longer right tail (more extreme positive shocks), while negative skewness reflects a longer left tail (more extreme negative shocks). Panel (b) displays excess Crow-Siddiqui kurtosis, calculated by substracting 2.91 from the raw kurtosis value. This captures the "tailedness" or prevalence of extreme shocks relative to a normal distribution, with a positive excess kurtosis indicating heavier tails and a greater likelihood of extreme shocks.

Panel (a) of Figure 11 shows that Kelly skewness exhibits notable fluctuations for both men and women. Furthermore, during economic slowdowns, the distribution becomes more negatively skewed, reflecting an increase in the magnitude of extreme negative earnings shocks relative to extreme positive ones. Conversely, during economic recoveries and expansions, the magnitude of extreme positive shocks becomes relatively larger. Notably, despite the marked gender differences in shock dispersion, the levels and trends of Kelly skewness are similar between men and women.

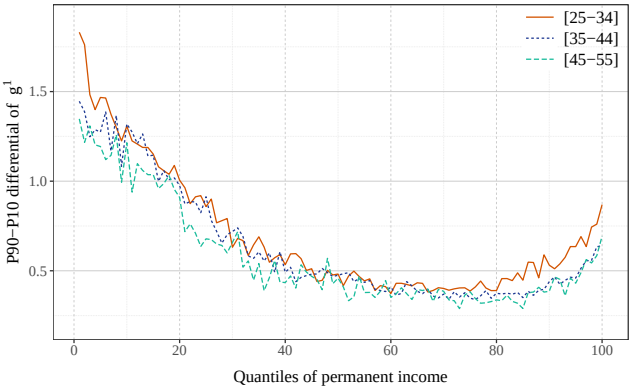
Panel (b) of Figure 11 illustrates Crow-Siddiqui kurtosis, which remains consistently high for both men and women, well above the level associated with a normal distribution. This indicates the persistent presence of heavy tails and thus a significant probability of extreme earnings shocks. Men have higher kurtosis than women throughout the period, suggesting they face greater exposure to extreme shocks. Importantly, following the early 1990s recession, kurtosis declined for the remainder of the decade, leading to a relatively stable kurtosis at a lower level. However, in the aftermath of the 2008 GFC, we observe a rise in kurtosis back to its mid-1990s levels, suggesting a renewed increase in the frequency of extreme earning shocks, especially for men.

Overall, although there are some noteworthy cyclical and gender-specific variations, the key moment properties of earnings shock distribution, including its asymmetry and heavy tails, have remained largely unchanged over the past three decades. This result underscores the persistent nature of idiosyncratic earnings risk.

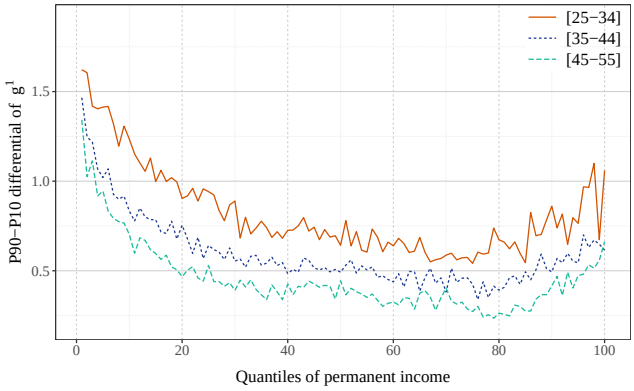
3.2.2 Earnings shocks by rank and age

Figure 12: **Dispersion, Kelly skewness and Crow-Siddiqui kurtosis of one-year changes in residualized log earnings by age group, permanent earnings percentiles, and gender.**

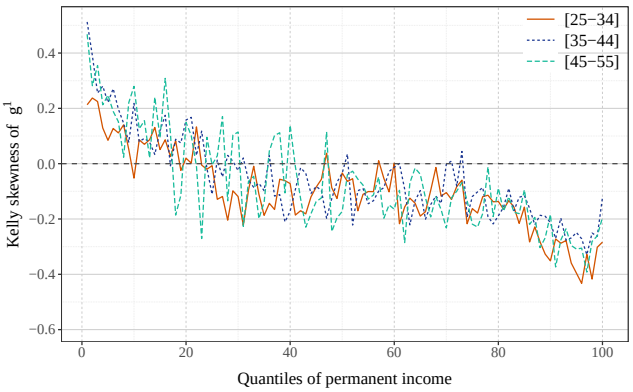
(a) Men: P90-P10



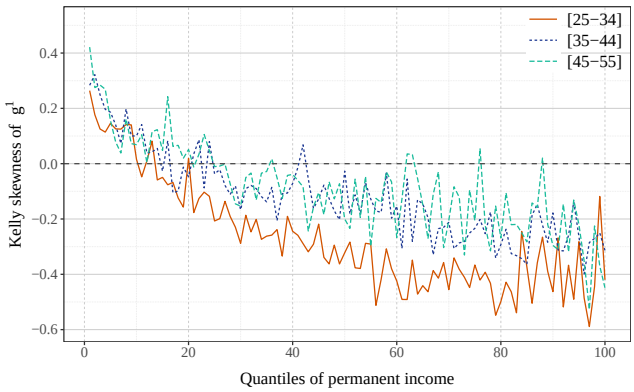
(b) Women: P90-P10



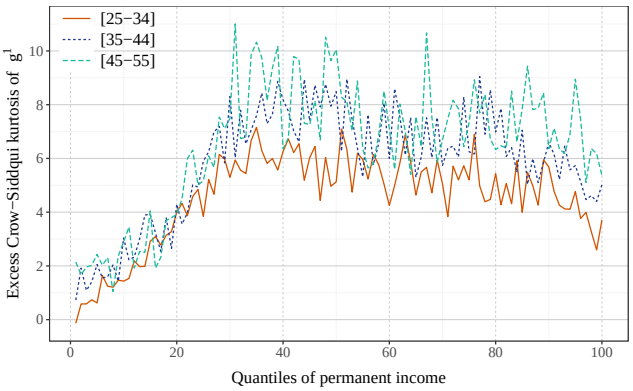
(c) Men: Kelly skewness



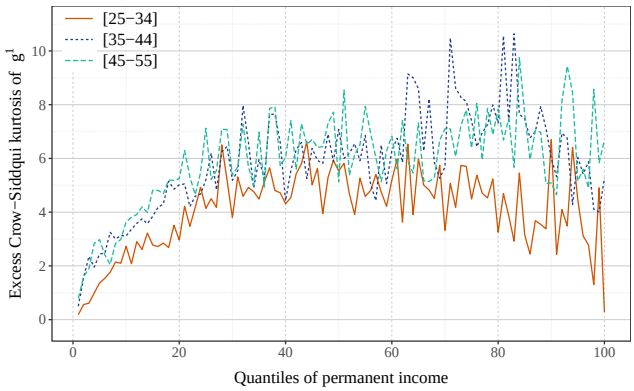
(d) Women: Kelly skewness



(e) Men: Excess Crow-Siddiqui kurtosis



(f) Women: Excess Crow-Siddiqui kurtosis



Note: This figure illustrates the dispersion, Kelly skewness, and Crow-Siddiqui kurtosis of one-year changes in residualized log earnings (i.e., earnings shocks), segmented by age group (25–34, 35–44, 45–55 years), permanent earnings percentiles, and gender. Panels (a) and (b) show the p90–p10 differential, measuring overall dispersion across the earnings shock distribution for men and women, respectively. Panels (c) and (d) present Kelly skewness, capturing the asymmetry of shocks, where positive values indicate a longer right tail (i.e., more extreme positive shocks). Panels (e) and (f) display excess Crow-Siddiqui kurtosis, reflecting the "tailedness" or likelihood of extreme earnings shocks relative to a normal distribution.

We now explore the second- and higher-order moments of one-year changes in residualized log earnings, disaggregated by age, earnings rank, and gender. This analysis allows us to investigate how the

dispersion, asymmetry, and extremity of earnings shocks for both men and women vary across different stages of the life cycle and positions in the earnings distribution.

Figure 12 presents these dynamics. We divide workers into three age categories: 25–34, 35–44, and 45–55 years. Within each age group, we further stratify individuals by gender and permanent earnings rank (i.e., percentiles of average earnings over the preceding three years). The top panels (a) and (b) report the dispersion of one-year earnings shocks, measured by the p90-p10 differential, for men and women, respectively. The middle and bottom panels illustrate the higher-order moments. Specifically, Panels (c) and (d) show Kelly skewness, capturing the asymmetry of the shock distribution. Panels (e) and (f) depict Crow-Siddiqui kurtosis, measuring the thickness of the tails in the distribution.

Volatility. We begin with volatility, the second moment. From Panels (a) and (b) of Figure 12, three significant findings emerge.

First, the dispersion of earnings shocks decreases with age for both men and women. Younger workers (25–34) experience higher shock volatility across all earnings levels, with the p90-p10 differential gradually narrowing for older age groups. This pattern of declining volatility with age may be a result of labour market churning—such as part-time or casual employment, career/job switching, and transitions between education and work—that is more common among younger workers. As they age, their earnings growth becomes increasingly stable, especially within the lower and upper segments of the permanent earnings distribution.

Second, both panels reveal a U-shaped pattern in the income profiles of earnings shock dispersion, irrespective of age. Dispersion is greatest at the lower quantiles, decreases gradually as one moves up the permanent income rank, but rises sharply again beyond the 95th percentile. This pattern indicates that earnings shocks are more volatile for both low- and top-income earners, with the bottom experiencing the most pronounced volatility. Evidence from Tin and Tran (2023*b*) suggest both work hours and wages play almost equally important role in explaining the higher fluctuations at the lower end, and point to the dominance of part-time and casual work within this earnings range as a significant contributor. Conversely, at the top, they reveal that wages, rather than hours worked, are the primary driver of shock dispersion.[10]

Third, while the overall patterns are similar across genders, men display slightly higher dispersion at the bottom of the permanent earnings distribution, regardless of age group. In other words, low-income male workers are exposed to larger earnings shock volatility compared to their female counterparts, highlighting a gender difference in earnings stability among the lowest earners. One potential reason is sectoral composition: low-income male workers are spread across different industries, including manufacturing and construction that are more prone to economic shocks, whereas low-income female workers are more concentrated in the service sector. On the contrary, young (25-34) and middle-aged (35-44) women in the median and upper permanent income quadrants experience higher dispersion than their male counterparts. This likely reflects the impact of maternal responsibilities, which may lead to career interruptions, employment gaps, or part-time transitions—therefore increasing volatility.

Skewness. We now turn to skewness, the third moment. Panels (c) and (d) of Figure 12 display Kelly skewness for one-year earnings shocks. Despite the positive skewness for the overall distribu-

[10] See Figures 2 and 3 in Tin and Tran (2023*b*) and Figure D.1 in their online technical appendix.

tion, as reported in Figure 8, both panels show consistently negative skewness for individuals with permanent income ranks above the 30th percentile. They demonstrate that higher-income earners face larger extreme negative shocks compared to positive ones. In contrast, low-income earners face more extreme positive shocks, aligning with the strong upward income mobility observed in the subsequent Subsection 3.3. This asymmetry may also arise from structural constraints: low income workers are closer to the income floor, giving them more room for upward than downward movements.

Additionally, there are gender differences. Panel (c) shows that for men across age groups, Kelly skewness is closer to zero, especially around the median of the permanent earnings distribution, indicating a more symmetric distribution of earnings shocks. In other words, the distribution of one-year male earnings shocks tends to be fairly balanced between positive and negative shocks. In contrast, Panel (d) reveals more variability in Kelly skewness for women, both across the earnings distribution and over the life cycle. Higher-income women generally experience greater negative skewness compared to their male counterparts. Moreover, younger women (25–34) exhibit the most pronounced decline in skewness, revealing that this group experiences significant extreme downward shocks. This pattern is likely explained by life events such as marriage and parental duties that disproportionately affect women in early to mid-career stages.

In summary, these findings highlight a more consistent and symmetric distribution of earnings shocks for men, whereas women face greater variability in skewness. This indicates that idiosyncratic factors contribute to more uneven earnings changes for women compared to men.

Kurtosis. Panels (e) and (f) of Figure 12 present Crow-Siddiqui kurtosis for one-year earnings shocks. The results illustrate that excess kurtosis increases sharply across the lower segment of the permanent earnings distribution, before stabilizing around the 30th percentile for both men and women. This pattern implies that the distribution of earnings shocks deviates further from normality (where kurtosis is 3) at higher income levels. In other words, higher-income earners face a greater likelihood of extreme earnings shocks.

When viewed alongside the skewness results, these findings suggest an important asymmetry. While low-income earners experience relatively larger extreme positive shocks, such occurrences are rare. Conversely, higher-income earners are more frequently exposed to extreme negative shocks.

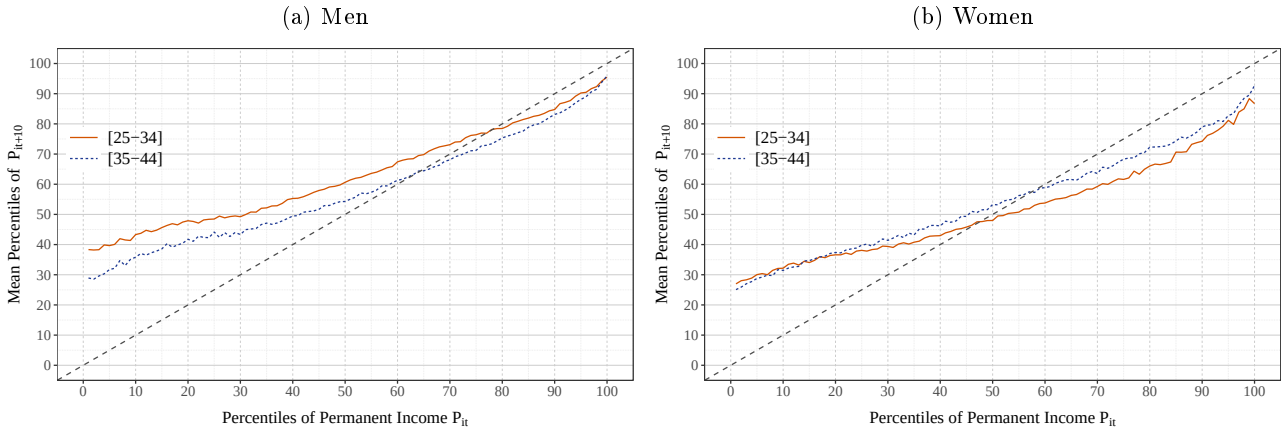
Moreover, Panels (e) and (f) also show that older workers, regardless of gender or permanent income rank, exhibit higher kurtosis than younger workers. This suggests that the frequency of extreme earnings shocks rises over the life cycle, which may be the result of health-related work hour reductions, early retirement, or other career transitions near retirement. The presence of fatter tails at older ages reinforces the importance of accounting for life-cycle risks when evaluating earnings dynamics in ageing populations.

3.3 Earnings mobility

To examine earnings mobility, we analyze the average rank-rank mobility of permanent earnings over a 10-year period.Figure 13 depicts the average rank of permanent earnings in period $t+10$ as a function of permanent earnings in period t, based on annual averages for three age groups of men and women from 1997 to 2007.[11]

[11] Results for individual years reflect a similar pattern.

Figure 13: **10-year average rank mobility by age group and gender (Averages from 1997-2007).**

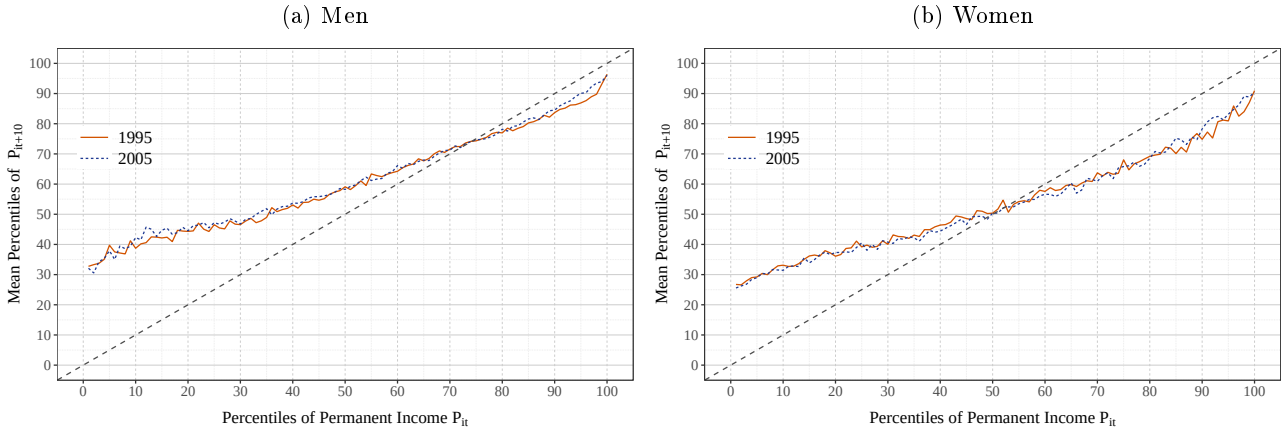


Note: This figure shows the 10-year average rank mobility for men and women, based on averages from 1997 to 2007. Panel (a) displays mobility for men, while Panel (b) presents mobility for women, across two age groups: 25–34 and 35–44. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their average rank after ten years. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the 45-degree line indicate upward mobility, and deviations below indicate downward mobility. This figure highlights the within- and between-group differences in mobility, showing that younger male workers are the most mobile, while older female workers are the least mobile.

Panel (a) of Figure 13 shows that men experience strong upward mobility at the lower end of the permanent earnings distribution, with young men (25–34) achieving higher mobility than those aged 35–44. For instance, on average, men initially in the 10th percentile rise to the 40th percentile after ten years. Male mobility path is also fairly linear, and upward mobility at the lower end of the distribution is significantly stronger than downward mobility at the upper end. This results in a rank-rank trajectory that crosses the 45-degree line at the upper percentiles—around p75 for men aged 25–34 and p65 for those aged 35–44.

Panel (b) illustrates a similar pattern of upward mobility for women, but with three key differences. First, women's mobility is weaker overall: women starting in the 10th percentile reach, on average, only the 30th percentile after ten years. Second, unlike men, older women (35–44) exhibit higher mobility than younger women (25–34), except at the lower end of the income rank. This pattern aligns with women's life cycle earnings trends reported in Figure 7, where younger women experienced stagnating or declining earnings in their early careers. Lastly, the rank-rank mobility profile for women is flatter, passing through the 45-degree line at approximately the median of permanent income. This suggests a more symmetric 10-year average mobility pattern compared to that for men, with relatively lower upward mobility at the bottom and higher downward mobility at the top. For instance, on average, a woman in the 90th percentile drops to the 75th percentile after ten years, whereas her male counterpart moves only slightly to the 85th percentile, remaining closer to his original rank. Thus, despite sustained female earnings growth outpacing male earnings growth over the past three decades, our findings suggest that women remain less mobile in relative terms.

Figure 14: **10-year average rank mobility over time (1995 vs. 2005).**



Note: This figure illustrates the 10-year average rank mobility for men and women, comparing two starting periods: 1995 and 2005. Panel (a) displays mobility for men, while Panel (b) shows mobility for women. The x-axis indicates individuals' initial percentile rank in the permanent income distribution, and the y-axis indicates their average rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the 45-degree line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995 and 2005 profiles suggests that rank mobility remained stable over time, with minimal changes in upward or downward movement across cohorts for both genders.

Figure 14 further examines 10-year average rank mobility by gender across two time periods—1995 to 2005 (indexed as 1995) and 2005 to 2015 (indexed as 2005). The close alignment of mobility profiles between these periods, for both men and women, indicates a remarkable stability in earnings mobility over time. That is, despite shifts in the broader economic landscape over the past 30 years, the extent of upward and downward movement over the earnings ranks has remained largely unchanged.

Interestingly, the persistent mobility profile can potentially be attributed to the stable earnings dynamics documented in the preceding analyses. For instance, the persistently strong upward mobility among men in the lower permanent income ranks is positively associated with relatively high dispersion and positive skewness in residualized earnings growth among men in this income group. For women, particularly young women in the low-income rank, higher dispersion and larger negative skewness relative to their male counterparts may help explain their weaker mobility.

Our analysis of 10-year mobility aligns with the rest of the GRID projects, facilitating cross-country comparability. Importantly, the rank-rank measure crosses the 45-degree line at significantly higher percentiles—at the 70th percentile for men and the 50th percentile for women—compared to the US, UK, and Canada. This implies that long-run upward mobility in Australia was significantly stronger during the period of uninterrupted economic growth. Moreover, our results are robust to the time horizon considered. The 5-year rank-rank mobility measures closely mirror the 10-year figures, differing by only around 5 percentile points across the permanent income percentiles (see Figure B.27 in Appendix). For instance, men starting in the 25th percentile can expect to reach the median within a decade, and according to the 5-year rank-rank measure, they typically attain the 45th percentile halfway through. This provides further evidence of Australia's relatively strong and persistent upward mobility.

4 Extension: Market and post-government income

In this section, we extend the analysis to broader income definitions, incorporating market income and post-government income. Market income is defined as the sum of labour and capital income, while post-government income adjusts market income for taxes and transfers. This extension allows us to distinguish inequality and risk originating from market forces from those mitigated by the tax and transfer system. The same data selection criteria and methodology as in the main analysis are applied. We provide a summary of the key findings below, with further details available in Appendix Section C.

Overall, our results show that trends in market income associated with growth, inequality, dynamics and mobility statistics closely mirror those of labour earnings, with only small deviations. In contrast, post-government income exhibits more pronounced differences but only in level. That is, while there are noticeable shifts in the levels of post-government income inequality and idiosyncratic risk, reflecting the redistributive role of the tax and transfer system, their patterns broadly resemble those for labour earnings and market income.

4.1 Growth

Appendix Figures C.17 and C.18 plot the growth trajectories of log labour earnings, market income and post-government income across the income distribution for men and women, respectively. They illustrate that for individuals between the 10th and 90th percentiles, the growth paths of market and post-government income closely track labour earnings. In other words, capital income, taxes, and government transfers contribute little additional income growth for the majority of earners. Disposable income dynamics are primarily driven by labour market outcomes.

At the top of the distribution, however, there are notable differences. Among the top 0.1% and 0.01% of men, market income growth moderately outpaced labour earnings growth beginning in the early 2000s, reflecting the increasing importance of capital income. In contrast, during the same period, post-government income growth for the top 1% exhibits substantial compression relative to market income—falling by up to 20 log points. Nevertheless, post-government income growth at the top remains higher than that of the broader distribution.

Another noteworthy observation concerns the bottom 10% of workers, whose income trajectories are significantly affected by the tax and transfer system. Panel (a) of Figure C.19 shows that since around 2000, post-government income growth for men in the bottom decile trailed labour earnings growth by approximately 5 log points. Because these statistics are expressed relative to their 1991 levels, this divergence does not necessarily imply higher tax burdens. Rather, it likely reflects a decline in the relative generosity of public transfers to low-income male workers compared to the early 1990s.

In contrast, the public transfer system for low-income women appears to have remained robust. Their post-government income growth substantially exceeded both labour and market income growth, most likely through child-related support targeted at single-parent households, where women are disproportionately represented. However, this positive redistributive effect has been weakening since the early 2010s, possibly reflecting a gradual erosion of transfer generosity due to discretionary policy changes.[12] Alternatively, given the strict means-testing of welfare benefits, this decline in post-

[12]For instance, throughout the 2010s, income-test thresholds for the base payment of the Family Tax Benefit (FTB) Part A—one of the largest welfare programs aimed at low-income parents—remained fixed in nominal terms, while the FTB Part B supplement for single-earner households lowered its primary earner phase-out threshold by approximately

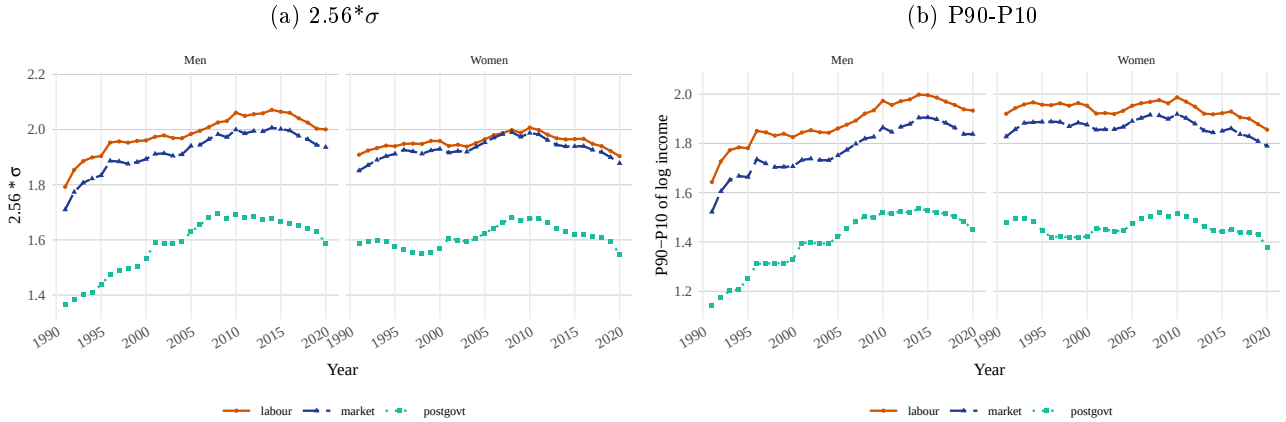
government income growth among women may also reflect mechanical withdrawal of benefits as more women increased their labour supply and thus market income.

4.2 Inequality

Figure 15 documents the evolution of inequality of labour earnings, market income, and post-government income, separately by gender. Consistently across inequality measures, market income and post-government income inequality levels are below those of labour earnings, though post-government income inequality is substantially lower. This pattern highlights the significant role of Australia's tax and transfer system in reducing income disparities, particularly through targeted transfers and a relatively progressive tax structure. Moreover, Figure C.28 in the appendix demonstrates that the redistributive effect is especially pronounced in narrowing bottom-end inequality (p50–p10 differential), consistent with the system's focus on low-income households.

However, although redistributive policies reduce the level of inequality, they have not fundamentally altered the patterns of inequality over time. Inequality trends remain largely parallel across labour, market, and post-government income measures. This is further evident in Appendix Figures C.31 through C.35, which show that inequality differences across the three income definitions at market entry and throughout the life cycle primarily reflect shifts in the level rather than changes in the overall shape or direction. Thus, while the tax and transfer system substantially reduces the magnitude of inequality, it does not reshape the underlying market-driven dynamics.

Figure 15: **Trends in income inequality by gender across different inequality metrics for three income measures: labour earnings, market income, and post-government income.**



Note: This figure presents overall inequality in log real income from 1991 to 2020 separately for men and women, across three income measures: labour earnings, market income, and post-government income. Panels (a) and (b) plot two distinct inequality metrics, respectively: 2.56 times the standard deviation of log income (scaled to match the P90–P10 differential under a Gaussian distribution) and the P90–P10 differential.

4.3 Dynamics

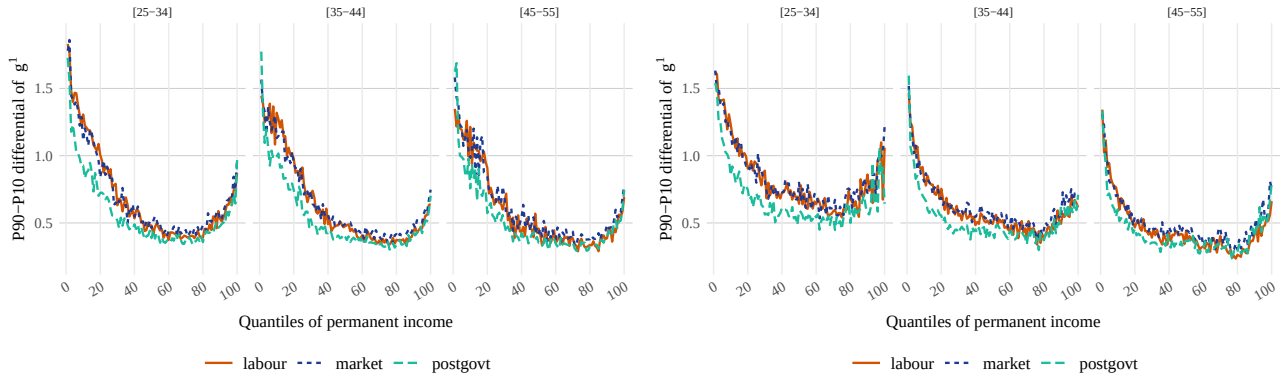
Average residualized income growth: Figure C.35 displays average one-year residualized log income growth. For most worker, the average growth rate hovers around zero. Since age-related effects have been removed, this result indicates that income growth is primarily driven by life-cycle

30%. Tin and Tran 2023*a* show that both the average benefit amount and the share of recipients declined significantly over this period.

factors such as experience and seniority. Conversely, from the early 1990s recession until the 2008 GFC, the top 1% saw positive average residualized income growth of approximately 2–3% per annum. This suggests the presence of additional growth drivers beyond age and experience. Moreover, the fact that this pattern appears across all three income measures—labour earnings, market income, and post-government income—indicates that the underlying mechanisms are not limited to non-wage sources such as capital income gains. Following the GFC, however, this trend reversed, and residualized growth for the top 1% declined into negative territory.[13]

Dispersion: Appendix Figure C.39 compares the dispersion of one-year residualized income growth across labour earnings, market income, and post-government income. The results show little difference between labour and market income dispersion, both in levels and trends. In contrast, dispersion for post-government income shocks is substantially lower.

Figure 16: **Dispersion of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men

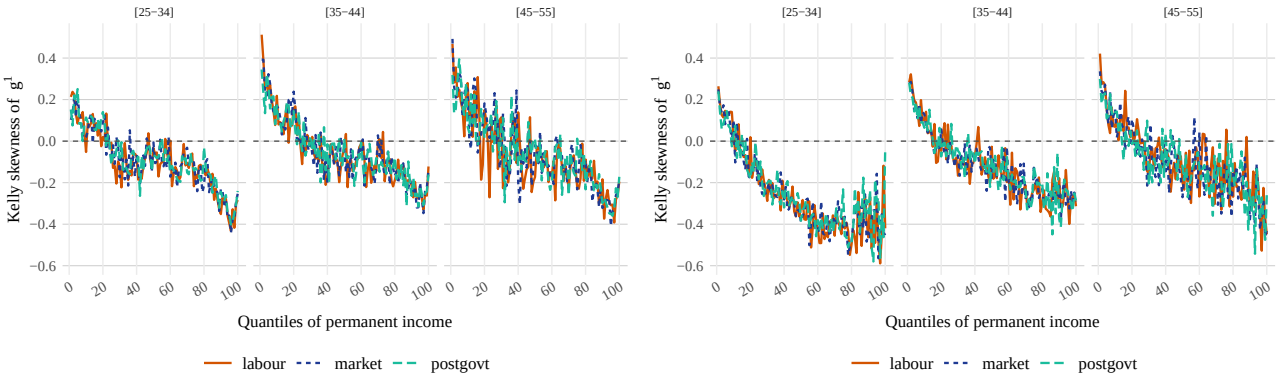
(b) Women

Note: This figure illustrates the dispersion of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Dispersion is measured by the p90–p10 differential, capturing the spread of income shocks across the distribution. The comparison highlights how volatility patterns vary by age, gender, income distribution, and income definition. It also demonstrates that post-government income consistently exhibits reduced dispersion across the board, suggesting that the tax-and-transfer system mitigates income shock volatility.

This volatility-mitigating role of the tax and transfer system is further evident in Figure 16, which plots dispersion across permanent income distribution. The reduction in income shock volatility is especially pronounced among younger workers (aged 25–34) with below-median permanent incomes, for both men and women. Figures C.46 and C.49 in the appendix confirm that these patterns persist over time. Importantly, this government insurance effect remains significant even over the medium term, as shown by the dispersion of five-year residualized income growth (Figures C.58, C.61, and C.64).

[13]Notably, residualized post-government income growth for the top 1% spiked above 5% during the GFC, exceeding labour earnings growth. This may reflect temporary tax and transfer policy adjustments during the crisis.

Figure 17: **Kelly skewness of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



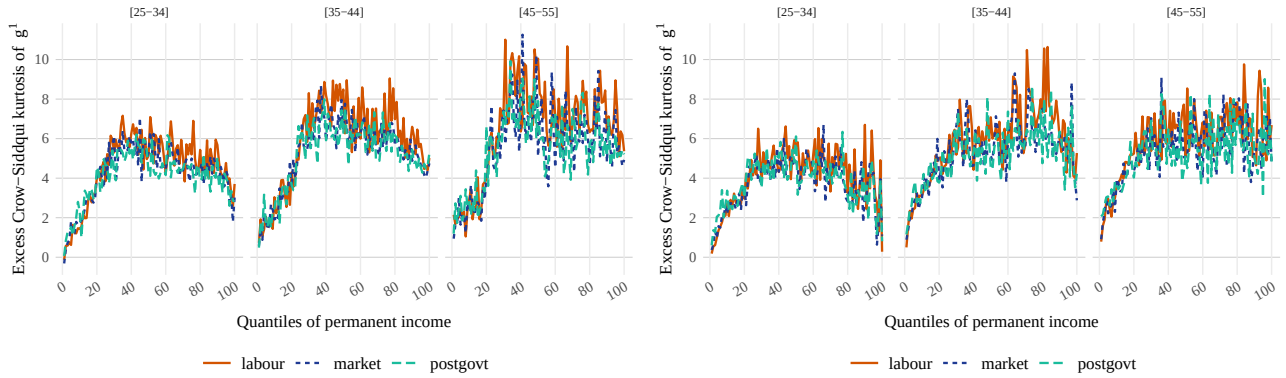
(a) Men (b) Women

Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks), and negative values reflect a longer left tail (more extreme negative shocks). The comparison highlights how the direction and magnitude of asymmetry vary across age, gender, income distribution, and income definitions. It also shows that post-government income exhibits similar skewness patterns to private income measures (labour earnings and market income), suggesting that the tax and transfer system plays only a weak—or negligible—role in mitigating the severity of private income shocks.

Despite the presence of strong and persistent government insurance, young women's income volatility remains higher than that of their male counterparts across all income measures. Nonetheless, there is an encouraging trend: Appendix Figure C.70 shows that five-year income shock dispersion among young women (aged 25–34) has declined over time, driven primarily by greater stability in labour earnings. This may reflect structural changes on both the demand and supply sides of the labour market, including shifts in family dynamics and the expansion of part-time and flexible work arrangements that promote female labour force attachment and facilitate more stable employment trajectories for young women. However, this improvement is not observed among young men (Figure C.61).

Skewness and Kurtosis: Turning to higher-order moments, Figures 17 and 18 reveal that the skewness and kurtosis profiles of market and post-government income closely mirror those of labour earnings. These patterns remain stable across age groups and over time, as further confirmed in Figures C.47, C.48, C.50, and C.51.

Figure 18: **Excess Crow-Siddiqui kurtosis of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men (b) Women

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution relative to a normal distribution, where higher kurtosis indicates a greater frequency of extreme positive or negative shocks. The comparison highlights how the prevalence of extreme income shocks varies across age, gender, income distribution, and income definitions. It further shows that post-government income exhibits similar kurtosis levels and patterns compared to market income, reflecting the weak—or negligible—insurance role of the tax and transfer system in mitigating tail risks.

Market income does not materially affect dispersion or skewness relative to labour earnings. However, the inclusion of capital income modestly reduces kurtosis, particularly among middle-aged workers (aged 35–44) (Figures C.48 and C.51). While the effect is small, it reflects a cushioning effect against extreme shocks via capital income sources. On the contrary, the tax and transfer system effectively reduces income volatility but has minimal impact on mitigating the severity or frequency of extreme income shocks. This aligns with Tin and Tran (2023*b*), who find that while government insurance reduces volatility, protection against extreme shocks is primarily provided through intra-family income pooling mechanisms.

An exception occurs during specific episodes, such as the early 1990s recession and the following decade, when the aggregate kurtosis of post-government income among men fell significantly below that of market income (Figure C.40), which suggests that tax and transfer policies played a role in mitigating the prevalence of extreme income shocks. However, based on Figures C.48 and C.51, we observe no comparable effect in 1995, 2005, or 2015, pointing to possible structural changes in the tax-transfer system or labour market over the last three decades.

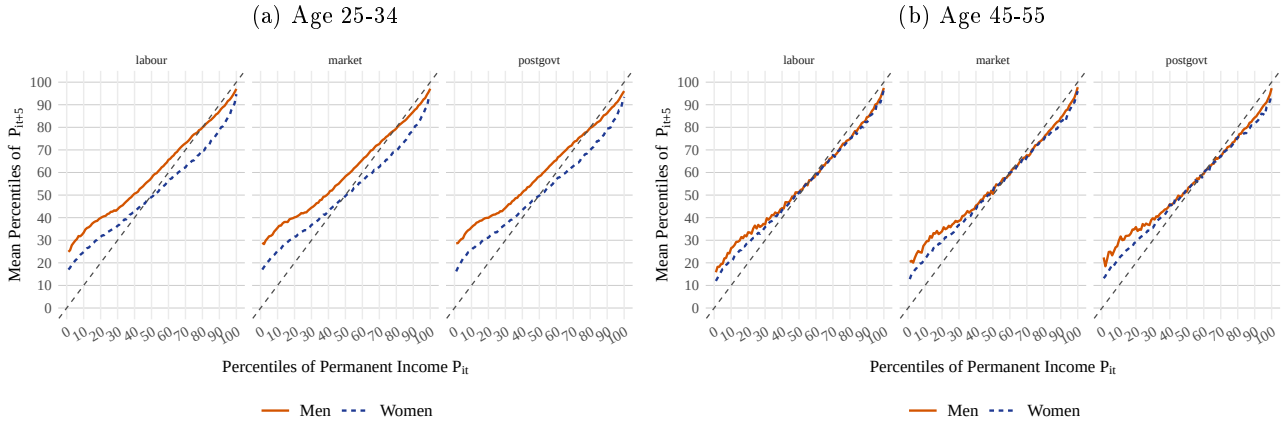
Beyond this, Appendix Figure C.57 documents a decline in the prevalence of short-term (one-year) extreme income shocks across all income measures and permanent income distribution for young women. Similarly, Figure C.71 depicts an easing of the severity of persistent, medium-term (five-year) negative shocks across female age groups. These results point to an improvement in the income risk profile of young women over time—an evolution not observed among their male counterparts, whose exposure to extreme shocks has remained largely unchanged.

4.4 Mobility

Both five-year and ten-year rank mobility patterns for market income and post-government income closely track those of labour earnings. As shown in Figure 19, the structure of mobility remains stable across income measures, with no meaningful shifts in the points where mobility profiles intersect the 45-degree line. Men consistently exhibit higher mobility than women across all age groups and income measures, especially below the median of the permanent income distribution. Young men (aged 25–34) are the most mobile, while young women are the least, resulting in the largest gender mobility gap among younger cohorts. This gap narrows considerably with age and becomes virtually negligible by ages 45–55. This indicates that gender differences in income mobility are largely driven by disparities among the young.

Figure C.79 further shows that mobility patterns have remained remarkably stable over time and across the three income definitions. While our current data do not extend into the 2020s, the results suggest a persistent structure in mobility dynamics over the three decades studied. From these persistent mobility patterns, two key findings emerge. First, while redistributive policies compress top-end income growth and reduce inequality and volatility at the bottom, they have limited impact on long-term income mobility. Second, income mobility in Australia is overwhelmingly shaped by labour market outcomes, with capital income, taxes, and transfers playing only a minimal role. This finding is consistent with earlier results showing that income growth, inequality, and dynamics are predominantly driven by labour earnings.

Figure 19: **5-year average rank mobility (averages of 1993–2010) by gender across labour earnings, market income, and post-government income, separately plotted by age group.**



Note: This figure shows the 5-year average rank mobility by gender across three income measures—labour earnings, market income, and post-government income—based on averages from 1993 to 2010. Panel (a) displays mobility profiles for individuals aged 25–34, Panel (b) for those aged 45–55. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank five years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility patterns vary by gender and age group, but remain virtually unchanged across the three income measures.

5 Conclusion

In this paper, we provide a comprehensive analysis of earnings inequality, dynamics, and mobility in Australia during its three decades of sustained economic growth (1991-2020), using administrative tax

data. Our findings reveal important insights into how individual earnings levels and growth patterns evolved in the context of a sustained economic expansion.

First, economic growth played a central role in shaping earnings inequality. Between 1991 and 2008—a period of strong macroeconomic performance—rising inequality was primarily driven by rapid earnings growth at the top of the distribution, especially among men. In contrast, the 2010s, characterised by slower aggregate growth, saw a deceleration in top-end earnings and a reversal of the gender inequality gap, underpinned by sustained earnings growth among low-income women. These developments combined to reduce overall earnings inequality in the final decade. Nevertheless, .the continued stagnation of low-income men suggests they have been left behind amid broader structural transformations, which remains a significant concern. Moreover, for low-income families, it is unclear whether the growth in female earnings improved household welfare or merely compensated for declines in male earnings. Further research is needed to explore the role of intra-household earnings and consumption dynamics.

Second, initial conditions and early-life opportunities—such as education and parental background—have become increasingly influential in shaping lifetime inequality, particularly among younger cohorts. Since around 2010, the impact of adult income shocks on inequality over the life cycle has diminished, indicating a shift toward more persistent early-life disparities. In a slower-growth environment, this trend highlights the growing importance of early-life interventions as a means of reducing long-term inequality.

Third, the distribution of earnings shocks—which captures idiosyncratic income risk—is asymmetric and heavy-tailed, with volatility disproportionately affecting low-income workers and young women. While these statistical properties remained relatively stable over time, they exhibit clear cyclicality: during economic slowdowns, volatility increases at the lower end of the distribution, and large negative shocks become more frequent and severe. These patterns underscore the need for targeted policies to help vulnerable groups better manage earnings risk.

Fourth, upward income mobility remained strong and stable throughout Australia's extended growth period, with mobility rates exceeding those of many other advanced economies. However, young men consistently exhibited higher mobility than young women, although gender mobility gaps narrowed substantially with age. Importantly, despite the role of taxes and transfers in reducing income inequality and volatility, we find little evidence that fiscal policy meaningfully altered long-term income mobility dynamics.

Finally, broader income measures reveal that labour income is the main driver of income growth, inequality, volatility, and mobility in Australia. Capital income contributes only modestly, primarily benefiting individuals at the top of the distribution. Although redistributive policies reduce top-end income and mitigate bottom-end inequality and volatility, the underlying dynamics remain largely shaped by labour market forces. Notably, public income support helped sustain income growth and stability for low-income women, while low-income men continued to experience declines even after redistribution.

Overall, our findings offer early evidence on how sustained macroeconomic growth influenced earnings inequality, dynamics, and mobility, while also revealing the limits of redistribution in altering long-term economic opportunity. Future research should extend the analysis to the household level and explore policy effectiveness through empirical or structural modelling.

References

Abhayaratna, Thomas, Andrew Carter and Shane Johnson. 2021. "The ATO Longitudinal Information Files (ALife):Individuals - A new dataset for public policy research." *TTPI - Working Paper* 13.

Auten, Gerald and David Splinter. 2024. "Income Inequality in the United States: Using Tax Data to Measure Long-Term Trends." *Journal of Political Economy* 132(7).

Bell, Brian, Nicholas Bloom and Jack Blundell. 2022. "Income Dynamics in the United Kingdom and the Impact of the Covid-19 Recession." *Quantitative Economics* 13(4).

Bowlus, Audra, Emilien Gouin-Bonenfant, Huju Liu, Lance Lochner and Youngmin Park. 2022. "Four Decades of Canadian Earnings Inequality and Dynamics across Workers and Firms." *Quantitative Economics* 13(4):1447–1491.

Chatterjee, A., A. Singh and T. Stone. 2016. "Understanding Wage Inequality in Australia." *Economic Record* 92:348–60.

De Nardi, Mariacristina, Giulio Fella, Marike Knoef, Gonzalo Paz-Pardo and Raun Van Ooijen. 2021. "Family and Government Insurance: Wage, Earnings, and Income Risks in the Netherlands and the US." *Journal of Public Economics* 193:104327.

Fisher-Post, Matthew, Nicolas Herault and Roger Wilkins. 2022. "Distributional National Accounts for Australia, 1991-2018." *IZA DP* No. 15651.

Guvenen, Fatih, Fatih Karahan, Serdar Ozkan and Jae Song. 2021. "What Do Data on Millions of US Workers Reveal about Life-Cycle Earning Risk?" *Econometrica* 89(5)(20913):2303–2339.

Guvenen, Fatih, Greg Kaplan, Jae Song and Justin Weidner. 2023. "Lifetime Incomes in the United States Over Six Decades." *American Economic Journal: Applied Economics* .

Guvenen, Fatih, Luigi Pistaferri and Giovanni Violante. 2022. "Global Trends in Income Inequality and Income Dynamics: New Insights from GRID." *Quantitative Economics* 13:1321–1360.

Hamilton, Reg. 2022. "The History of the Australian Minimum Wage." *Working Paper* .

Heathcote, Jonathan, Fabrizio Perri, Giovanni L. Violante and Lichen Zhang. 2023. "More Unequal We Stand? Inequality Dynamics in the United States 1967-2021." *Working Paper* .

Heathcote, Jonathan, Kjetil Storesletten and Giovanni L. Violante. 2020. "How Should Tax Progressivity Respond to Rising Income Inequality?" *Journal of the European Economic Association* 18(6):2715–2754.

Herault, Nicolas and Francisco Azpitarte. 2015. "Recent trends in income redistribution in Australia: Can changes in the tax-benefit system account for the decline in redistribution?" *Economic Record* 91(292):38–53.

Hoffmann, Eran B., Davide Malacrino and Luigi Pistaferri. 2022. "Earnings Dynamics and Labor Market Reforms: The Italian Case." *Quantitative Economics* 13(4):1637–1667.

Kaplan, Greg, Gianni La Cava and Tahlee Stone. 2018. "Household Economic Inequality in Australia." *Economic Record* 94:117–134.

Karahan, Fatih, Serdar Ozkan and Jae Song. Forthcoming. "Anatomy of Lifetime Earnings Inequality: Heterogeneity in Job Ladder Risk vs. Human Capital." *Journal of Politicl Economy Macroeconomics* .

Krueger, Dirk, Fabrizio Perri, Luigi Pistaferri and Giovanni Violante. 2010. "Cross Sectional Facts for Macroeconomists." *Review of Economic Dynamics* 13(1):1–14.

Leigh, Andrew. 2005. "Deriving Long Run Inequality Series from Tax Data." *Economic Record* 81:58–70.

Lippi, Francesco and Fabrizio Perri. 2023. "Unequal Growth." *Journal of Monetary Economics* .

McKinney, Kevin L., John M. Abowd and Hubert P. Janicki. 2022. "U.S. Long-term Earnings Outcomes by Sex, Race, Ethnicity, and Place of Birth." *Quantitative Economics* 13(4):1879–1945.

Piketty, T. and E. Saez. 2003. "Income inequality in the United States, 19131998." *Quarterly Journal of Economics* 118:1–41.

Piketty, Thomas, Emmanuel Saez and Gabriel Zucman. 2018. "Distributional National Accounts: Methods and Estimates for the United States." *Quarterly Journal of Economics* 133(2):553–609.

Productivity Commission. 2018. "Rising inequality? A stocktake of the evidence." *Working Paper* .

Saez, Emmanuel and Gabriel Zucman. 2020. "The Rise of Income and Wealth Inequality in America: Evidence from Distributional Macroeconomic Accounts." *Journal of Economic Perspectives* 34(4):3–26.

Tin, Darapheak and Chung Tran. 2023*a*. "Aggregate Implications of Family-Related Transfers with Means Testing." *Working Paper* .

Tin, Darapheak and Chung Tran. 2023*b*. "Lifecycle Earnings Risk and Insurance: New Evidence from Australia." *Economic Record* 99 (325):141–174.

Tran, Chung and Nabeeh Zakariyya. 2021. "Tax Progressivity in Australia: Facts, Measurements and Estimates." *Economic Record* 97 (316):45–77.

Tran, Chung and Nabeeh Zakariyya. 2023. "Growth, Redistribution and Inequality: The Australian Case." *Working Paper* .

Wilkins, Roger. 2015. "Measuring income inequality in Australia." *Australian Economic Review* 48(1):93–102.

Appendix

A Data: Summary statistics[14]

	Number of individuals				Percentage of women			
Year	Original	CS	LX	H	Original	CS	LX	H
1991	983,476	530,283	378,260	-	44.92	43.14	41.76	-
1992	979,065	527,550	380,470	-	44.96	43.42	42.13	-
1993	977,567	533,715	386,543	320,466	44.91	43.68	42.51	41.25
1994	989,879	545,664	395,941	323,470	45.03	43.96	42.86	41.64
1995	1,012,618	562,889	409,693	331,145	45.4	44.31	43.23	41.99
1996	1,034,423	590,827	426,375	341,581	45.74	44.48	43.51	42.31
1997	1,045,595	600,838	432,706	352,414	46.01	44.78	43.7	42.69
1998	1,048,281	609,306	434,783	362,646	46.01	44.97	43.83	42.88
1999	1,056,571	616,042	439,602	367,774	46.12	45.19	44.08	43.13
2000	1,076,253	626,512	446,972	372,791	46.31	45.48	44.34	43.28
2001	1,095,857	635,920	453,911	376,923	46.64	45.69	44.48	43.46
2002	1,112,807	640,395	457,142	382,168	47	45.79	44.63	43.76
2003	1,138,673	643,056	465,497	389,958	47.44	45.9	44.74	43.9
2004	1,171,995	652,977	469,845	391,155	47.79	46.07	44.89	43.97
2005	1,205,964	666,143	477,674	395,078	47.89	46.14	44.97	44.06
2006	1,235,593	679,819	488,542	402,392	47.96	46.34	45.08	44.16
2007	1,269,997	696,736	503,394	412,287	47.98	46.55	45.32	44.31
2008	1,318,165	725,584	516,141	419,451	47.86	46.65	45.45	44.5
2009	1,327,342	733,132	521,422	427,969	48.06	46.7	45.5	44.68
2010	1,340,228	739,348	528,695	439,966	48.05	46.7	45.53	44.81
2011	1,363,749	755,250	538,667	446,686	48.05	46.62	45.65	44.95
2012	1,370,301	771,205	546,236	451,853	47.67	46.7	45.81	45.04
2013	1,370,705	779,184	552,304	459,918	47.58	46.7	45.9	45.14
2014	1,403,134	788,363	559,697	467,106	47.76	46.76	46.18	45.39
2015	1,432,924	798,600	564,879	470,454	47.99	47.01	46.57	45.67
2016	1,467,041	808,594	-	-	48.22	47.24	-	-
2017	1,499,854	819,852	-	-	48.47	47.42	-	-
2018	1,527,016	833,686	-	-	48.58	47.64	-	-
2019	1,556,649	848,159	-	-	48.78	47.92	-	-
2020	1,557,642	854,916	-	-	49	48.22	-	-

Table A.1: Sample size and percentage of women in ALife (Original), CS, LX and H samples per year

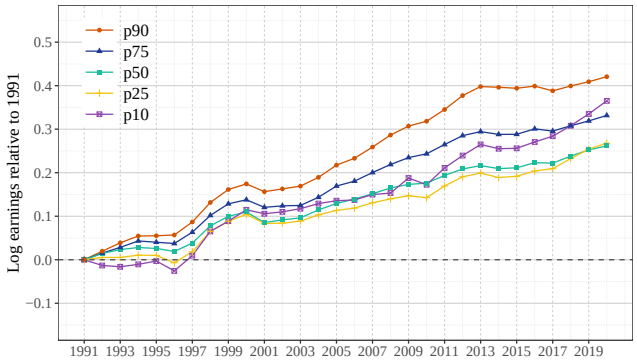
[14] More statistics are provided in our Online Technical Appendix.

B Labour earnings: Additional results

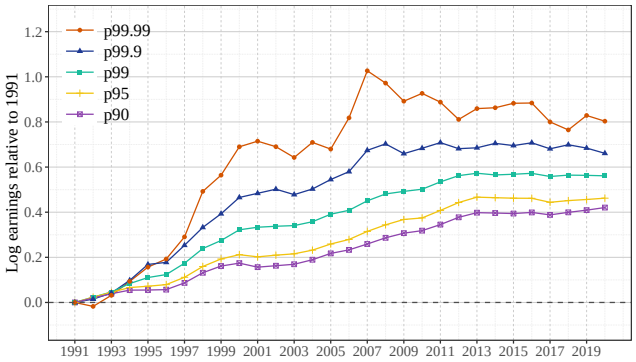
B.1 Earnings inequality over time

Figure B.1: **Changes in log real annual earnings across the earnings distribution (all workers, 1991–2020).**

(a) p10-p90



(b) p90-p99.99

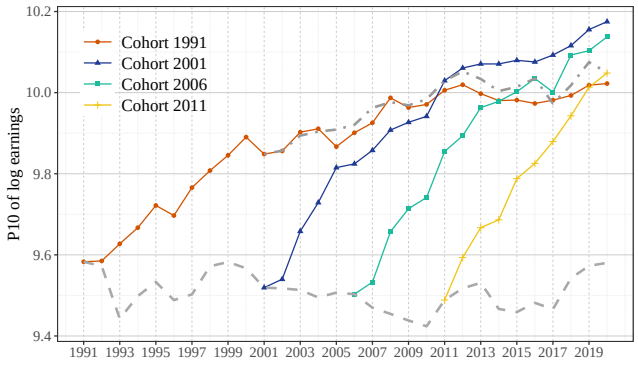


Note: The figure shows changes in selected percentiles of log real annual earnings ($\log y_{it}$) for all workers from 1991 to 2020, with 1991 normalized to zero. Each line traces the evolution of a specific percentile relative to its 1991 level. Panel (a) presents changes across the 10th to 90th percentiles. Panel (b) focuses on the right tail of the distribution, plotting changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles.

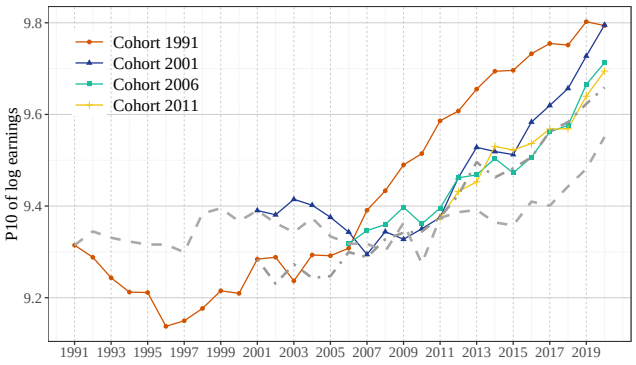
Trends in earnings across groups.

Figure B.2: **Life-cycle profiles of log earnings at the lower and middle parts of the earnings distribution by cohort and gender.**

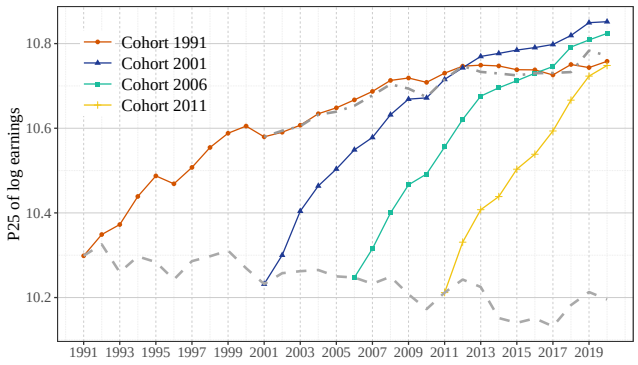
(a) Men: p10



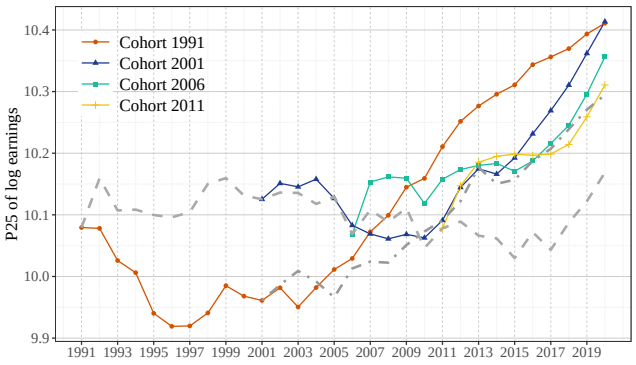
(b) Women: p10



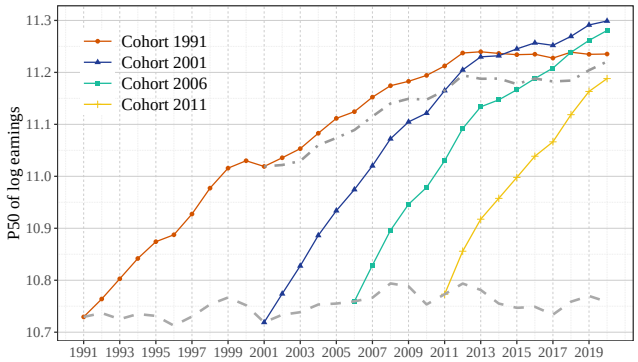
(c) Men: p25



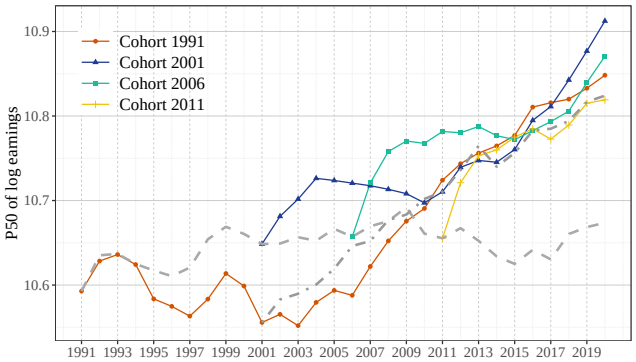
(d) Women: p25



(e) Men: p50



(f) Women: p50

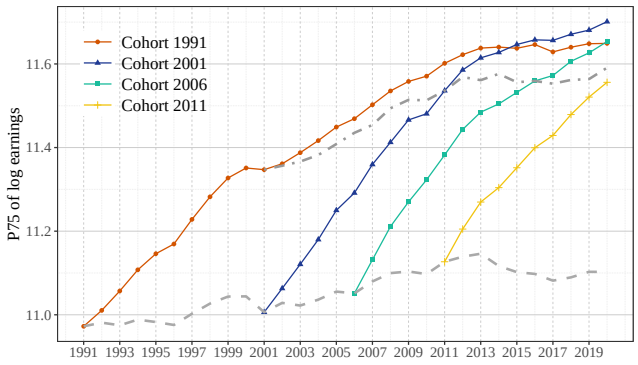


Note: This figure illustrates life-cycle earnings profiles across four cohorts (1991, 2001, 2006, and 2011) for men and women, focusing on the lower and middle parts of the earnings distribution. Panels (a) and (b) plot the evolution of log real earnings ($\log y_{it}$) at the 10th percentile (p10) for men and women, respectively. Panels (c) and (d) show earnings profiles at the 25th percentile (p25), while Panels (e) and (f) display median earnings (p50). Grey dashed and dash-dotted lines mark average log earnings levels at ages 25 and 35 for every cohort between 1991 and 2020.

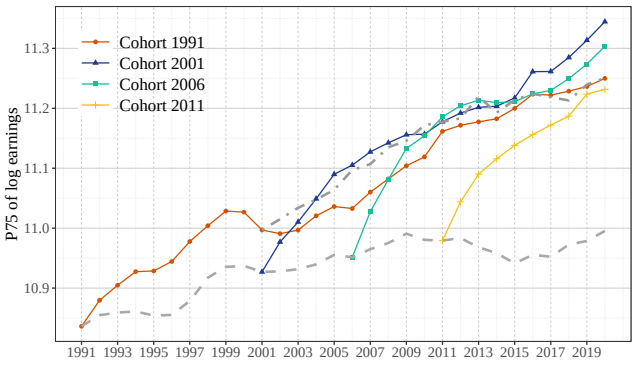
Earnings over the life cycle: p10, p25, and p50.

Figure B.3: **Life-cycle profiles of log earnings at the upper part of the earnings distribution by cohort and gender.**

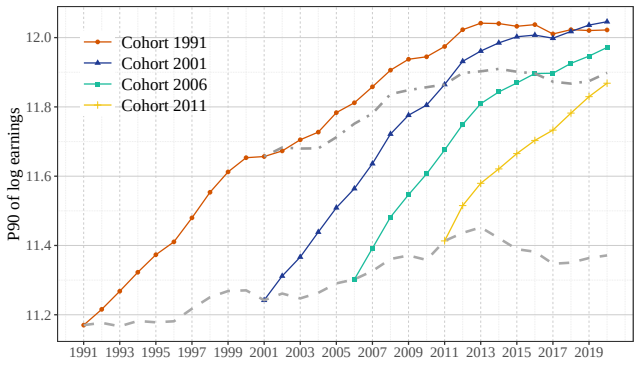
(a) Men: p75



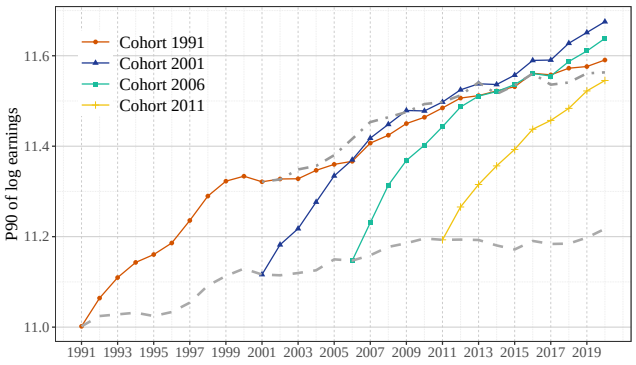
(b) Women: p75



(c) Men: p90



(d) Women: p90

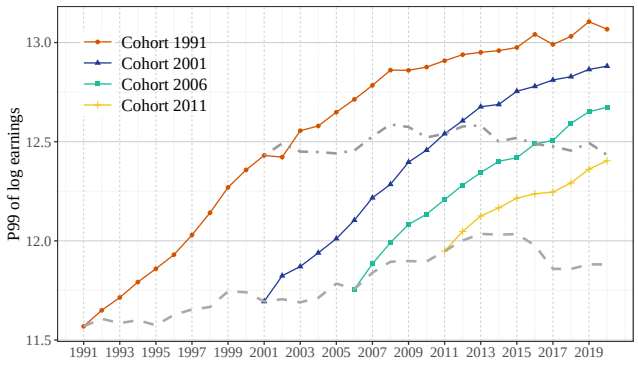


Note: This figure illustrates life-cycle earnings profiles across four cohorts (1991, 2001, 2006, and 2011) for men and women, focusing on the upper part of the earnings distribution. Panels (a) and (b) plot the evolution of log real earnings ($\log y_{it}$) at the 75th percentile (p75) for men and women, respectively. Panels (c) and (d) show earnings profiles at the 90th percentile (p90). Grey dashed and dash-dotted lines mark average log earnings levels at ages 25 and 35 for every cohort between 1991 and 2020.

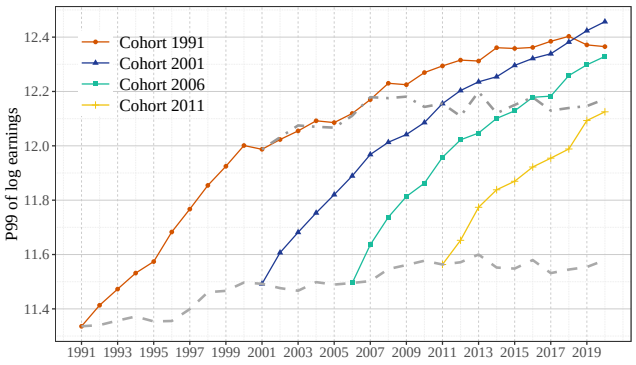
Earnings over the life cycle: p75, p90.

Figure B.4: **Life-cycle profiles of log earnings at the very top of the earnings distribution by cohort and gender.**

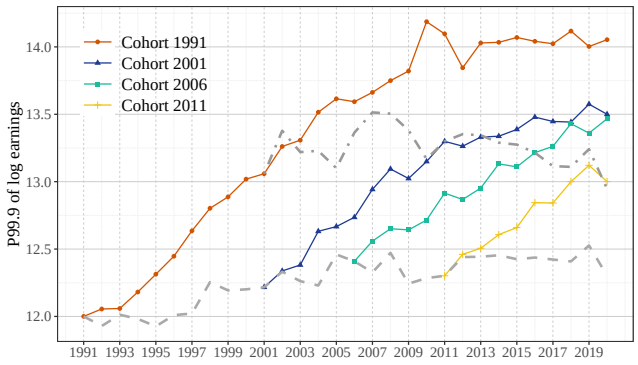
(a) Men: p99



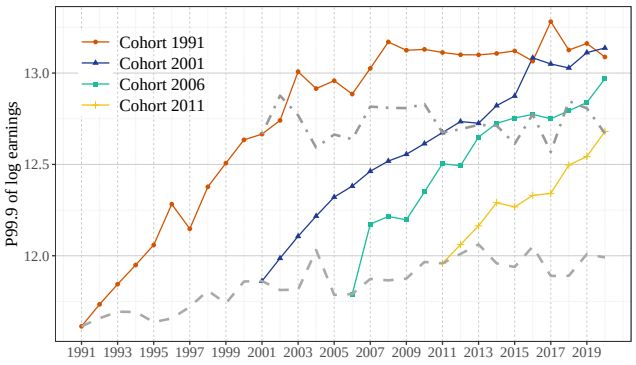
(b) Women: p99



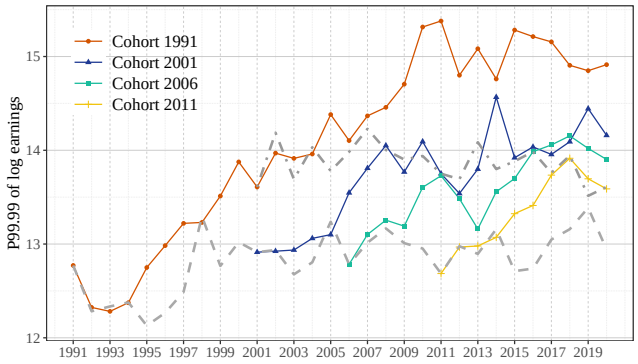
(c) Men: p99.9



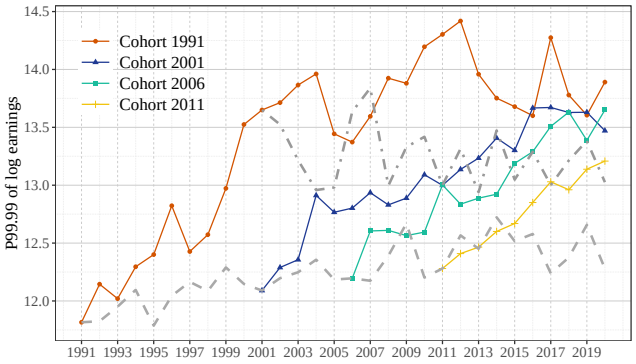
(d) Women: p99.9



(e) Men: p99.99



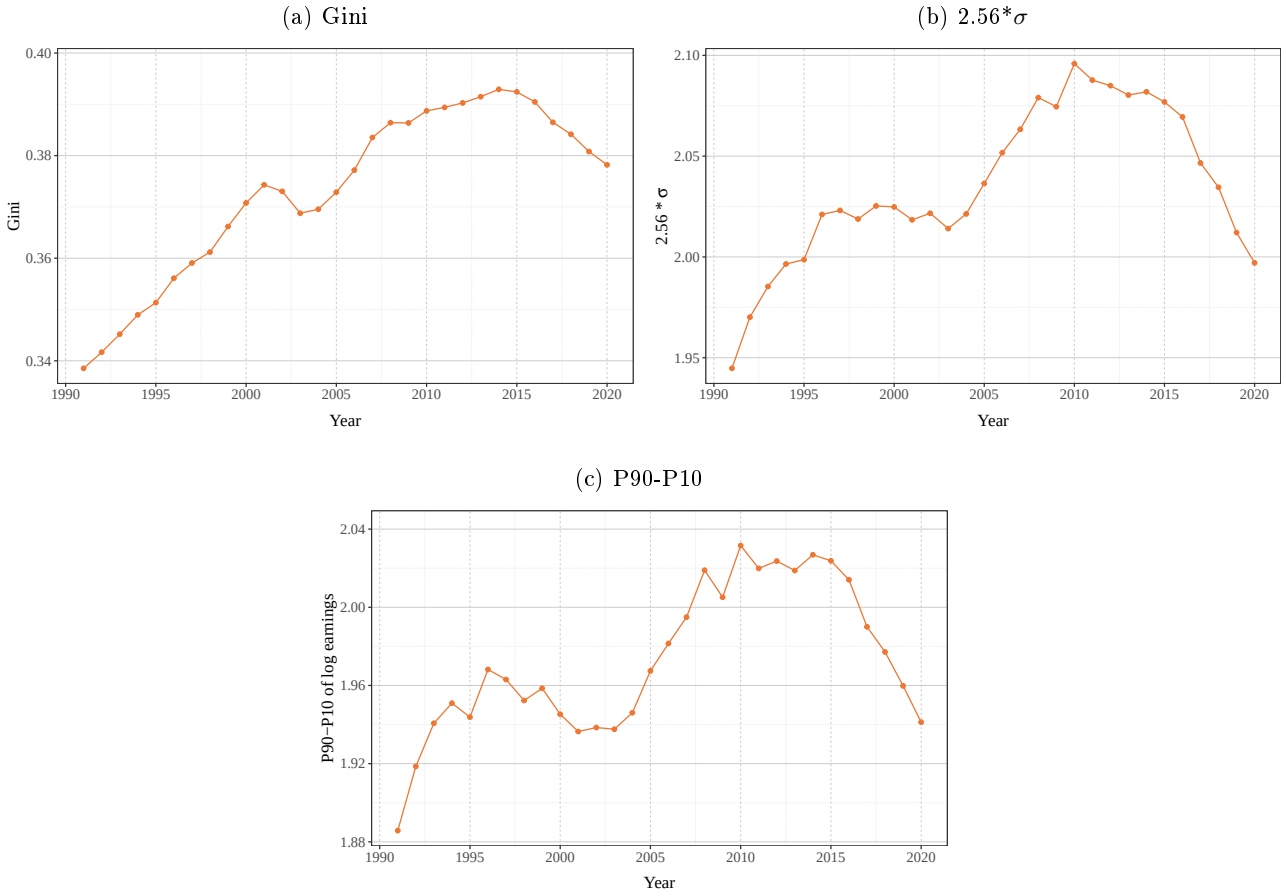
(f) Women: p99.99



Note: This figure illustrates life-cycle earnings profiles across four cohorts (1991, 2001, 2006, and 2011) for men and women, focusing on the very top of the earnings distribution. Panels (a) and (b) plot the evolution of log real earnings ($\log y_{it}$) at the 99th percentile (p99) for men and women, respectively. Panels (c) and (d) show earnings profiles for men and women at the 99.9th percentile (p99.9), and Panels (e) and (f) display earnings profiles at the 99.99th percentile (p99.99). Grey dashed and dash-dotted lines mark average log earnings levels at ages 25 and 35 for every cohort between 1991 and 2020.

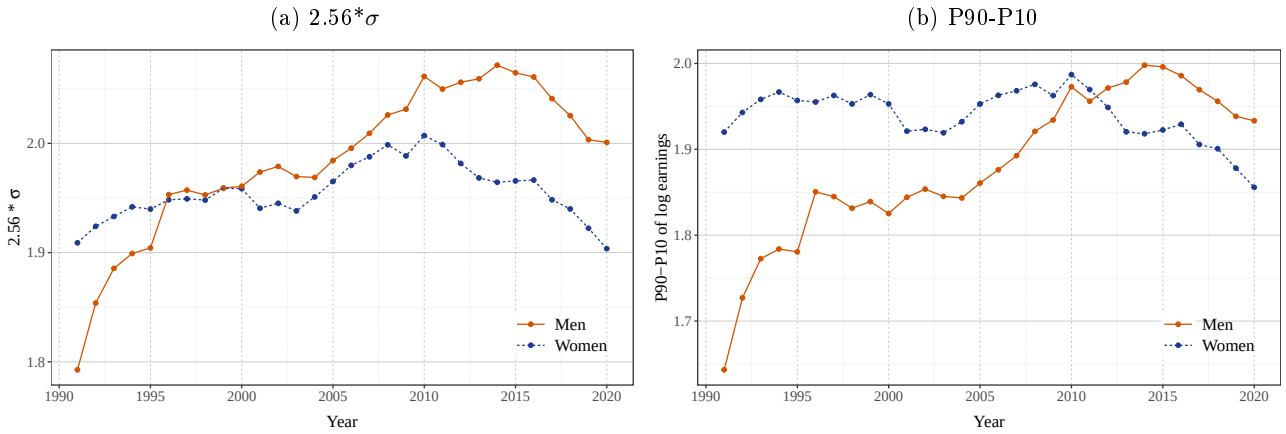
Earnings over the life cycle: p99, p99.9, p99.99.

Figure B.5: Trends in earnings inequality across different measures (Gini, p90-p10, and scaled standard deviation).



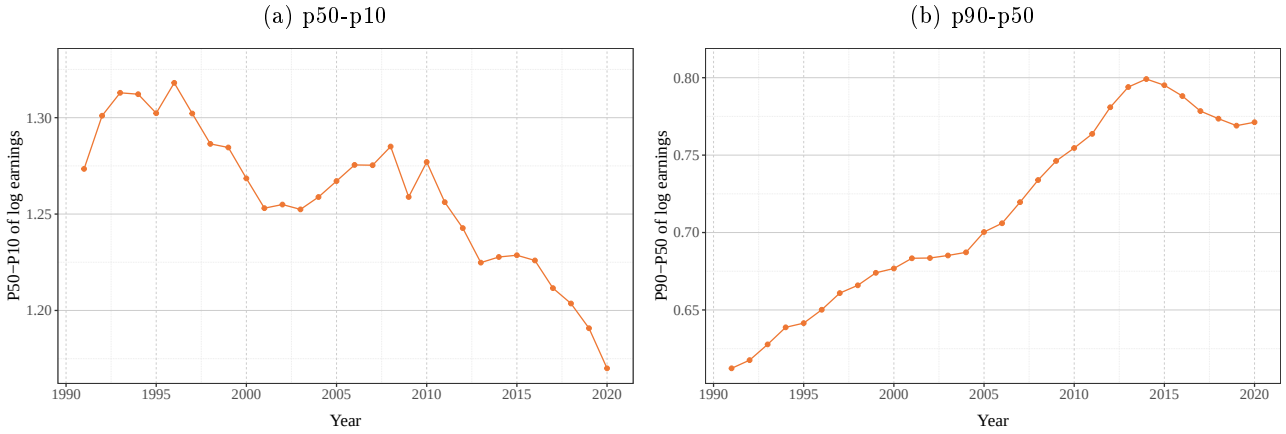
Note: This figure presents trends in overall inequality in log real earnings ($\log y_{it}$) from 1991 to 2020, using three distinct measures. Panel (a) displays the Gini coefficient, providing a standard summary measure of inequality. Panel (b) plots the p90–p10 differential, capturing the spread between the top and bottom of the earnings distribution. Panel (c) shows 2.56 times the standard deviation of log earnings, an alternative metric aligned with the p90–p10 differential under a Gaussian distribution assumption. These complementary measures highlight the robustness of inequality trends across different metrics during Australia's period of sustained economic growth.

Figure B.6: Trends in earnings inequality by gender.



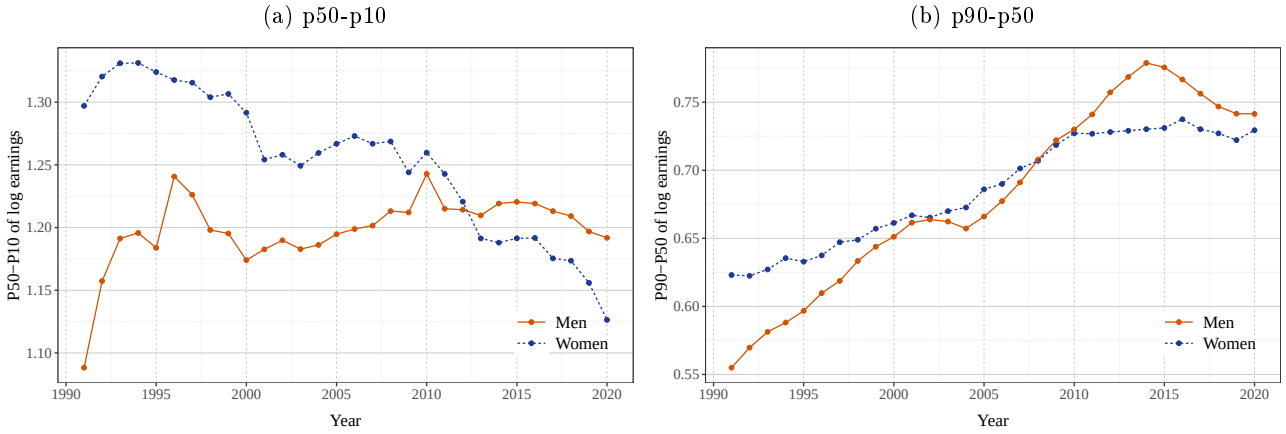
Note: This figure compares overall inequality in log real earnings ($\log y_{i,t}$) between men and women from 1991 to 2020. Panel (a) displays the Gini coefficient, while Panel (b) shows the p90–p10 differential. Both measures highlight differences in earnings dispersion across genders over time.

Figure B.7: Trends in bottom-end (p50-p10) and top-end (p90-p50) earnings inequality.



Note: This figure presents trends in lower-end (p50–p10) and upper-end (p90–p50) inequality in log real earnings ($\log y_{it}$) from 1991 to 2020. Panel (a) shows the p50–p10 differential, capturing dispersion at the lower end of the distribution, while Panel (b) shows the p90–p50 differential, capturing dispersion at the upper end.

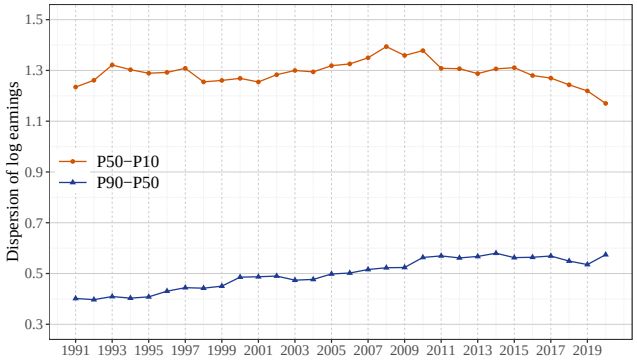
Figure B.8: Trends in bottom-end (p50-p10) and top-end (p90-p50) earnings inequality by gender.



Note: This figure presents trends in lower-end (p50–p10) and upper-end (p90–p50) inequality in log real earnings ($\log y_{it}$) for men and women from 1991 to 2020. Panel (a) shows the p50–p10 differential, capturing dispersion at the lower end of the distribution, while Panel (b) shows the p90–p50 differential, capturing dispersion at the upper end.

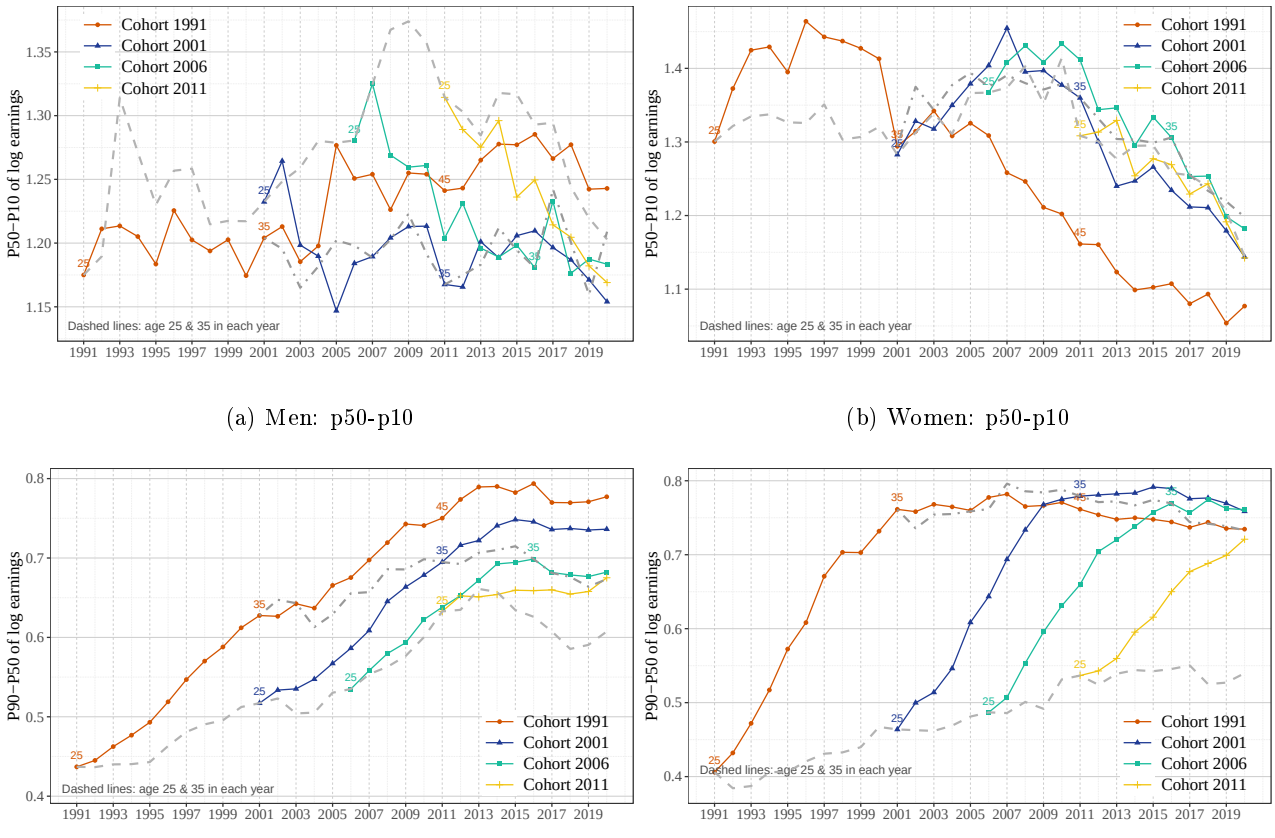
Trends in earnings inequality.

Figure B.9: **Initial earnings inequality among 25-year-olds.**



Note: This figure shows initial earnings inequality among 25-year-olds from 1991 to 2020, based on two measures of log real earnings ($\log y_{it}$). The p50–p10 differential captures bottom-end inequality, while the p90–p50 differential captures top-end inequality. These metrics highlight changes in earnings dispersion at different parts of the distribution for young workers at labour market entry.

Figure B.10: Life-cycle profiles of bottom-end (p50–p10) and top-end (p90–p50) earnings inequality by cohort.



(a) Men: p50-p10

(b) Women: p50-p10

(c) Men: p90-p50

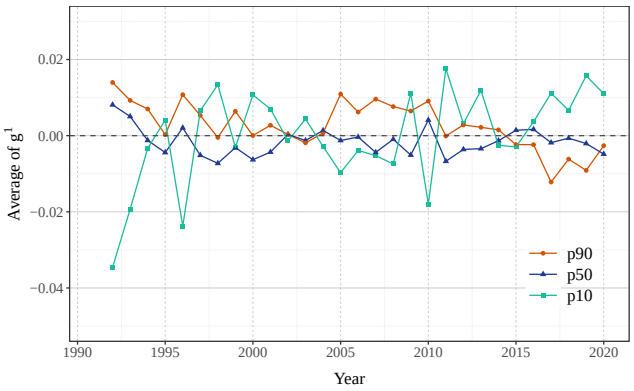
(d) Women: p90-p50

Note: The figure illustrates life-cycle earnings inequality profiles across different cohorts for men and women. Panels (a) and (b) plot the evolution of bottom-end inequality (p50–p10 differential) based on log real earnings ($\log y_{it}$) by age for four cohorts—1991, 2001, 2006, and 20011. Panels (c) and (d) plot the evolution of top-end inequality (p90–p50 differential) across the same cohorts. Grey dashed lines mark ages 25 and 35 for each cohort between 1991 and 2020. These panels capture cohort-specific patterns in inequality dynamics over the life cycle at different segments of the earnings distribution.

Earnings inequality over the life cycle.

B.2 Earnings dynamics

Figure B.11: **Average one-year changes in residualized log earnings for selected percentiles of the earnings distribution.**

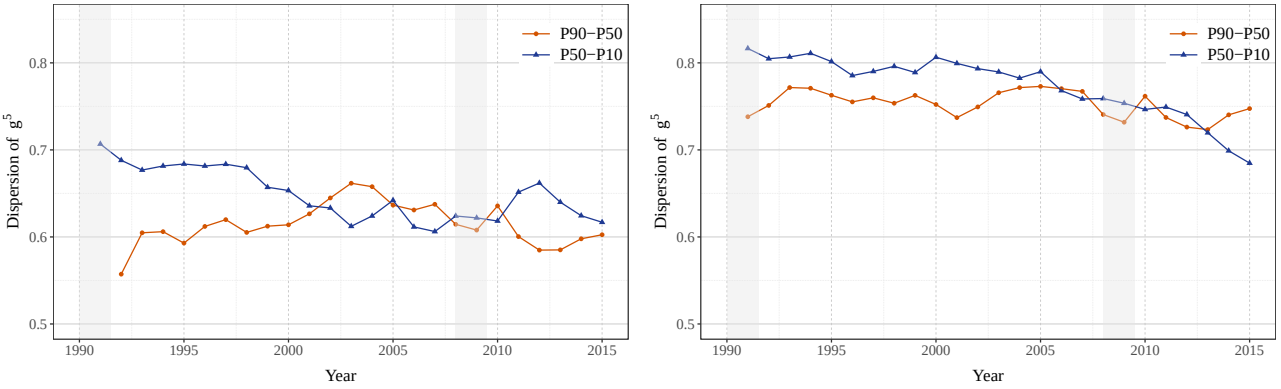


Note: This figure plots the average one-year changes in residualized log earnings ($\triangle\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$) across selected percentiles of the earnings distribution. Residualized log earnings remove age-related effects (such as experience and seniority) to isolate idiosyncratic earnings shocks.

Earnings shocks over time.

Cyclical features

Figure B.12: **Dispersion of five-year changes in residualized log earnings by gender.**

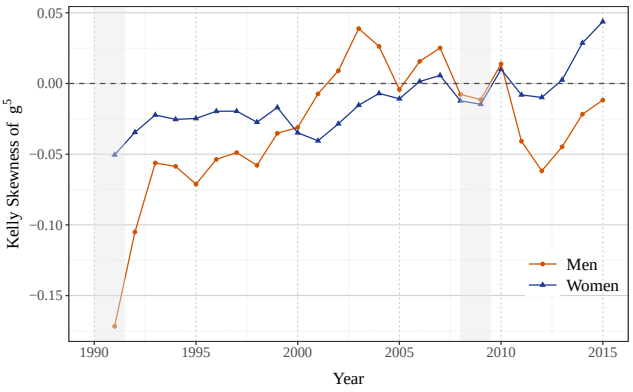


(a) Men (b) Women

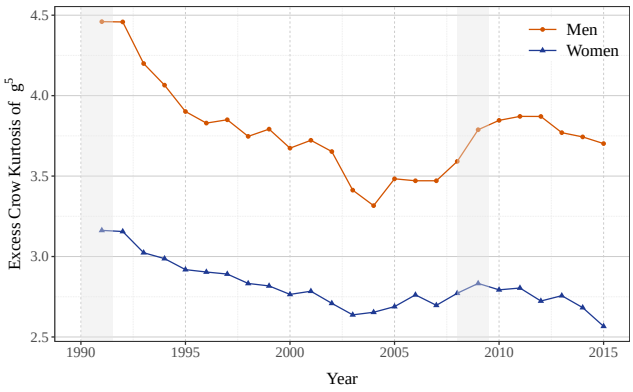
Note: This figure displays the dispersion of five-year changes in residualized log earnings (i.e., earnings shocks) for men and women from 1990 to 2015, calculated as $\triangle^5\varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panel (a) shows the dispersion for men, and Panel (b) for women. Two measures are reported: the p90–p50 differential captures dispersion at the upper end of the earnings shock distribution, while the p50–p10 differential captures dispersion at the lower end. Together, these measures highlight differences in earnings shock volatility across the distribution over five-year periods.

Figure B.13: **Higher-order moments (skewness and kurtosis) of five-year changes in residualized log earnings by gender.**

(a) Kelly skewness



(b) Excess Crow-Siddiqui kurtosis

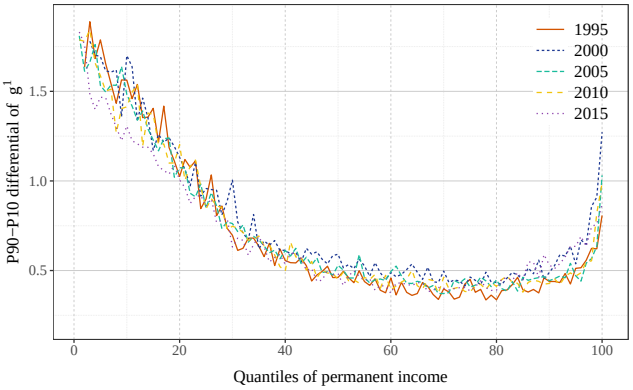


Note: This figure shows the higher-order moments of five-year changes in residualized log earnings (i.e., earnings shocks) by gender from 1990 to 2015. Changes are calculated as $\triangle^5 \varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panel (a) presents Kelly skewness, which measures the asymmetry of earnings shocks: positive skewness indicates a longer right tail (more extreme positive shocks), while negative skewness reflects a longer left tail (more extreme negative shocks). Panel (b) displays excess Crow-Siddiqui kurtosis, obtained by subtracting 2.91 from the raw kurtosis value. A positive excess kurtosis indicates heavier tails and a greater likelihood of extreme earnings shocks compared to a normal distribution.

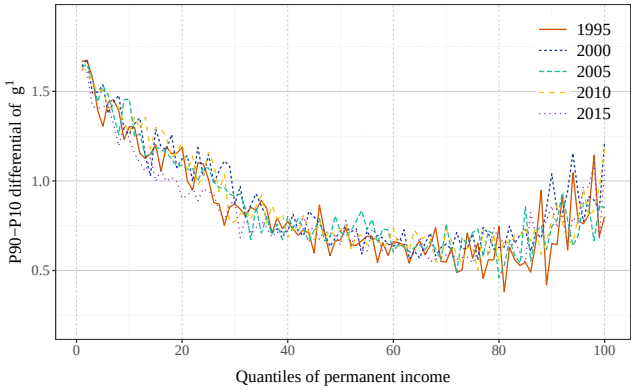
5-year earnings shocks.

Figure B.14: **Dispersion of one-year changes in residualized log earnings across time, by age group, permanent earnings percentiles, and gender.**

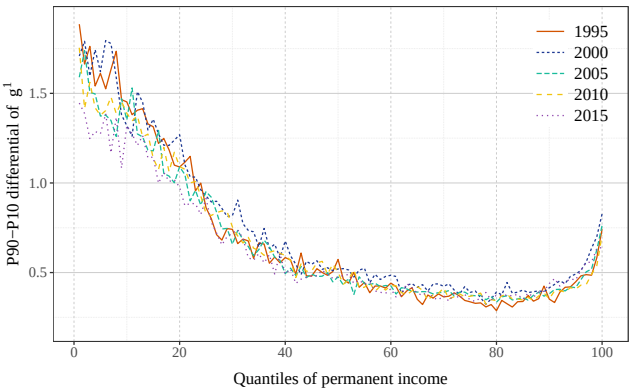
(a) Men: 25-34



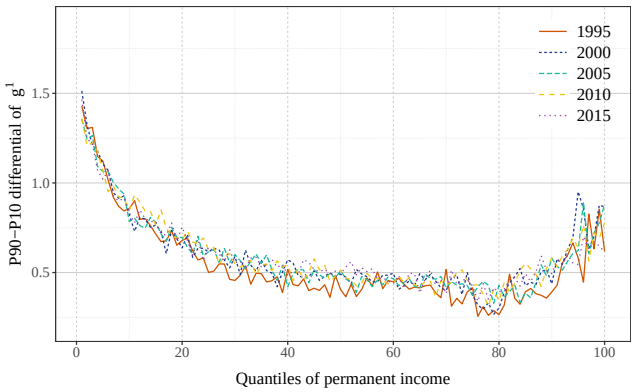
(b) Women: 25-34



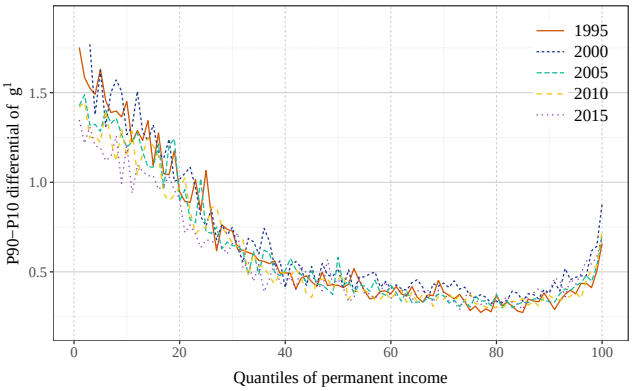
(c) Men: 35-44



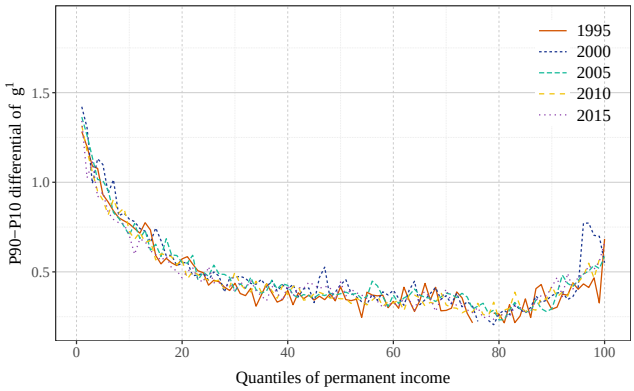
(d) Women: 35-44



(e) Men: 45-55

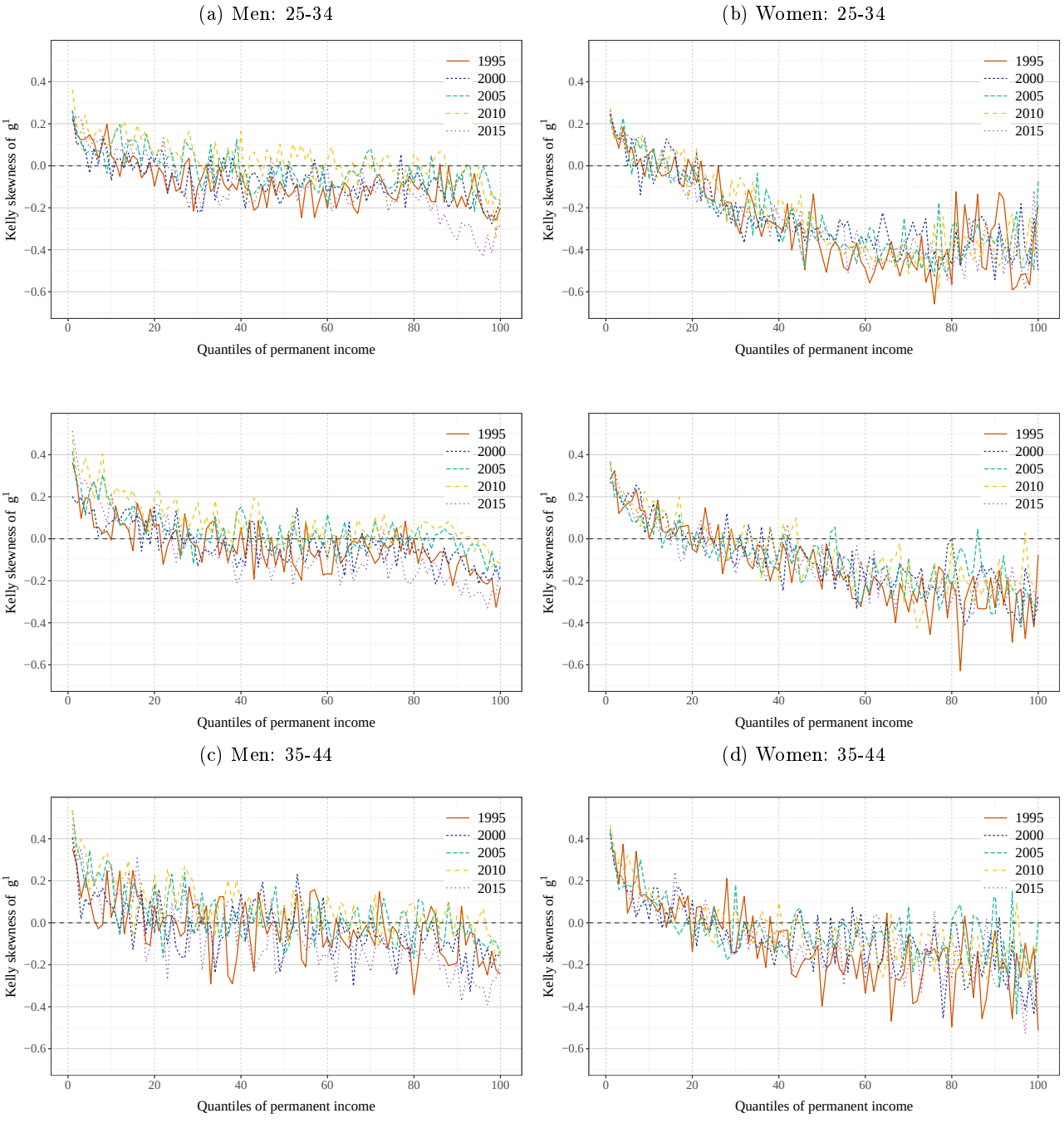


(f) Women: 45-55



Note: This figure illustrates the dispersion of one-year changes in residualized log earnings (i.e., earnings shocks) across five time points (1995, 2000, 2005, 2010, and 2015) segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Dispersion is measured using the p90–p10 differential of one-year earnings shocks. Panels (a) and (b) show results for the 25–34 age group, Panels (c) and (d) for the 35–44 group, and Panels (e) and (f) for the 45–55 group, separately for men and women.

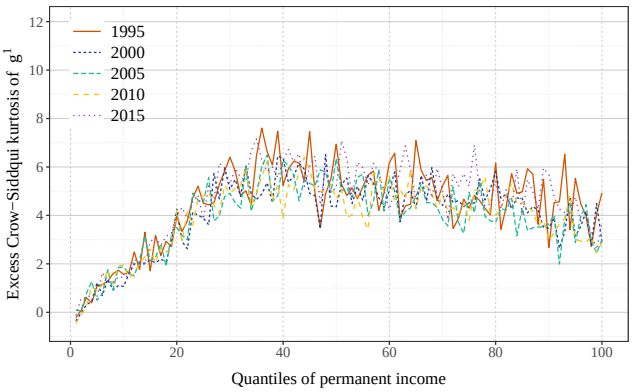
Figure B.15: **Kelly skewness of one-year changes in residualized log earnings across time, by age group, permanent earnings percentiles, and gender.**



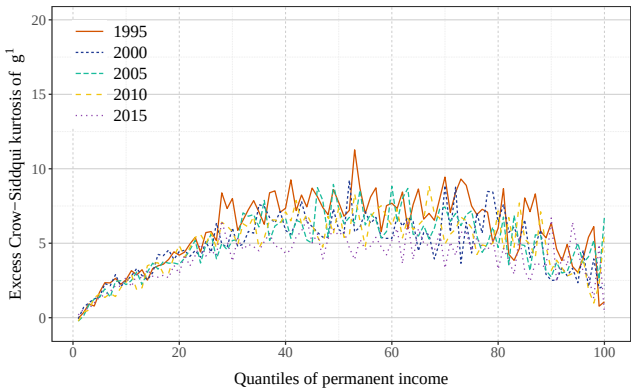
Note: This figure illustrates the Kelly skewness of one-year changes in residualized log earnings (i.e., earnings shocks) across five time points (1995, 2000, 2005, 2010, and 2015) segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Panels (a) and (b) show the skewness for men and women aged 25–34, panels (c) and (d) for men and women aged 35–44, and panels (e) and (f) for men and women aged 45–55. Kelly skewness captures the asymmetry of earnings shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values reflect a longer left tail (more extreme negative shocks).

Figure B.16: **Excess Crow–Siddiqui kurtosis of one-year changes in residualized log earnings across time, by age group, permanent earnings percentiles, and gender.**

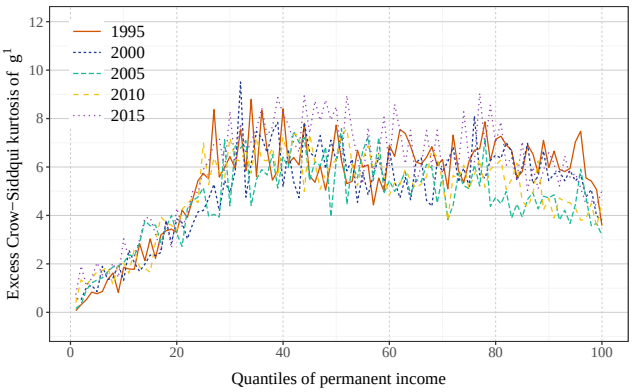
(a) Men: 25-34



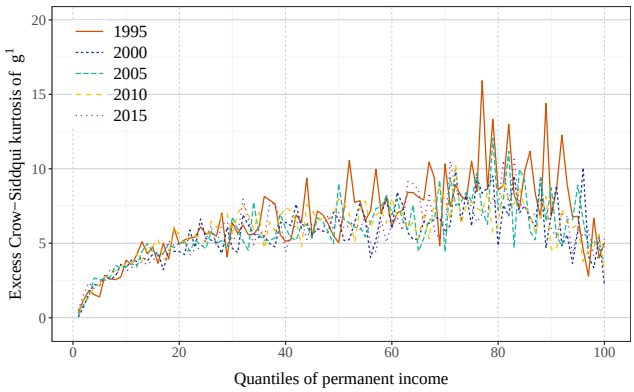
(b) Women: 25-34



(c) Men: 35-44

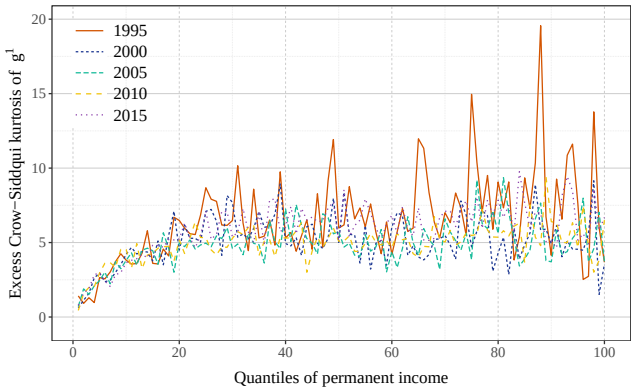


(d) Women: 35-44



(e) Men: 45-55

(f) Women: 45-55

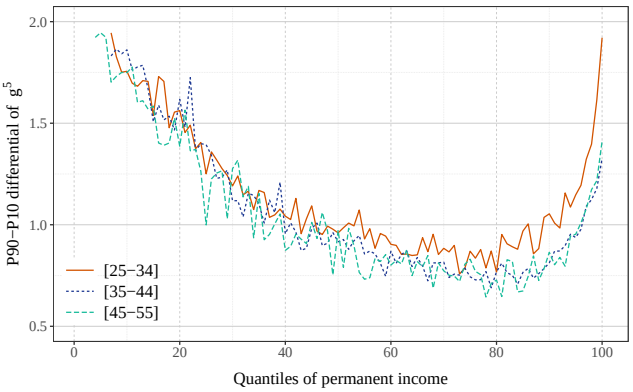


Note: This figure illustrates the excess Crow–Siddiqui kurtosis of one-year changes in residualized log earnings (i.e., earnings shocks) across five time points (1995, 2000, 2005, 2010, and 2015) segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Panels (a) and (b) show kurtosis measures for men and women aged 25–34, panels (c) and (d) for men and women aged 35–44, and panels (e) and (f) for men and women aged 45–55. Excess Crow–Siddiqui kurtosis captures the "tailedness" of the earnings shock distribution relative to a normal distribution, with higher values indicating a greater likelihood of extreme earnings shocks.

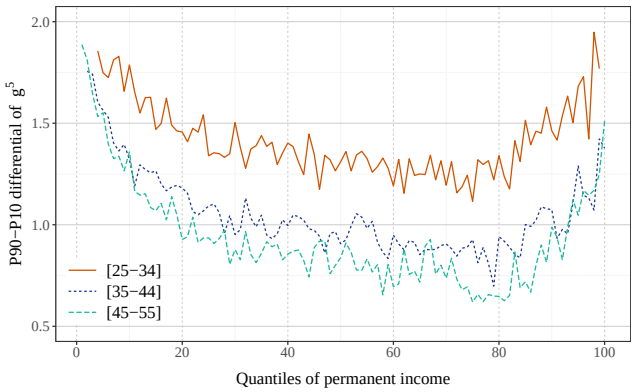
1-year Earnings shocks by rank and age.

Figure B.17: **Dispersion, Kelly skewness, and Crow–Siddiqui kurtosis of five-year changes in residualized log earnings by age group, permanent earnings percentiles, and gender.**

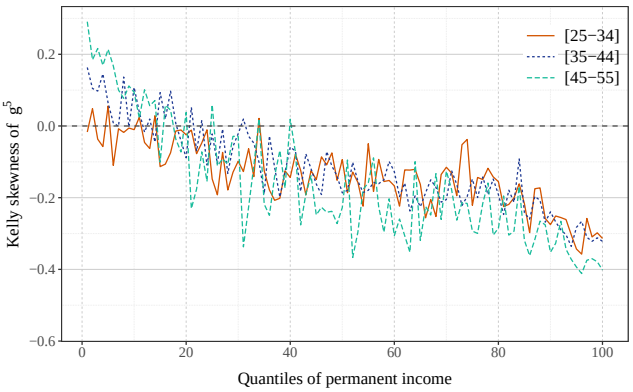
(a) Men: P90-P10



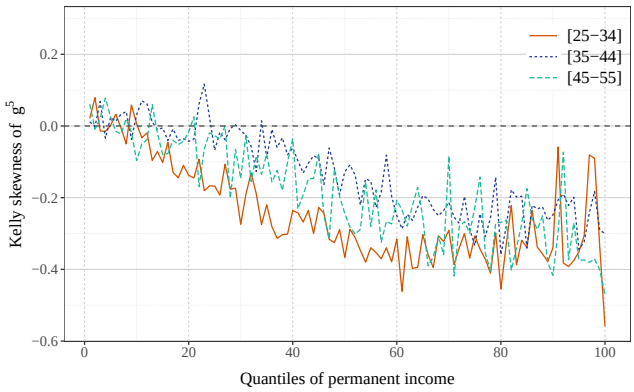
(b) Women: P90-P10



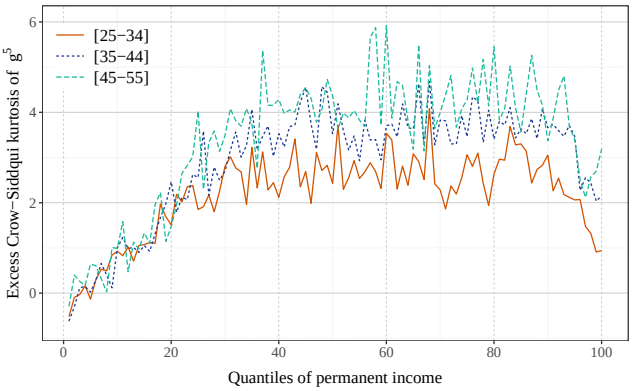
(c) Men: Kelly skewness



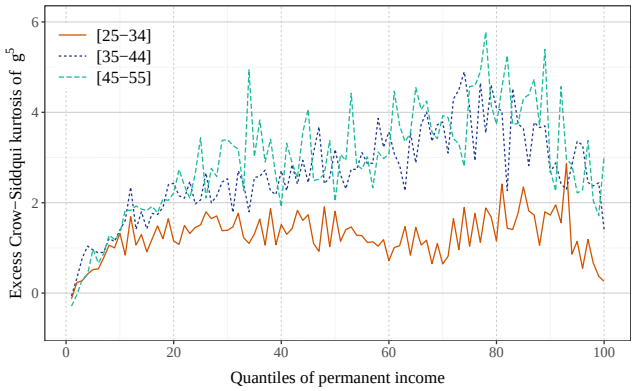
(d) Women: Kelly skewness



(e) Men: Excess Crow-Siddiqui kurtosis



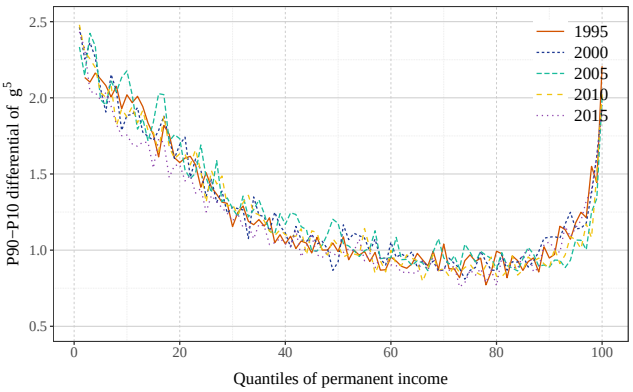
(f) Women: Excess Crow-Siddiqui kurtosis



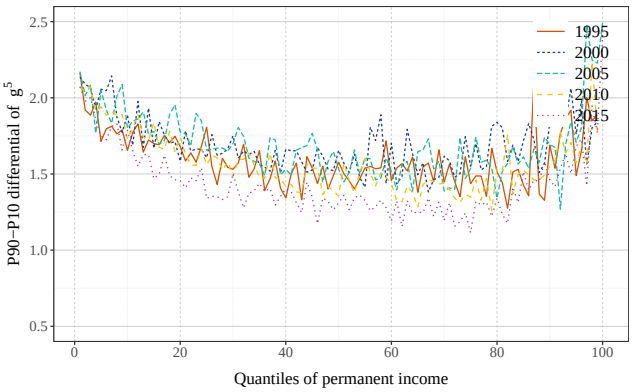
Note: This figure illustrates the dispersion, Kelly skewness, and Crow–Siddiqui kurtosis of five-year changes in residualized log earnings (i.e., earnings shocks), segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Five-year changes are calculated as $\triangle^5 \varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panels (a) and (b) show the p90–p10 differential, measuring overall dispersion across the earnings shock distribution for men and women, respectively. Panels (c) and (d) present Kelly skewness, capturing the asymmetry of shocks, where positive values indicate a longer right tail (more extreme positive shocks). Panels (e) and (f) display excess Crow–Siddiqui kurtosis, reflecting the "tailedness" or likelihood of extreme earnings shocks relative to a normal distribution.

Figure B.18: **Dispersion of five-year changes in residualized log earnings across time by age group, permanent earnings percentiles, and gender.**

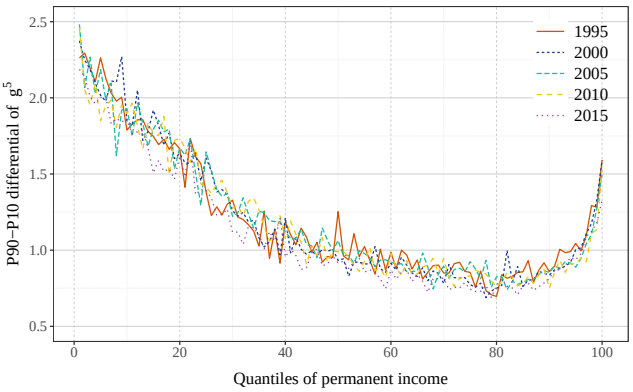
(a) Men: 25-34



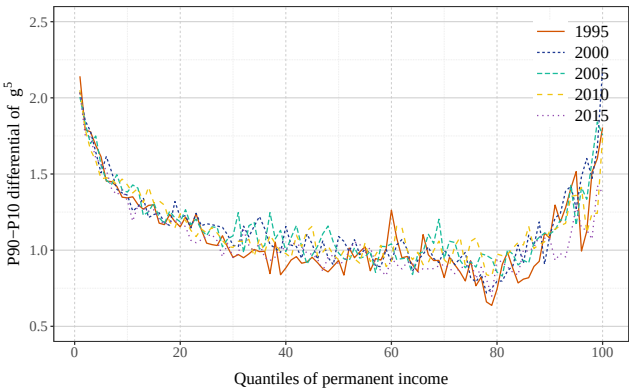
(b) Women: 25-34



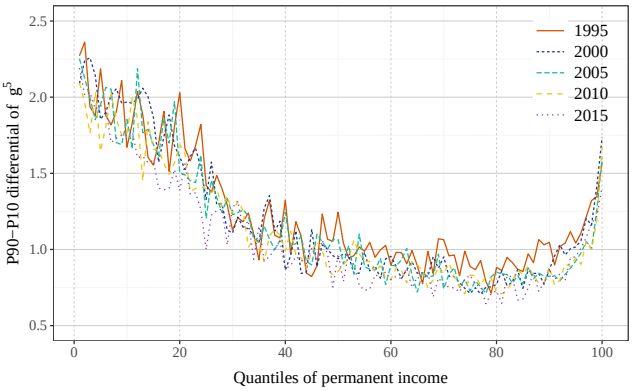
(c) Men: 35-44



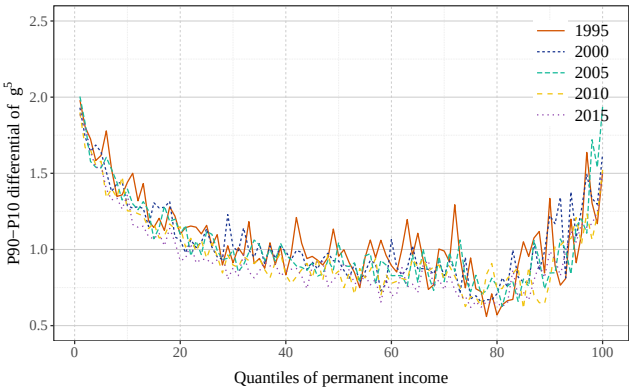
(d) Women: 35-44



(e) Men: 45-55



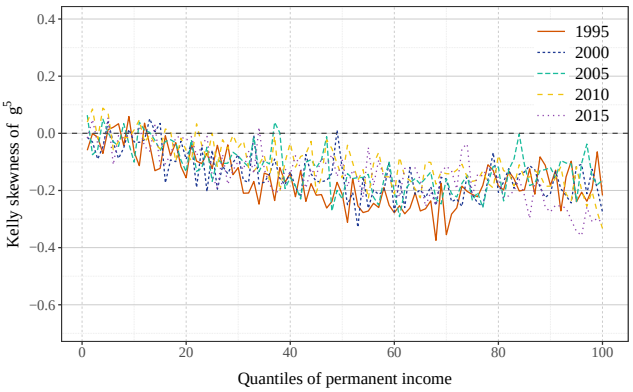
(f) Women: 45-55



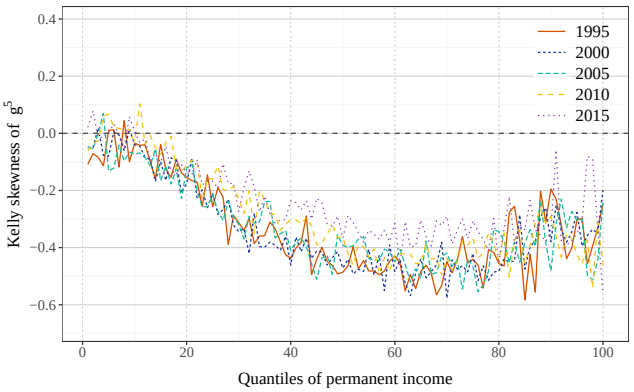
Note: This figure illustrates the dispersion of five-year changes in residualized log earnings (i.e., earnings shocks) across time (1995, 2000, 2005, 2010, and 2015), segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Dispersion is measured using the p90–p10 differential of five-year earnings shocks, calculated as $\triangle^5 \varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panels (a) and (b) show results for the 25–34 age group, Panels (c) and (d) for the 35–44 group, and Panels (e) and (f) for the 45–55 group, separately for men and women.

Figure B.19: **Kelly skewness of five-year changes in residualized log earnings across time by age group, permanent earnings percentiles, and gender.**

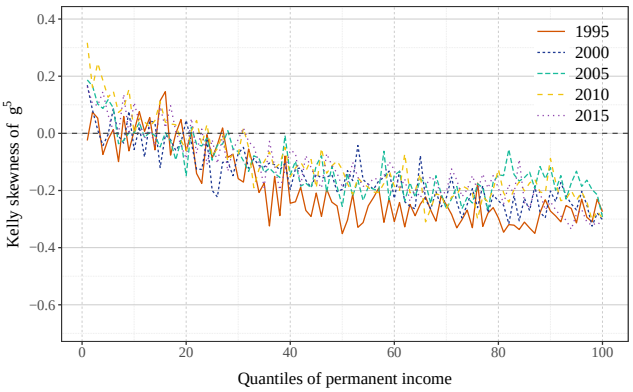
(a) Men: 25-34



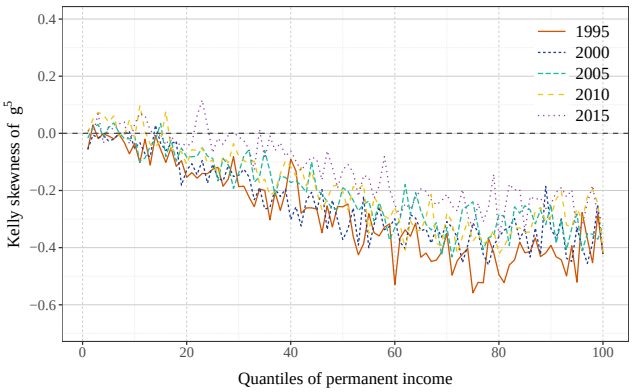
(b) Women: 25-34



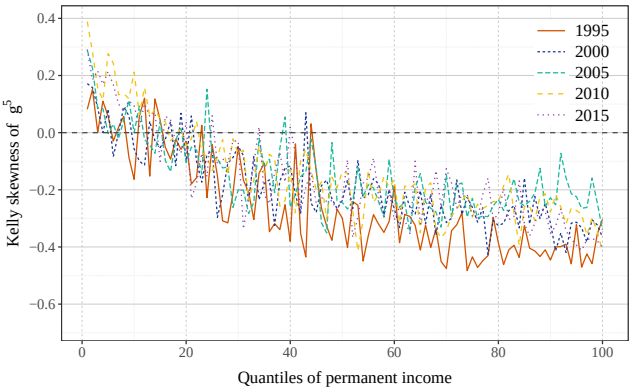
(c) Men: 35-44



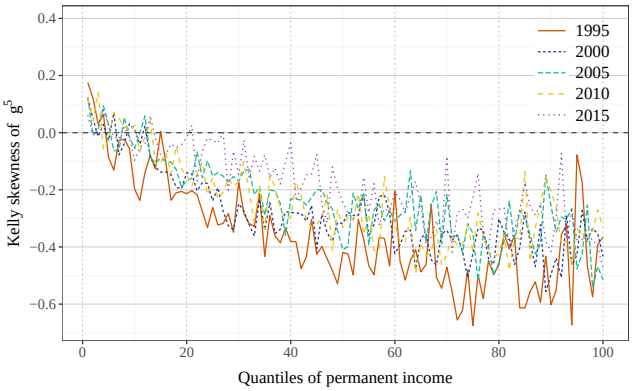
(d) Women: 35-44



(e) Men: 45-55



(f) Women: 45-55

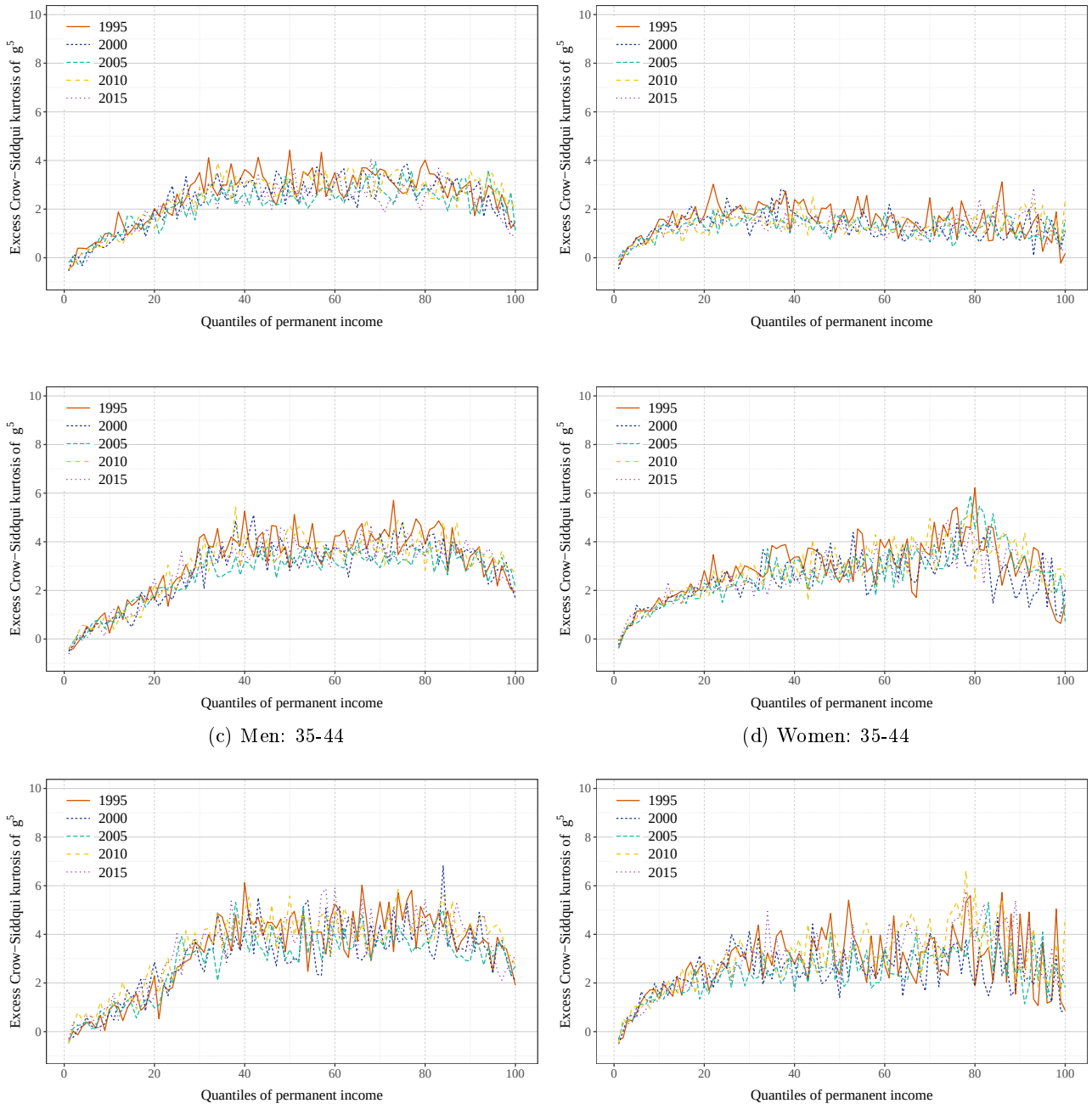


Note: This figure illustrates the Kelly skewness of five-year changes in residualized log earnings (i.e., earnings shocks) across time (1995, 2000, 2005, 2010, and 2015), segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Five-year earnings shocks are calculated as $\triangle^5 \varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panels (a) and (b) show results for the 25–34 age group, Panels (c) and (d) for the 35–44 group, and Panels (e) and (f) for the 45–55 group, separately for men and women. Positive Kelly skewness values indicate a distribution with a longer right tail (more extreme positive shocks), while negative values reflect a longer left tail (more extreme negative shocks).

Figure B.20: **Excess Crow–Siddiqui kurtosis of five-year changes in residualized log earnings across time by age group, permanent earnings percentiles, and gender.**

(a) Men: 25-34

(b) Women: 25-34



(c) Men: 35-44

(d) Women: 35-44

(e) Men: 45-55

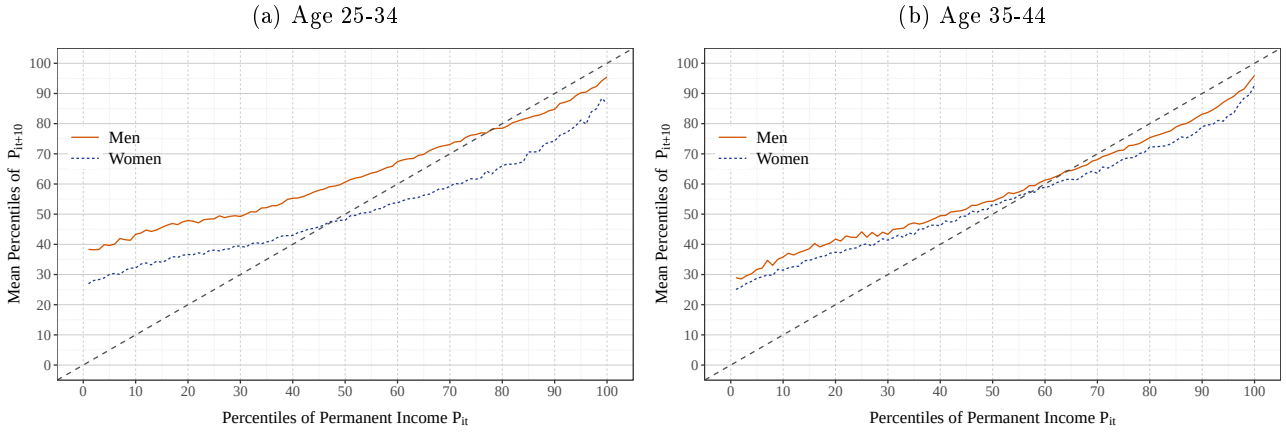
(f) Women: 45-55

Note: This figure illustrates the excess Crow–Siddiqui kurtosis of five-year changes in residualized log earnings (i.e., earnings shocks) across time (1995, 2000, 2005, 2010, and 2015), segmented by age group (25–34, 35–44, 45–55), permanent earnings percentiles, and gender. Five-year earnings shocks are calculated as $\triangle^5 \varepsilon_{it} = \varepsilon_{it+t} - \varepsilon_{it}$. Panels (a) and (b) show results for the 25–34 age group, Panels (c) and (d) for the 35–44 group, and Panels (e) and (f) for the 45–55 group, separately for men and women. Excess Crow–Siddiqui kurtosis is computed by subtracting 2.91 from the raw kurtosis value, with positive values indicating heavier tails and a greater likelihood of extreme earnings shocks relative to a normal distribution.

5-year earnings shocks by rank and age.

B.3 Earnings mobility

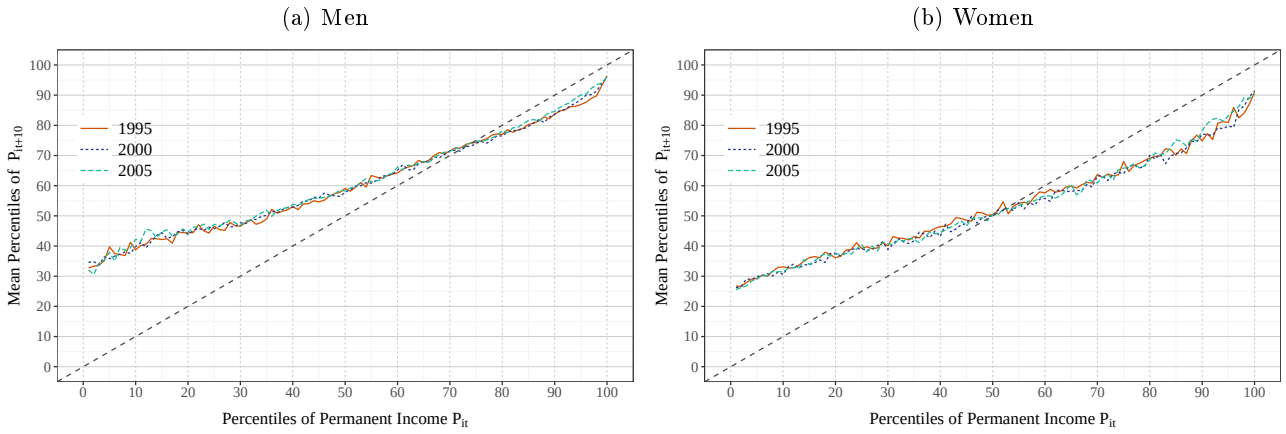
Figure B.21: **10-year average rank mobility by age group (men and women, averages from 1997 to 2007).**



Note: This figure shows the 10-year average rank mobility across two age groups, based on averages from 1997 to 2007. Panel (a) displays mobility for men and women aged 25–34, and Panel (b) for those aged 35–44. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the 45-degree line indicate upward mobility, and deviations below indicate downward mobility. This figure highlights that men generally exhibit higher earnings mobility than women, with the gender gap in mobility being most pronounced among younger workers (aged 25–34).

10-year mobility by age group and gender.

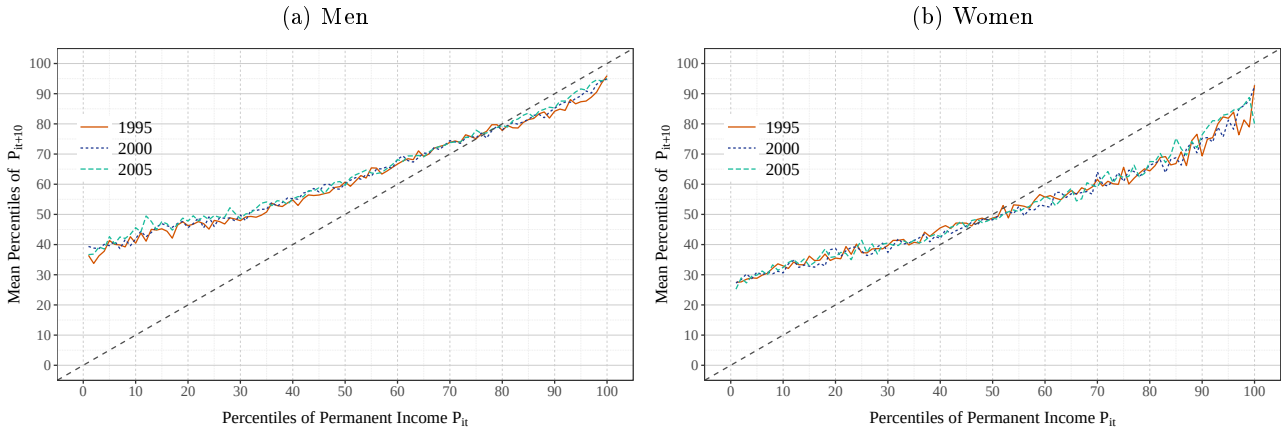
Figure B.22: **10-year average rank mobility over time (1995, 2000, and 2005), separately for men and women.**



Note: This figure shows the 10-year average rank mobility for men and women, comparing three starting periods: 1995, 2000, and 2005. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995, 2000, and 2005 profiles suggests that rank mobility remained stable across these periods for both genders, with only minimal variations in upward or downward movement.

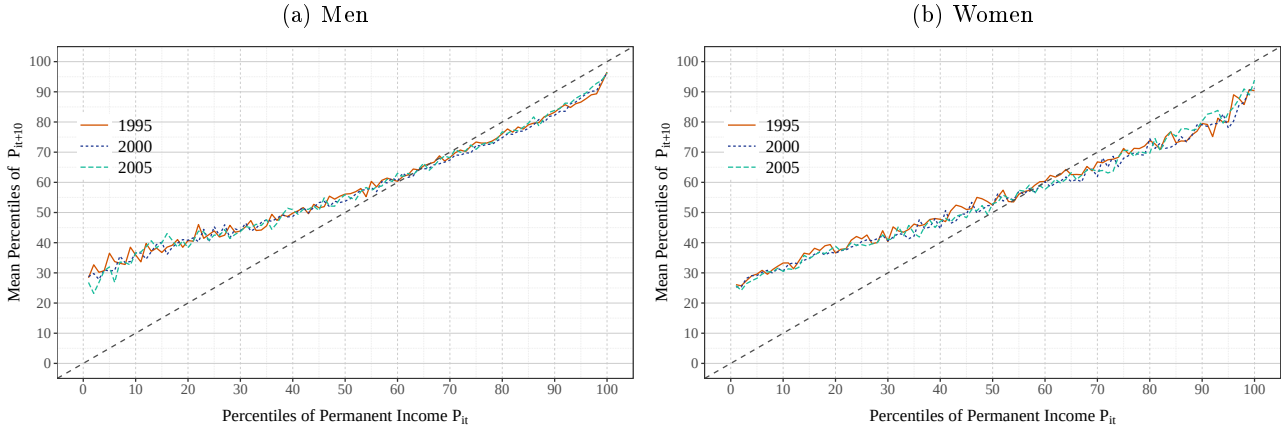
10-year mobility by gender over time.

Figure B.23: **10-year average rank mobility over time (1995, 2000, and 2005) for workers aged 25–34, separately for men and women.**



Note: This figure shows the 10-year average rank mobility for men and women aged 25–34, comparing three starting periods: 1995, 2000, and 2005. Panel (a) displays mobility profiles for young men, and Panel (b) for young women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995, 2000, and 2005 profiles suggests that rank mobility among young workers remained stable over time, with only minimal changes in upward or downward movement for both genders.

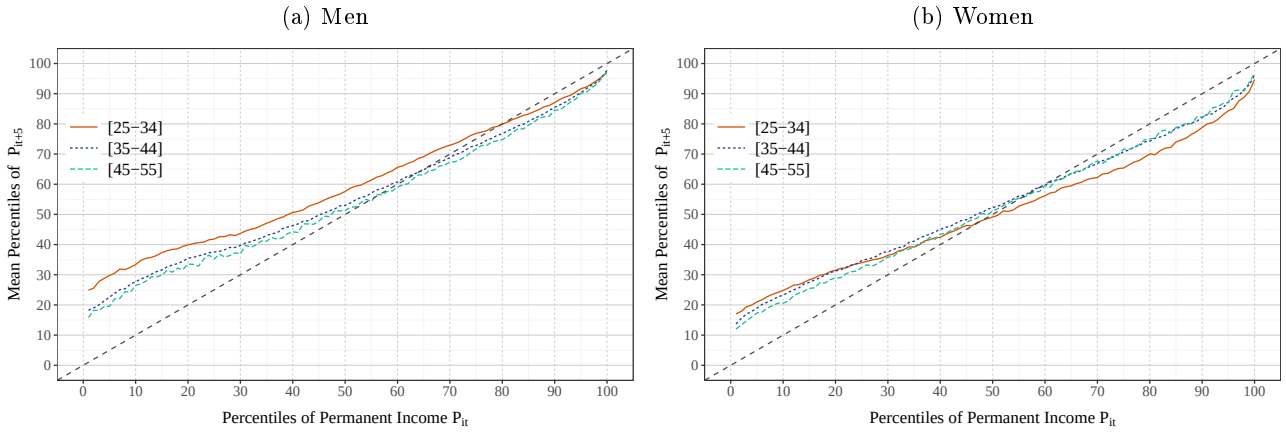
Figure B.24: **10-year average rank mobility over time (1995, 2000, and 2005) for workers aged 35–44, separately for men and women.**



Note: This figure shows the 10-year average rank mobility for men and women aged 35–44, comparing three starting periods: 1995, 2000, and 2005. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995, 2000, and 2005 profiles suggests that rank mobility among workers aged 35–44 remained stable over time, with only minimal changes in upward or downward movement for both genders.

10-year mobility by age group and gender over time.

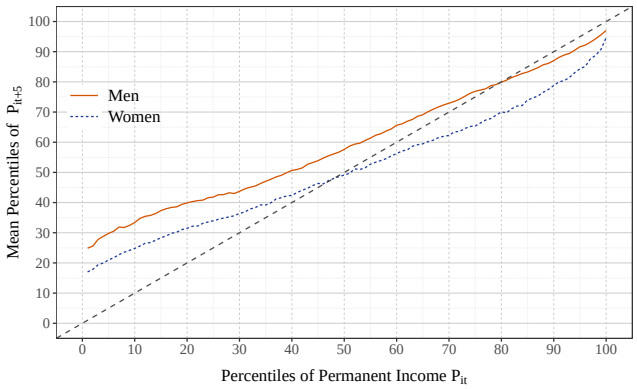
Figure B.25: **5-year average rank mobility by age group, separately for men and women (averages from 1993–2010).**

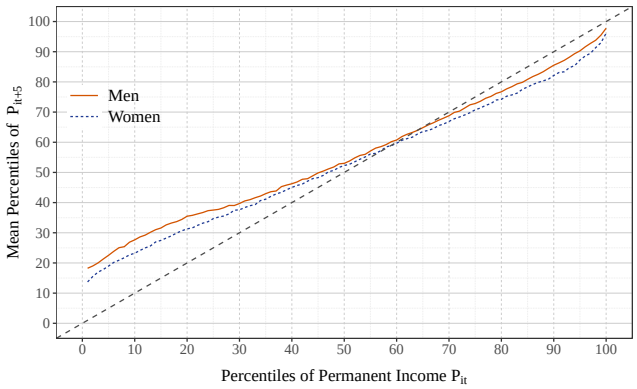


Note: This figure shows the 5-year average rank mobility by age group, separately for men and women, based on averages from 1993 to 2010. Panel (a) illustrates mobility for men, and Panel (b) for women, across three age groups: 25–34, 35–44, and 45–55. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility.

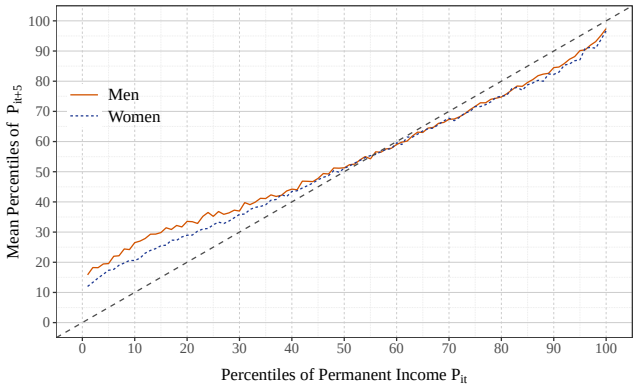
Figure B.26: **5-year average rank mobility by gender, separately for different age groups (averages from 1993–2010).**

(a) Age 25-34





(b) Age 35-44

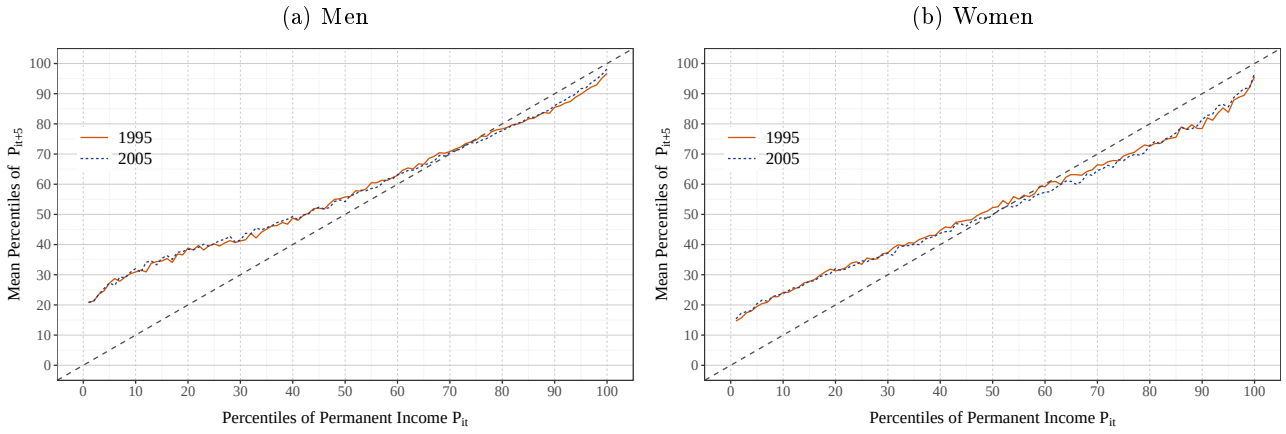


(c) Age 45-55

Note: This figure shows the 5-year average rank mobility by gender, separately for different age groups, based on averages from 1993 to 2010. Panels (a), (b), and (c) illustrate mobility across the three age groups: 25–34, 35–44, and 45–55, respectively, comparing men and women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility.

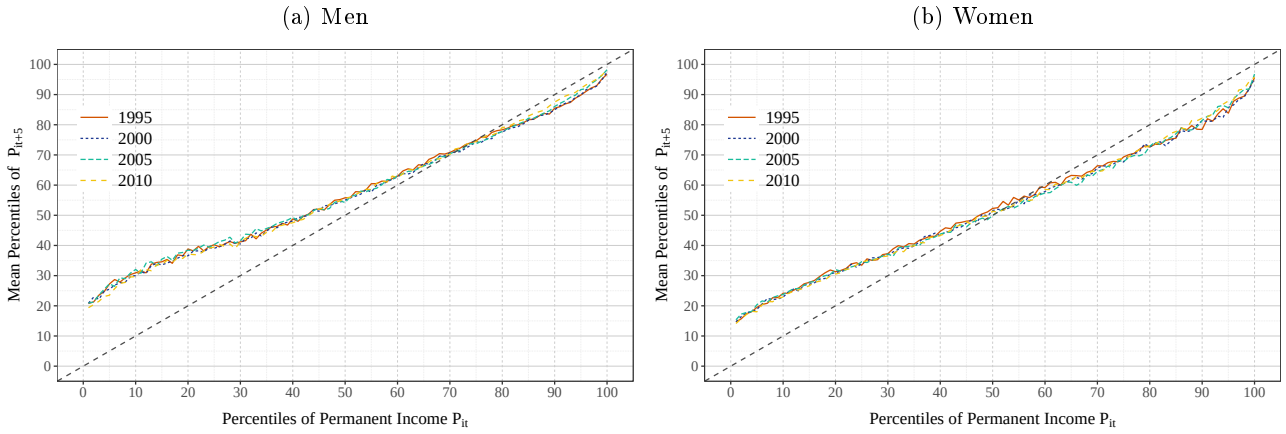
5-year mobility by age group and gender.

Figure B.27: **5-year average rank mobility over time (1995 and 2005), separately for men and women.**



Note: This figure illustrates the 5-year average rank mobility for men and women, comparing two starting periods: 1995 and 2005. Panel (a) displays mobility for men, while Panel (b) shows mobility for women. The x-axis indicates individuals' initial percentile rank in the permanent income distribution, and the y-axis indicates their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. The close alignment of the 1995 and 2005 profiles suggests that rank mobility remained stable over time, with minimal changes in upward or downward movement for both genders.

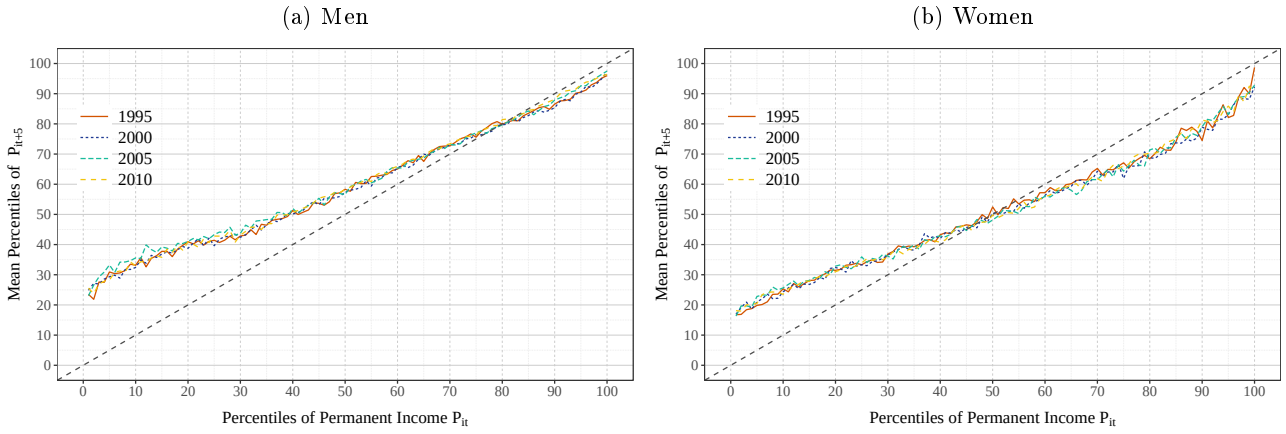
Figure B.28: **year average rank mobility over time (1995, 2000, 2005, and 2010), separately for men and women.**



Note: This figure illustrates 5-year average rank mobility over time for men and women, comparing the years 1995, 2000, 2005 and 2010. Panel (a) shows mobility for men, and Panel (b) shows mobility for women.
Note: This figure illustrates the 5-year average rank mobility for men and women, comparing four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility for men, while Panel (b) shows mobility for women. The x-axis indicates individuals' initial percentile rank in the permanent income distribution, and the y-axis indicates their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. The close alignment across different periods suggests that rank mobility remained relatively stable over time for both genders.

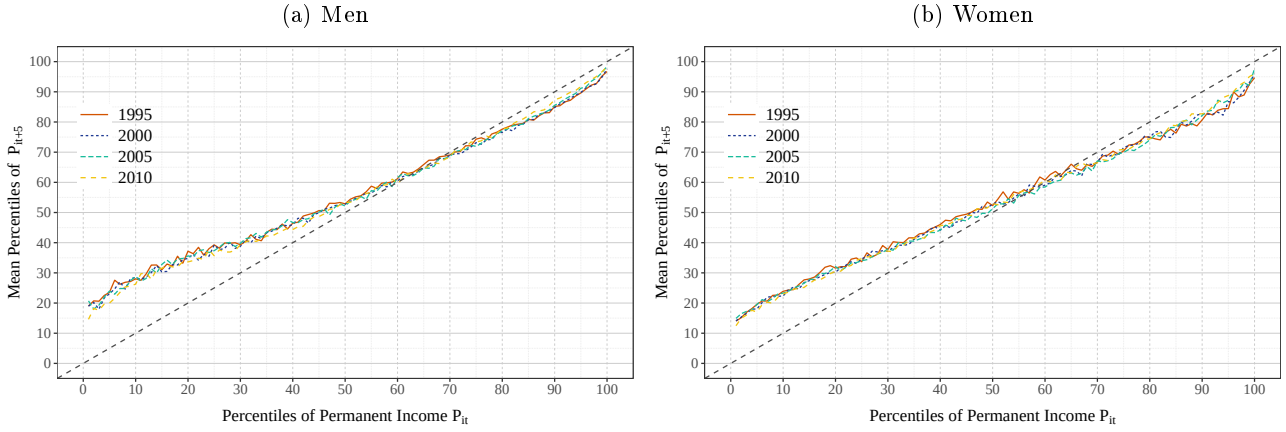
5-year mobility by gender over time.

Figure B.29: **5-year average rank mobility over time (1995, 2000, 2005, and 2010) for workers aged 25–34, separately for men and women.**



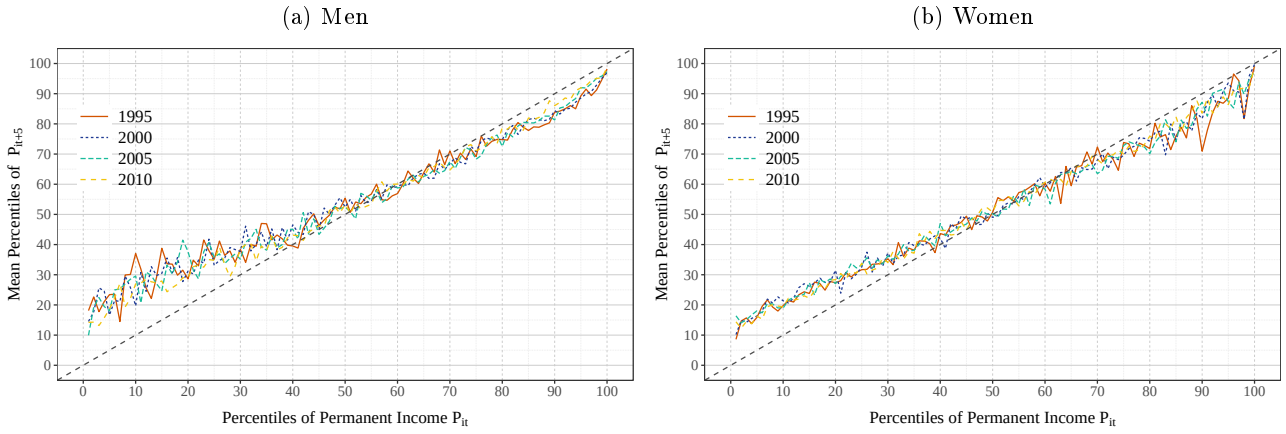
Note: This figure shows the 5-year average rank mobility for men and women aged 25–34, comparing four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the mobility profiles across years suggests that rank mobility among younger workers remained relatively stable over time for both genders.

Figure B.30: **5-year average rank mobility over time (1995, 2000, 2005, and 2010) for workers aged 35–44, separately for men and women.**



Note: This figure shows the 5-year average rank mobility for men and women aged 35–44, comparing four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close similarity of the mobility profiles across cohorts suggests that rank mobility among mid-career workers remained stable over time for both genders.

Figure B.31: **5-year average rank mobility over time (1995, 2000, 2005, and 2010) for workers aged 45–55, separately for men and women.**



Note: This figure shows the 5-year average rank mobility for men and women aged 45–55, comparing four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent earnings distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the mobility profiles across cohorts suggests that rank mobility among older workers remained relatively stable over time for both genders.

5-year mobility by age group and gender over time.

C Extension: Market and post-government income

We extend the analysis to include other sources of income. To ease exposition, we use the individual budget constraint to organise incomes, transfers and taxes as follows. Consider a worker i aged j at time t, where $i \in \{1, ..., N\}$, $j \in \{j_1, ..., J\}$ and $t \in \{1991, ..., 2020\}$. Her budget constraint at a point in time is given by

$$c^i_{j,t} + a^i_{j+1,t+1} = \overbrace{\underbrace{w^i_{j,t}n^i_{j,t}}_{\text{labor earnings/income}} + \underbrace{r^i_{j,t}a^i_{j,t}}_{\text{capital earnings/income}}}^{y^{i,market}_{j,t}\text{: market income}} - \underbrace{t^i_{j,t}}_{\text{tax}} + \underbrace{tr^i_{j,t}}_{\text{gov. transfer}} + \underbrace{b^i_{j,t}}_{\text{pri. transfer}} + \underbrace{a^i_{j,t}}_{\text{asset}}, \quad (1)$$

$y^{i,post-govt.}_{j,t}$: post-government income

where $c^i_{j,t}$ is consumption, $a^i_{j,t}$ and $a^i_{j+1,t+1}$are current and next-period asset holdings (net wealth) respectively, $w^i_{j,t}$ is wage rate, $n^i_{j,t}$ is labour supply, $r^i_{j,t}$ is rate of investment return, and $t^i_{j,t}$ is tax payment. There are four sources of income: labour earnings/income $w^i_{j,t}n^i_{j,t}$, capital earnings/income $r^i_{j,t}a^i_{j,t}$, public transfer income $tr^i_{j,t}$, and $b^i_{j,t}$ private transfer income including inheritance, inter-vivos transfers and private gifts.

We define market income as the sum of labour and capital earnings or income, $y^{i,market}_{j,t} = w^i_{j,t}n^i_{j,t} + r^i_{j,t}a^i_{j,t}$. After-tax income is $y^{i,post-tax}_{j,t} = y^{i,market}_{j,t} - t^i_{j,t}$, while after-transfer income is $y^{i,post-transfer}_{j,t} = y^{i,market}_{j,t} + tr^i_{j,t}$. Finally, post-government income is given by $y^{i,post-gov.}_{j,t} = y^{i,market}_{j,t} - t^i_{j,t} + tr^i_{j,t}$.

Next, we follow a similar approach in the main text to construct data samples and variables. Specifically, labour income includes salaries or wages, allowances, termination payments, and other

lump sum payments, while capital income includes dividend income, imputation credits, interest income, net capital gains, rental income, bonuses from life insurance policies, and annuity income. We compute core statistics and report our results in next sub-sections.

C.1 Market income: Core statistics

We provide summary statistics and report core statistics for post government income.

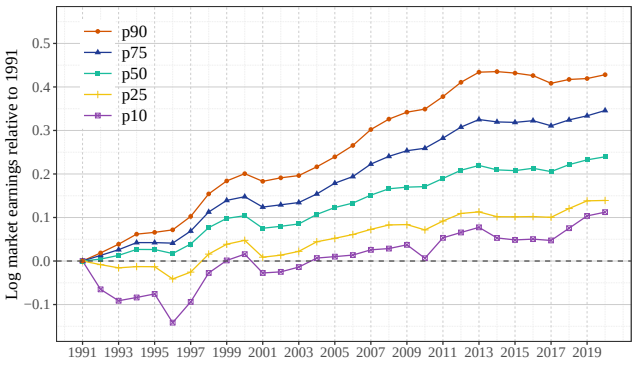
Table C.1: **Selected percentiles of the distribution of annual market income (men and women combined).**

Year	P2.5	P10	P25	P50	P75	P90	P95	P99	P99.9
1991	6,497	14,617	29,751	47,705	66,796	87,151	104,954	168,545	387,836
1995	6,223	14,296	29,958	48,891	69,469	92,161	113,261	191,938	476,614
2000	6,971	16,196	32,894	53,452	77,068	104,737	131,465	239,760	686,950
2005	6,958	16,408	33,002	54,252	79,362	109,092	137,675	258,643	726,228
2010	7,075	16,961	33,829	56,530	85,089	120,165	153,719	283,915	804,236
2015	7,946	18,688	35,412	58,412	88,745	129,346	167,151	298,158	789,976
2020	9,245	20,395	37,751	61,266	92,573	132,425	166,713	295,293	767,928

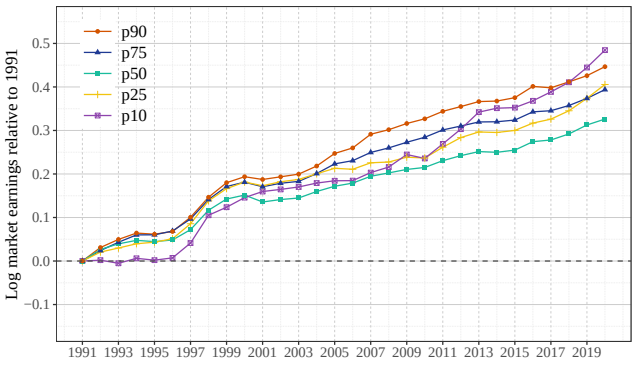
Note: Annual earnings reported in $2020 Australian dollars.

Figure C.1: **Changes in log real annual market income across the market income distribution (men and women, 1991–2019).**

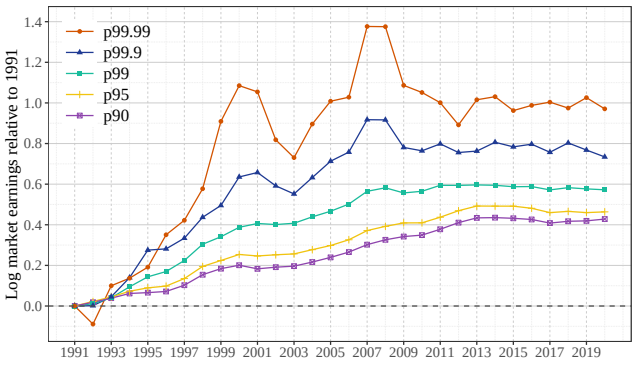
(a) Men: p10-p90



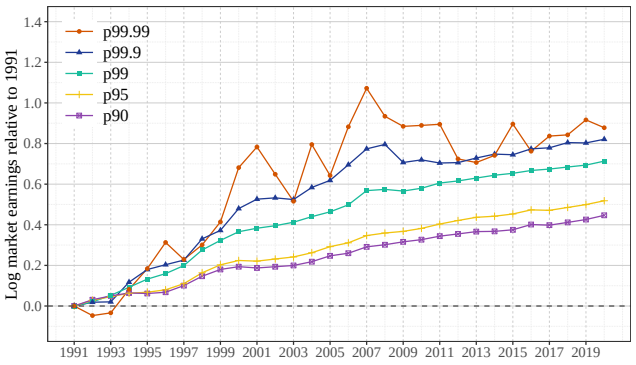
(b) Women: p10-p90



(c) Men: p90-p99.99



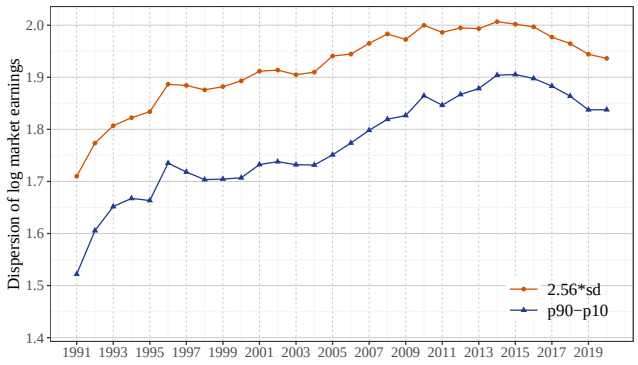
(d) Women: p90-p99.99



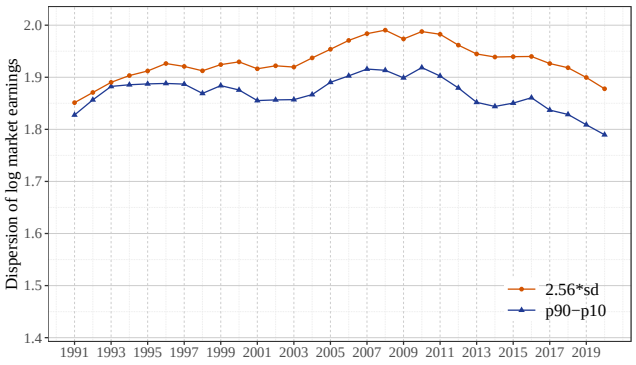
Note: This figure shows changes in selected percentiles of log real annual market income for men and women from 1991 to 2020, with 1991 normalized to zero. Each line traces the evolution of a specific percentile relative to its 1991 level. Panels (a) and (b) present changes across the 10th to 90th percentiles for men and women, respectively, capturing broad distributional shifts in market income. Panels (c) and (d) focus on the right-most tail of the distribution, plotting changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles.

Figure C.2: **Trends in overall market income inequality and top/bottom inequality (men and women, 1991–2020).**

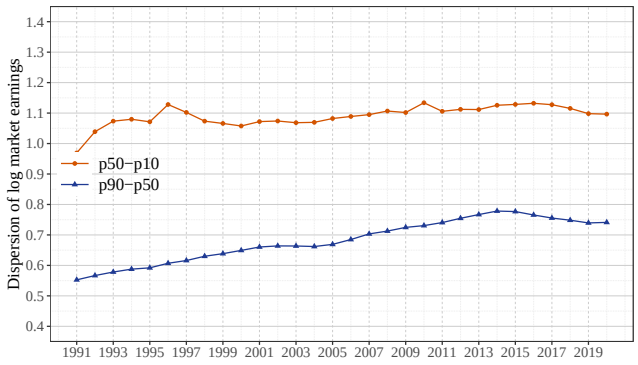
(a) Men: Overall inequality



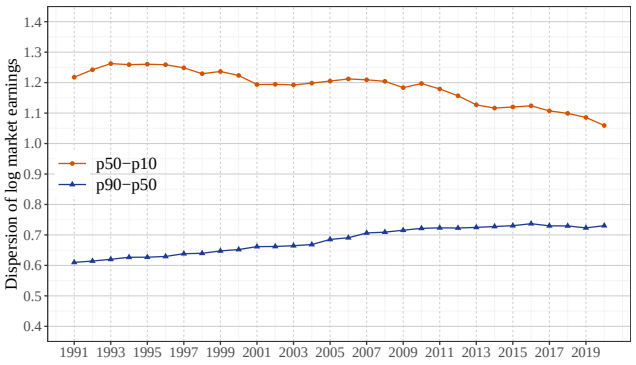
(b) Women: Overall inequality



(c) Men: Top/bottom inequality



(d) Women: Top/bottom inequality



Note: This figure shows trends in the dispersion of log real market income from 1991 to 2020 for men and women. Panels (a) and (b) display overall inequality, measured by the p90–p10 differential and 2.56 times the standard deviation (the latter scaled by 2.56 to match the p90–p10 differential under a Gaussian distribution). Panels (c) and (d) decompose inequality within the distribution, plotting the p90–p50 differential (top-end inequality) and the p50–p10 differential (bottom-end inequality). Both overall and within-group measures highlight distinct patterns in market income dispersion by gender.

Figure C.3: **Life-cycle profiles of median market income and market income inequality across cohorts (men and women, 1991–2020).**

(a) Men: Median market income

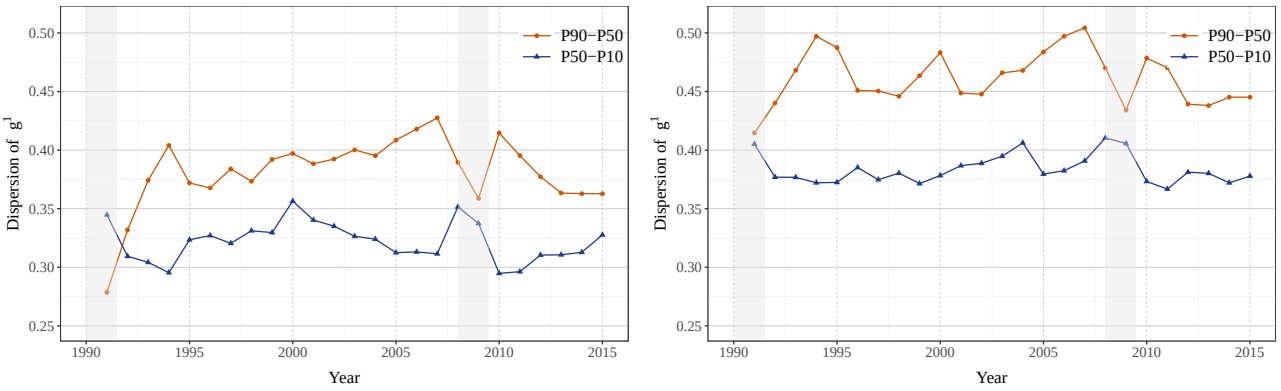
(b) Women: Median market income

(c) Men: Market income inequality

(d) Women: Market income inequality

Note: This figure illustrates life-cycle market income profiles across different cohorts for men and women. Panels (a) and (b) plot the evolution of median log real market income by age for four cohorts—individuals who entered the labour market in 1991, 2001, 2006, and 2011. Panels (c) and (d) display market income inequality within each cohort, measured by the p90–p10 differential. Grey dashed lines mark ages 25 and 35 for every cohort between 1991 and 2020. These panels capture cohort-specific patterns in median market income growth and within-cohort dispersion over the life cycle.

Figure C.4: **Dispersion of one-year changes in residualized log market income by gender.**



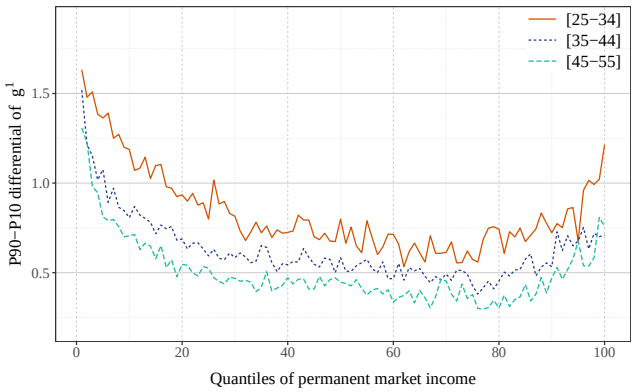
(a) Men (b) Women

Note: This figure displays the dispersion of one-year changes in residualized log market income (i.e., market income shocks) for men and women from 1990 to 2015. Panel (a) shows dispersion for men, while Panel (b) shows dispersion for women. Two measures are reported: the p90–p50 differential, which captures dispersion at the upper end of the market income shock distribution, and the p50–p10 differential, which captures dispersion at the lower end. Together, these measures highlight differences in market income shock volatility across the distribution and over time.

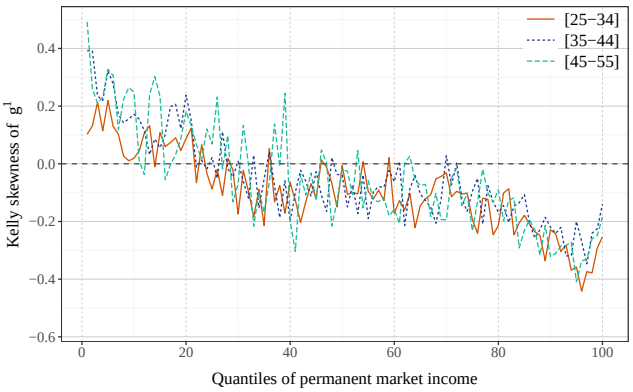
Figure C.5: **Dispersion, Kelly skewness, and Crow-Siddiqui kurtosis of one-year changes in residualized log market income by age group, permanent market income percentiles, and gender.**

(a) Men: P90-P10

(b) Women: P90-P10

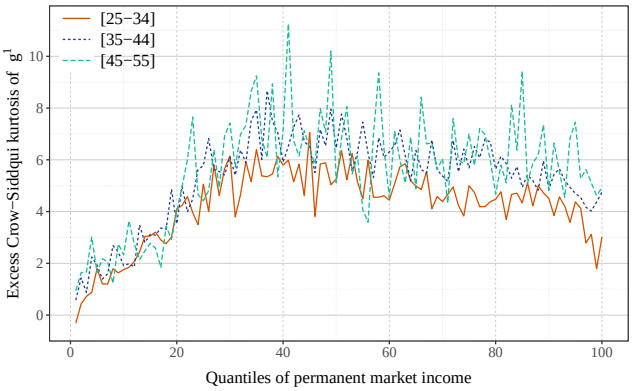


(c) Men: Kelly skewness

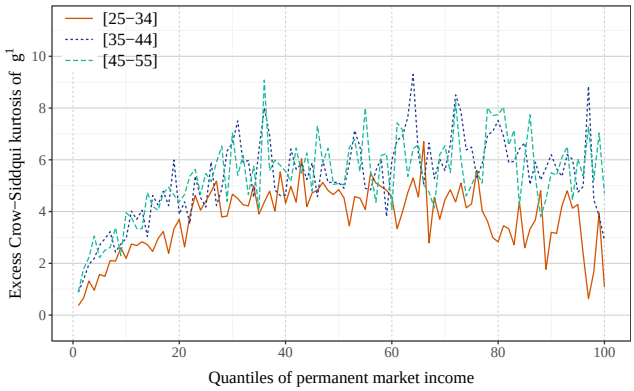


(d) Women: Kelly skewness

(e) Men: Excess Crow-Siddiqui kurtosis

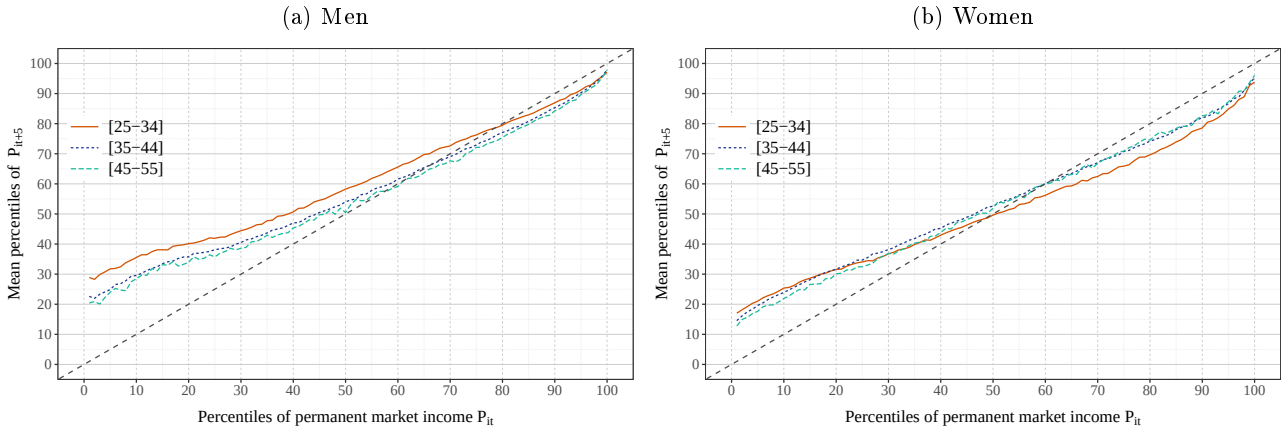


(f) Women: Excess Crow-Siddiqui kurtosis



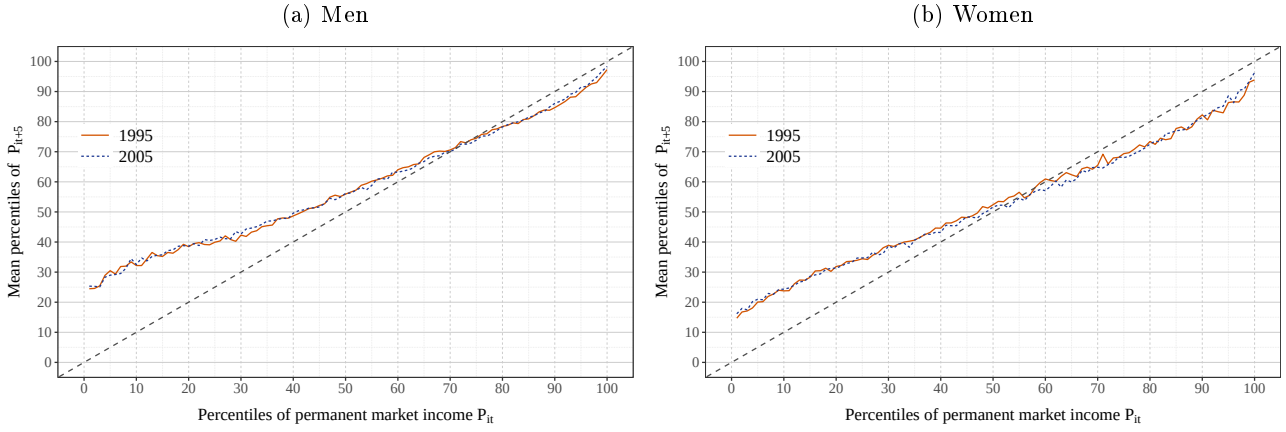
Note: This figure illustrates the dispersion, Kelly skewness, and Crow-Siddiqui kurtosis of one-year changes in residualized log market income (i.e., market income shocks), segmented by age group (25–34, 35–44, 45–55), permanent market income percentiles, and gender. Panels (a) and (b) show the p90–p10 differential, measuring overall dispersion across the market income shock distribution for men and women, respectively. Panels (c) and (d) present Kelly skewness, capturing the asymmetry of shocks, where positive values indicate a longer right tail (more extreme positive shocks). Panels (e) and (f) display excess Crow-Siddiqui kurtosis, reflecting the "tailedness" or likelihood of extreme income shocks relative to a normal distribution.

Figure C.6: **5-year average rank mobility (averages from 1993–2010) by age group and gender.**



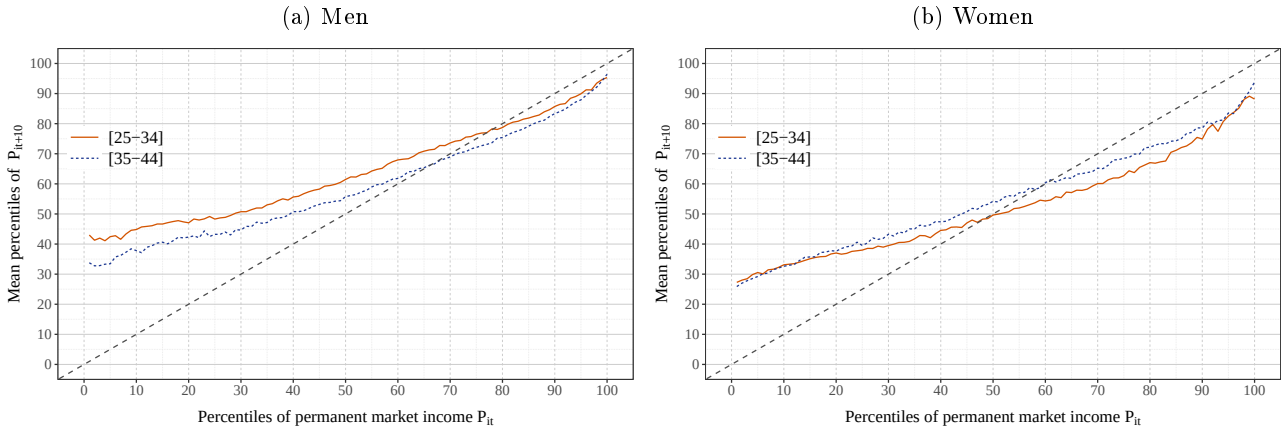
Note: This figure shows the 5-year average rank mobility across two age groups, based on averages from 1993 to 2010. Panel (a) displays mobility for men, and Panel (b) for women, segmented into age groups 25–34 and 35–44. The x-axis shows individuals' initial percentile rank in the permanent market income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the 45-degree line indicate upward mobility, and deviations below indicate downward mobility. The figure highlights that younger male workers exhibit the highest upward mobility, while younger female workers display the lowest mobility among the groups.

Figure C.7: **5-year average rank mobility over time (1995 and 2005) by gender.**



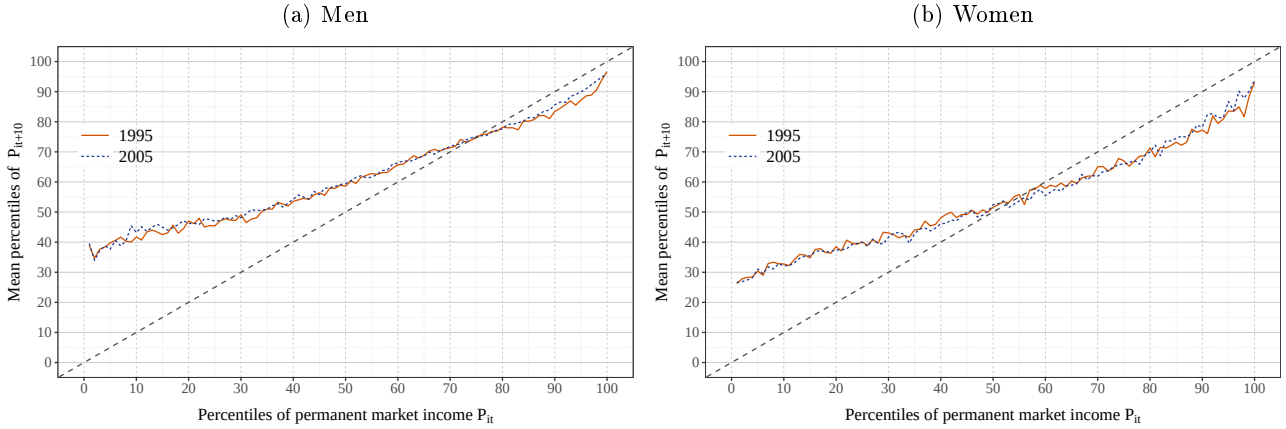
Note: This figure illustrates 5-year average rank mobility over time for men and women, comparing the years 1995 and 2005. Panel (a) shows mobility for men, and panel (b) shows mobility for women. The similarity between the 1995 and 2005 lines suggests stable rank mobility over time, with minimal variation in upward or downward mobility across these periods for both genders.
Note: This figure shows the 5-year average rank mobility for men and women, comparing two starting periods: 1995 and 2005. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis indicates individuals' initial percentile rank in the permanent market income distribution, and the y-axis indicates their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995 and 2005 profiles suggests that rank mobility remained stable over time, with minimal changes in upward or downward movement for both genders.

Figure C.8: **10-year average rank mobility (averages from 1997 to 2007) by age group and gender.**



Note: This figure shows the 10-year average rank mobility across two age groups, based on averages from 1997 to 2007. Panel (a) displays mobility profiles for men, and Panel (b) for women, segmented into age groups 25–34 and 35–44. The x-axis shows individuals' initial percentile rank in the permanent market income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The figure highlights that younger male workers (aged 25–34) exhibit the highest upward mobility, whereas younger female workers experience the lowest upward mobility.

Figure C.9: **10-year average rank mobility over time (1995 and 2005), separately for men and women.**



Note: This figure illustrates the 10-year average rank mobility for men and women, comparing two starting periods: 1995 and 2005. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent market income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995 and 2005 profiles suggests that rank mobility remained stable over time for both genders.

C.2 Post-government income: Core statistics

We provide summary statistics and report core statistics for post government income.

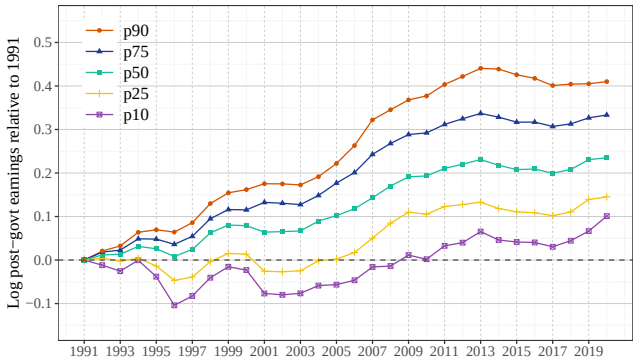
Table C.2: **Selected percentiles of the distribution of post-government income (men and women combined).**

Year	P2.5	P10	P25	P50	P75	P90	P95	P99	P99.9
1991	7,319	15,663	27,236	39,442	51,500	63,991	74,929	118,055	288,429
1995	7,905	16,653	27,734	40,146	53,829	67,958	81,106	134,928	357,412
2000	8,408	17,566	29,381	42,560	57,390	73,894	89,999	161,679	482,002
2005	7,431	17,415	29,241	43,208	60,816	78,903	95,250	165,318	443,892
2010	7,511	18,561	32,079	47,803	67,083	90,456	111,842	192,169	493,140
2015	8,332	20,047	32,865	48,213	68,301	93,982	117,588	189,636	442,068
2020	9,932	21,776	34,727	50,183	70,585	94,643	115,703	185,425	435,246

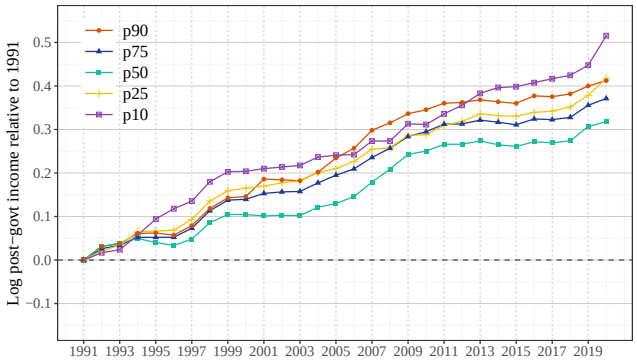
Note: Annual earnings reported in $2020 Australian dollars.

Figure C.10: **Changes in log real annual post-government income across the earnings distribution (men and women, 1991–2020).**

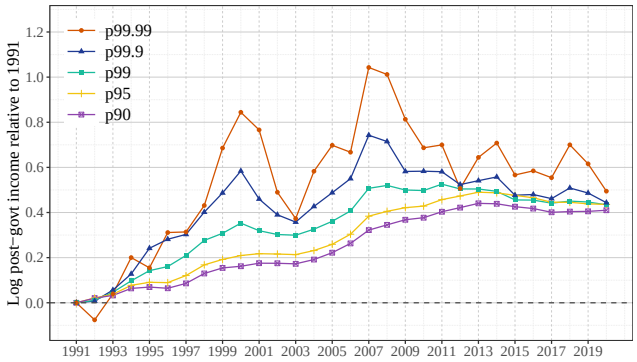
(a) Men: p10-p90



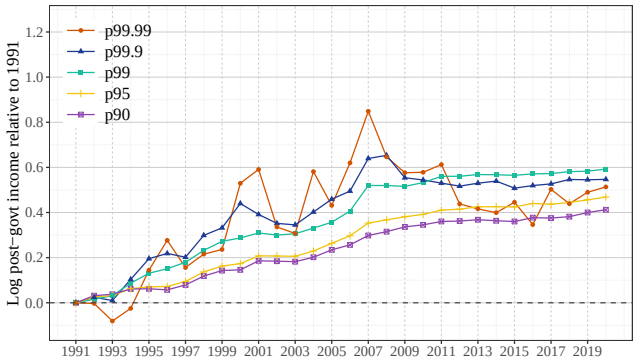
(b) Women: p10-p90



(c) Men: p90-p99.99



(d) Women: p90-p99.99

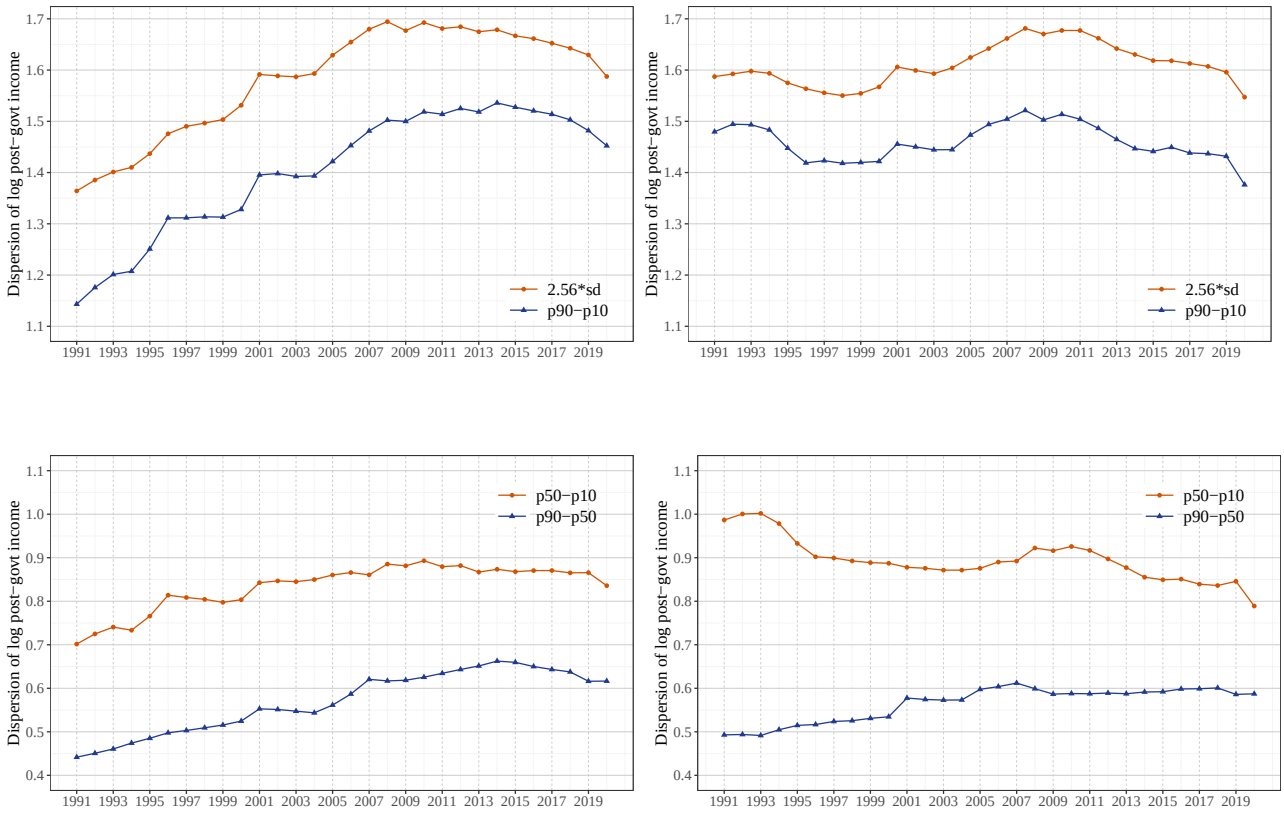


Note: This figure shows changes in selected percentiles of log real annual post-government income for men and women from 1991 to 2019, with 1991 normalized to zero. Each line traces the evolution of a specific percentile relative to its 1991 level. Panels (a) and (b) present changes across the 10th to 90th percentiles for men and women, respectively, capturing broad distributional shifts. Panels (c) and (d) focus on the right-most tail of the distribution, plotting changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles. This figure highlights differences in income growth trajectories across the distribution after accounting for taxes and transfers.

Figure C.11: **Trends in overall post-government income inequality and top/bottom inequality.**

(a) Men: Overall inequality

(b) Women: Overall inequality



(c) Men: Top/bottom inequality

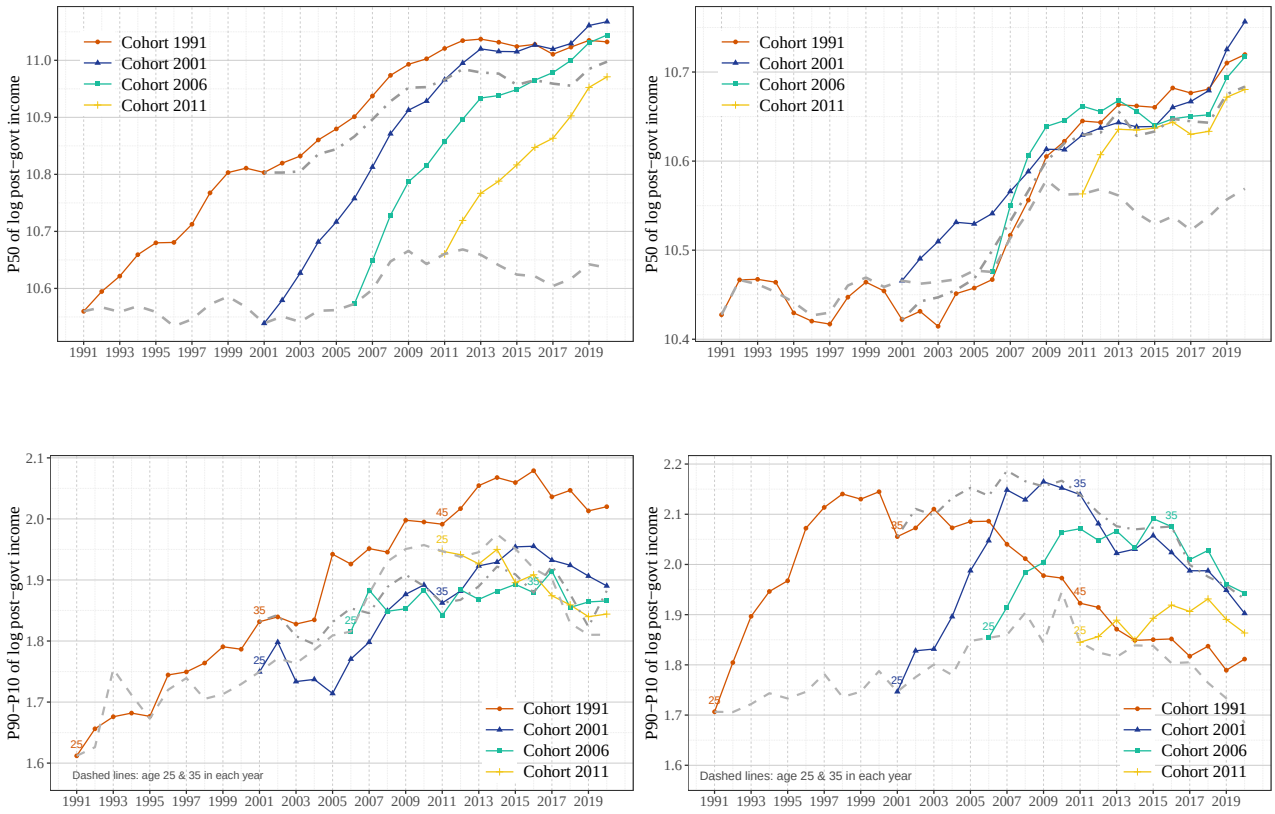
(d) Women: Top/bottom inequality

Note: The figure shows trends in the dispersion of log real post-government income for men and women from 1991 to 2019. Panels (a) and (b) display overall inequality, measured by the p90–p10 differential and 2.56 times the standard deviation (the latter is scaled by 2.56 to match the p90–p10 differential under a Gaussian distribution). Panels (c) and (d) decompose inequality within the distribution, plotting the p90–p50 differential (top-end inequality) and the p50–p10 differential (bottom-end inequality). Both overall and within-group measures highlight distinct trends by gender and across the distribution.

Figure C.12: **Life-cycle profiles of median post-government income and inequality by cohort.**

(a) Men: Median post-govt. income

(b) Women: Median post-govt. income

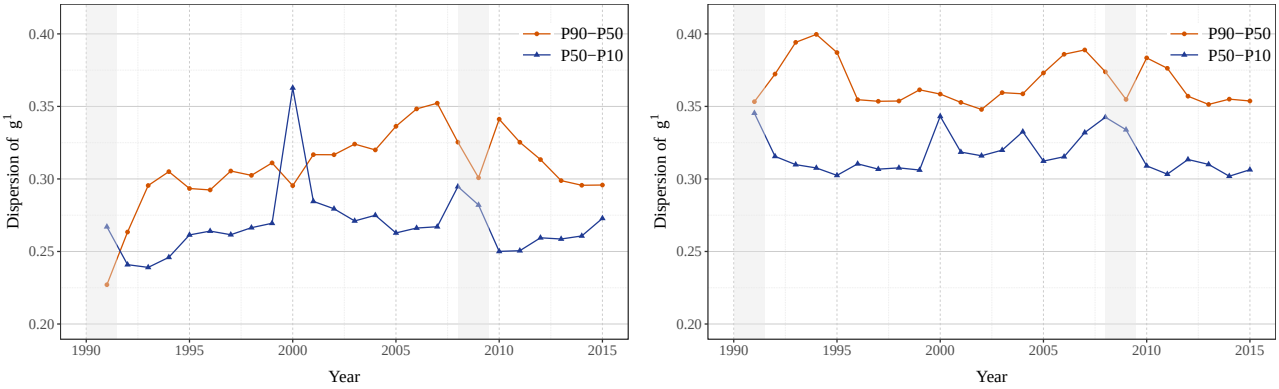


(c) Men: Post-govt. income inequality

(d) Women: Post-govt. income inequality

Note: The figure illustrates life-cycle post-government income profiles across different cohorts for men and women. Panels (a) and (b) plot the evolution of median log real post-government income ($\log y_{i,t}$) by age for four cohorts—individuals who entered the labour market in 1991, 2001, 2006, and 2011. Panels (c) and (d) display post-government income inequality within each cohort, measured by the p90–p10 differential. Grey dashed lines mark respective statistics for ages 25 and 35 for every cohort between 1991 and 2020. These panels capture cohort-specific patterns in median income growth and within-cohort dispersion over the life cycle.

Figure C.13: **Dispersion of one-year changes in residualized log post-government income by gender.**

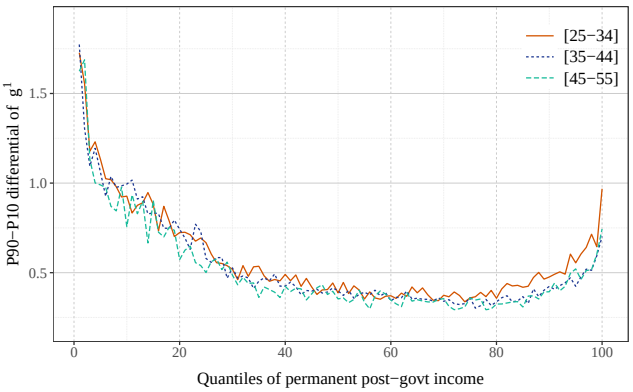


(a) Men (b) Women

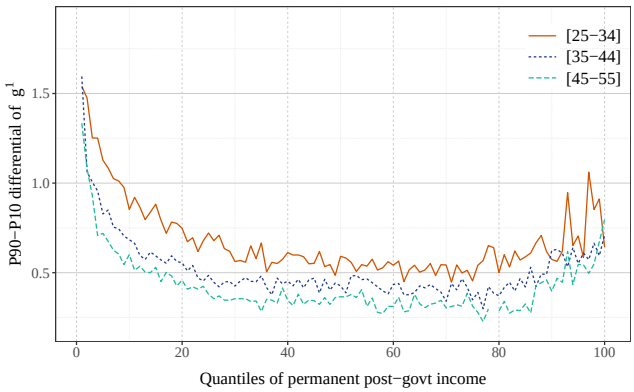
Note: This figure displays the dispersion of one-year changes in residualized log post-government income (i.e., post-government income shocks) for men and women from 1990 to 2015. Panel (a) shows the dispersion for men, while Panel (b) shows the dispersion for women. Two measures are reported: the p90–p50 differential captures dispersion at the upper end of the shock distribution, while the p50–p10 differential captures dispersion at the lower end. Together, these measures highlight differences in post-government income shock volatility between men and women across the distribution and over time.

Figure C.14: **Dispersion, Kelly skewness, and Crow-Siddiqui kurtosis of one-year changes in log post-government income by age group, permanent post-government income percentiles, and gender.**

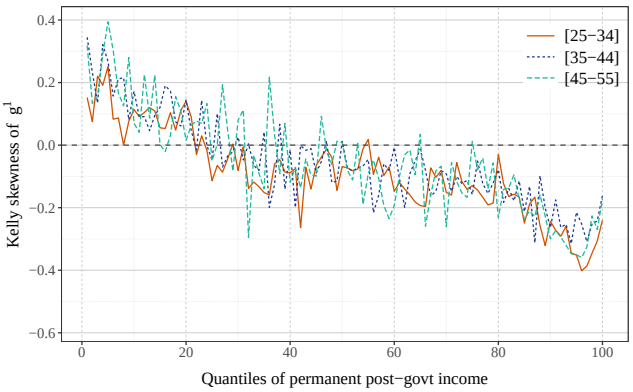
(a) Men: p90-p10



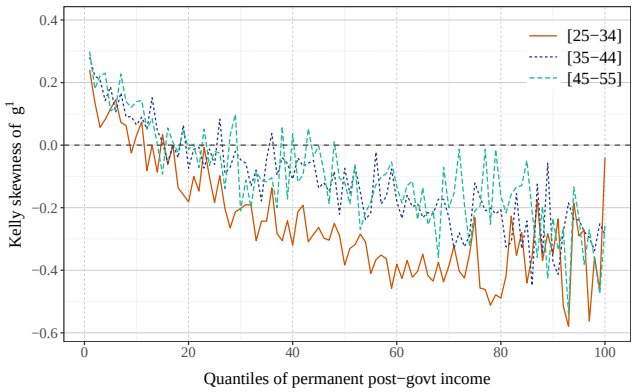
(b) Women: p90-p10



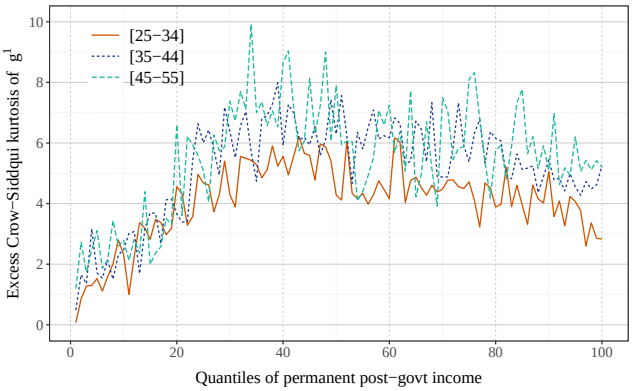
(c) Men: Kelly skewness



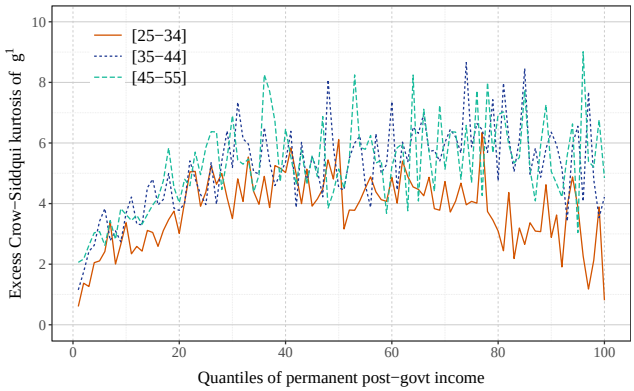
(d) Women: Kelly skewness



(e) Men: Excess Crow-Siddiqui kurtosis

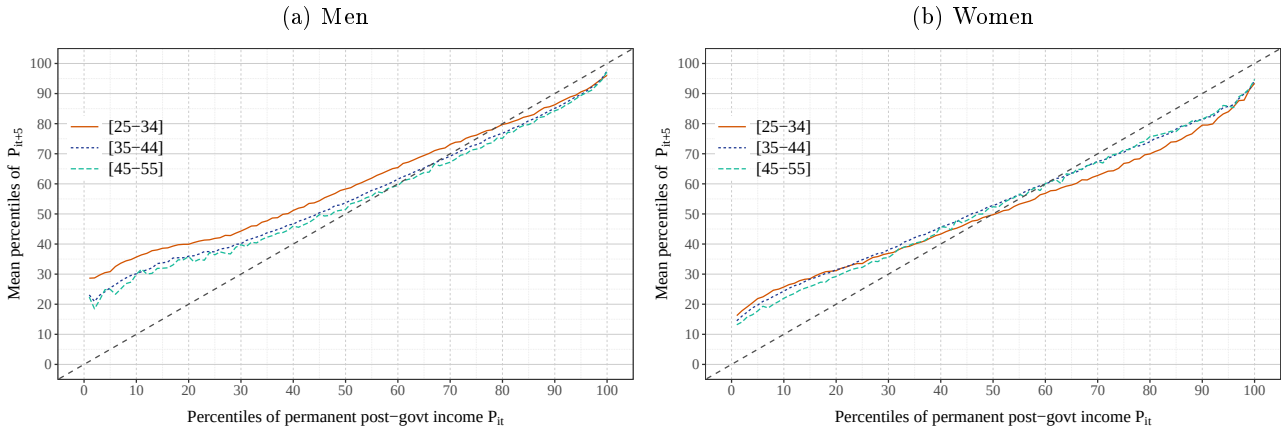


(f) Women: Excess Crow-Siddiqui kurtosis



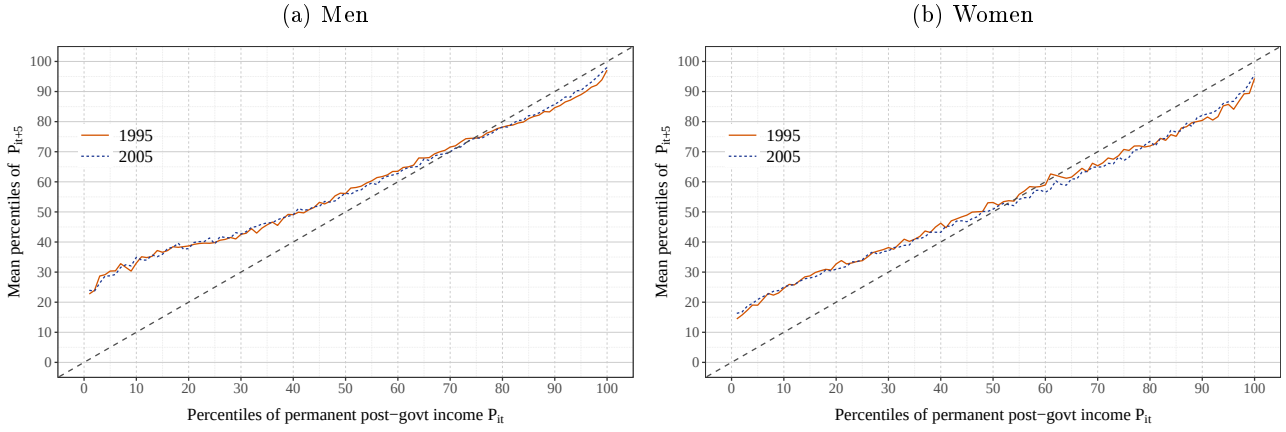
Note: This figure illustrates the dispersion, Kelly skewness, and excess Crow-Siddiqui kurtosis of one-year changes in residualized log post-government income (i.e., post-government income shocks), segmented by age group (25–34, 35–44, 45–55), permanent post-government income percentiles, and gender. Panels (a) and (b) show the p90–p10 differential, measuring overall dispersion across the income shock distribution for men and women, respectively. Panels (c) and (d) present Kelly skewness, capturing the asymmetry of income shocks, where positive values indicate a longer right tail (i.e., more extreme positive shocks). Panels (e) and (f) display excess Crow-Siddiqui kurtosis, reflecting the "tailedness" or likelihood of extreme income shocks relative to a normal distribution.

Figure C.15: **5-year average rank mobility (averages from 1993–2010) by age group and gender.**



Note: This figure shows the 5-year average rank mobility across two age groups, based on averages from 1993 to 2010. Panel (a) displays mobility profiles for men, and Panel (b) for women, segmented into age groups 25–34, 35–44, and 45-55. The x-axis shows individuals' initial percentile rank in the permanent post-government income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the 45-degree line indicate upward mobility, and deviations below indicate downward mobility. The figure highlights that younger male workers (25–34) exhibit the highest upward mobility, while younger female workers have lower upward mobility.

Figure C.16: **5-year average rank mobility over time (1995 and 2005) by gender.**



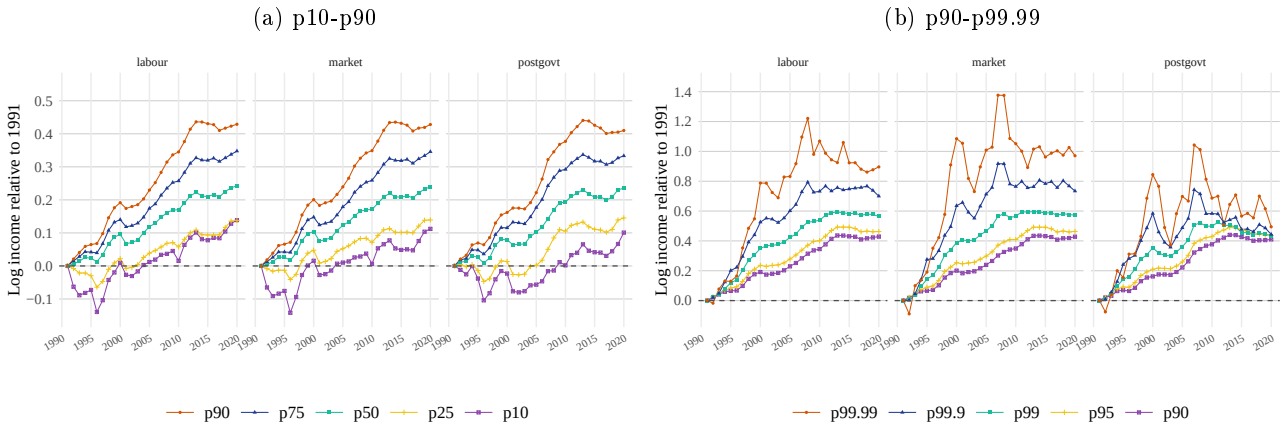
Note: This figure illustrates 5-year average rank mobility over time for men and women, comparing the years 1995 and 2005. Panel (a) shows mobility for men, and panel (b) shows mobility for women. The similarity between the 1995 and 2005 lines suggests stable rank mobility over time, with minimal variation in upward or downward mobility across these periods for both genders.
Note: This figure illustrates the 5-year average rank mobility for men and women, comparing two starting periods: 1995 and 2005. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent post-government income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals later rank. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The close alignment of the 1995 and 2005 profiles suggests that rank mobility remained stable over time, with minimal changes in upward or downward movement for both genders.

C.3 Comparison: labour earnings, market income and post-government income

C.3.1 Income inequality over time

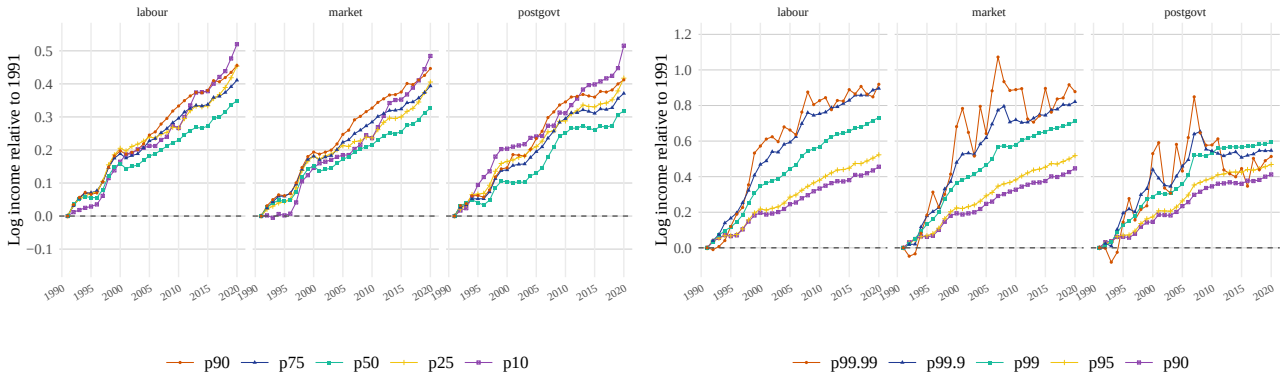
This section compares the three income measures: labour earnings from the main section, with market income and post-government income as defined above.

Figure C.17: **Changes in log real annual income for men across selected percentiles, separately for labour earnings, market income, and post-government income.**



Note: This figure shows changes in selected percentiles of log real annual income ($\log y_{i,t}$) for men from 1991 to 2020, with 1991 normalized to zero. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Percentiles are normalized to their respective 1991 values. Panel (a) plots changes across the 10th to 90th percentiles, capturing broad distributional shifts, while Panel (b) focuses on the top of the distribution, illustrating changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles.

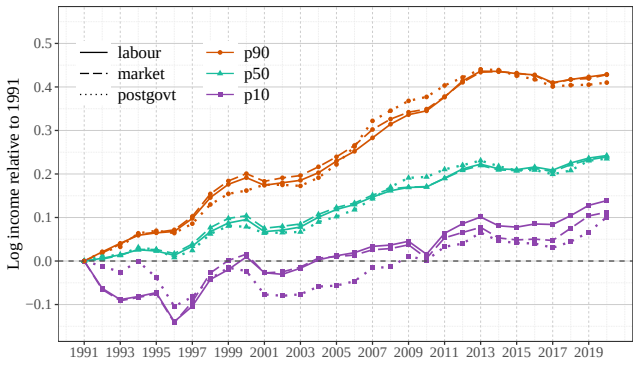
Figure C.18: **Changes in log real annual income for women across selected percentiles, separately for labour earnings, market income, and post-government income.**



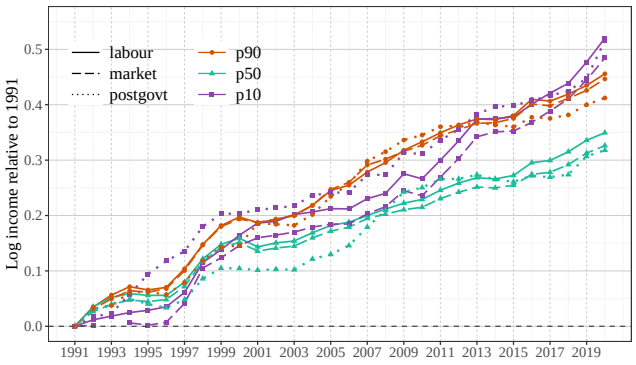
Note: This figure shows changes in selected percentiles of log real annual income ($\log y_{i,t}$) for women from 1991 to 2020, with 1991 normalized to zero. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Percentiles are normalized to their respective 1991 values. Panel (a) plots changes across the 10th to 90th percentiles, capturing broad distributional shifts, while Panel (b) focuses on the top of the distribution, illustrating changes at the 90th, 95th, 99th, 99.9th, and 99.99th percentiles.

Figure C.19: **Changes in log real annual income across selected percentiles of labour earnings, market income, and post-government income, separately by gender.**

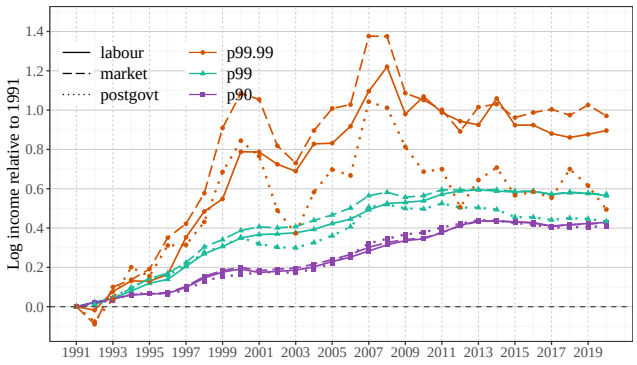
(a) Men: p10-p90



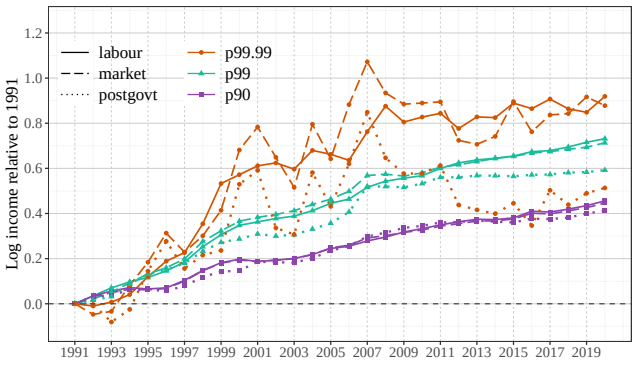
(b) Women: p10-p90



(c) Men: p90-p99.99



(d) Women: p90-p99.99



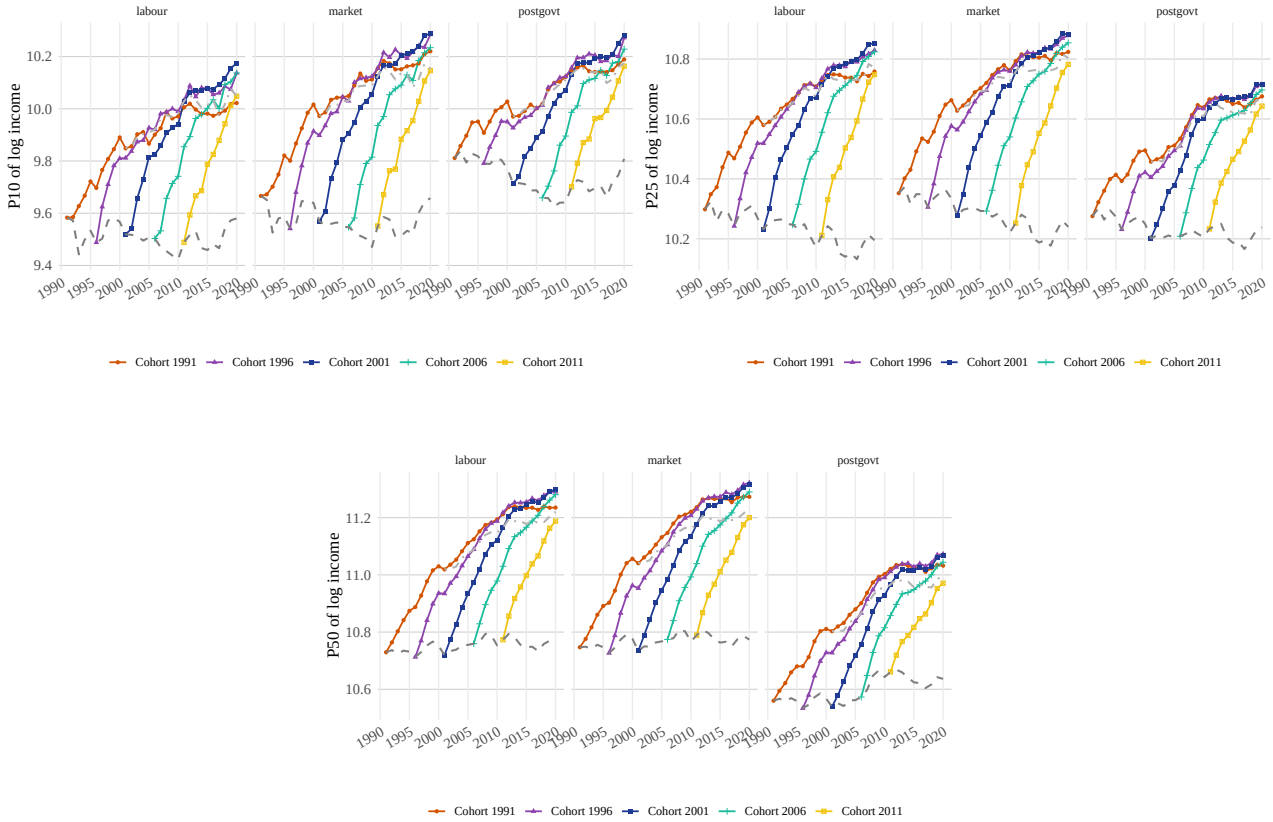
Note: This figure shows changes in selected percentiles of log real annual income ($\log y_{it}$) for men and women from 1991 to 2020, with 1991 normalized to zero. Each line represents a specific point in the income distribution, comparing three income measures: labour earnings, market income, and post-government income. Panel (a) shows changes from the 10th to 90th percentiles for men, and Panel (b) for women. Panel (c) focuses on the top percentiles (90th, 99th, and 99.99th) for men, and Panel (d) for women.

Trends in income across groups.

Figure C.20: **Life-cycle profiles of log income for men at the lower half (p10, p25) and median (p50) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Men: p10

(b) Men: p25



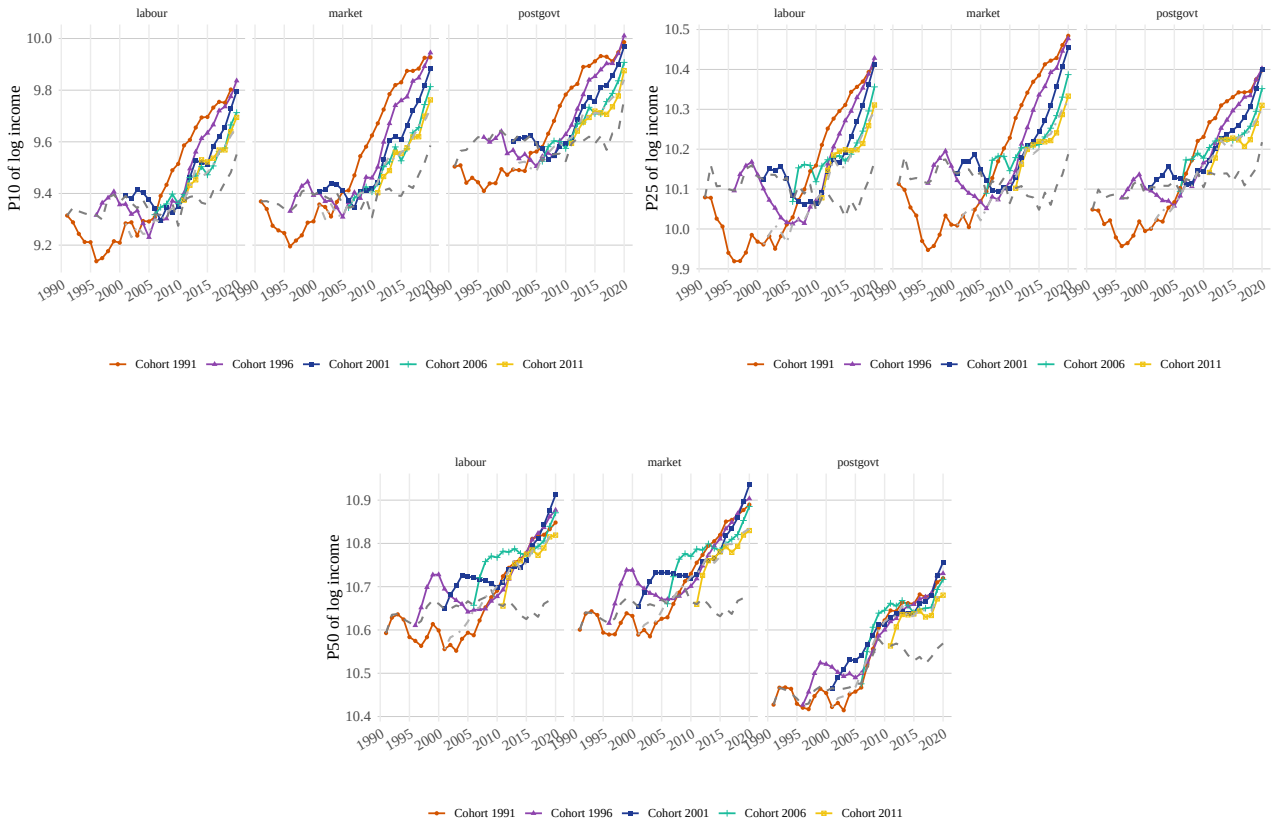
(c) Men: median

Note: This figure illustrates life-cycle income profiles for men across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 10th percentile (Panel (a)), 25th percentile (Panel (b)), and the median (50th percentile) (Panel (c)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Figure C.21: **Life-cycle profiles of log income for women at the lower half (p10, p25) and median (p50) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Women: p10

(b) Women: p25



(c) Women: median

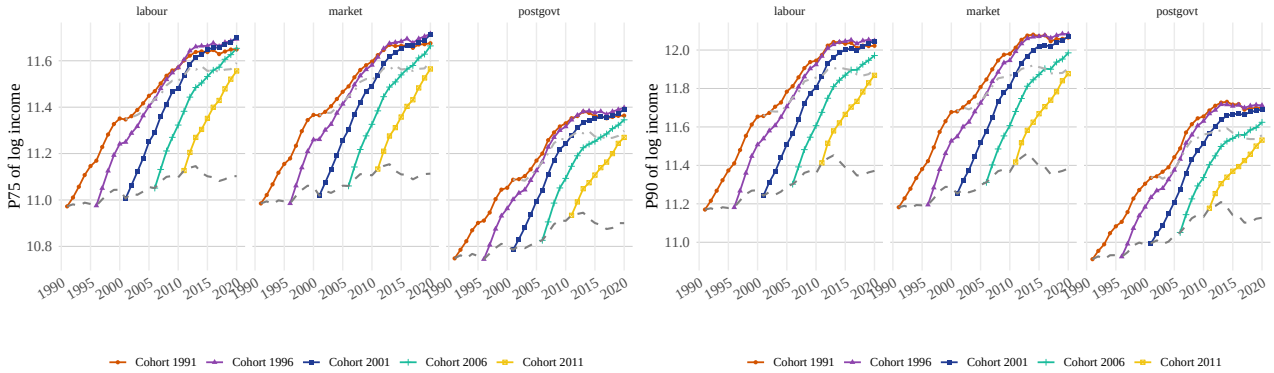
Note: This figure illustrates life-cycle income profiles for women across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 10th percentile (Panel (a)), 25th percentile (Panel (b)), and the median (50th percentile) (Panel (c)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Income over the life cycle: p10, p25, and p50.

Figure C.22: **Life-cycle profiles of log income for men at the upper half (p75, p90) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Men: p75

(b) Men: p90

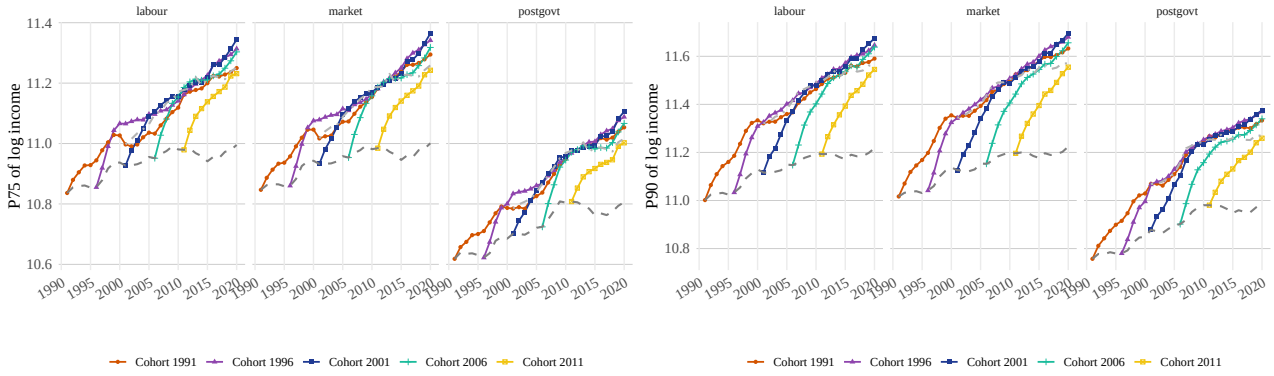


Note: This figure illustrates life-cycle income profiles for men across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 75th percentile (Panel (a)) and the 90th percentile (Panel (b)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Figure C.23: **Life-cycle profiles of log income for women at the upper half (p75, p90) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Women: p75

(b) Women: p90



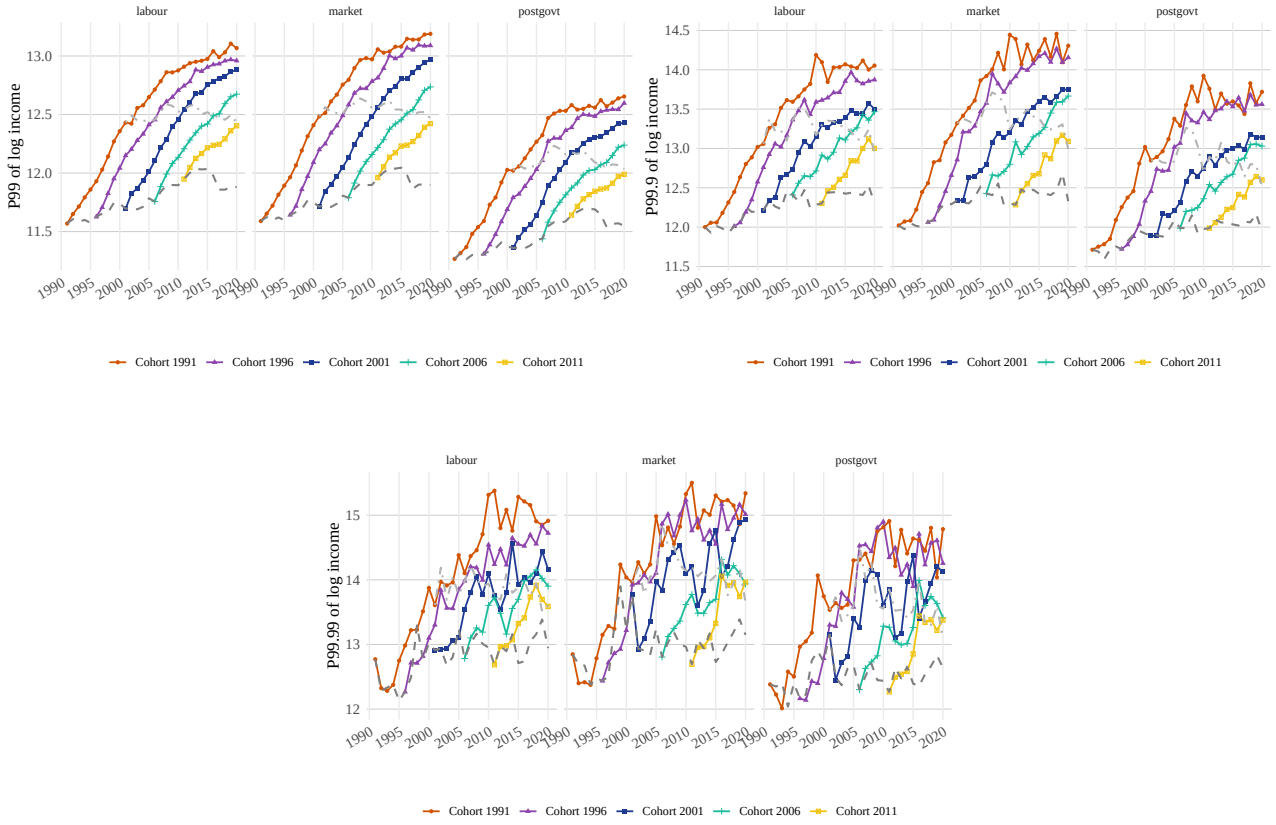
Note: This figure illustrates life-cycle income profiles for women across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 75th percentile (Panel (a)) and the 90th percentile (Panel (b)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Income over the life cycle: p75, p90.

Figure C.24: **Life-cycle profiles of log income for men at the top (p99, p99.9, p99.99) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Men: p99

(b) Men: p99.9



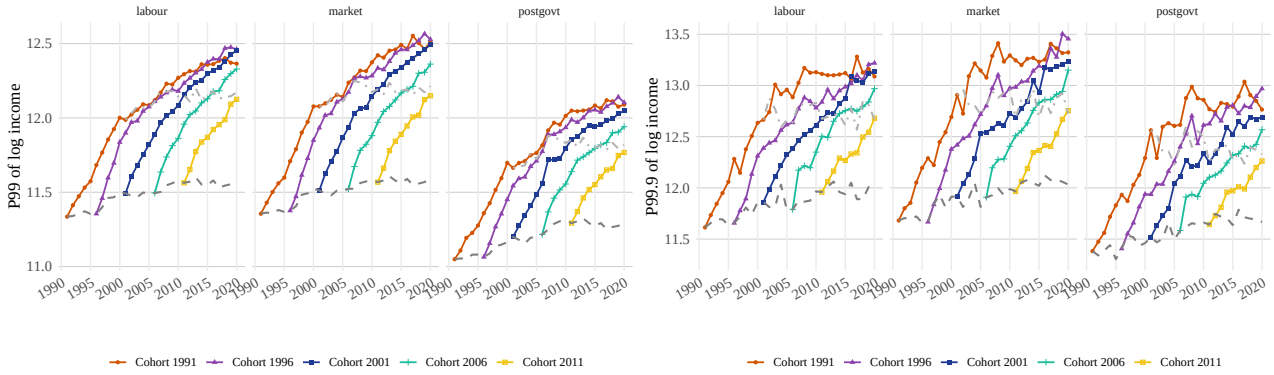
(c) Men: p99.99

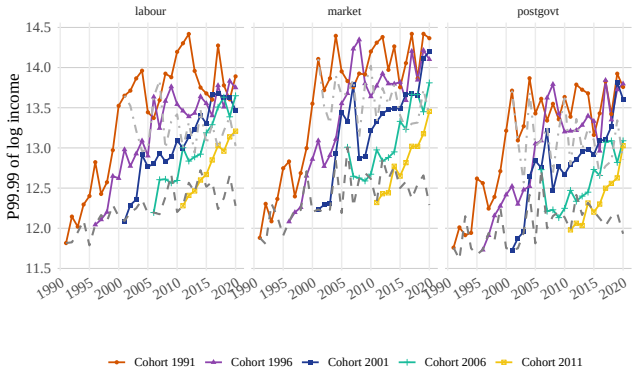
Note: This figure illustrates life-cycle income profiles for men across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 99th percentile (Panel (a)), 99.9th percentile (Panel (b)), and 99.99th percentile (Panel (c)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Figure C.25: **Life-cycle profiles of log income for women at the top (p99, p99.9, p99.99) of the distribution, separately by labour earnings, market income, and post-government income.**

(a) Women: p99

(b) Women: p99.9

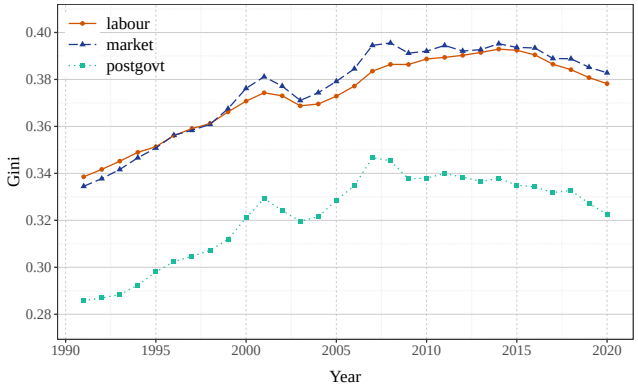




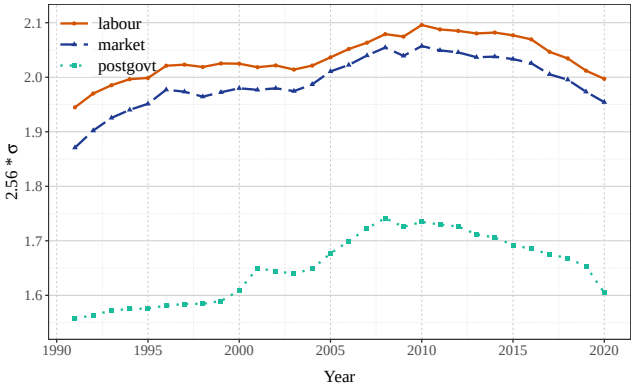
(c) Women: p99.99

Note: This figure illustrates life-cycle income profiles for women across five cohorts (1991, 1996, 2001, 2006, and 2011) at the 99th percentile (Panel (a)), 99.9th percentile (Panel (b)), and 99.99th percentile (Panel (c)) of the distribution. Each panel compares three income measures: labour earnings (left), market income (middle), and post-government income (right). Dark grey dashed lines mark the respective statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

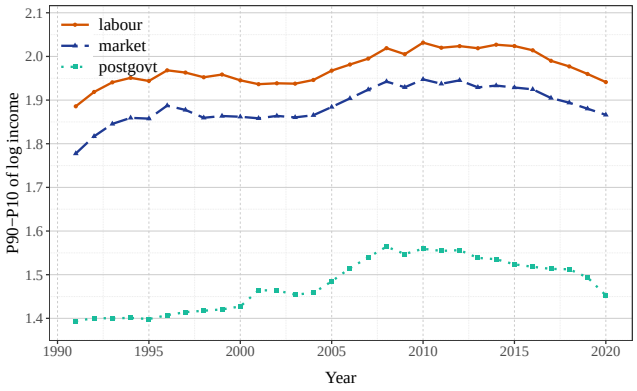
Income over the life cycle: p99, p99.9, p99.99.



(d) Gini



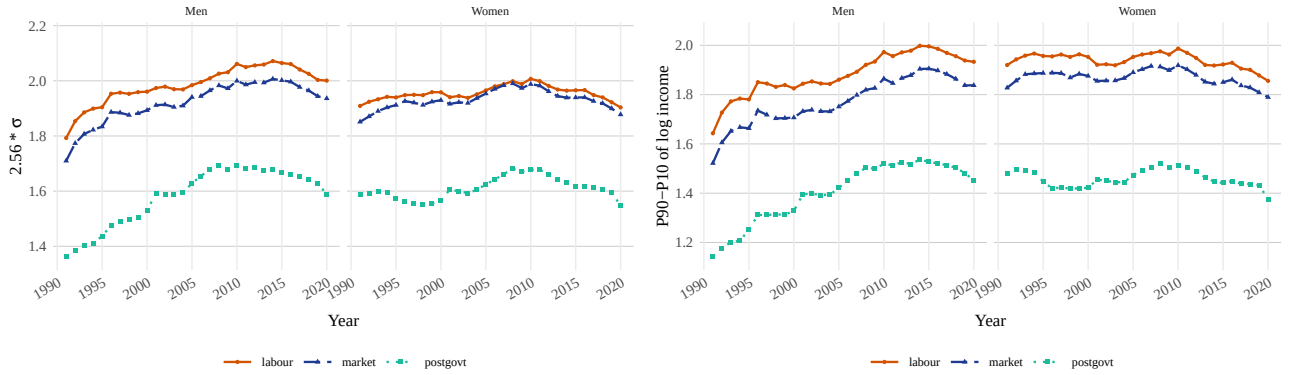
(e) 2.56*σ



(f) P90-P10

Figure C.26: **Trends in income inequality across different metrics for labour earnings, market income, and post-government income.**

Note: This figure presents overall inequality in log real income from 1991 to 2019 across three income measures: labour earnings, market income, and post-government income. Panels (a), (b), and (c) plot three distinct inequality metrics, respectively: the Gini coefficient, the P90–P10 differential, and 2.56 times the standard deviation of log income (scaled to match the P90–P10 differential under a Gaussian distribution). These panels highlight differences in inequality levels—especially between private income (labour earnings and market income) and post-government income—as well as similarities in inequality trends across the three measures over time.



(a) 2.56*σ (b) P90-P10

Figure C.27: **Trends in income inequality by gender across different inequality metrics for three income measures: labour earnings, market income, and post-government income.**

Note: This figure presents overall inequality in log real income from 1991 to 2020 separately for men and women, across three income measures: labour earnings, market income, and post-government income. Panels (a) and (b) plot two distinct inequality metrics, respectively: 2.56 times the standard deviation of log income (scaled to match the P90–P10 differential under a Gaussian distribution) and the P90–P10 differential. These panels highlight gender differences in inequality levels and trends across the three income measures.

Trends in overall income inequality.

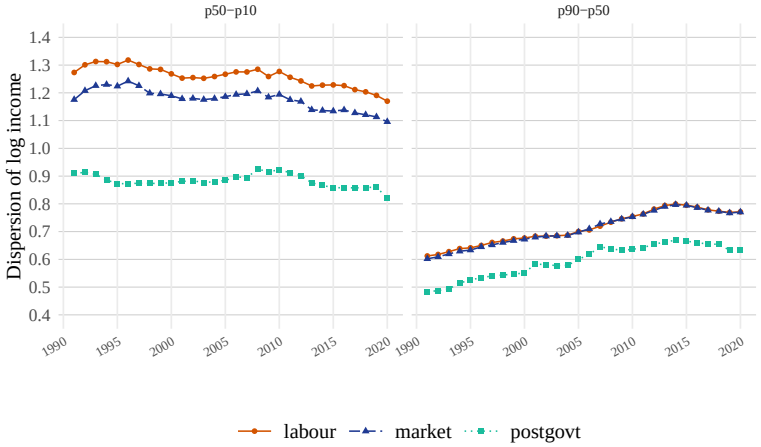
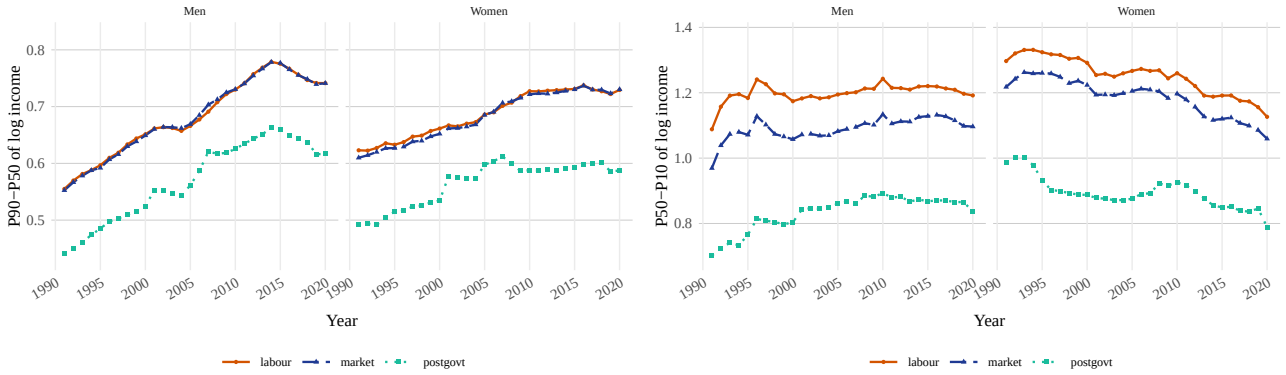


Figure C.28: **Trends in bottom-end (P50–P10) and top-end (P90–P50) income inequality for three income measures: labour earnings, market income, and post-government income.**

Note: This figure presents bottom-end (P50–P10) and top-end (P90–P50) inequality in log real income from 1991 to 2019 across three income measures: labour earnings, market income, and post-government income. The bottom-end inequality (P50–P10) captures dispersion between the median and the 10th percentile, while the top-end inequality (P90–P50) captures dispersion between the 90th percentile and the median. These panels highlight differences in inequality dynamics across the income distribution and between private income (labour earnings and market income) and post-government income.



(a) Top-end inequality: P90-P50

(b) Bottom-end inequality: P50-P10

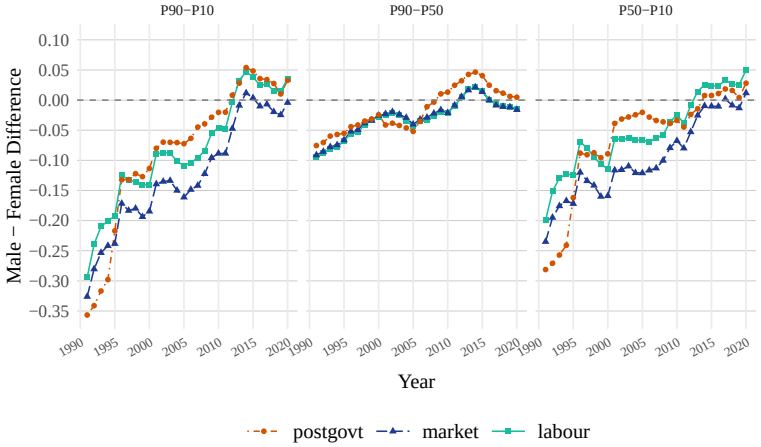
Figure C.29: **Trends in bottom-end (P50–P10) and top-end (P90–P50) income inequality by gender for three income measures: labour earnings, market income, and post-government.**

Note: This figure presents bottom-end (P50–P10) and top-end (P90–P50) inequality in log real income by gender from 1991 to 2020 across three income measures: labour earnings, market income, and post-government income. Panel (a) shows top-end inequality (P90–P50), capturing dispersion between the 90th percentile and the median. Panel (b) shows bottom-end inequality (P50–P10), capturing dispersion between the median and the 10th percentile. These panels highlight gender-specific trends and differences in inequality across the income distribution and income measures.

Trends in lower-end and upper-end income inequality.

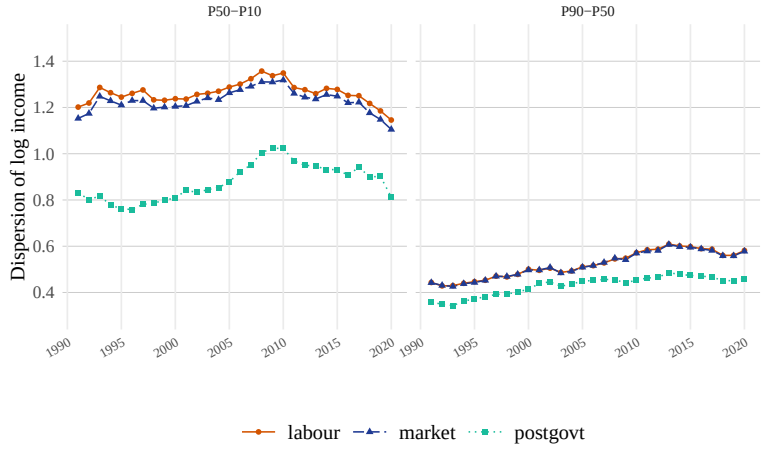
Gender gap in income inequality.

Figure C.30: **Trends in gender differences in income inequality across three income measures: labour earnings, market income and post-government income.**



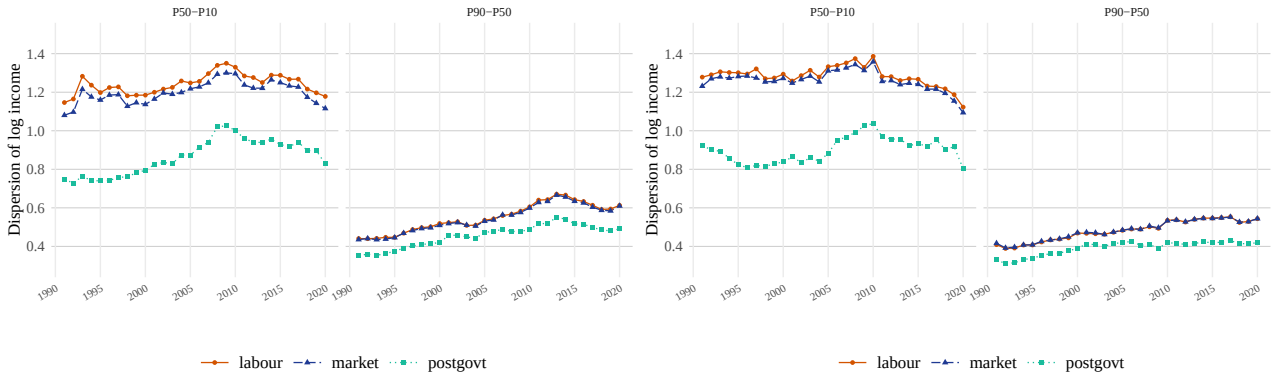
Note: This figure plots gender differences in three inequality metrics—P90–P10 (overall dispersion), P90–P50 (top-end inequality), and P50–P10 (bottom-end inequality)—for labour earnings, market income, and post-government income from 1991 to 2020. A negative value indicates that the respective inequality measure is higher for women than for men, while a positive value indicates greater inequality among men. The comparison highlights how gender gaps in inequality vary across the distribution and income definitions but exhibit a common upward trend over time, suggesting a shift toward lower within-group inequality among women relative to their male counterparts.

Figure C.31: **Initial income inequality among 25-year-olds across three income measures: labour earnings, market income and post-government income.**



Note: This figure shows initial income inequality among 25-year-olds from 1991 to 2020 for three different income measures: labour earnings, market income, and post-government income. Two metrics are used: the p50–p10 differential (bottom-end inequality) and the p90–p50 differential (top-end inequality). These measures capture differences in initial inequality across parts of the income distribution and between income measures for young workers over time.

Figure C.32: **Initial income inequality among 25-year-olds by gender, for three income measures: labour earnings, market income and post-government income.**



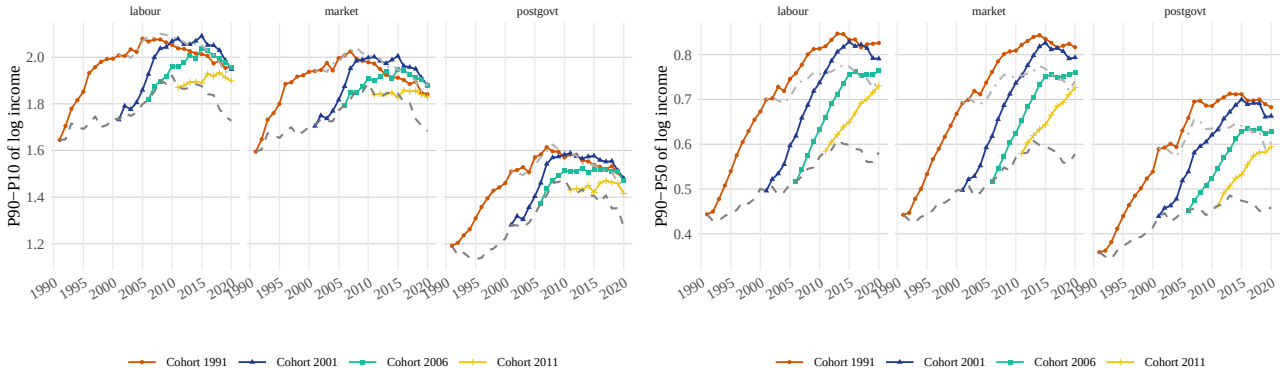
(a) Men (b) Women

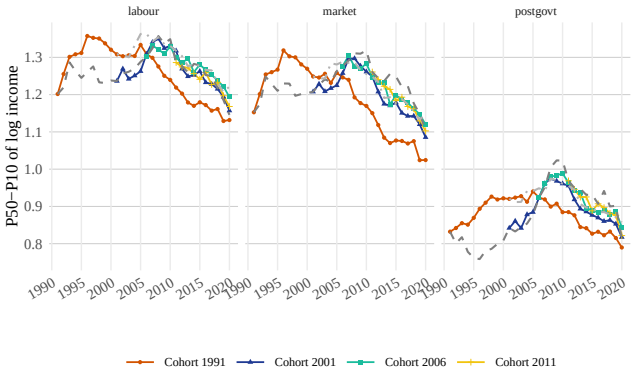
Note: This figure shows initial income inequality among 25-year-olds from 1991 to 2020 by gender for three different income measures: labour earnings, market income, and post-government income. Two metrics are used: the p50–p10 differential (bottom-end inequality) and the p90–p50 differential (top-end inequality). These measures capture differences in initial inequality across parts of the income distribution and between income definitions for young male and female workers over time.

Figure C.33: **Life-cycle profiles of overall, top-end, and bottom-end income inequality by cohort, separately for labour earnings, market income, and post-government income.**

(a) Overall: p90-p10

(b) Top-end: p90-p50





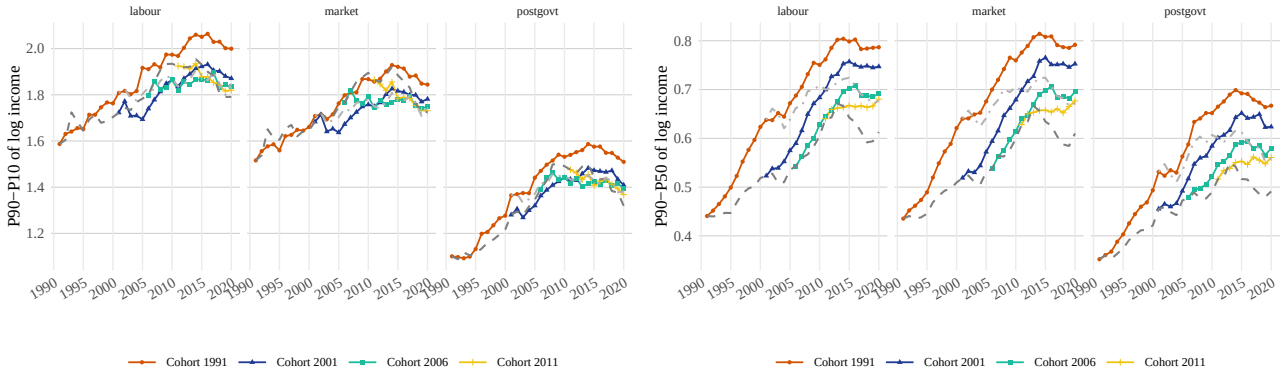
(c) Bottom-end: p50-p10

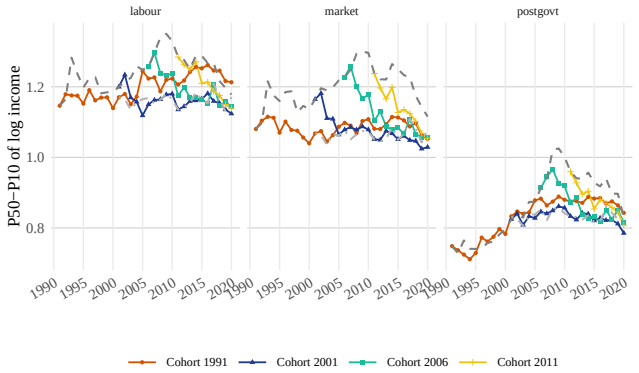
Note: This figure illustrates life-cycle income inequality profiles across four cohorts (1991, 2001, 2006, and 2011), separately for three income measures: labour earnings (left), market income (middle), and post-government income (right). Panel (a) presents overall inequality, measured by the p90–p10 differential. Panel (b) shows top-end inequality, based on the p90–p50 differential. Panel (c) displays bottom-end inequality, using the p50–p10 differential. Dark grey dashed lines mark corresponding inequality statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Figure C.34: **Life-cycle profiles of overall, top-end, and bottom-end income inequality for men by cohort, separately for labour earnings, market income, and post-government income.**

(a) Overall: p90-p10

(b) Top-end: p90-p50





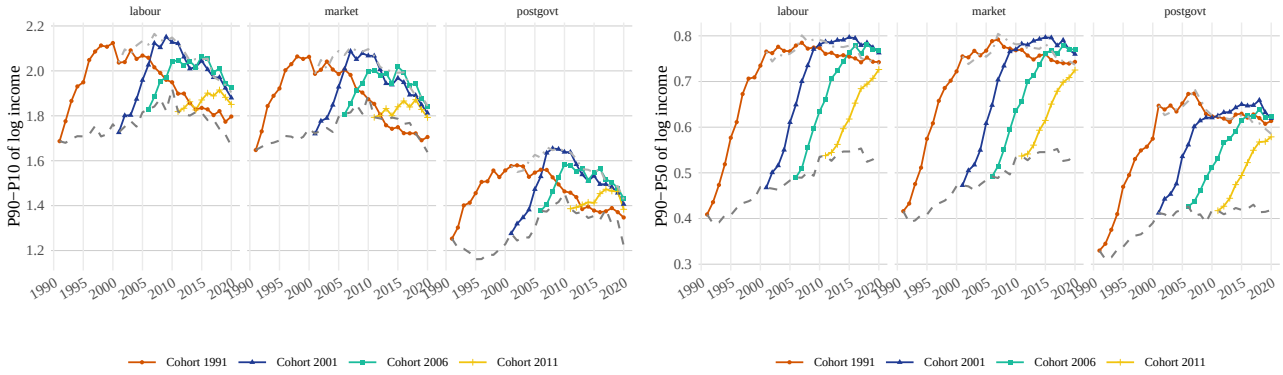
(c) Bottom-end: p50-p10

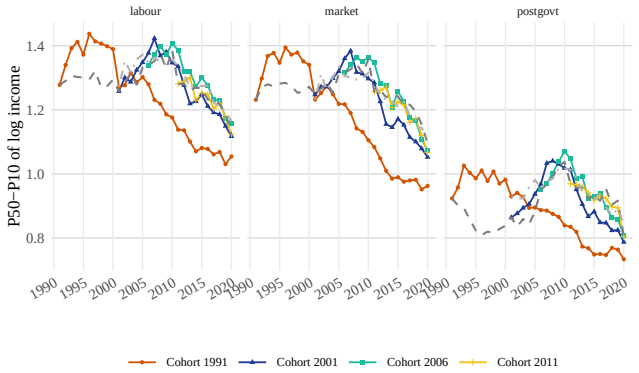
Note: This figure illustrates life-cycle income inequality profiles for four male cohorts (1991, 2001, 2006, and 2011), separately for three income measures: labour earnings (left), market income (middle), and post-government income (right). Panel (a) presents overall inequality, measured by the p90–p10 differential. Panel (b) shows top-end inequality, based on the p90–p50 differential. Panel (c) displays bottom-end inequality, using the p50–p10 differential. Dark grey dashed lines mark corresponding inequality statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Figure C.35: **Life-cycle profiles of overall, top-end, and bottom-end income inequality for women by cohort, separately for labour earnings, market income, and post-government income.**

(a) Overall: p90-p10

(b) Top-end: p90-p50





(c) Bottom-end: p50-p10

Note: This figure illustrates life-cycle income inequality profiles for four female cohorts (1991, 2001, 2006, and 2011), separately for three income measures: labour earnings (left), market income (middle), and post-government income (right). Panel (a) presents overall inequality, measured by the p90–p10 differential. Panel (b) shows top-end inequality, based on the p90–p50 differential. Panel (c) displays bottom-end inequality, using the p50–p10 differential. Dark grey dashed lines mark corresponding inequality statistics at age 25, and light grey dashed lines mark those at age 35, across cohorts between 1991 and 2020.

Income inequality over the life cycle.

C.3.2 Income dynamics

Figure C.36: **Average one-year changes in residualized log income across selected percentiles for three income measures: labour earnings, market income, and post-government income.**

(a) p25

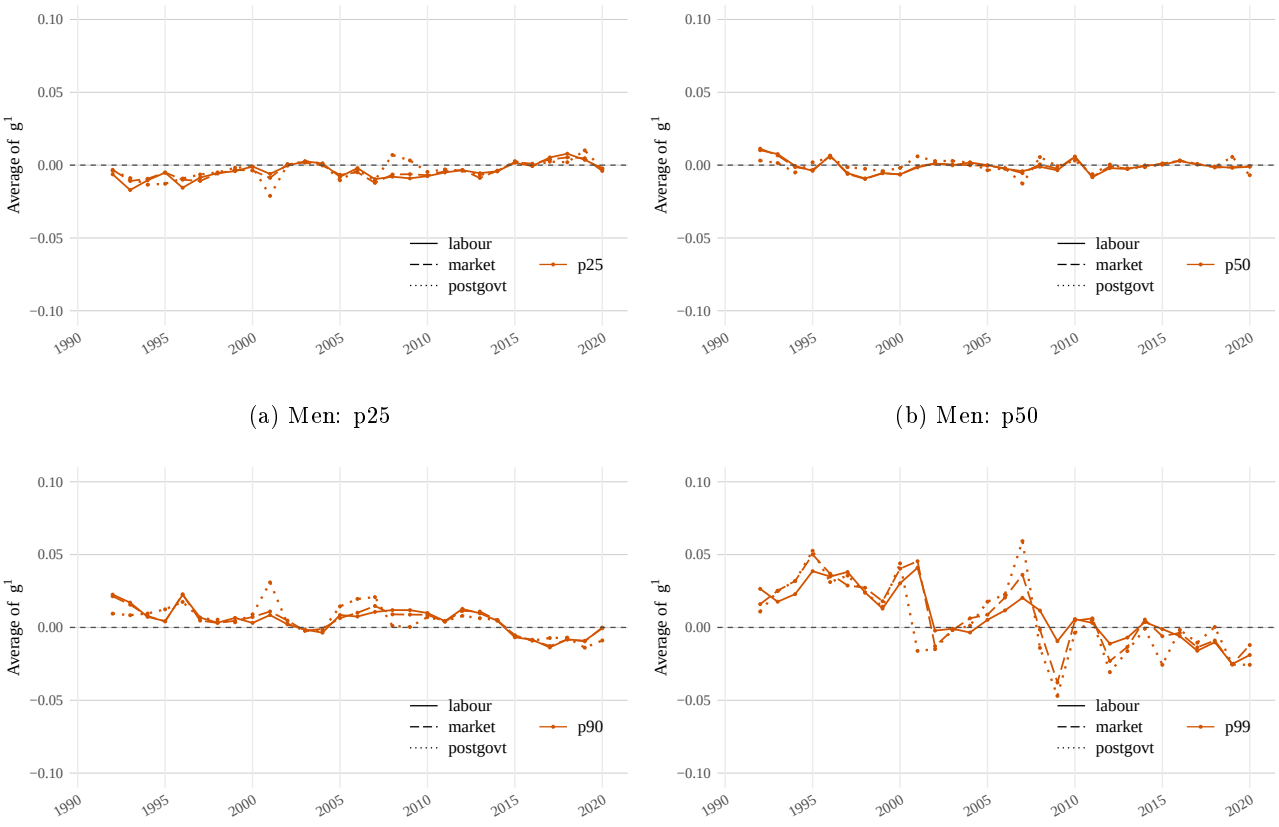
(b) p50

(c) p90

(d) p99

Note: This figure plots the average one-year changes in residualized log income, $\triangle\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$, across selected percentiles of the income distribution for three income measures: labour earnings, market income, and post-government income. Residualized log income removes age-related effects (including experience and seniority) to isolate idiosyncratic income shocks. Each panel highlights differences in average income shock trajectories over time across the distribution.

Figure C.37: **Average one-year changes in residualized log income for men across selected percentiles for three income measures: labour earnings, market income, and post-government income.**



(a) Men: p25

(b) Men: p50

(c) Men: p90

(d) Men: p99

Note: This figure plots the average one-year changes in residualized log income for men, $\triangle\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$, across selected percentiles of the income distribution for three income measures: labour earnings, market income, and post-government income. Residualized log income removes age-related effects (including experience and seniority) to isolate idiosyncratic income shocks. Each panel highlights differences in average income shock trajectories over time across the distribution for male workers.

Figure C.38: **Average one-year changes in residualized log income for women across selected percentiles for three income measures: labour earnings, market income, and post-government income.**

(a) Women: p25

(b) Women: p50

(c) Women: p90

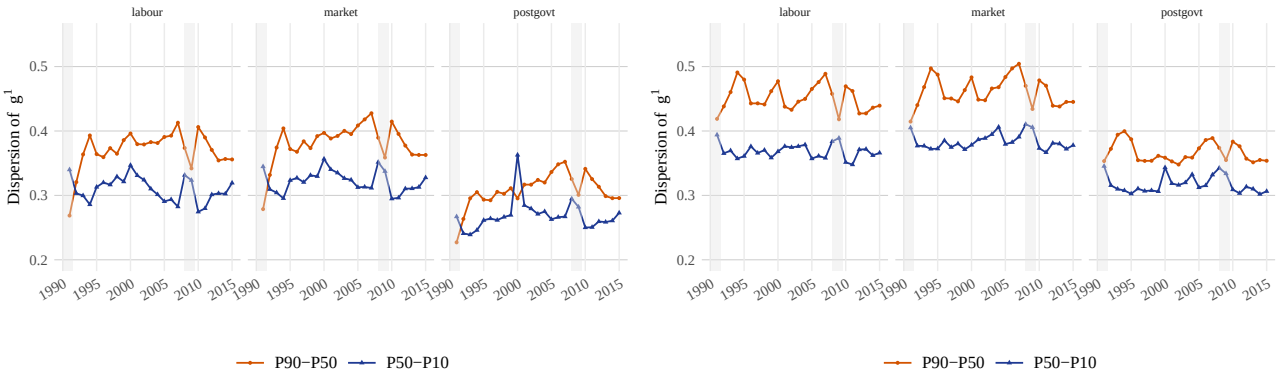
(d) Women: p99

Note: This figure plots the average one-year changes in residualized log income for women, $\triangle\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{it-1}$, across selected percentiles of the income distribution for three income measures: labour earnings, market income, and post-government income. Residualized log income removes age-related effects (including experience and seniority) to isolate idiosyncratic income shocks. Each panel highlights differences in average income shock trajectories over time across the distribution for male workers.

Average income shocks over time.

Cyclical features

Figure C.39: **Dispersion of one-year changes in residualized log income by gender across three income measures: labour earnings, market income, and post-government income.**

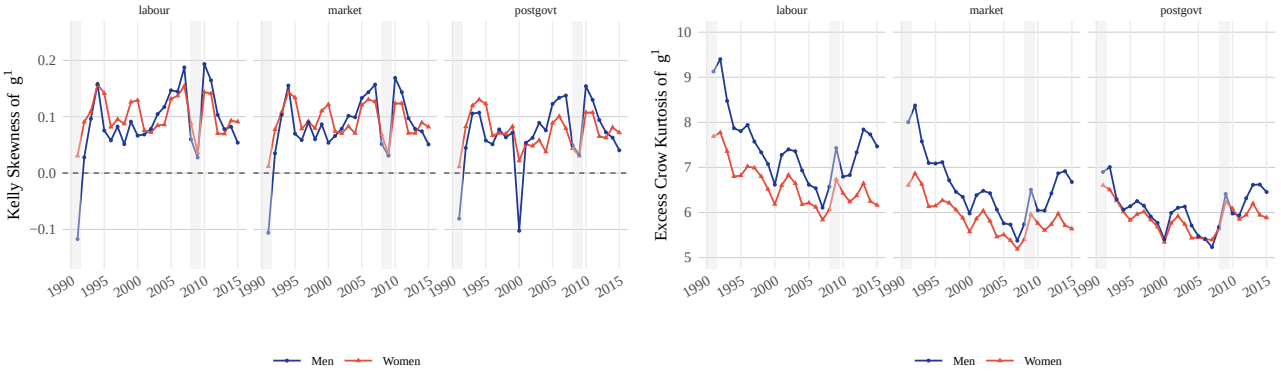


(a) Men

(b) Women

Note: This figure displays the dispersion of one-year changes in residualized log income for men and women across three income measures—labour earnings (left), market income (middle), and post-government income (right)—from 1990 to 2015. Two metrics are reported: the p90–p50 differential captures volatility at the upper end of the income shock distribution, and the p50–p10 differential captures volatility at the lower end. Together, these panels highlight differences in income shock volatility across the distribution, gender, and income definitions over time.

Figure C.40: **Higher-order moments (Kelly skewness and excess Crow-Siddiqui kurtosis) of one-year changes in residualized log income by gender across three income measures: labour earnings, market income, and post-government income.**



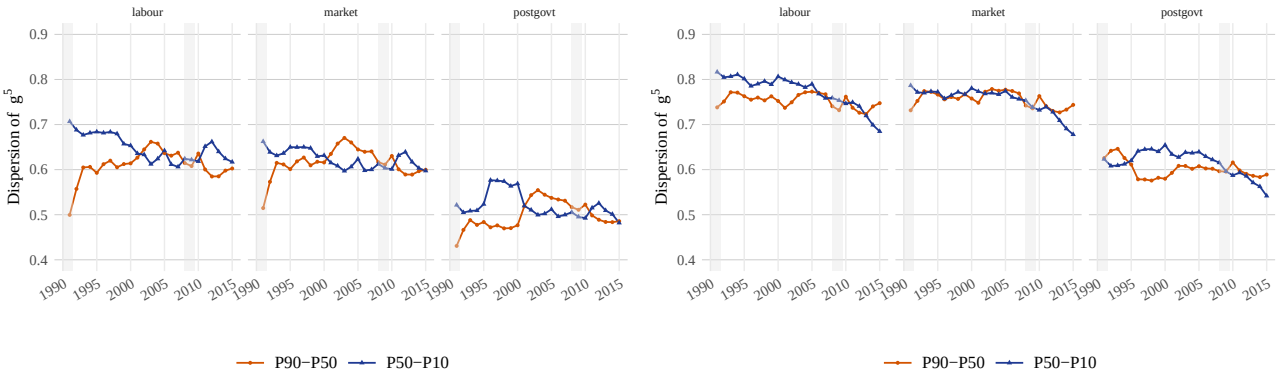
(a) Kelly skewness

(b) Excess Crow-Siddiqui kurtosis

Note: This figure shows the higher-order moments of one-year changes in residualized log income for men and women across three income measures—labour earnings (left), market income (middle), and post-government income (right)—from 1990 to 2015. Panel (a) presents Kelly skewness, capturing the asymmetry of income shocks, where positive values indicate a longer right tail (larger positive shocks). Panel (b) displays excess Crow-Siddiqui kurtosis, calculated by subtracting 2.91 from the raw kurtosis value, which measures the "tailedness" or frequency of extreme income shocks relative to a normal distribution. A positive excess kurtosis indicates heavier tails and a greater likelihood of extreme shocks compared to a normal distribution.

Trends in 1-year income shocks.

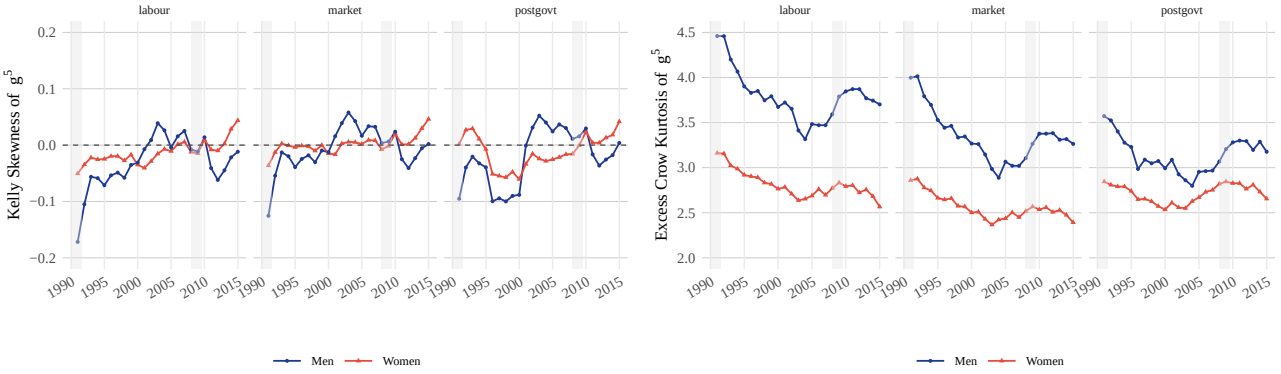
Figure C.41: **Dispersion of five-year changes in residualized log income by gender across three income measures: labour earnings, market income, and post-government income.**



(a) Men (b) Women

Note: This figure displays the dispersion of five-year changes in residualized log income for men and women across three income measures—labour earnings (left), market income (middle), and post-government income (right)—from 1990 to 2015. Panel (a) shows the dispersion for men, and Panel (b) for women. Two metrics are reported: the p90–p50 differential captures volatility at the upper end of the income shock distribution, and the p50–p10 differential captures volatility at the lower end. Together, these panels highlight differences in five-year income shock volatility across gender, income levels, and time, measured over five-year periods.

Figure C.42: **Higher-order moments (Kelly skewness and excess Crow-Siddiqui kurtosis) of five-year changes in residualized log income by gender across three income measures: labour earnings, market income, and post-government income.**

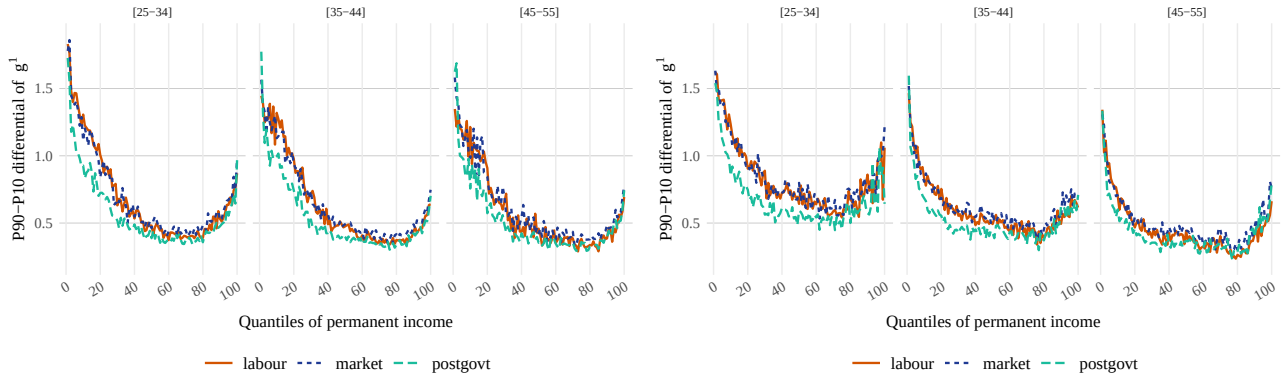


(a) Kelly skewness (b) Excess Crow-Siddiqui kurtosis

Note: This figure shows the higher-order moments of five-year changes in residualized log income by gender across three income measures—labour earnings (left), market income (middle), and post-government income (right)—from 1990 to 2015. Panel (a) presents Kelly skewness, capturing the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks). Panel (b) displays excess Crow-Siddiqui kurtosis, calculated by subtracting 2.91 from the raw kurtosis value. Kurtosis measures the "tailedness" of a distribution compared to a normal distribution. A positive excess kurtosis signals a higher likelihood of extreme income changes relative to a normal distribution.

Trends in 5-year income shocks.

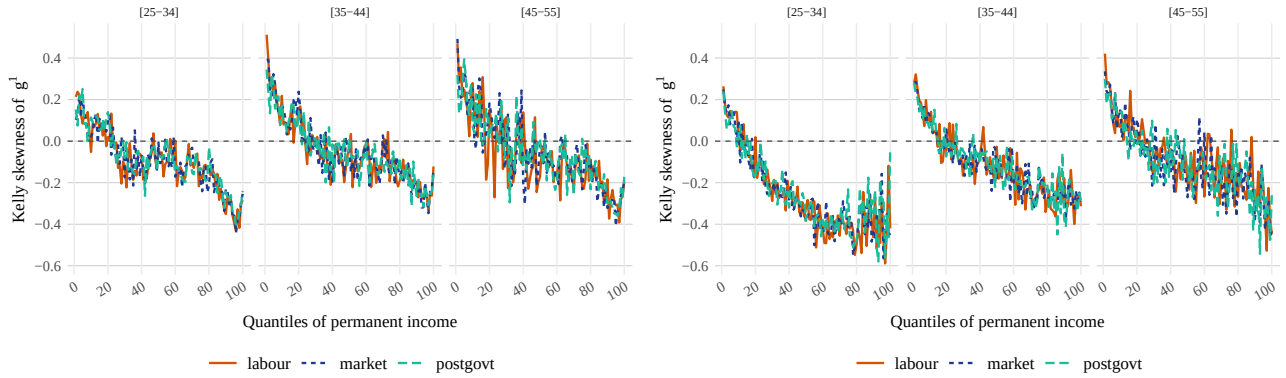
Figure C.43: **Dispersion of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men (b) Women

Note: This figure illustrates the dispersion of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Dispersion is measured by the p90–p10 differential, capturing the spread of income shocks across the distribution. The comparison highlights how volatility patterns vary by age, gender, income distribution, and income definition. It also demonstrates that post-government income consistently exhibits reduced dispersion across the board, suggesting that the tax-and-transfer system mitigates income shock volatility.

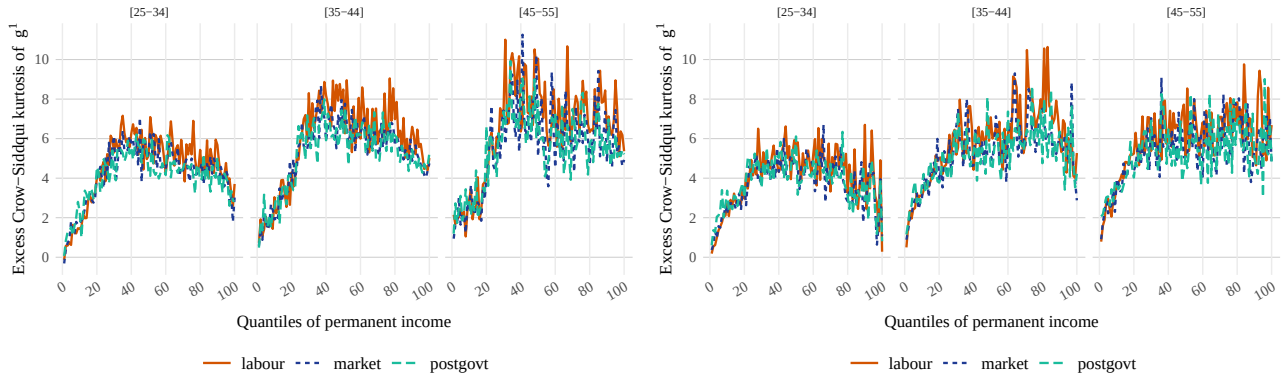
Figure C.44: **Kelly skewness of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men (b) Women

Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks), and negative values reflect a longer left tail (more extreme negative shocks). The comparison highlights how the direction and magnitude of asymmetry vary across age, gender, income distribution, and income definitions. It also shows that post-government income exhibits similar skewness patterns to private income measures (labour earnings and market income), suggesting that the tax and transfer system plays only a weak—or negligible—role in mitigating the severity of private income shocks.

Figure C.45: **Excess Crow-Siddiqui kurtosis of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men

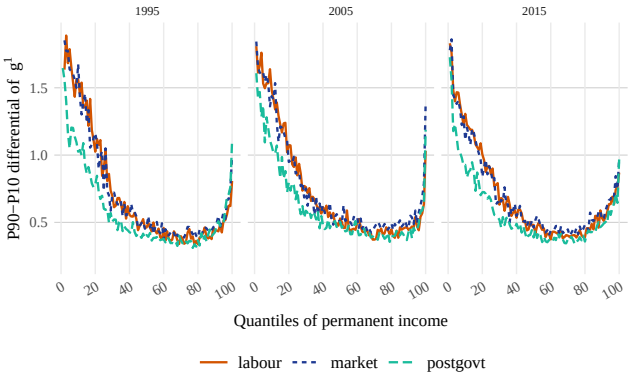
(b) Women

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution relative to a normal distribution, where higher kurtosis indicates a greater frequency of extreme positive or negative shocks. The comparison highlights how the prevalence of extreme income shocks varies across age, gender, income distribution, and income definitions. It further shows that post-government income exhibits similar kurtosis levels and patterns compared to market income, reflecting the weak—or negligible—insurance role of the tax and transfer system in mitigating tail risks.

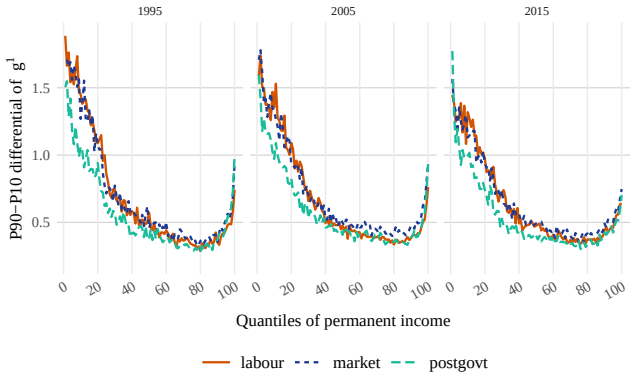
1-year income shocks by rank and age

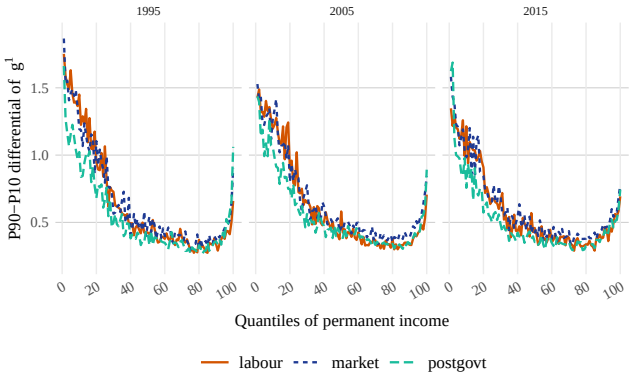
Figure C.46: **Dispersion of one-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34



(b) Men: 35-44



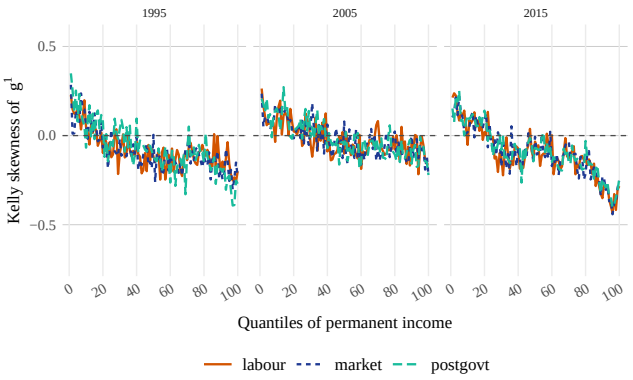


(c) Men: 45-55

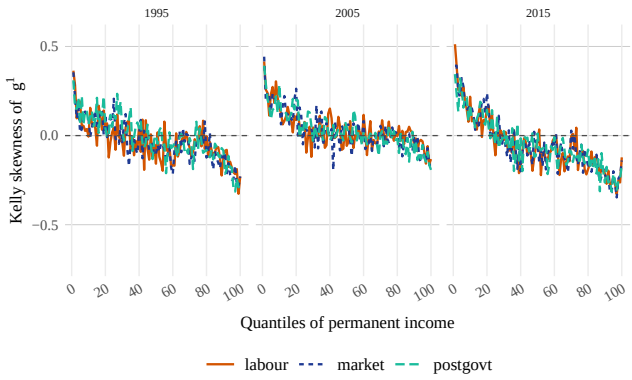
Note: This figure illustrates the dispersion of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to overall dispersion has evolved across different periods.

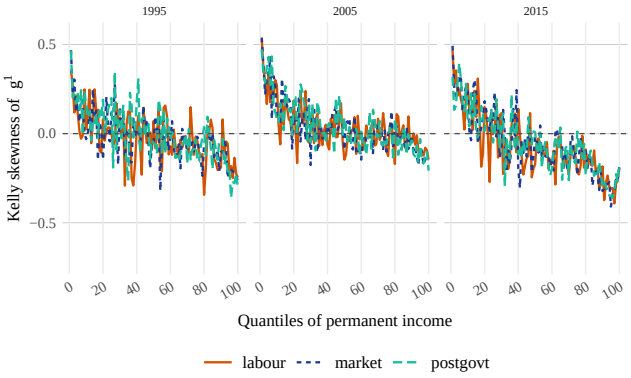
Figure C.47: **Kelly skewness of one-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34



(b) Men: 35-44



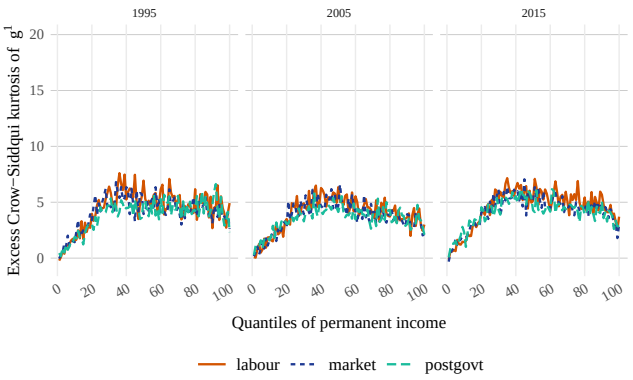


(c) Men: 45-55

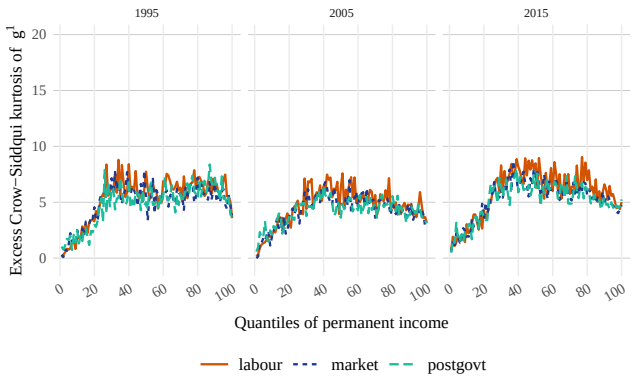
Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the asymmetry of income shocks has evolved over time.

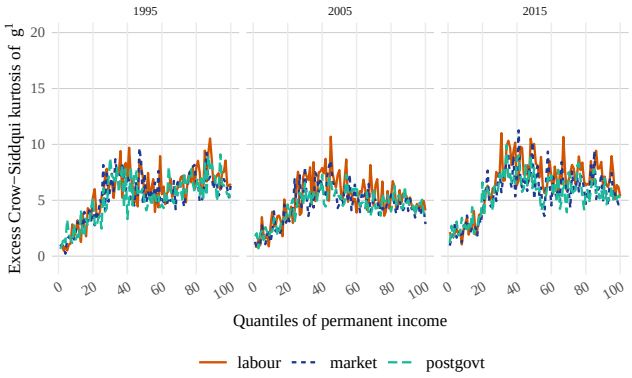
Figure C.48: **Excess Crow–Siddiqui kurtosis of one-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34



(b) Men: 35-44





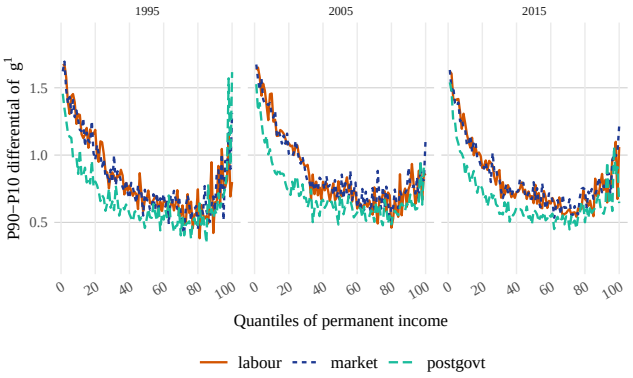
(c) Men: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Excess Crow-Siddiqui kurtosis captures the "tailedness" of income shocks, where higher values indicate a greater frequency of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the frequency of extreme shocks has evolved over time.

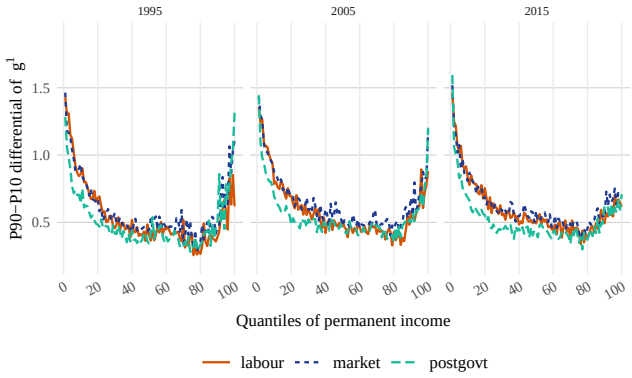
Evolution of 1-year income shocks for men over time, plotted separately by period.

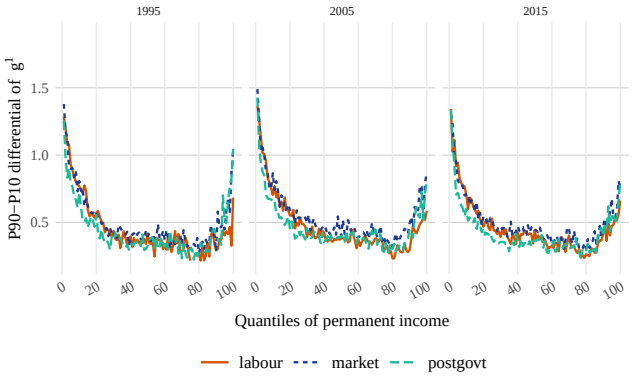
Figure C.49: **Dispersion of one-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34



(b) Women: 35-44



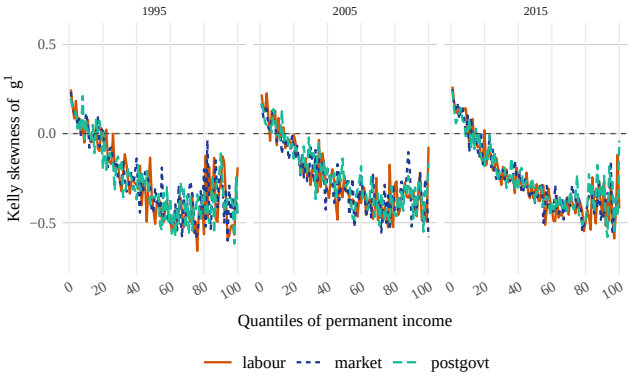


(c) Women: 45-55

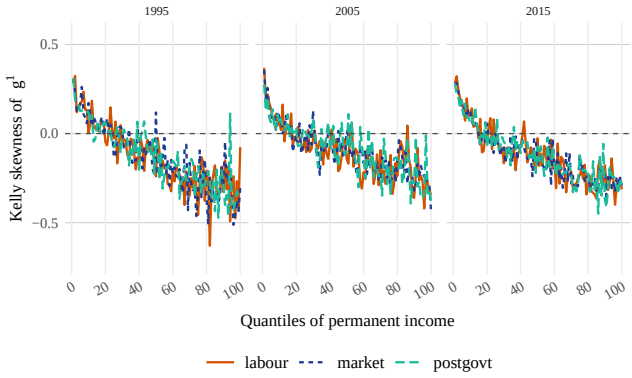
Note: This figure illustrates the dispersion of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to overall dispersion has evolved across different periods.

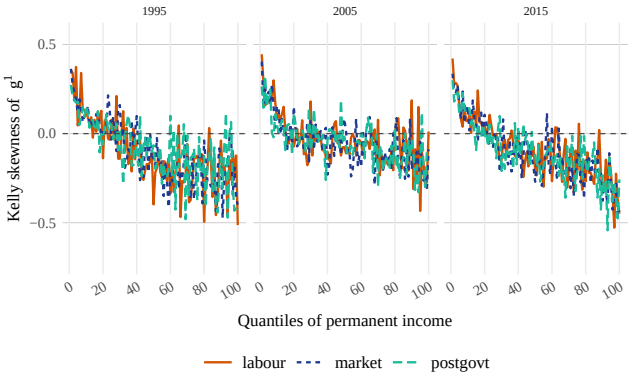
Figure C.50: **Kelly skewness of one-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34



(b) Women: 35-44



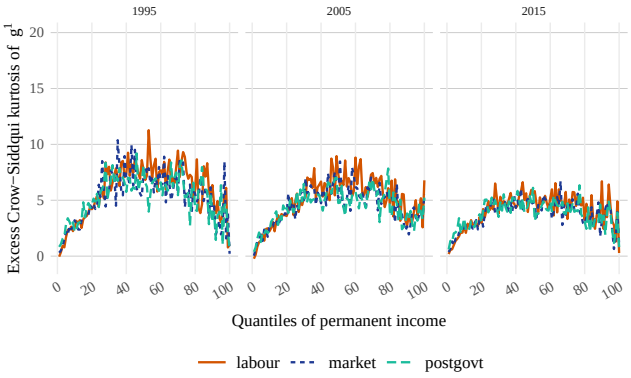


(c) Women: 45-55

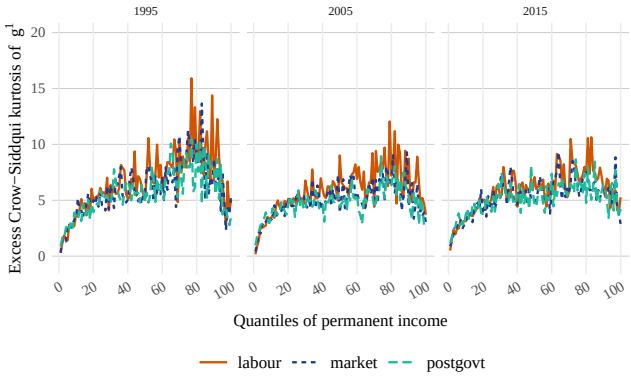
Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the asymmetry of income shocks has evolved over time.

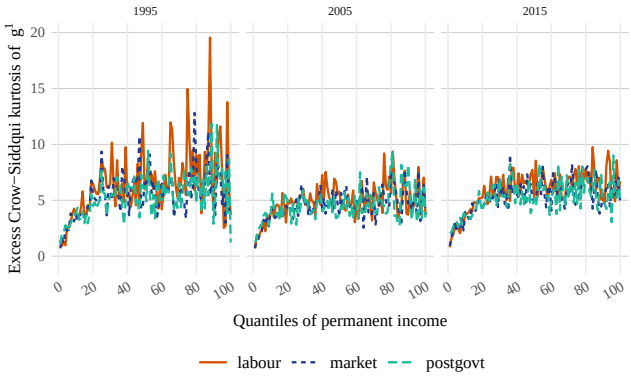
Figure C.51: **Excess Crow–Siddiqui kurtosis of one-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34



(b) Women: 35-44





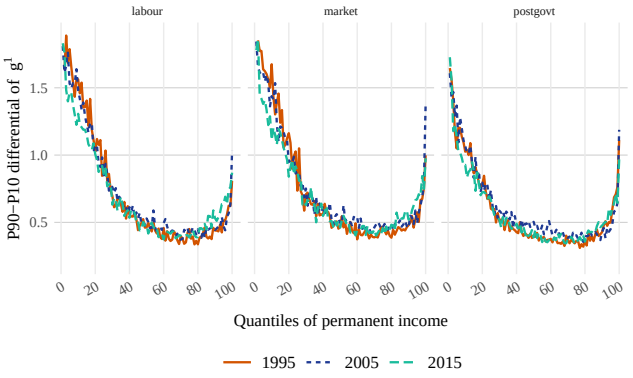
(c) Women: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Excess Crow-Siddiqui kurtosis captures the "tailedness" of income shocks, where higher values indicate a greater frequency of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the frequency of extreme shocks has evolved over time.

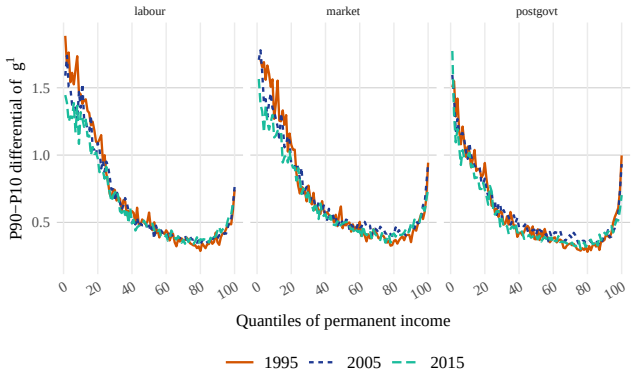
Evolution of 1-year income shocks for women over time, plotted separately by period.

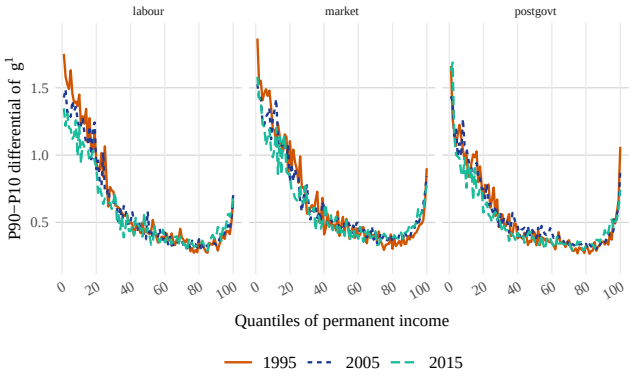
Figure C.52: **Dispersion of one-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44



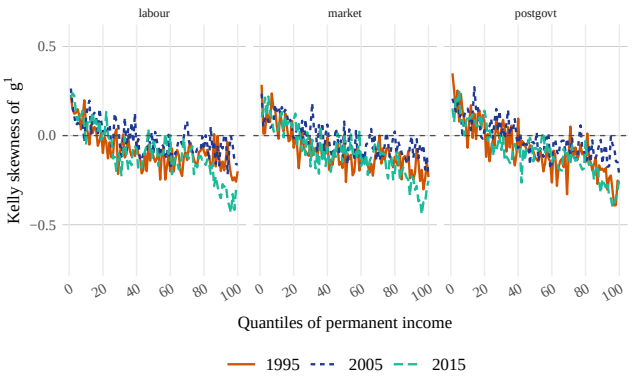


(c) Men: 45-55

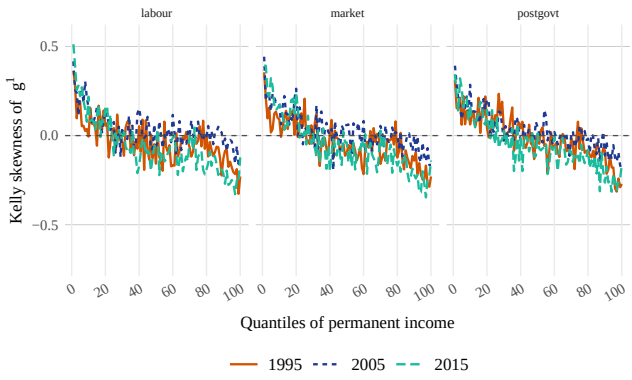
Note: This figure illustrates the dispersion of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the dispersion of each income component has evolved across different periods.

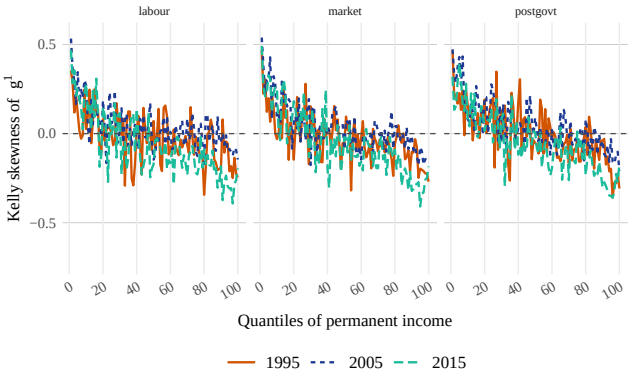
Figure C.53: **Kelly skewness of one-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44



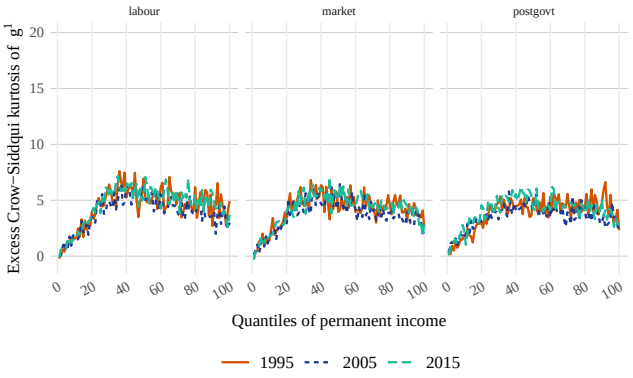


(c) Men: 45-55

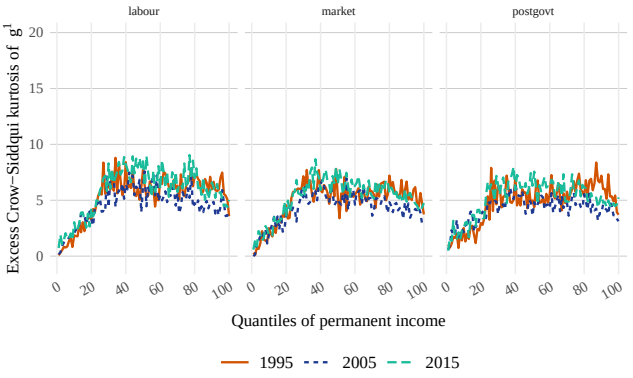
Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the asymmetry of each income component has evolved across different periods.

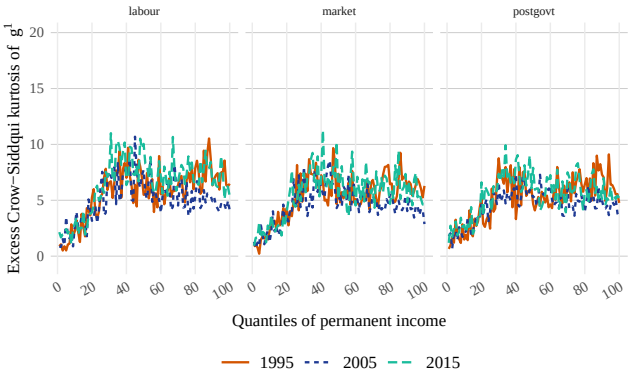
Figure C.54: **Excess Crow-Siddiqui kurtosis of one-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44





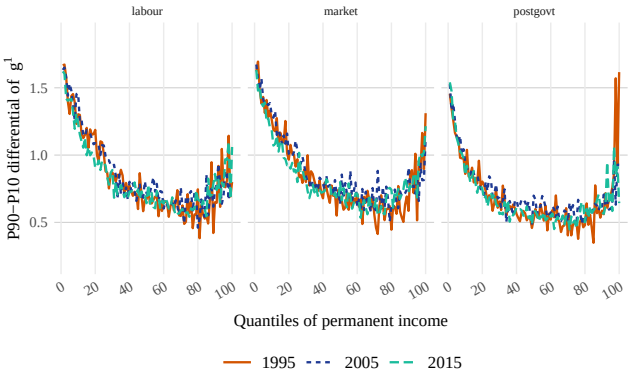
(c) Men: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution, where higher values indicate a greater likelihood of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—to highlight how the prevalence of extreme income shocks has evolved across different periods.

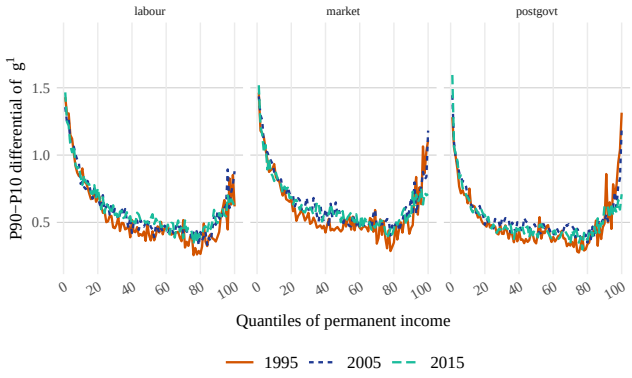
Evolution of 1-year income shocks for men over time, plotted separately by income measure.

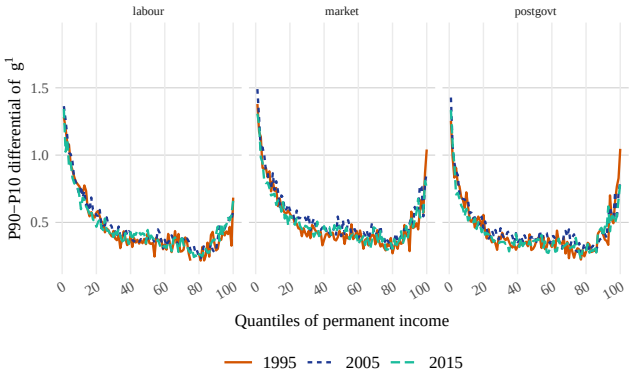
Figure C.55: **Dispersion of one-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34



(b) Women: 35-44



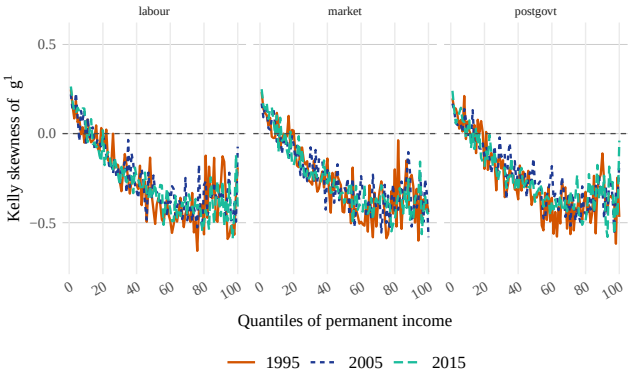


(c) Women: 45-55

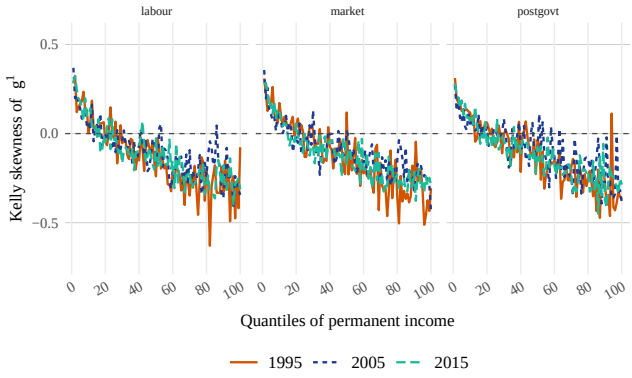
Note: This figure illustrates the dispersion of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the dispersion of each income component has evolved across different periods.

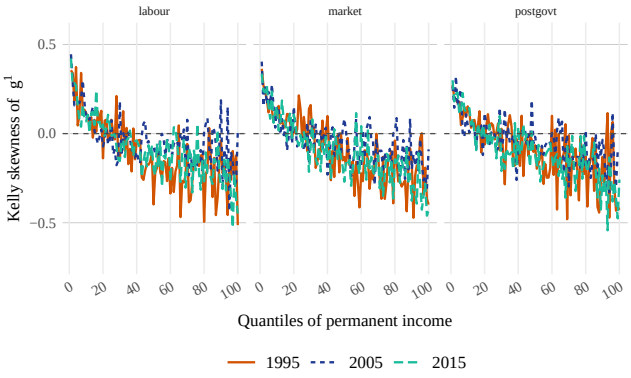
Figure C.56: **Kelly skewness of one-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34



(b) Women: 35-44





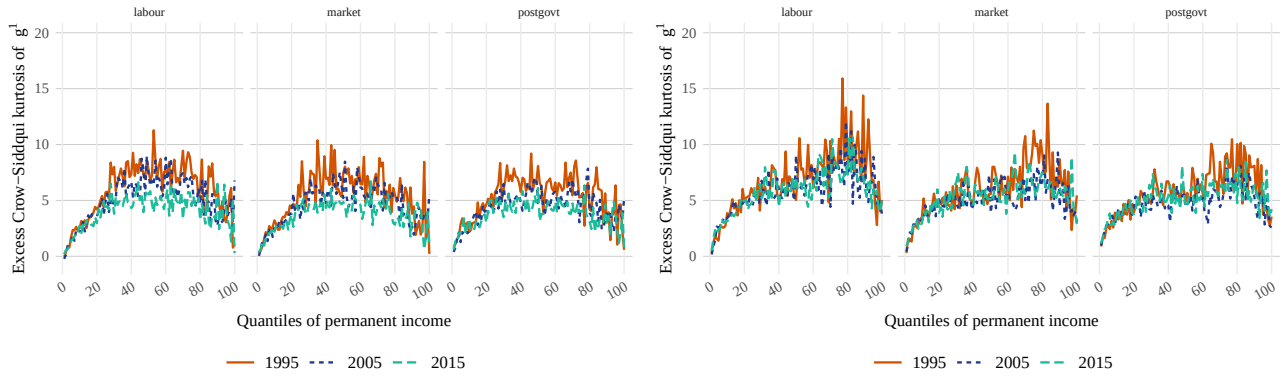
(c) Women: 45-55

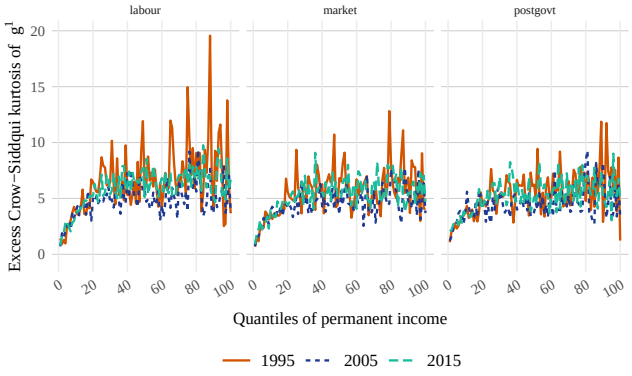
Note: This figure illustrates the Kelly skewness of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the asymmetry of each income component has evolved across different periods.

Figure C.57: **Excess Crow-Siddiqui kurtosis of one-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34

(b) Women: 35-44



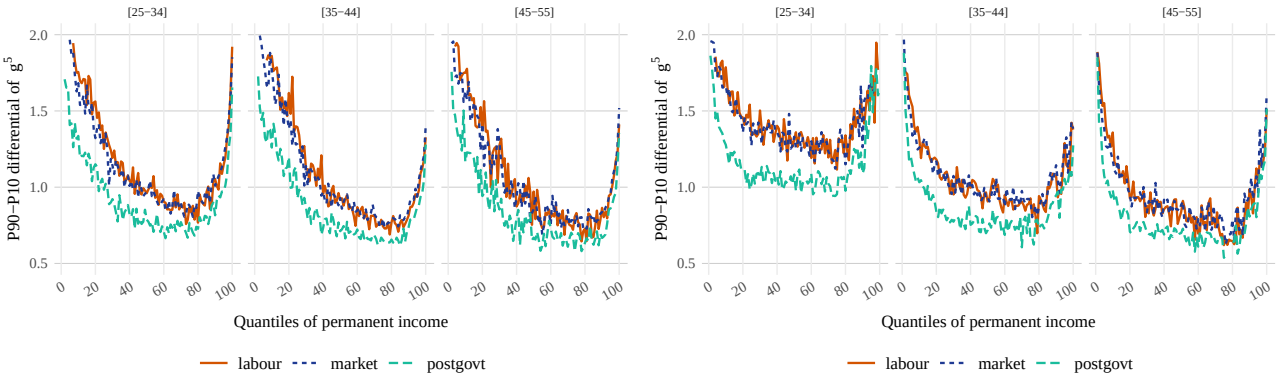


(c) Women: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of one-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution, where higher values indicate a greater likelihood of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—to highlight how the prevalence of extreme income shocks has evolved across different periods.

Evolution of 1-year income shocks for women over time, plotted separately by income measure.

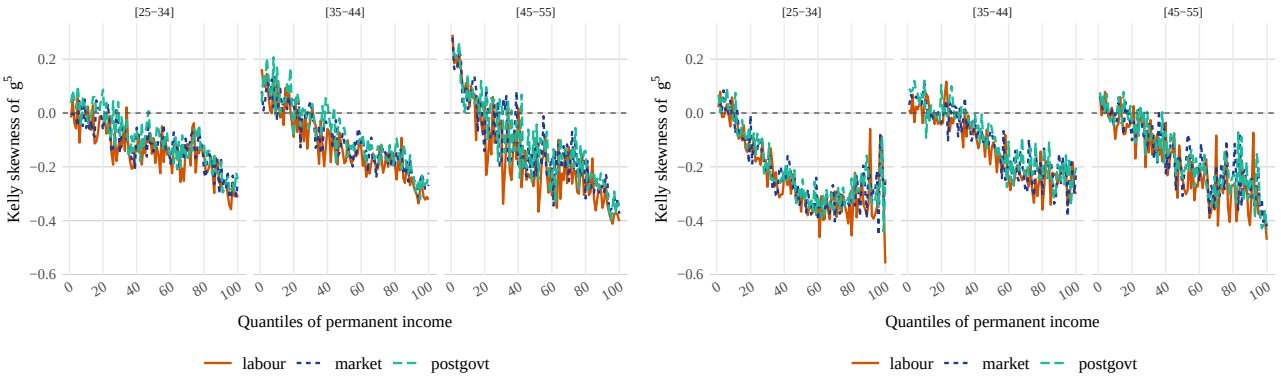
Figure C.58: **Dispersion of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men (b) Women

Note: This figure illustrates the dispersion of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Dispersion is measured by the p90–p10 differential, capturing the spread of income shocks across the distribution. The comparison highlights how volatility patterns vary by age, gender, income distribution, and income definition. It also demonstrates that post-government income consistently exhibits reduced dispersion across the board, suggesting that the tax-and-transfer system mitigates income shock volatility.

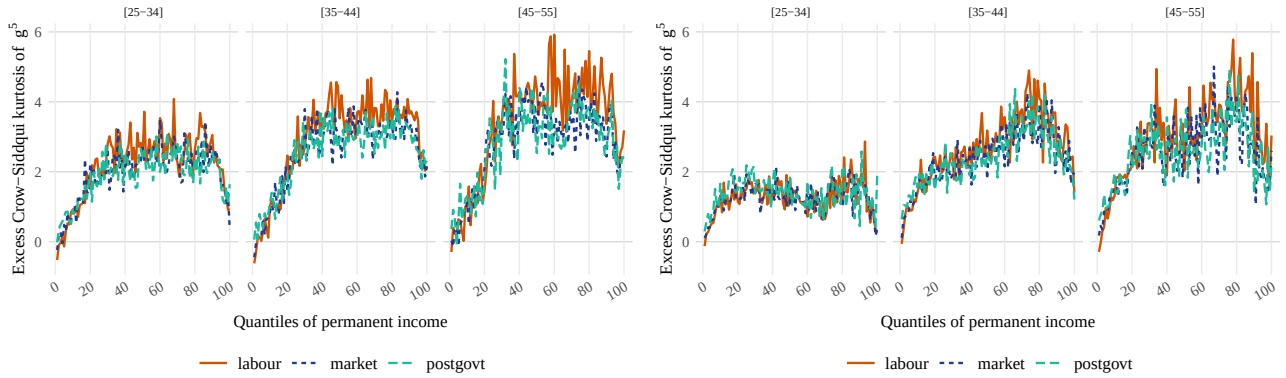
Figure C.59: **Kelly skewness of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men (b) Women

Note: This figure illustrates the Kelly skewness of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks), and negative values reflect a longer left tail (more extreme negative shocks). The comparison highlights how the direction and magnitude of asymmetry vary across age, gender, income distribution, and income definitions. It also shows that post-government income exhibits similar skewness patterns to private income measures (labour earnings and market income), suggesting that the tax and transfer system plays only a weak—or negligible—role in mitigating the severity of private income shocks.

Figure C.60: **Excess Crow-Siddiqui kurtosis of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—by age group, permanent income percentiles, and gender.**



(a) Men

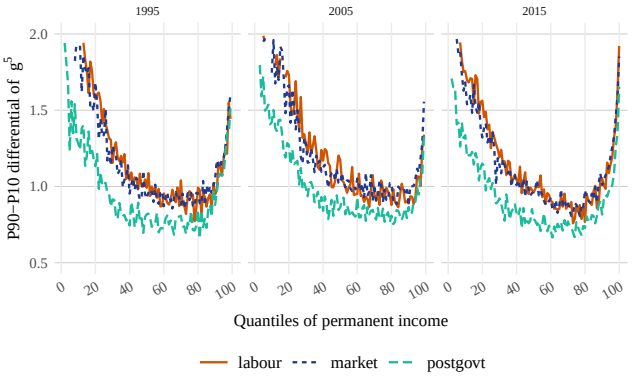
(b) Women

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of five-year changes in residualized log income across three income measures—labour earnings, market income, and post-government income—segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and gender. Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution relative to a normal distribution, where higher kurtosis indicates a greater frequency of extreme positive or negative shocks. The comparison highlights how the prevalence of extreme income shocks varies across age, gender, income distribution, and income definitions. It further shows that post-government income exhibits similar kurtosis levels and patterns compared to market income, reflecting the weak—or negligible—insurance role of the tax and transfer system in mitigating tail risks.

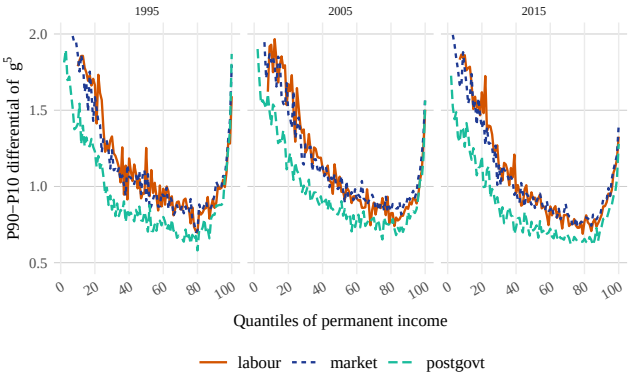
5-year income shocks by rank and age

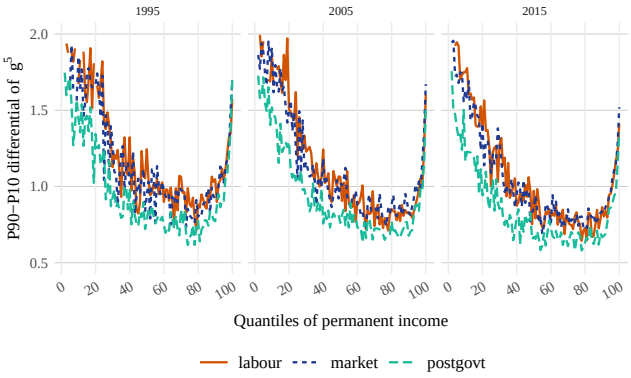
Figure C.61: **Dispersion of five-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34



(b) Men: 35-44



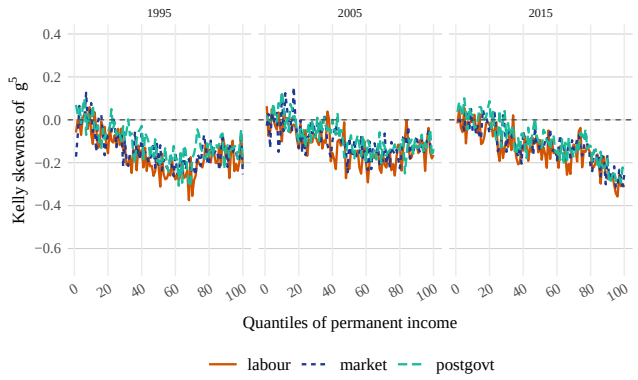


(c) Men: 45-55

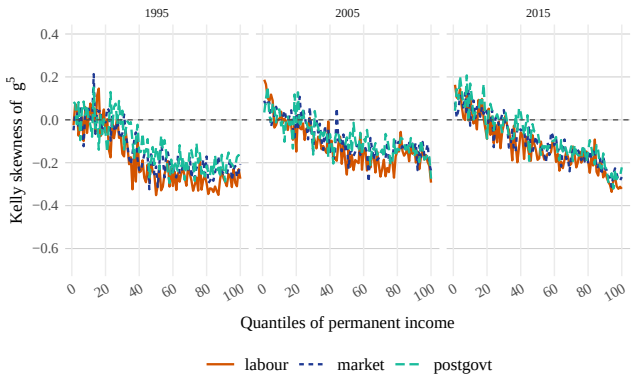
Note: This figure illustrates the dispersion of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to overall dispersion has evolved across different periods.

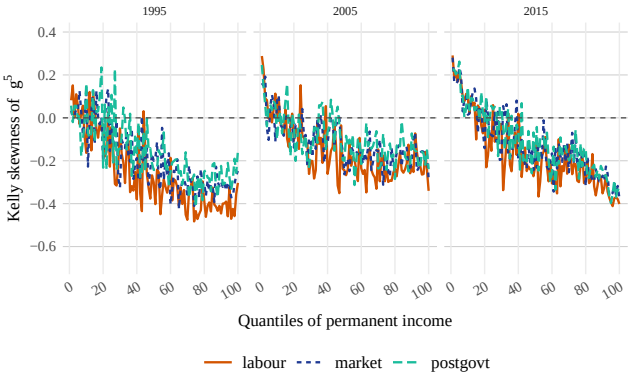
Figure C.62: **Kelly skewness of five-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34



(b) Men: 35-44





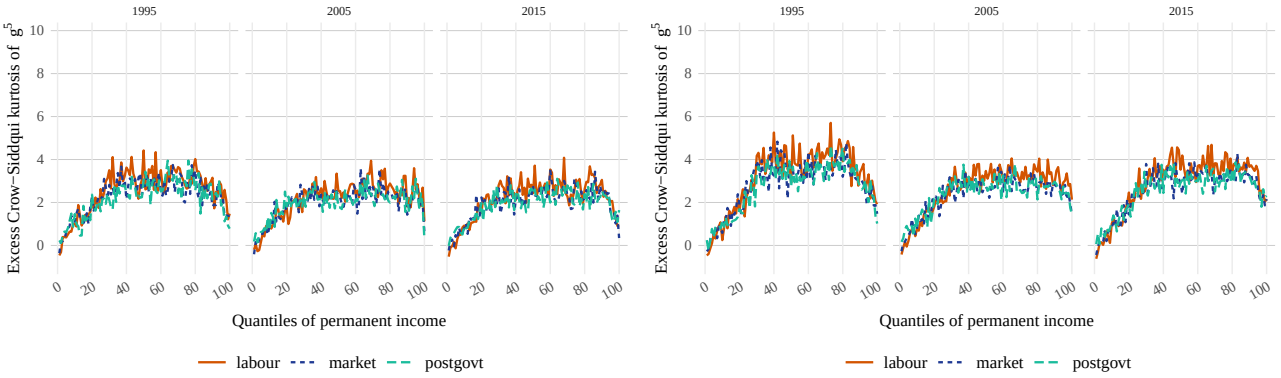
(c) Men: 45-55

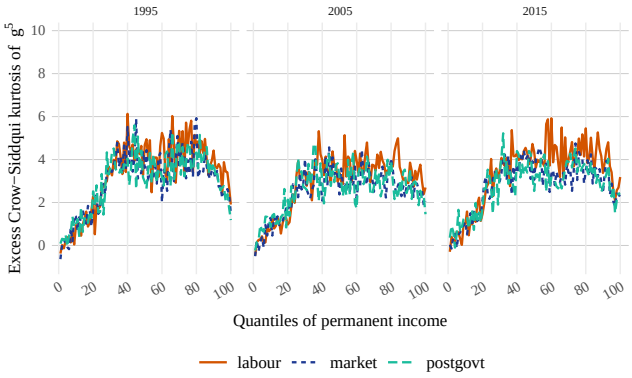
Note: This figure illustrates the Kelly skewness of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the asymmetry of income shocks has evolved over time.

Figure C.63: **Excess Crow–Siddiqui kurtosis of five-year changes in residualized log income for men by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Men: 25-34

(b) Men: 35-44





(c) Men: 45-55

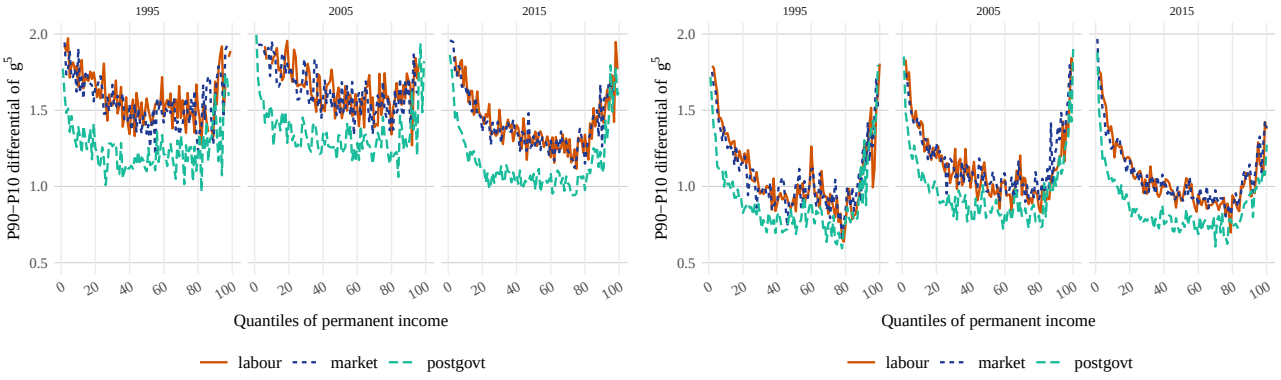
Note: This figure illustrates the excess Crow-Siddiqui kurtosis of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Excess Crow-Siddiqui kurtosis captures the "tailedness" of income shocks, where higher values indicate a greater frequency of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the frequency of extreme shocks has evolved over time.

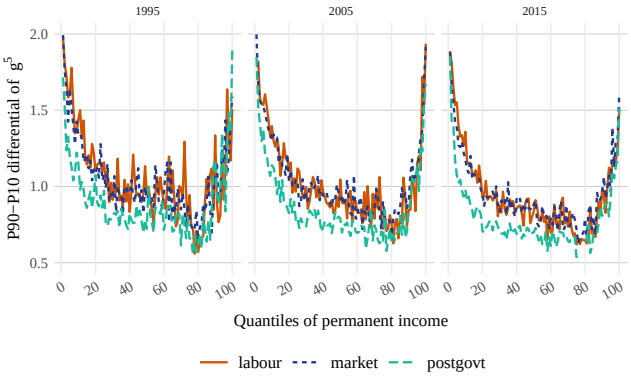
Evolution of 5-year income shocks for men over time, plotted separately by period.

Figure C.64: **Dispersion of five-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34

(b) Women: 35-44



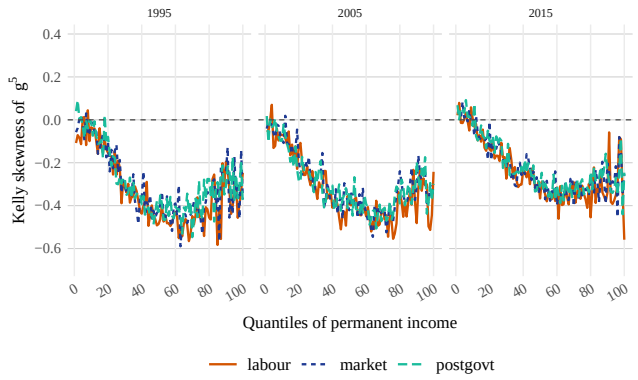


(c) Women: 45-55

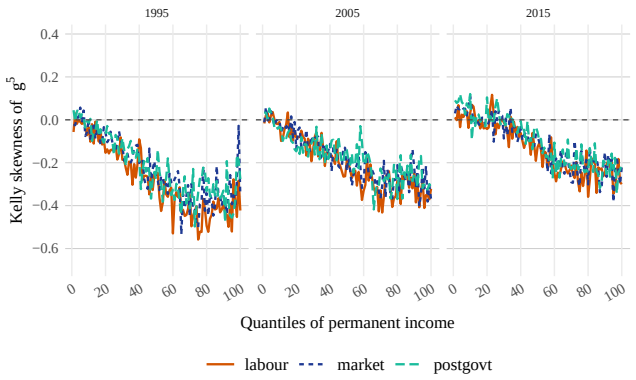
Note: This figure illustrates the dispersion of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to overall dispersion has evolved across different periods.

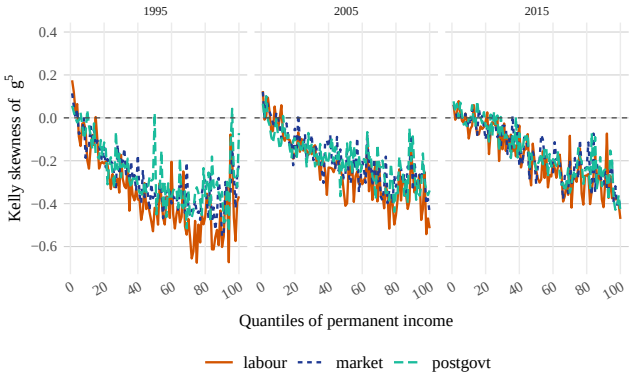
Figure C.65: **Kelly skewness of five-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34



(b) Women: 35-44





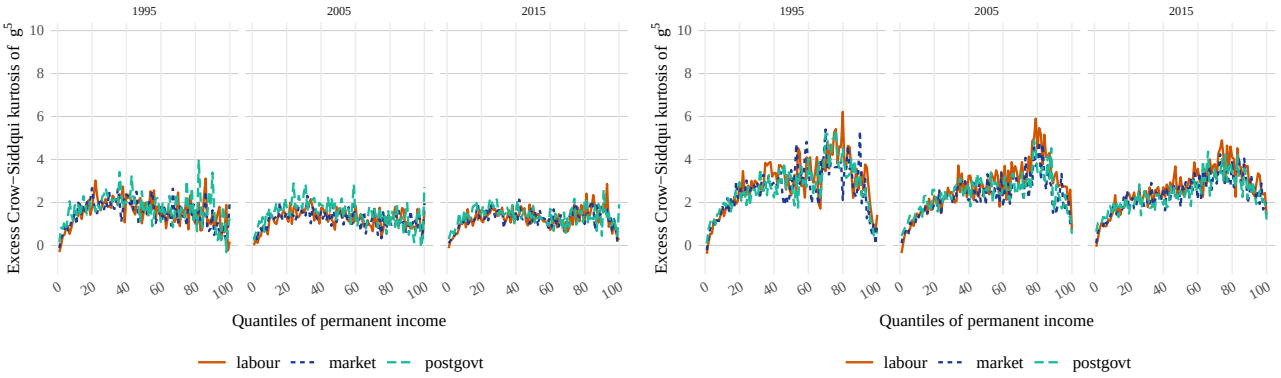
(c) Women: 45-55

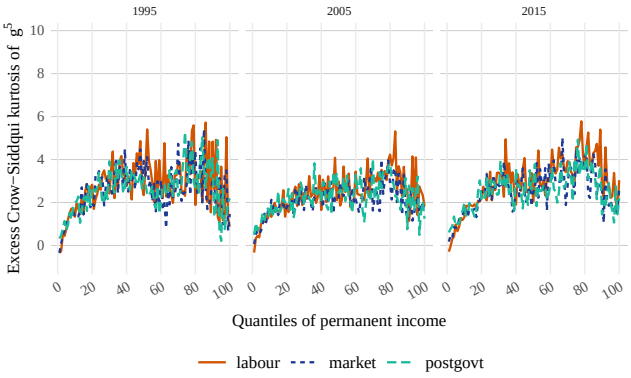
Note: This figure illustrates the Kelly skewness of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the asymmetry of income shocks has evolved over time.

Figure C.66: **Excess Crow–Siddiqui kurtosis of five-year changes in residualized log income for women by age group and permanent income percentiles across three income measures: labour earnings, market income, and post-government income, separately by year.**

(a) Women: 25-34

(b) Women: 35-44





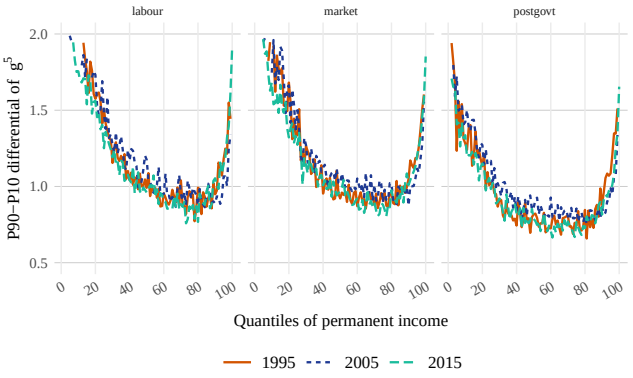
(c) Women: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, and income measures (labour earnings, market income, and post-government income). Excess Crow-Siddiqui kurtosis captures the "tailedness" of income shocks, where higher values indicate a greater frequency of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three points in time—1995 (left), 2005 (middle), and 2015 (right)—to highlight how the contribution of each income component to the frequency of extreme shocks has evolved over time.

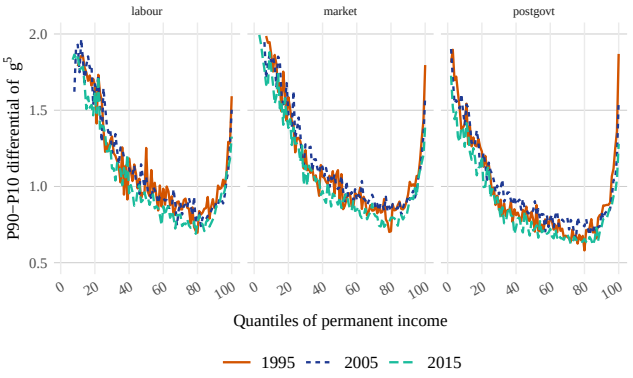
Evolution of 5-year income shocks for women over time, plotted separately by period.

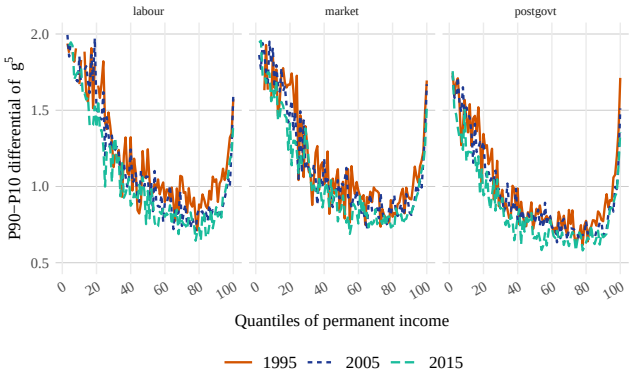
Figure C.67: **Dispersion of five-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44



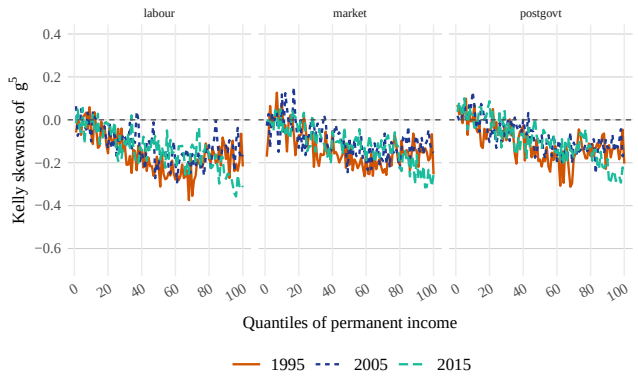


(c) Men: 45-55

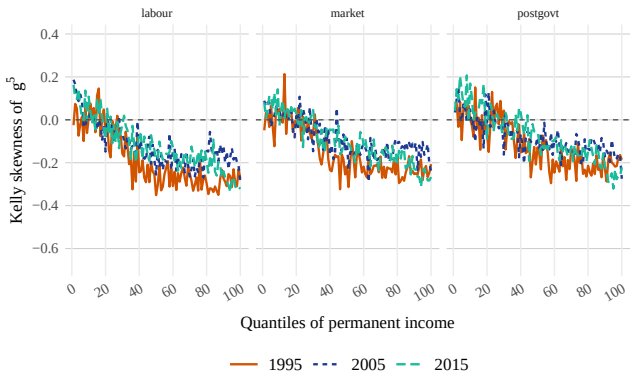
Note: This figure illustrates the dispersion of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the dispersion of each income component has evolved across different periods.

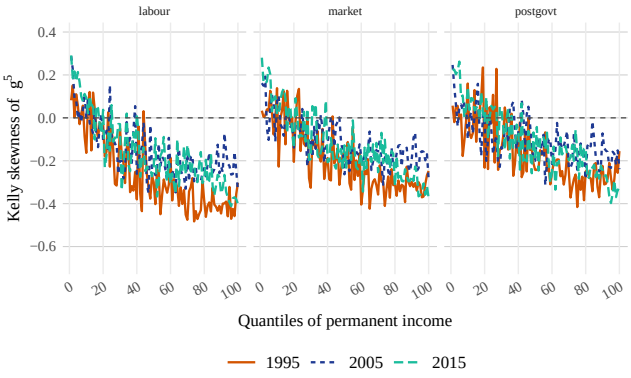
Figure C.68: **Kelly skewness of five-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44



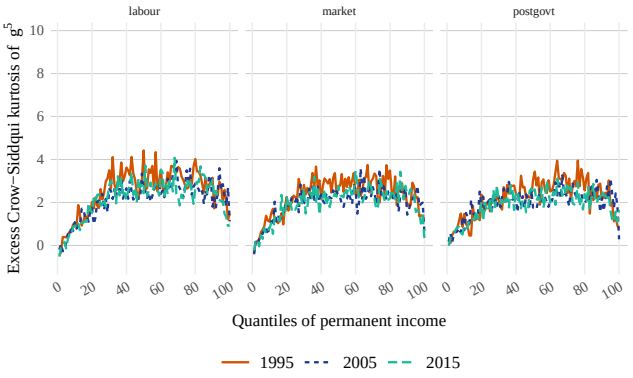


(c) Men: 45-55

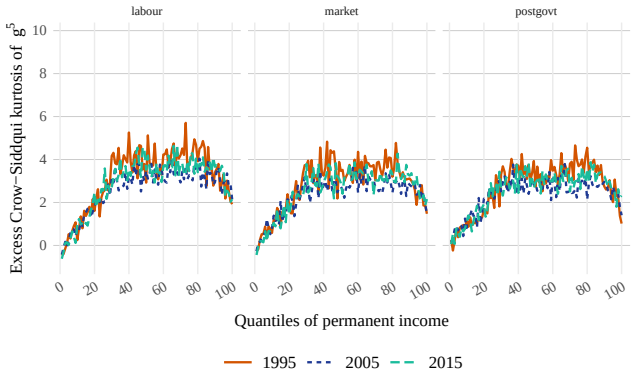
Note: This figure illustrates the Kelly skewness of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the asymmetry of each income component has evolved across different periods.

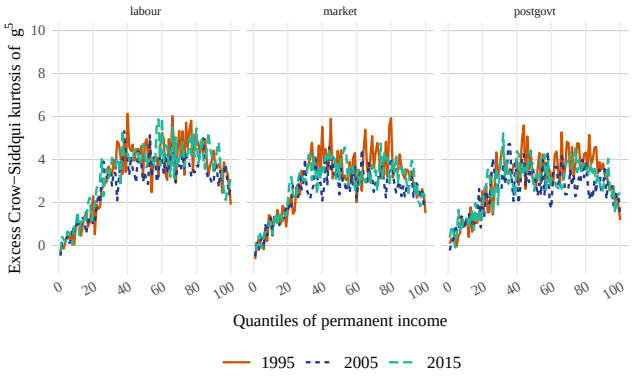
Figure C.69: **Excess Crow-Siddiqui kurtosis of five-year changes in residualized log income over time for men by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Men: 25-34



(b) Men: 35-44





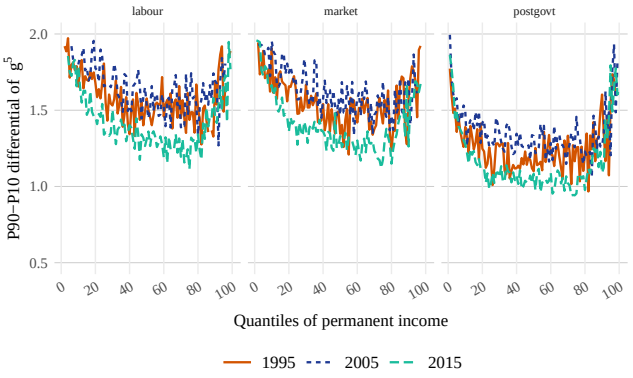
(c) Men: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of five-year changes in residualized log income for men, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution, where higher values indicate a greater likelihood of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—to highlight how the prevalence of extreme income shocks has evolved across different periods.

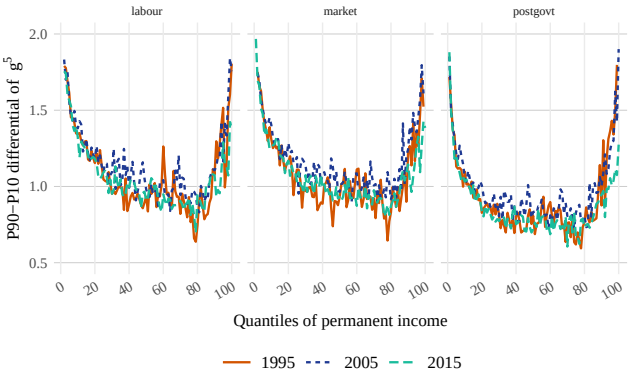
Evolution of 5-year income shocks for men over time, plotted separately by income measure.

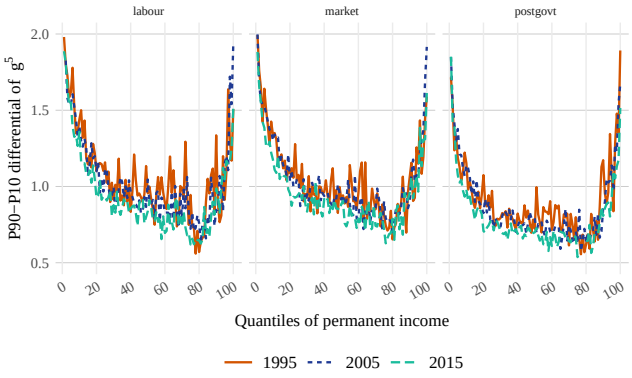
Figure C.70: **Dispersion of five-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34



(b) Women: 35-44



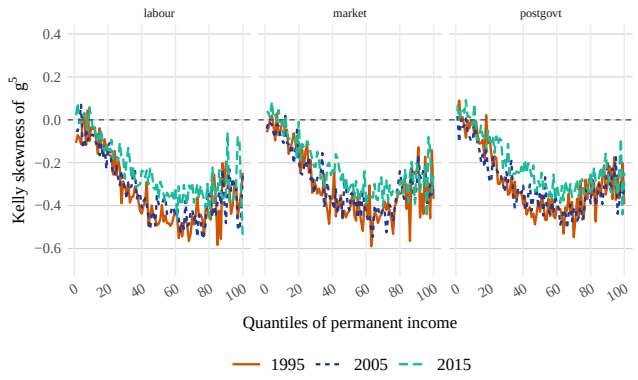


(c) Women: 45-55

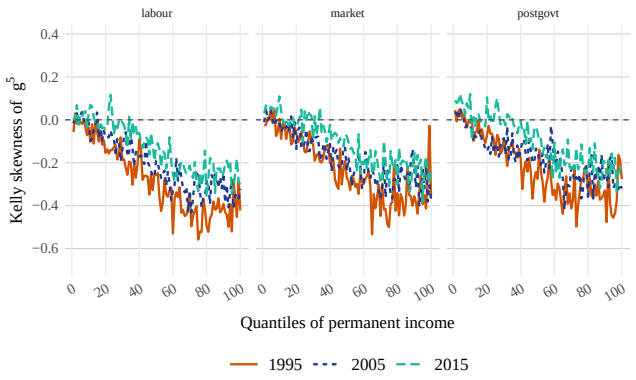
Note: This figure illustrates the dispersion of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Dispersion is measured using the p90–p10 differential, capturing overall volatility across the income shock distribution. Each panel compares dispersion separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the dispersion of each income component has evolved across different periods.

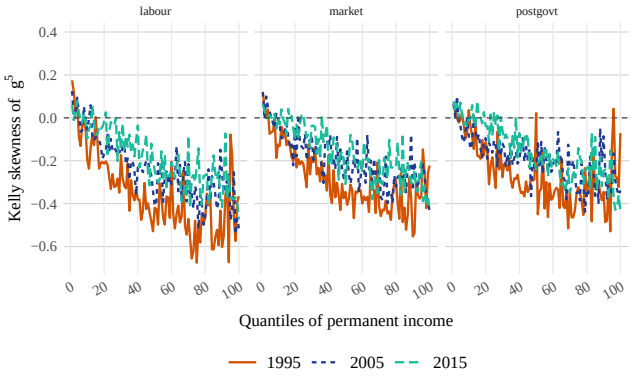
Figure C.71: **Kelly skewness of five-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34



(b) Women: 35-44





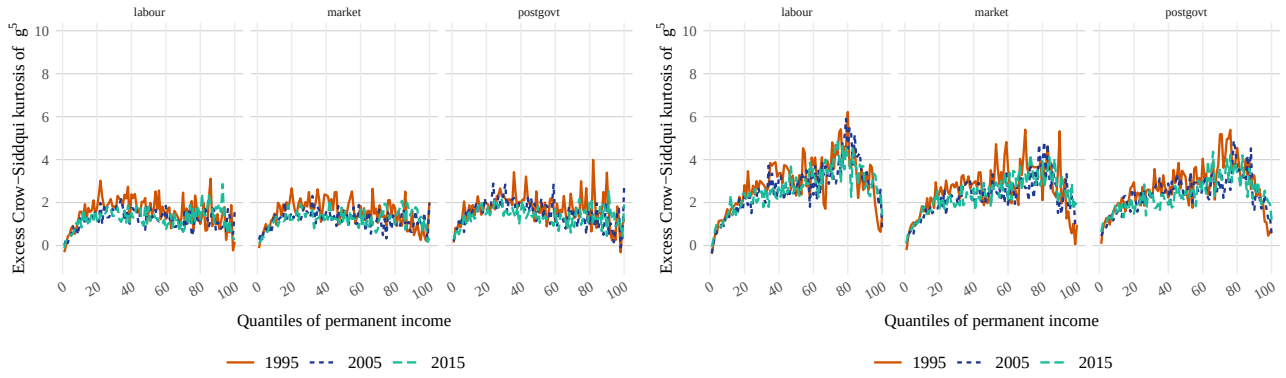
(c) Women: 45-55

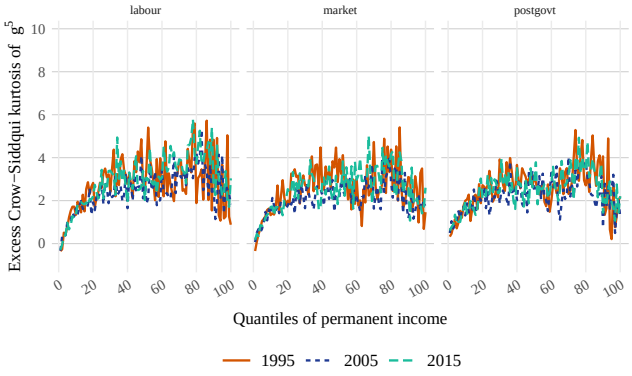
Note: This figure illustrates the Kelly skewness of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Kelly skewness captures the asymmetry of income shocks, where positive values indicate a longer right tail (more extreme positive shocks) and negative values indicate a longer left tail (more extreme negative shocks). Each panel compares skewness separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—and highlights how the asymmetry of each income component has evolved across different periods.

Figure C.72: **Excess Crow-Siddiqui kurtosis of five-year changes in residualized log income over time for women by age group and permanent income percentiles, separately plotted by three income measures: labour earnings, market income, and post-government income.**

(a) Women: 25-34

(b) Women: 35-44





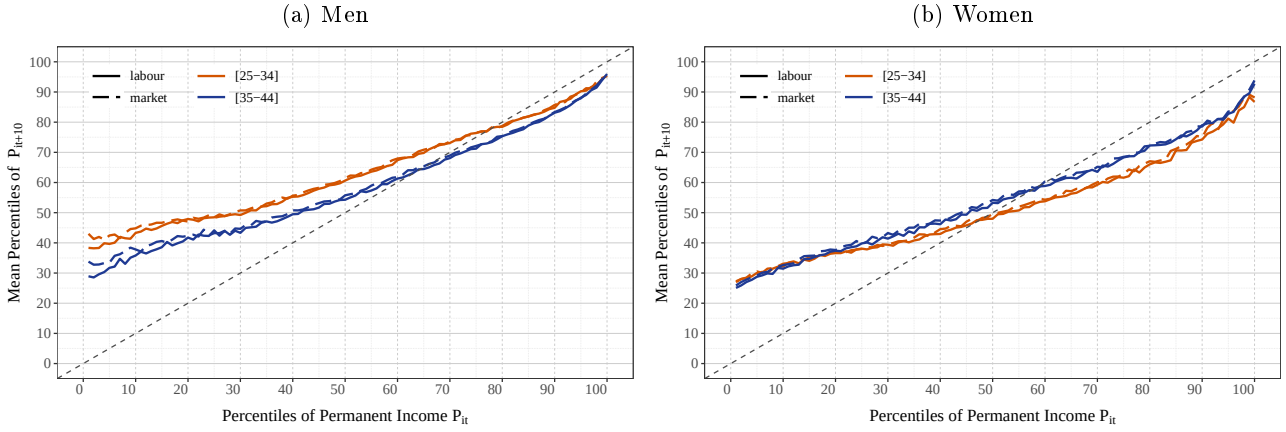
(c) Women: 45-55

Note: This figure illustrates the excess Crow-Siddiqui kurtosis of five-year changes in residualized log income for women, segmented by age group (25–34, 35–44, 45–55), permanent income percentiles, income measures (labour earnings, market income, and post-government income), and time periods (1995, 2005, and 2015). Excess Crow-Siddiqui kurtosis captures the "tailedness" of the income shock distribution, where higher values indicate a greater likelihood of extreme shocks relative to a normal distribution. Each panel compares kurtosis separately across three income measures—labour earnings (left), market income (middle), and post-government income (right)—to highlight how the prevalence of extreme income shocks has evolved across different periods.

Evolution of 5-year income shocks for women over time, plotted separately by income measure.

C.3.3 Income mobility

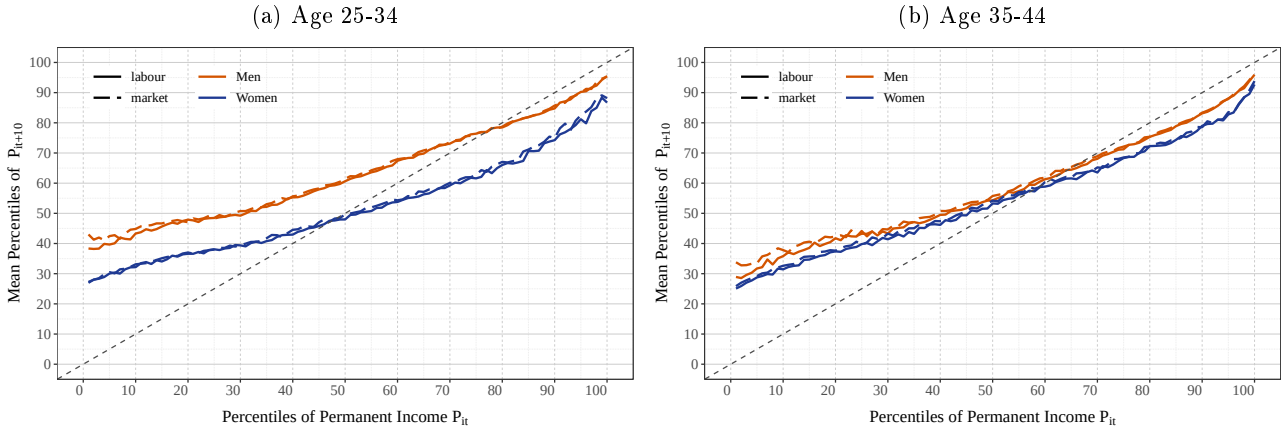
Figure C.73: **10-year average rank mobility (averages of 1997–2007) by age group across labour earnings and market income, separately plotted by gender.**



Note: This figure shows the 10-year average rank mobility by age group across two income measures—labour earnings and market income—based on averages from 1997 to 2007. Panel (a) displays mobility profiles for men, and Panel (b) for women, segmented into two age groups: 25–34 and 35–44. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank ten years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility varies across age groups, gender, and between labour and market income definitions.

10-year mobility across age groups and income measures, separately plotted by gender.

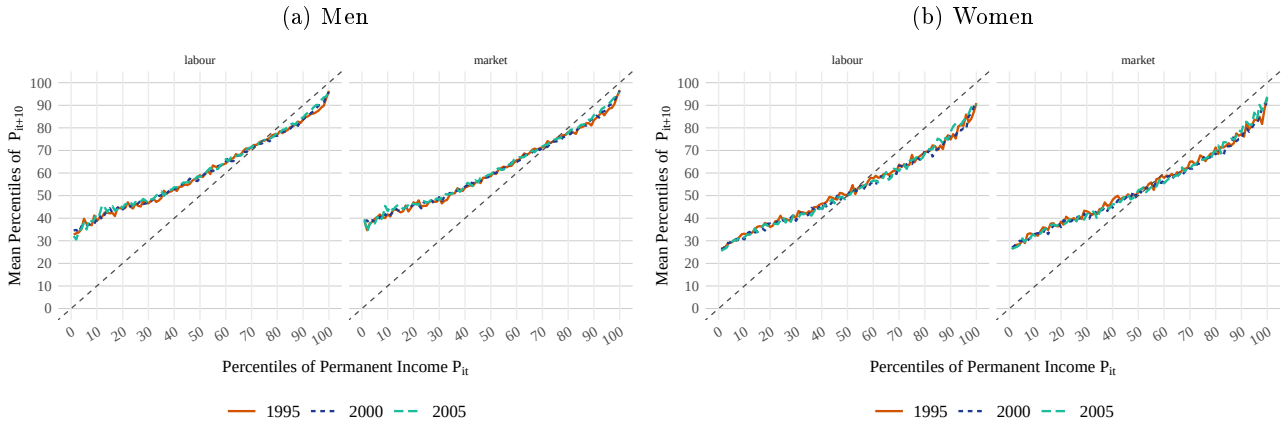
Figure C.74: **10-year average rank mobility (averages of 1997–2007) by gender and two income measures: labour earnings and market income, separately plotted by age group.**



Note: This figure shows the 10-year average rank mobility by gender across two income measures—labour earnings and market income—based on averages from 1997 to 2007. Panel (a) displays mobility profiles for individuals aged 25–34, and Panel (b) for those aged 35–44. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank ten years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility differs between men and women within each age group and across labour and market income measures.

10-year mobility for men and women across income measures, separately plotted by age group.

Figure C.75: **10-year average rank mobility over time (1995, 2000, and 2005) across labour earnings and market income, separately plotted by gender.**



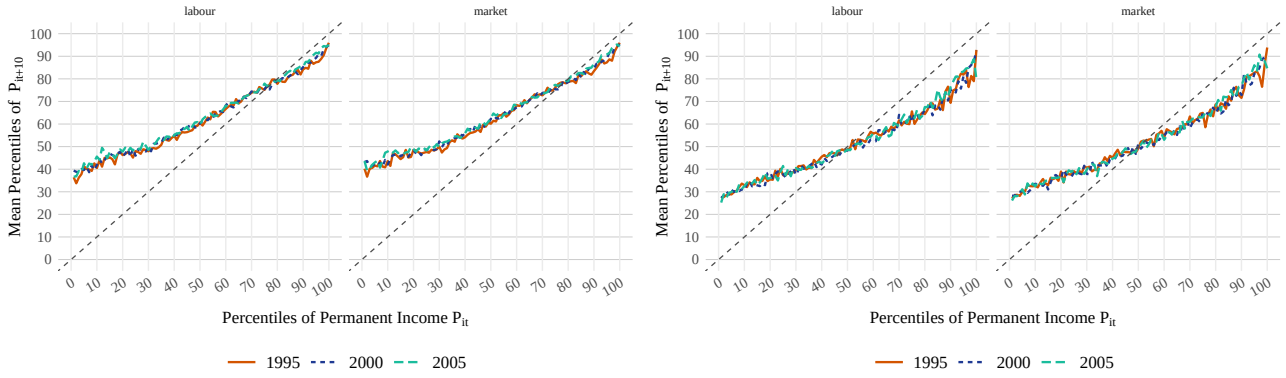
Note: This figure illustrates the 10-year average rank mobility over three starting periods—1995, 2000, and 2005—for men and women across two income measures: labour earnings and market income. Panel (a) displays mobility profiles for men, and Panel (b) for women. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank ten years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility patterns evolved over time for each gender across labour and market income definitions.

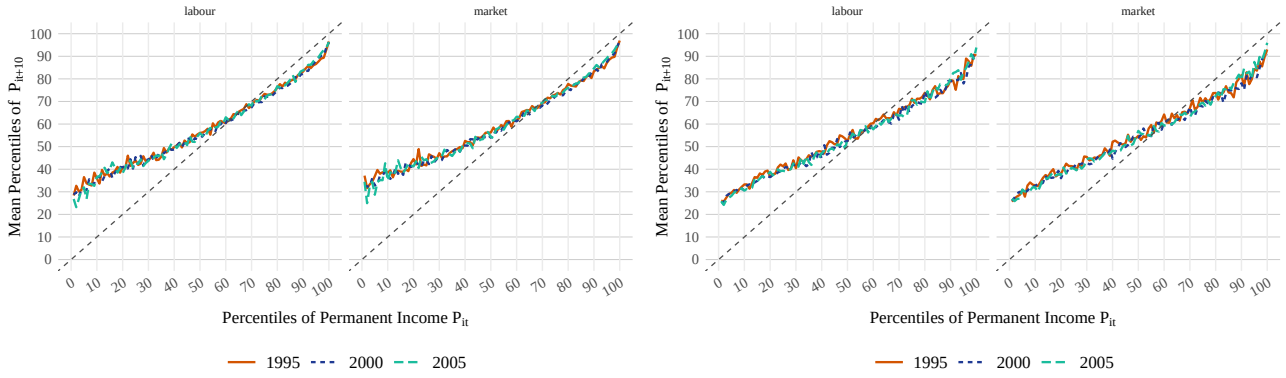
10-year mobility across gender and income measures over time.

Figure C.76: **10-year average rank mobility over time (1995, 2000, and 2005) across labour earnings and market income, separately plotted by gender and age group.**

(a) Men: 25-34

(b) Women: 25-34





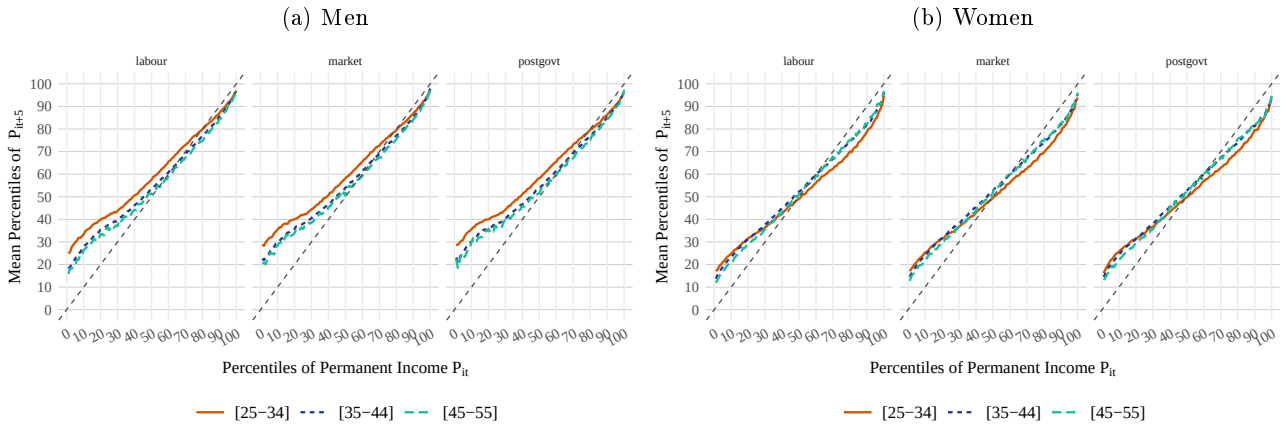
(c) Men: 35-44

(d) Women: 35-44

Note: This figure illustrates the 10-year average rank mobility over three starting periods—1995, 2000, and 2005—by gender and age group across two income measures: labour earnings and market income. Panel (a) displays mobility profiles for men aged 25–34, Panel (b) for women aged 25–34, Panel (c) for men aged 35–44, and Panel (d) for women aged 35–44. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank ten years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank ten years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility patterns evolved over time across gender, age group, and income definitions.

10-year mobility across gender, age group and income measures over time.

Figure C.77: **5-year average rank mobility (averages of 1993–2010) by age group across labour earnings, market income, and post-government income, separately plotted by gender.**



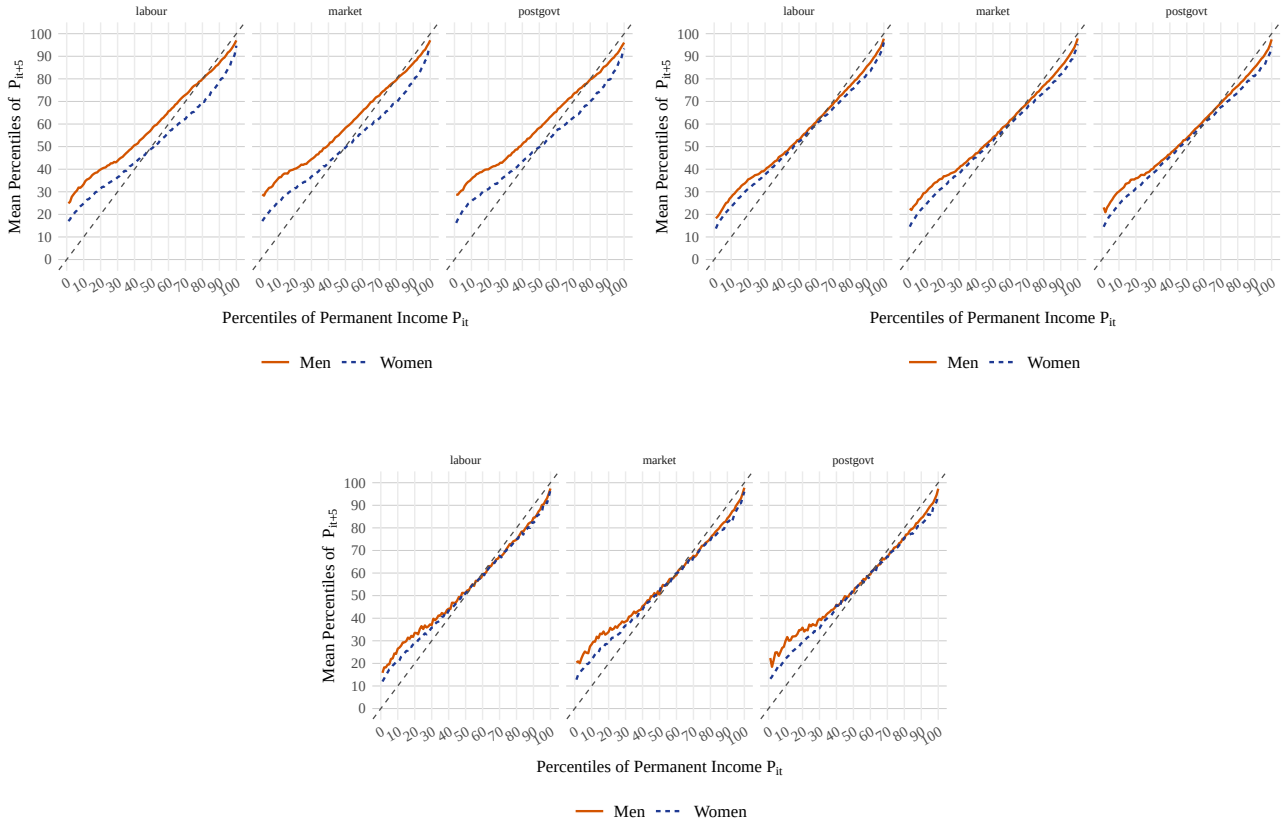
Note: This figure shows the 5-year average rank mobility by age group across three income measures—labour earnings, market income, and post-government income—based on averages from 1993 to 2010. Panel (a) displays mobility profiles for men, and Panel (b) for women, segmented into three age groups: 25–34, 35–44, and 45–55. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank five years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility patterns vary by age group and gender, but remain virtually unchanged across the three income measures.

5-year mobility across age groups and income measures, separately plotted by gender.

Figure C.78: **5-year average rank mobility (averages of 1993–2010) by gender across labour earnings, market income, and post-government income, separately plotted by age group.**

(a) Age 25-34

(b) Age 35-44

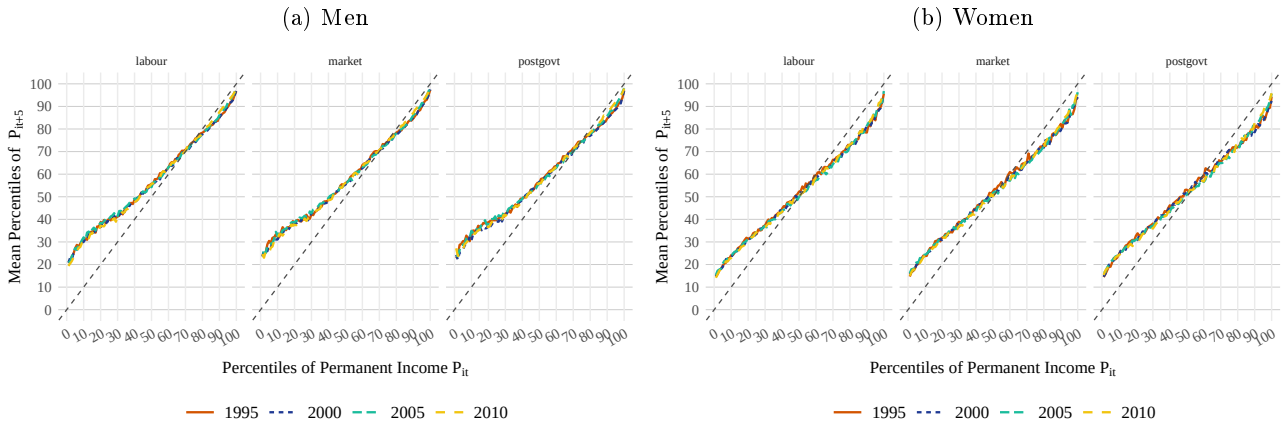


(c) Age 45-55

Note: This figure shows the 5-year average rank mobility by gender across three income measures—labour earnings, market income, and post-government income—based on averages from 1993 to 2010. Panel (a) displays mobility profiles for individuals aged 25–34, Panel (b) for those aged 35–44, and Panel (c) for those aged 45–55. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank five years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights how mobility patterns vary by gender and age group, but remain virtually unchanged across the three income measures.

5-year mobility for men and women across income measures, separately plotted by age group.

Figure C.79: **5-year average rank mobility over time (1995, 2000, 2005 and 2010) across three income measures: labour earnings, market income and post-government income, plotted separately for men and women.**



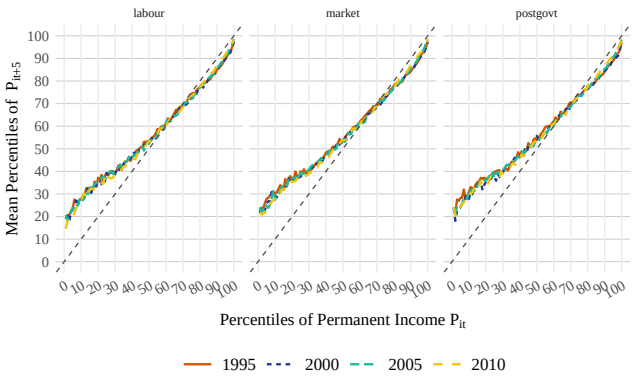
Note: This figure illustrates the 5-year average rank mobility over time (1995, 2000, 2005 and 2010) for men and women across three income measures: labour earnings, market income and post-government income, based on averages from 1993 to 2010. The left panel shows mobility for men, while the right panel shows mobility for women. We plot mobility separately for men and women to highlight how mobility changes over time for each gender group across different income measures.

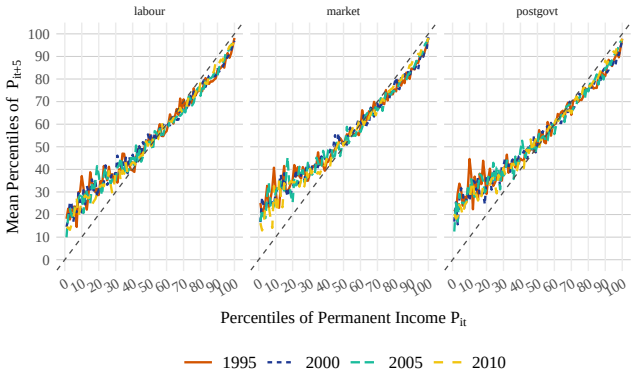
5-year mobility across gender and income measures over time.

Figure C.80: **5-year average rank mobility for men over time (1995, 2000, 2005, and 2010) across labour earnings, market income, and post-government income, separately plotted by age group.**

(a) Men: 25-34

(b) Men: 35-44



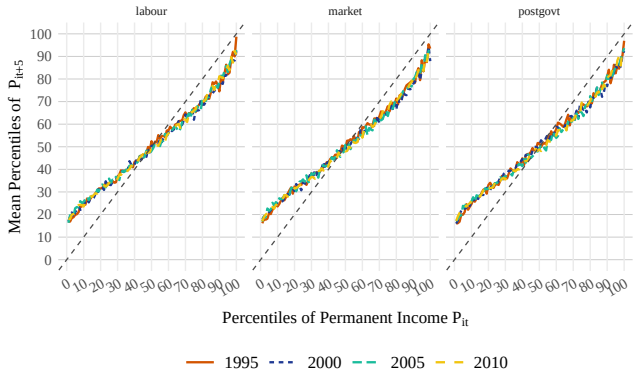


(c) Men: 45-55

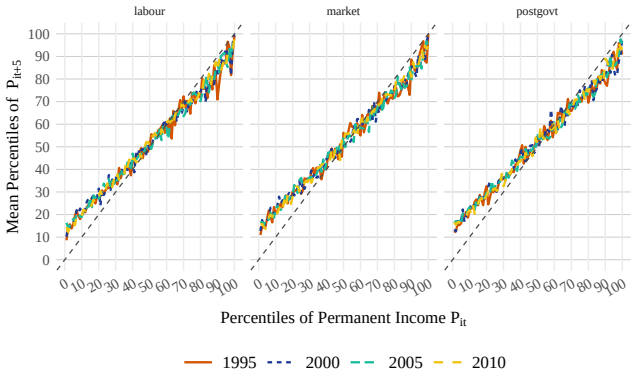
Note: This figure illustrates the 5-year average rank mobility for men across three income measures—labour earnings, market income, and post-government income—over four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility profiles for men aged 25–34, Panel (b) for those aged 35–44, and Panel (c) for those aged 45–55. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank five years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights the stability of male mobility patterns across age groups and income measures over time.

Figure C.81: **5-year average rank mobility for women over time (1995, 2000, 2005, and 2010) across labour earnings, market income, and post-government income, separately plotted by age group.**

(a) Women: 25-34



(b) Women: 35-44



(c) Women: 45-55

Note: This figure illustrates the 5-year average rank mobility for women across three income measures—labour earnings, market income, and post-government income—over four starting periods: 1995, 2000, 2005, and 2010. Panel (a) displays mobility profiles for women aged 25–34, Panel (b) for those aged 35–44, and Panel (c) for those aged 45–55. The x-axis shows individuals' initial percentile rank in the permanent income distribution, and the y-axis shows their mean percentile rank five years later. The 45-degree line represents perfect persistence (no mobility), where initial rank equals rank five years later. Deviations above the line indicate upward mobility, and deviations below indicate downward mobility. The comparison highlights the stability of female mobility patterns across age groups and income measures over time.

5-year mobility across gender, age group and income measures over time.