CAPITAL AND LABOR INCOME MOBILITY

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WORKING PAPER N°2025/24

OCTOBER 2025

WORLD INEQUALITY LAB

Capital and Labor Income Mobility*

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October 1, 2025

Abstract

Does capital or labor income drive overall relative income mobility? This article examines the dynamics of capital and labor *intra*-generational income mobility, utilizing individual-level income registers from Norway covering almost 300,000 individuals observed over 26 years. It introduces a novel methodological framework to decompose total income mobility into the contributions of its components across the life cycle. We present *three* key findings on the subject. *First*, different capital and labor income mobility measures along the respective unidimensional distributions do not convey clear income-factor mobility orderings. *Second*, upward total income mobility is mainly driven by upward labor income mobility and by the joint upward mobility of capital and labor. *Third*, downward total income mobility is mainly driven by downward capital income mobility and by the joint downward mobility of capital and labor. These results are robust to considering only high upward or downward jumps and are discussed in light of recent theoretical and empirical findings on the dynamics of compositional inequality and homoploutia in capital and labor, both within countries and globally.

JEL-Classification: D31, D33, D63.

Keywords: Income Mobility, Functional Income Distribution, Norway.

*Iacono acknowledges financial support from the RCN, project number 315765. We are grateful to Y. Berman, M. Corak, P. Engzell, S. Filauro, T. Piketty, A. Vesperoni and C. Zoli as well as to the participants at the *Int'l Conference on Inequalities and Opportunities* (U of Bari), at the U of Siegen, at the XXXVII Conference of the SIEP (Naples), and at LSE III for their comments. All errors are our own.

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How to cite this working paper: Ranaldi, M., Bühler, J., Iacono, R., Capital and Labor Income Mobility, World Inequality Lab Working Paper 2025/24

1 Introduction

The study of income dynamics is a central topic in economics. Income can be derived from labor or from owning assets—that is, wealth—which generates returns. Individual income trajectories can, therefore, be decomposed into factors influenced by labor and capital market dynamics. But which of these drives relative income mobility — the degree to which individuals or households change their position within the income distribution over time — in modern economies: labor income or capital income? While factor shares have received increasing attention in recent decades, and have been described as the principal problem of political economy (Atkinson, 2009), their intersection with the study of income mobility has been largely overlooked.

To address the above questions, this paper develops a measurement framework that decomposes the relative total income mobility into its components of labor and capital income. To our knowledge, this is the first such decomposition in the economic literature. This framework enables a classification of mobility types based on factor incomes by decomposing standard measures of relative upward and downward total income mobility. Specifically, we decompose total income mobility and examine the frequency of *four* key mobility types that shape overall relative mobility patterns: *(i)* upward capital income mobility only, *(ii)* upward labor income mobility only, *(iii)* simultaneous upward capital and labor mobility, and *(iv)* simultaneous downward capital and labor mobility.

The *first* and *second* types describe upward jumps along the capital and labor income distributions, respectively. The *third* and *fourth* types describe joint upward and downward jumps along both distributions of capital and labor income. We refer to the first two as *capital-* and *labor-driven* upward mobility, and the third and fourth as upward and downward *homoploutic* mobility, respectively. This paper then applies this framework to an intra-generational panel using high-quality register data from Norway covering almost $300,000$ individuals observed over 26 years. The Norwegian administrative data provide an optimal setting to minimize measurement error and offer a clean empirical context for analyzing mobility patterns.

We document three main findings. *First*, different capital and labor income mobility measures along the respective uni-dimensional distributions do not convey clear income-factor mobility orderings. In most cases, mobility is higher in the labor income distribution. However, aggregate measures may mask different mobility patterns, as rank is not held constant across distributions. *Second*, upward total income mobility is primarily driven by upward labor income mobility and the joint upward mobility of labor and capital. *Third*, downward total income mobility is mainly driven by downward capital income mobility and the joint downward mobility of labor and capital. While we expected the joint dynamics of capital and labor mobility to play a significant role in shaping overall total income mobility, our results reveal that when analyzed separately, labor income tends to lift individuals up the total income ladder, whereas capital income tends to push them down. Although this effect is less pronounced for large upward or downward movements (e.g., transitions from the bottom or top 10% to the top or bottom 10%), the findings remain robust across different specifications.

The asymmetry we observe between labor and capital mobility can be explained by the different underlying dynamics of these income sources. Labor income growth is often tied to systematic, life-cycle mechanisms — such as career progression and human capital accumulation — which tend to generate upward movements in the distribution. By contrast, capital incomes are highly concentrated, volatile, and exposed to negative shocks, such as losses in financial markets or business failures. While some individuals experience large positive returns, these are less frequent in the aggregate. As a result, capital income mobility is more often associated with downward movements, whereas labor income is more often associated with upward shifts. This is also the result of a high level of compositional inequality, namely that capital income represents a larger share of total income at the top, whereas labor income is the dominant source for most of the population (Ranaldi and Milanovic, 2022, Iacono and Palagi, 2022). All in all, while upward mobility can in principle stem from both factors, we observe it is primarily driven by labor income or by the joint dynamics of labor and capital, but almost never by capital alone. In other words, sustained upward movement typically requires labor income, which then allows individuals to accumulate and benefit from capital as well.

These findings connect with and extend the existing literature on economic mobility, which has paid relatively little attention to the joint dynamics of capital and labor incomes, potentially due to poorer data quality regarding capital incomes at the top of the distribution. Specifically, this paper contributes to *four* streams of research, which we discuss below.

Literature First, this paper contributes to the broader literature on economic mobility by offering a novel angle of investigation: it focuses on intra-generational mobility and its decomposition by income sources, using high-quality Norwegian register data. This perspective complements the more traditional focus on inter-generational mobility Jäntti and Jenkins (2015). Recent trends in inter-generational economic mobility in Norway are documented in depth by Markussen and Røed (2020), who find stable or mildly declining rank–rank mobility for sons in the post-war period, but a marked decline for daughters. A portion of the overall decline in mobility has been attributed to the sustained immigration inflows observed over recent decades Hoen et al. (2022). [1]

The results of this paper are also connected to the recent theoretical and empirical literature on *compositional inequality* and *homoploutia*, which examine the composition of capital and labor incomes across the entire income distribution and the top of the distribution, respectively, both within countries and globally. Specifically, in line with recent findings on the rising tendency of homoploutia - the proportion of individuals in the top deciles of both the capital and labor income distributions - in the US (Berman and Milanovic, 2024), we also find that the joint dynamics of capital and labor income mobility is a key driver of upward social mobility. Moreover, our finding that labor income contributes more to total income mobility than capital income aligns with recent evidence showing that, at a global level, labor income - rather than capital income - is the primary determinant of total income status (Ranaldi, 2025).

[1] For longer-run trends in intergenerational mobility in Norway, see Modalsli (2017).

Our results relate as well to the literature on innovation and income dynamics. Aghion et al. (2019), for instance, show that innovation increases top income inequality, primarily through labor income gains for individuals linked to successful firms. While their analysis focuses on cross-sectional inequality at the top, our finding that upward mobility is mainly driven by labor income and joint gains in labor and capital is consistent with innovation-driven dynamics. However, unlike Aghion et al. (2019), we find that downward mobility is more strongly associated with declines in capital income, pointing to a broader set of mechanisms shaping income trajectories.

Finally, our work offers novel insights into the public economics literature on the relationship between mobility and taxation. If a social planner aims to enhance relative income mobility, it is essential to determine which of the different income factors yields a higher degree of mobility. This distinction can help guide policies, such as differential taxation of income sources, to achieve the desired mobility outcomes.[2] Notice that although the relationship between intra-generational mobility and welfare can be ambiguous, in our setting we assume that higher mobility is desirable, as it is associated with lower income dispersion across the life-cycle (Jäntti and Jenkins, 2015, Cappelen et al., 2024).[3]

The paper is structured as follows. Section 2 presents the data and introduces the main inequality and mobility measures for capital and labor income distributions, analyzed separately. Section 3 outlines the methodology developed to decompose total income mobility into the contributions of capital and labor. Furthermore, it offers a methodological discussion on the relationship between income mobility and compositional inequality, specifically in terms of capital and labor income. Section 4 conveys the main results from the analysis. Section 5 presents some additional analysis, while section 6 concludes the paper.

[2] For a more detailed discussion of the relationship between tax rates and income mobility in Norway, see Cappelen et al. (2024). They find a negative relationship between income mobility and marginal tax rates, implying that taxation of both capital and labor income reduces income mobility.

[3] To gauge more understanding of why lifetime income inequality can be more relevant than the distribution of current income, see Aaberge and Mogstad (2015).

2 Descriptive statistics and mobility measures

In this section, we describe the data used in our study, along with key descriptive statistics on capital and labor income inequality. We also present measures of income composition along the distribution, as well as a range of mobility indicators for the uni-dimensional distributions of capital and labor incomes.

2.1 Data

We focus on an intra-generational panel, constructed utilizing annual income tax return register data provided by Statistics Norway, covering the period 1993 to 2018 (for a total of 26 years).

Cohort - Income receiving unit Our analysis focuses on individuals born between 1960 and 1964, allowing us to track their income trajectories over their entire life cycle. Specifically, these individuals were aged 29–33 in 1993 and reached 54–58 by 2018. This cohort selection maximizes the period during which individuals are observed in adulthood. We apply some sample selection rules to ensure a balanced panel. We exclude individuals who (i) died, or (ii) emigrated during the period, or (iii) have missing values for some years. The final dataset comprises 7,640,750 observations, corresponding to 293,875 individuals observed over 26 years. Of these, 148,419 are men (approximately 50.5%) and 145,456 are women.

Income definition Income mobility is measured in terms of individual (gross) pre-tax market income, which is the sum of all income types (wages, self-employment income, capital income), excluding government transfers. Since our focus is on the intersection of functional income distribution and mobility, we divide total individual income into two main components. Capital Income (CI, hereafter) is defined as the pre-tax sum of interest received, share dividends, realized capital gains (or losses), and other property income received during the calendar year. Additionally, CI includes net income from renting land and other fixed capital not classified under self-employment income, profits from life insurance savings schemes, capital income from abroad, and other unspecified property income. Labor Income (LI, hereafter), or work income, is defined as the sum of employee earnings and net self-employment income received during the calendar year. In our baseline estimation, we classify net self-employment income as part of work income, which is an arbitrary but necessary decision.[4] Total income is obtained by summing capital income and labor income.[5]

2.2 Descriptive statistics

This subsection presents descriptive statistics for the three univariate distributions, shown in Table 1. As expected, labor income is the dominant source of income, with a mean approximately twelve times that of capital income. However, capital income is significantly more dispersed and skewed compared to labor income. While capital income remains marginal up to the boundary of the third quartile, the highest capital income is nearly an order of magnitude greater than the highest labor income.

[4] We conduct a robustness check on this income definition in subsection 5.1.

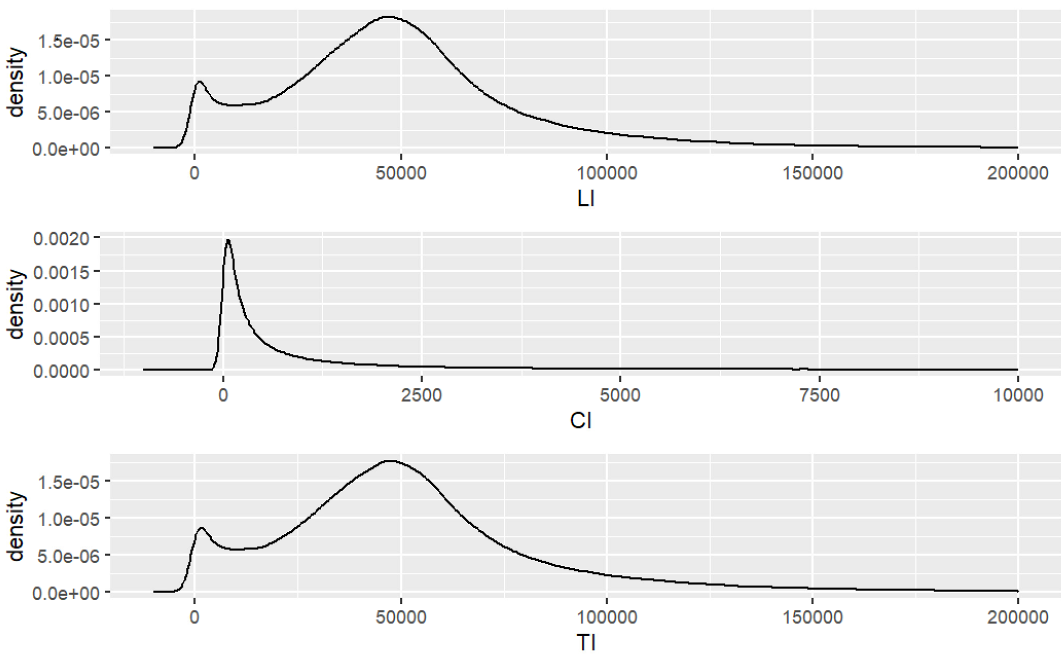
[5] All income values are adjusted for inflation using the Consumer Price Index (CPI) and expressed in 2019 USD. The CPI data and exchange rates for the period 1993–2018 are sourced from the OECD (see CPI data and exchange rates).

Table 1: Descriptive statistics

	Capital Income (CI)	Labor Income (LI)	Total Income (TI)
Mean	4223.90	50001.79	54225.69
Std.Dev	183648.05	56613.53	193985.23
Min	-31294652	-8481575	-31446324
Q1	11.82	26592.64	27394.08
Median	99.25	46479.65	47302.32
Q3	564.69	65193.93	66998.79
Max	339603552	45582364	338992800
CV	43.48	1.13	3.58
Skewness	1170.89	219.88	998.77
Kurtosis	1915264	145469.82	1532710.55
N (obs)	7640750	7640750	7640750

Note: Descriptive statistics for the three univariate distributions, including mean, standard deviation, minimum value, first quartile (Q1), median, third quartile (Q3), maximum value, coefficient of variation, skewness, kurtosis, and total number of observations. All values are expressed in USD, with 2019=100.

Figure 1: Univariate densities - TI, CI, LI



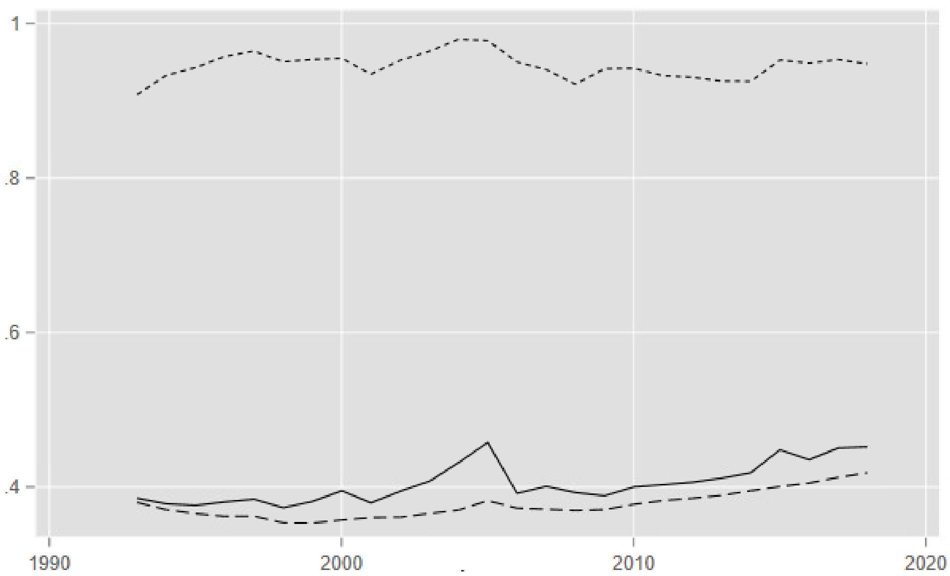
Note: univariate kernel densities for total income (top), capital income (middle), and labor income (bottom). For each of the 293,875 individuals, we compute the average of their capital income (CI), labor income (LI), and total income (TI) over the entire period from 1993 to 2018.

To illustrate that these large discrepancies are not merely driven by life-cycle movements or other temporal dynamics, we also plot the kernel density of the three univariate distributions in Figure 1. For each individual, we use the mean income over the entire time span 1993 – 2018. Note the different scales on the x-axes. While labor incomes are primarily concentrated in the range of approximately 20,000 to 75,000 USD, most Norwegians during this period had capital incomes very close to zero.

2.3 Inequality statistics

Inequality and exchange mobility are closely interconnected. Ideally, to study mobility dynamics independently of inequality, the dispersion of factor incomes (and consequently total income) would need to remain constant over time. However, we acknowledge that this is often not the case. Even when the Gini coefficient for total income remains stable, opposing contributions from capital and labor income may be at play. To illustrate these dynamics, Figure 2 presents the sample Gini coefficients for Capital Income (CI), Labor Income (LI), and Total Income (TI) over the entire period.

Figure 2: Time series of Gini 1993 – 2018 - TI, CI, LI

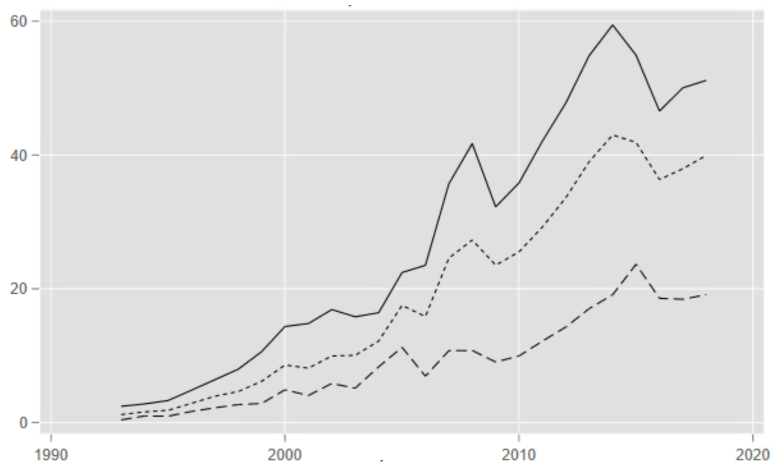


Note: This graph presents the sample time series of Gini coefficients for capital income (short-dashed line), labor income (dashed line), and total income (solid line) over the period 1993-2018.

Figure 2 shows that the Gini coefficient for capital income (short-dashed line) increased from 0.91 in 1993 to 0.98 in 2005, driven by a surge in dividend payments to shareholders ahead of anticipated tax regime changes in 2006 (Iacono and Palagi, 2022). Since then, the CI Gini has remained relatively stable, fluctuating between 0.94 and 0.95. The Gini coefficient for labor income (dashed line) has ranged between 0.35 and 0.41, exhibiting a slow but steady increase since the early 2000s. Meanwhile, the total income Gini initially rose due to the growing concentration of capital income at the top, peaking in 2005. It then declined until 2009 before resuming a gradual upward trend, paralleling the LI Gini, and reaching 0.45 in 2018.

Let us now move to the dynamics of the joint distribution of capital and labor income through two key concepts and indicators: *homoploutia* and *compositional inequality*. *Homoploutia* refers to the phenomenon in which the same individuals rank among the top earners in both capital and labor income distributions, as documented for the U.S. by Berman and Milanovic (2024). While Berman and Milanovic (2024) estimate homoploutia cross-sectionally, this study examines the extent to which individuals within a cohort persistently cluster in the top shares of both distributions over time. In other words, we analyze the dynamics of homoploutia *across* the life cycle.

Figure 3: The degree of homoploutia 1993 – 2018

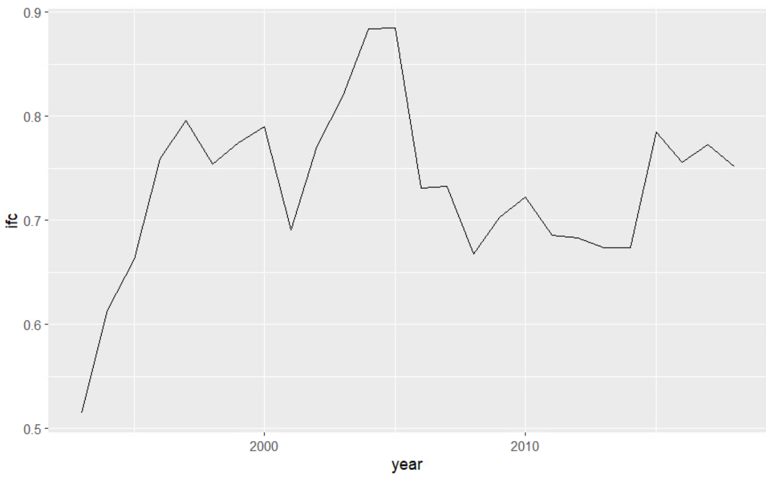


Note: This graph shows the degree of homoploutia (Berman and Milanovic, 2024) within the top decile of the capital and labor income distributions (solid line), within the top 5% of both distributions (short dash), and within the top 1% (dashed), over the period 1993–2018. Homoploutia measures the share of individuals who are simultaneously at the top of both the labor and capital income distributions.

To capture this, we employ three distinct measures of homoploutia, illustrated in Figure 3: (1) the share of individuals in the top 10% of both distributions, (2) the share of individuals in the top 5% of both distributions, and (3) the share of individuals in the top 1% of both distributions. Results show that homoploutia has been consistently increasing over the life cycle, with a steeper rise for the top 10% and a more moderate increase for the top 1%. This finding suggests that the share of individuals within a cohort who occupy the top ranks of both the capital and labor income distributions has been rising in Norway.

When examining the dynamics of capital and labor income composition across the income distribution (Figure 4) — referred to as compositional inequality — we observe a slightly different pattern. While compositional inequality increased significantly before the 2000s, it has since exhibited notable fluctuations. However, the overall trend has stabilized around a level of 0.75 in the IFC index, our preferred measure of compositional inequality.

Figure 4: IFC Index 1993 – 2018



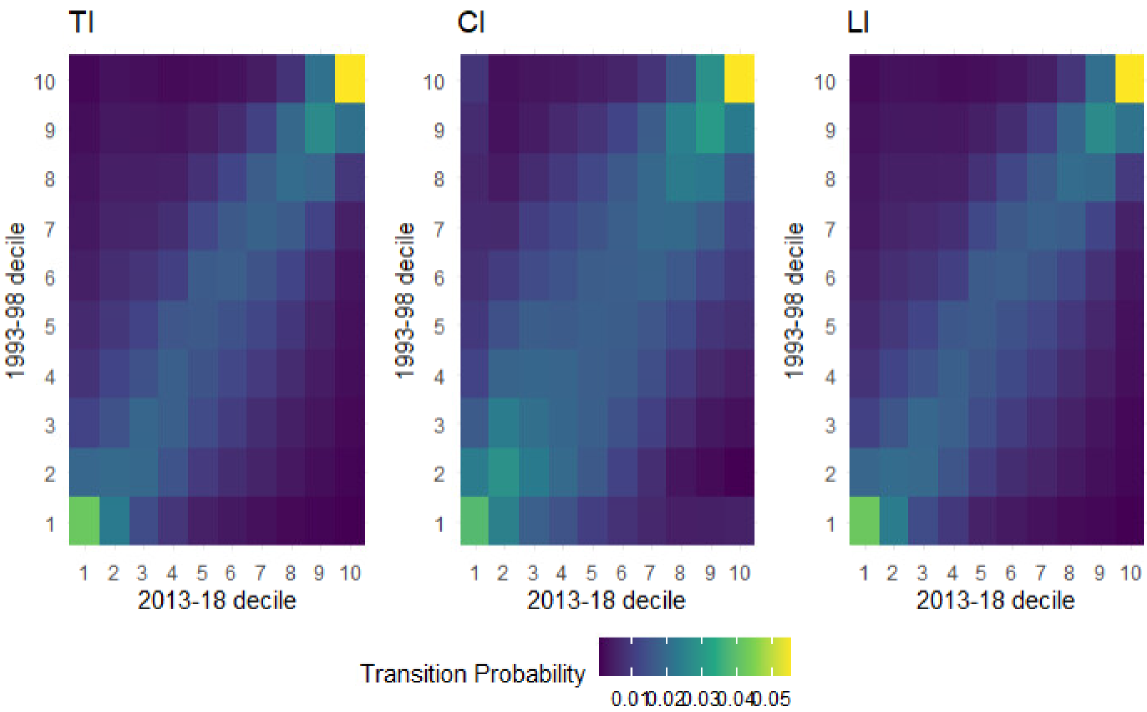
Note: This graph shows the Income-Factor Concentration (IFC) Index (Ranaldi, 2022) over the period 1993–2018. The IFC Index ranges between +1 and −1. It equals +1 when capital income is concentrated at the top of the total income distribution and labor income at the bottom. It equals 0 when both income sources are distributed proportionally across the total income ranking. Finally, it equals −1 when labor income is concentrated at the top and capital income at the bottom of the total income distribution.

When considered together, Figures 3 and 4 indicate that, over the life cycle, there is an increasing share of individuals benefiting from multiple sources of income at the top. However, when examining the entire distribution, Norway remains a country characterized by a stark separation between income-rich capital earners and income-poor laborers. This result aligns with recent findings by Ranaldi and Milanovic (2022), which show that Scandinavian countries are exceptional in combining very low income inequality with high compositional inequality relative to other countries worldwide. Ranaldi and Milanovic (2022) argue that this pattern is driven by a compressed wage distribution alongside extreme wealth concentration. Moreover, our findings on the dynamics of compositional inequality across the life-cycle align well with those of Iacono and Palagi (2022), who document that compositional inequality in Norway has been declining since 2005, despite remaining at a high absolute level.

2.4 Mobility measures

For convenience, we begin by dividing the time period into two intervals: pooling 1993 – 1998 as the initial period and 2013 – 2018 as the final period. We then observe mobility in this two-period case. Following Atkinson (1981), consider there are 10 deciles. The relative number of observations in decile k in period t is denoted by m_t^k with ($k = 1, ..., 10; t = 1, 2$). The marginal distribution in period 1 is summarized by the vector $m_1^k = (m_1^1, m_1^2, \ldots, m_1^{10})$, and similarly for period 2. Hence, as shown in Jäntti and Jenkins (2015), the relationship between the two periods is given by $m_1^k = m_2^k A$. In this context, mobility is entirely characterized by the transition matrix A. To begin with, we computed the transition matrix A for each of the three univariate distributions, namely total income, capital income, and labor income. These transition matrices are presented in figure 5.

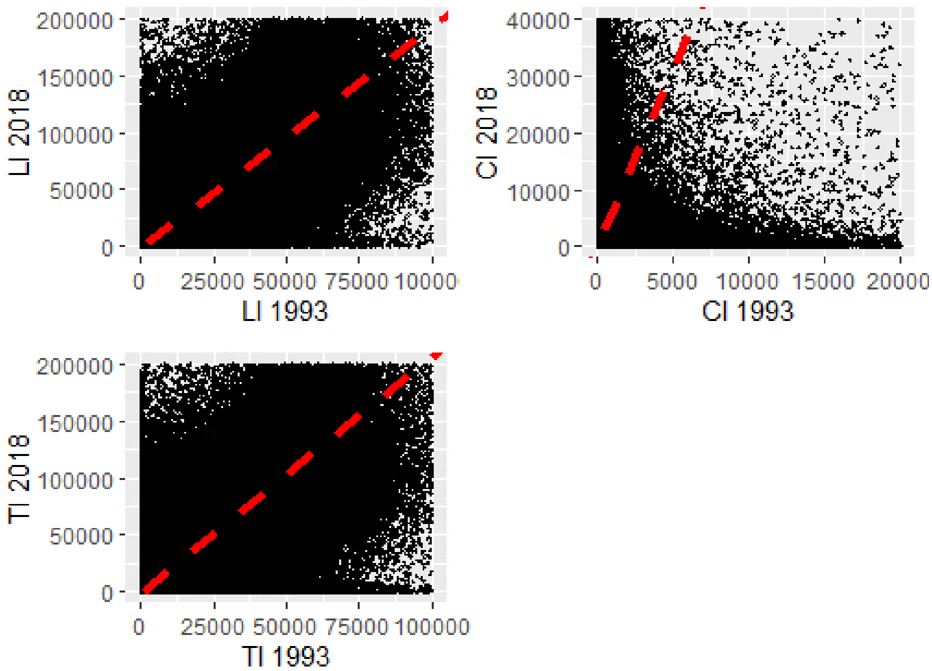
Figure 5: Decile Transition Matrix - TI, CI, LI



Note: Recall that we divide the entire time period into two intervals: pooling 1993 – 1998 as the initial period and 2013 – 2018 as the final period. Darker blue indicates a lower transition probability, implying that the cell contains fewer observations. Lighter green and yellow correspond to increasing transition probabilities, suggesting that a significant portion of individuals is in these cells.

Another tool for visualizing relative mobility in the two-period case is the bivariate joint distribution, represented by scatter plots of incomes (TI, CI, LI) in the final period 2018 against the initial period 1993. We present the three scatter plots for each of the three income variables in figure 6. Each dot above (below) the red line indicates an individual whose income (capital, labor, or total) has increased by more (less) than the increase in the mean income of the respective category. If most individuals are closely centered around the line, this suggests lower mobility, while more scattered dots indicate higher mobility. We observe that, particularly for capital income, many points are situated far from the line. However, it is important to note that this likely reflects life cycle effects in capital income, where many young people start with capital incomes at (almost) zero. Such incomes require a capital stock that these individuals have not yet accumulated, in the absence of inheritances.

Figure 6: Scatterplots - LI, CI, TI



Note: The slope of the dashed line represents the change in mean income between 1993 and 2018. Each dot above (below) the red line indicates an individual whose income (capital, labor, or total) has increased by more (less) than the increase in the mean income of the respective category.

To log-transform the incomes that we will use to estimate a set of mobility indices, we manipulate negative and zero values for each of the factor incomes by setting them equal to 1, ensuring that the log transformation is always defined. The manipulated dataset will therefore retain the same number of observations as in the previous subsections. In table 2, we present an array of mobility indices.

We begin with the Prais-Bibby index, which measures mobility by quantifying the extent to which individuals move across income ranks (e.g., deciles or quintiles) between two periods, with 0 indicating perfect immobility and 1 indicating perfect mobility (Prais, 1955, Bibby, 1975). The Prais-Bibby index shows substantially higher mobility in capital income (0.749) compared to labor income (0.509). Next, we estimate β, the OLS coefficient that indicates how much log-period-2 income correlates with log-period-1 income. β indicates a higher persistence between the two periods for LI ($0.767 > 0.716$), implying again lower mobility compared to CI. Dispersion in the univariate distributions is measured by the standard deviation (SD) and the SD

Table 2: Mobility indices

	Capital Income (CI)	Labor Income (LI)	Total Income (TI)
Prais-Bibby	0.749	0.509	0.262
Beta	0.716	0.767	0.562
SD period-1	1.568	1.924	2.259
SD period-2	2.291	3.202	2.676
SD ratio	0.685	0.601	0.844
Pearson's r	0.491	0.461	0.474
Shorrocks index	0.832	0.836	0.906

Note: Recall that we divide the entire time period into two intervals, pooling 1993 – 1998 as the first period and 2013 – 2018 as the second period.

ratio, with a relatively lower SD ratio for LI indicating a stronger increase in variation compared to CI.

β and the SD ratio are used to compute Pearson's $r = \beta \times \frac{\sigma_1}{\sigma_2}$, which corresponds to β scaled by the changes in dispersion in the univariate distributions. Pearson's r is an index of immobility, with $r = 1$ implying unchanged ranks and hence total immobility. As shown in Table 2, Pearson's r is lower for LI (0.461), indicating higher mobility than for CI (0.491), which contradicts the evidence of the β and the Prais-Bibby index. Finally, similarly to Pearson's r, the Shorrocks index (Shorrocks, 1978) indicates slightly higher mobility for LI. In conclusion, different capital and labor income mobility measures along the respective uni-dimensional distributions do not convey clear income-factor mobility orderings.

3 Methodology

This section presents a framework for decomposing total income mobility across the life cycle into its capital and labor income components. It begins with a simple extension of a standard social welfare framework to theoretically underpin the main dynamics at play, and then decomposes inter-temporal income jumps to allow for the assessment of the various income components. Further discussion on the methodological relationship between compositional inequality and income mobility will follow.

3.1 Social welfare framework

Social welfare, W, in a two-period context, can be defined as follows (Atkinson and Bourguignon, 1982, Jäntti and Jenkins, 2015):

$$W = \int_0^{\alpha_y} \int_0^{\alpha_x} U(x, y) f(x, y)\, dx\, dy, \tag{1}$$

where $U(x, y)$ is a differentiable utility function of income at time t, x, and at time $t+1$, y; $f(x, y)$ is the bivariate joint density; and α_x and α_y represent the maximum incomes at time t and $t+1$, respectively. The relationship between the two distributions, x and y, as represented by the density function f, can be interpreted as the mobility of the population.

To incorporate the composition of income into the social welfare function, equation (1) can be re-written as:

$$W = \int_0^{\alpha_{y_1}} \int_0^{\alpha_{y_2}} \int_0^{\alpha_{x_1}} \int_0^{\alpha_{x_2}} U(\mathcal{V}(x_1, x_2), \mathcal{V}(y_1, y_2)) f(x_1, x_2, y_1, y_2)\, dx_1\, dx_2\, dy_1\, dy_2, \tag{2}$$

where the subscripts 1 and 2 refer to the two income components of the respective income distributions. This function assumes that preferences between the two income components remain constant over time, as the form of $\mathcal{V}$ is unchanged across periods.[6] However, an alternative formulation that relaxes this assumption could be written as follows:

$$U(\mathcal{V}_t(x_1, x_2), \mathcal{V}_{t+1}(y_1, y_2)).$$

While it is straightforward to assume that increases in income during either period are desirable for all income sources ($\frac{dU}{dx_i}, \frac{dU}{dy_i} \geq 0\ \forall i$), assessing the degree of substitutability and complementarity between income sources across time is more challenging. In the next section, we present a decomposition framework to precisely assess

[6]The function $\mathcal{V}$ can, for instance, be modeled as a CES function of the form $\mathcal{V}(x_1, x_2) = \left[\delta x_1^{\rho} + (1-\delta) x_2^{\rho}\right]^{\frac{1}{\rho}}$ at time 1, where ρ controls the elasticity of substitution between income sources. Varying ρ allows for studying how substitutability between labor and capital income affects welfare and mobility.

the separate contributions of the different income components to overall income mobility. Through the empirical analysis of capital and labor income mobility in Norway, this paper aims to shed light on these issues.

3.2 Inter-temporal income jumps

Consider a population of n individuals, each with an income $y_i^t \in \mathfrak{X} \subseteq \mathbb{R}_+$, where $i = 1, \ldots, n$ at time t. Individual income is composed of capital income π_i^t and labor income w_i^t, such that $y_i^t = \pi_i^t + w_i^t$. The cumulative distribution function $F(x)$ represents the proportion of the population with an income less than or equal to x, while its inverse, the quantile function $Q(p)$, identifies the income thresholds for given quantiles. If $F(x)$ is absolutely continuous, its density function $f(x)$ is the derivative of $F(x)$.

The income thresholds corresponding to the quantiles above and below a given income y are defined as $Q^+(F(y))$ and $Q^-(F(y))$, respectively. The gaps between an individual's income at time $t+1$ and these quantile thresholds relative to their income at time t are expressed as:

$$\epsilon(y_i^{t+1}) = y_i^{t+1} - Q_{t+1}(F_t(y_i^t)), \tag{3}$$

The figures below illustrate a positive and negative total income jumps, respectively.

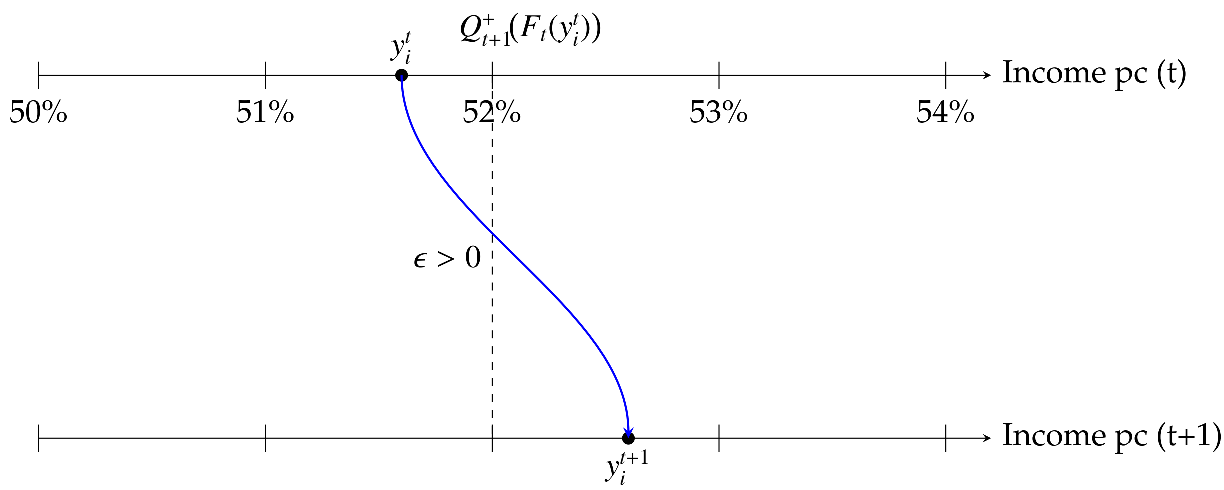


Figure 7: Positive total income jump.

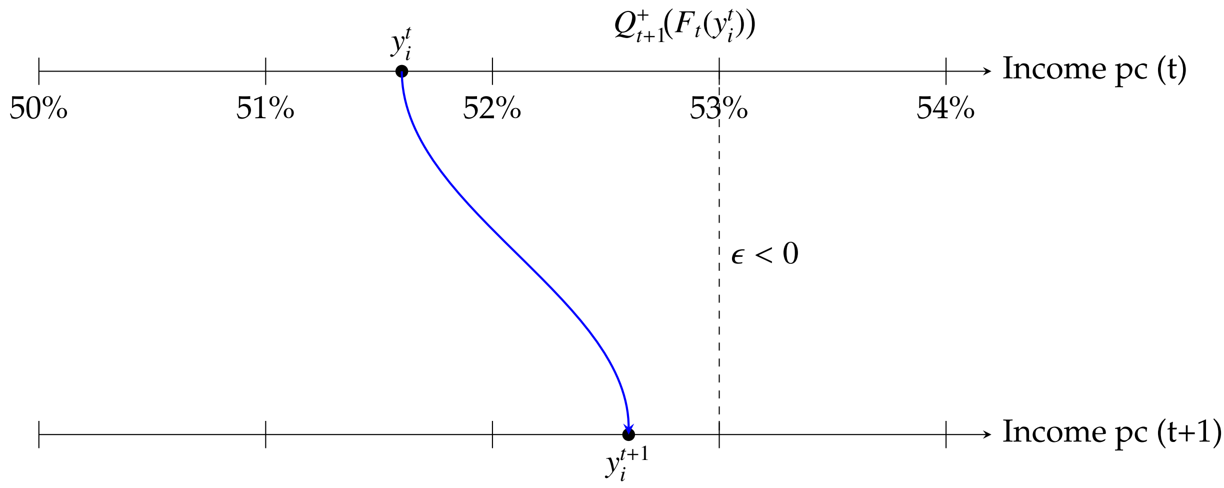


Figure 8: Negative total income jump.

Equation 3 allows for evaluating whether an individual's income has risen above or fallen below the upper quantile threshold. Specifically, if $\epsilon > 0$, individual i's income has risen above the upper quantile threshold of the distribution at time $t+1$, relative to their income at time t, moving up by at least one quantile. If $\epsilon < 0$, individual i's income has either fallen by at least one quantile or remained below the upper quantile threshold of the distribution at time $t+1$, relative to their income at time t.

To account for the contributions of capital and labor income components in the dynamics of total income, equation (3) can be decomposed as follows:

$$\epsilon(y_i^{t+1}) = \underbrace{\epsilon_\pi(\pi_i^{t+1})}_{\textit{capital jump}} + \underbrace{\epsilon_w(w_i^{t+1})}_{\textit{labor jump}} + \underbrace{\Big(-Q_{t+1}(F_t(y_i^t)) + Q_{t+1}(F_{\pi,t}(\pi_i^t)) + Q_{t+1}(F_{w,t}(w_i^t))\Big)}_{\textit{alignment coefficient}}, \quad (4)$$

where $\epsilon_\pi(\pi_i^{t+1})$ and $\epsilon_w(w_i^{t+1})$ represent the quantile gap changes due to π and w components, respectively.[7] Formally, we can write:

$$\epsilon_\pi(\pi_i^{t+1}) = \pi_i^{t+1} - Q_{t+1}(F_{\pi,t}(\pi_i^t))$$
$$\epsilon_w(w_i^{t+1}) = w_i^{t+1} - Q_{t+1}(F_{w,t}(w_i^t)).$$

The term $B = -Q_{t+1}(F_t(y_i^t)) + Q_{t+1}(F_{\pi,t}(\pi_i^t)) + Q_{t+1}(F_{w,t}(w_i^t))$ quantifies the alignment of total income y, capital income π, and labor income w across their respective distributions. If the distribution functions F, F_π, and F_w are identical and the three variables are perfectly rank-aligned, B equals zero. These terms act as interaction factors, influencing total income mobility differently based on the mobility levels of capital and labor income. The figures below illustrate this decomposition under the assumption that the alignment coefficient has no impact — a premise consistent with the empirical evidence presented in the next section.

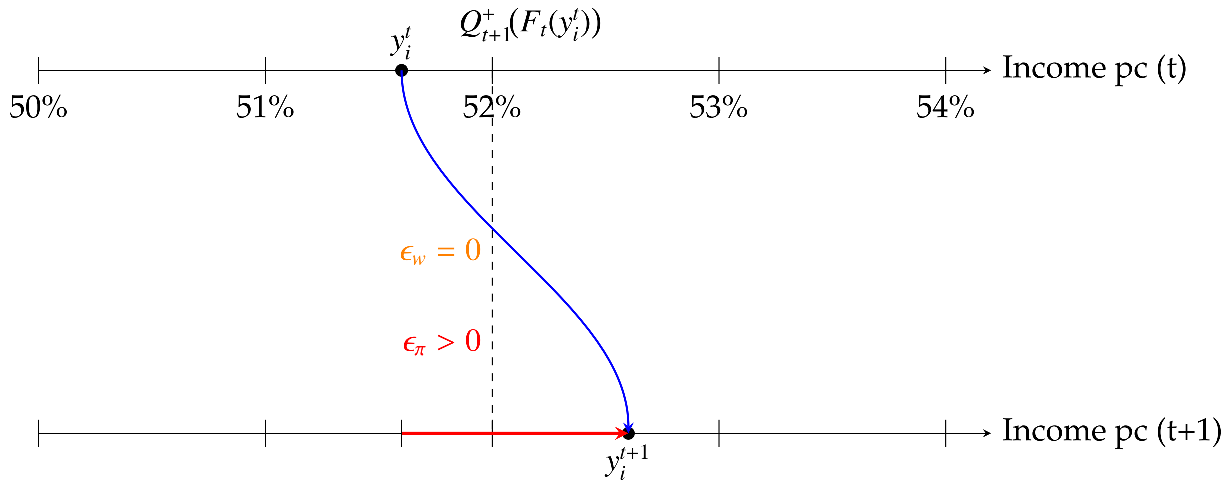


Figure 9: Positive capital jump and zero labor jump. The alignment coefficient is assumed to have no impact (in line with empirical findings).

[7] Equation (4) can be rewritten relatively to the quantile threshold, as follows:

$$\tilde{\epsilon} = \frac{\epsilon(y_i^{t+1})}{Q_{t+1}(F_t(y_i^t))} = \frac{\epsilon_\pi}{Q_{t+1}(F_t(\pi_i^t))}\frac{Q_{t+1}(F_t(\pi_i^t))}{Q_{t+1}(F_t(y_i^t))} + \frac{\epsilon_w}{Q_{t+1}(F_t(w_i^t))}\frac{Q_{t+1}(F_t(w_i^t))}{Q_{t+1}(F_t(y_i^t))} + \underbrace{\frac{B}{Q_{t+1}(F_t(y_i^t))}}_{\tilde{B}}.$$

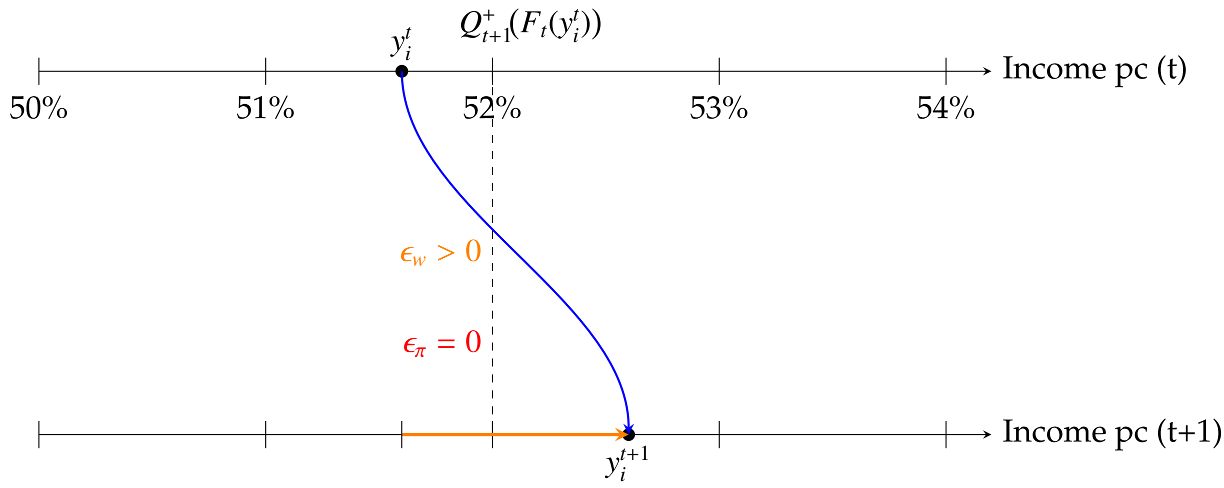


Figure 10: Positive labor jump and zero capital jump. The alignment coefficient is assumed to have no impact (in line with empirical findings).

Quantile functions for total income, capital income, and labor income are related in the following way:

$$Q_y(p) = \alpha Q_\pi(p) + \beta Q_w(p), \tag{5}$$

where $\alpha = \frac{\pi_{r_{Q_y(p)}}}{Q_\pi(p)}$ and $\beta = \frac{w_{r_{Q_y(p)}}}{Q_w(p)}$, with $r_{Q_y(p)}$ indicating ranking with respect to y, represent coefficients capturing the relative contributions of capital and labor income to the pth quantile of total income. These coefficients may deviate from one, indicating disproportionate contributions of capital or labor income relative to their respective distributions.

While equation (5) can be evaluated for each period t, we can slightly modify the equation to explicitly incorporate an inter-temporal interpretation of the main coefficients α and β, as follows:

$$Q_{y,t+1}(p) = \alpha^* Q_{\pi,t}(p) + \beta^* Q_{w,t}(p), \tag{6}$$

where $\alpha^* = \frac{\pi_{r_{Q_{y,t+1}(p)},t+1}}{Q_{\pi,t}(p)}$ and $\beta^* = \frac{w_{r_{Q_{y,t+1}(p)},t+1}}{Q_{w,t}(p)}$ represent the inter-temporal contributions of capital and labor income, respectively, to total income ranking status at time $t+1$.

3.3 Mobility decomposition measures

This section presents the main aggregate measures of income mobility decomposition in terms of capital and labor. It builds on the previously derived decomposition of inter-temporal income gaps while also decomposing widely used measures of income mobility.

3.3.1 Matrix decomposition

To formalize transitions between income quantiles over time, let us define the following transition matrix M:

$$M := \begin{bmatrix} m_{11} & m_{12} & \dots & m_{1n} \\ m_{21} & m_{22} & \dots & m_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ m_{n1} & m_{n2} & \dots & m_{nn} \end{bmatrix}, \tag{7}$$

where $m_{ij} = \frac{|M_{ij}|}{n}$ represents the proportion of individuals transitioning from quantile i of the total income distribution at time t to quantile j of the total income distribution at time $t+1$. This matrix can be decomposed to identify specific mobility patterns influenced by components such as ϵ_π, ϵ_w, and B.

The matrix M can in fact be decomposed in the following way:

$$m_{ij} = \sum_{l=1}^{\kappa} \frac{|M^l_{i,j}|}{n}$$

where each $|M^l_{i,j}|$ represents a subset of individuals transitioning from quantile i at time t to quantile j at time $t+1$. A complete partition based on the joint dynamics of the major capital and labor mobility components, is such that $\cup_{l=1}^{\kappa} M^l = M$ and $M^l \cap M^h = \emptyset \; \forall l \neq h$. An example of a relevant partition is one where individuals, for any given jump from percentile i to percentile j of the total income distribution (whether upward or downward), are separated into four main groups: those whose jump is characterized by a *positive* change in the distribution of capital and a *negative* change in the distribution of labor (*capital-driven mobility*); those characterized by a negative change in the distribution of capital and a positive change in the distribution of labor (*labor-driven mobility*); those whose jump is characterized by positive changes in both components (upward *homoploutic* mobility), and those whose jump is characterized by negative changes in both components (downward *homoploutic* mobility).

We can therefore decompose the matrix M as $M = \sum_{l=1}^{\kappa} M^l$, where each M^l represents a component of the matrix. If we define the trace of M, $tr(M)$, normalized suitably, as our indicator of *relative mobility*, denoted $\mathfrak{H}$, then it can be expressed as:

$$\mathfrak{H} = f(tr(M)) = f\left(\sum_{l=1}^{\kappa} tr\left(M^l\right)\right),$$

where f is our normalization function. Following the approach of Shorrocks (1978), relative mobility $\mathfrak{H}$ is defined by:

$$\mathfrak{H} = \frac{\left(\sum_{l=1}^{\kappa}\left(n_l - tr\left(M^l\right)\right)\right)}{n}, \tag{8}$$

where n_l denotes the complete immobility of partition l.

In order to assess the contribution of different components to upward and downward mobility, in a similar vein, we can decompose the upper and lower diagonals of M, defined as $\text{Upper}(M) = \{M_{i,j} \mid i < j\}$ and $\text{Lower}(M) = \{M_{i,j} \mid i > j\}$, in the following way:

$$\text{Upper}(M) = \text{Upper}\left(\sum_{l=1}^{\kappa} M^l\right), \quad \text{Lower}(M) = \text{Lower}\left(\sum_{l=1}^{\kappa} M^l\right). \tag{9}$$

In the empirical section, the contribution of each main component to the upper and lower diagonal will be suitably normalized by the total number of people in the corresponding diagonal.

3.3.2 Compositional and income mobility

The correlation between time 1's income, y_1, and time 2's income, y_2, can be expressed as:

$$\rho(y_1, y_2) = \frac{\text{Cov}(C_1, C_2) + \text{Cov}(C_1, L_2) + \text{Cov}(L_1, C_2) + \text{Cov}(L_1, L_2)}{\sigma_{y_1}\sigma_{y_2}}, \tag{10}$$

where σ_{y_1} and σ_{y_2} are the standard deviations of income in periods 1 and 2, respectively.

Each term in the decomposition represents a distinct contribution to the overall correlation. The term $\frac{\text{Cov}(C_1,C_2)}{\sigma_{y_1}\sigma_{y_2}}$ captures capital persistence, reflecting the stability of capital income over time, while $\frac{\text{Cov}(L_1,L_2)}{\sigma_{y_1}\sigma_{y_2}}$ represents labor persistence, indicating the stability of labor income over time. Additionally, the terms $\frac{\text{Cov}(C_1,L_2)}{\sigma_{y_1}\sigma_{y_2}}$ and $\frac{\text{Cov}(L_1,C_2)}{\sigma_{y_1}\sigma_{y_2}}$ account for cross-component contributions, capturing the interdependencies between capital and labor incomes across the two periods. This straightforward decomposition can be readily incorporated into standard aggregate measures of mobility.

Following Yitzhaki and Wodon (2005), we can define the Gini mobility index, which measures how much individual rankings in the income distribution change between two periods, as follows:

$$G_m = \frac{G_1\,(1-\Gamma_{12}) + G_2(1-\Gamma_{21})}{G_1 + G_2} \tag{11}$$

where G_1 and G_2 are the total income Gini at time 1 and 2, respectively, and Γ_{12} and Γ_{21} are the directional measures of mobility, defined as follows:

$$\Gamma_{12} = \frac{\text{Cov}\left(\frac{y_1}{\mu_1}, r(y_2)\right)}{\text{Cov}\left(\frac{y_1}{\mu_1}, r(y_1)\right)}, \quad \Gamma_{21} = \frac{\text{Cov}\left(\frac{y_2}{\mu_2}, r(y_1)\right)}{\text{Cov}\left(\frac{y_2}{\mu_2}, r(y_2)\right)}.$$

In simple terms, the Gini mobility index evaluates the extent of rank movements across two income distributions. A higher G_m indicates greater mobility, meaning that individuals experience larger changes in their relative positions. Conversely, a lower G_m suggests more stability in income rankings over time.

Given equation (10), we can further decompose the covariance, for each period, as follows:

$$\text{Cov}\left(\frac{y_i}{\mu_i}, r(y_j)\right) = \text{Cov}\left(\frac{\pi_i}{\mu_i}, r(y_j)\right) + \text{Cov}\left(\frac{w_i}{\mu_i}, r(y_j)\right),$$

and by knowing that compositional inequality in terms of capital and labor (Ranaldi, 2022) and income inequality can be related by the following equation (Ranaldi and Milanovic, 2022):

$$G = \kappa \frac{I}{\alpha - \pi}, \tag{12}$$

where I is the income-factor concentration index, α the contribution of capital income inequality to total income inequality, π the overall capital share in the economy, and

κ an additional coefficient.[8] By relating equations (11), (10), and (12), we can write:

$$G_m = \frac{f(I_1, \sigma_1)\left(1 - \Gamma^{\pi}_{12} - \Gamma^{w}_{12}\right) + f(I_2, \sigma_2)\left(1 - \Gamma^{\pi}_{21} - \Gamma^{w}_{21}\right)}{f(I_1, \sigma_1) + f(I_2, \sigma_2)}, \tag{13}$$

where $\sigma_i = \alpha_1 - \pi_i$ and $\Gamma^l_{ij} = \frac{\mathrm{Cov}\left(\frac{l_i}{\mu_i}, r(y_j)\right)}{\mathrm{Cov}\left(\frac{y_i}{\mu_i}, r(y_i)\right)}$ for $l = \pi, w$.

From equation (13), we can compute the relative contribution of compositional inequality at time t to the Gini mobility index, G_m. Under the reasonable assumption that $\sigma_1, \sigma_2 > 0$, we observe that:

$$\frac{\partial G_m}{\partial I_1} > 0 \iff (1 - \Gamma^{\pi}_{12} - \Gamma^{w}_{12}) > (1 - \Gamma^{\pi}_{21} - \Gamma^{w}_{21}), \tag{14}$$

and, similarly, we find:

$$\frac{\partial G_m}{\partial I_2} > 0 \iff (1 - \Gamma^{\pi}_{12} - \Gamma^{w}_{12}) < (1 - \Gamma^{\pi}_{21} - \Gamma^{w}_{21}). \tag{15}$$

In other words, a positive change in compositional inequality at time t positively affects the Gini mobility index, depending on the directional mobility measures, which are here considered as our measures of *compositional mobility*. If the directional mobility measure from time 1 to 2 is higher (lower) than that from time 2 to 1, then the relationship is positive (negative).

Intuitively, these results suggest that the impact of compositional inequality on mobility depends fundamentally on how income ranks are rearranged between periods. If individuals' income ranks change more significantly moving forward in time (from period 1 to 2), then greater compositional inequality initially will amplify mobility. Conversely, if rank mobility is more pronounced backward in time (from period 2 to 1), greater compositional inequality at the later time will enhance measured mobility. Thus, whether an economy benefits from increased compositional inequality — in terms of higher measured mobility — depends crucially on the temporal direction of rank changes in its capital and labor income distributions. This highlights the nuanced interplay between inequality structure and income mobility dynamics.

[8] $\alpha = \frac{\tilde{G}_\pi \pi}{G}$ reflects the contribution of capital income inequality to overall income inequality, where $\tilde{G}_\pi$ denotes the pseudo-Gini coefficient of capital income, π is the share of capital income, and G is the overall Gini coefficient.

Another relevant observation is the relationship between the dynamics of functional income distribution, measured by the profit-to-output ratio (capital share), and income mobility. To clarify the main channels involved, we refer to equation (11), considering only its numerator for simplicity.[9] By applying the Lerman and Yitzhaki decomposition to the Gini coefficient at time 1 (Lerman and Yitzhaki, 1985), it can be shown that the Gini mobility index, G_m, changes in response to variations in the capital share, π, depending on compositional inequality and the measure of directional upward mobility, Γ_{12}.

Specifically, when compositional inequality is positive (i.e., capital and labor incomes are unevenly distributed across individuals), an increase in the capital share will *reduce* income mobility if compositional mobility, here measured by the second term in equation 16, is negative (thus implying higher persistence). This effect becomes stronger with greater compositional inequality. Formally, this relationship can be expressed as follows:[10]

$$\frac{\partial G_m}{\partial \pi} \approx \underbrace{I}_{compositional\ inequality} \times \underbrace{(1 - \Gamma_{12}^{\pi} - \Gamma_{12}^{w})}_{compositional\ mobility} . \tag{16}$$

Equation (16) is useful as it links the macroeconomic dynamics of the capital share — whose rise can be associated, among other factors, with technological developments — to income mobility over time, and enrich the debate on the relationship between inequality, on the one hand, and mobility, on the other hand (Corak, 2013).

4 Results

In this Section, we present the results from the decomposition framework outlined in 3.3.1. We will work with three different settings: (a) the entire time range, specifying the initial year as period-1 and the final year as period-2; (b) 5-year time windows,

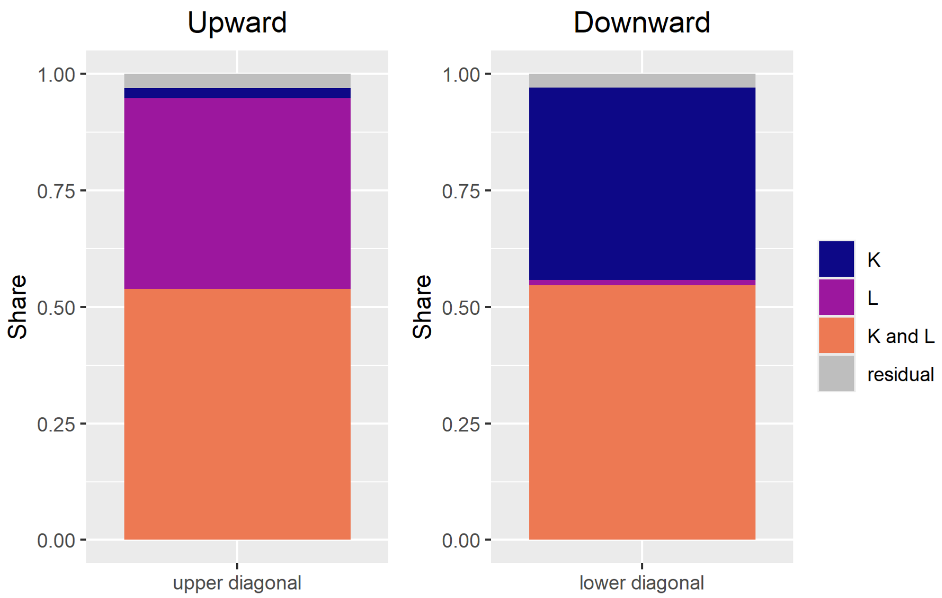
[9]Recall that the numerator of equation (11) is simply used for normalization purposes.

[10]Equation (16) can be derived by decomposing the Gini coefficient at time 1, G_1, into the contributions of capital and labor income inequality, following Lerman and Yitzhaki's approach, and then taking the derivative of G_m with respect to π, which appears as one of the components in the decomposition.

dividing the entire 26-year period of analysis into 5 sub-periods; (c) a year-to-year setting, examining mobility in a granular way across the entire 1993 – 2018 period. The main setting that we use to produce our results will be (a), with results from the other settings serving as robustness checks and being available upon request.

To begin, recall the transition matrix for TI on the left side of figure 5, and focus on upward mobility (all individuals on the right side of the diagonal). What kind of upward mobility trajectories do we observe? We decompose mobility in TI and show the frequencies of the main typologies that contribute to overall relative mobility patterns: (1) upward CI only; (2) upward LI only; (3) upward LI, upward CI. We claim that these three typologies account for more than 90% of all possible observations. In the same vein, we decompose the lower left of the diagonal into (1) downward CI only; (2) downward LI only; (3) downward in CI and LI.

Figure 11: Unconditional results of decomposition of upward / downward mobility



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L).

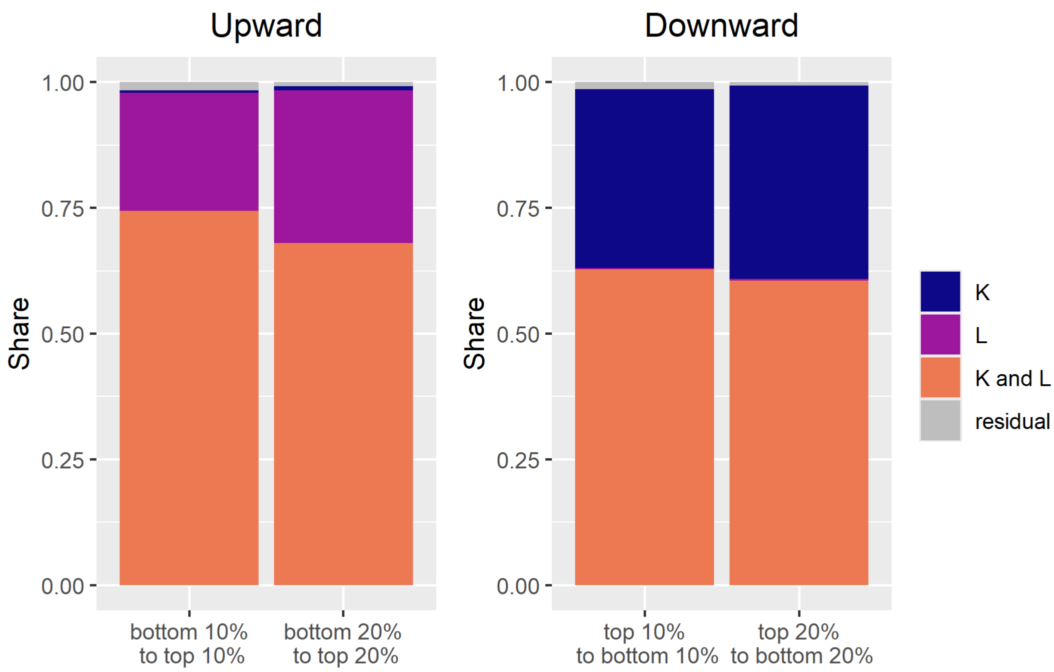
In Figure 11, we display the results for the upper and lower diagonals of the transition matrix - see equation (9) - representing individuals experiencing upward and downward movement in income, respectively. In the left panel, we observe that upward mobility is driven by either increases in both capital and labor income (about 54%) or by increases in labor income with non-increasing capital income (41%). Although the contributions vary slightly over time, no clear temporal pattern is discernible (see Appendix A.1).

When we focus on downward mobility, we find that while more than half of downward movements are explained by both capital and labor incomes being stagnant or declining simultaneously, decreases in capital income alone seem to be the other driving factor. Thus, we observe distinct patterns, with labor income mobility playing a more significant role in upward mobility and capital income mobility being more important for downward mobility.

Building on this distinction, we next assess gender differences by selecting an alternative cohort consisting exclusively of individuals who identify as men. In this case, our focus returns to individuals born between 1960 and 1964, as in the main analysis. Figures 20 and 21 present the results, which appear similar to the baseline sample (Appendix A.2).

In the next step, we investigate whether this pattern is robust to conditioning on large upward or downward jumps. Interestingly, we observe in Figure 12 that the importance of positive (negative) changes in both capital and labor income to explain movements from the very bottom (top) to the very top (bottom) increases as we tighten the definition of the far bottom and top. However, the overall pattern emerging from the unconditional exercises is confirmed. On its own, it is primarily labor income increases that matter for upward mobility, while only capital income decreases are responsible for a significant degree of downward mobility.

Figure 12: Conditional results of decomposition of upward / downward mobility



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L), conditioned on moving from the bottom (top) 10% to the top (bottom) 10%, or from the bottom (top) 20% to the top (bottom) 20%, respectively.

4.1 Investigating joint *upward* and *downward* mobility

To investigate movements in the component where both labor *and* capital incomes experienced upward mobility, leading to upward movement in the joint income distribution, we first discuss a set of summary statistics presented in Table 3. A set of figures on joint upward mobility is available in the Appendix under A.3.

On average, individuals falling into this category experienced an upward jump of about $38,000 in labor income and about $9,200 in capital income. The median jump in labor income ($31,000) is even about 100 times as large as the median jump in capital income ($308). That is, the typical individual in this group appears to have moved up primarily due to labor income. In line with this, for 93% of these individuals, the labor income jump was larger than the capital income jump. However, note that in

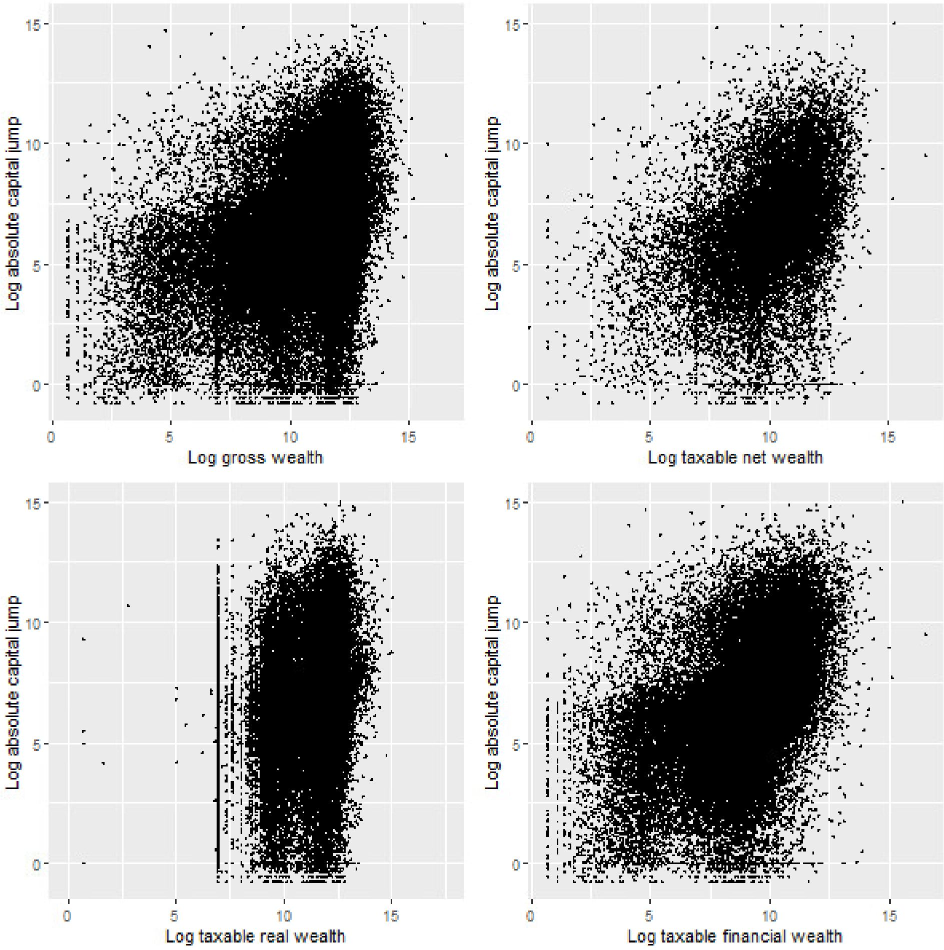
Table 3: Joint upward mobility - Summary stats

metric	value
mean $ labor jump	38370.92
mean $ capital jump	9247.69
median $ labor jump	30860.27
median $ capital jump	308.48
mean percentile labor jump	27.77
mean percentile capital jump	30.80
mean share of labor jump	0.90
median share of labor jump	0.99
share individuals w. labor jump > capital jump	0.93

terms of percentiles within the univariate labor or capital distributions, the capital income jumps are slightly larger. Hence, while these individuals moved at least as far within the capital income distribution as within the labor income distribution, the absolute dollar increase in labor income far outweighed the increase in capital income. For movements in the overall income distribution, however, what matters are the changes in dollar income - not so much how many percentiles one moved up or down in a given distribution.

Another useful exercise for the sample of individuals experiencing joint upward mobility is to analyze the correlation between their upward capital income jumps and the type of assets held by these individuals in the initial year (1993). Is it mostly real or financial capital held at the initial year that is associated with upward capital income jumps? Figure 13 plots the scatter of the log of the absolute jumps in CI over the period 1993-2018 on the vertical axis, against the log of gross wealth (upper left panel), log of net wealth (upper right), log of real capital (down left), and log of financial capital (down right), always in 1993. The correlation coefficient between the log of absolute capital jumps is stronger for gross financial capital ($r = 0.44$) than for gross real capital ($r = 0.20$), leading us to hypothesize that the role played by gross financial capital has been stronger in the determination of the upward capital income jumps, compared to real capital. However, it is important to note that the direct mechanism — i.e., initial financial capital allowing for more capital accumulation and thus more

Figure 13: Capital income upward jumps and wealth



Note: The graph displays four different scatterplots. The Y axis displays the log of the absolute jump in CI, while the X axis displays log of gross wealth (upper left), log of net wealth (upper right), log of real capital (down left), and log of financial capital (down right).

capital income — is just one among many. High initial wealth could also be associated with certain parental characteristics, such as professional networks, which in turn provide better access to higher-paying jobs and thereby facilitate greater capital accumulation out of labor income. While this is not the central focus of the present work, it could open up many interesting avenues for future research on this matter.

Let us now move to the analysis of joint downward income jumps, as shown in Table 4. The difference is substantial: mean capital income falls are approximately 55 times larger than mean capital income rises, as previously discussed. Similarly, average labor income declines exceed average labor income increases, although by a lesser factor of approximately 4. Thus, on average, we observe a similar dynamic for joint downward jumps as previously discussed for the overall dynamics: labor income changes tend to dominate in upward jumps, while capital income changes are more influential in downward jumps. However, the median values of capital and labor income jumps indicate a much smaller difference between upward and downward movements. This discrepancy underscores the significant role played by extreme jumps, particularly evident in large downward shifts in capital income.

Table 4: Joint downward mobility - Summary stats

Metric	**Value**
mean $ labor jump	-143,936.67
mean $ capital jump	-490,819.28
median $ labor jump	-27,852.63
median $ capital jump	-384.52
mean percentile labor jump	-27.27
mean percentile capital jump	-27.01
mean share of labor jump	0.89
median share of labor jump	0.99
share individuals w. abs(labor jump) > abs(capital jump)	0.92

5 Robustness analysis

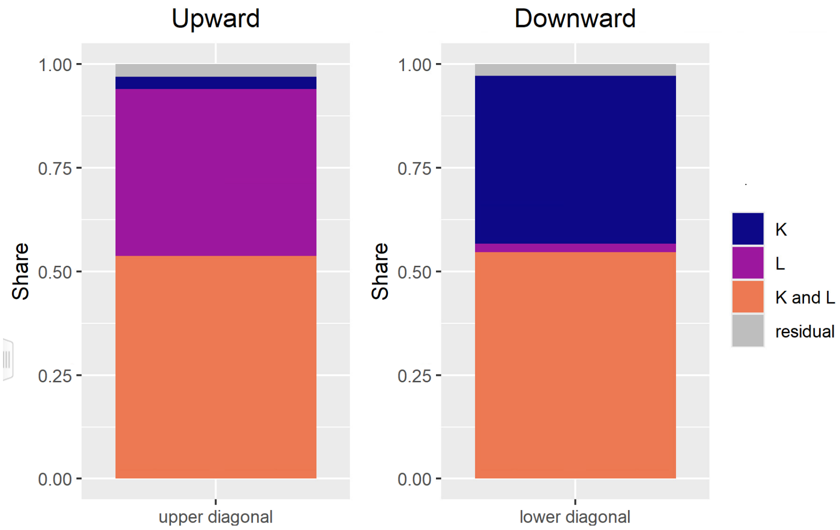
5.1 Income definition

In the baseline specification, we allocate the entirety of self-employment income to labor income. While this represents a strong assumption, it serves as a starting point for the analysis and will be relaxed to assess the robustness of the results. This approach is further motivated by evidence suggesting that self-employed individuals may exhibit different mobility patterns compared to those who rely primarily on wage income. Notably, prior studies have found that the self-employed tend to experience greater upward mobility than wage earners (Lindquist and Vladasel, 2025, Quadrini, 2000).

A more realistic treatment would involve decomposing self-employment income into labor and capital components, assigning one-third to capital income and the remaining two-thirds to labor income. We perform this decomposition and show in

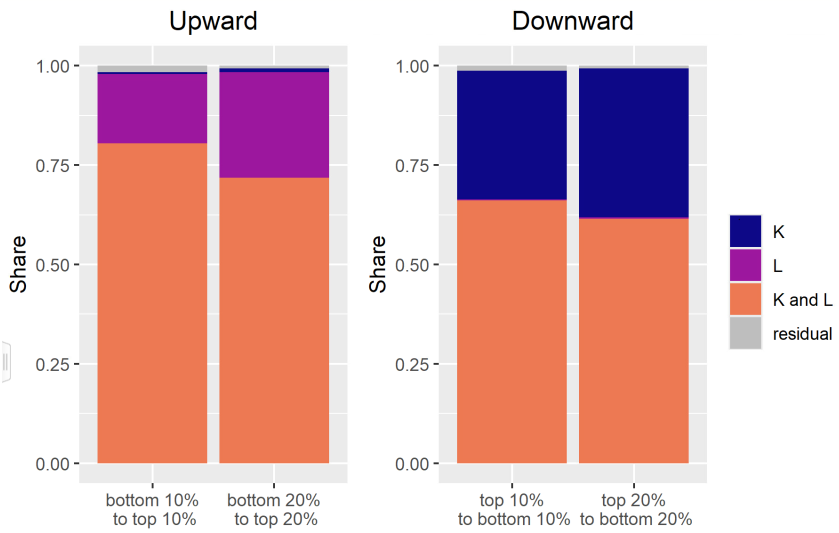
Figure 14 the decomposition results for the unconditional setting, while Figure 15 presents the conditional results.

Figure 14: Unconditional results of decomposition - SE income split



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L).

Figure 15: Conditional results of decomposition - SE income split



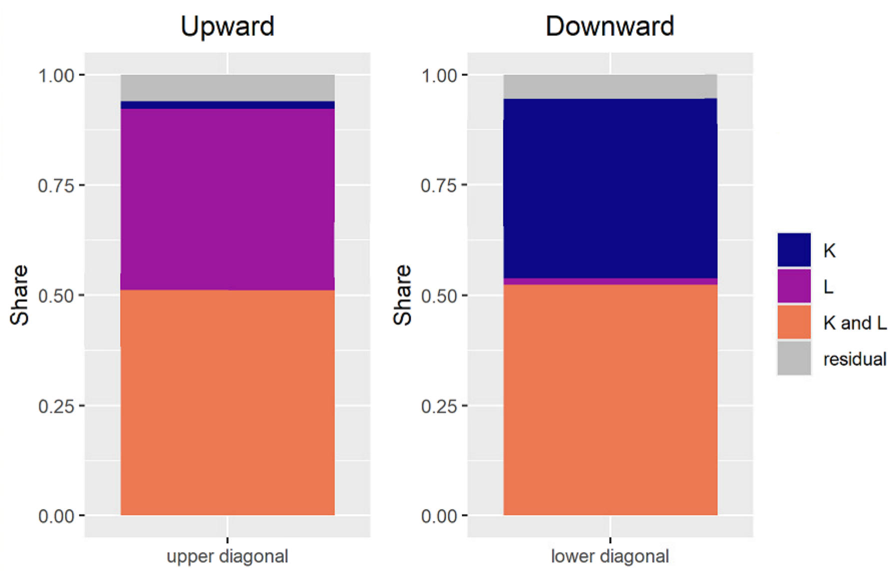
Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L), conditioned on moving from the bottom (top) 10% to the top (bottom) 10%, or from the bottom (top) 20% to the top (bottom) 20%, respectively.

Both figures 14 and 15 display similar results to those of the baseline sample without SE income split, in figure 11 and 12. Allocating a portion of the self-employment income has led to a slightly higher share of the joint upward mobility component, especially when conditioning on jumps from bottom to top of the distribution (figure 15).

5.2 Cohort selection

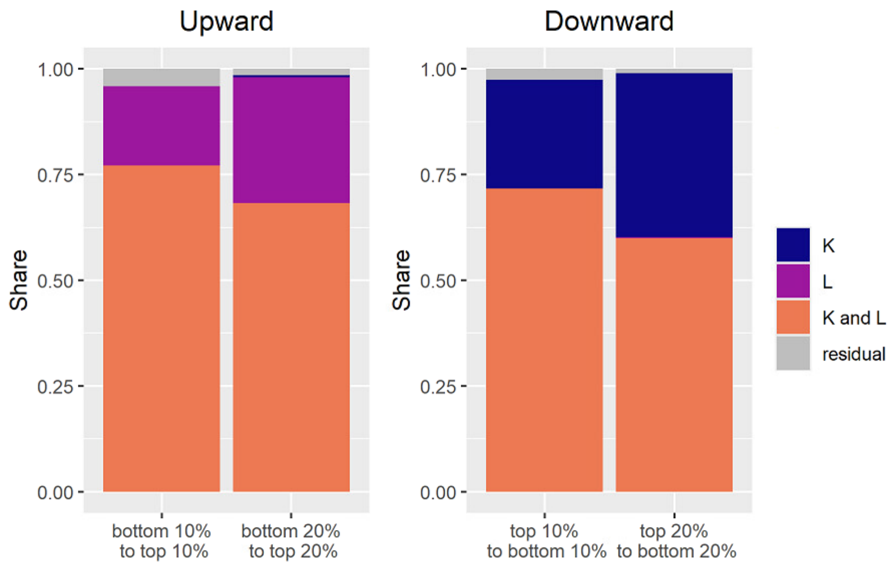
The results presented in the previous sections may to some extent be depending on the specific cohort selection. To ensure robustness, we analyze an alternative cohort to assess whether the findings hold. This time, our focus is on individuals born between 1955 and 1959, for whom we track income trajectories over their entire life cycle. Specifically, these individuals were aged 34 – 38 in 1993 and reached 59 – 63 by 2018. Figure 16 and 17 presents the results, that appear to be sufficiently robust to cohort selection.

Figure 16: Unconditional results of decomposition - Robustness cohort selection



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L).

Figure 17: Conditional results of decomposition - Robustness cohort selection



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L), conditioned on moving from the bottom (top) 10% to the top (bottom) 10%, or from the bottom (top) 20% to the top (bottom) 20%, respectively.

6 Concluding remarks

Do individuals move up (or down) the ladder due to jumps in capital or labor income, or both? In other words, shall individuals invest in human capital and try to climb the ladder through remuneration for their labour, or does it pay more off to accumulate financial wealth in order to boost capital incomes? The literature on relative income mobility has so far mostly focused on aggregate welfare measures such as total income, or simply on earnings due to data availability considerations. However, little attention has been paid to the sources of total income mobility by focusing on its two principal components: capital and labor income. Taking a life-cycle perspective and exploiting register data from Norway covering almost 300,000 individuals across 26 years, this paper studies relative capital and labor income mobility, and decomposes total income mobility into its constituent factors.

To this end, this paper introduces a novel mobility decomposition framework based on the decomposition of inter-temporal income jumps, suitable for life-cycle analysis. We report several results on this topic. *First*, while labor income mobility along its unidimensional distribution tends to be larger than capital income mobility, different relative mobility indicators produce different mobility rankings. This result further justifies the need to understand what contributes to upward and downward relative mobility through the decomposition framework.

We report that while the interaction of both factors is key to determining both upward and downward total income mobility dynamics, labor income alone explains upward total income mobility more than capital income does, and vice versa: capital income alone is a key determinant of downward income mobility patterns. These results have been discussed in light of the recent stream of research on compositional inequality and homoploutia, focusing on the study of the joint distribution of capital and labor income across individuals, both theoretically and empirically.

This comparison has confirmed the role of both factors in determining one's income status, as described by the recent trends in homoploutia in the US (Berman and Milanovic, 2024). Moreover, labor income appears to be the main determinant of total income mobility, as shown in recent global inequality studies on capital and labor (Ranaldi, 2025). However, our results also indicate that these findings are mitigated when considering large jumps along the distribution.

To conclude, we see this paper as the first attempt at linking studies on the functional income distribution with mobility studies. We therefore encourage further research on this subject from other countries, in order to obtain a coherent picture of stylized facts on the role of factor incomes and social mobility.

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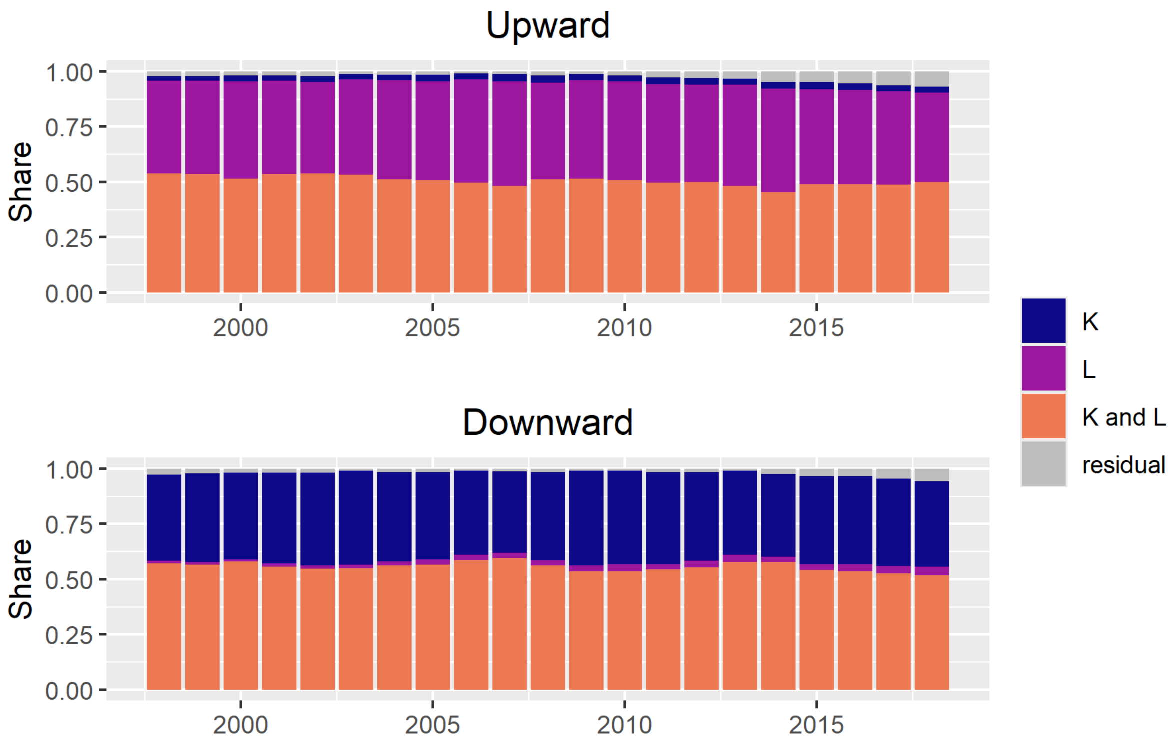
A Additional Figures

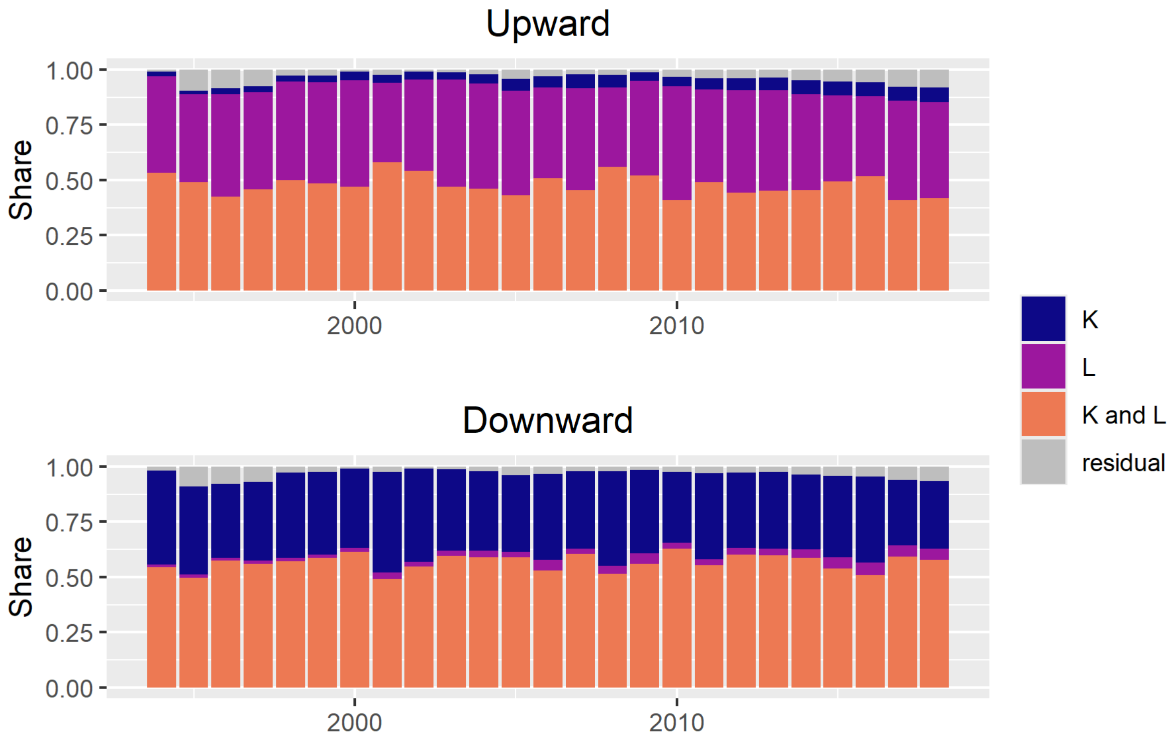
A.1 Granular results of the mobility decomposition

Figure 18: Results of decomposition of upward and downward mobility over time, 5 year periods



Note: Bars show upward and downward mobility decomposition over the period from year $t-5$ to t, for all years.

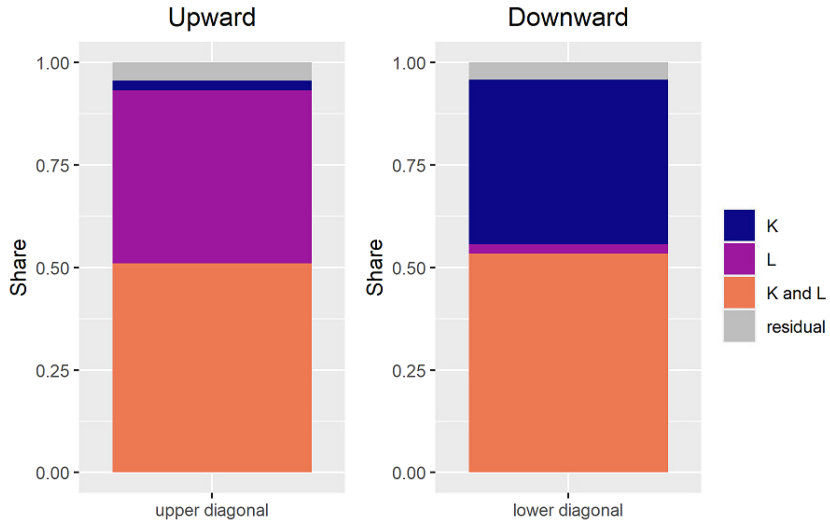
Figure 19: Results of decomposition of upward and downward mobility over time, 1 year periods



Note: Bars show upward and downward mobility decomposition over the period from year $t - 1$ to t, for all years.

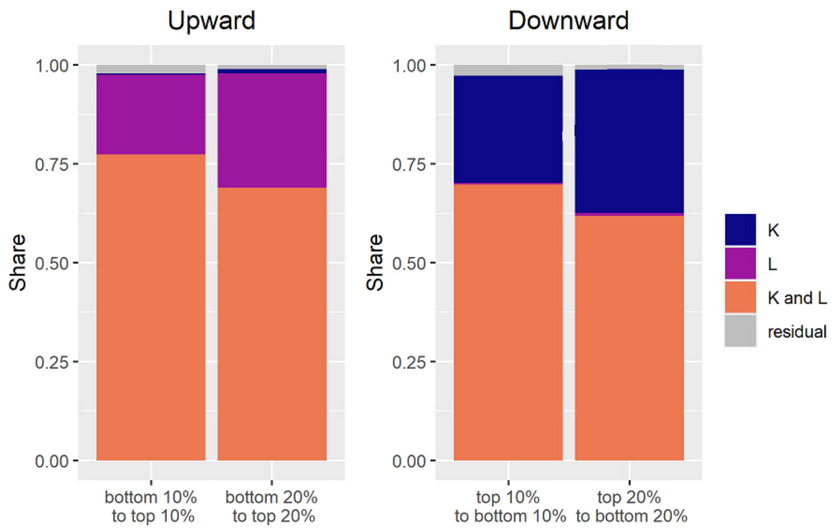
A.2 Gender differences

Figure 20: Unconditional results of decomposition - Male cohort



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L).

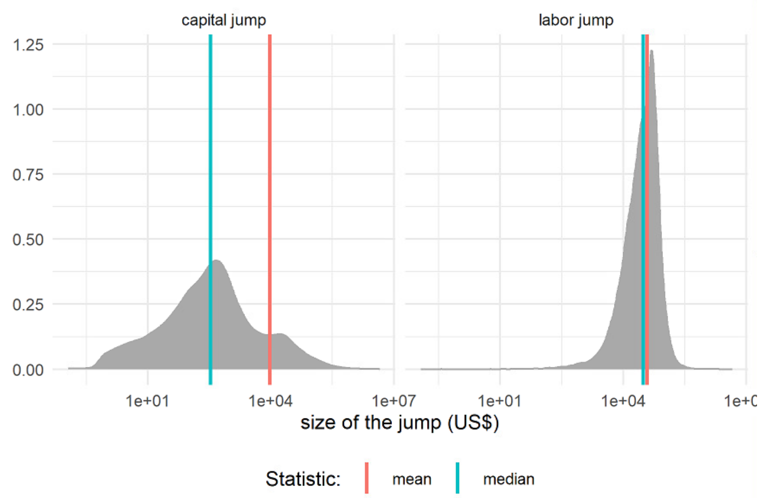
Figure 21: Conditional results of decomposition - Male cohort



Note: The graph displays the share of upward (downward) mobility explained solely by upward (downward) movement in capital income (K), only upward (downward) movement in labor income (L), and upward (downward) movement in both income components (K and L), conditioned on moving from the bottom (top) 10% to the top (bottom) 10%, or from the bottom (top) 20% to the top (bottom) 20%, respectively.

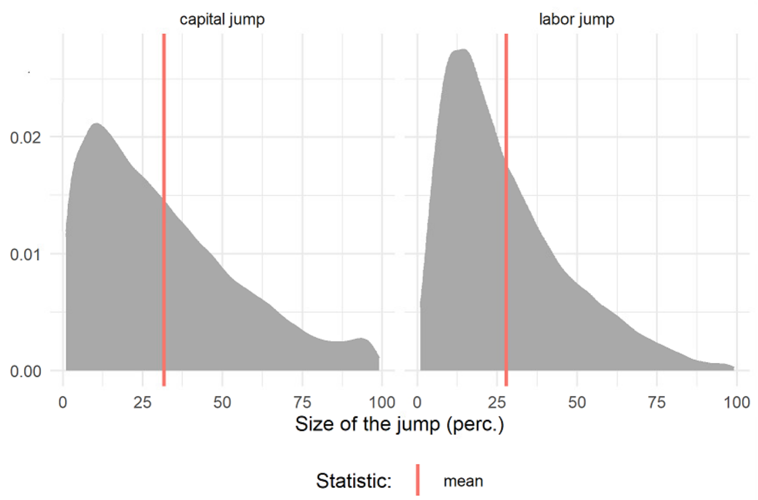
A.3 Joint upward mobility

Figure 22: Joint upward mobility - Size of the jump (unconditional)



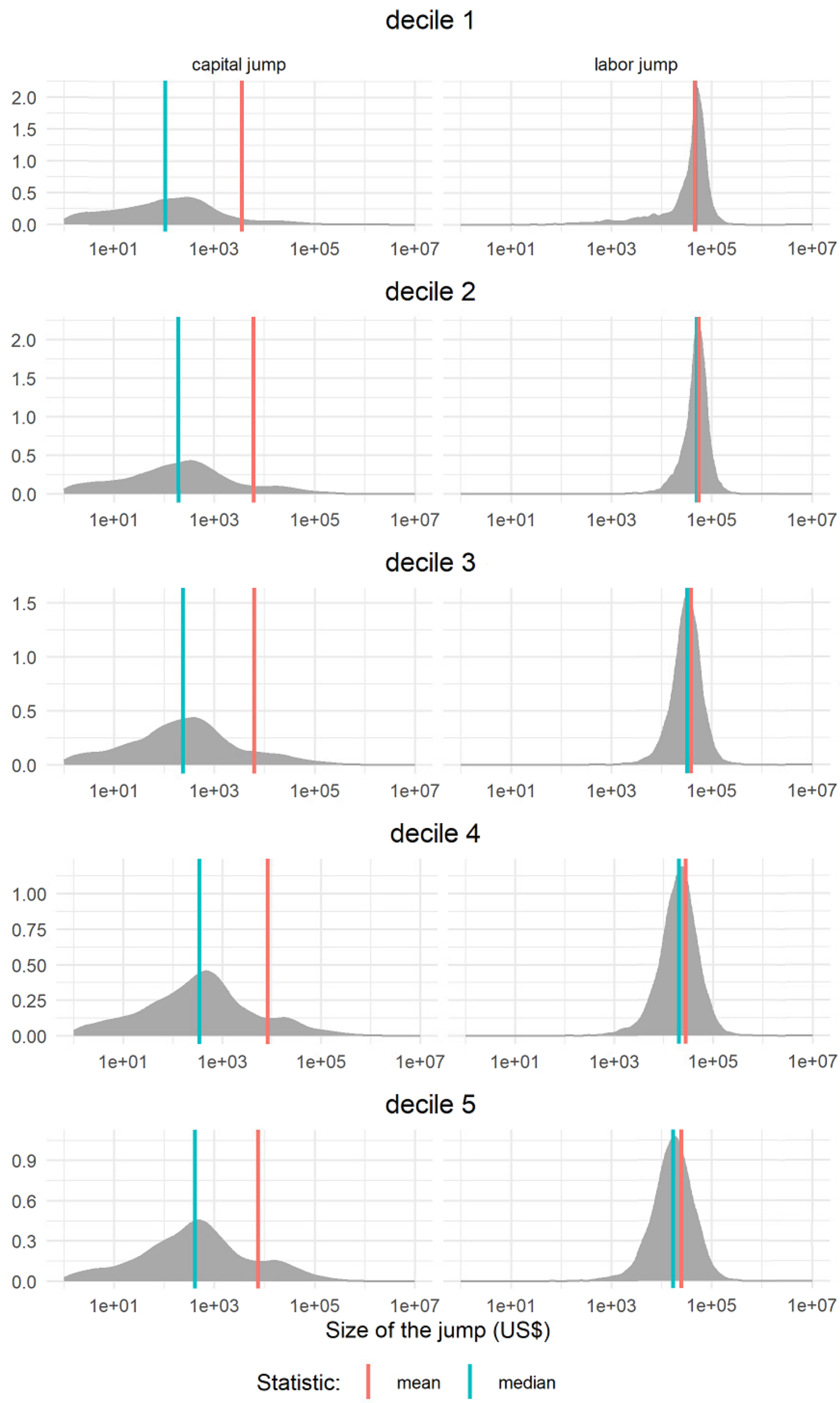
Note: The graph displays the distribution of absolute upward jumps in labor and capital income for those individuals which are part of our component 3, that is, those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income.

Figure 23: Density of relative upward jumps in capital and labor income



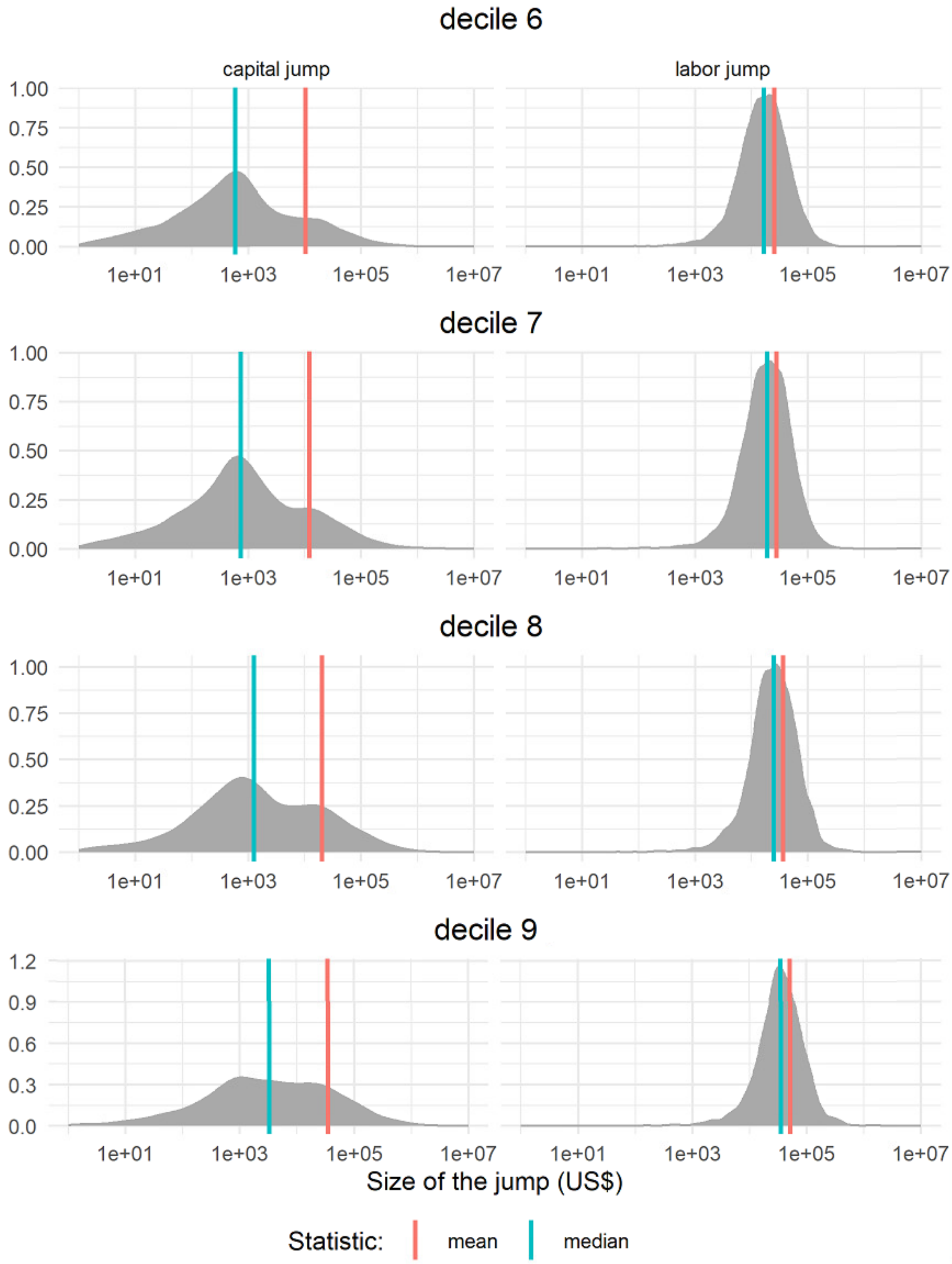
Note: The graph displays the distribution of relative upward jumps in labor and capital income for those individuals which are part of our component 3, that is, those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income.

Figure 24: Joint upward mobility - Conditioning on initial decile



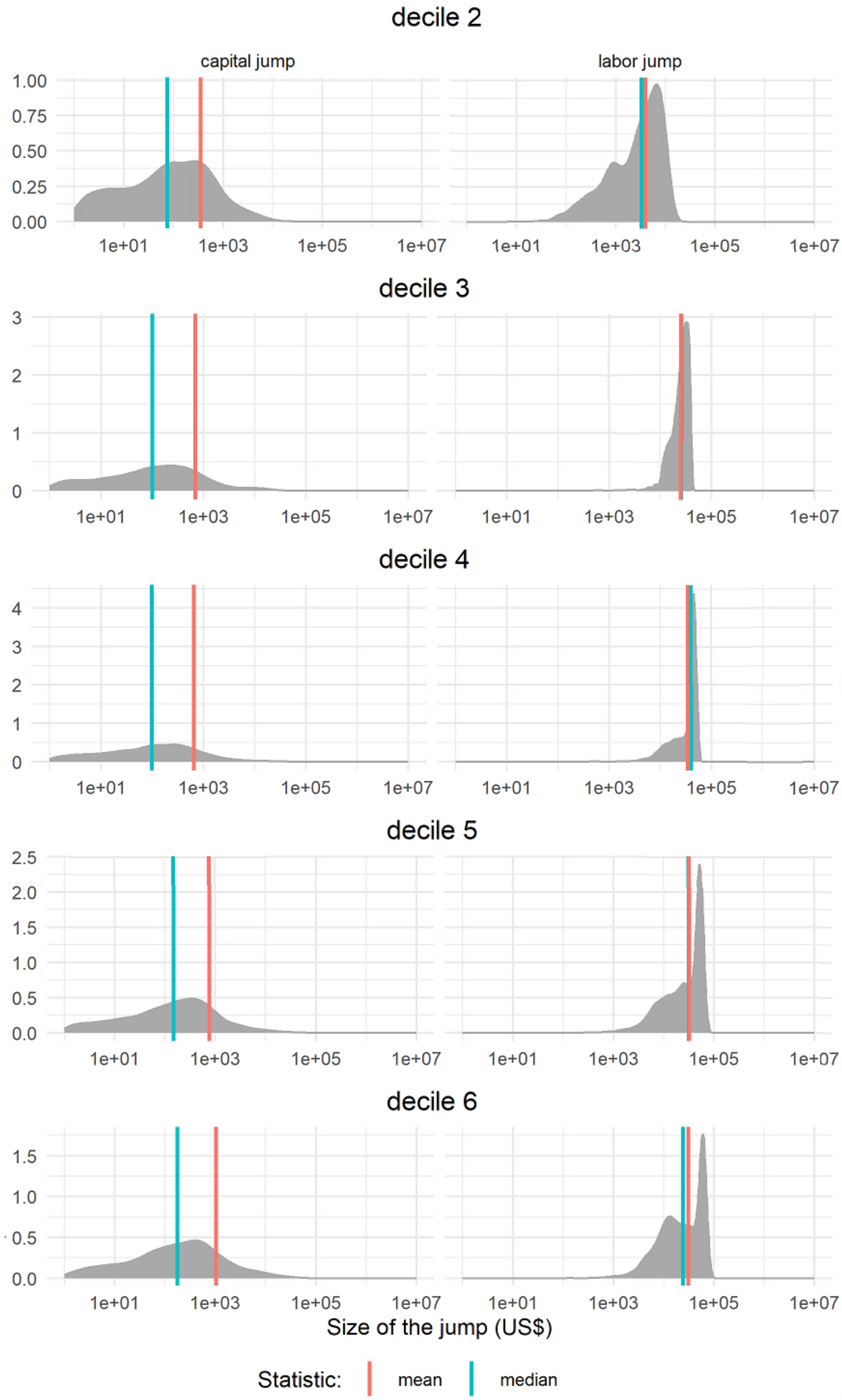
Note: The graph displays the distribution of upward jumps in labor and capital income for those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income. Income jumps are displayed conditional on the initial decile in 1993.

Figure 25: Joint upward mobility - Conditioning on initial decile



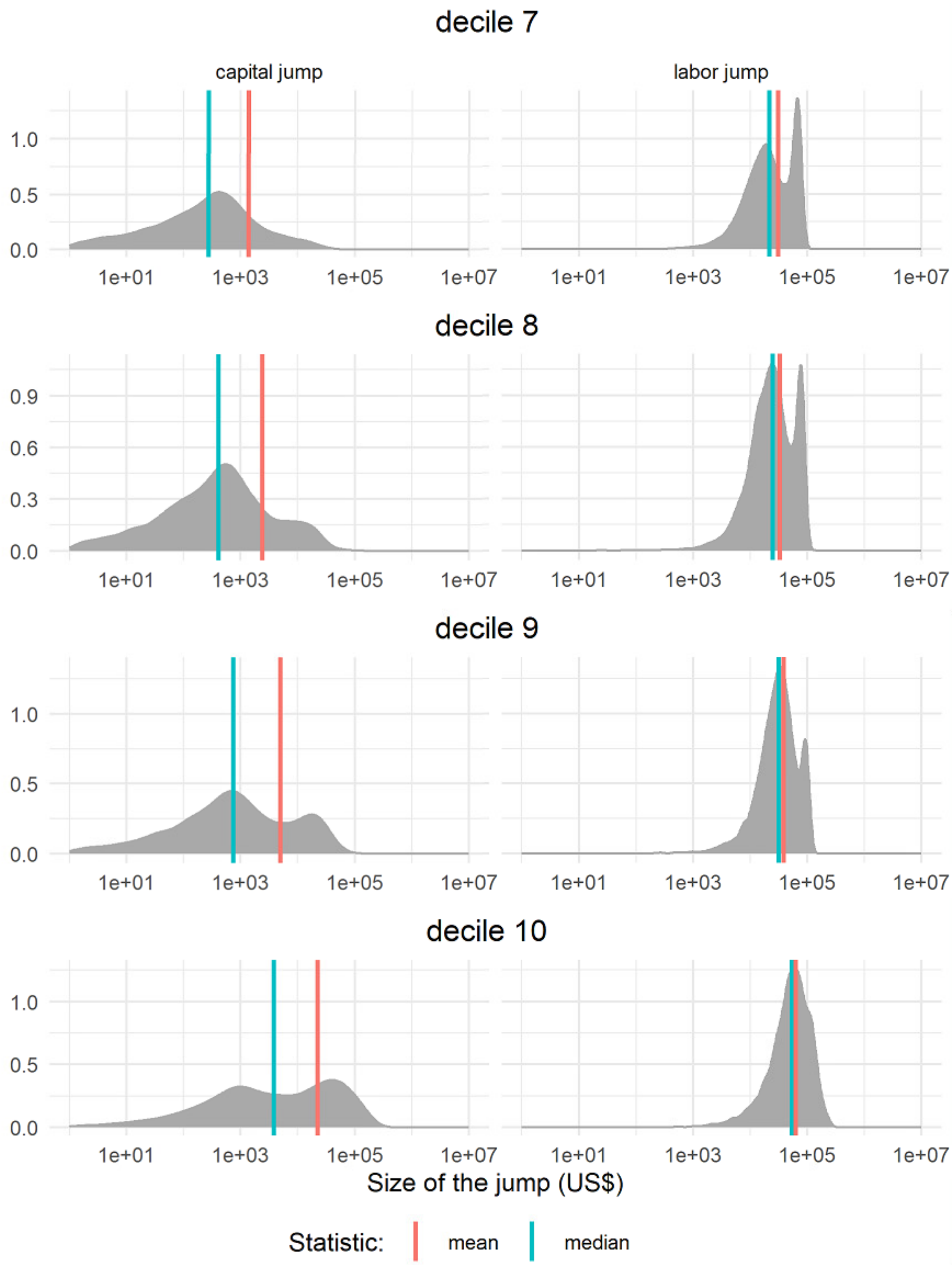
Note: The graph displays the distribution of upward jumps in labor and capital income for those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income. Income jumps are displayed conditional on the initial decile in 1993. Decile 10 is omitted, because individuals initially in decile 10 cannot move further upward.

Figure 26: Joint upward mobility - Conditioning on target decile



Note: The graph displays the distribution of upward jumps in labor and capital income for those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual ends after 25 years. Decile 1 is omitted, because no individual can start below decile 1.

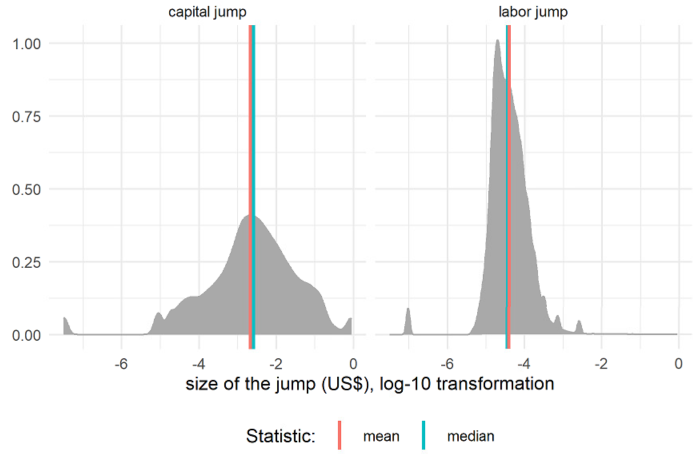
Figure 27: Joint upward mobility - Conditioning on target decile



Note: The graph displays the distribution of upward jumps in labor and capital income for those individuals moving upwards in the total income distribution because of simultaneous upward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual ends after 25 years.

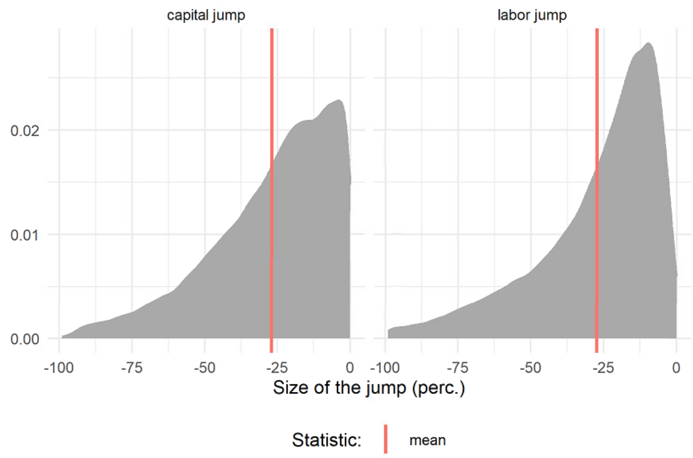
A.4 Joint downward mobility

Figure 28: Joint downward mobility - Size of the jump (unconditional)



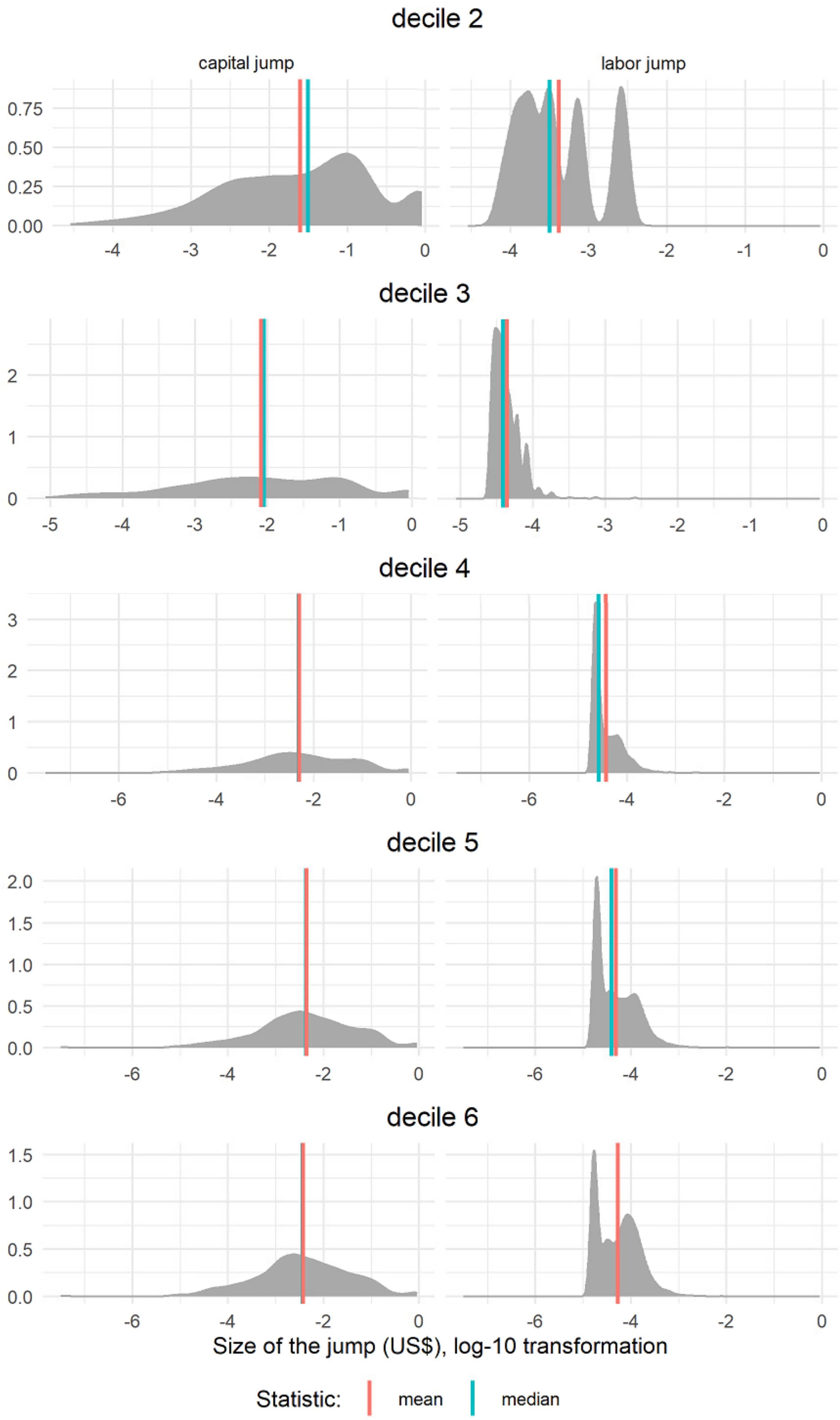
Note: The graph displays the distribution of absolute upward jumps in labor and capital income for those individuals which are part of our component 4, that is, those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income.

Figure 29: Density of relative downward jumps in capital and labor income



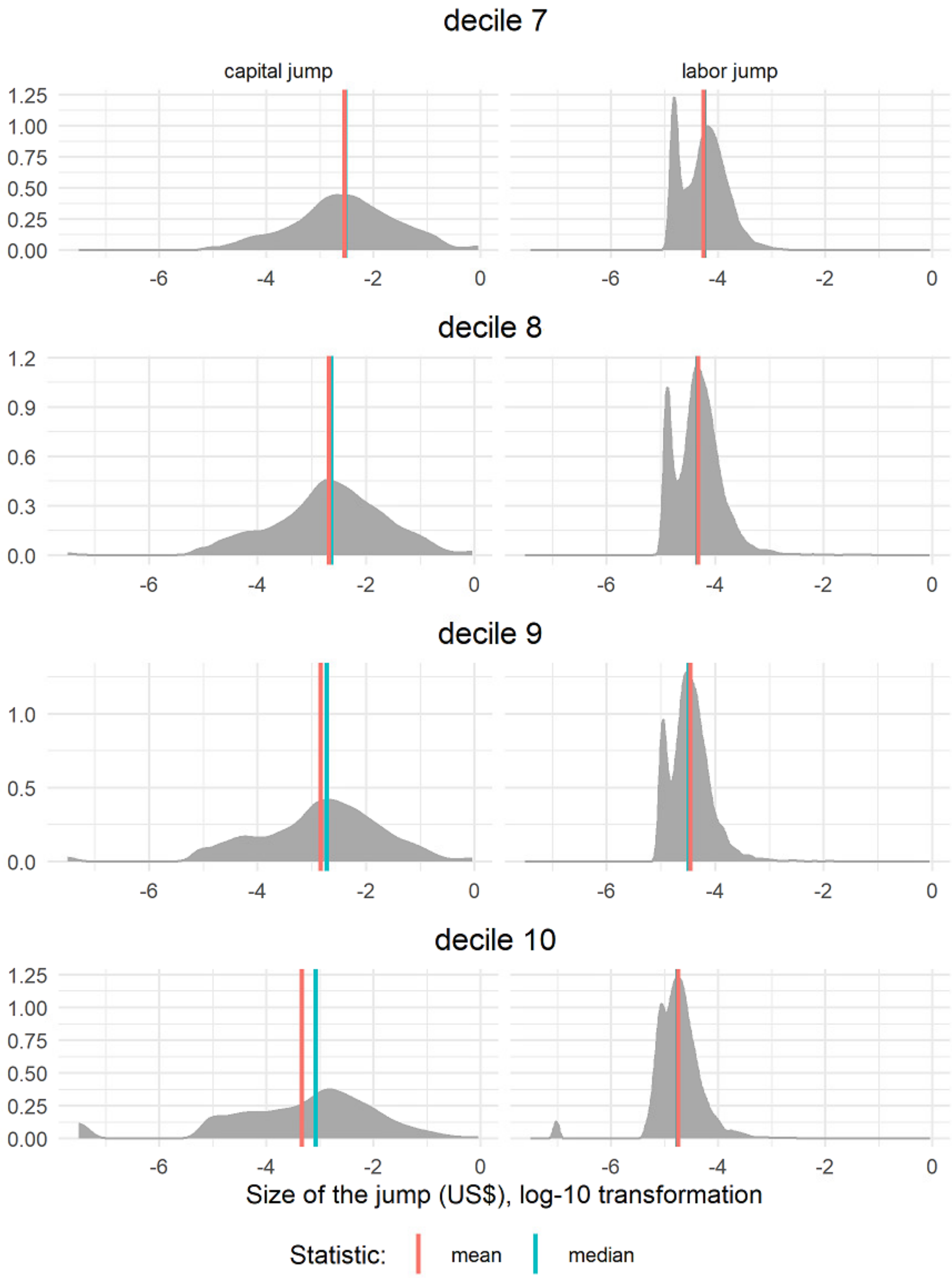
Note: The graph displays the distribution of relative upward jumps in labor and capital income for those individuals which are part of our component 4, that is, those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income.

Figure 30: Joint downward mobility - Conditioning on initial decile.



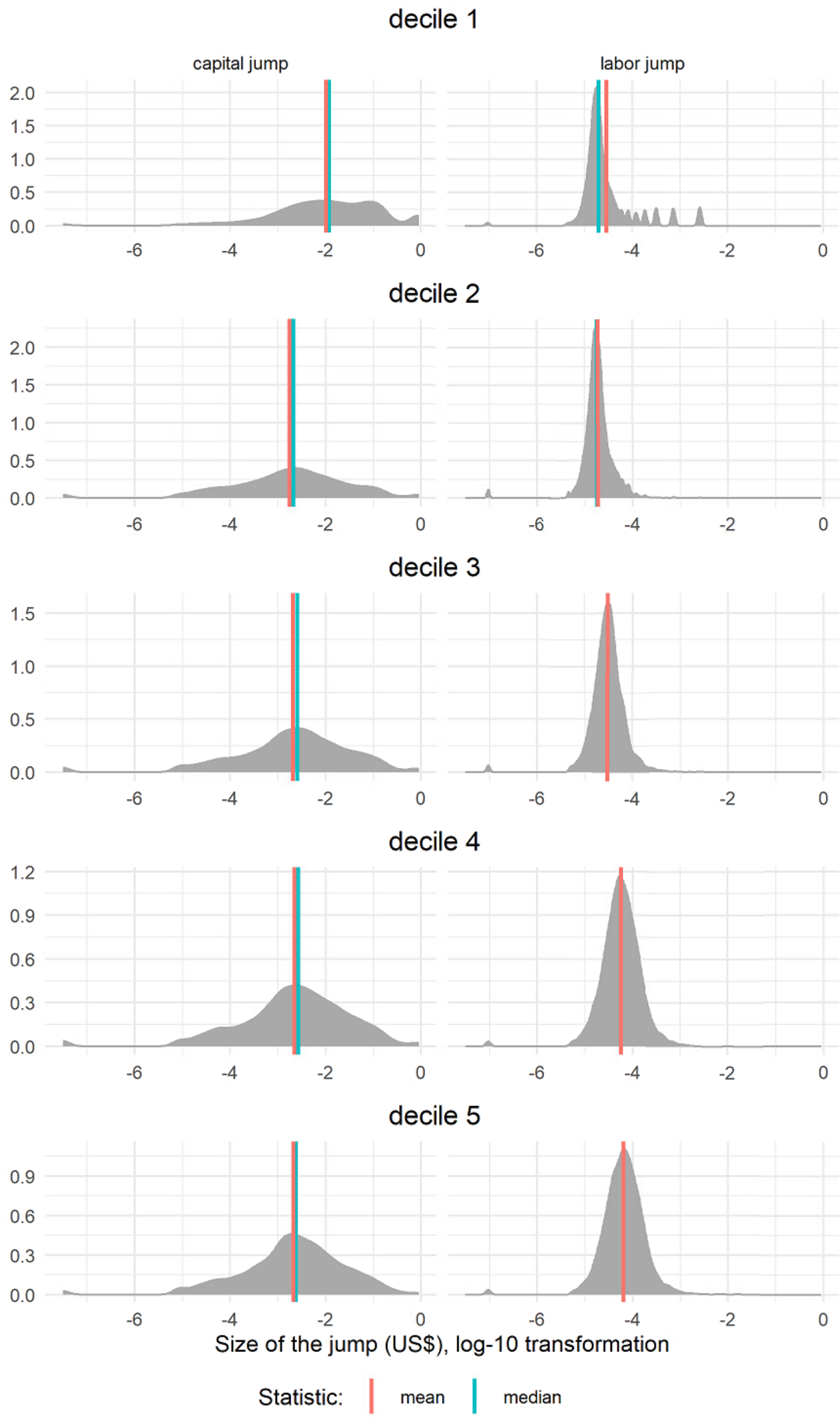
Note: The graph displays the distribution of downward jumps in labor and capital income for those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual starts in 1993. Decile 1 is omitted, as these individuals cannot move further down.

Figure 31: Joint downward mobility - Conditioning on initial decile



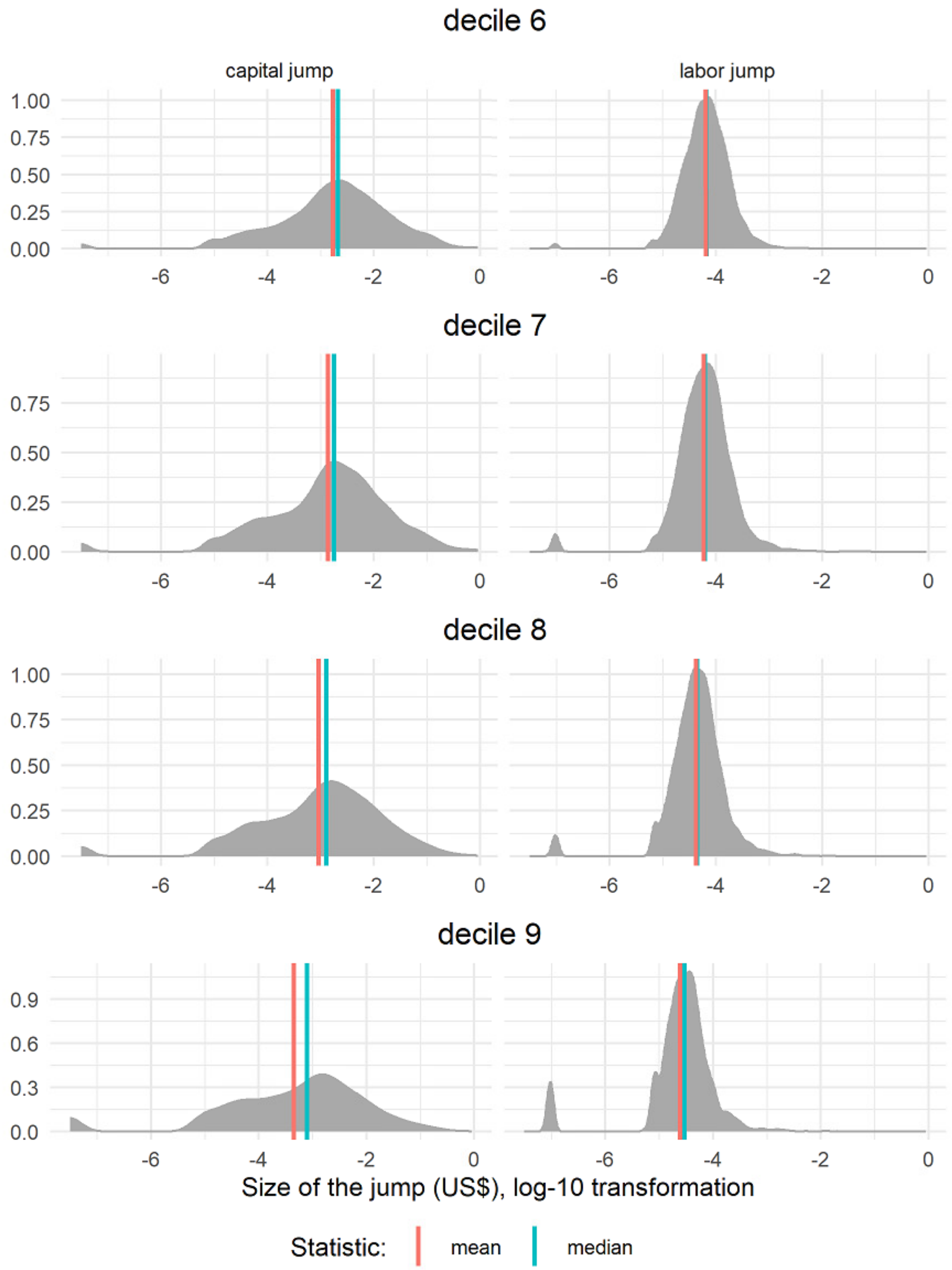
Note: The graph displays the distribution of downward jumps in labor and capital income for those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual starts in 1993.

Figure 32: Joint downward mobility - Conditioning on target decile



Note: The graph displays the distribution of downward jumps in labor and capital income for those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual ends after 25 years.

Figure 33: Joint downward mobility - Conditioning on target decile



Note: The graph displays the distribution of downward jumps in labor and capital income for those individuals moving down in the total income distribution because of simultaneous downward movements in capital *and* labor income. Income jumps are displayed conditional on the decile where an individual ends after 25 years. Decile 10 is omitted, as these individuals cannot have started above decile 10.