BANK OF CANADA
BANQUE DU CANADA

Staff working paper / Document de travail du personnel—2026-42

Last updated: November 19, 2026

Cyclicality of Income-Growth Distribution and the Role of Monetary Policy

Yaz Terajima
Financial Stability Department
Bank of Canada
yterajima@bankofcanada.ca

Carolyn A. Wilkins
Princeton University
Former Senior Deputy Governor
cw9142@princeton.edu

Bank of Canada staff research is produced independently from the Bank's Governing Council and may support or challenge prevailing views. The views expressed in this paper are solely those of the authors and may differ from official Bank of Canada positions. No responsibility for them should be attributed to the Bank.

DOI: https://doi.org/10.34989/swp-2026-42 | ISSN 1701-9397

© 2026 Bank of Canada

Cyclicality of Income-Growth Distribution and the Role of Monetary Policy*

Yaz Terajima
Bank of Canada

Carolyn Wilkins
Princeton University

October 30, 2026

Abstract

This paper studies how monetary policy affects the distribution of household income growth over the business cycle. Using comprehensive Canadian administrative tax records, we document the cyclicality of the income-growth distribution across the full market-income distribution—rather than labour earnings alone, as in prior work—estimate the impacts of monetary policy shocks by income level and source, and assess how much monetary policy amplifies or dampens these cyclical changes. We find that skewness, rather than variance, is the defining feature of how the income-growth distribution varies over the business cycle, driven by low- and high-income households and, among income sources, mainly by investment income, particularly capital gains. Monetary policy tightening persistently lowers income growth more for high-income than for low-income households, largely through labour income and, to a lesser extent, business and investment income. Because high- and low-income households are also households driving the pro-cyclical skewness, monetary policy tightening directly counters it, stabilizing income inequality over the business cycle. A direct aggregate analysis of the skewness of income growth on the monetary policy shock corroborates this result.

Keywords: Monetary policy, income inequality, pro-cyclical skewness
JEL Codes: D31, E32, E53

*The authors thank José-Víctor Ríos-Rull, Martin Eichenbaum, Michael Ehrmann and Olivier Coibion for helpful discussions, Youngmin Park and Felipe Alves for comments on the draft, and Julien Champagne and Rodrigo Sekkel for sharing their work and insight on monetary policy shocks; and the seminar participants at the Bank of Canada and Waseda University, the participants of the BoC-BoJ-Philly Fed joint workshop at the Federal Reserve Bank of Philadelphia, the Ninth Annual CIGS End of Year Macroeconomics Conference, and 2025 World Congress of the Econometric Society. We would also like to thank Shirley Ren for her excellent research assistant support.

1 Introduction

There is broad agreement among central banks in advanced economies that price stability is the most important contribution to economic well-being that monetary policy can make. At the same time, a growing literature has documented that the business cycle itself reshapes the distribution of household income growth, and that this reshaping is best captured not by its dispersion but by its skewness—whether income gains and losses are concentrated in the upper or lower tail of the distribution (Storesletten et al., 2004; Guvenen et al., 2014; Busch et al., 2022). This raises the question of whether, and how, monetary policy—in pursuit of its price-stability mandate—interacts with this pro-cyclical skewness of income growth: does it amplify or offset the asymmetric income risk that households face over the business cycle? The answer is not obvious given that the effects of monetary policy on the distribution of income are complex and uncertain (Bernanke, 2015; Draghi, 2016). This paper addresses this question directly, documenting how the skewness of the income-growth distribution correlates with GDP growth and estimating how monetary policy shocks affect income growth across the distribution and, in turn, its cyclical skewness.

Assessing these effects requires looking beyond average income growth to the shape of the income-growth distribution itself, and in particular to its skewness. Unlike variance, which treats gains and losses symmetrically, skewness captures the asymmetric nature of individual income risk—such as a sharp drop in business or investment income—that is concentrated in one tail of the distribution rather than spread evenly around the mean. Guvenen et al. (2014) document empirically that the counter-cyclicality of individual earnings risk in U.S. data is driven by increased left-skewness during recessions rather than by a counter-cyclical variance, a pattern Guvenen et al. (2022b) confirm to be a global regularity across a broad set of countries. This evidence suggests that skewness, more than variance, may be a more informative feature of cyclical variation in the income-growth distribution over the business cycle, making it a natural focal point for understanding how monetary policy might affect that distribution.

Our paper builds on and bridges two strands of literature, with the skewness of the income-growth distribution serving as the key link between them. The first strand examines how the income-growth distribution co-moves with the business cycle: Storesletten et al. (2004) document the counter-cyclical variance of individual income shocks, while Guvenen et al. (2014) and Busch et al. (2022) show that the pro-cyclicality of skewness—rather than of variance—is the more salient feature of this co-movement. Skewness captures whether income risk is concentrated in the upper or lower tail of the distribution, and a recent theoretical literature shows that it is precisely this asymmetry, rather than the overall dispersion of income, that governs how monetary policy interacts with the business cycle. Auclert et al. (2025) show that whether monetary policy amplifies or attenuates aggregate fluctuations depends on the cyclicality of income risk borne by low-income households; Bilbiie (2025) shows that the effects of monetary policy are discounted, rather than amplified, when income inequality is pro-cyclical; and Bilbiie et al. (2023) quantify how counter-cyclical income risk amplifies business-cycle volatility through a precautionary-saving channel.

The second strand examines the implications of monetary policy shocks for income inequality (e.g., Furceri et al., 2018; Coibion et al., 2017; Mumtaz and Theophilopoulou, 2017; Holm et al., 2021; Amberg et al., 2022; Andersen et al., 2023; Chang and Schorfheide, 2024), largely without connecting these distributional effects to the cyclicality of skewness that this theoretical work identifies as central to monetary policy transmission. Because of the complex and offsetting effects of monetary policy, determining net effects is clearly an empirical question, and while there are a growing number of empirical studies in the second strand of literature, very few directly examine how monetary policy shapes, or is shaped by, the pro-cyclical skewness of the income-growth distribution. The closest work is Chang et al. (2025), who develop a structural VAR with functional variables to jointly model the two-way interaction between the income distribution and macro aggregates, including monetary policy shocks; even so, they study the distribution of income *levels* rather than of income *growth*, and their focus is on how monetary policy moves that distribution rather than on

the cyclicality of its skewness—the latter remaining largely unexplored.

Coibion et al. (2017) report variance and historical decompositions showing that monetary policy shocks account for a non-trivial share of the observed cyclical fluctuations in income and consumption inequality, while Furceri et al. (2018) find that the distributional effects of monetary policy shocks are state-dependent, being larger during expansions than during recessions. Building on this evidence, we make three contributions that, to our knowledge, have not been brought together in the prior literature. First, we document how the moments—mean, variance and skewness—of the income-growth distribution co-move with the business cycle across the full range of household income sources, rather than labour earnings alone as in the existing business-cycle literature. Second, we show how this unconditional pro-cyclical skewness maps into differences in income growth across households once we have conditioned on their past income, and identify the income sources underlying those differences. Third, we assess how monetary policy shocks alter this co-movement—thereby directly connecting the empirical cyclicality of skewness to the mechanism that theory identifies as central to monetary policy's aggregate and distributional effects. Our analysis draws on large-scale Canadian income-tax data, which allow us to measure the income-growth distribution across the full range of households and income sources.

More specifically, this paper uses Statistics Canada's Longitudinal Administrative Databank (LAD) to contribute to these strands of the literature along three dimensions: i) document how different moments of the income-growth distribution are correlated with the business cycle; ii) estimate the impacts of monetary policy shocks on income growth by the level of household income and by major source of income iii) assess how monetary policy amplifies or dampens the dynamics of income-growth distribution over the business cycle. The LAD data set has several advantages for this study. It is a panel dataset that covers a representative 20% of all tax filers in Canada, including details on multiple different sources of income at both the individual and family level. It also has a long history, running from

1982, allowing us to capture a relatively long period of variation in monetary policy.[1]

Regarding the first dimension, we follow the Busch et al. (2022) study that uses administrative and survey data from multiple countries to estimate the correlations between the GDP growth and the skewness of the income-growth distribution. Relative to Busch et al., however, our data set has a larger sample size and a longer time series covering almost four decades of data, and measures a broader range of market income sources (e.g., investment and private retirement income is also included). Our findings confirm Busch et al. (2022) in that the skewness of the income-growth distribution is pro-cyclical and that the variance is not counter-cyclical. We do find, however, that an alternative measure of dispersion—the coefficient of variation of income growth—is significantly counter-cyclical, suggesting that whether the dispersion of income growth appears counter-cyclical depends on how dispersion is measured, as well as on the breadth of income sources considered. A breakdown of the skewness measure shows that movements in both tails of the distribution contribute to the pro-cyclicality of the skewness. When analyzing the skewness by income sources, we find that multiple sources contribute to the observed pro-cyclical skewness of market income, with investment income exhibiting the highest pro-cyclicality. A further decomposition shows that this result is driven primarily by capital gains, rather than by other components, such as dividend, interest or rental income. Conditional on income level, we also find that the income growth among both low- and high-income households is more positively correlated with GDP growth than among their middle income peers. Capital gains income is also the main driver of this result.

With regards to the second dimension, we use the panel local projections method developed by Jordà (2005). Our monetary policy shock estimates come from extending the work of Champagne and Sekkel (2018), which uses narrative evidence with real-time data and forecasts from the Bank of Canada, up to 2019. Our sample period (1982 to 2019) includes only conventional monetary policy actions, with no quantitative easing or tighten-

[1]Given that the data do not allow us to study those who did not file taxes, the results are limited to dynamics on the intensive margin of the income process.

ing.[2] We estimate the impact of monetary policy shocks over the five-year horizon across several dimensions: average market income, by income decile and by income source (wages, salaries and commissions; non-professional business; professional business; investment; and other income).

We find that monetary policy tightening decreases average income growth over multiple years.[3] We also find larger and more persistent declines in market income growth for high income-level households, while the low income-level households are relatively less impacted, reducing income inequality. This result is consistent with the findings of Andersen et al. (2023), who document a similar response in Denmark. It contrasts, however, with Coibion et al. (2017) for the United States and Mumtaz and Theophilopoulou (2017) for the United Kingdom, who find that contractionary shocks increase inequality, and with Holm et al. (2021) for Norway, who find that stimulative policy reduces disposable-income inequality in the medium to long run as labour-income effects become dominant.

The main force behind our results is that monetary policy tightening reduces the growth of wages, salaries and commissions by progressively more as household income rises consistently over the horizon. In addition, investment income, especially capital gains, is found to be more sensitive to monetary policy shocks than other sources of income, and the impact is concentrated in the tails of the income distribution. Although low-income households also show substantial sensitivity in investment-income growth, investment is a small share of their income. For high-income households, investment is a larger share of income, so its growth sensitivity significantly affects their overall income growth. Moreover, non-professional business income is more sensitive to monetary policy shocks than professional business income, with the effect more concentrated among low-income households, where this source of income is more important. Overall, our results suggest that monetary policy tightening reduces income inequality.

[2]The Bank of Canada did not engage in quantitative easing before 2020.

[3]Our analysis of the impact of monetary policy is symmetric between loosening and tightening such that the results can be flipped when discussing monetary policy loosening.

The inequality result is consistent with other studies finding that variation in income sources across the distribution is a key driver behind the distributional consequences of monetary policy actions (Coibion et al., 2017). This underscores the importance of heterogeneity in inequality dynamics, as household income and balance sheet composition play an important role in shaping their outcomes following a shock.

Andersen et al. (2023) similarly find that monetary policy is felt most by high income earners in Denmark, such that monetary policy expansion increases income inequality. Their result works through the capital income channel whereas our result relies on labour income as well as non-professional business and investment income. Amberg et al. (2022) find a U-shaped response in the distribution of income to monetary policy shocks in Sweden – both the top and bottom earners are more sensitive to monetary policy than the middle. In contrast, Holm et al. (2021) find that indirect effects on labour income build up over time and eventually outweigh direct effects on financial income, so in the medium- and long-run, stimulative monetary policy reduces inequality.

Finally, bringing these two sets of results together, we find that the households at the top and bottom of the income-level distribution are the ones whose income growth co-moves most strongly with the business cycle, and that monetary policy tightening during expansions curbs these cyclical gains—most robustly for the high income-level households. This suggests that tightening dampens the pro-cyclical skewness of the income-growth distribution, stabilizing it over the business cycle. We formalize this intuition as the third dimension of our analysis, combining our estimated correlations between the income-growth distribution and GDP growth with our estimates of the income-growth effects of monetary policy shocks to assess directly how policy amplifies or dampens the cyclicality of the distribution. Consistent with this intuition, we find that at the one-year horizon, monetary policy tightening counters pro-cyclical skewness of the income-growth distribution, thereby stabilizing cyclical variation in the income-growth distribution arising from it. We corroborate this decile-level evidence with a direct aggregate local projection of the Kelley skewness of market-income

growth on the monetary policy shock, which confirms that a tightening shock significantly lowers skewness at the one-year horizon.

Our paper also relates to a broader literature on income and wealth inequality. A long-standing literature documents the distribution of income and wealth in the United States (e.g, Díaz-Giménez et al., 1997; Budría et al., 2002; Piketty and Saez, 2003; Díaz-Giménez et al., 2011; Kuhn and Ríos-Rull, 2016; Saez and Zucman, 2016). We add to this literature by documenting the historical evolution of income inequality in Canada since 1982. Burkinshaw et al. (2022) also compare income and wealth inequality between Canada and the United States. Second, Castañeda et al. (1998) documented the correlations of detrended output with the family-income shares earned by the quintiles of the income distribution. The contemporaneous correlation between detrended output and the income share monotonically decreases as the quintile moves up for the lowest to the fifth (excluding the top 5%), and then the correlation increases for the top 5%. Although our approach and data differ from theirs, we analyze a similar question. Section 3.1 discusses our estimation results of the contemporaneous correlation between GDP growth and income growth by the deciles of income. Interestingly, we find a consistent pattern with that from Castañeda et al. (1998) that the correlation monotonically decreases from the first decile of the income distribution to the ninth, and then increases for the tenth decile.

The rest of the paper starts with a description of the data and stylized facts (Section 2), before turning to the relationship between the business cycle and the income-growth distribution (Section 3). Sections 4 and 5 cover our estimates of monetary policy shocks and their effects on income inequality. Section 6 discusses the impacts of monetary policy on the skewness of the income-growth distribution over the business cycle. The final section presents conclusions and avenues for further study.

2 Income tax data and stylized facts

This section describes the micro-data on individual and family income that we use for the analysis and discusses the Canadian inequality facts from the literature and the dataset.

2.1 Income tax data

The micro-data analysis uses the administrative dataset called "Longitudinal Administrative Databank" (LAD) from Statistics Canada, the federal agency in charge of official statistics in Canada (Statistics Canada, n.d.). LAD is a panel dataset of individuals, comprising a 20% sample of all individual tax filers, recipients of Federal child benefits, filers' non-filing spouses, and filers' non-filing children. Statistics Canada constructs cross-sectionally representative census families by matching spouses and children using information reported by individual filers. When a family member is a tax filer but not selected in the original 20% sample, Statistics Canada incorporates additional information for that individual when constructing a family-level variable. We construct a family-panel dataset over time based on the identification numbers of each couple or the parents.[4]

LAD contains detailed income and demographic information about the individuals.[5] One advantage of this dataset is its long history. Our sample covers the period from 1982 to 2019, 38 years of individual and family income information. This is especially beneficial for identifying the effects of monetary policy shocks, since the long sample provides greater variations in those shocks over time.[6] The 20% sample has grown over the period with 3.2 million people in 1982 to 6.1 million in 2022 (Statistics Canada, 2025).

Income information in LAD includes total income, including both taxable and non-

[4]Individuals report and identify their spouse and common-law partner in their tax file each year. We assume that a new family starts whenever the paired identification numbers of a couple change. Single-parent families or unattached individuals constitute a household with their identification number over time as long as their status does not change.

[5]See Appendix A for a more detailed description of the dataset.

[6]Similar studies analyzing the impact of monetary policy shocks using administrative tax data, e.g., Amberg et al. (2022), Andersen et al. (2023) and Holm et al. (2021), typically work with a shorter period of available annual data, e.g., 20-plus years.

taxable income; market income, defined as pre-tax income excluding government transfers; and after-tax income. We use market income as the main income variable for the analysis because our focus is on the underlying sources of income inequality before taxes and government transfers. Furthermore, LAD provides a detailed breakdown of market income. We categorize them into the following five sources: wage, salary and commission (WSC), non-professional business (Bus), professional business (Prof), investment (Inv) and other (Other).

LAD provides income information on two distinct types of businesses, non-professional and professional. Non-professional business is defined as solo-proprietors without a regulatory governing body, and professional business as solo-proprietors with a regulatory governing body. Investment income consists of dividends, income from limited partnerships, rental income and capital gains or losses.[7] Given the importance of investment income for our question, we also examine its subcategories, especially capital gains. Other income includes spousal/child support, scholarships/grants and private retirement income. Market income can be negative as it is measured net of any losses or expenses associated with business and/or investment income.

For the rest of the paper, the household is our unit of observation. We define a household to be one of the census families or an unattached individual. For couples, we define the head of the household as the member with the highest market income. Household income is defined to be the sum of income earned by all its members. The sample for the analysis consists of those with the age of the household head between 18 and 65 and the household income above the federal "Personal Basic Amount". The Personal Basic Amount specifies the non-refundable tax credits for each filer, ranging from $6,000 in early 80s to $12,000 in 2019. Furthermore, households with market income between -$1,000 and $0 are excluded from the sample. These restrictions limit extreme income-growth observations arising from

[7]Unlike the other income sources, which are available for the full 1982–2019 sample, limited partnership income is only reported separately in the data starting in 1988. The estimations involving this subcategory are therefore based on the shorter 1988–2019 sample.

very small values in the denominator. All values of income from the dataset are deflated using the Consumer Price Index (CPI).

2.2 Income inequality facts

Income inequality measured by the Gini coefficient in Canada increased substantially during the 1980s and first half of the 1990s, but has been relatively stable over the past 25 years. The largest and most persistent increases in the Gini coefficient occurred during the recessions in the 1980s and 1990s (Figure 1).[8] The Gini coefficient based on market income is more than 10% higher in 2019 than it was in 1976, despite a slight decline in the final years of the sample. This mainly reflects the sharp increases in the Gini coefficient during the recessions in the 1980s and early 1990s, after which it did not return to pre-recession levels. The Gini is much lower and rises less when household income is adjusted for the effects of transfers and taxes. This points to the contribution of automatic stabilizers and discretionary fiscal actions (note in Figure 1 the sharp increase in transfers as a share of gross domestic product during recessions). It also reflects the use of tax policy to mitigate the adverse effects of the business cycle on lower-income families.[9] This pattern echoes the well-documented U.S. experience, where Heathcote et al. (2023) show that market-income inequality below the median is strongly counter-cyclical—driven primarily by fluctuations in employment and hours worked rather than hourly wages—while the expansion of transfers and taxes substantially dampens the cyclicality of disposable-income inequality, most dramatically during the COVID-19 recession.

Although it is a commonly used metric of inequality, the Gini coefficient masks important changes in relative incomes over time, especially those that occur in the tails of the distribution. Our dataset shows that, even over periods when the Gini was relatively stable, there have been important changes in the income distribution over time. Figure 2 shows the

[8]The chart is from Burkinshaw et al. (2022) based on the Statistics Canada data. For more stylized facts on income distribution in Canada see Burkinshaw et al. (2022).

[9]This point is also stressed by Fortin et al. (2012).

average real household market income by decile for each year over the last four decades based on the LAD data. It is striking that income in the middle deciles has remained relatively flat and has even drifted down in the lower deciles.[10] Stagnant middle-class income over the last several decades is a common observation among countries of the Organisation for Economic Cooperation and Development (OECD, 2019). Moreover, Zhang et al. (2016) document that income mobility across income groups has also worsened, suggesting that inequality has become more persistent over time. Despite some fluctuations during economic downturns, the income of high-income households rose relative to the rest of the distribution over the sample period.

The variation in relative income over time in Canada, combined with considerable variation in the monetary policy instrument over the same period, raises important questions about how the income distribution changes over the business cycle and what role monetary policy plays. In answering these questions, it is important to recognize that the composition of household income differs substantially across deciles, as shown in Figure 3. While wage, salary and commission make up the majority of household income in all deciles, investment income and professional business income make up a much larger share of income for the highest decile. In contrast, non-professional business income and other income shares gradually increase as we move to lower deciles. The share of non-professional business income is smaller in the first decile due to a fraction of non-professional business making a net loss. Sensitivity to macroeconomic shocks may therefore differ across income sources. For instance, investment income and non-professional business income could be more susceptible to macroeconomic conditions and come with higher volatility. We discuss these results in the following section.

[10] Appendix B provides more discussion on this.

3 Business cycle and income-growth distribution

Before analyzing the impact of monetary policy shocks, we first assess how the income-growth distribution varies over the business cycle. This establishes the key cyclical features of the distribution against which we can evaluate whether monetary policy amplifies or dampens those dynamics. We therefore begin in this section by analysing how the income-growth distribution correlates with GDP growth.

3.1 Correlation between moments of income-growth distribution and GDP growth

This part analyzes how the distribution of income growth correlates with GDP growth in Canada, closely following Busch et al. (2022).[11] Busch et al. (2022) use a mix of survey data and a sample of administrative data for the United States, Germany and Sweden to analyze the correlation between the distribution of labour-earnings growth and GDP growth for each country. In contrast, our analysis uses a larger data sample and a broader definition of market income, including investment income and other sources such as private retirement income. Despite these differences, we reproduce their central result for Canada—pro-cyclical skewness alongside a variance that is not counter-cyclical—as detailed below, first for market income and then by income source.

[11]The literature on the income-growth distribution over the business cycle had focused on the counter-cyclical variance of individual income shocks since a seminal paper by Storesletten et al. (2004). Guvenen et al. (2014) brought in new insight into this literature by highlighting the role of counter-cyclical skewness over the business cycle playing a larger role than that of variance. Using harmonized administrative panel data for 13 countries, Guvenen et al. (2022b) confirm that this pattern is a global regularity: the skewness of individual income growth is pro-cyclical in almost every country in their sample, even though there is no common cross-country trend in the level of cross-sectional income inequality. A related but distinct strand of the literature studies the cyclicality of cross-sectional inequality *levels* rather than of the income-growth distribution, finding these levels to be broadly counter-cyclical across OECD countries, including Canada (Krueger et al., 2010; Maestri and Roventini, 2012); this level-based approach, however, differs conceptually from our focus on the moments of the income-growth distribution.

3.1.1 Market income

We first estimate the following time-series equation based on market income:

$$m\left(\Delta\text{Market income}_{i,t}\right) = \alpha + \gamma t + \beta^m \Delta GDP_t + u_t, \text{ where} \tag{1}$$

$$\Delta\text{Market income}_{i,t} = \frac{\text{Market income}_{i,t} - \text{Market income}_{i,t-1}}{|\text{Market income}_{i,t-1}|} \times 100.$$

ΔMarket income$_{i,t}$ indicates the percent change in the market income of household i from year $t-1$ to t. We use the absolute value for the denominator because market income can be negative due to net losses in business income.[12] $m\left(.\right)$ is the function that maps the cross-sectional annual income-growth distribution of all households in the sample to its moment for a given t. We look at the *mean*, *variance*, *coefficient of variation* (CV) and *skewness* of the household income-growth distribution. For the skewness, we follow the literature and use Kelley skewness: Kelley Skewness $\equiv \frac{\text{(P90 - P50) - (P50 - P10)}}{\text{P90 - P10}}$, where P indicates the percentile. The use of Kelley skewness allows us to break down movements in skewness into movements in the two tails of the distribution. Hence, we also provide the estimation results for the moments P90-P10, P90-P50 and P50-P10. Finally, β^m measures the correlation of our interest, where ΔGDP_t is the log difference in real GDP from year t to $t+1$ multiplied by 100.

We estimate Equation 1 using annual household income-tax data and Canadian real GDP from 1982 to 2019.[13] Figure 4 plots the time series of these moments—the mean, variance, CV and Kelley skewness of the market income-growth distribution—over the sample period, used for the regression analysis. Table 1 displays the estimation results for the mean, variance, CV and Kelley skewness.[14] Intuitively, the mean of the income-growth distribution is positively

[12] We also avoid using the log difference for income growth due to this reason.

[13] Canadian real GDP data series can be obtained from Statistics Canada through this link.

[14] Given the sensitivity of some moments, especially the variance, to the outliers of the distribution, the time-series moment estimations in this section (Equation 1 and its by-source version, Equation 2) are based on the winsorized income-growth distribution at 1% and 99%. Appendix C presents those based on the raw

correlated with GDP growth. One percent GDP growth is significantly correlated with a 1.017-percentage-point increase in average income growth. The correlation for the variance is not significant while that of the CV is negative and significant at the 5% level. While the non-negative coefficient estimate for the variance confirms the finding by Busch et al. (2022)—indicating that the variance of income growth is not counter-cyclical—the CV of market income appears to be counter-cyclical. This suggests that the finding by Busch et al. (2022) that the dispersion of income growth is not counter-cyclical may depend on the definition of the dispersion, i.e., the variance versus the CV, as well as on the definition of income. Our finding that the CV of market income is counter-cyclical is based on the analysis of broader income, which includes labour earnings as well as other sources of income. In the next section, we break down the analysis by income source and look at the cyclicality of the variance and CV for labour earnings.

Regarding skewness, the right four columns of Table 1 present the results for Kelley skewness and its components. We find a significant and positive correlation between Kelley skewness and GDP growth. Hence, the skewness is pro-cyclical, i.e., the skewness of income growth becomes more positive (or right-skewed) when GDP growth is higher and vice versa. More intuitively, during economic expansions, the upper tail of the household income-growth distribution moves further to the right relative to the median and/or the left tail moves closer to the median. Hence, income growth at both tails rises relative to median income growth.

As mentioned above, one benefit of using Kelley skewness is that it allows us to identify the relative contributions of the two tails. We observe that GDP growth significantly and positively correlates with P90-P50 of the income-growth distribution, while it negatively correlates with P50-P10. This means that, when GDP growth increases, both P90 and P10 of the income-growth distribution move more to the right than the median does, making the distribution more right-skewed. Hence, the movement in both tails contributes to the pro-cyclicality of the skewness. We also note that the weakly significant result for P90-P10—a

distribution, which confirm the findings in this section. The panel decile estimations that follow (Equation 3) instead use the non-winsorized data.

measure of dispersion as with the variance—confirms our finding that the variance is not counter-cyclical.

3.1.2 By income source

To further understand the cyclicality of income growth, Equation 1 can be adopted to estimate the correlation with GDP growth by the source of income instead, i.e., the breakdown of market income. Figures E1–E5 in Appendix E display the time series of the mean, variance, CV and Kelley skewness for each of these income sources, as well as Figures E6–E10 displaying those for the further breakdown of the investment income category. Specifically, we estimate the following time-series equation:

$$m\left(\Delta Income_{i,j,t}\right) = \alpha + \gamma t + \beta^{m} \Delta GDP_{t} + u_{t}, \text{ where} \tag{2}$$

$$\Delta Income_{i,j,t} = \frac{\text{Income}_{i,j,t} - \text{Income}_{i,j,t-1}}{|\text{Market income}_{i,t-1}|} \times 100.$$

Now, $\Delta Income_{i,j,t}$ includes the index j for the source of income where j indicates one of the following sources: wage, salary and commission (WSC); non-professional business income (Bus); professional business income ($Prof$); investment income (Inv); and other income ($Other$). The change in each income source is measured relative to the absolute value of market income, as shown in Equation 2, rather than to the level of that income source itself. This makes the changes comparable across income sources and captures their relative importance for total market income.[15] For example, when the WSC and Inv both change by \$100 in one year, $\Delta Income_{i,j,t}$ is exactly the same regardless of the level of WSC or Inv in the base year.

Tables E3–E7 in Appendix E present the estimation results of Equation 2 for the mean,

[15] In addition, since market income is restricted to be above and below certain threshold values around zero, using it as the denominator of the change in income helps avoid the issue of the division by small numbers, making the ratio extremely large and thus generating outliers. Hence, no additional restriction in the value of income around zero for different sources is placed.

variance, CV and Kelley skewness of each income source. For the mean, all income sources, except *Other*, are pro-cyclical. WSC has the largest and most statistically-significant correlation with GDP growth. Bus and Inv also show a high and significant degree of pro-cyclicality, while $Prof$ shows the smallest and only weakly significant correlation. Regarding the variance, we observe that the finding in Section 3.1.1 that the variance of market-income growth is not significantly correlated with GDP growth is a result of heterogeneity across income sources. WSC, Bus and *Other* show positive correlations with GDP growth with some statistical significance. Among these, Bus is the only source showing strongly significant positive correlation, whereas the variance of labour earnings (WSC) shows an only weakly significant positive correlation.[16] The variance of the other income sources shows non-significant cyclicality with GDP growth.

Turning to the CV, we find that the counter-cyclicality of the CV documented for market income as a whole in Section 3.1.1 is concentrated in a subset of income sources. Both WSC and Bus exhibit a negative and weakly significant (at the 10% level) correlation between their CV and GDP growth, indicating that these two sources are the primary drivers of the counter-cyclical CV of market income. By contrast, the CV of $Prof$, Inv and *Other* shows no statistically significant correlation with GDP growth. This suggests that the relative dispersion of labour earnings and non-professional business income narrows during expansions, while the relative dispersion of professional business, investment and other income does not vary systematically over the business cycle.

Turning to the skewness, all income sources except *Other* show positive and significant coefficients for GDP growth. That is, the pro-cyclicality of the skewness in market income is driven by all of these sources, and not just the labour earnings. Among income sources with

[16] Our finding that the variance of WSC is not counter-cyclical appears different from other papers. For example, Bowlus et al. (2022) use similar Canadian data and find that the variance of labour earnings growth increases during recessions, i.e., counter-cyclical variance. We can note three differences in the details of the analyses that may lead to these contradictory findings. First, their study is based on individual labour earnings while ours is based on household earning. Second, they residualize labour earnings by filtering them by observable characteristics of the individuals while we do not. Finally, their conclusion regarding counter-cyclicality is based on the increase in variance in recessions while ours is based on the correlation analysis with GDP growth throughout business cycles.

pro-cyclical skewness, Inv shows the highest pro-cyclical relationship with GDP growth, at 0.0583, followed by WSC at 0.0261. We can further break down investment income into its components—dividend, interest, capital gains, limited partnership and rental income—and estimate Equation 2 separately for each. Tables E8–E12 in Appendix E present the estimation results. The results show that the pro-cyclicality of the skewness of investment income is driven by capital gains, which has a high and significant correlation with GDP growth.

As an additional robustness check, Appendix D repeats the analysis in this section using the change in the annual unemployment rate as an alternative indicator of the business cycle in place of GDP growth. The results confirm that the mean and skewness of income growth are pro-cyclical, and that the weak pro-cyclicality of the variance is driven by WSC and Bus.

3.2 Correlation conditional on the level of income

The previous section analyzed income growth without conditioning on the level of income. We now examine how the correlation between income growth and GDP growth varies across the income distribution, exploiting the panel data structure of household income tax records over time:

$$\begin{aligned}\frac{\text{Market income}_{i,t} - \text{Market income}_{i,t-1}}{|\text{Market income}_{i,t-1}|} = &\sum_{q=1}^{10} (\beta_q \cdot \Delta GDP_t \cdot Decile_{i,t-1,q} + \eta_q \cdot Decile_{i,t-1,q}) \\ &+ \sum_{\ell=1}^{2} \delta_\ell \cdot \frac{\text{Market income}_{i,t-\ell} - \text{Market income}_{i,t-1-\ell}}{|\text{Market income}_{i,t-1-\ell}|} \\ &+ \alpha_i + \gamma_t + \varepsilon_{i,t}, \end{aligned} \tag{3}$$

where i indexes each household, t the year, and q each income decile group. $\text{Market income}_{i,t}$ is the market income for household i at time t.[17] $Decile_{i,t-1,q}$ is a dummy variable that equals

[17] Again, given that $\text{Market income}_{i,t}$ can be negative, we take the absolute value when it is the denominator of a ratio.

1 when the average market income of household i over the past two years (i.e., market income from $t-1$ and $t-2$) belongs to the decile group q at time $t-1$ and 0 otherwise. ΔGDP_t is the log difference in real GDP as previously mentioned. α_i captures the individual household fixed effects and γ_t the time effects. The standard errors are two-way clustered at the household level and at the interaction of year and 2-digit postal code. Given the inclusion of the time fixed effects, our interest is in the relative difference in the correlation of income-GDP growth across income deciles, captured by β_q. We set the 5th income decile as the reference group.

Table 2 presents the estimation results. First, we note that the estimate for the *relative* average growth of market income, η_q's, shown in the rows labelled $Decile_1$ through $Decile_{10}$ in the table, monotonically declines with the decile, with the lowest decile group having the highest average growth relative to the 5th decile. It is important to keep in mind that these η_q's rank households by their income *level* but describe their income *growth*: households that currently sit at the bottom of the income-level distribution tend to experience the largest positive income growth, whereas those at the top tend to experience the smallest (or negative) growth—a pattern reminiscent of mean reversion. As a result, households in the lowest income decile group are more likely to be represented in the right (high-growth) tail of the unconditional income-growth distribution analyzed in Section 3.1, while those in the highest income decile group are more likely to be represented in the left (low-growth) tail.

Next, Figure 5 displays the estimates of β_q's with 95% confidence bands, where $q = 5$ is the reference group. Both the lowest and the highest income decile groups exhibit stronger positive correlation between their income growth and GDP growth than the 5th decile. The 4th and 6th deciles are not significantly different from the 5th. The 7th through 9th deciles show lower point estimates, but the 9th decile's lower estimate is not statistically significant. This asymmetric, U-shaped pattern of cyclicality across the income distribution echoes Parker and Vissing-Jørgensen (2010), who document for the United States that both the bottom quintiles—through job loss—and, increasingly since the early 1980s, the top 1%

of earners exhibit substantially higher income cyclicality than households in the middle of the distribution.[18]

Table 1 in Section 3.1 informs us that both tails of the income-growth distribution co-move more positively with GDP growth than the median, generating the pro-cyclical skewness. Table 2 now shows that these tail movements are driven by income growth of the lowest and the highest income-level decile groups.[19]

Turning to the correlations of income growth with GDP growth by income source, we estimate the following regression separately for each of the five components of market income.

$$\begin{aligned}\frac{\text{Income}_{i,t} - \text{Income}_{i,t-1}}{|\text{Market income}_{i,t-1}|} = &\sum_{q=1}^{10} (\beta_q \cdot \Delta GDP_t \cdot Decile_{i,t-1,q} + \eta_q \cdot Decile_{i,t-1,q}) \\ &+ \sum_{\ell=1}^{2} \delta_\ell \cdot \frac{\text{Income}_{i,t-\ell} - \text{Income}_{i,t-1-\ell}}{|\text{Market income}_{i,t-1-\ell}|} \\ &+ \alpha_i + \gamma_t + \varepsilon_{i,t}, \end{aligned} \tag{4}$$

where, now, $\text{Income}_{i,t}$ is the income of household i at time t from one of the five sources: wage, salary and commission (WSC); non-professional business income (Bus); professional business income ($Prof$); investment income (Inv); and other income ($Other$). The rest of the variables are defined as in Equation 3. Figure 6 breaks down these income-GDP growth correlations by income source, with 95% confidence bands and with the underlying estimation results presented in Table E1 in Appendix E. The figure and table show that the high positive correlation between income and GDP growth of the highest and lowest income deciles is largely driven by investment income. For the lowest two deciles, non-professional business income is also an important driver, while WSC income and non-professional business income explain the low negative income-GDP growth correlation for the 6th to 9th deciles. A further decomposition of the investment income category, presented in Table E2, shows

[18] In our analysis of market income, we do partially capture households who lose their jobs and hence all labour earnings as long as they have other market income above the threshold away from zero.

[19] In addition, the finding that the magnitude of the contemporaneous correlation with GDP monotonically declines from the lowest income to the high income excluding the top confirms the earlier work on the US income distribution over the business cycle by Castañeda et al. (1998).

that capital gains income is the primary driver of the correlation pattern across income decile groups.

Given that the pro-cyclical skewness of the income-growth distribution is associated with stronger income-GDP growth correlation of the high- and the low-income households, our next question is how monetary policy impacts them. Accordingly, the remainder of the paper identifies monetary policy shocks in Canada and estimates their impacts on the distribution of income growth.

4 Monetary policy shocks

Our empirical approach in analyzing the impact of monetary policy on household income growth relies on monetary policy shocks identified in the literature. Specifically, we extend the monetary policy shock time series constructed by Champagne and Sekkel (2018) to cover our household income sample until 2019.[20] Champagne and Sekkel (2018) estimate these shocks by using narrative evidence, following Romer and Romer (2000), with real-time data and forecasts from the Bank of Canada projections. Specifically, they estimate the following regression equation:

$$\begin{aligned}\Delta i_m &= \alpha + \beta_1 i_{t-d14} + \sum_{h=1}^{3} \rho_h u_{t-h} + \sum_{j=-1}^{2} \sigma_j \hat{y}^f_{m,j} + \sum_{j=-1}^{2} \delta_j \pi^f_{m,j} \\ &\quad + \sum_{j=-1}^{2} \theta_j \left(\hat{y}^f_{m,j} - \hat{y}^f_{m-1,j} \right) + \sum_{j=-1}^{2} \phi_j \left(\pi^f_{m,j} - \pi^f_{m-1,j} \right) \\ &\quad + \beta_2 FFR_{t-d14} + \beta_3 ER_{t-d14} + \beta_4 \Delta FFR_{m-m_{-1}} + \epsilon_m, \end{aligned} \tag{5}$$

where the dependent variable (Δi_m), the change in the intended policy rate, is measured at the meeting level, as indicated by the subscript m . The subscript j denotes the quarter of the real-time data or forecast relative to the meeting date, while subscripts $t-h$ and $t-d14$ refer to information from the previous months and two weeks relative to the meeting date,

[20] Their original estimation period was over 1974-2015.

respectively (and not to information from a previous meeting). Specifically, Champagne and Sekkel (2018) regress the change in the policy target rate (Δi_m) between two meetings on the one- and two-quarter-ahead forecasts of real output growth ($\hat{y}^f_{m,j}$) and inflation ($\pi^f_{m,j}$), as well as the nowcast and the real-time lagged values for the previous quarter. They also include the revisions to the forecasts relative to the previous round of forecasts (e.g., $\hat{y}^f_{m,j} - \hat{y}^f_{m-1,j}$), since both the levels and changes in the forecasts can be important determinants of the Bank of Canada's behaviour. To control for economic developments between meetings, they include the intended policy rate two weeks before the meeting and the (real-time) rates of unemployment for the previous three months.

Champagne and Sekkel (2018) make two important departures from Romer and Romer (2000): first, in the third line of Equation 5 they further control for the levels and changes of the U.S. FFR (FFR_{t-d14}) and the logarithm of the USD/CAD nominal exchange rate (ER_{t-d14}) two weeks before the meeting. Canada is a small open economy with close ties to the U.S., and these variables are included to capture any tendency for the Bank of Canada to react to interest rate movements in the U.S., as well as to changes in the value of the Canadian dollar relative to its U.S. counterpart. Second, they break the estimation of Equation 5 into two subsamples: the first subsample includes all those meetings preceding the inflation targets (i.e., 1974–1991) and the second subsample includes all meetings thereafter (1992 onward).[21] Champagne and Sekkel (2018) show that there was a structural break in the Bank of Canada's reaction function, with the U.S./Canadian dollar exchange rate and U.S. interest rates being the main drivers of changes in the policy rate in the two decades prior to inflation targeting, and GDP and inflation forecasts the main drivers afterwards. The estimated residuals from Equation 5 for each subsample are spliced together for the meeting-by-meeting series of monetary policy shocks. For our analysis, we annualized the series by summing the meeting-level shocks within each year. Figure 7 displays these shocks over the period 1982-2019.

[21] The Bank of Canada adopted an inflation targeting framework in 1991, and has made only minor changes since then. Bank of Canada (2021)

To assess the validity of the annualized and extended monetary policy shock series, we test their macroeconomic implications using the following Canadian province-level panel local-projection model:

$$\begin{aligned}
\ln Y_{j,t+h} - \ln Y_{j,t-1} &= \phi_h \cdot MP_t \\
&+ \sum_{\ell=1}^{2} \varphi_{h,\ell} \cdot (\ln GDP_{j,t-\ell} - \ln GDP_{j,t-1-\ell}) \\
&+ \sum_{\ell=1}^{2} \psi_{h,\ell} \cdot (\ln CPI_{j,t-\ell} - \ln CPI_{j,t-1-\ell}) \\
&+ \sum_{\ell=1}^{2} \omega_{h,\ell} \cdot (\ln BCPI_{t-\ell} - \ln BCPI_{t-1-\ell}) \\
&+ \lambda_j + \varepsilon_{j,t+h}, \qquad (6)
\end{aligned}$$

where j is one of the ten Canadian provinces and h the forecast horizon. Y is real GDP or CPI. Figure 8 shows the impulse-response functions for GDP growth and CPI inflation with respect to a 1-pp monetary policy tightening shock. The bands indicate the 90% and 68% confidence intervals, respectively. Real GDP begins to decline after Year 1 and continues to decline through Year 4. CPI inflation increases in Year 1 before persistently declining over the five-year period. These observations are broadly consistent with the findings of Champagne and Sekkel (2018) with their monthly shock series over the period of 1974-2015.

In the following section, we use these annualized monetary policy shocks to identify their impacts on household income.

5 Impacts of monetary policy shocks on household income

This section uses the monetary policy shocks identified in the previous section and analyzes the impacts of those shocks on household income, using the panel local projections

method developed by Jordà (2005). We first estimate the average impact on household income growth. We then examine how the effect varies across income deciles by interacting the monetary policy shock with decile indicators defined using households' average market income over the previous two years. As discussed in earlier sections, we also break down market income into the five sources: wage, salary and commission (WSC), non-professional business (Bus), professional business (Prof), investment (Inv) and other (Other), as well as the subcategories of investment income.

5.1 Average income

We first estimate the following baseline regression equation:

$$\begin{aligned} \frac{y_{i,t+h} - y_{i,t-1}}{|\text{Market income}_{i,t-1}|} &= \beta_h \cdot MP_t \\ &+ \sum_{\ell=1}^{2} \gamma_{h,\ell} \cdot \frac{y_{i,t-\ell} - y_{i,t-\ell-1}}{|\text{Market income}_{i,t-\ell-1}|} \\ &+ \sum_{\ell=1}^{2} \sigma_{h,\ell} \cdot MP_{t-\ell} + \theta_h \cdot X + \alpha_i + \varepsilon_{i,t+h}, \end{aligned} \tag{7}$$

where i indexes the household, t the year, and h the forecast horizon of the local projections. We first define y_i being the market income of household i in year t and later replace it with each of the other income sources.[22] The dependent variable is the growth rate of income from $t-1$ to $t+h$, expressed as a percentage. MP_t is the monetary policy shock identified in the previous section. Equation 7 is the baseline specification where β_h is the parameter of interest, capturing the average change in household income growth over horizon h following a 1-pp monetary policy tightening shock. We include as controls the first two lags of both the dependent variable and the monetary policy shocks. In addition, the vector X contains three macro control variables: the first two lags of real GDP growth, CPI inflation at the

[22] Again, given that y_i can be negative, we take the absolute value when it is the denominator of a ratio.

provincial level and changes in a commodity price index.[23] Finally, α_i captures the household fixed effects.

We estimate this specification with the panel fixed effects estimator and two-way cluster the standard errors at the household level and the interaction of year and 2-digit postal code. Our market-income sample for these estimations consists of 63 million observations at $h = 0$ and 40 million at $h = 5$; the samples for the component sources are of a similar size, except for limited partnership income, whose shorter 1988–2019 window yields 55 million observations at $h = 0$ and 33 million at $h = 5$. Estimation results for Equation 7 for market income are presented in Table 3, while those for its component sources are presented in Tables F1–F10 in Appendix F.

Figure 9 displays the impulse-response function of a 1-pp tightening monetary policy shock on the household income growth, using the estimates from Equation 7. The confidence bands in this and subsequent figures are 95% confidence intervals. Monetary policy tightening decreases household income growth on average over the 5-year period, with a 0.903-pp decline in Year 1 and a peak decline of 2.207 pp in Year 4.[24]

Figures 10 and 11 decompose this average response across the five income sources and the subcategories of investment income, using the estimates from Equation 7 reported in Tables F1–F10 in Appendix F. Figure 10 shows that the decline in market-income growth is driven almost entirely by WSC income, which falls persistently and by the largest margin among the income sources, from a decline of 0.4 pp on impact to 3.4 pp by Year 5 (Table F1). Business income, whether non-professional or professional (Tables F2 and F3), barely responds to the shock and stays close to zero throughout the five-year horizon. Other income (Table F5) instead rises steadily, reaching a 0.7-pp increase by Year 5, partially offsetting the decline in WSC income. Investment income (Table F4) displays the oscillating

[23] For the commodity price index, we use the Bank of Canada commodity price index (BCPI), converted to Canadian dollars.

[24] We also observe an oscillation of the income-growth response with an uptick in Year 2 before it persistently declines. From the column $h = 2$ of Table 4, we see that lower income-decile households contribute more to this uptick in Year 2.

pattern noted above: it declines on impact, turns positive and peaks at 0.9 pp in Year 2, flattens out in Years 3 and 4, and rises again to 1.0 pp by Year 5.

Figure 11 breaks investment income down further into its five subcategories (Tables F6–F10 in Appendix F) and shows that this oscillation is almost entirely driven by capital gains income (Table F8), whose response closely tracks that of total investment income, moving from a 0.3-pp decline in Year 1 to a 1.2-pp increase by Year 5. Interest income (Table F7) instead declines persistently, moving in the same direction as WSC income but by a smaller magnitude, reaching a 0.4-pp decline by Year 5. Dividend, limited partnership and rental income (Tables F6, F9 and F10) remain close to zero over the entire horizon.

5.2 By income decile - Market income

To understand the heterogeneous impacts of monetary policy across the income distribution, we introduce the income decile dummies and their interactions with the monetary policy shock to the baseline specification:

$$\begin{aligned}\frac{y_{i,t+h} - y_{i,t-1}}{|\text{Market income}_{i,t-1}|} &= \sum_{q=1}^{10} \beta_{hq} \cdot MP_t \cdot Decile_{i,t-1,q} + \eta_{hq} Decile_{i,t-1,q} \\ &+ \sum_{\ell=1}^{2} \gamma_{h,\ell} \cdot \frac{y_{i,t-\ell} - y_{i,t-\ell-1}}{|\text{Market income}_{i,t-\ell-1}|} \\ &+ \theta_t + \alpha_i + \varepsilon_{i,t+h}, \end{aligned} \tag{8}$$

Here, as before, y denotes market income for the discussion in this section and, later, each of the other sources of income. q indexes the decile of the household's average market income over the previous two years, so that β_{hq} captures how the income-growth response to a monetary policy shock differs across the distribution, and θ_t now denotes time fixed effects, which replace the macro controls X of Equation 7. As with the baseline, we estimate this specification with the panel fixed effects estimator and two-way cluster the standard errors at

the household level and the interaction of year and 2-digit postal code.[25] Estimation results of Equation 8 for market income are presented in Table 4.

Figure 12 shows the responses across income deciles in Year 1. The figure indicates that high-income households (those in the 10th decile) experience a 0.741 pp larger decline in income growth than middle-income households (those in the 5th decile) in Year 1. In addition, the low-income households (those in the 1st decile) also have a lower point estimate, but the difference from the 5th percentile is not statistically significant. The stronger decline at the top points to a compression of income growth across the distribution. Moreover, the point estimates across the 2nd to the 10th decile slope downwards, implying that the higher the income, the lower the income growth. Hence, the monetary policy tightening reduces overall income inequality. Finally, the large reduction in income growth among the high-income households suggests that the income-level distribution is becoming more negatively skewed or more left-skewed.

The remaining columns of Table 4 show that this pattern evolves notably beyond Year 1. Unlike Year 1, where only the 10th decile differs significantly from the 5th decile, the 1st decile's response turns significantly positive in Years 2, 3 and 5, at 1.842 pp, 0.901 pp and 1.225 pp, respectively, but is not significant in Year 4. The 10th decile's response, meanwhile, is insignificant in Year 2 (-0.253 pp) before returning to significance in Years 3 through 5, reaching its largest magnitude of -0.996 pp in Year 4 before easing slightly to -0.873 pp in Year 5. Both tails increasingly diverge from middle-income households, although the timing differs somewhat beyond Year 1, in contrast to the one-sided divergence observed in Year 1.

More generally, the point estimates for the 2nd to 9th deciles tend to slope downwards across these horizons, so that the higher the income, the lower the income growth throughout the 5-year period; the exception is Year 4, where the 1st decile's response is not statistically different from the middle. As a result, the U-shape (i.e., impact by decile relative to the 5th decile benchmark) temporarily narrows to a decline concentrated in the upper half of

[25] Appendix G examines the sensitivity of the standard errors to the choice of the second clustering variable.

the income distribution. Overall, monetary policy tightening continues to reduce income inequality beyond Year 1, increasingly through stronger relative income growth at the bottom and weaker relative income growth at the top.

The next section elaborates more on these findings by breaking down market income into different sources.

5.3 By income decile - By income source

As discussed above, there are five major sources of income: wage, salary and commission (WSC), non-professional business (Bus), professional business (Prof), investment (Inv) and other (Other). We estimate Equation 8 separately for each major source of income, with results presented in Tables F11–F20 in Appendix F. Monetary policy can impact households differently because the composition of their income varies across the distribution, as shown in Figures 14–15. In Year 1 (Figure 14), WSC income growth declines the least for the lowest decile and progressively more at higher income deciles. This heterogeneity persists through Year 5 (Figure 15) and makes WSC the primary driver of the differences in overall income-growth responses across deciles. Investment income growth initially declines the most for the lowest two deciles, followed by the highest decile, driven by changes in capital gains. However, this pattern reverses beginning in Year 2 (Figure F1) and continues through Years 3 and 4 (Figures F2 and F3). Overall, the capital gains response appears volatile across the five years, especially for the lowest and highest income decile groups.

In contrast, non-professional and professional business income (Tables F12 and F13 in Appendix F) show little decile heterogeneity, with most coefficients small and statistically insignificant, consistent with these sources' minor contribution to the overall income response. Other income (Table F15) similarly shows limited heterogeneity in the short run, though a modest, positive and increasingly significant response emerges for the upper-middle and top deciles from Year 3 onward. Among the investment subcategories, dividend and rental income (Tables F16 and F20) show some scattered decile differences without a clear pattern

across horizons, while interest income (Table F17) displays a notable reversal, whereby the 1st and 10th deciles respond positively on impact and in Year 1 but turn significantly negative by Years 4 and 5. Limited partnership income (Table F19) stands out for the 10th decile, whose response is negative and significant at a similar magnitude across all five years.

6 Monetary policy, business cycle and the skewness of the income-growth distribution

What are the implications of monetary policy for the dynamics of the income-growth distribution over the business cycle? Our analysis in this paper indicates that monetary policy counters the volatility of the income-growth distribution over the business cycle that arises from the pro-cyclicality of the skewness of the income-growth distribution. In particular, we find that monetary policy tightening reduces the income growth of high-income households more than that of middle-income households, while low-income households are not significantly affected in Year 1. Recall from Section 3 that high-income-level households tend to be located in the left (low-growth) tail of the income-growth distribution; by lowering their income growth further, monetary policy tightening therefore stretches this left tail away from the median, making the income-growth distribution more negatively skewed. This counteracts the pro-cyclical rightward movement of the tails that occurs during economic booms, when average income growth and skewness are both higher.

This section elaborates this argument by bringing together our analysis of the income-growth distribution over the business cycle in Section 3 and the impacts of monetary policy on the income-growth distribution in Section 5. Section 3 showed that the skewness of the income-growth distribution is pro-cyclical, with both tails of the distribution co-moving more positively with GDP growth than the median. Section 5 then estimated the distributional effects of monetary policy using Equation 8. We now combine these results to assess how monetary policy contributes to the skewness of the income-growth distribution over the

business cycle. We focus on the one-year horizon.

6.1 Aggregate skewness response to monetary policy

To complement the decile-level evidence above, we estimate an aggregate local projection of the Kelley skewness of household market-income growth, together with its two percentile-spread components ($P90-P50$ and $P50-P10$), on the monetary policy shock, using the same annual time series of income-growth distribution moments used to estimate Equation 1 in Section 3.1 (plotted in Figure 4). Because this exercise has only 36 to 32 annual observations across the horizons, we use a parsimonious specification with the contemporaneous monetary policy shock and contemporaneous GDP growth, CPI inflation and BCPI growth as controls, paralleling the static, contemporaneous framing of the correlation analysis in Section 3.[26] Specifically, we estimate

$$\frac{S_{t+h} - S_{t-1}}{|S_{t-1}|} = \alpha_h + \beta_h \cdot MP_t + \theta_{h,1} \cdot \Delta GDP_t + \theta_{h,2} \cdot \Delta CPI_t + \theta_{h,3} \cdot \Delta BCPI_t + \varepsilon_{t+h}, \quad (9)$$

where S_t is, in turn, the Kelley skewness, $P90 - P50$, $P50 - P10$ or $P90 - P10$ of the market-income growth distribution in year t, h is the forecast horizon, α_h is a constant, MP_t is the monetary policy shock, and ΔGDP_t, ΔCPI_t and $\Delta BCPI_t$ are the contemporaneous log-differences of real GDP, CPI and the Bank of Canada commodity price index. Both the dependent variable (the growth rate of S) and the monetary policy shock are expressed in percentage terms, so the coefficient β_h gives the percentage change in S following a 1-pp monetary policy shock. We report Newey-West standard errors (maximum lag length of 3) to account for serial correlation in the annual time series.

Table 5 reports the Year-1 estimates, using Newey-West standard errors to account for serial correlation in the annual local-projection residuals. A 1-pp monetary policy tightening

[26] As a robustness check, we also estimated a lag-augmented specification following more closely Equation 7 (two lags of the shock, of the dependent variable, and of the macro controls). With so few time-series observations, this substantially reduces power: the Year-1 monetary policy shock coefficient on Kelley skewness falls to -0.455 (Newey-West s.e. 0.510) and is no longer significant. We view the contemporaneous specification as the more reliable choice given the sample size, but note this sensitivity as a caveat.

shock lowers the Kelley skewness of the market-income growth distribution by 1.878 percentage points in Year 1 (significant at the 5% level). Neither the upper-half ($P90 - P50$) nor the lower-half ($P50 - P10$) spread component is individually significant under Newey-West standard errors; only the Kelley skewness measure is. We therefore read this as evidence of an overall reduction in the skewness of the income-growth distribution, without attributing it to a specific tail. Figure 13 plots the impulse responses of all four measures over the full five-year horizon: Year 1 is the only horizon at which the Kelley skewness response is statistically significant, consistent with our focus on the one-year horizon throughout this section. This aggregate, unconditional result reinforces the decile-level finding in Table 4 that monetary policy tightening compresses income growth in the upper part of the income distribution in Year 1, dampening the pro-cyclical skewness documented in Section 3.

6.2 Comparing the boom and the monetary policy response

Having established the aggregate skewness response, we now place it side by side with the business-cycle pattern to see how directly monetary policy offsets the boom. Monetary policy tightening often occurs during periods of strong economic activity or rising inflationary pressures.[27] The income-growth distribution becomes more positively skewed during boom periods, and monetary policy tightening during these periods can dampen the pro-cyclicality of skewness by shifting the income-growth distribution in the opposite direction (i.e., making it less positively skewed). We can visually compare the dynamics of income-growth distributions in the boom and after the monetary policy shock by looking at Figure 5 and 12. Figure 16 superimposes these two figures on top of each other. In doing so, the numbers from Figure 12 are adjusted. They are annualized to make them comparable with the income-GDP growth correlations, which are based on annual growth rates.

We observe a clear pattern in Figure 16 that monetary policy tightening counters the higher income growth of the high income-level households (relative to their 5th-decile peers)

[27] Note that the correlation coefficient between annual GDP growth and annual changes in the Bank Rate of the Bank of Canada over the data period, 1982-2019, is significantly positive at 0.5471.

that occurs in the boom, reducing their relative advantage over their peers. As shown in Figure 17, the sources behind this counter effect differ across the distribution: for the high income-level households it operates through both investment income—mainly capital gains—and WSC income, whereas for the low income-level households it operates mainly through investment income. More broadly, capital gains account for the U-shaped pattern of the income-growth response relative to the middle of the distribution, while WSC income accounts for the overall gradient by which the response declines as income rises. Interestingly, the WSC income of the low income-level households decreases less in response to a monetary policy tightening, which partially offsets the decline in their investment income and leaves their overall response close to that of their middle-income peers.[28]

So far we have compared income-growth responses *across* deciles relative to the middle of the distribution. Such relative comparisons reveal who gains or loses most from the boom and the monetary policy response, but they are silent on how much each decile actually contributes to movements in *aggregate* income growth, which depends on the size of each group's income as well as on its relative response. To gauge how much each decile matters for the *aggregate*, Figure 18 decomposes a 1-pp change in aggregate income growth into the contribution of each income decile, under two scenarios: a business-cycle expansion and an accommodative (loosening) monetary policy shock. We use an accommodative shock here, rather than the tightening shock discussed elsewhere, so that both scenarios raise aggregate income growth and can be compared within the same quadrant of the figure; because our estimated responses are symmetric, the tightening case is simply the mirror image. The decomposition confirms that the high-income deciles account for a disproportionate share of the aggregate fluctuation during the boom. The contribution of the high-income households to the observed pro-cyclical skewness of the income-growth distribution is important in the

[28]This finding is consistent with Cantore et al. (2026), who show, using US and UK data, that employed individuals at the bottom of the income distribution increase their hours worked in response to an interest rate hike by relatively more than other income groups. The mechanism is that their lower purchasing power following the hike induces a strong income effect that dominates the substitution effect, arising from their lower intertemporal elasticity of substitution, leading them to work more.

aggregate, and by countering their business-cycle movements, monetary policy reduces this pro-cyclicality and thus the aggregate volatility arising from it. By doing so, monetary policy in turn stabilizes the income-level distribution, or income inequality, over the business cycle. Finally, the difference between the two scenarios (the red line) shows that monetary policy does not offset the business cycle proportionally across the distribution: its impact relative to the size of the business-cycle movement varies by decile. This relative impact is largest for the upper-middle-class households in the 7th to 9th income deciles, whose income shares monetary policy moves by the most relative to how much they move over the business cycle. At the other extreme, monetary policy moves the income share of the 10th decile the least relative to its business-cycle movement.

6.3 Relation to the theoretical literature

The theoretical literature previewed in the introduction—in which the cyclicality of individual income *risk*, rather than the overall dispersion of income, governs how monetary policy interacts with the business cycle—provides a natural lens for interpreting our empirical findings. The general principle is laid out by Auclert et al. (2025): in heterogeneous-agent models, the cyclicality of idiosyncratic income risk is the decisive feature determining whether incomplete markets amplify or dampen the aggregate effects of monetary policy. The key object is thus not how wide the income distribution is, but how its tails move over the cycle.

Our central finding speaks directly to this object. Because skewness, unlike variance, captures the asymmetric likelihood of large income gains versus large income drops, our result that the *skewness* of the income-growth distribution is pro-cyclical while its *variance* is not shows that the cyclical action is concentrated in the lower (low-growth) tail of the income-growth distribution—which, as documented in Section 3, is where high income-level households are more likely to be located: large income drops for these households become more likely in downturns. This is precisely the counter-cyclical income risk that these models place at the center of the transmission mechanism. Bilbiie (2025) shows analytically

that reconciling the behavior of HANK models requires exactly this risk channel—counter-cyclical income risk operating alongside pro-cyclical income inequality—and documents the same combination in U.S. data during the Great Recession and the COVID-19 recession; our micro-level evidence on the pro-cyclical skewness of income growth supplies a direct empirical counterpart. Bilbiie et al. (2023) further show that this counter-cyclical risk, operating through cyclical precautionary saving, substantially amplifies aggregate business-cycle fluctuations. Our decile-level estimates add a distributional dimension to this mechanism: monetary policy offsets the business cycle unevenly across the income distribution, moving the income shares of the upper-middle (7th–9th) deciles most relative to their cyclical movement (Figure 18). Taken together, our Canadian tax-based evidence that monetary policy counters the pro-cyclical skewness of the income-growth distribution provides direct empirical support for the risk-based mechanism at the center of this theoretical literature.

7 Conclusion

This paper set out to answer whether monetary policy, in pursuit of its price-stability mandate, amplifies or offsets the pro-cyclical skewness of household income growth over the business cycle. Using Statistics Canada's Longitudinal Administrative Databank of tax filers from 1982 to 2019, we address this question along three dimensions: i) documenting how the moments of the income-growth distribution—and, in particular, its skewness—correlate with GDP growth; ii) estimating the impacts of monetary policy shocks on household income by income decile group and by major source of income; and iii) combining these two sets of results to assess whether monetary policy dampens or amplifies the cyclicality of the income-growth distribution over the business cycle. Because our results are based on tax filers only, they speak to dynamics on the intensive margin of the income process.

Our central finding is that skewness, rather than variance, is the defining feature of how the income-growth distribution moves over the business cycle, and that this skewness is

precisely what monetary policy counters. Confirming and extending Busch et al. (2022) to a longer time series and a broader definition of income for Canada, we show that the skewness of the income-growth distribution is pro-cyclical while its variance is not: during economic expansions both tails shift to the right relative to the median household's income growth—the upper tail stretching further away while the lower tail moves closer—so that the distribution becomes more right-skewed, rather than simply widening or narrowing symmetrically. This pro-cyclical skewness is driven by households at the bottom and top of the income-level distribution, whose income growth co-moves with GDP growth by more than that of middle-income households. Among income sources, investment income shows the strongest pro-cyclical skewness, particularly through capital gains.

With regards to the effects of monetary policy, we find that a tightening shock generates larger and more persistent declines in income growth for high income-level households than for low income-level households, mainly through wage, salary and commission income and, to a lesser extent, through non-professional business and investment income. Households whose major income source is non-professional business or investment income experience larger income-growth declines following monetary policy tightening than those whose major income source is professional business income, a pattern consistent with other studies finding that the composition of income sources across the distribution is a key driver of the distributional consequences of monetary policy (Coibion et al., 2017; Mumtaz and Theophilopoulou, 2017; Holm et al., 2021; Andersen et al., 2023; Amberg et al., 2022).

Bringing these findings together delivers the paper's main message: monetary policy tightening acts unevenly across the same parts of the income-growth distribution that drive its pro-cyclical skewness, thereby countering that skewness. During booms, high-income-level households—who sit at the top of the income-*level* distribution but, through mean reversion, in the left (low-growth) tail of the income-*growth* distribution—enjoy outsized income growth, driven largely by capital gains, which pulls them toward the middle of the growth distribution and raises its positive skewness. By curbing precisely these households'

income-growth gains, monetary policy tightening pushes them back into the left tail of the income-growth distribution, reducing its positive skewness and offsetting the pro-cyclical shift that occurs as economic activity strengthens. Although both tails of the income-growth distribution contribute to its pro-cyclical skewness, monetary policy counters that skewness asymmetrically, acting most robustly through the high income-level households. In doing so, monetary policy dampens the volatility of the income-growth distribution that arises from its pro-cyclical skewness and, in turn, stabilizes the income-level distribution, or income inequality, over the business cycle.

This provides direct empirical evidence for a mechanism that a growing theoretical literature identifies as central to monetary policy transmission. The cyclicality of income risk, captured by the skewness rather than the dispersion of income growth, can determine whether monetary policy amplifies or attenuates business-cycle fluctuations (Auclert et al., 2025; Bilbiie, 2025; Bilbiie et al., 2023). By linking the cyclical skewness of household income growth directly to the distributional effects of monetary policy shocks, our results provide an empirical bridge between one strand of the literature on income dynamics over the business cycle and another strand on the distributional effects of monetary policy.

References

Amberg, N., Jansson, T., Klein, M., Rogantini Picco, A., 2022. Five facts about the distributional income effects of monetary policy shocks. American Economic Review: Insights 4, 289–304.

Andersen, A., Johannesen, N., Jørgensen, M., Peydró, J.L., 2023. Monetary policy and inequality. The Journal of Finance 78, 2945–89.

Auclert, A., Rognlie, M., Straub, L., 2025. Fiscal and monetary policy with heterogeneous agents. Annual Review of Economics 17, 539–562. DOI: 10.1146/annurev-economics-091624-044646.

Bank of Canada, 2021. Monetary policy renewal. Available at: https://www.bankofcanada.ca/wp-content/uploads/2021/12/Monetary-Policy-Framework-Renewal-December-2021.pdf.

Bernanke, B.S., 2015. Monetary policy and inequality. Brookings, Commentary, https://www.brookings.edu/articles/monetary-policy-and-inequality.

Bilbiie, F.O., 2025. Monetary policy and heterogeneity: An analytical framework. The Review of Economic Studies 92, 2398–2436. DOI: 10.1093/restud/rdae066.

Bilbiie, F.O., Primiceri, G.E., Tambalotti, A., 2023. Inequality and Business Cycles. NBER Working Papers 31729. National Bureau of Economic Research.

Bowlus, A., Gouin-Bonenfant, E., Liu, H., Lochner, L., Park, Y., 2022. Four decades of canadian earnings inequality and dynamics across workers and firms. Quantitative Economics 13, 1447–1491.

Budría, S., Díaz-Giménez, J., Quadrini, V., Ríos-Rull, J.V., 2002. Updated facts on the distributions of earnings, income, and wealth. Federal Reserve Bank of Minneapolis Quarterly Review 26, 2–35.

Burkinshaw, S., Terajima, Y., Wilkins, C.A., 2022. Income inequality in canada. Bank of Canada Staff Discussion Paper 2022-16, https://www.bankofcanada.ca/2022/07/

staff-discussion-paper-2022-16/.

Busch, C., Domeij, D., Guvenen, F., Madera, R., 2022. Skewed idiosyncratic income risk over the business cycle: Sources and insurance. American Economic Journal: Macroeconomics 14, 207–242.

Cantore, C., Ferroni, F., Mumtaz, H., Theophilopoulou, A., 2026. A tail of labor supply and a tale of monetary policy. Journal of the European Economic Association Advance access article jvag030. DOI: 10.1093/jeea/jvag030.

Castañeda, A., Díaz-Giménez, J., Ríos-Rull, J.V., 1998. Exploring the income distribution business cycle dynamics. Journal of Monetary Economics 42, 93–130.

Champagne, J., Sekkel, R., 2018. Changes in monetary regimes and the identification of monetary policy shocks: Narrative evidence from canada. Journal of Monetary Economics 99, 72–87.

Chang, M., Schorfheide, F., 2024. On the Effects of Monetary Policy Shocks on Income and Consumption Heterogeneity. NBER Working Paper 32166. National Bureau of Economic Research.

Chang, Y., Kim, S., Park, J.Y., 2025. How Do Macroaggregates and Income Distribution Interact Dynamically? A Novel Structural Mixed Autoregression with Aggregate and Functional Variables. Working Paper. Indiana University.

Coibion, O., Gorodnichenko, Y., Kueng, L., Silvia, J., 2017. Innocent bystanders? monetary policy and inequality. Journal of Monetary Economics 88, 70–89.

Díaz-Giménez, J., Glover, A., Ríos-Rull, J.V., 2011. Facts on the distributions of earnings, income, and wealth in the united states: 2007 update. Federal Reserve Bank of Minneapolis Quarterly Review 34, 2–31.

Díaz-Giménez, J., Quadrini, V., Ríos-Rull, J.V., 1997. Dimensions of inequality: Facts on the distribution of earnings, income, and wealth. Federal Reserve Bank of Minneapolis Quarterly Review 21, 3–21.

Draghi, M., 2016. Stability, equity and monetary policy. 2nd DIW Europe Lecture. Available at http://www.ecb.europa.eu/press/key/date/2016/html/sp161025.en.html.

Fortin, N., Green, D., Lemieux, T., Milligan, K., Riddell, W.C., 2012. Canadian inequality: Recent developments and policy options. Canadian Public Policy 38, 121–145.

Furceri, D., Loungani, P., Zdzienicka, A., 2018. The effects of monetary policy shocks on inequality. Journal of International Money and Finance 85, 168–186.

Guvenen, F., Kaplan, G., Song, J., Weidner, J., 2022a. Lifetime earnings in the united states over six decades. American Economic Journal: Applied Economics 14, 446–479.

Guvenen, F., Ozkan, S., Song, J., 2014. The nature of countercyclical income risk. Journal of Political Economy 122, 621–660.

Guvenen, F., Pistaferri, L., Violante, G.L., 2022b. Global trends in income inequality and income dynamics: New insights from grid. Quantitative Economics 13, 1321–1360.

Heathcote, J., Perri, F., Violante, G.L., Zhang, L., 2023. More unequal we stand? inequality dynamics in the united states, 1967–2021. Review of Economic Dynamics 50, 235–266.

Holm, M.B., Paul, P., Tischbirek, A., 2021. The transmission of monetary policy under the microscope. Journal of Political Economy 129, 2861–2904.

Jordà, O., 2005. Estimation and inference of impulse responses by local projections. American Economic Review 95, 161–182.

Krueger, D., Perri, F., Pistaferri, L., Violante, G.L., 2010. Cross-sectional facts for macroeconomists. Review of Economic Dynamics 13, 1–14.

Kuhn, M., Ríos-Rull, J.V., 2016. 2013 update on the U.S. earnings, income, and wealth distributional facts: A view from macroeconomics. Federal Reserve Bank of Minneapolis Quarterly Review 37, 2–73.

Maestri, V., Roventini, A., 2012. Inequality and Macroeconomic Factors: A Time-Series Analysis for a Set of OECD Countries. Working Paper 34. Department of Economics, University of Verona.

Mumtaz, H., Theophilopoulou, A., 2017. The impact of monetary policy on inequality in the UK. An empirical analysis. European Economic Review 98, 410–423.

OECD, 2019. Under pressure: The squeezed middle class. OECD Publishing, https://www.oecd.org/social/under-pressure-the-squeezed-middle-class-689afed1-en.htm.

Parker, J.A., Vissing-Jørgensen, A., 2010. The increase in income cyclicality of high-income households and its relation to the rise in top income shares. Brookings Papers on Economic Activity 2010, 1–70.

Piketty, T., Saez, E., 2003. Income inequality in the united states, 1913-1998. The Quarterly Journal of Economics 118, 1–41.

Romer, C., Romer, D., 2000. Federal reserve information and the behavior of interest rates. American Economic Review 90, 429–457.

Saez, E., Zucman, G., 2016. Wealth inequality in the united states since 1913: Evidence from capitalized income tax data. The Quarterly Journal of Economics 131, 519–578.

Statistics Canada, 2025. Longitudinal administrative databank (LAD) overview, 2023. https://www150.statcan.gc.ca/n1/pub/12-585-x/12-585-x2025001-eng.htm.

Statistics Canada, n.d. Longitudinal administrative data (LAD). https://www150.statcan.gc.ca/n1/en/catalogue/13C0019. Service no. 13C0019. Accessed 10 October 2026.

Storesletten, K., Telmer, C.I., Yaron, A., 2004. Cyclical dynamics in idiosyncratic labor market risk. Journal of Political Economy 112, 695–717.

Zhang, X., Saani, H., Chung, J., 2016. The evolution of income mobility in canada: Evidence from the longitudinal administrative databank, 1982 to 2012. Statistics Canada Income Research Paper Series, Catalogue no. 75F0002M.

Tables and Figures

Table 1: Estimation results of Equation 1 for Market Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	1.017***	63.32	-1.429**	0.0257***	0.738	1.418***	-0.680***
	(0.229)	(38.86)	(0.604)	(0.00369)	(0.453)	(0.432)	(0.0485)
t	0.0761**	-0.639	-0.158***	0.00260***	-0.0413	0.0673	-0.109***
	(0.0367)	(7.211)	(0.0528)	(0.000685)	(0.102)	(0.0808)	(0.0266)
Constant	-146.6*	2,824	325.5***	-5.091***	155.8	-94.19	250.0***
	(73.58)	(14,429)	(106.8)	(1.373)	(203.4)	(161.6)	(53.42)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.370	0.019	0.400	0.514	0.034	0.202	0.419

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: Estimation results of Equation 3

	Dependent variable: $\frac{\text{Market income}_{i,t} - \text{Market income}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$
$\Delta GDP_t \cdot Decile_1$	0.659***
	(0.100)
$\Delta GDP_t \cdot Decile_2$	0.149***
	(0.0470)
$\Delta GDP_t \cdot Decile_3$	0.0931***
	(0.0334)
$\Delta GDP_t \cdot Decile_4$	0.0292
	(0.0251)
$\Delta GDP_t \cdot Decile_6$	-0.0208
	(0.0211)
$\Delta GDP_t \cdot Decile_7$	-0.0764***
	(0.0224)
$\Delta GDP_t \cdot Decile_8$	-0.0721***
	(0.0242)
$\Delta GDP_t \cdot Decile_9$	-0.0391
	(0.0299)
$\Delta GDP_t \cdot Decile_{10}$	0.408***
	(0.0613)
$Decile_1$	64.27***
	(0.380)
$Decile_2$	34.10***
	(0.207)
$Decile_3$	18.45***
	(0.132)
$Decile_4$	8.056***
	(0.0828)
$Decile_6$	-6.462***
	(0.0713)
$Decile_7$	-12.09***
	(0.0951)
$Decile_8$	-17.80***
	(0.119)
$Decile_9$	-24.33***
	(0.171)
$Decile_{10}$	-37.25***
	(0.326)
$\frac{\text{Market income}_{i,t-1} - \text{Market income}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.160***
	(0.00494)
$\frac{\text{Market income}_{i,t-2} - \text{Market income}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0561***
	(0.00372)
Constant	9.228***
	(0.0843)
Observations	63,451,605
R^2	0.141
Household FE	Yes
Time FE	Yes

Note: Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Estimation results of Equation 7 - Market Income

Dependent variable: $\frac{\text{Market income}_{i,t+h} - \text{Market income}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	-0.214***	-0.903***	0.123	-1.442***	-2.207***	-1.873***
	(0.0705)	(0.109)	(0.184)	(0.173)	(0.200)	(0.236)
MP_{t-1}	-1.118***	-0.242*	-0.994***	-2.276***	-1.508***	-2.161***
	(0.107)	(0.146)	(0.181)	(0.187)	(0.208)	(0.235)
MP_{t-2}	0.255***	-0.103	-1.115***	-1.041***	-0.681***	-2.478***
	(0.0979)	(0.127)	(0.155)	(0.156)	(0.190)	(0.208)
$\frac{\text{Market income}_{i,t-1} - \text{Market income}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.164***	-0.167***	-0.176***	-0.184***	-0.203***	-0.206***
	(0.00514)	(0.00864)	(0.0103)	(0.00995)	(0.0107)	(0.0124)
$\frac{\text{Market income}_{i,t-2} - \text{Market income}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0800***	-0.0728***	-0.0778***	-0.0878***	-0.0930***	-0.0884***
	(0.00350)	(0.00480)	(0.00438)	(0.00700)	(0.00605)	(0.00569)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.0281***	0.0332***	0.0343***	0.0359***	0.0412***	0.0395***
	(0.00173)	(0.00218)	(0.00251)	(0.00254)	(0.00274)	(0.00282)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	0.00987***	0.0126***	0.00858***	0.0118***	0.00918***	0.0113***
	(0.00115)	(0.00164)	(0.00206)	(0.00220)	(0.00258)	(0.00275)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	0.107*	-0.394***	1.061***	0.952***	1.069***	0.826***
	(0.0568)	(0.0944)	(0.120)	(0.115)	(0.138)	(0.152)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	0.0954*	1.424***	1.067***	1.281***	0.870***	1.312***
	(0.0501)	(0.102)	(0.117)	(0.137)	(0.167)	(0.176)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.0296***	0.0410***	0.0191*	0.0287**	-0.0680***	0.0222
	(0.00587)	(0.00821)	(0.0111)	(0.0130)	(0.0142)	(0.0175)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.00687*	-0.0425***	-0.0196**	-0.0680***	-0.0454***	0.0127
	(0.00366)	(0.00701)	(0.00879)	(0.0109)	(0.0120)	(0.0143)
Constant	9.220***	11.05***	11.71***	14.41***	18.38***	20.44***
	(0.183)	(0.250)	(0.329)	(0.387)	(0.444)	(0.515)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.118	0.121	0.120	0.129	0.178	0.195
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Estimation results of Equation 8 - Market Income

Dependent variable: $\frac{\text{Market income}_{i,t+h} - \text{Market income}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	1.080***	-0.410	1.842***	0.901**	0.240	1.225**
	(0.193)	(0.312)	(0.345)	(0.372)	(0.434)	(0.489)
$MP_t \cdot Decile_2$	0.489***	0.0748	0.847***	0.389	0.235	1.013***
	(0.0914)	(0.151)	(0.163)	(0.254)	(0.225)	(0.254)
$MP_t \cdot Decile_3$	0.253***	0.0882	0.236**	0.111	-0.0171	0.365**
	(0.0573)	(0.0839)	(0.0933)	(0.112)	(0.144)	(0.151)
$MP_t \cdot Decile_4$	0.0511	-0.0370	0.0594	0.0966	0.102	0.234***
	(0.0493)	(0.0554)	(0.0667)	(0.0733)	(0.0804)	(0.0888)
$MP_t \cdot Decile_6$	-0.130***	-0.148***	-0.151***	-0.0469	-0.0896	-0.145**
	(0.0390)	(0.0499)	(0.0543)	(0.0651)	(0.0654)	(0.0698)
$MP_t \cdot Decile_7$	-0.232***	-0.144**	-0.246***	-0.130*	-0.172**	-0.304***
	(0.0411)	(0.0579)	(0.0553)	(0.0674)	(0.0779)	(0.0859)
$MP_t \cdot Decile_8$	-0.288***	-0.275***	-0.207***	-0.119	-0.189**	-0.338***
	(0.0428)	(0.0598)	(0.0676)	(0.0829)	(0.0944)	(0.105)
$MP_t \cdot Decile_9$	-0.315***	-0.412***	-0.160*	-0.191*	-0.325***	-0.513***
	(0.0493)	(0.0704)	(0.0847)	(0.111)	(0.121)	(0.137)
$MP_t \cdot Decile_{10}$	-0.264***	-0.741***	-0.253	-0.474**	-0.996***	-0.873***
	(0.0965)	(0.136)	(0.164)	(0.198)	(0.247)	(0.280)
$Decile_1$	65.97***	97.24***	119.2***	137.0***	153.5***	169.2***
	(0.372)	(0.493)	(0.646)	(0.774)	(0.871)	(0.885)
$Decile_2$	34.52***	51.79***	64.01***	74.30***	83.31***	92.04***
	(0.190)	(0.256)	(0.309)	(0.414)	(0.440)	(0.491)
$Decile_3$	18.71***	28.01***	34.84***	40.56***	45.73***	50.59***
	(0.112)	(0.147)	(0.179)	(0.231)	(0.259)	(0.273)
$Decile_4$	8.139***	12.04***	15.03***	17.53***	19.73***	21.99***
	(0.0636)	(0.0765)	(0.0912)	(0.117)	(0.127)	(0.141)
$Decile_6$	-6.523***	-9.730***	-12.15***	-14.44***	-16.39***	-18.32***
	(0.0546)	(0.0688)	(0.0781)	(0.0973)	(0.107)	(0.111)
$Decile_7$	-12.29***	-18.30***	-22.90***	-27.09***	-30.90***	-34.66***
	(0.0788)	(0.106)	(0.125)	(0.155)	(0.176)	(0.180)
$Decile_8$	-18.00***	-26.74***	-33.50***	-39.71***	-45.48***	-51.10***
	(0.107)	(0.147)	(0.176)	(0.215)	(0.252)	(0.254)
$Decile_9$	-24.46***	-36.43***	-45.84***	-54.57***	-62.71***	-70.83***
	(0.153)	(0.207)	(0.242)	(0.291)	(0.347)	(0.345)
$Decile_{10}$	-36.31***	-54.46***	-68.98***	-82.48***	-94.83***	-107.7***
	(0.274)	(0.367)	(0.434)	(0.569)	(0.607)	(0.580)
$\frac{\text{Market income}_{i,t-1} - \text{Market income}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.160***	-0.161***	-0.170***	-0.177***	-0.196***	-0.198***
	(0.00493)	(0.00832)	(0.00996)	(0.00957)	(0.0103)	(0.0119)
$\frac{\text{Market income}_{i,t-2} - \text{Market income}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0561***	-0.0371***	-0.0340***	-0.0363***	-0.0341***	-0.0243***
	(0.00370)	(0.00374)	(0.00320)	(0.00611)	(0.00578)	(0.00300)
Constant	9.249***	14.96***	20.24***	25.74***	31.28***	36.77***
	(0.0844)	(0.110)	(0.131)	(0.150)	(0.162)	(0.178)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.141	0.155	0.156	0.155	0.231	0.254
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

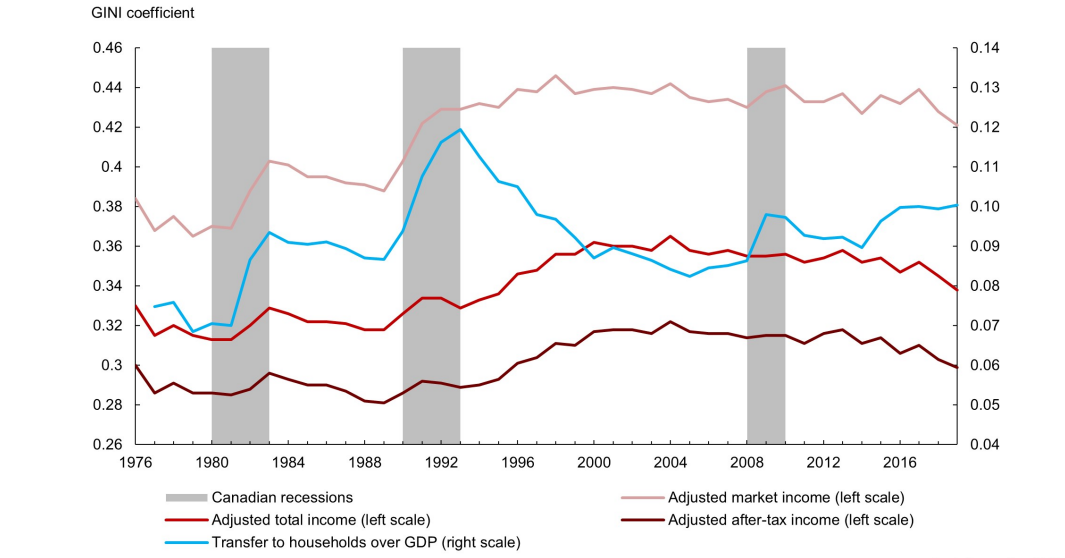
Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Estimation results of the aggregate local projection for the Kelley skewness of market income growth, Year 1

	Kelley skewness	$P90-P50$	$P50-P10$	$P90-P10$
MP shock	-1.878**	-1.600	-0.212	-1.114
	(0.841)	(1.006)	(0.347)	(0.771)
$\%\Delta GDP_t$	0.161	0.780**	0.720***	0.754***
	(0.404)	(0.287)	(0.135)	(0.209)
$\%\Delta CPI_t$	0.0499	-0.191	-0.114	-0.177
	(0.525)	(0.337)	(0.163)	(0.244)
$\%\Delta BCPI_t$	-0.0125	-0.0170	-0.0231	-0.0182
	(0.0600)	(0.0577)	(0.0211)	(0.0435)
Constant	1.694	1.641	-0.0386	1.111
	(1.599)	(1.363)	(0.600)	(1.039)
Observations	36	36	36	36
R^2	0.194	0.215	0.339	0.230

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 1: Gini coefficient on various income measures over four decades



Source: Statistics Canada, Table 36-10-0477-01 and Table 11-10-0134-01

Last observation: 2019

Figure 2: Average income by decile group over four decades

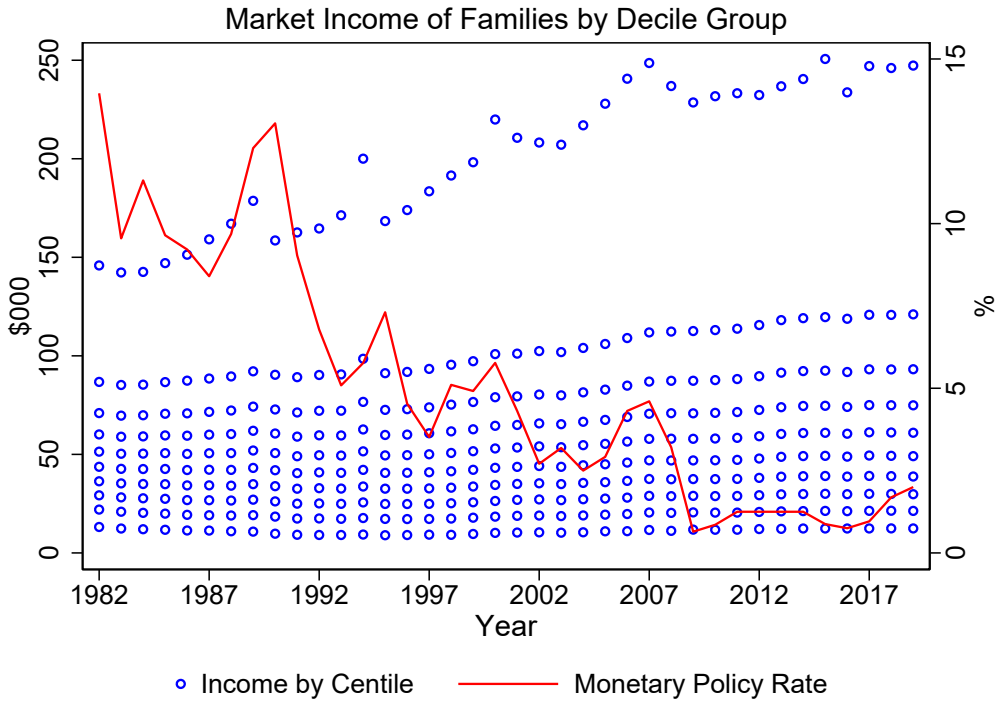


Figure 3: Major sources of household income by income decile

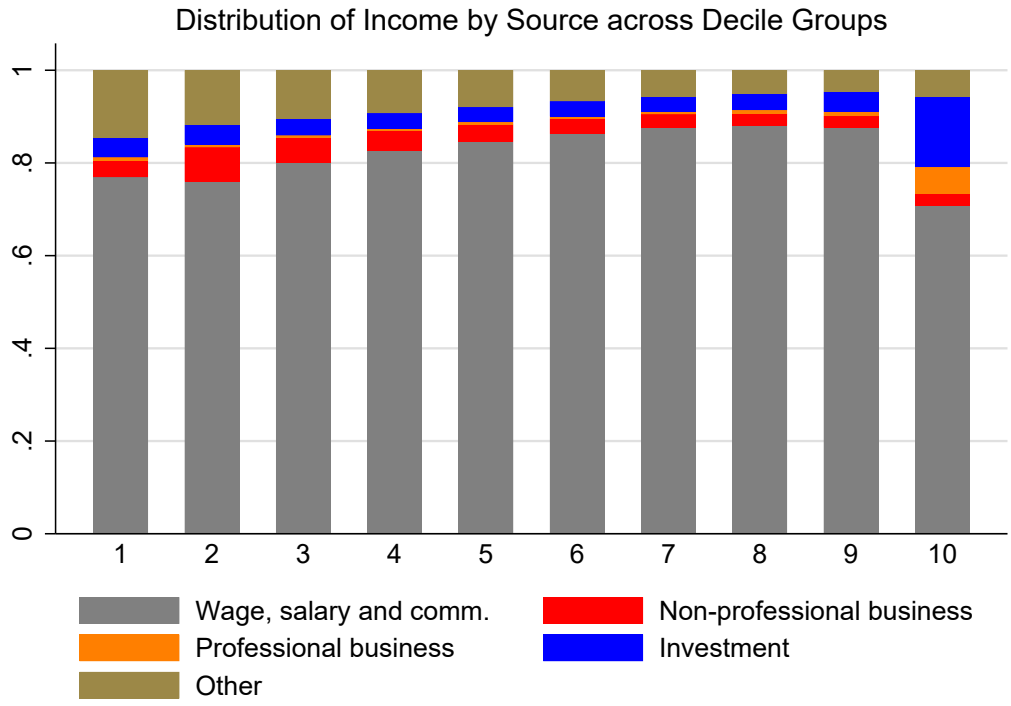
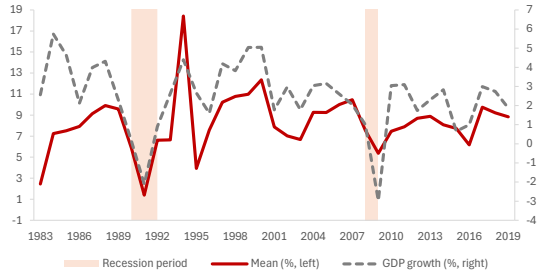
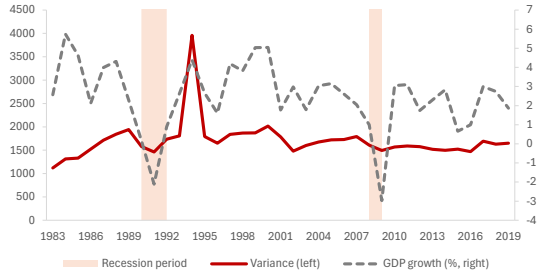


Figure 4: Moments of Market Income Growth Distributions

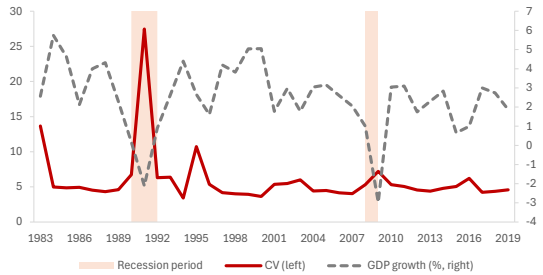
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

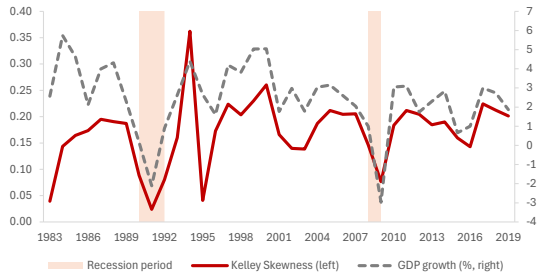


Figure 5: GDP-income growth correlation by income decile

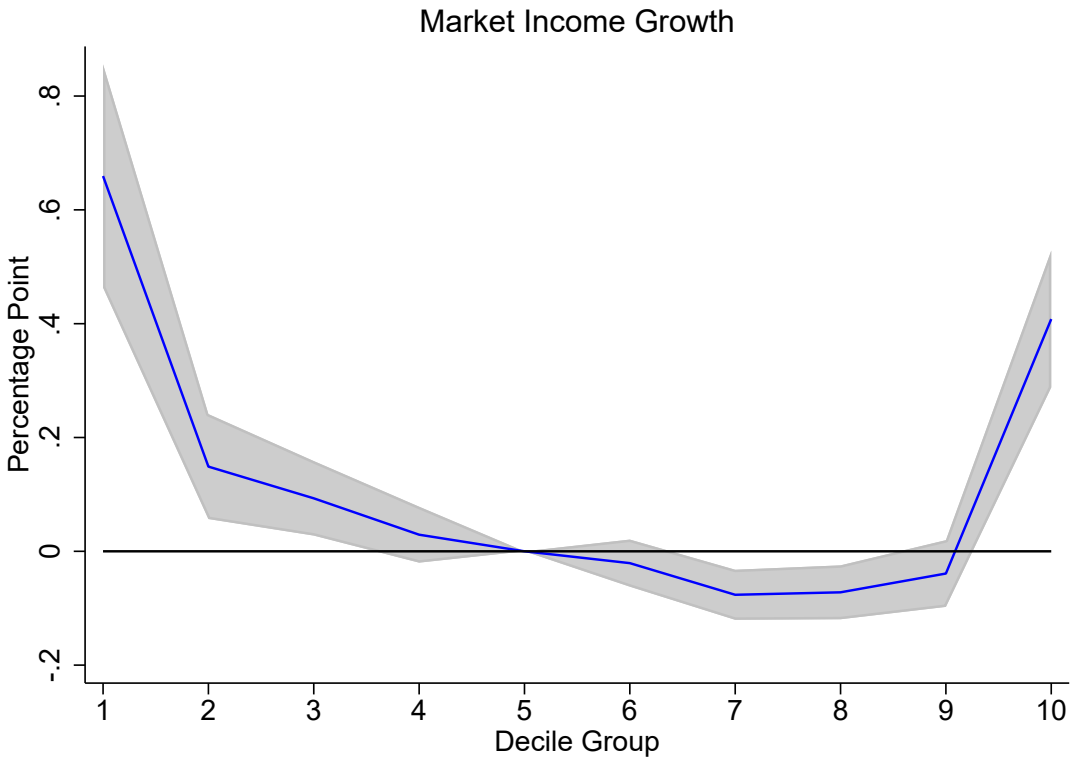
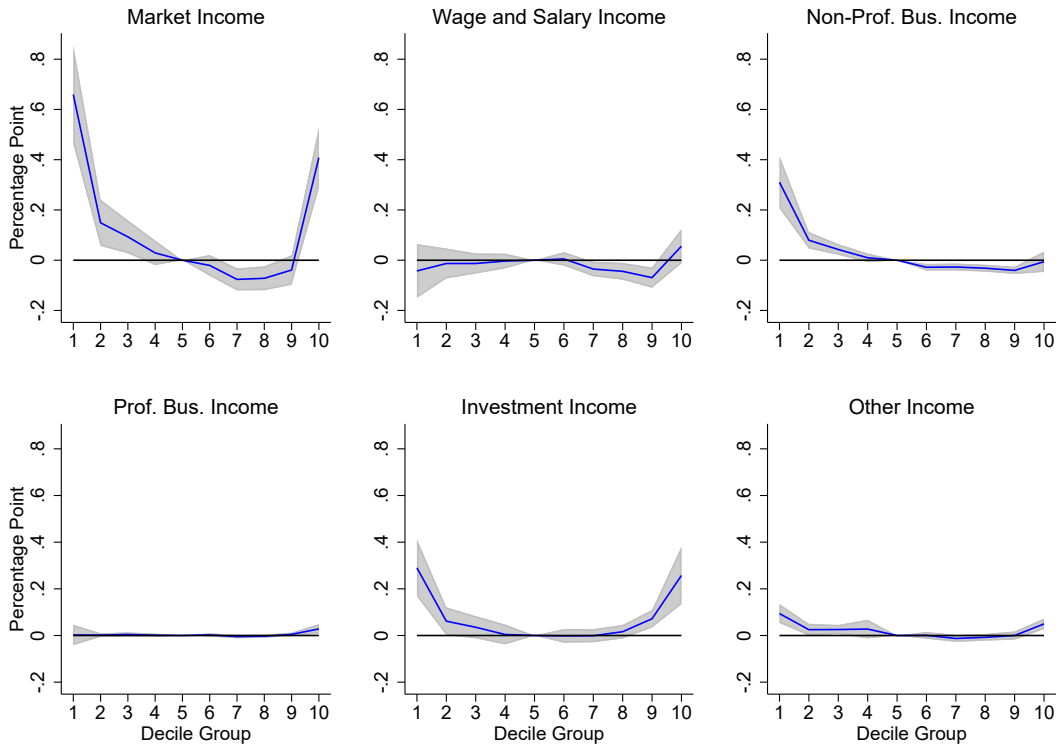


Figure 6: GDP-income growth correlation by income decile



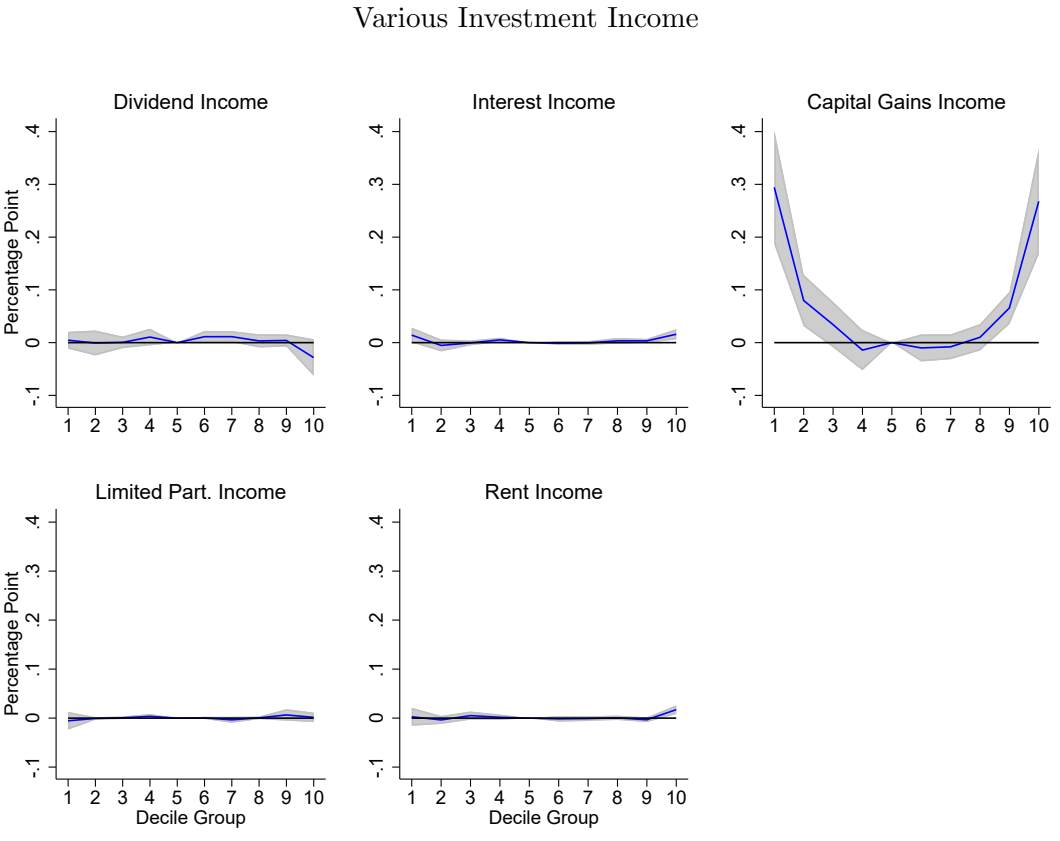


Figure 7: Annualized monetary policy shocks

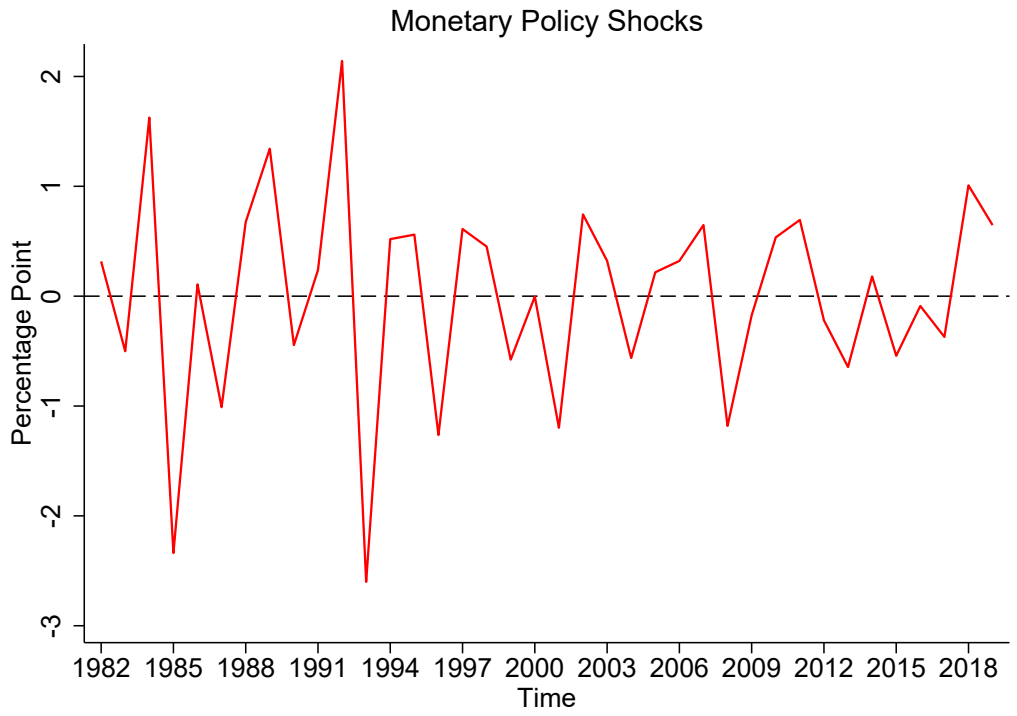


Figure 8: Impulse-response functions with annualized monetary policy shocks

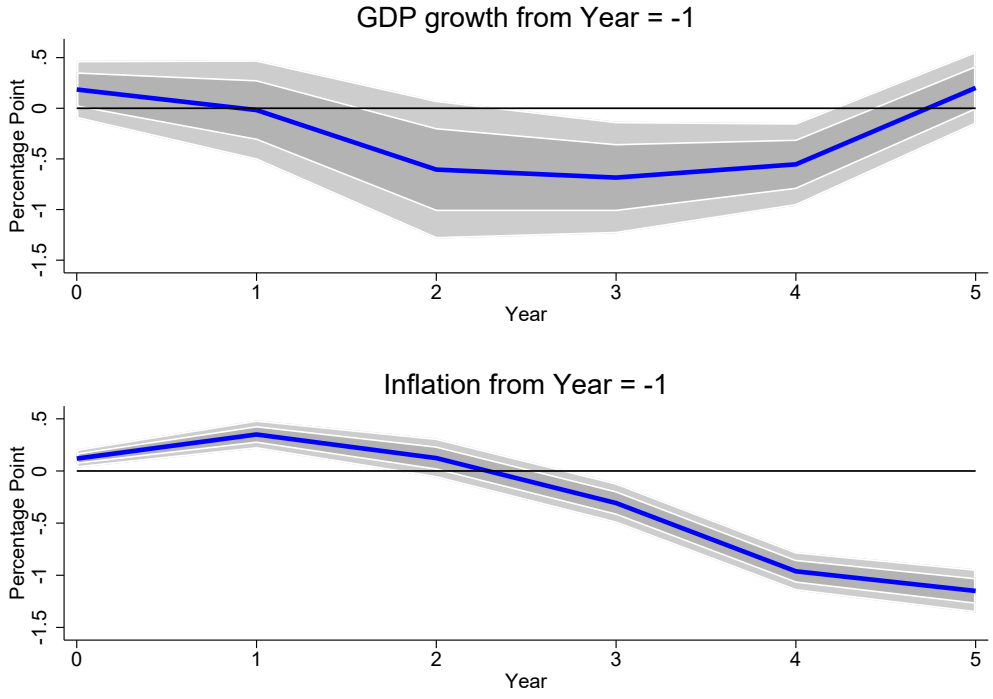


Figure 9: IRF of 1-pp MP tightening shock on household income

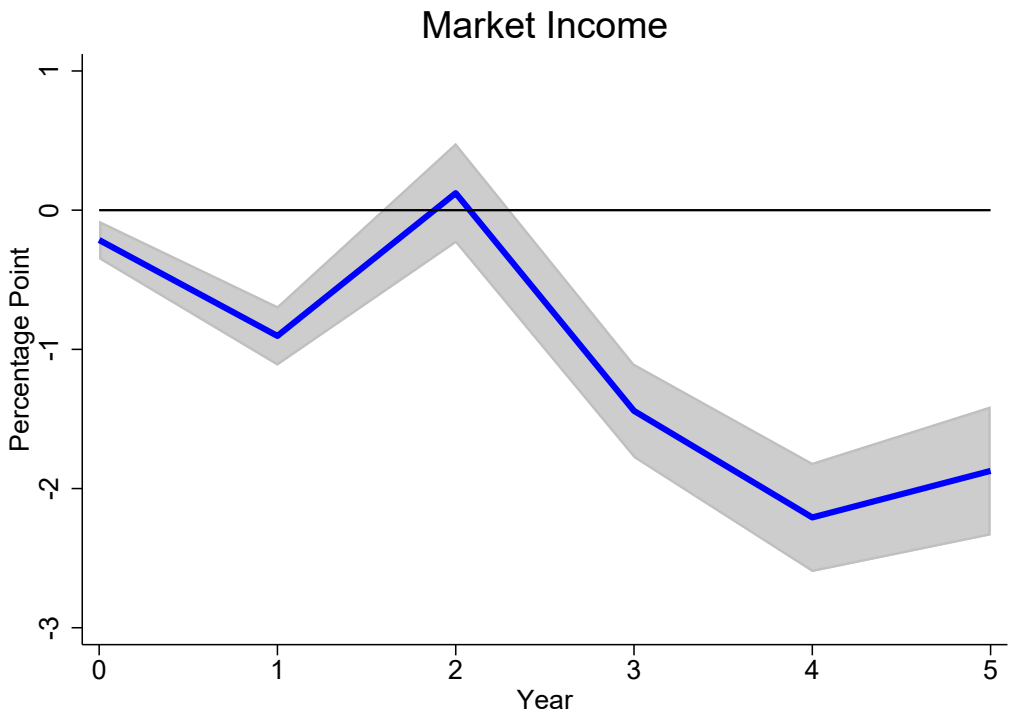


Figure 10: IRF of 1-pp MP tightening shock on household income

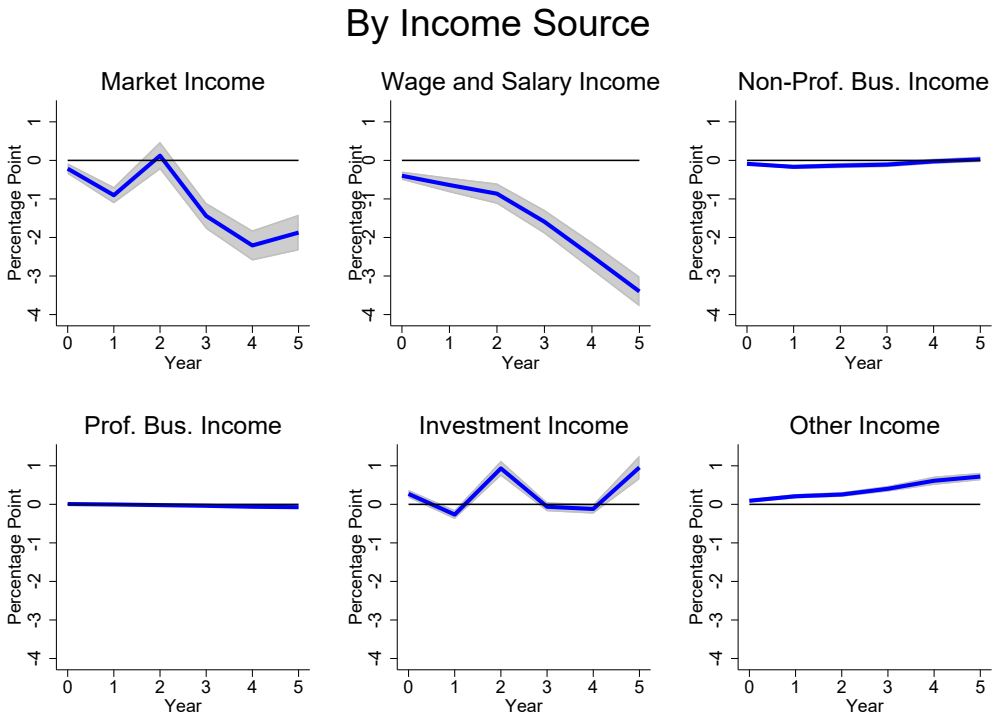


Figure 11: IRF of 1-pp MP tightening shock on household income

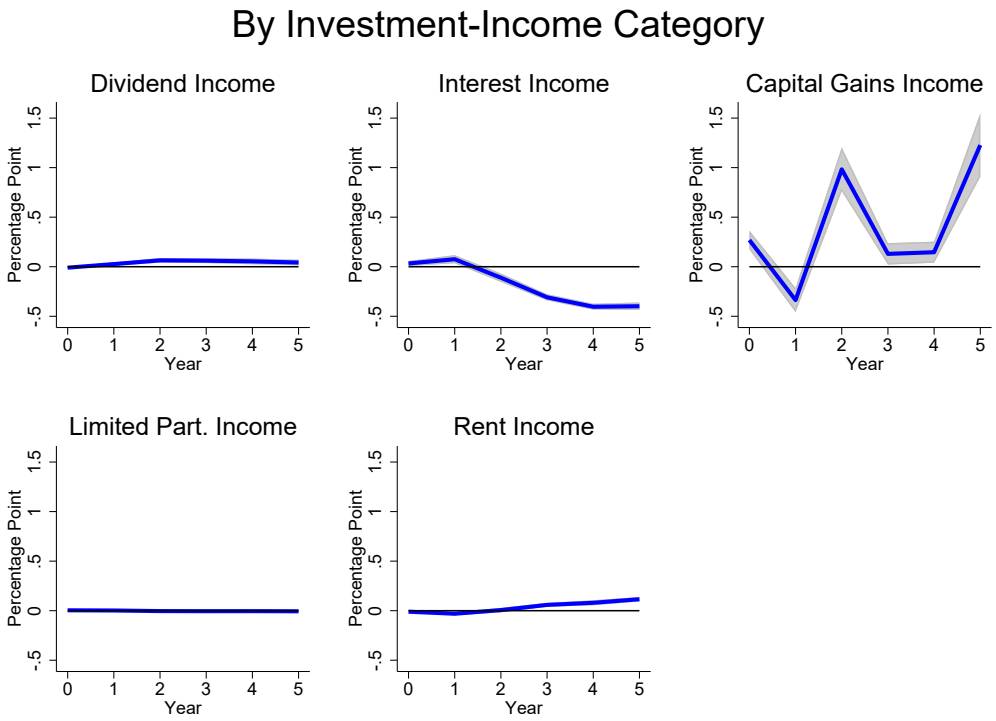


Figure 12: IRF of 1-pp MP tightening shock by income decile, Year 1

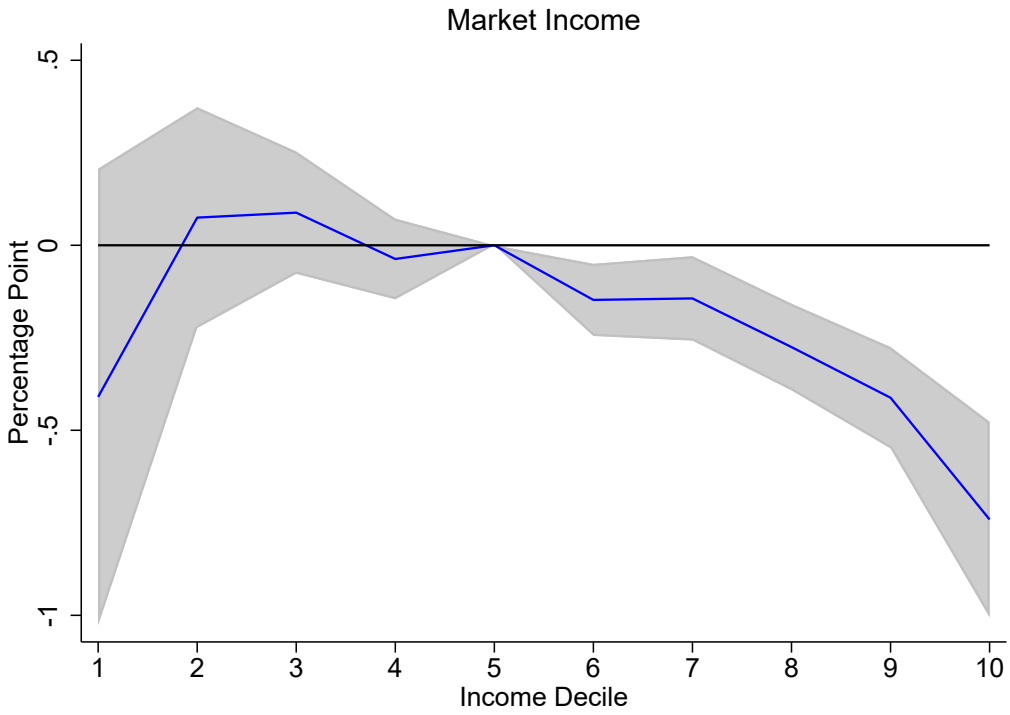
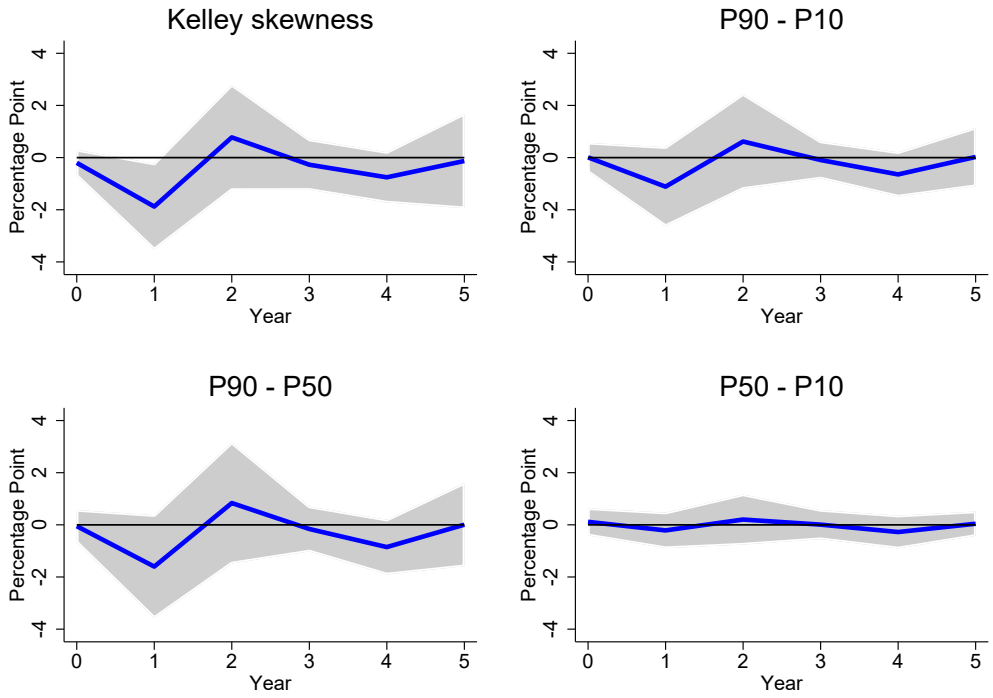


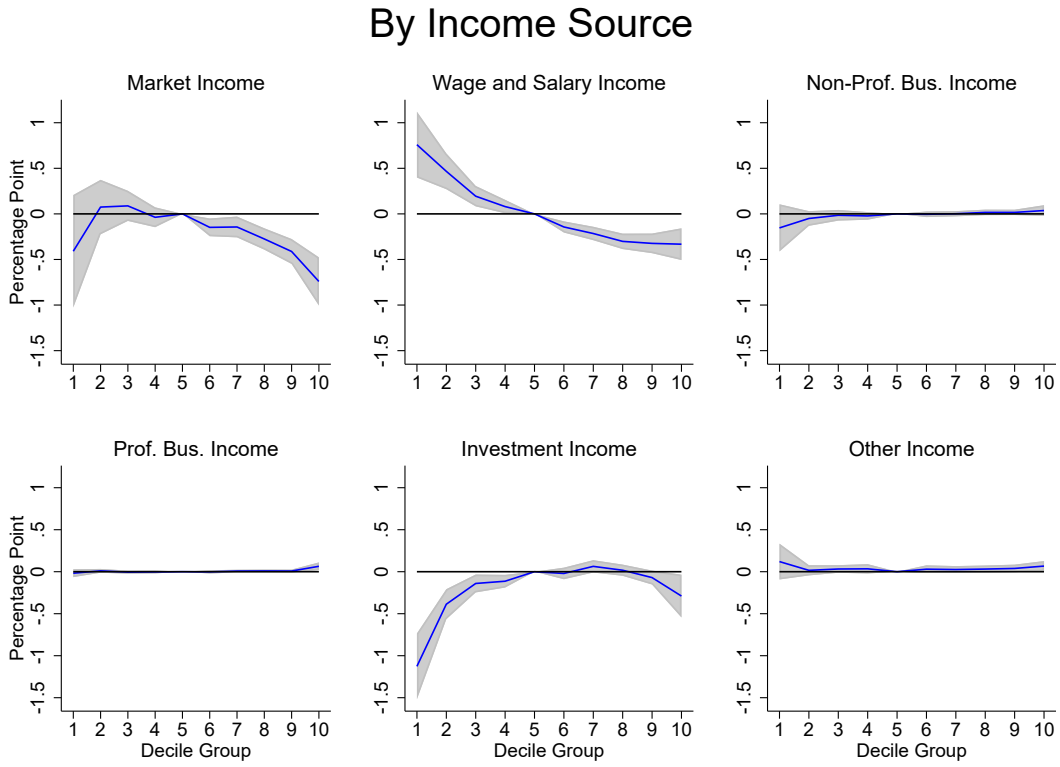
Figure 13: IRF of 1-pp MP tightening shock on Kelley skewness of market income growth and its components



Note: Shaded areas indicate the 95% confidence bands, based on Newey-West standard errors (maximum lag length: 3).

Figure 14: Drivers of income impulse response, Year 1

Driven mostly by wage/salary and investment income



Capital gains drive the investment income response

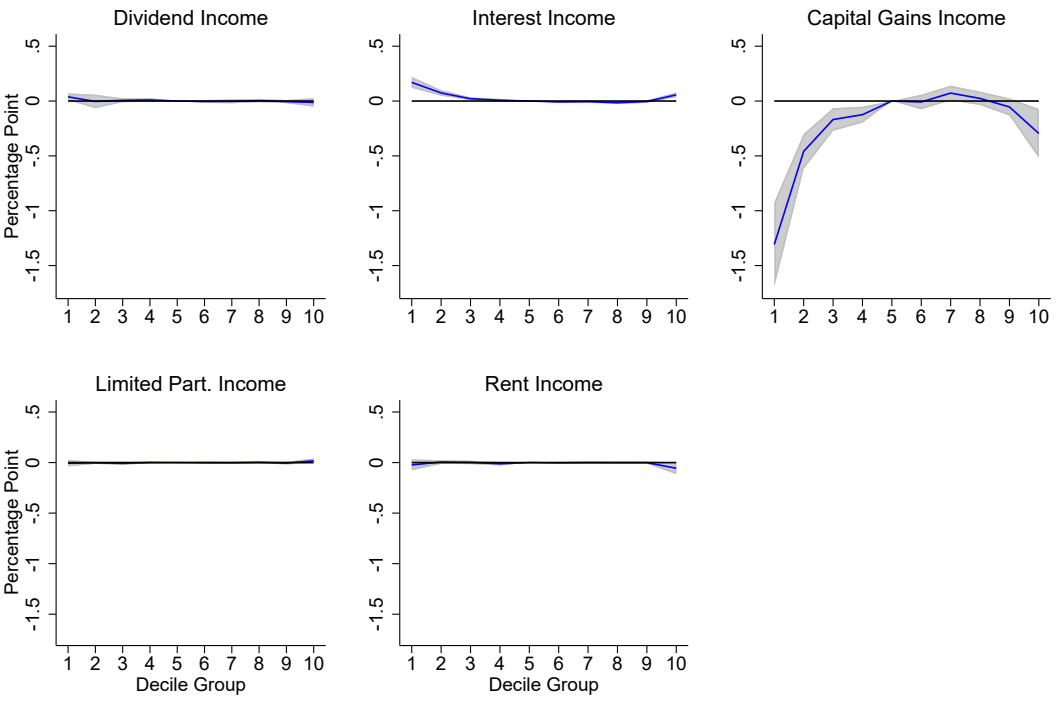
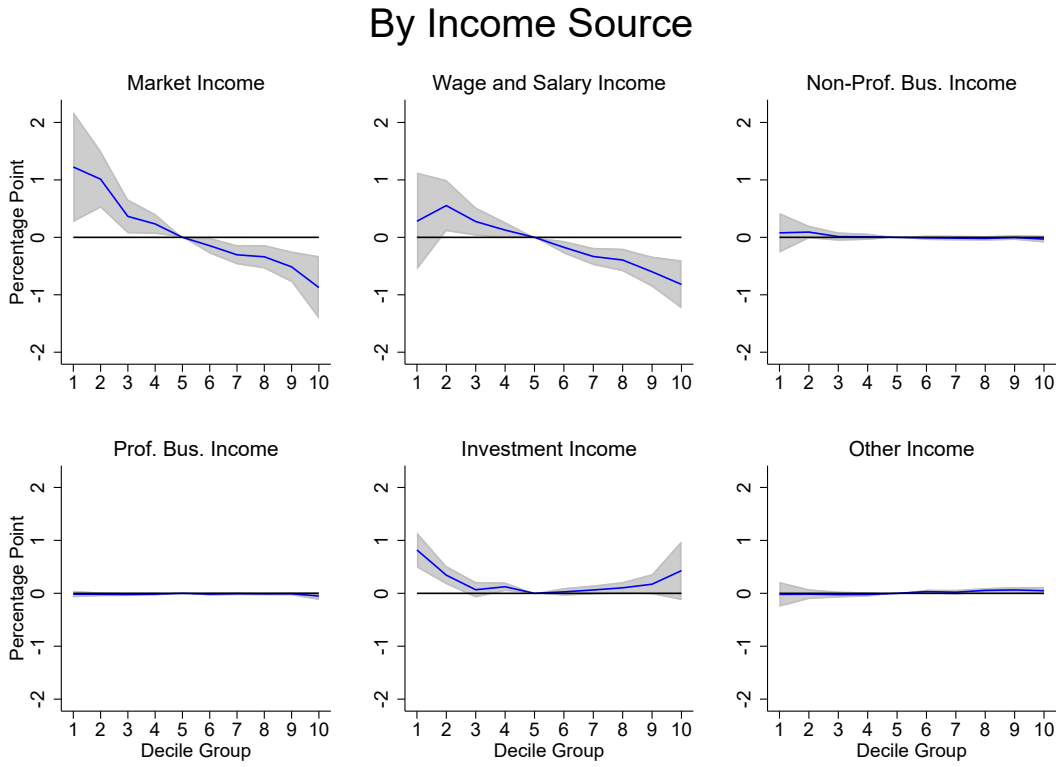


Figure 15: Drivers of income impulse response, Year 5

Heterogeneous impacts on WSC still persist



Effects on capital gains volatile

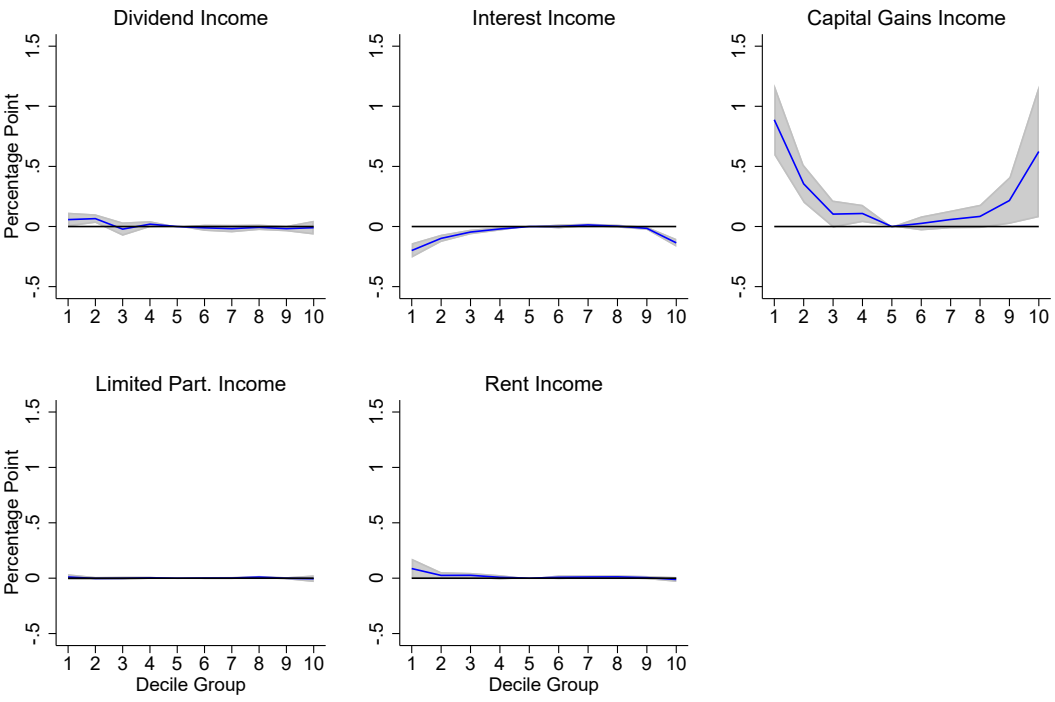


Figure 16: Comparison of the income-GDP growth correlation and the impact of monetary policy, relative to the fifth decile group

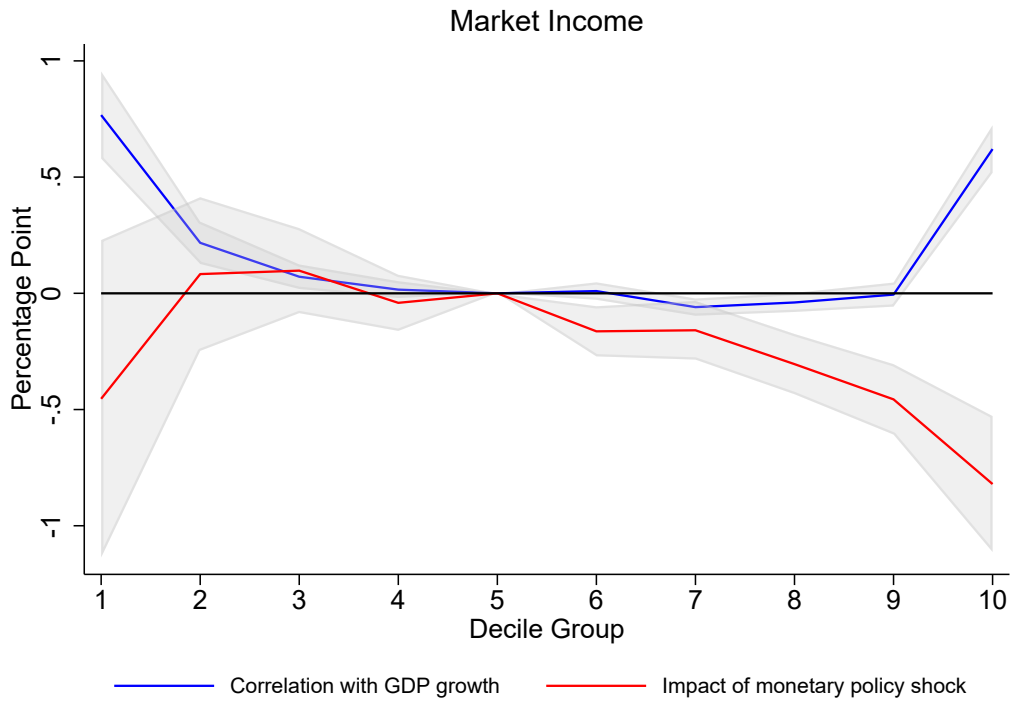
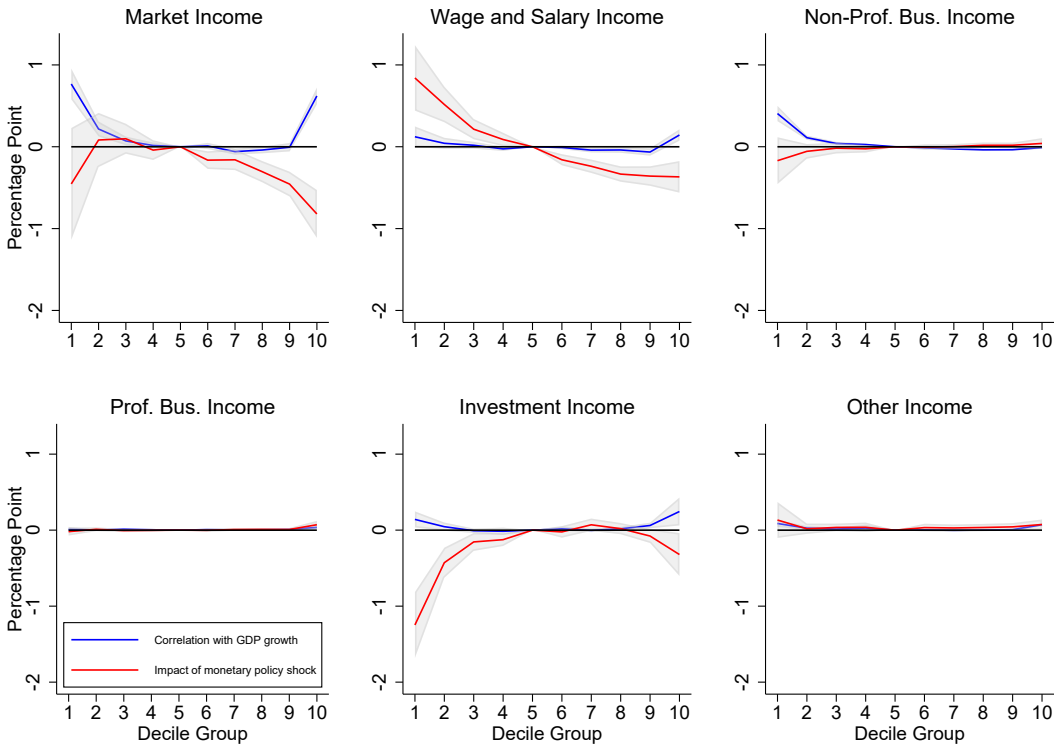


Figure 17: Implications of MP shocks for the BC dynamics of income distribution

Various Income



Various Investment Income

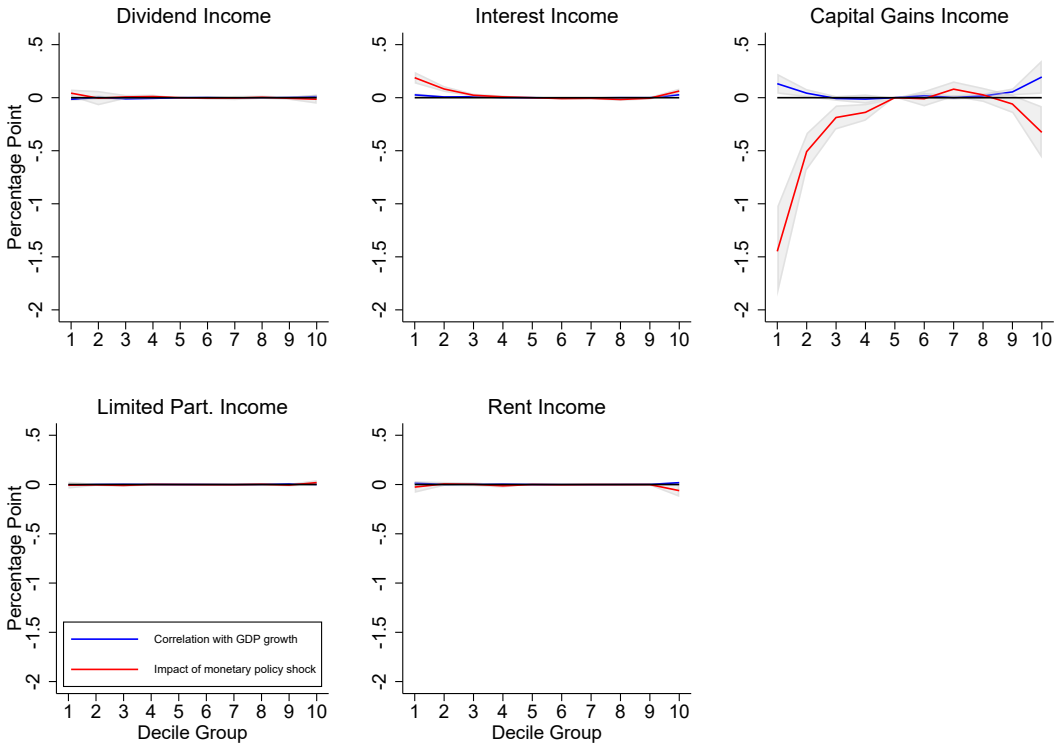
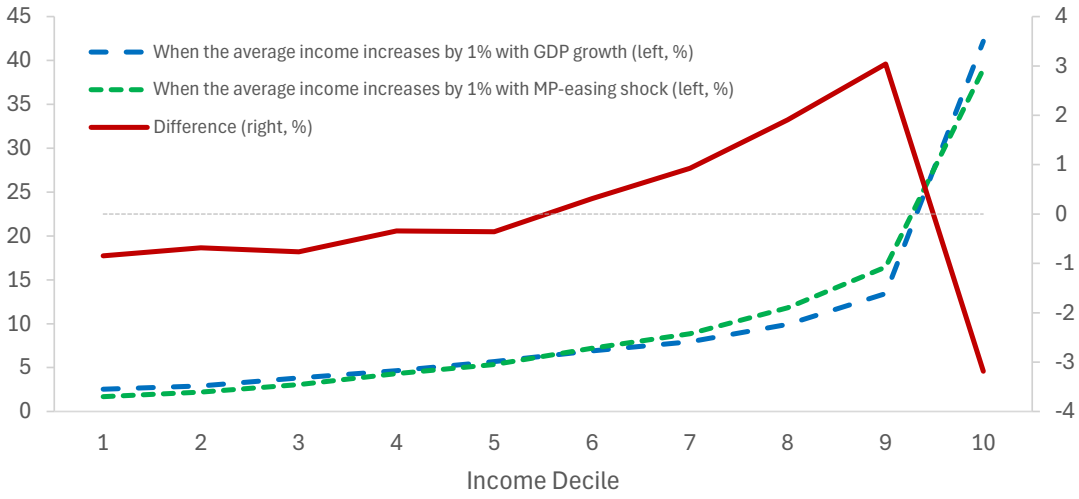


Figure 18: Contribution to the aggregate income by income decile - BC and MP



Appendix

A Tax data

Statistics Canada provides the following information regarding the Longitudinal Administrative Databank (LAD). LAD is a subset of the T1 Family File (T1FF). The T1FF is a yearly cross-sectional file of all taxfilers and their families. Census families are created from information provided annually to the Canada Revenue Agency in personal income tax returns. Both legal and common law spouses are attached by the spousal Social Insurance Number (SIN) listed on the tax form, or by matching based on name, address, age, sex, and marital status. Children are identified through a similar algorithm and supplementary files. Prior to 1993, non-filing children were identified from information on their parents' tax form. Information from the Family Allowance Program was used to assist in the identification of children. Since 1993, information from the Child Tax Benefit Program has been used for this purpose.

The LAD is a random, 20% sample of the T1FF. Selection for LAD is based on an individual's SIN. There is no age restriction, but people without a SIN can only be included in the family component. Once a person is selected for the LAD, the individual remains in the sample and is picked up each year from the T1FF if he or she appears on the T1 that year. Individuals selected for the LAD are linked across years by a unique LAD identification number generated from the SIN, to create a longitudinal profile of each individual. The LAD is augmented each year with a sample of new taxfilers so that it consists of approximately 20% of taxfilers for every year. The 20% sample has grown over the years: 3.2 million people in 1982, 4.05 million in 1992, 4.7 million in 2002 and 5.3 million in 2012. This growth reflects increases in the Canadian population and increases in the incidence of tax filing as a result of the introduction of the Federal sales tax credit in 1986 and the Goods and Services Tax

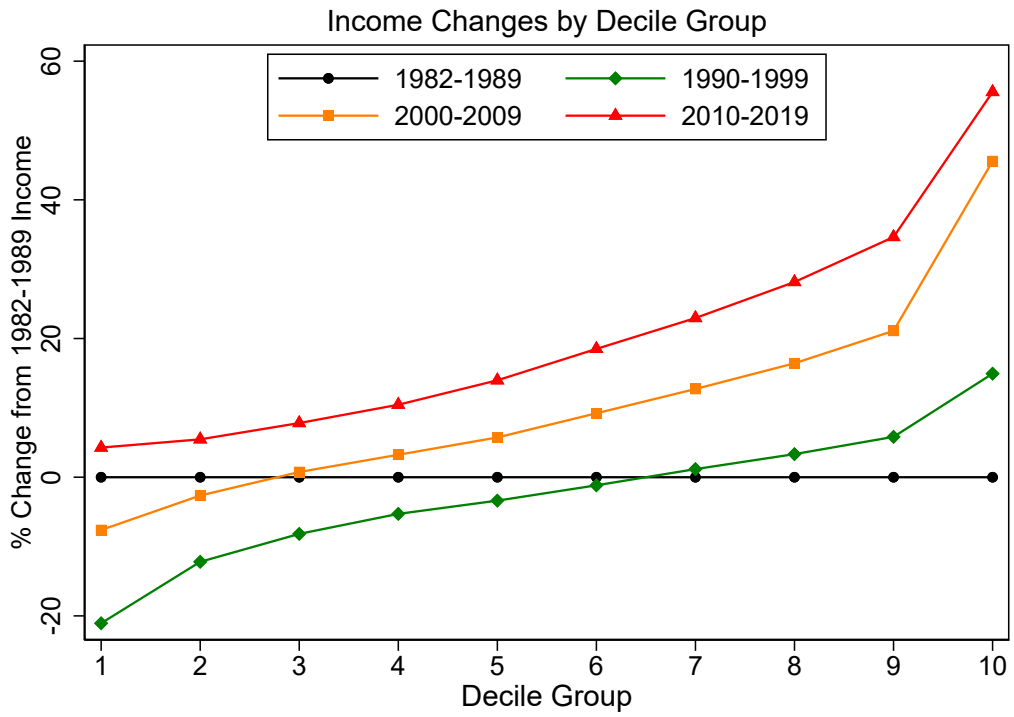
credit in 1989.

The LAD is organized into four levels of aggregation, namely the individual, spouse/parent, family, and child levels. The databank contains information on demographics, income, and other taxation data at the different levels of aggregation from 1982-2019, with new years of data being added as the information becomes available. Changes in tax legislation and in the design of the T1 form itself have resulted in some variables not being available for all years as well as some minor definitional changes from one year to the next. The LAD also obtains information through microdata linkages to other administrative data sources including Tax Free Savings Account (TFSA) information, private corporation ownership information from Schedule 50 of the T2 tax form, and immigration information from the Landing file administrative data. In addition, a linking key resides on the Longitudinal Immigration Database (IMDB) – a database containing immigration records from 1980 to present – which allows for research to be conducted using a linked IMDB-LAD database. All microdata linkages have been approved by the relevant Statistics Canada management and privacy bodies. Further information is available at http://www.statcan.gc.ca. The LAD has been designed to serve as a research tool from which custom tabulations can be prepared. This dictionary, in turn, has been created to assist researchers in identifying the type of information that is available from the LAD. It identifies and defines the LAD variables including historical changes.

B Additional facts about income inequality

Figure B1 displays the relative changes in market income over the last four decades by household income decile, where the income of each decile is normalized to be zero for the period over 1982-1989. The 1990s was particularly a bad period for the majority of tax filers with households in the 6th decile and below on average lowered their income relative to those in the 1980s. Bowlus et al. (2022) show that labour earnings of the low-income young in particular were hit adversely in the early-1990s recession. This observation is also consistent with that of the lifetime earnings in the United States where Guvenen et al. (2022a) find

Figure B1: Reletive income changes over four decades



that lifetime earnings of the median male worker declined for the cohort who started working in 1983 relative to those of the cohort who started in 1967. Stagnant middle-class income over the last several decades is a common observation among countries of the Organisation for Economic Cooperation and Development (OECD (2019)). Moreover, Zhang et al. (2016) document that income mobility across income groups has also worsened, suggesting that inequality has become more persistent over time.

In addition, the positive slope of the curve for the 1990s in Figure B1 indicates that the inequality increased relative to the 1980s. Over the next two decades, income of all deciles increased with the highest income group steeply gaining the most. Although the Gini coefficient does not capture well the inequality driven by the tails, Figure B1 suggests that the high-income households were still pulling their income higher and away from the rest over the last two decades.

Table C1: Estimation results of Equation 1 for the mean and variance without winsorizing

	Mean	Variance
GDP growth	1.069***	932.6**
	(0.243)	(428.5)
t	0.0931**	124.1
	(0.0424)	(87.16)
Constant	-178.6**	-240,449
	(84.93)	(174,378)
Observations	37	37

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

C Impact of income-growth outliers

This section discusses the impact of income-growth outliers in the estimation of the correlation between income-growth distribution moments and GDP growth. The estimation results presented in Table 1 in Section 3.1 used the income-growth data after winsorizing at 1% and 99%. Winsorization could impact the correlation between income-growth distribution moments and GDP growth. Table C1 presents the estimation results of Equation 1 for the mean and variance. Note that winsorization at 1% and 99% does not impact Kelley skewness since Kelley skewness only depends on the 10th, 50th and 90th percentiles of the distribution.

Comparing Table 1 and C1 reveals that the estimates regarding the mean of the income-growth distribution on GDP growth are not that different with both point estimates around 1 (1.009 and 1.069, respectively) and both highly significant. In contrast, those of the variance differ greatly with the point estimate at 66.45 and 932.6, respectively and both weakly significant. Hence, the outliers do impact the correlation of the variance of income growth with GDP growth, but not other two moments. However, regardless of the outliers, the finding that the variance of income-growth distribution is weakly pro-cyclical remains.

D Correlation between moments of income-growth distributions and unemployment rate changes

This appendix presents a robustness check of the correlation between the moments of the income-growth distribution and the business cycle, presented in Section 3.1, using an alternative measure of the business cycle. Specifically, we re-estimate Equation 1 for market income and Equation 2 for each income source, replacing the annual GDP growth, ΔGDP_t, with the change in the annual Canadian unemployment rate, ΔUnemployment Rate$_t$.[29] Since the unemployment rate rises during recessions and falls during expansions, a negative correlation with ΔUnemployment Rate$_t$ corresponds to a positive (pro-cyclical) correlation with GDP growth, and vice versa.

Table D1 presents the estimation results for market income. Consistent with the findings in Section 3.1.1, the mean of the income-growth distribution is significantly and negatively correlated with the change in the unemployment rate, confirming that the mean is pro-cyclical. The variance is also significantly and negatively correlated with the change in the unemployment rate, confirming our earlier finding that the variance of income growth is not counter-cyclical; the negative and significant coefficient on P90-P10, a further measure of variability, corroborates this finding. Regarding skewness, Kelley skewness is significantly and negatively correlated with the change in the unemployment rate, confirming that the skewness of income growth is pro-cyclical. Looking at the two tails, P90-P50 is significantly and negatively correlated while P50-P10 is positively correlated with the change in the unemployment rate, mirroring the opposite-signed correlations with GDP growth found in Section 3.1.1 and confirming that both tails contribute to the pro-cyclicality of skewness.

Tables D2–D6 present the estimation results by income source. Consistent with Sec-

[29] The annual unemployment rate for Canada is obtained from Statistics Canada.

tion 3.1.2, the mean of income growth is significantly and negatively correlated with the change in the unemployment rate for WSC, Bus, $Prof$ and Inv, with WSC showing the largest-magnitude coefficient, while the correlation for $Other$ is not statistically significant. Regarding the variance, only WSC and Bus show a significant negative correlation with the change in the unemployment rate, with Bus having the larger-magnitude and more significant coefficient, confirming that these two sources drive the weak pro-cyclicality of the variance of market-income growth. The variance for $Prof$, Inv and $Other$ is not significantly correlated with the change in the unemployment rate.

Regarding skewness, all income sources except $Other$ show a significant negative correlation between Kelley skewness and the change in the unemployment rate, confirming that the pro-cyclicality of the skewness in market income is driven by all of these sources. Among these, Inv has the largest-magnitude coefficient, consistent with the finding in Section 3.1.2 that investment income contributes the most to the pro-cyclical skewness of market income.

Tables D7–D11 present the estimation results for the components of investment income. Among these, only investment-interest income shows a significant negative correlation with the change in the unemployment rate for both the mean and Kelley skewness, while dividend, capital gains, limited partnership and rental income do not show a statistically significant correlation for either moment. This suggests that interest income is the primary contributor to the pro-cyclicality of the mean and skewness of investment income found in Table D5, whereas no single component drives the (statistically insignificant) correlation of investment-income variance.

Overall, the results in this appendix, based on the change in the unemployment rate as an alternative indicator of the business cycle, confirm the findings in Section 3.1 that the mean and skewness of the income-growth distribution are pro-cyclical, while the variance is not counter-cyclical.

Table D1: Estimation results of Equation 1 for Market Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-2.777***	-229.5**	3.944**	-0.0658***	-3.239**	-4.379***	1.141*
	(0.488)	(107.5)	(1.698)	(0.00747)	(1.446)	(1.008)	(0.568)
t	0.0275	-3.844	-0.0895***	0.00138***	-0.0804	-0.00210	-0.0783**
	(0.0269)	(8.038)	(0.0281)	(0.000389)	(0.109)	(0.0772)	(0.0344)
Constant	-46.99	9,370	185.3***	-2.603***	235.6	47.77	187.8**
	(53.88)	(16,143)	(56.33)	(0.781)	(219.5)	(154.9)	(69.06)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.426	0.090	0.461	0.514	0.166	0.319	0.245

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D2: Estimation results of Equation 1 for Wage, Salary and Commission Income (WSC)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-1.935***	-62.30**	7.372**	-0.0720***	-0.866	-2.752***	1.885***
	(0.291)	(25.06)	(3.568)	(0.00504)	(0.524)	(0.410)	(0.183)
t	0.0278	0.976	-0.125**	0.00135***	0.0344	0.0600	-0.0256
	(0.0175)	(2.796)	(0.0588)	(0.000421)	(0.0575)	(0.0424)	(0.0189)
Constant	-49.88	-847.0	258.3**	-2.576***	-5.375	-84.45	79.07**
	(34.92)	(5,604)	(117.9)	(0.842)	(115.3)	(84.91)	(37.86)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.605	0.129	0.429	0.781	0.058	0.544	0.702

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D3: Estimation results of Equation 1 for Non-Professional Business Income (Bus)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-1.129***	-78.63***	7.492*	-0.0438***	-1.314**	-2.198***	0.884***
	(0.368)	(21.70)	(4.370)	(0.0121)	(0.512)	(0.641)	(0.324)
t	-0.0730***	-31.47***	-0.0714	-0.00101	-0.783***	-0.476***	-0.307***
	(0.0159)	(1.598)	(0.109)	(0.000632)	(0.0331)	(0.0308)	(0.0208)
Constant	150.2***	64,287***	154.4	2.162*	1,629***	987.1***	641.7***
	(31.99)	(3,209)	(220.0)	(1.268)	(66.28)	(61.76)	(41.76)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.439	0.915	0.298	0.294	0.954	0.848	0.887

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D4: Estimation results of Equation 1 for Professional Business Income (Prof)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-0.536*	-2.037	1.029	-0.0293**	0.164	-0.672	0.836**
	(0.313)	(17.37)	(0.629)	(0.0117)	(0.498)	(0.518)	(0.335)
t	-0.157***	-19.67***	0.256***	-0.00592***	-0.543***	-0.467***	-0.0761*
	(0.0188)	(1.578)	(0.0628)	(0.00115)	(0.0481)	(0.0351)	(0.0384)
Constant	318.8***	40,290***	-504.0***	12.00***	1,138***	964.0***	173.6**
	(37.65)	(3,165)	(125.2)	(2.286)	(96.51)	(70.26)	(76.71)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.738	0.841	0.510	0.657	0.872	0.866	0.337

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D5: Estimation results of Equation 1 for Investment Income (Inv)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-1.414**	-263.1	52.91	-0.135**	-4.577	-3.851*	-0.726
	(0.668)	(198.9)	(74.27)	(0.0538)	(3.242)	(2.239)	(1.440)
t	0.0336	0.548	0.0956	0.00622***	0.0194	0.0496	-0.0303
	(0.0280)	(8.857)	(1.803)	(0.00189)	(0.139)	(0.0957)	(0.0548)
Constant	-65.62	-661.9	-121.1	-12.38***	-21.63	-89.92	68.29
	(56.37)	(17,810)	(3,589)	(3.780)	(278.5)	(192.3)	(110.0)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.038	0.009	-0.047	0.127	0.056	0.042	-0.046

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D6: Estimation results of Equation 1 for Other Income (Other)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	0.0881	-3.023	-4.497	0.0344	0.260	0.330	-0.0705
	(0.0938)	(8.043)	(4.379)	(0.0204)	(0.633)	(0.477)	(0.180)
t	0.00423	0.112	-0.0135	0.00293*	-0.0812**	-0.0380**	-0.0432***
	(0.00390)	(0.667)	(0.244)	(0.00153)	(0.0298)	(0.0184)	(0.0128)
Constant	-7.799	-113.1	40.68	-5.745*	168.9***	79.67**	89.20***
	(7.814)	(1,334)	(489.7)	(3.053)	(59.40)	(36.69)	(25.51)
Observations	37	37	37	37	37	37	37
Adjusted R^2	-0.039	-0.056	-0.044	0.019	0.015	-0.009	0.022

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D7: Estimation results of Equation 1 for Investment-Dividend Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-0.0739	4.339	-1.940	-0.0996	-0.0696	-0.178	0.108
	(0.0734)	(11.16)	(9.524)	(0.0601)	(0.509)	(0.274)	(0.259)
t	0.0300***	3.075**	0.00988	0.0107**	0.150**	0.109***	0.0410
	(0.00616)	(1.319)	(0.512)	(0.00445)	(0.0698)	(0.0385)	(0.0336)
Constant	-59.54***	-6,065**	-0.791	-21.21**	-295.6**	-215.4***	-80.28
	(12.30)	(2,641)	(1,029)	(8.887)	(139.5)	(76.93)	(67.15)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.402	0.352	-0.058	0.224	0.318	0.414	0.079

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D8: Estimation results of Equation 1 for Investment-Interest Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-0.525***	2.089**	5.186	-0.201***	0.558***	-0.334**	0.892***
	(0.143)	(0.975)	(10.62)	(0.0455)	(0.149)	(0.128)	(0.223)
t	0.00969	-0.982***	2.782	0.00416	-0.206***	-0.0890***	-0.117***
	(0.0106)	(0.0982)	(1.679)	(0.00463)	(0.0148)	(0.0162)	(0.0132)
Constant	-19.57	1,984***	-5,574	-8.416	417.1***	180.2***	236.9***
	(21.26)	(196.4)	(3,361)	(9.275)	(29.53)	(32.61)	(26.44)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.189	0.872	0.042	0.137	0.934	0.521	0.693

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D9: Estimation results of Equation 1 for Investment-Capital Gains Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-1.221	-192.4	4.279**	-0.0927	-6.841	-5.699	-1.142
	(0.936)	(233.3)	(1.925)	(0.0614)	(5.089)	(3.417)	(2.217)
t	-0.0868*	-16.59	0.453	-0.00378	-0.542**	-0.381**	-0.161*
	(0.0465)	(13.06)	(0.295)	(0.00321)	(0.204)	(0.153)	(0.0881)
Constant	177.1*	34,105	-894.3	7.673	1,112**	778.7**	333.5*
	(93.44)	(26,258)	(587.7)	(6.421)	(409.2)	(307.7)	(176.9)
Observations	37	37	37	37	37	37	37
Adjusted R^2	-0.011	0.006	-0.003	-0.016	0.151	0.085	0.001

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D10: Estimation results of Equation 1 for Investment-Limited Partnership Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	-0.190	-10.26	34.93*	-0.0856	-0.681	-0.742**	0.0605
	(0.180)	(14.15)	(19.91)	(0.0556)	(0.566)	(0.299)	(0.413)
t	-0.0705***	-6.171**	-1.339	-0.0129*	-0.354***	-0.258***	-0.0957
	(0.0231)	(2.571)	(1.801)	(0.00660)	(0.112)	(0.0649)	(0.0611)
Constant	141.8***	12,452**	2,726	26.02*	715.3***	521.1***	194.2
	(46.37)	(5,160)	(3,618)	(13.24)	(225.3)	(130.3)	(122.5)
Observations	31	31	31	31	31	31	31
Adjusted R^2	0.299	0.330	0.012	0.165	0.460	0.514	0.161

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Data for limited partnership income are only available from 1988.

Table D11: Estimation results of Equation 1 for Investment-Rental Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔUnemployment Rate	0.245	4.585	-2.731	0.0242	0.398**	0.424*	-0.0263
	(0.171)	(4.163)	(2.850)	(0.0199)	(0.159)	(0.219)	(0.157)
t	-0.00684	-0.446	0.622	0.000261	-0.0268*	-0.0129	-0.0139
	(0.00977)	(0.426)	(0.407)	(0.00127)	(0.0133)	(0.0115)	(0.0130)
Constant	14.64	1,012	-1,235	-0.426	69.94**	34.71	35.23
	(19.63)	(856.2)	(817.3)	(2.548)	(26.63)	(23.07)	(26.19)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.054	0.038	0.030	0.010	0.147	0.095	0.018

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

E Correlation between income growth and GDP growth by income source: additional results

This appendix presents additional results supporting the analysis in Section 3.1 of the correlation between the moments of the income-growth distribution and GDP growth by income source. Tables E1 and E2 present the panel-regression estimates of Equation 4 by income source, complementing the market-income results in Table 2 discussed in Section 3.1. Tables E3–E12 present the estimation results of Equation 2 by income source, complementing the market-income results in Table 1 discussed in Section 3.1.2. Figures E1–E10 present the corresponding scatter plots of each moment against GDP growth by income source, complementing Figure 4 for market income.

Table E1: Estimation results of Equation 4 by Income Source

Dependent variable: $\frac{\text{Income}_{i,t}-\text{Income}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$	Income				
	WSC	Non-Professional	Professional	Investment	Other
$\Delta GDP_t \cdot Decile_1$	-0.0428	0.310***	0.00232	0.290***	0.0941***
	(0.0547)	(0.0529)	(0.0222)	(0.0623)	(0.0207)
$\Delta GDP_t \cdot Decile_2$	-0.0131	0.0795***	0.00164	0.0614**	0.0250*
	(0.0304)	(0.0168)	(0.00397)	(0.0303)	(0.0128)
$\Delta GDP_t \cdot Decile_3$	-0.0131	0.0428***	0.00458	0.0353	0.0256***
	(0.0204)	(0.0108)	(0.00443)	(0.0243)	(0.00991)
$\Delta GDP_t \cdot Decile_4$	-0.00335	0.00979	0.00106	0.00431	0.0276
	(0.0149)	(0.00874)	(0.00366)	(0.0217)	(0.0203)
$\Delta GDP_t \cdot Decile_6$	0.00518	-0.0280***	0.00260	-0.00158	0.000562
	(0.0137)	(0.00682)	(0.00347)	(0.0150)	(0.00741)
$\Delta GDP_t \cdot Decile_7$	-0.0351**	-0.0270***	-0.00470	-0.00106	-0.0127*
	(0.0147)	(0.00701)	(0.00370)	(0.0143)	(0.00747)
$\Delta GDP_t \cdot Decile_8$	-0.0443***	-0.0318***	-0.00294	0.0162	-0.00777
	(0.0170)	(0.00711)	(0.00349)	(0.0148)	(0.00742)
$\Delta GDP_t \cdot Decile_9$	-0.0694***	-0.0406***	0.00503	0.0718***	-0.000158
	(0.0205)	(0.00726)	(0.00362)	(0.0191)	(0.00884)
$\Delta GDP_t \cdot Decile_{10}$	0.0557	-0.00589	0.0282***	0.257***	0.0497***
	(0.0348)	(0.0208)	(0.0105)	(0.0629)	(0.0115)
$Decile_1$	42.33***	9.625***	0.729***	6.477***	2.411***
	(0.234)	(0.199)	(0.0574)	(1.058)	(0.267)
$Decile_2$	23.77***	4.248***	0.352***	3.243***	0.969***
	(0.136)	(0.0823)	(0.0156)	(0.632)	(0.174)
$Decile_3$	12.98***	2.182***	0.202***	1.811***	0.318**
	(0.0858)	(0.0508)	(0.0152)	(0.365)	(0.137)
$Decile_4$	5.612***	0.960***	0.0859***	0.934***	-0.0132
	(0.0526)	(0.0293)	(0.0108)	(0.0773)	(0.211)
$Decile_6$	-4.412***	-0.639***	-0.116***	-0.605**	-0.235***
	(0.0442)	(0.0225)	(0.00977)	(0.274)	(0.0484)
$Decile_7$	-8.066***	-1.189***	-0.224***	-1.227**	-0.382***
	(0.0596)	(0.0270)	(0.0113)	(0.507)	(0.0405)
$Decile_8$	-11.52***	-1.665***	-0.367***	-1.946**	-0.611***
	(0.0766)	(0.0326)	(0.0135)	(0.808)	(0.0549)
$Decile_9$	-14.98***	-2.156***	-0.642***	-2.870**	-0.874***
	(0.0969)	(0.0408)	(0.0181)	(1.301)	(0.108)
$Decile_{10}$	-19.72***	-3.116***	-1.776***	-4.467	-1.222***
	(0.150)	(0.0757)	(0.0437)	(3.318)	(0.274)
$\frac{\text{Income}_{i,t-1}-\text{Income}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.179***	-0.166***	-0.137***	-0.372***	-0.593***
	(0.00532)	(0.00885)	(0.0115)	(0.122)	(0.0479)
$\frac{\text{Income}_{i,t-2}-\text{Income}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0638***	-0.0810***	-0.0622***	-0.127**	-0.214***
	(0.00198)	(0.00909)	(0.00687)	(0.0547)	(0.0545)
Constant	3.745***	0.452***	0.403***	3.188***	1.770***
	(0.0483)	(0.0249)	(0.00872)	(0.130)	(0.109)
Observations	63,451,605	63,451,605	63,451,605	63,451,605	63,451,605
R^2	0.162	0.104	0.129	0.160	0.287
Household FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E2: Estimation results of Equation 4 by Investment Income Source

Dependent variable: $\frac{\text{Income}_{i,t}-\text{Income}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$	Investment Income				
	Dividend	Interest	Capital Gains	LP	Rental
$\Delta GDP_t \cdot Decile_1$	0.00457	0.0142**	0.294***	-0.00550	0.00274
	(0.00814)	(0.00722)	(0.0553)	(0.00926)	(0.00937)
$\Delta GDP_t \cdot Decile_2$	-0.000715	-0.00527	0.0799***	-0.000752	-0.00377
	(0.0121)	(0.00573)	(0.0249)	(0.00132)	(0.00416)
$\Delta GDP_t \cdot Decile_3$	0.000525	-0.000570	0.0341	0.000657	0.00515
	(0.00561)	(0.00238)	(0.0219)	(0.00134)	(0.00421)
$\Delta GDP_t \cdot Decile_4$	0.0106	0.00524**	-0.0142	0.00358	0.00170
	(0.00806)	(0.00204)	(0.0195)	(0.00242)	(0.00279)
$\Delta GDP_t \cdot Decile_6$	0.0113**	-0.00112	-0.0100	0.000393	-0.00152
	(0.00559)	(0.00167)	(0.0131)	(0.00111)	(0.00294)
$\Delta GDP_t \cdot Decile_7$	0.0113**	-0.000571	-0.00790	-0.00351	-0.000921
	(0.00531)	(0.00185)	(0.0120)	(0.00309)	(0.00237)
$\Delta GDP_t \cdot Decile_8$	0.00326	0.00347	0.0101	0.000548	0.000574
	(0.00637)	(0.00274)	(0.0128)	(0.00136)	(0.00227)
$\Delta GDP_t \cdot Decile_9$	0.00412	0.00337*	0.0657***	0.00647	-0.00339
	(0.00592)	(0.00196)	(0.0156)	(0.00596)	(0.00245)
$\Delta GDP_t \cdot Decile_{10}$	-0.0283	0.0159***	0.268***	0.00158	0.0172***
	(0.0177)	(0.00495)	(0.0513)	(0.00492)	(0.00449)
$Decile_1$	1.022***	0.439***	3.667***	0.112***	1.178***
	(0.0460)	(0.0235)	(0.966)	(0.0338)	(0.0391)
$Decile_2$	0.683***	0.197***	1.711***	0.0408***	0.532***
	(0.0351)	(0.0194)	(0.599)	(0.00862)	(0.0178)
$Decile_3$	0.423***	0.0982***	0.940***	0.0172***	0.274***
	(0.0216)	(0.00799)	(0.349)	(0.00641)	(0.0136)
$Decile_4$	0.187***	0.0295***	0.574***	-0.00386	0.114***
	(0.0176)	(0.00586)	(0.0718)	(0.00744)	(0.00872)
$Decile_6$	-0.201***	-0.0266***	-0.249	-0.0125***	-0.0954***
	(0.0173)	(0.00503)	(0.264)	(0.00421)	(0.00909)
$Decile_7$	-0.390***	-0.0538***	-0.526	-0.0115	-0.194***
	(0.0202)	(0.00645)	(0.490)	(0.00993)	(0.00894)
$Decile_8$	-0.579***	-0.0873***	-0.882	-0.0361***	-0.284***
	(0.0271)	(0.00858)	(0.778)	(0.00676)	(0.0100)
$Decile_9$	-0.877***	-0.127***	-1.297	-0.0633***	-0.389***
	(0.0339)	(0.00967)	(1.246)	(0.0103)	(0.0126)
$Decile_{10}$	-1.615***	-0.246***	-1.614	-0.121***	-0.663***
	(0.0790)	(0.0231)	(3.120)	(0.0228)	(0.0232)
$\frac{\text{Income}_{i,t-1}-\text{Income}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.161***	-0.141***	-0.398***	-0.147***	-0.167***
	(0.0198)	(0.0126)	(0.123)	(0.00981)	(0.0109)
$\frac{\text{Income}_{i,t-2}-\text{Income}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0887***	-0.0772***	-0.137**	-0.112***	-0.0458**
	(0.0182)	(0.00601)	(0.0586)	(0.00940)	(0.0197)
Constant	0.684***	0.0155***	2.192***	0.0245***	0.146***
	(0.0130)	(0.00368)	(0.199)	(0.00295)	(0.00662)
Observations	63,451,605	63,451,605	63,451,605	54,600,230	63,451,605
R^2	0.121	0.102	0.169	0.213	0.129
Household FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E3: Estimation results of Equation 2 for Wage, Salary and Commission Income (WSC)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.711***	18.52*	-2.627*	0.0261***	0.214	0.952***	-0.738***
	(0.112)	(9.979)	(1.321)	(0.00178)	(0.206)	(0.163)	(0.0647)
t	0.0618**	1.899	-0.251**	0.00260***	0.0455	0.106**	-0.0605***
	(0.0244)	(2.819)	(0.102)	(0.000737)	(0.0572)	(0.0512)	(0.0166)
Constant	-119.5**	-2,732	516.7**	-5.139***	-28.06	-178.6*	150.6***
	(48.94)	(5,642)	(206.3)	(1.477)	(114.4)	(102.5)	(33.28)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.536	0.056	0.355	0.680	0.011	0.432	0.706

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E4: Estimation results of Equation 2 for Non-Professional Business Income (Bus)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.461**	31.36***	-3.121*	0.0178***	0.472**	0.848**	-0.376**
	(0.180)	(11.00)	(1.762)	(0.00620)	(0.218)	(0.315)	(0.157)
t	-0.0514**	-29.99***	-0.217	-0.000179	-0.761***	-0.436***	-0.325***
	(0.0215)	(1.874)	(0.150)	(0.000822)	(0.0371)	(0.0424)	(0.0219)
Constant	105.8**	61,259***	453.6	0.452	1,583***	904.9***	677.7***
	(43.45)	(3,772)	(305.3)	(1.656)	(74.22)	(85.26)	(44.20)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.463	0.916	0.346	0.319	0.952	0.846	0.893

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E5: Estimation results of Equation 2 for Professional Business Income (Prof)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.204*	-1.905	-0.318	0.0103**	-0.0518	0.251	-0.303**
	(0.110)	(5.517)	(0.258)	(0.00420)	(0.183)	(0.174)	(0.130)
t	-0.148***	-19.74***	0.241***	-0.00542***	-0.546***	-0.455***	-0.0906**
	(0.0205)	(1.529)	(0.0698)	(0.00125)	(0.0434)	(0.0353)	(0.0391)
Constant	298.9***	40,433***	-471.8***	10.98***	1,143***	939.5***	203.3**
	(41.02)	(3,068)	(139.6)	(2.508)	(87.02)	(70.81)	(78.14)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.736	0.841	0.498	0.645	0.872	0.866	0.320

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E6: Estimation results of Equation 2 for Investment Income (Inv)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.559*	77.57	17.00	0.0583***	1.099	1.337	-0.238
	(0.294)	(68.14)	(10.57)	(0.0184)	(0.782)	(0.803)	(0.201)
t	0.0600**	4.418	0.600	0.00893***	0.0769	0.114	-0.0373
	(0.0247)	(6.244)	(1.759)	(0.00242)	(0.106)	(0.0694)	(0.0538)
Constant	-119.7**	-8,571	-1,178	-17.94***	-138.9	-222.0	83.15
	(49.38)	(12,460)	(3,507)	(4.859)	(212.7)	(138.3)	(108.2)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.040	-0.020	-0.051	0.152	-0.014	0.022	-0.049

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E7: Estimation results of Equation 2 for Other Income (Other)

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.0103	3.598*	2.442	-0.00735	0.154	0.0931	0.0611
	(0.0215)	(2.052)	(1.755)	(0.00701)	(0.112)	(0.0605)	(0.0764)
t	0.00436	0.263	0.0966	0.00254	-0.0759**	-0.0354*	-0.0406***
	(0.00378)	(0.677)	(0.225)	(0.00154)	(0.0302)	(0.0182)	(0.0134)
Constant	-8.096	-423.8	-185.2	-4.937	157.9**	74.12**	83.81***
	(7.595)	(1,354)	(452.4)	(3.086)	(60.35)	(36.27)	(26.79)
Observations	37	37	37	37	37	37	37
Adjusted R^2	-0.051	-0.036	-0.030	-0.001	0.019	-0.014	0.026

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E8: Estimation results of Equation 2 for Investment-Dividend Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.0195	1.707	0.981	0.0362	0.173	0.138*	0.0357
	(0.0296)	(2.875)	(4.839)	(0.0269)	(0.130)	(0.0687)	(0.0811)
t	0.0310***	3.129**	0.0545	0.0124***	0.157**	0.115***	0.0421
	(0.00655)	(1.288)	(0.643)	(0.00444)	(0.0689)	(0.0377)	(0.0336)
Constant	-61.57***	-6,177**	-92.33	-24.76***	-310.2**	-227.6***	-82.51
	(13.13)	(2,578)	(1,298)	(8.897)	(137.8)	(75.33)	(67.14)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.396	0.352	-0.057	0.215	0.330	0.428	0.078

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E9: Estimation results of Equation 2 for Investment-Interest Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.0947**	-0.906**	-10.05	0.0394**	-0.188***	0.0149	-0.203***
	(0.0443)	(0.436)	(10.33)	(0.0193)	(0.0536)	(0.0560)	(0.0669)
t	0.0150	-1.025***	2.370*	0.00634	-0.215***	-0.0874***	-0.128***
	(0.0139)	(0.0983)	(1.254)	(0.00552)	(0.0164)	(0.0182)	(0.0187)
Constant	-30.47	2,070***	-4,726*	-12.84	435.8***	177.0***	258.9***
	(27.99)	(196.9)	(2,490)	(11.08)	(32.85)	(36.62)	(37.67)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.015	0.876	0.075	0.009	0.927	0.491	0.605

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E10: Estimation results of Equation 2 for Investment-Capital Gains Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.665	31.55	-3.111**	0.0600***	1.271	1.932	-0.661
	(0.452)	(86.67)	(1.351)	(0.0200)	(1.665)	(1.430)	(0.422)
t	-0.0569	-14.75	0.317	-0.00113	-0.471***	-0.288**	-0.183**
	(0.0401)	(10.23)	(0.229)	(0.00321)	(0.159)	(0.115)	(0.0793)
Constant	115.6	30,367	-615.5	2.236	967.2***	587.0**	380.2**
	(80.24)	(20,444)	(454.3)	(6.429)	(318.1)	(229.1)	(159.3)
Observations	37	37	37	37	37	37	37
Adjusted R^2	0.010	-0.013	0.034	0.040	0.086	0.068	0.013

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table E11: Estimation results of Equation 2 for Investment-Limited Partnership Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	0.0930	4.106	-10.65*	0.0479**	0.201	0.288**	-0.0871
	(0.0584)	(4.276)	(6.247)	(0.0224)	(0.229)	(0.127)	(0.161)
t	-0.0678***	-6.032**	-1.800	-0.0117*	-0.345***	-0.248***	-0.0968
	(0.0222)	(2.555)	(2.052)	(0.00623)	(0.113)	(0.0643)	(0.0617)
Constant	136.4***	12,165**	3,670	23.50*	697.0***	500.4***	196.5
	(44.73)	(5,124)	(4,130)	(12.50)	(225.9)	(129.0)	(123.6)
Observations	31	31	31	31	31	31	31
Adjusted R^2	0.308	0.331	-0.010	0.222	0.456	0.514	0.168

Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Data for limited partnership income are only available from 1988.

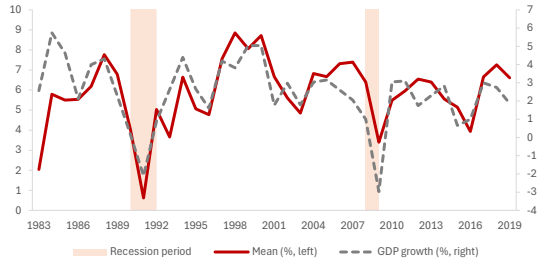
Table E12: Estimation results of Equation 2 for Investment-Rental Income

	Mean	Variance	CV	Kelley	P90-P10	P90-P50	P50-P10
ΔGDP	-0.0328	-0.956	2.349*	-0.00177	-0.102*	-0.0729	-0.0288
	(0.0804)	(1.518)	(1.296)	(0.00934)	(0.0595)	(0.101)	(0.0696)
t	-0.00889	-0.498	0.723*	0.000117	-0.0321**	-0.0171	-0.0150
	(0.0118)	(0.403)	(0.406)	(0.00146)	(0.0129)	(0.0137)	(0.0138)
Constant	18.80	1,118	-1,443*	-0.134	80.64***	43.23	37.41
	(23.72)	(808.4)	(816.5)	(2.949)	(25.77)	(27.54)	(27.71)
Observations	37	37	37	37	37	37	37
Adjusted R^2	-0.026	0.019	0.053	-0.055	0.096	-0.001	0.025

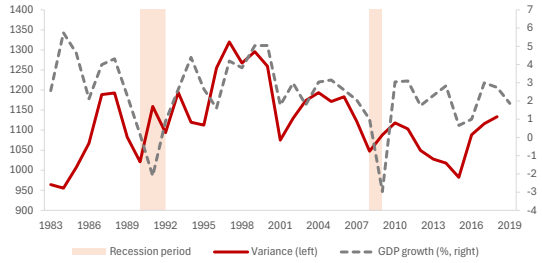
Note: Newey-West standard errors in parentheses (maximum lag length: 3). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure E1: Moments of Wage, Salary and Commission Income (WSC) Growth Distributions

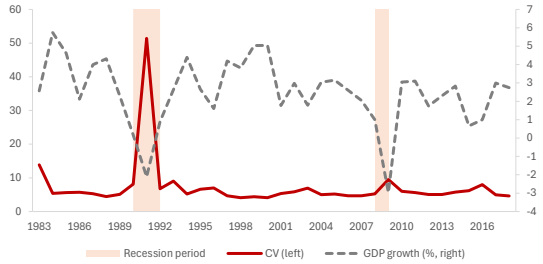
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

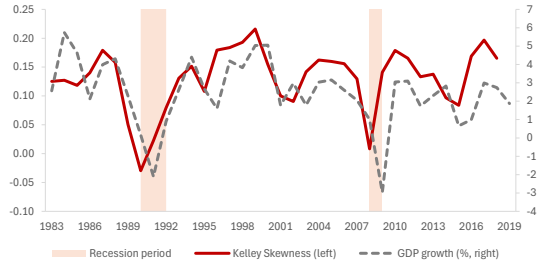
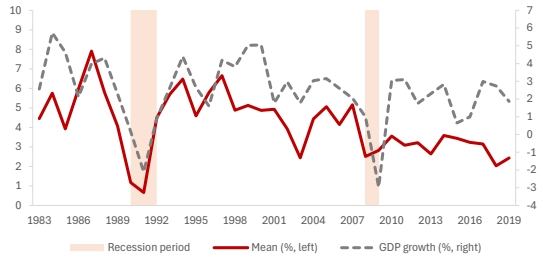
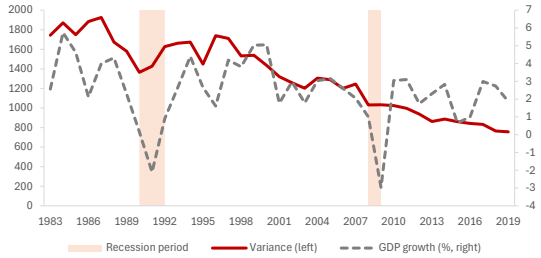


Figure E2: Moments of Non-Professional Business Income (Bus) Growth Distributions

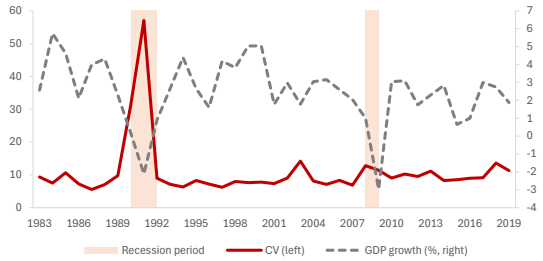
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

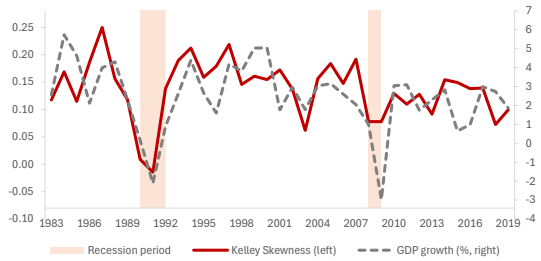
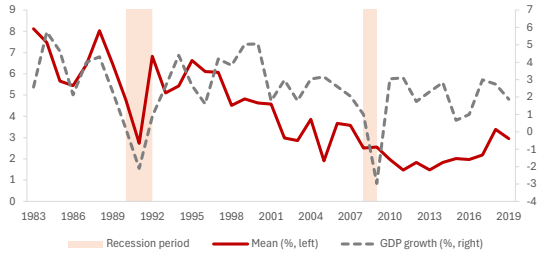
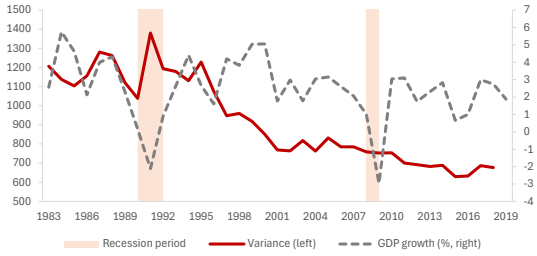


Figure E3: Moments of Professional Business Income (Prof) Growth Distributions

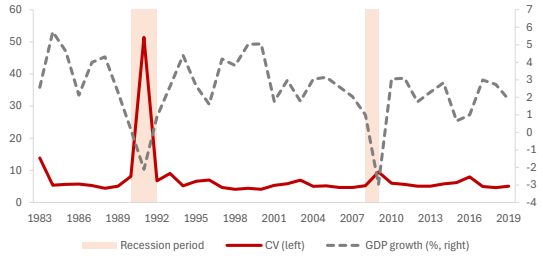
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

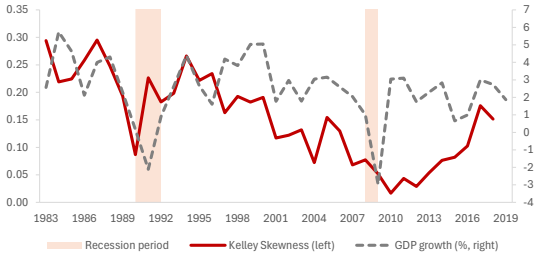
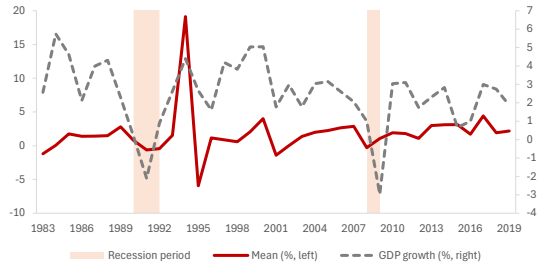
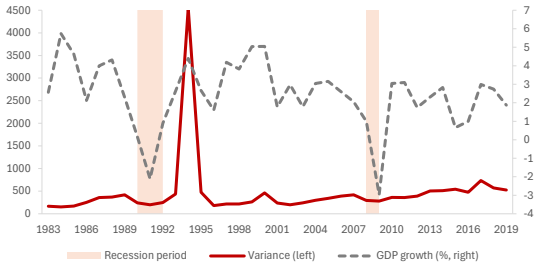


Figure E4: Moments of Investment Income (Inv) Growth Distributions

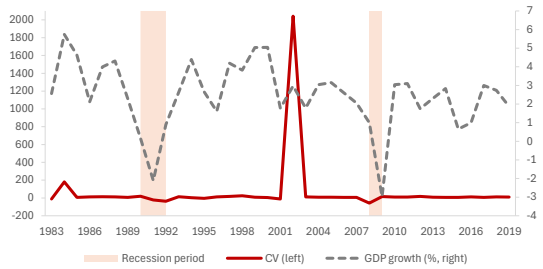
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

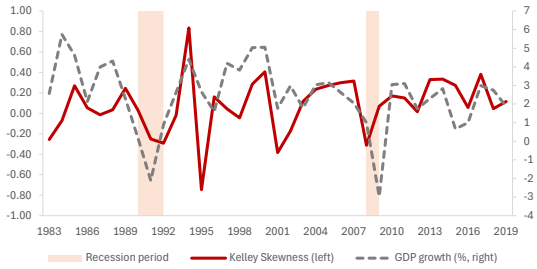
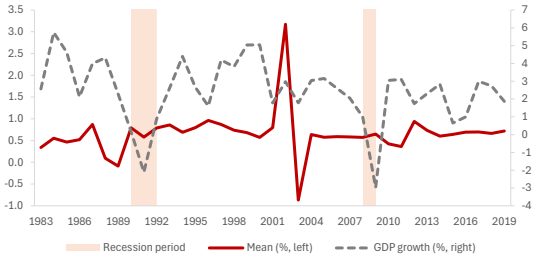
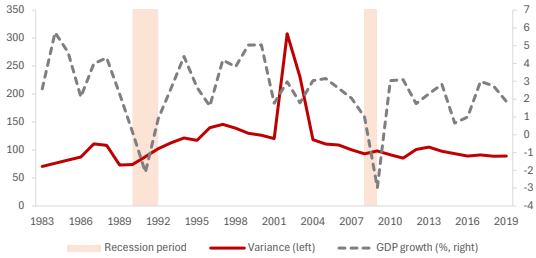


Figure E5: Moments of Other Income (Other) Growth Distributions

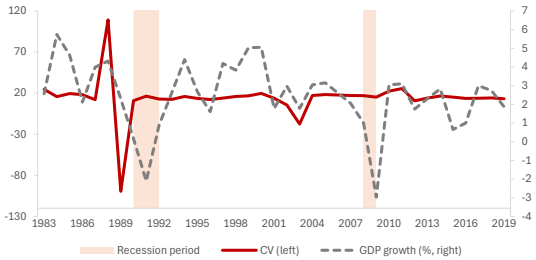
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

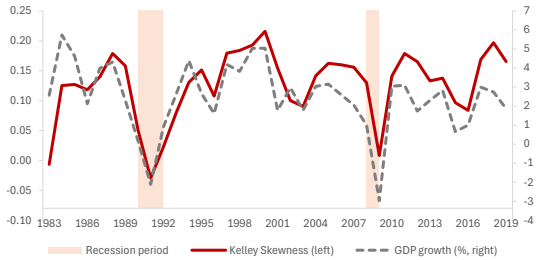
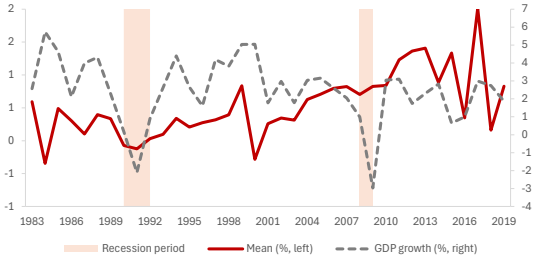
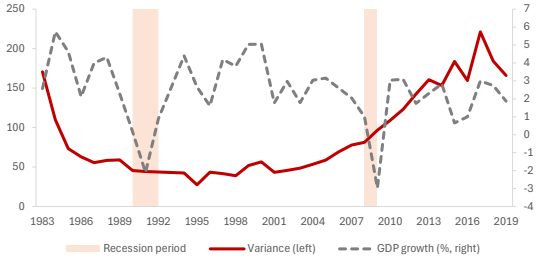


Figure E6: Moments of Investment-Dividend Income Growth Distributions

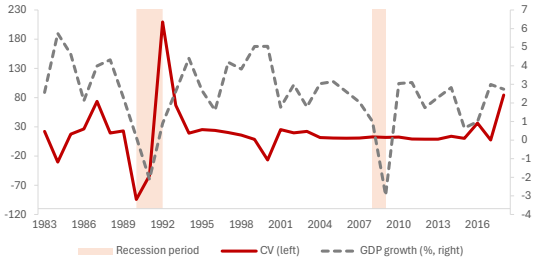
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

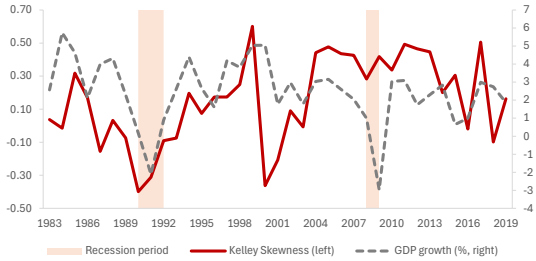
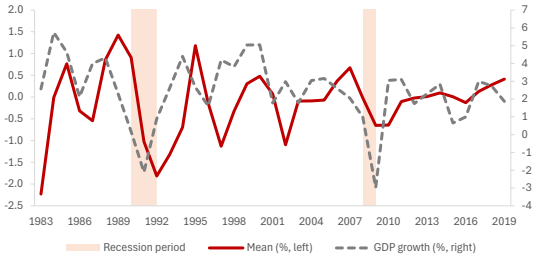
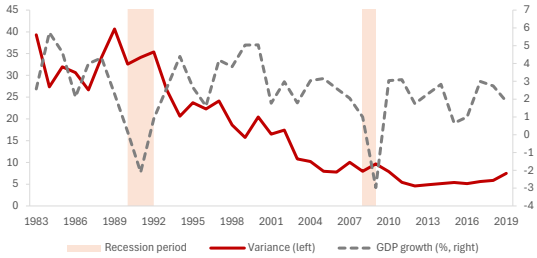


Figure E7: Moments of Investment-Interest Income Growth Distributions

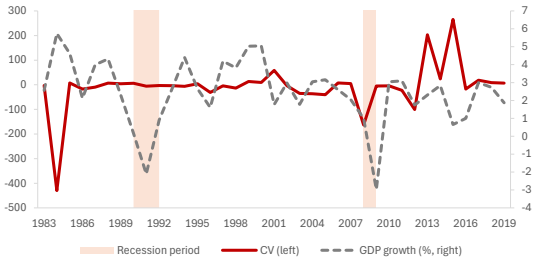
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

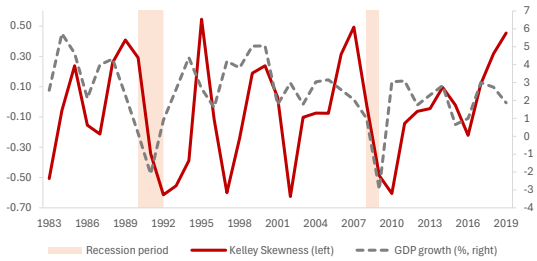
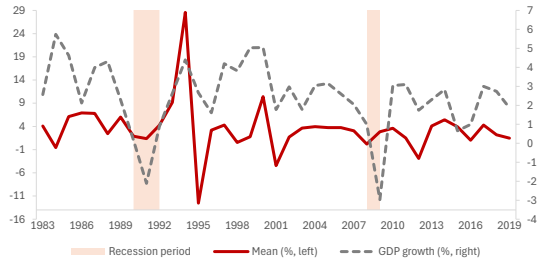
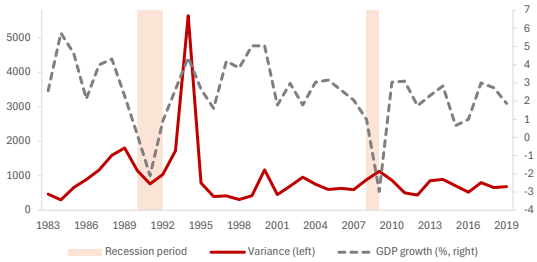


Figure E8: Moments of Investment-Capital Gains Income Growth Distributions

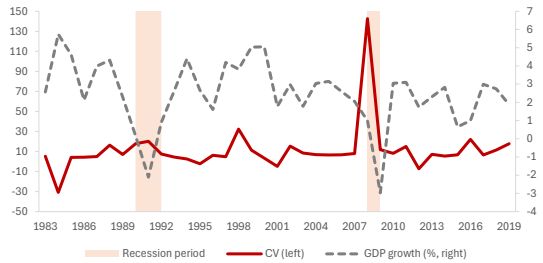
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

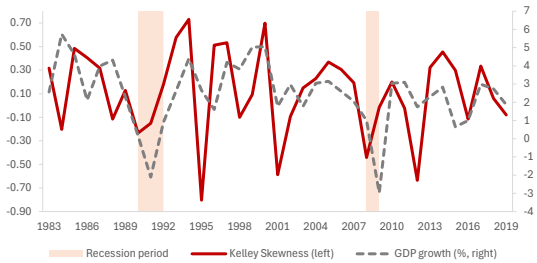
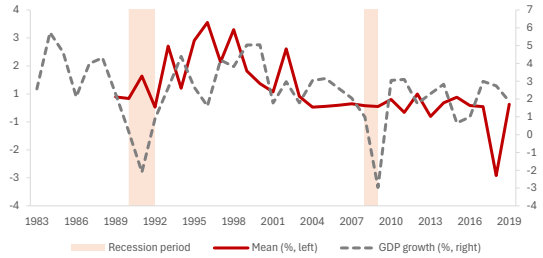
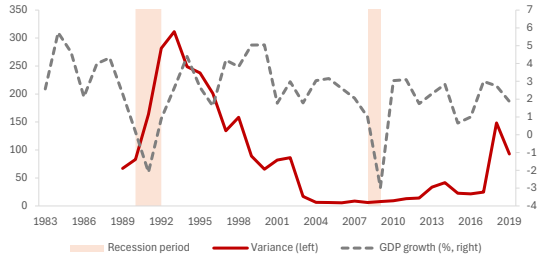


Figure E9: Moments of Investment-Limited Partnership Income Growth Distributions

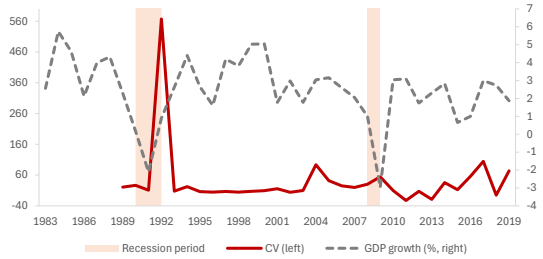
(a) Mean



(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness

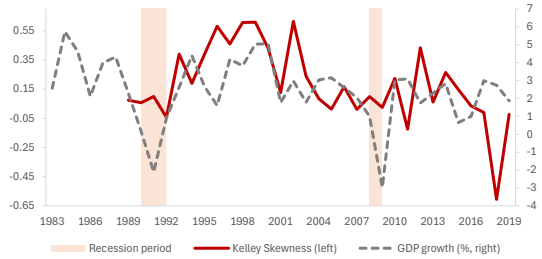
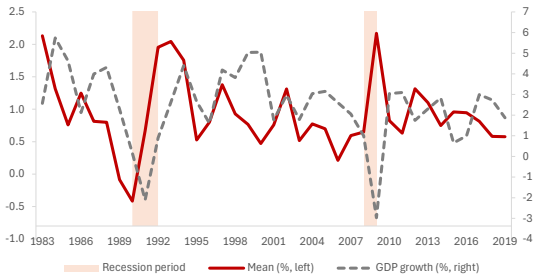
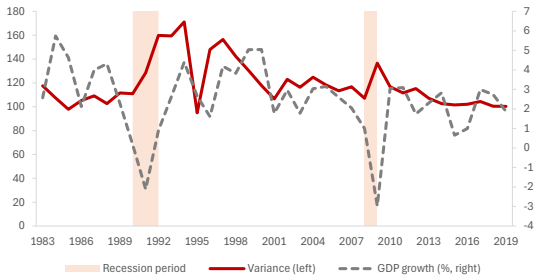


Figure E10: Moments of Investment-Rental Income Growth Distributions

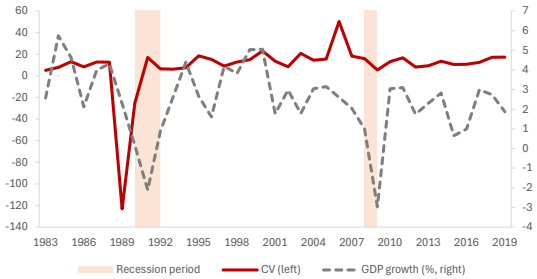
(a) Mean



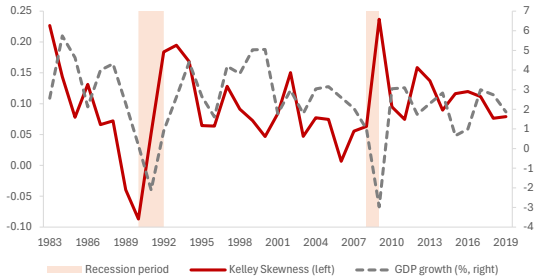
(b) Variance



(c) Coefficient of Variation



(d) Kelley Skewness



F Impacts of monetary policy by income source: additional results

This appendix presents additional results supporting the analysis in Section 5 of the impacts of monetary policy shocks on income growth by income source. Tables F1–F10 present the estimation results of Equation 7 by income source, complementing the market-income results in Table 3. Tables F11–F20 present the estimation results of Equation 8 by income source and income decile, complementing the market-income results in Table 4. Figures F1–F3 present the corresponding decomposition of the effect of monetary policy on household income growth by income source across horizons $h = 2, 3, 4$, complementing Figure 14 and Figure 15 in the main text.

G Sensitivity of the clustering choice

The baseline specification of Equation 8 two-way clusters standard errors at the household level, to account for serial correlation in the error term within a household over time, and at the interaction of year and 2-digit postal code, to account for cross-sectional correlation across households in the same geographic area and time period. This appendix examines how sensitive the standard errors are to the choice of this second clustering variable. Figure G1 compares the 68% and 95% confidence bands around the estimated one-year effect ($h = 1$) of a 1-pp monetary policy tightening shock on household income, $\widehat{\beta}_{q1}$, across income deciles, q, under alternative choices for the second clustering variable, as indicated in the legend. In all cases, standard errors continue to be clustered at the household level in addition to the second clustering variable shown. The baseline (black) uses the interaction of year and 2-digit postal code as the second clustering variable.

The confidence bands are broadly similar in width across the different choices of the sec-

Table F1: Estimation results of Equation 7 - Wages, Salaries and Commissions Income

Dependent variable: $\frac{\text{WSC}_{i,t+h}-\text{WSC}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	-0.399***	-0.639***	-0.863***	-1.593***	-2.486***	-3.400***
	(0.0552)	(0.0969)	(0.136)	(0.158)	(0.186)	(0.198)
MP_{t-1}	-0.744***	-1.007***	-1.470***	-2.482***	-3.032***	-3.448***
	(0.0706)	(0.120)	(0.161)	(0.182)	(0.189)	(0.218)
MP_{t-2}	-0.627***	-0.893***	-1.419***	-2.155***	-1.982***	-3.068***
	(0.0591)	(0.102)	(0.140)	(0.149)	(0.173)	(0.199)
$\frac{\text{WSC}_{i,t-1}-\text{WSC}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.171***	-0.232***	-0.249***	-0.272***	-0.268***	-0.305***
	(0.00505)	(0.00821)	(0.0116)	(0.0145)	(0.0237)	(0.0193)
$\frac{\text{WSC}_{i,t-2}-\text{WSC}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0890***	-0.118***	-0.131***	-0.150***	-0.152***	-0.165***
	(0.00229)	(0.00343)	(0.00494)	(0.0105)	(0.00881)	(0.0103)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.0290***	0.0373***	0.0426***	0.0458***	0.0493***	0.0496***
	(0.00152)	(0.00202)	(0.00225)	(0.00245)	(0.00267)	(0.00274)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	0.0122***	0.0156***	0.0177***	0.0203***	0.0178***	0.0191***
	(0.000955)	(0.00144)	(0.00183)	(0.00209)	(0.00240)	(0.00251)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	0.573***	0.834***	1.158***	1.452***	1.551***	1.944***
	(0.0376)	(0.0670)	(0.0913)	(0.110)	(0.135)	(0.154)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	0.673***	1.151***	1.492***	1.727***	1.770***	1.660***
	(0.0415)	(0.0722)	(0.103)	(0.134)	(0.162)	(0.171)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.0308***	0.0471***	0.0673***	0.0581***	-0.0460***	-0.0295*
	(0.00497)	(0.00762)	(0.0102)	(0.0127)	(0.0144)	(0.0178)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.000624	0.00456	0.00403	-0.0665***	-0.0865***	-0.0497***
	(0.00360)	(0.00625)	(0.00865)	(0.0100)	(0.0113)	(0.0138)
Constant	1.674***	2.933***	3.192***	3.897***	5.438***	6.693***
	(0.120)	(0.209)	(0.287)	(0.370)	(0.445)	(0.514)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.118	0.146	0.176	0.154	0.231	0.253
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F2: Estimation results of Equation 7 - Non-Professional Business Income

Dependent variable: $\frac{\text{Bus}_{i,t+h}-\text{Bus}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	-0.0889***	-0.168***	-0.134***	-0.110***	-0.0253	0.0268
	(0.0184)	(0.0257)	(0.0341)	(0.0334)	(0.0335)	(0.0356)
MP_{t-1}	-0.160***	-0.201***	-0.187***	-0.111***	0.0241	0.0146
	(0.0205)	(0.0311)	(0.0347)	(0.0323)	(0.0305)	(0.0332)
MP_{t-2}	-0.0968***	-0.112***	-0.0881***	0.0193	0.0850***	0.0593*
	(0.0236)	(0.0270)	(0.0314)	(0.0255)	(0.0299)	(0.0318)
$\frac{\text{Bus}_{i,t-1}-\text{Bus}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.166***	-0.151***	-0.171***	-0.174***	-0.173***	-0.171***
	(0.00883)	(0.0133)	(0.0111)	(0.0132)	(0.0152)	(0.0192)
$\frac{\text{Bus}_{i,t-2}-\text{Bus}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0829***	-0.0750***	-0.0688***	-0.0761***	-0.0762***	-0.0752***
	(0.00902)	(0.00563)	(0.0101)	(0.00640)	(0.00817)	(0.0117)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.00168***	0.00175***	0.00145***	0.00141***	0.000195	-0.00115**
	(0.000316)	(0.000388)	(0.000454)	(0.000466)	(0.000485)	(0.000469)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	0.000372	0.000664*	0.000479	-9.72e-05	-0.000788	-0.00163***
	(0.000282)	(0.000368)	(0.000428)	(0.000477)	(0.000498)	(0.000630)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.0105	-0.0307**	-0.0662***	-0.0687***	-0.106***	-0.0634***
	(0.0109)	(0.0151)	(0.0199)	(0.0209)	(0.0236)	(0.0244)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	0.0322***	0.0434***	0.106***	0.104***	0.140***	0.107***
	(0.0100)	(0.0151)	(0.0194)	(0.0219)	(0.0236)	(0.0250)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.00323***	0.00416***	0.00687***	0.00684***	0.00228	0.00353
	(0.000919)	(0.00121)	(0.00165)	(0.00188)	(0.00213)	(0.00227)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	0.00113	0.00131	0.00165	-0.00231	-0.00131	-0.000219
	(0.000769)	(0.00127)	(0.00158)	(0.00177)	(0.00188)	(0.00194)
Constant	0.922***	1.148***	1.268***	1.439***	1.584***	1.676***
	(0.0300)	(0.0400)	(0.0476)	(0.0565)	(0.0632)	(0.0712)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.102	0.110	0.123	0.158	0.184	0.198
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F3: Estimation results of Equation 7 - Professional Business Income

Dependent variable: $\frac{\text{Prof}_{i,t+h}-\text{Prof}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.00833*	-0.00359	-0.0200**	-0.0379***	-0.0624***	-0.0742***
	(0.00468)	(0.00624)	(0.00838)	(0.0106)	(0.0115)	(0.0133)
MP_{t-1}	-0.0298***	-0.0532***	-0.0782***	-0.119***	-0.132***	-0.140***
	(0.00729)	(0.00772)	(0.00914)	(0.0129)	(0.0129)	(0.0142)
MP_{t-2}	-0.0339***	-0.0470***	-0.0694***	-0.0926***	-0.0822***	-0.103***
	(0.00704)	(0.00601)	(0.00826)	(0.0104)	(0.0121)	(0.0129)
$\frac{\text{Prof}_{i,t-1}-\text{Prof}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.137***	-0.144***	-0.162***	-0.166***	-0.159***	-0.165***
	(0.0117)	(0.0150)	(0.0173)	(0.0176)	(0.0187)	(0.0208)
$\frac{\text{Prof}_{i,t-2}-\text{Prof}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0624***	-0.0660***	-0.0844***	-0.0816***	-0.0799***	-0.0849***
	(0.00688)	(0.00856)	(0.0104)	(0.00825)	(0.00920)	(0.0107)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.000519***	0.00122***	0.00181***	0.00183***	0.00193***	0.00269***
	(0.000168)	(0.000257)	(0.000311)	(0.000384)	(0.000422)	(0.000544)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	0.000848***	0.00125***	0.00164***	0.00174***	0.00212***	0.00230***
	(0.000178)	(0.000253)	(0.000257)	(0.000281)	(0.000319)	(0.000385)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	0.0329***	0.0477***	0.0599***	0.0777***	0.0877***	0.107***
	(0.00386)	(0.00433)	(0.00560)	(0.00695)	(0.00813)	(0.00959)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	0.0386***	0.0570***	0.0773***	0.0979***	0.111***	0.118***
	(0.00328)	(0.00465)	(0.00616)	(0.00859)	(0.00910)	(0.0107)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.00143***	0.00149***	0.00145***	0.00119*	-0.00170*	-0.00245**
	(0.000415)	(0.000374)	(0.000476)	(0.000621)	(0.000881)	(0.000995)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.000697**	-0.00157***	-0.00199***	-0.00518***	-0.00680***	-0.00714***
	(0.000281)	(0.000379)	(0.000476)	(0.000762)	(0.000826)	(0.000913)
Constant	0.0186*	0.00924	-0.00876	-0.0424**	-0.0503**	-0.0743***
	(0.0102)	(0.0121)	(0.0155)	(0.0202)	(0.0237)	(0.0286)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.129	0.165	0.172	0.201	0.222	0.269
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F4: Estimation results of Equation 7 - Investment Income

Dependent variable: $\frac{\text{Inv}_{i,t+h}-\text{Inv}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.273***	-0.265***	0.933***	-0.0630	-0.120*	0.958***
	(0.0524)	(0.0598)	(0.101)	(0.0597)	(0.0621)	(0.157)
MP_{t-1}	-0.383***	0.670***	0.243***	-0.207***	0.910***	0.449***
	(0.0762)	(0.0608)	(0.0653)	(0.0579)	(0.112)	(0.0867)
MP_{t-2}	0.683***	0.442***	-0.179	0.449***	0.503***	-0.471**
	(0.126)	(0.128)	(0.122)	(0.123)	(0.137)	(0.202)
$\frac{\text{Inv}_{i,t-1}-\text{Inv}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.372***	-0.376***	-0.399***	-0.420***	-0.441***	-0.534**
	(0.121)	(0.128)	(0.132)	(0.136)	(0.154)	(0.231)
$\frac{\text{Inv}_{i,t-2}-\text{Inv}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.127**	-0.123*	-0.132*	-0.172**	-0.170	-0.110***
	(0.0542)	(0.0642)	(0.0703)	(0.0794)	(0.145)	(0.0336)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.000691	-0.00136	-0.00362***	-0.00282***	0.000428	0.00156
	(0.000844)	(0.000893)	(0.000992)	(0.000755)	(0.000731)	(0.00102)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	-0.00135*	-3.91e-05	-0.00415***	-0.00140	-0.00108	0.00227**
	(0.000753)	(0.000745)	(0.000896)	(0.000906)	(0.000885)	(0.00115)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.395***	-0.992***	0.289***	0.0123	0.102*	-0.538***
	(0.0593)	(0.0767)	(0.0765)	(0.0628)	(0.0535)	(0.125)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.403***	0.554***	-0.114*	-0.123*	-0.582***	0.0740
	(0.0528)	(0.0738)	(0.0625)	(0.0630)	(0.101)	(0.0469)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.00728	0.00311	-0.0299***	-0.0132*	-0.0164	0.0660***
	(0.00630)	(0.00630)	(0.00686)	(0.00678)	(0.0119)	(0.0185)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.0100***	-0.0418***	-0.0165***	-0.00544	0.0328***	0.0485***
	(0.00365)	(0.00423)	(0.00485)	(0.00626)	(0.0105)	(0.00637)
Constant	5.096***	4.686***	3.939***	5.002***	6.327***	6.440***
	(0.534)	(0.569)	(0.583)	(0.607)	(0.770)	(0.647)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.159	0.152	0.211	0.283	0.303	0.335
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F5: Estimation results of Equation 7 - Other Income

Dependent variable: $\frac{\text{Other}_{i,t+h}-\text{Other}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.0928***	0.210***	0.255***	0.404***	0.612***	0.720***
	(0.0215)	(0.0284)	(0.0310)	(0.0377)	(0.0549)	(0.0493)
MP_{t-1}	0.193***	0.301***	0.454***	0.612***	0.727***	0.884***
	(0.0218)	(0.0317)	(0.0334)	(0.0417)	(0.0523)	(0.0524)
MP_{t-2}	0.169***	0.315***	0.439***	0.529***	0.600***	0.799***
	(0.0214)	(0.0251)	(0.0285)	(0.0334)	(0.0409)	(0.0405)
$\frac{\text{Other}_{i,t-1}-\text{Other}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.593***	-0.602***	-0.614***	-0.649***	-0.872***	-0.984***
	(0.0480)	(0.0437)	(0.0433)	(0.0285)	(0.136)	(0.0804)
$\frac{\text{Other}_{i,t-2}-\text{Other}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.214***	-0.220***	-0.228***	-0.325***	-0.793***	-0.301***
	(0.0545)	(0.0680)	(0.0744)	(0.0202)	(0.236)	(0.0215)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	-0.00379***	-0.00369***	-0.00553***	-0.00778***	-0.0101***	-0.0104***
	(0.000381)	(0.000430)	(0.000505)	(0.000451)	(0.000815)	(0.000589)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	-0.00176***	-0.00222***	-0.00384***	-0.00509***	-0.00685***	-0.00642***
	(0.000314)	(0.000348)	(0.000388)	(0.000435)	(0.000684)	(0.000538)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.293***	-0.398***	-0.521***	-0.662***	-0.805***	-0.853***
	(0.0261)	(0.0247)	(0.0289)	(0.0299)	(0.0646)	(0.0398)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.332***	-0.432***	-0.539***	-0.605***	-0.737***	-0.684***
	(0.0176)	(0.0229)	(0.0273)	(0.0292)	(0.0621)	(0.0377)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	-0.00199*	-0.000832	-0.0106***	-0.00636**	0.0149***	0.0120***
	(0.00119)	(0.00167)	(0.00186)	(0.00312)	(0.00345)	(0.00363)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	0.00778***	0.00334**	0.00312	0.0230***	0.0295***	0.0326***
	(0.00137)	(0.00169)	(0.00192)	(0.00231)	(0.00296)	(0.00290)
Constant	3.222***	4.233***	5.372***	6.509***	8.218***	8.516***
	(0.165)	(0.174)	(0.187)	(0.102)	(0.536)	(0.166)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.287	0.302	0.614	0.417	0.712	0.799
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F6: Estimation results of Equation 7 - Dividend Income

Dependent variable: $\frac{\text{Div}_{i,t+h}-\text{Div}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	-0.00957	0.0269***	0.0645***	0.0611***	0.0540***	0.0426***
	(0.00584)	(0.00815)	(0.0120)	(0.0125)	(0.0148)	(0.0140)
MP_{t-1}	0.0271***	0.0612***	0.0747***	0.0800***	0.0630***	0.0685***
	(0.00697)	(0.00997)	(0.0118)	(0.0154)	(0.0148)	(0.0162)
MP_{t-2}	0.0271***	0.0386***	0.0499***	0.0556***	0.0360***	0.0634***
	(0.00624)	(0.00840)	(0.0110)	(0.0127)	(0.0119)	(0.0138)
$\frac{\text{Div}_{i,t-1}-\text{Div}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.161***	-0.143***	-0.153***	-0.167***	-0.161***	-0.171***
	(0.0198)	(0.0176)	(0.0230)	(0.0144)	(0.0223)	(0.0229)
$\frac{\text{Div}_{i,t-2}-\text{Div}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0891***	-0.0754***	-0.0763***	-0.0976***	-0.0876***	-0.0962***
	(0.0181)	(0.00834)	(0.00673)	(0.0103)	(0.0110)	(0.0159)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	4.84e-05	4.46e-05	-0.000726***	-0.00131***	-0.00166***	-0.00186***
	(0.000121)	(0.000163)	(0.000197)	(0.000232)	(0.000268)	(0.000343)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	7.19e-05	-0.000364**	-0.000992***	-0.00115***	-0.00144***	-0.00157***
	(0.000116)	(0.000149)	(0.000189)	(0.000201)	(0.000258)	(0.000300)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.0199***	-0.0500***	-0.0722***	-0.0768***	-0.101***	-0.0796***
	(0.00451)	(0.00625)	(0.00890)	(0.0105)	(0.0117)	(0.0120)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.0568***	-0.0632***	-0.0622***	-0.0715***	-0.0513***	-0.0679***
	(0.00474)	(0.00690)	(0.00854)	(0.00992)	(0.0113)	(0.0111)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	-0.00284***	-0.00329***	0.00228**	0.00413***	0.00146	0.00196
	(0.000494)	(0.000664)	(0.000900)	(0.00121)	(0.00130)	(0.00157)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.00206***	0.000856	0.00354***	0.00350***	0.00158	0.0107***
	(0.000480)	(0.000672)	(0.000928)	(0.00125)	(0.00155)	(0.00119)
Constant	0.679***	0.966***	1.237***	1.488***	1.707***	1.906***
	(0.0221)	(0.0233)	(0.0300)	(0.0319)	(0.0391)	(0.0355)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.121	0.117	0.118	0.152	0.174	0.204
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F7: Estimation results of Equation 7 - Interest Income

Dependent variable: $\frac{\text{Int}_{i,t+h}-\text{Int}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.0331***	0.0759***	-0.110***	-0.309***	-0.403***	-0.399***
	(0.0126)	(0.0209)	(0.0215)	(0.0159)	(0.0152)	(0.0193)
MP_{t-1}	0.0897***	-0.0193	-0.266***	-0.460***	-0.470***	-0.301***
	(0.0110)	(0.0170)	(0.0183)	(0.0187)	(0.0199)	(0.0167)
MP_{t-2}	-0.0406***	-0.141***	-0.286***	-0.418***	-0.333***	-0.259***
	(0.00824)	(0.0108)	(0.0155)	(0.0176)	(0.0133)	(0.0134)
$\frac{\text{Int}_{i,t-1}-\text{Int}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.140***	-0.159***	-0.182***	-0.191***	-0.190***	-0.200***
	(0.0125)	(0.0202)	(0.0256)	(0.0302)	(0.0325)	(0.0367)
$\frac{\text{Int}_{i,t-2}-\text{Int}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0777***	-0.0895***	-0.117***	-0.115***	-0.114***	-0.131***
	(0.00602)	(0.0114)	(0.0178)	(0.0190)	(0.0200)	(0.0246)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	0.00147***	0.00227***	0.00212***	0.00176***	0.00211***	0.00236***
	(0.000104)	(0.000154)	(0.000161)	(0.000150)	(0.000168)	(0.000180)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	0.00126***	0.00171***	0.00141***	0.00118***	0.00118***	0.000949***
	(9.83e-05)	(0.000145)	(0.000155)	(0.000149)	(0.000167)	(0.000166)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	0.0149*	-0.0296**	-0.0389***	0.0354***	0.0642***	0.0263**
	(0.00833)	(0.0115)	(0.0120)	(0.0109)	(0.0104)	(0.0125)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.0467***	-0.0378***	0.00674	-0.000137	-0.0309***	-0.0430***
	(0.00663)	(0.00880)	(0.00882)	(0.00810)	(0.00926)	(0.0111)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.00595***	0.00761***	0.00566***	-0.00241***	-0.00791***	-0.00281***
	(0.000477)	(0.000764)	(0.000960)	(0.000907)	(0.000997)	(0.000919)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	0.00257***	1.21e-05	-0.00741***	-0.0143***	-0.0100***	0.00104
	(0.000444)	(0.000762)	(0.000931)	(0.000947)	(0.000805)	(0.000863)
Constant	0.0865***	0.176***	0.0957***	-0.0272	-0.00995	0.0706***
	(0.0142)	(0.0223)	(0.0240)	(0.0197)	(0.0205)	(0.0225)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.100	0.176	0.210	0.197	0.211	0.215
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F8: Estimation results of Equation 7 - Capital Gains Income

Dependent variable: $\frac{\text{CapG}_{i,t+h}-\text{CapG}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.270***	-0.337***	0.983***	0.130**	0.147***	1.227***
	(0.0484)	(0.0622)	(0.112)	(0.0551)	(0.0542)	(0.164)
MP_{t-1}	-0.489***	0.616***	0.376***	0.0680	1.195***	0.520***
	(0.0788)	(0.0616)	(0.0680)	(0.0505)	(0.125)	(0.0821)
MP_{t-2}	0.640***	0.472***	-0.0468	0.665***	0.644***	-0.481**
	(0.135)	(0.135)	(0.127)	(0.131)	(0.144)	(0.226)
$\frac{\text{CapG}_{i,t-1}-\text{CapG}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.398***	-0.400***	-0.420***	-0.444***	-0.467***	-0.575**
	(0.123)	(0.130)	(0.133)	(0.137)	(0.168)	(0.242)
$\frac{\text{CapG}_{i,t-2}-\text{CapG}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.137**	-0.132*	-0.140*	-0.187**	-0.196	-0.101***
	(0.0583)	(0.0694)	(0.0757)	(0.0833)	(0.179)	(0.0342)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	8.80e-06	-0.00278***	-0.00409***	-0.00211***	0.00140**	0.00291***
	(0.000670)	(0.000754)	(0.000957)	(0.000714)	(0.000620)	(0.000921)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	-0.00211***	-0.00105*	-0.00378***	-0.000937	0.000299	0.00421***
	(0.000616)	(0.000624)	(0.000819)	(0.000703)	(0.000814)	(0.00105)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.381***	-0.895***	0.428***	0.110	0.214***	-0.423***
	(0.0669)	(0.0861)	(0.0827)	(0.0710)	(0.0596)	(0.139)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.258***	0.699***	0.000150	0.00538	-0.454***	0.260***
	(0.0419)	(0.0676)	(0.0484)	(0.0465)	(0.0897)	(0.0659)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	0.00644	0.000551	-0.0357***	-0.0136*	-0.0102	0.0689***
	(0.00680)	(0.00664)	(0.00741)	(0.00731)	(0.0131)	(0.0195)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	-0.0120***	-0.0442***	-0.0154***	0.00133	0.0379***	0.0331***
	(0.00306)	(0.00370)	(0.00432)	(0.00512)	(0.0108)	(0.00498)
Constant	3.955***	3.071***	2.008***	2.829***	3.837***	3.538***
	(0.434)	(0.459)	(0.469)	(0.478)	(0.688)	(0.492)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.168	0.163	0.238	0.310	0.343	0.368
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F9: Estimation results of Equation 7 - Limited Partnership Income

Dependent variable: $\frac{\text{LimP}_{i,t+h}-\text{LimP}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
MP_t	0.00401	0.00199	-0.00397	-0.00507**	-0.00447*	-0.00599**
	(0.00355)	(0.00233)	(0.00291)	(0.00238)	(0.00258)	(0.00245)
MP_{t-1}	0.00863***	0.00292	-0.00275	0.00129	-0.00266	-0.00654*
	(0.00247)	(0.00395)	(0.00202)	(0.00242)	(0.00231)	(0.00338)
MP_{t-2}	0.00135	-0.00197	-0.00388**	-0.00207	-0.00815**	-0.00428
	(0.00334)	(0.00296)	(0.00195)	(0.00294)	(0.00348)	(0.00352)
$\frac{\text{LimP}_{i,t-1}-\text{LimP}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.147***	-0.146***	-0.129***	-0.150***	-0.145***	-0.149***
	(0.00982)	(0.0168)	(0.0174)	(0.0209)	(0.0219)	(0.0262)
$\frac{\text{LimP}_{i,t-2}-\text{LimP}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.112***	-0.113***	-0.113***	-0.0836***	-0.0874***	-0.0916***
	(0.00940)	(0.0227)	(0.0214)	(0.00772)	(0.0111)	(0.0128)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	-0.000676	-0.000414	-0.000219*	-0.000116**	-2.78e-05	1.28e-05
	(0.000563)	(0.000390)	(0.000126)	(5.28e-05)	(9.74e-05)	(9.71e-05)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	-0.000244	0.000295	-0.000186	3.64e-05	4.41e-05	7.08e-05
	(0.000357)	(0.000324)	(0.000129)	(5.44e-05)	(7.33e-05)	(8.07e-05)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.00459	-0.00506*	-0.00317	-0.00671***	-0.00292	-0.00724***
	(0.00289)	(0.00286)	(0.00266)	(0.00231)	(0.00183)	(0.00188)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.00276	-0.00246	-0.00651***	-0.00644***	-0.00831***	-0.00176
	(0.00193)	(0.00285)	(0.00184)	(0.00210)	(0.00214)	(0.00213)
$\ln BCPI_{t-1} - \ln BCPI_{t-2}$	-0.000101	0.000178	0.000282***	0.000121	-0.000104	4.78e-05
	(0.000142)	(0.000137)	(0.000106)	(0.000110)	(0.000188)	(0.000162)
$\ln BCPI_{t-2} - \ln BCPI_{t-3}$	0.000286***	0.000461***	0.000452***	0.000334**	0.000431***	4.08e-05
	(0.000101)	(9.52e-05)	(9.31e-05)	(0.000169)	(0.000157)	(0.000113)
Constant	0.0295***	0.0292***	0.0362***	0.0458***	0.0454***	0.0438***
	(0.00917)	(0.00926)	(0.00700)	(0.00720)	(0.00535)	(0.00548)
Observations	54,739,215	48,705,270	44,202,885	40,261,375	36,687,425	33,407,040
R^2	0.213	0.180	0.160	0.194	0.175	0.174
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F10: Estimation results of Equation 7 - Rental Income

Dependent variable: $\frac{\text{Rent}_{i,t+h}-\text{Rent}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	0	1	2	3	4	5
MP_t	-0.0102***	-0.0305***	0.00593	0.0586***	0.0798***	0.116***
	(0.00378)	(0.00808)	(0.0114)	(0.00990)	(0.0129)	(0.0114)
MP_{t-1}	-0.0205***	-0.00507	0.0380***	0.0872***	0.113***	0.130***
	(0.00387)	(0.00711)	(0.00906)	(0.00948)	(0.0117)	(0.0110)
MP_{t-2}	0.0103***	0.0232***	0.0576***	0.101***	0.115***	0.129***
	(0.00342)	(0.00685)	(0.00907)	(0.00813)	(0.0112)	(0.00867)
$\frac{\text{Rent}_{i,t-1}-\text{Rent}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.167***	-0.187***	-0.175***	-0.161***	-0.205***	-0.170***
	(0.0109)	(0.0187)	(0.0131)	(0.0160)	(0.0397)	(0.0174)
$\frac{\text{Rent}_{i,t-2}-\text{Rent}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0459**	-0.0437**	-0.0623*	-0.0442**	-0.0773*	-0.0647***
	(0.0197)	(0.0208)	(0.0348)	(0.0194)	(0.0422)	(0.0106)
$\ln GDP_{j,t-1} - \ln GDP_{j,t-2}$	-0.000347***	-0.000612***	-0.000765***	-0.000962***	-0.00131***	-0.00173***
	(7.87e-05)	(8.95e-05)	(0.000119)	(0.000127)	(0.000145)	(0.000146)
$\ln GDP_{j,t-2} - \ln GDP_{j,t-3}$	-0.000474***	-0.000692***	-0.000660***	-0.000488	-0.00107***	-0.00119***
	(0.000102)	(0.000110)	(0.000139)	(0.000449)	(0.000123)	(0.000128)
$\ln CPI_{j,t-1} - \ln CPI_{j,t-2}$	-0.0296***	-0.0281***	-0.0362***	-0.0602***	-0.0809***	-0.0745***
	(0.00314)	(0.00487)	(0.00672)	(0.00644)	(0.00791)	(0.00712)
$\ln CPI_{j,t-2} - \ln CPI_{j,t-3}$	-0.00722**	-0.0104***	-0.0171***	-0.0138**	-0.00894	-0.00726
	(0.00301)	(0.00383)	(0.00498)	(0.00618)	(0.00601)	(0.00649)
$\%\Delta BCPI_{t-1}$	8.42e-06	-0.000271	-0.000617	0.000441	0.00224***	0.000949*
	(0.000196)	(0.000406)	(0.000585)	(0.000384)	(0.000766)	(0.000506)
$\%\Delta BCPI_{t-2}$	7.68e-05	-0.000343	0.000740*	0.00243***	0.00215***	0.000489
	(0.000163)	(0.000287)	(0.000417)	(0.000454)	(0.000490)	(0.000471)
Constant	0.238***	0.302***	0.391***	0.484***	0.589***	0.629***
	(0.00906)	(0.0112)	(0.0145)	(0.0156)	(0.0202)	(0.0170)
Observations	63,600,525	56,845,560	51,921,590	47,608,420	43,700,455	40,110,005
R^2	0.129	0.079	0.077	0.127	0.092	0.164
Household FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F11: Estimation results of Equation 8 - Wages, Salaries, and Commissions Income

Dependent variable: $\frac{\text{WSC}_{i,t+h}-\text{WSC}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.550***	0.759***	0.467*	0.661**	0.414	0.281
	(0.116)	(0.183)	(0.252)	(0.317)	(0.381)	(0.433)
$MP_t \cdot Decile_2$	0.258***	0.467***	0.290**	0.390**	0.335*	0.553**
	(0.0620)	(0.0996)	(0.131)	(0.178)	(0.199)	(0.227)
$MP_t \cdot Decile_3$	0.107***	0.194***	0.0948	0.164*	0.126	0.275**
	(0.0363)	(0.0569)	(0.0711)	(0.0918)	(0.111)	(0.126)
$MP_t \cdot Decile_4$	0.0314	0.0803**	0.0454	0.0694	0.0820	0.127*
	(0.0277)	(0.0375)	(0.0454)	(0.0547)	(0.0633)	(0.0710)
$MP_t \cdot Decile_6$	-0.103***	-0.143***	-0.140***	-0.117***	-0.116**	-0.174***
	(0.0223)	(0.0311)	(0.0378)	(0.0447)	(0.0491)	(0.0562)
$MP_t \cdot Decile_7$	-0.153***	-0.215***	-0.169***	-0.154***	-0.181***	-0.333***
	(0.0244)	(0.0377)	(0.0467)	(0.0583)	(0.0676)	(0.0768)
$MP_t \cdot Decile_8$	-0.232***	-0.301***	-0.162***	-0.164**	-0.188**	-0.395***
	(0.0266)	(0.0433)	(0.0573)	(0.0735)	(0.0893)	(0.101)
$MP_t \cdot Decile_9$	-0.228***	-0.323***	-0.167**	-0.210**	-0.268**	-0.599***
	(0.0323)	(0.0552)	(0.0747)	(0.100)	(0.117)	(0.135)
$MP_t \cdot Decile_{10}$	-0.158***	-0.332***	-0.289**	-0.335**	-0.397**	-0.819***
	(0.0500)	(0.0890)	(0.113)	(0.148)	(0.184)	(0.216)
$Decile_1$	42.36***	67.78***	85.58***	100.8***	114.8***	127.2***
	(0.197)	(0.329)	(0.435)	(0.649)	(0.642)	(0.730)
$Decile_2$	23.81***	38.71***	49.11***	58.02***	65.91***	73.13***
	(0.116)	(0.197)	(0.251)	(0.347)	(0.365)	(0.419)
$Decile_3$	12.98***	21.22***	27.06***	32.14***	36.62***	40.67***
	(0.0697)	(0.115)	(0.146)	(0.198)	(0.220)	(0.238)
$Decile_4$	5.621***	9.172***	11.73***	13.96***	15.88***	17.67***
	(0.0381)	(0.0591)	(0.0736)	(0.0952)	(0.106)	(0.115)
$Decile_6$	-4.414***	-7.324***	-9.462***	-11.38***	-13.13***	-14.70***
	(0.0321)	(0.0501)	(0.0609)	(0.0774)	(0.0858)	(0.0948)
$Decile_7$	-8.176***	-13.48***	-17.53***	-21.12***	-24.43***	-27.48***
	(0.0477)	(0.0793)	(0.0995)	(0.130)	(0.143)	(0.157)
$Decile_8$	-11.67***	-19.12***	-25.00***	-30.35***	-35.31***	-39.89***
	(0.0643)	(0.107)	(0.136)	(0.179)	(0.197)	(0.220)
$Decile_9$	-15.20***	-25.07***	-33.08***	-40.54***	-47.52***	-54.12***
	(0.0836)	(0.139)	(0.176)	(0.234)	(0.254)	(0.287)
$Decile_{10}$	-19.66***	-33.09***	-44.63***	-55.40***	-65.82***	-75.49***
	(0.117)	(0.195)	(0.256)	(0.382)	(0.377)	(0.436)
$\frac{\text{WSC}_{i,t-1}-\text{WSC}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.179***	-0.245***	-0.265***	-0.290***	-0.289***	-0.328***
	(0.00530)	(0.00872)	(0.0123)	(0.0155)	(0.0246)	(0.0205)
$\frac{\text{WSC}_{i,t-2}-\text{WSC}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0638***	-0.0777***	-0.0788***	-0.0896***	-0.0827***	-0.0874***
	(0.00197)	(0.00290)	(0.00274)	(0.00921)	(0.00551)	(0.00625)
Constant	3.774***	7.975***	11.56***	15.42***	19.19***	23.28***
	(0.0479)	(0.0750)	(0.102)	(0.137)	(0.182)	(0.182)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.162	0.204	0.249	0.200	0.320	0.343
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F12: Estimation results of Equation 8 - Non-Professional Business Income

Dependent variable: $\frac{\text{Bus}_{i,t+h}-\text{Bus}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	-0.119	-0.153	-0.0591	-0.0780	-0.0303	0.0785
	(0.0978)	(0.131)	(0.167)	(0.180)	(0.190)	(0.176)
$MP_t \cdot Decile_2$	0.0269	-0.0504	-0.00947	-0.0192	-0.0559	0.0921*
	(0.0281)	(0.0407)	(0.0487)	(0.0526)	(0.0540)	(0.0559)
$MP_t \cdot Decile_3$	0.0284	-0.0154	-0.0636*	-0.0306	-0.0522	0.0133
	(0.0208)	(0.0298)	(0.0336)	(0.0398)	(0.0336)	(0.0370)
$MP_t \cdot Decile_4$	0.00775	-0.0221	-0.0247	0.00166	0.00573	0.00939
	(0.0179)	(0.0213)	(0.0276)	(0.0277)	(0.0270)	(0.0280)
$MP_t \cdot Decile_6$	-0.00359	-0.00442	0.0325	0.00706	-0.00335	-0.00775
	(0.0138)	(0.0156)	(0.0240)	(0.0214)	(0.0199)	(0.0203)
$MP_t \cdot Decile_7$	-0.00764	0.00158	0.0193	0.00875	-0.00338	-0.0132
	(0.0127)	(0.0146)	(0.0205)	(0.0197)	(0.0202)	(0.0212)
$MP_t \cdot Decile_8$	0.00275	0.0164	0.0415**	0.0268	0.0172	-0.0184
	(0.0120)	(0.0155)	(0.0209)	(0.0191)	(0.0199)	(0.0207)
$MP_t \cdot Decile_9$	-0.00657	0.0165	0.0484**	0.0304	0.0188	-0.00305
	(0.0121)	(0.0150)	(0.0225)	(0.0198)	(0.0207)	(0.0220)
$MP_t \cdot Decile_{10}$	0.0452	0.0367	0.0643*	0.000228	-0.00292	-0.0303
	(0.0336)	(0.0298)	(0.0373)	(0.0254)	(0.0257)	(0.0306)
$Decile_1$	10.36***	13.65***	15.94***	17.38***	18.80***	20.02***
	(0.191)	(0.239)	(0.286)	(0.290)	(0.309)	(0.339)
$Decile_2$	4.443***	5.913***	6.853***	7.452***	8.044***	8.519***
	(0.0782)	(0.101)	(0.118)	(0.124)	(0.135)	(0.145)
$Decile_3$	2.286***	3.034***	3.550***	3.841***	4.130***	4.346***
	(0.0453)	(0.0566)	(0.0646)	(0.0710)	(0.0766)	(0.0832)
$Decile_4$	0.984***	1.257***	1.469***	1.613***	1.685***	1.777***
	(0.0232)	(0.0278)	(0.0332)	(0.0369)	(0.0392)	(0.0429)
$Decile_6$	-0.704***	-0.926***	-1.063***	-1.142***	-1.212***	-1.300***
	(0.0179)	(0.0237)	(0.0256)	(0.0283)	(0.0304)	(0.0334)
$Decile_7$	-1.252***	-1.639***	-1.900***	-2.055***	-2.213***	-2.342***
	(0.0243)	(0.0320)	(0.0365)	(0.0398)	(0.0433)	(0.0483)
$Decile_8$	-1.739***	-2.294***	-2.677***	-2.883***	-3.128***	-3.340***
	(0.0309)	(0.0415)	(0.0494)	(0.0519)	(0.0566)	(0.0640)
$Decile_9$	-2.250***	-2.998***	-3.521***	-3.816***	-4.151***	-4.410***
	(0.0386)	(0.0527)	(0.0634)	(0.0658)	(0.0720)	(0.0815)
$Decile_{10}$	-3.122***	-4.214***	-5.037***	-5.465***	-5.973***	-6.403***
	(0.0570)	(0.0833)	(0.0988)	(0.0938)	(0.103)	(0.121)
$\frac{\text{Bus}_{i,t-1}-\text{Bus}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.166***	-0.152***	-0.172***	-0.175***	-0.174***	-0.173***
	(0.00884)	(0.0134)	(0.0112)	(0.0133)	(0.0154)	(0.0193)
$\frac{\text{Bus}_{i,t-2}-\text{Bus}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0810***	-0.0723***	-0.0657***	-0.0729***	-0.0728***	-0.0715***
	(0.00907)	(0.00561)	(0.0100)	(0.00621)	(0.00795)	(0.0114)
Constant	0.451***	0.742***	1.014***	1.234***	1.451***	1.650***
	(0.0251)	(0.0248)	(0.0294)	(0.0322)	(0.0353)	(0.0421)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.104	0.113	0.127	0.163	0.189	0.203
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F13: Estimation results of Equation 8 - Professional Business Income

Dependent variable: $\frac{\text{Prof}_{i,t+h}-\text{Prof}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.0395	-0.0177	-0.0220	0.0807	-0.00348	-0.0150
	(0.0395)	(0.0237)	(0.0303)	(0.100)	(0.0303)	(0.0310)
$MP_t \cdot Decile_2$	0.0182**	0.0103	0.00346	0.00648	0.00940	-0.0187
	(0.00916)	(0.0115)	(0.0127)	(0.0142)	(0.0160)	(0.0182)
$MP_t \cdot Decile_3$	0.0104	-0.00538	-0.00148	-0.00617	-0.0200	-0.0216
	(0.00801)	(0.00943)	(0.0115)	(0.0127)	(0.0145)	(0.0155)
$MP_t \cdot Decile_4$	0.00203	-0.00255	-0.00182	0.00174	-0.0114	-0.0144
	(0.00813)	(0.00921)	(0.0107)	(0.0119)	(0.0135)	(0.0149)
$MP_t \cdot Decile_6$	0.00668	-0.00204	-0.000156	-0.00818	-0.00595	-0.0143
	(0.00817)	(0.0100)	(0.0124)	(0.0158)	(0.0151)	(0.0165)
$MP_t \cdot Decile_7$	0.00661	0.00784	0.0122	0.0120	0.00855	-0.00685
	(0.00808)	(0.00799)	(0.00955)	(0.0112)	(0.0130)	(0.0141)
$MP_t \cdot Decile_8$	0.0216**	0.00910	0.0106	0.00627	-0.00623	-0.0103
	(0.00903)	(0.00826)	(0.0115)	(0.0119)	(0.0125)	(0.0136)
$MP_t \cdot Decile_9$	0.0194**	0.00804	0.00496	0.00762	-0.00558	-0.00786
	(0.00838)	(0.00873)	(0.0102)	(0.0116)	(0.0134)	(0.0157)
$MP_t \cdot Decile_{10}$	0.0794***	0.0644***	0.0420	0.0182	-0.0404	-0.0513
	(0.0206)	(0.0233)	(0.0278)	(0.0307)	(0.0342)	(0.0383)
$Decile_1$	0.734***	0.947***	1.110***	1.284***	1.449***	1.564***
	(0.0263)	(0.0358)	(0.0495)	(0.0563)	(0.0645)	(0.0690)
$Decile_2$	0.355***	0.473***	0.534***	0.617***	0.702***	0.764***
	(0.0134)	(0.0188)	(0.0227)	(0.0271)	(0.0316)	(0.0359)
$Decile_3$	0.212***	0.274***	0.325***	0.357***	0.410***	0.455***
	(0.0105)	(0.0132)	(0.0162)	(0.0188)	(0.0212)	(0.0239)
$Decile_4$	0.0880***	0.125***	0.124***	0.156***	0.187***	0.219***
	(0.00709)	(0.0100)	(0.0118)	(0.0134)	(0.0150)	(0.0184)
$Decile_6$	-0.110***	-0.145***	-0.184***	-0.204***	-0.234***	-0.257***
	(0.00678)	(0.00918)	(0.0111)	(0.0139)	(0.0151)	(0.0176)
$Decile_7$	-0.235***	-0.324***	-0.402***	-0.460***	-0.513***	-0.572***
	(0.00900)	(0.0112)	(0.0143)	(0.0171)	(0.0199)	(0.0234)
$Decile_8$	-0.373***	-0.537***	-0.649***	-0.772***	-0.864***	-0.962***
	(0.0118)	(0.0155)	(0.0194)	(0.0237)	(0.0267)	(0.0317)
$Decile_9$	-0.628***	-0.903***	-1.114***	-1.323***	-1.493***	-1.679***
	(0.0162)	(0.0217)	(0.0276)	(0.0342)	(0.0396)	(0.0476)
$Decile_{10}$	-1.704***	-2.559***	-3.277***	-3.953***	-4.536***	-5.135***
	(0.0366)	(0.0505)	(0.0645)	(0.0803)	(0.0929)	(0.110)
$\frac{\text{Prof}_{i,t-1}-\text{Prof}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.138***	-0.144***	-0.163***	-0.167***	-0.160***	-0.166***
	(0.0117)	(0.0150)	(0.0173)	(0.0176)	(0.0187)	(0.0208)
$\frac{\text{Prof}_{i,t-2}-\text{Prof}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0623***	-0.0658***	-0.0842***	-0.0813***	-0.0796***	-0.0845***
	(0.00687)	(0.00855)	(0.0104)	(0.00823)	(0.00917)	(0.0107)
Constant	0.403***	0.628***	0.829***	1.010***	1.161***	1.322***
	(0.00867)	(0.0117)	(0.0149)	(0.0189)	(0.0219)	(0.0267)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.129	0.165	0.173	0.202	0.223	0.270
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F14: Estimation results of Equation 8 - Investment Income

Dependent variable: $\frac{\text{Inv}_{i,t+h}-\text{Inv}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.536***	-1.126***	1.377***	0.186	-0.317*	0.820***
	(0.117)	(0.198)	(0.203)	(0.135)	(0.170)	(0.169)
$MP_t \cdot Decile_2$	0.114*	-0.387***	0.563***	-0.0360	-0.105	0.344***
	(0.0684)	(0.0905)	(0.0884)	(0.125)	(0.0777)	(0.0890)
$MP_t \cdot Decile_3$	0.0225	-0.140**	0.189***	-0.0209	-0.0827	0.0678
	(0.0606)	(0.0543)	(0.0499)	(0.0534)	(0.0675)	(0.0751)
$MP_t \cdot Decile_4$	-0.0386	-0.113***	0.0596	0.0501	0.0305	0.125***
	(0.0606)	(0.0379)	(0.0405)	(0.0417)	(0.0417)	(0.0421)
$MP_t \cdot Decile_6$	-0.103**	-0.0208	-0.0641*	0.0338	-0.0108	0.0280
	(0.0513)	(0.0351)	(0.0328)	(0.0487)	(0.0381)	(0.0363)
$MP_t \cdot Decile_7$	-0.122***	0.0639*	-0.0846***	-0.00331	-0.0142	0.0636
	(0.0440)	(0.0370)	(0.0306)	(0.0351)	(0.0385)	(0.0433)
$MP_t \cdot Decile_8$	-0.115***	0.0179	-0.0387	0.00933	-0.0263	0.104*
	(0.0385)	(0.0340)	(0.0356)	(0.0373)	(0.0391)	(0.0558)
$MP_t \cdot Decile_9$	-0.102***	-0.0697	0.0406	0.0250	-0.0657	0.173*
	(0.0362)	(0.0426)	(0.0474)	(0.0417)	(0.0401)	(0.0969)
$MP_t \cdot Decile_{10}$	-0.0178	-0.290**	0.180	0.0197	-0.330***	0.429
	(0.113)	(0.130)	(0.132)	(0.113)	(0.0967)	(0.284)
$Decile_1$	7.176***	8.573***	9.682***	9.770***	10.35***	11.34***
	(1.121)	(1.253)	(1.395)	(1.486)	(2.239)	(1.627)
$Decile_2$	3.390***	4.214***	4.809***	5.045***	5.239***	5.742***
	(0.655)	(0.725)	(0.824)	(0.890)	(1.345)	(0.992)
$Decile_3$	1.893***	2.303***	2.626***	2.756***	2.931***	3.215***
	(0.379)	(0.412)	(0.504)	(0.519)	(0.801)	(0.594)
$Decile_4$	0.941***	1.089***	1.220***	1.206***	1.308***	1.517***
	(0.0902)	(0.0898)	(0.171)	(0.188)	(0.319)	(0.254)
$Decile_6$	-0.612**	-0.716**	-0.840***	-1.030***	-1.050**	-1.197***
	(0.272)	(0.295)	(0.272)	(0.306)	(0.436)	(0.319)
$Decile_7$	-1.231**	-1.536***	-1.729***	-1.900***	-2.060**	-2.351***
	(0.507)	(0.553)	(0.544)	(0.601)	(0.877)	(0.653)
$Decile_8$	-1.907**	-2.460***	-2.774***	-2.930***	-3.234**	-3.609***
	(0.807)	(0.877)	(0.883)	(0.973)	(1.427)	(1.065)
$Decile_9$	-2.694**	-3.603**	-4.068***	-4.253***	-4.718**	-5.258***
	(1.293)	(1.401)	(1.432)	(1.567)	(2.300)	(1.729)
$Decile_{10}$	-3.856	-5.953*	-6.783*	-7.149*	-7.773	-8.901**
	(3.197)	(3.410)	(3.480)	(3.743)	(5.377)	(4.095)
$\frac{\text{Inv}_{i,t-1}-\text{Inv}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.372***	-0.376***	-0.398***	-0.419***	-0.440***	-0.532**
	(0.122)	(0.129)	(0.133)	(0.137)	(0.155)	(0.232)
$\frac{\text{Inv}_{i,t-2}-\text{Inv}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.127**	-0.122*	-0.131*	-0.171**	-0.167	-0.107***
	(0.0547)	(0.0647)	(0.0708)	(0.0805)	(0.147)	(0.0347)
Constant	3.183***	4.021***	4.714***	5.376***	5.992***	6.627***
	(0.129)	(0.184)	(0.182)	(0.240)	(0.395)	(0.261)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.160	0.153	0.212	0.283	0.304	0.335
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F15: Estimation results of Equation 8 - Other Income

Dependent variable: $\frac{\text{Other}_{i,t+h}-\text{Other}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.00654	0.121	0.0343	0.0255	0.0856	-0.0203
	(0.0784)	(0.109)	(0.131)	(0.137)	(0.134)	(0.120)
$MP_t \cdot Decile_2$	0.0386	0.0164	-0.0194	0.0348	0.0222	-0.0159
	(0.0460)	(0.0312)	(0.0398)	(0.0447)	(0.0466)	(0.0478)
$MP_t \cdot Decile_3$	0.0613	0.0325	-0.00905	-0.0211	-0.0313	-0.0245
	(0.0469)	(0.0228)	(0.0236)	(0.0288)	(0.0275)	(0.0289)
$MP_t \cdot Decile_4$	0.0572	0.0343	-0.00738	-0.0183	-0.00482	-0.0206
	(0.0566)	(0.0283)	(0.0257)	(0.0260)	(0.0215)	(0.0208)
$MP_t \cdot Decile_6$	0.0818*	0.0302	0.0326	0.0463	0.0368**	0.0322*
	(0.0468)	(0.0234)	(0.0206)	(0.0313)	(0.0175)	(0.0180)
$MP_t \cdot Decile_7$	0.0675	0.0262	0.0120	0.0368	0.0345*	0.0210
	(0.0449)	(0.0207)	(0.0208)	(0.0247)	(0.0179)	(0.0231)
$MP_t \cdot Decile_8$	0.0803*	0.0315	0.00341	0.0530**	0.0553**	0.0557**
	(0.0465)	(0.0217)	(0.0220)	(0.0240)	(0.0216)	(0.0220)
$MP_t \cdot Decile_9$	0.0790	0.0392*	0.0181	0.0451	0.0866***	0.0640**
	(0.0489)	(0.0229)	(0.0242)	(0.0321)	(0.0276)	(0.0273)
$MP_t \cdot Decile_{10}$	0.0782	0.0669**	0.0398	0.0833***	0.0662	0.0488
	(0.0532)	(0.0304)	(0.0312)	(0.0317)	(0.0470)	(0.0350)
$Decile_1$	2.634***	2.553***	2.913***	2.911***	1.972***	3.792***
	(0.243)	(0.285)	(0.249)	(0.148)	(0.628)	(0.137)
$Decile_2$	1.030***	0.716***	0.869***	0.902***	0.476	1.479***
	(0.158)	(0.177)	(0.133)	(0.0923)	(0.315)	(0.0735)
$Decile_3$	0.381***	0.131	0.203**	0.156*	-0.0659	0.516***
	(0.126)	(0.139)	(0.0825)	(0.0820)	(0.199)	(0.0546)
$Decile_4$	0.0526	-0.0893	-0.0128	-0.0225	-0.0794	0.185***
	(0.164)	(0.182)	(0.105)	(0.0975)	(0.103)	(0.0325)
$Decile_6$	-0.231***	-0.132***	-0.0861***	-0.0678*	0.0865	-0.152***
	(0.0405)	(0.0504)	(0.0306)	(0.0354)	(0.0892)	(0.0290)
$Decile_7$	-0.410***	-0.243***	-0.188***	-0.167***	0.152	-0.337***
	(0.0342)	(0.0426)	(0.0515)	(0.0408)	(0.200)	(0.0508)
$Decile_8$	-0.627***	-0.445***	-0.406***	-0.369***	0.187	-0.558***
	(0.0553)	(0.0667)	(0.0944)	(0.0392)	(0.345)	(0.0810)
$Decile_9$	-0.872***	-0.707***	-0.715***	-0.617***	0.322	-0.767***
	(0.110)	(0.127)	(0.164)	(0.0579)	(0.568)	(0.134)
$Decile_{10}$	-1.101***	-1.145***	-1.348***	-1.173***	0.712	-1.318***
	(0.281)	(0.315)	(0.358)	(0.137)	(1.163)	(0.278)
$\frac{\text{Other}_{i,t-1}-\text{Other}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.593***	-0.602***	-0.614***	-0.649***	-0.872***	-0.984***
	(0.0480)	(0.0437)	(0.0432)	(0.0284)	(0.135)	(0.0802)
$\frac{\text{Other}_{i,t-2}-\text{Other}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.214***	-0.220***	-0.228***	-0.325***	-0.793***	-0.302***
	(0.0545)	(0.0680)	(0.0744)	(0.0201)	(0.236)	(0.0216)
Constant	1.768***	2.318***	2.839***	3.454***	4.143***	4.713***
	(0.108)	(0.109)	(0.0657)	(0.0566)	(0.0830)	(0.0346)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.287	0.302	0.615	0.417	0.712	0.800
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F16: Estimation results of Equation 8 - Dividend Income

Dependent variable: $\frac{\text{Div}_{i,t+h}-\text{Div}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.0547***	0.0385**	-0.0392	0.00309	0.0470*	0.0575*
	(0.0134)	(0.0159)	(0.0456)	(0.0302)	(0.0271)	(0.0295)
$MP_t \cdot Decile_2$	0.0252**	-0.00373	0.0434	0.0195	0.0153	0.0657***
	(0.0112)	(0.0315)	(0.0267)	(0.0136)	(0.0164)	(0.0184)
$MP_t \cdot Decile_3$	0.0117	0.00659	0.000900	0.00508	0.0126	-0.0215
	(0.00810)	(0.00885)	(0.0103)	(0.0109)	(0.0146)	(0.0285)
$MP_t \cdot Decile_4$	0.0211**	0.00981	0.00452	0.0210**	0.0237**	0.0196
	(0.00929)	(0.00832)	(0.0121)	(0.00954)	(0.0117)	(0.0129)
$MP_t \cdot Decile_6$	0.00351	-0.00368	-0.00397	0.00535	0.0142	-0.0107
	(0.00720)	(0.00665)	(0.00858)	(0.00899)	(0.0127)	(0.0133)
$MP_t \cdot Decile_7$	-0.00784	-0.00303	-0.00506	-0.00252	-0.00494	-0.0174
	(0.00717)	(0.00916)	(0.00776)	(0.0111)	(0.0131)	(0.0162)
$MP_t \cdot Decile_8$	-0.0158**	0.00378	-0.000905	0.00282	0.0156	-0.00665
	(0.00701)	(0.00737)	(0.00914)	(0.00984)	(0.0117)	(0.0118)
$MP_t \cdot Decile_9$	-0.0183**	-0.00502	0.00761	0.00502	0.0103	-0.0176
	(0.00744)	(0.00744)	(0.00943)	(0.0107)	(0.0148)	(0.0118)
$MP_t \cdot Decile_{10}$	-0.100***	-0.0128	0.0122	0.0919***	0.0858***	-0.00973
	(0.0163)	(0.0199)	(0.0222)	(0.0259)	(0.0236)	(0.0295)
$Decile_1$	1.032***	1.571***	2.002***	2.481***	2.857***	3.299***
	(0.0391)	(0.0495)	(0.0620)	(0.0793)	(0.0768)	(0.0868)
$Decile_2$	0.681***	1.004***	1.257***	1.529***	1.722***	1.997***
	(0.0269)	(0.0393)	(0.0369)	(0.0443)	(0.0443)	(0.0513)
$Decile_3$	0.422***	0.598***	0.737***	0.907***	1.021***	1.199***
	(0.0162)	(0.0196)	(0.0217)	(0.0272)	(0.0308)	(0.0351)
$Decile_4$	0.212***	0.295***	0.347***	0.408***	0.447***	0.548***
	(0.0140)	(0.0132)	(0.0139)	(0.0162)	(0.0187)	(0.0205)
$Decile_6$	-0.175***	-0.230***	-0.303***	-0.363***	-0.416***	-0.458***
	(0.0101)	(0.0114)	(0.0123)	(0.0142)	(0.0192)	(0.0191)
$Decile_7$	-0.364***	-0.455***	-0.591***	-0.721***	-0.863***	-0.944***
	(0.0141)	(0.0200)	(0.0224)	(0.0214)	(0.0242)	(0.0266)
$Decile_8$	-0.571***	-0.771***	-0.970***	-1.161***	-1.361***	-1.492***
	(0.0198)	(0.0217)	(0.0238)	(0.0293)	(0.0333)	(0.0348)
$Decile_9$	-0.867***	-1.186***	-1.470***	-1.723***	-2.015***	-2.235***
	(0.0290)	(0.0306)	(0.0343)	(0.0403)	(0.0457)	(0.0485)
$Decile_{10}$	-1.681***	-2.344***	-2.879***	-3.305***	-3.776***	-4.189***
	(0.0658)	(0.0639)	(0.0730)	(0.0754)	(0.0819)	(0.0908)
$\frac{\text{Div}_{i,t-1}-\text{Div}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.161***	-0.143***	-0.153***	-0.166***	-0.160***	-0.171***
	(0.0197)	(0.0175)	(0.0229)	(0.0144)	(0.0222)	(0.0229)
$\frac{\text{Div}_{i,t-2}-\text{Div}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0887***	-0.0748***	-0.0755***	-0.0967***	-0.0866***	-0.0951***
	(0.0181)	(0.00827)	(0.00661)	(0.0104)	(0.0110)	(0.0160)
Constant	0.685***	0.979***	1.302***	1.599***	1.913***	2.194***
	(0.0129)	(0.0146)	(0.0163)	(0.0172)	(0.0227)	(0.0229)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.121	0.117	0.119	0.153	0.175	0.206
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F17: Estimation results of Equation 8 - Interest Income

Dependent variable: $\frac{\text{Int}_{i,t+h}-\text{Int}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.0272	0.170***	0.0648**	-0.0133	-0.0797***	-0.200***
	(0.0180)	(0.0254)	(0.0258)	(0.0206)	(0.0254)	(0.0313)
$MP_t \cdot Decile_2$	-0.000487	0.0740***	0.0198	-0.0336***	-0.0439***	-0.0985***
	(0.00950)	(0.0130)	(0.0134)	(0.0124)	(0.0138)	(0.0158)
$MP_t \cdot Decile_3$	-0.00850	0.0210***	0.0122	-0.0124*	-0.0277***	-0.0457***
	(0.00517)	(0.00685)	(0.00787)	(0.00725)	(0.00866)	(0.0101)
$MP_t \cdot Decile_4$	-0.000226	0.00735	0.00597	-0.00539	-0.0170**	-0.0203***
	(0.00433)	(0.00586)	(0.00616)	(0.00622)	(0.00695)	(0.00714)
$MP_t \cdot Decile_6$	0.000727	-0.00746	0.00366	-0.00337	0.00369	0.000803
	(0.00377)	(0.00455)	(0.00607)	(0.00483)	(0.00545)	(0.00860)
$MP_t \cdot Decile_7$	0.00124	-0.00526	0.00192	0.00356	0.00823	0.0131**
	(0.00378)	(0.00503)	(0.00525)	(0.00537)	(0.00548)	(0.00571)
$MP_t \cdot Decile_8$	0.00287	-0.0153**	-0.000810	-0.00290	-0.00496	0.00299
	(0.00481)	(0.00613)	(0.00568)	(0.00539)	(0.00602)	(0.00639)
$MP_t \cdot Decile_9$	0.00219	-0.00417	-0.00194	-0.00711	-0.00752	-0.0150**
	(0.00441)	(0.00600)	(0.00623)	(0.00574)	(0.00617)	(0.00706)
$MP_t \cdot Decile_{10}$	0.0340***	0.0565***	0.000995	-0.0308**	-0.0632***	-0.136***
	(0.00900)	(0.0111)	(0.0128)	(0.0123)	(0.0148)	(0.0168)
$Decile_1$	0.472***	0.794***	0.919***	0.955***	0.997***	0.940***
	(0.0190)	(0.0310)	(0.0408)	(0.0477)	(0.0500)	(0.0559)
$Decile_2$	0.183***	0.328***	0.390***	0.417***	0.437***	0.426***
	(0.0105)	(0.0158)	(0.0204)	(0.0236)	(0.0256)	(0.0280)
$Decile_3$	0.0961***	0.172***	0.207***	0.224***	0.235***	0.231***
	(0.00593)	(0.00903)	(0.0113)	(0.0127)	(0.0142)	(0.0158)
$Decile_4$	0.0416***	0.0708***	0.0842***	0.0918***	0.0969***	0.103***
	(0.00400)	(0.00574)	(0.00666)	(0.00725)	(0.00798)	(0.00863)
$Decile_6$	-0.0290***	-0.0525***	-0.0634***	-0.0719***	-0.0798***	-0.0768***
	(0.00335)	(0.00468)	(0.00623)	(0.00698)	(0.00768)	(0.00851)
$Decile_7$	-0.0549***	-0.0993***	-0.129***	-0.150***	-0.166***	-0.171***
	(0.00449)	(0.00690)	(0.00868)	(0.00990)	(0.0106)	(0.0121)
$Decile_8$	-0.0784***	-0.153***	-0.199***	-0.234***	-0.259***	-0.269***
	(0.00569)	(0.00964)	(0.0125)	(0.0142)	(0.0153)	(0.0175)
$Decile_9$	-0.118***	-0.225***	-0.299***	-0.356***	-0.402***	-0.424***
	(0.00870)	(0.0130)	(0.0177)	(0.0203)	(0.0219)	(0.0257)
$Decile_{10}$	-0.207***	-0.424***	-0.594***	-0.724***	-0.842***	-0.898***
	(0.0187)	(0.0247)	(0.0327)	(0.0383)	(0.0420)	(0.0496)
$\frac{\text{Int}_{i,t-1}-\text{Int}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.141***	-0.159***	-0.181***	-0.191***	-0.190***	-0.200***
	(0.0126)	(0.0203)	(0.0255)	(0.0301)	(0.0324)	(0.0366)
$\frac{\text{Int}_{i,t-2}-\text{Int}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0772***	-0.0878***	-0.115***	-0.113***	-0.112***	-0.129***
	(0.00600)	(0.0112)	(0.0176)	(0.0189)	(0.0198)	(0.0243)
Constant	0.0155***	0.0453***	0.0891***	0.135***	0.166***	0.163***
	(0.00369)	(0.00532)	(0.00634)	(0.00715)	(0.00825)	(0.00921)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.102	0.180	0.213	0.200	0.213	0.218
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F18: Estimation results of Equation 8 - Capital Gains Income

Dependent variable: $\frac{\text{CapG}_{i,t+h}-\text{CapG}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.439***	-1.308***	1.294***	0.156	-0.290**	0.888***
	(0.106)	(0.196)	(0.197)	(0.110)	(0.128)	(0.150)
$MP_t \cdot Decile_2$	0.0950	-0.459***	0.508***	-0.0262	-0.0872	0.355***
	(0.0638)	(0.0807)	(0.0855)	(0.117)	(0.0677)	(0.0810)
$MP_t \cdot Decile_3$	0.0260	-0.169***	0.174***	-0.0266	-0.0938	0.103*
	(0.0593)	(0.0524)	(0.0489)	(0.0491)	(0.0609)	(0.0575)
$MP_t \cdot Decile_4$	-0.0496	-0.125***	0.0558	0.0304	0.00782	0.108***
	(0.0603)	(0.0364)	(0.0384)	(0.0383)	(0.0363)	(0.0370)
$MP_t \cdot Decile_6$	-0.0957*	-0.00860	-0.0533*	-0.00676	-0.0313	0.0259
	(0.0497)	(0.0338)	(0.0309)	(0.0343)	(0.0340)	(0.0299)
$MP_t \cdot Decile_7$	-0.0989**	0.0726**	-0.0697**	-8.47e-05	-0.0212	0.0584
	(0.0428)	(0.0337)	(0.0286)	(0.0309)	(0.0350)	(0.0377)
$MP_t \cdot Decile_8$	-0.0913**	0.0242	-0.0350	-0.00368	-0.0545	0.0841*
	(0.0380)	(0.0311)	(0.0319)	(0.0325)	(0.0371)	(0.0495)
$MP_t \cdot Decile_9$	-0.0559*	-0.0537	0.0506	0.0375	-0.0784**	0.216**
	(0.0324)	(0.0399)	(0.0438)	(0.0356)	(0.0348)	(0.0992)
$MP_t \cdot Decile_{10}$	0.0949	-0.295***	0.267**	0.0126	-0.298***	0.624**
	(0.102)	(0.114)	(0.112)	(0.0946)	(0.0730)	(0.279)
$Decile_1$	4.381***	4.640***	5.065***	4.312***	4.270**	4.537***
	(0.999)	(1.111)	(1.242)	(1.288)	(2.164)	(1.578)
$Decile_2$	1.905***	2.137***	2.334***	2.092***	1.992	2.076**
	(0.610)	(0.671)	(0.767)	(0.811)	(1.372)	(1.003)
$Decile_3$	1.022***	1.106***	1.214**	1.060**	1.059	1.095*
	(0.357)	(0.387)	(0.478)	(0.479)	(0.831)	(0.607)
$Decile_4$	0.539***	0.544***	0.593***	0.460***	0.504	0.557**
	(0.0823)	(0.0800)	(0.162)	(0.172)	(0.344)	(0.269)
$Decile_6$	-0.276	-0.280	-0.307	-0.378	-0.321	-0.409
	(0.261)	(0.284)	(0.259)	(0.288)	(0.452)	(0.322)
$Decile_7$	-0.547	-0.674	-0.670	-0.632	-0.565	-0.742
	(0.488)	(0.533)	(0.520)	(0.566)	(0.918)	(0.661)
$Decile_8$	-0.857	-1.070	-1.100	-0.931	-0.903	-1.115
	(0.777)	(0.844)	(0.845)	(0.915)	(1.499)	(1.072)
$Decile_9$	-1.137	-1.535	-1.577	-1.303	-1.268	-1.538
	(1.240)	(1.344)	(1.365)	(1.467)	(2.415)	(1.730)
$Decile_{10}$	-0.982	-2.120	-2.212	-1.732	-1.477	-2.198
	(3.025)	(3.229)	(3.280)	(3.464)	(5.622)	(4.011)
$\frac{\text{CapG}_{i,t-1}-\text{CapG}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.398***	-0.400***	-0.420***	-0.444***	-0.466***	-0.574**
	(0.123)	(0.131)	(0.134)	(0.137)	(0.169)	(0.243)
$\frac{\text{CapG}_{i,t-2}-\text{CapG}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.137**	-0.132*	-0.140*	-0.187**	-0.195	-0.101***
	(0.0586)	(0.0698)	(0.0761)	(0.0839)	(0.181)	(0.0353)
Constant	2.185***	2.603***	2.851***	3.074***	3.229***	3.525***
	(0.198)	(0.259)	(0.254)	(0.308)	(0.537)	(0.361)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.169	0.164	0.239	0.310	0.344	0.368
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table F19: Estimation results of Equation 8 - Limited Partnership Income

Dependent variable: $\frac{\text{LimP}_{i,t+h}-\text{LimP}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	0.0368	-0.00606	-0.000654	0.00283	0.00286	0.0111
	(0.0289)	(0.0162)	(0.0109)	(0.0112)	(0.0133)	(0.0127)
$MP_t \cdot Decile_2$	-0.00201	-0.00292	-0.00375	-0.0120*	-0.00232	-0.00225
	(0.00473)	(0.00539)	(0.00597)	(0.00638)	(0.00638)	(0.00697)
$MP_t \cdot Decile_3$	-0.00443	-0.00782	-0.00443	-0.00905	-0.00647	-0.00103
	(0.00476)	(0.00749)	(0.00679)	(0.00834)	(0.00806)	(0.00747)
$MP_t \cdot Decile_4$	-0.00523	0.000783	0.000546	-0.00191	0.00624	0.00350
	(0.00400)	(0.00424)	(0.00440)	(0.00453)	(0.00855)	(0.00523)
$MP_t \cdot Decile_5$	-0.00268	-0.00114	-0.00394	-0.00573	-0.00482	0.00118
	(0.00367)	(0.00488)	(0.00460)	(0.00524)	(0.00556)	(0.00476)
$MP_t \cdot Decile_6$	-0.00403	-0.00157	-0.00459	-0.00401	-0.00339	0.00141
	(0.00365)	(0.00470)	(0.00429)	(0.00509)	(0.00512)	(0.00496)
$MP_t \cdot Decile_7$	0.00125	0.00220	0.00222	0.00456	0.00659	0.0104**
	(0.00331)	(0.00503)	(0.00404)	(0.00561)	(0.00562)	(0.00528)
$MP_t \cdot Decile_8$	-0.0105*	-0.00539	-0.00518	-0.00800	0.00356	-0.000709
	(0.00624)	(0.00666)	(0.00474)	(0.00521)	(0.00564)	(0.00526)
$MP_t \cdot Decile_9$	0.00764	0.0179	-0.0119	-0.0342***	-0.0123	-0.00471
	(0.0104)	(0.0116)	(0.0173)	(0.0124)	(0.0116)	(0.0155)
$MP_t \cdot Decile_{10}$	-0.147***	-0.146***	-0.129***	-0.150***	-0.145***	-0.150***
	(0.00982)	(0.0168)	(0.0174)	(0.0208)	(0.0219)	(0.0262)
$Decile_1$	0.0993***	0.0973***	0.0974***	0.120***	0.145***	0.134***
	(0.0224)	(0.0181)	(0.0176)	(0.0217)	(0.0278)	(0.0290)
$Decile_2$	0.0387***	0.0384***	0.0364***	0.0452***	0.0409***	0.0490***
	(0.00811)	(0.00723)	(0.00742)	(0.00909)	(0.0101)	(0.0112)
$Decile_3$	0.0184***	0.0170***	0.0174***	0.0181**	0.0156*	0.0198**
	(0.00560)	(0.00616)	(0.00638)	(0.00754)	(0.00850)	(0.00834)
$Decile_4$	0.00422	0.00672	0.00593	0.00383	-0.00282	0.00754
	(0.00362)	(0.00436)	(0.00441)	(0.00521)	(0.00674)	(0.00583)
$Decile_6$	-0.0116***	-0.00427	-0.00453	-0.0159***	-0.0131**	-0.0132**
	(0.00328)	(0.00407)	(0.00400)	(0.00461)	(0.00589)	(0.00529)
$Decile_7$	-0.0193***	-0.0133**	-0.0174***	-0.0252***	-0.0296***	-0.0247***
	(0.00494)	(0.00529)	(0.00533)	(0.00680)	(0.00782)	(0.00808)
$Decile_8$	-0.0348***	-0.0287***	-0.0339***	-0.0431***	-0.0444***	-0.0371***
	(0.00641)	(0.00671)	(0.00659)	(0.00877)	(0.0104)	(0.0105)
$Decile_9$	-0.0483***	-0.0411***	-0.0574***	-0.0740***	-0.0757***	-0.0664***
	(0.0119)	(0.0125)	(0.00882)	(0.0124)	(0.0134)	(0.0141)
$Decile_{10}$	-0.117***	-0.0952***	-0.0852***	-0.124***	-0.121***	-0.102***
	(0.0204)	(0.0174)	(0.0218)	(0.0251)	(0.0306)	(0.0282)
$\frac{\text{LimP}_{i,t-1}-\text{LimP}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.147***	-0.146***	-0.129***	-0.150***	-0.145***	-0.150***
	(0.00982)	(0.0168)	(0.0174)	(0.0208)	(0.0219)	(0.0262)
$\frac{\text{LimP}_{i,t-2}-\text{LimP}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.112***	-0.113***	-0.113***	-0.0836***	-0.0874***	-0.0916***
	(0.00940)	(0.0227)	(0.0214)	(0.00771)	(0.0111)	(0.0128)
Constant	0.0245***	0.0232***	0.0285***	0.0400***	0.0439***	0.0415***
	(0.00294)	(0.00404)	(0.00392)	(0.00560)	(0.00649)	(0.00648)
Observations	54,773,995	48,736,875	44,232,870	40,290,130	36,715,055	33,433,700
R^2	0.213	0.180	0.160	0.194	0.175	0.174
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

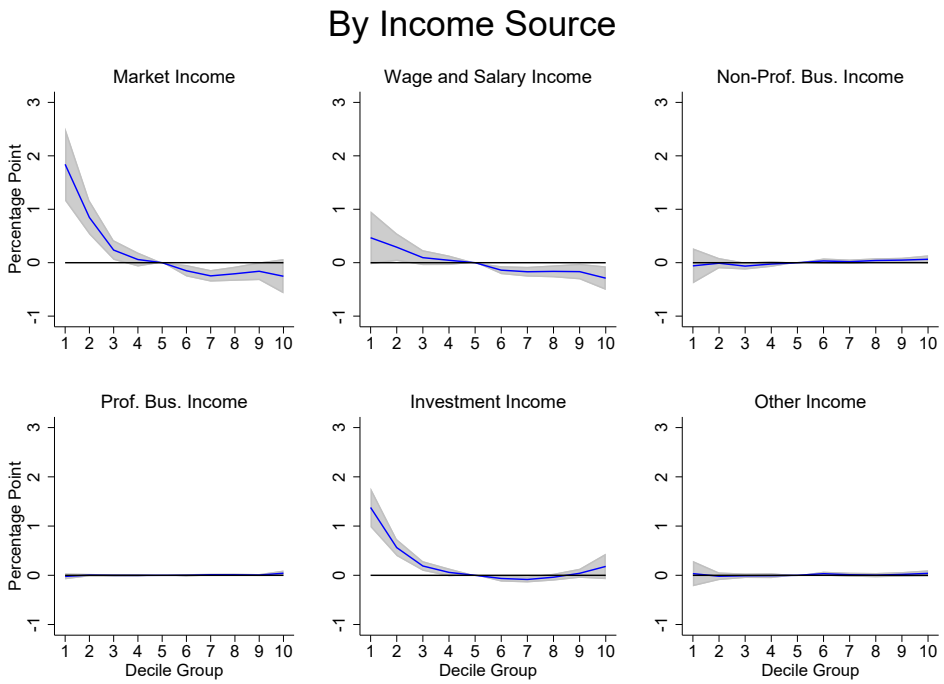
Table F20: Estimation results of Equation 8 - Rental Income

Dependent variable: $\frac{\text{Rent}_{i,t+h}-\text{Rent}_{i,t-1}}{\lvert\text{Market income}_{i,t-1}\rvert}$						
	Local projection horizon, h					
	0	1	2	3	4	5
$MP_t \cdot Decile_1$	-0.00956	-0.0232	0.0670	0.0438	0.0169	0.0870*
	(0.0200)	(0.0273)	(0.0464)	(0.0416)	(0.0898)	(0.0457)
$MP_t \cdot Decile_2$	-0.00556	0.00516	-0.00380	0.0124	0.0102	0.0253*
	(0.0104)	(0.00955)	(0.0126)	(0.0135)	(0.0143)	(0.0153)
$MP_t \cdot Decile_3$	-0.00859	0.00171	0.000325	0.0142	0.0283***	0.0263**
	(0.00921)	(0.00872)	(0.0106)	(0.0104)	(0.0107)	(0.0111)
$MP_t \cdot Decile_4$	-0.0121	-0.0117	-0.0127	-0.00341	0.00574	0.00806
	(0.00992)	(0.00846)	(0.00983)	(0.00918)	(0.0124)	(0.0103)
$MP_t \cdot Decile_5$	-0.0102	-0.00226	-0.0107*	0.0363	0.00352	0.00823
	(0.00774)	(0.00518)	(0.00642)	(0.0379)	(0.00849)	(0.00868)
$MP_t \cdot Decile_6$	-0.0130*	-0.000122	-0.00850	-0.00576	0.00334	0.0108
	(0.00784)	(0.00490)	(0.00615)	(0.00684)	(0.00741)	(0.00729)
$MP_t \cdot Decile_7$	-0.0137*	-0.000630	-0.00836	-0.000364	0.00143	0.0119*
	(0.00762)	(0.00459)	(0.00585)	(0.00682)	(0.00762)	(0.00718)
$MP_t \cdot Decile_8$	-0.0155**	-0.000556	-0.00913	-0.00743	0.00123	0.00536
	(0.00761)	(0.00525)	(0.00639)	(0.00705)	(0.00800)	(0.00754)
$MP_t \cdot Decile_9$	-0.0310***	-0.0560*	-0.0912**	-0.0421***	-0.0715*	-0.0115
	(0.00989)	(0.0298)	(0.0417)	(0.0121)	(0.0375)	(0.0113)
$MP_t \cdot Decile_{10}$	-0.0310***	-0.0560*	-0.0912**	-0.0421***	-0.0715*	-0.0115
	(0.00989)	(0.0298)	(0.0417)	(0.0121)	(0.0375)	(0.0113)
$Decile_1$	1.181***	1.468***	1.567***	1.898***	1.979***	2.297***
	(0.0328)	(0.0506)	(0.0854)	(0.0672)	(0.115)	(0.0793)
$Decile_2$	0.522***	0.654***	0.724***	0.888***	0.916***	1.058***
	(0.0155)	(0.0198)	(0.0310)	(0.0299)	(0.0393)	(0.0349)
$Decile_3$	0.285***	0.367***	0.396***	0.488***	0.505***	0.578***
	(0.0106)	(0.0137)	(0.0187)	(0.0194)	(0.0223)	(0.0223)
$Decile_4$	0.117***	0.149***	0.161***	0.207***	0.205***	0.247***
	(0.00681)	(0.00926)	(0.0107)	(0.0103)	(0.0125)	(0.0117)
$Decile_6$	-0.0993***	-0.129***	-0.141***	-0.178***	-0.180***	-0.201***
	(0.00573)	(0.00639)	(0.00872)	(0.0150)	(0.0102)	(0.00947)
$Decile_7$	-0.196***	-0.249***	-0.275***	-0.319***	-0.345***	-0.390***
	(0.00718)	(0.00806)	(0.0115)	(0.0109)	(0.0147)	(0.0132)
$Decile_8$	-0.283***	-0.367***	-0.400***	-0.474***	-0.518***	-0.578***
	(0.00901)	(0.0116)	(0.0190)	(0.0141)	(0.0207)	(0.0172)
$Decile_9$	-0.397***	-0.510***	-0.562***	-0.670***	-0.730***	-0.827***
	(0.0119)	(0.0162)	(0.0274)	(0.0190)	(0.0305)	(0.0233)
$Decile_{10}$	-0.623***	-0.794***	-0.860***	-1.057***	-1.127***	-1.305***
	(0.0205)	(0.0398)	(0.0654)	(0.0319)	(0.0639)	(0.0385)
$\frac{\text{Rent}_{i,t-1}-\text{Rent}_{i,t-2}}{\lvert\text{Market income}_{i,t-2}\rvert}$	-0.167***	-0.187***	-0.175***	-0.161***	-0.205***	-0.170***
	(0.0109)	(0.0187)	(0.0131)	(0.0160)	(0.0396)	(0.0174)
$\frac{\text{Rent}_{i,t-2}-\text{Rent}_{i,t-3}}{\lvert\text{Market income}_{i,t-3}\rvert}$	-0.0458**	-0.0436**	-0.0622*	-0.0440**	-0.0771*	-0.0643***
	(0.0197)	(0.0207)	(0.0348)	(0.0193)	(0.0422)	(0.0105)
Constant	0.147***	0.237***	0.308***	0.373***	0.466***	0.537***
	(0.00658)	(0.00699)	(0.00895)	(0.00971)	(0.0120)	(0.0119)
Observations	63,649,630	56,889,730	51,963,485	47,648,605	43,739,035	40,147,225
R^2	0.129	0.079	0.077	0.127	0.092	0.165
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure F1: Drivers of income impulse response, Year 2

Investment income of the poor fare better



Volatile response by capital gains for the poor

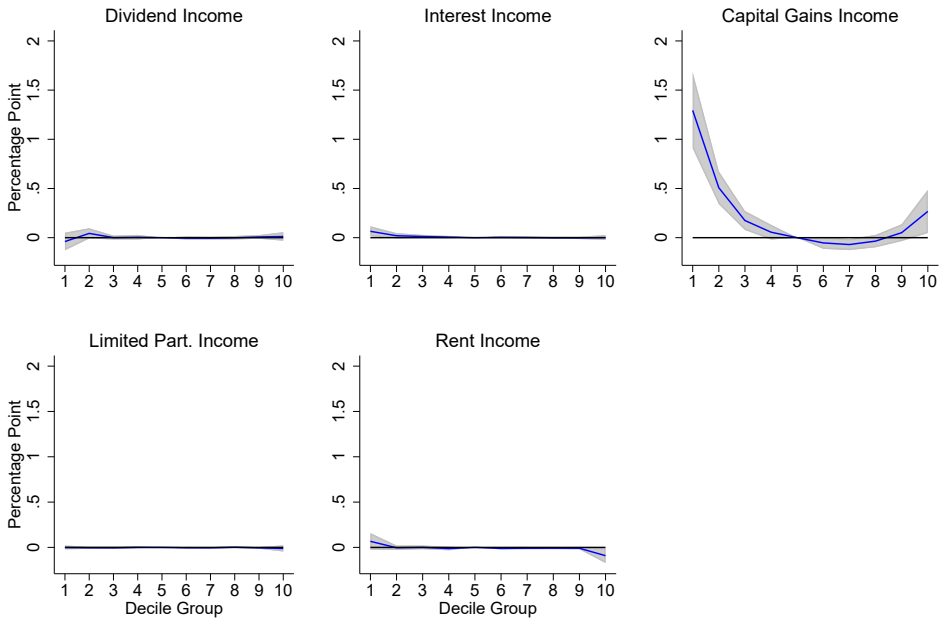
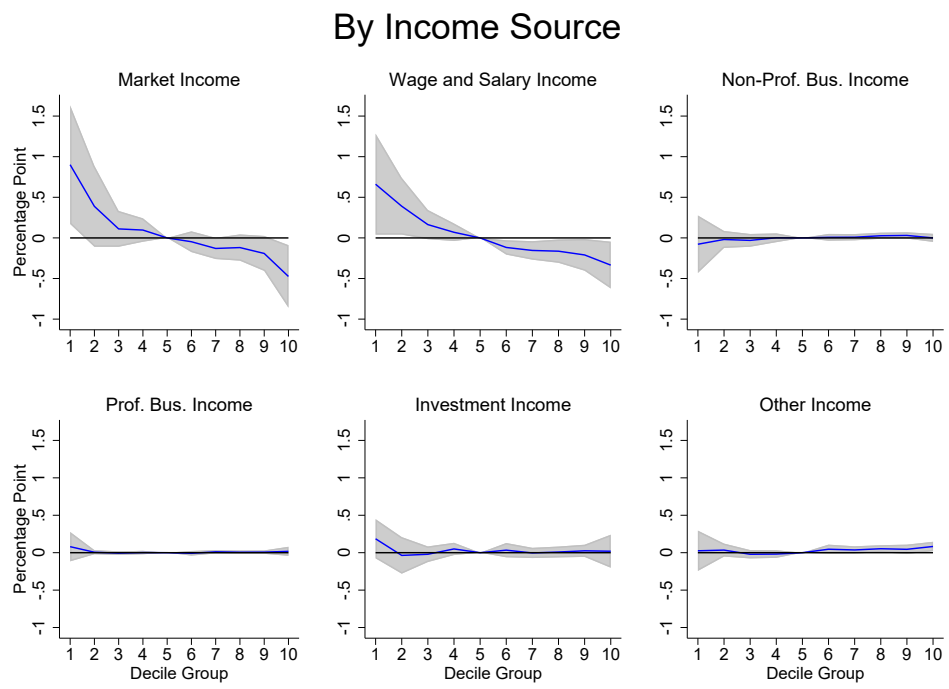


Figure F2: Drivers of income impulse response, Year 3

Heterogeneous impacts on WSC persist



Effects on capital gains less significant

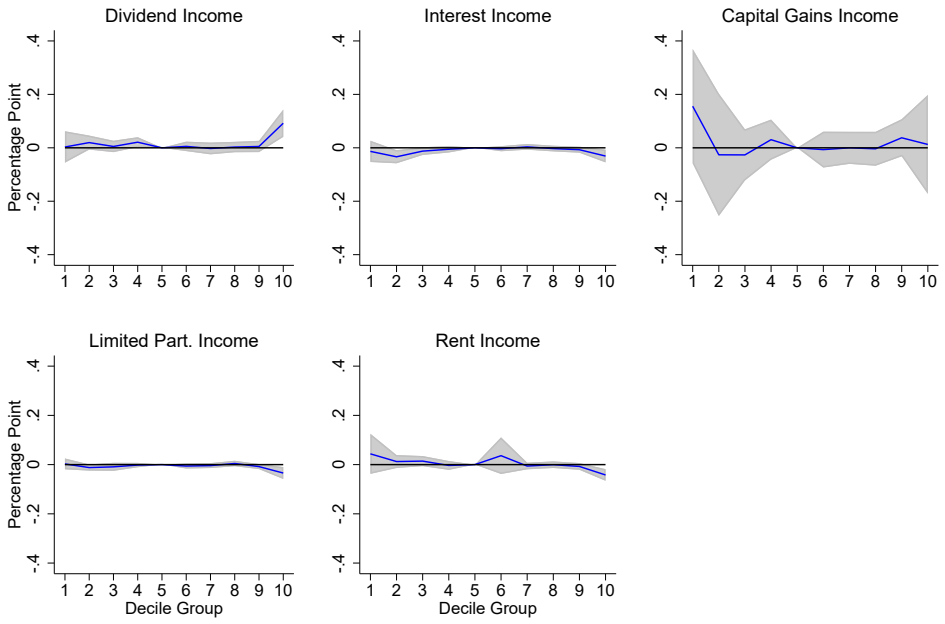
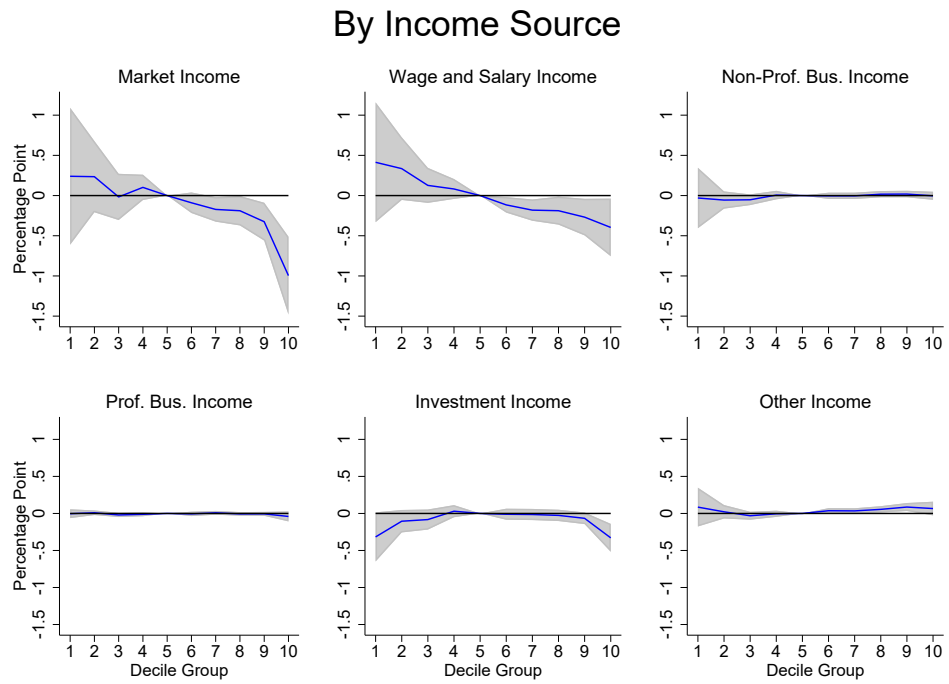


Figure F3: Drivers of income impulse response, Year 4

Heterogeneous impacts on WSC still persist



Effects on capital gains volatile

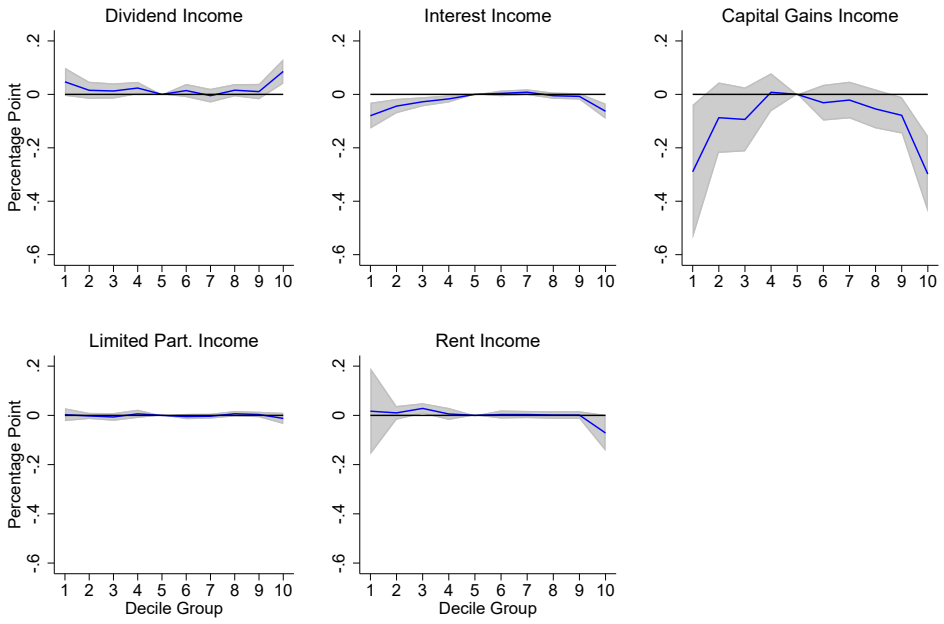
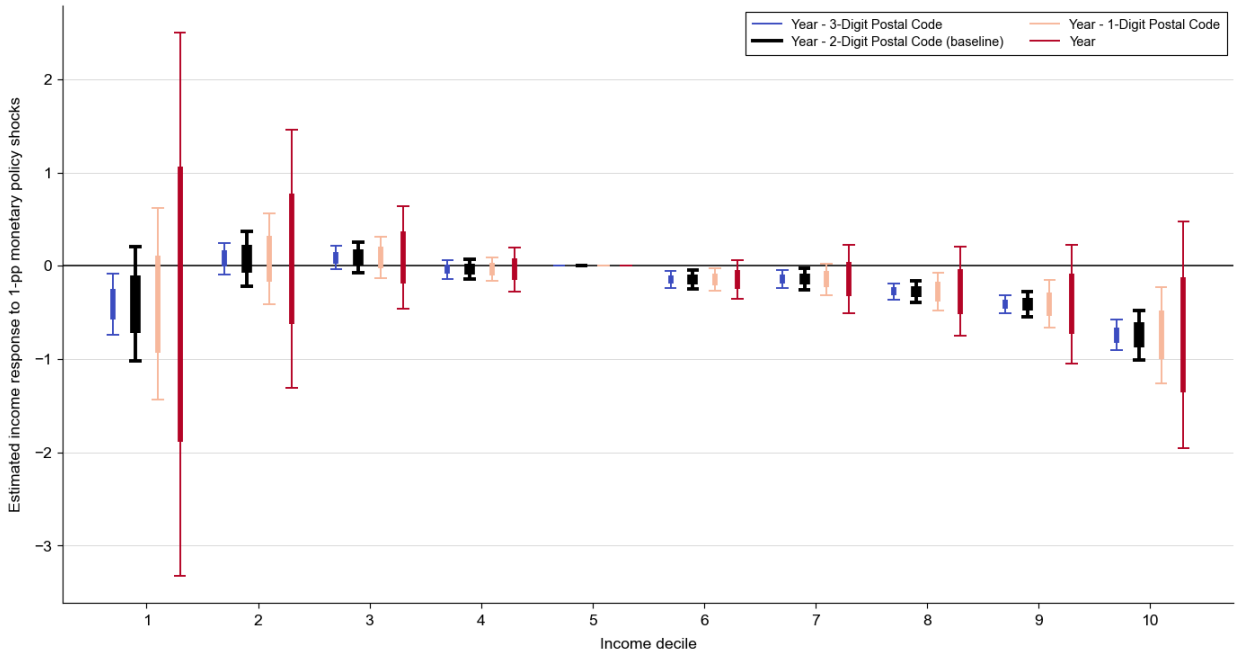


Figure G1: Comparison of clustering choices for the standard errors of the regression for Equation 8.



Note: The figure shows the 68% (thick) and 95% (thin) confidence bands around the one-year effect of a 1-pp MP tightening shock on household income under different clustering schemes. Both bands are drawn on a single vertical line for each series, with caps at the ends of the 95% interval. All specifications cluster at the household level; each line adds a second clustering dimension as indicated in the legend. Clustering on the interaction of year and 2-digit postal code is the baseline (black).

ond clustering variable for most income deciles, and the point estimates are, by construction, identical across all specifications since only the standard errors are affected by the choice of clustering. This indicates that our main findings regarding the heterogeneous impacts of monetary policy across the income distribution are not sensitive to the particular choice of the second clustering variable used to compute standard errors.