Online Appendix for "Macro Perspectives on Income Inequality"

A Anatomy of capital gains

To better understand the difference between these income concepts, I now discuss how capital gains arise. It is useful to start from the fact that the price of an asset can be thought of as the present value of its future cash flows. Formally, denoting P_t the price of an asset, we have:

$$P_t = \sum_{h=1}^{\infty} R_{t \to t+h}^{-1} \mathrm{E}_t[D_{t+h}],$$

where $R_{t \to t+h}$ denotes the discount rate between t and $t+h$ and $\mathrm{E}_t[D_{t+h}]$ denotes the expected dividend at time $t+h$. While I assume that this discount rate is deterministic, a similar equality would hold if it were stochastic or asset-specific (Campbell and Shiller, 1988). The only important assumption to obtain such a formula is to rule out bubbles, that is, a situation where the path of asset prices increases much faster than dividends, which is unlikely for most assets held by households. The asset in question could be a stock, a fixed-income security (in which case the dividend should be understood as the coupon payments plus the principal), or a house (in which case the dividend corresponds to the rent associated with the ownership of a house).

We can differentiate this equality over time to obtain a decomposition of capital gains. Denoting by Δ the difference of a variable between t and $t+1$, we have:

$$\Delta P_t = \sum_{k=1}^{\infty} R_{t \to t+h}^{-1} \times \Delta \mathrm{E}_t[D_{t+h}] + \sum_{h=1}^{\infty} \left(\Delta R_{t \to t+h}^{-1}\right) \times \mathrm{E}_{t+1}[D_{t+h+1}].$$

This equality decomposes the capital gain into two terms. The first term corresponds to the present value of the change in dividends at each horizon h, $\Delta \mathrm{E}_t[D_{t+h}]$; the second term corresponds to changes in the way these dividends are discounted, as captured by $\Delta R_{t \to t+h}^{-1}$. Put differently, this equation says that capital gains can arise due to two distinct forces: either because the present value of future dividends increases or because the rate used to discount the future decreases.

Note that, irrespective of the source of the capital gain, capital gains can be expected or unexpected. Typically, most expected capital gains reflect expected changes in cash flows, as discount rates are seldom expected to change. For instance, if the economy is expected to grow on average at a rate of 3%, rents are expected to grow at a rate of 3%, and, therefore, house prices are also expected to grow at a rate of 3%.

Year-to-year, *realized* capital gains can be higher or lower than their expected values. At the level of an asset class (e.g., S&P 500 or national housing index), unexpected capital gains are, on average, equally driven by unexpected changes in future cash flows or unexpected changes in future discount rates (Campbell, 1991). In contrast, at the level of an individual asset (that is, a typical firm or a typical house), news about future cash flows typically dominates (Vuolteenaho, 2002). Between 1980 and 2020, there has been a series of unexpected negative shocks on interest rates. This suggests that a substantial component of the higher-than-average capital gains observed for equity and housing during that period (Figure 1 in the main text) may have been driven by a decline in discount rates rather than a rise in expected cash flows.

B Formalizing income measures

This section formalizes the difference between the four different notions of income discussed in the main text: distributed income, factor income, Haig-Simons income, and Hicksian income. Proposition 1, which is the key new result of this note, is obtained by combining the definition of Hicksian income from Sefton and Weale (2006) with the results of Fagereng et al. (2024) on the welfare effect of small deviations in future income and asset prices. As a preview of the results, Table A1 contrasts the mathematical expression of each income concept.

B.1 General environment

To simplify the exposition, I first consider an endowment economy, where dividends and labor income "fall from the sky". When discussing the concept of factor income, I will move to a production economy as, otherwise, the concept does not make sense.

Time is continuous. There is a financial asset that returns a flow of dividends $(D_t)_{t\geq 0}$. Denote P_t the price of the asset at time t. Note that we can define the return of the asset as $r_t \equiv (D_t + \dot{P}_t)/P_t$. Consider an individual that earns labor income $Y_{L,t}$ and that can trade the financial assets. Denoting N_t the number of shares held at time t. The individual budget constraint is

$$C_t + P_t\dot{N}_t = Y_{L,t} + N_t D_t. \tag{1}$$

Simons (1938) defines income as "the sum of consumption and accumulation during a given period." Each income concept below will correspond to a different notion of accumulation (or savings).

Distributed income. Distributed income is defined as consumption *plus* net asset purchases.

$$\text{Distributed income} \equiv C_t + P_t\dot{N}_t = Y_{L,t} + N_t D_t,$$

where the second equality follows from the individual budget constraint (1). This equation says that distributed income includes labor income and the dividend income received by households.

Haig-Simons income. Haig-Simons income is defined as consumption *plus* change in net-worth

$$\text{Haig-Simons income} \equiv C_t + \frac{\mathrm{d}}{\mathrm{d}t}(P_t N_t) = Y_{L,t} + N_t(D_t + \dot{P}_t), \tag{2}$$

where the second equality follows from the individual budget constraint (1). Intuitively, Haig-Simons income corresponds to the maximum amount one can spend and still be as wealthy at the end of the period as at the beginning. This equation says that Haig-Simons income includes labor income, the dividend income received by households, and the change in asset value. The last two terms aggregate to the total return of the asset.

Hicksian income. Hicksian income is defined as consumption *plus* the money-metric change in welfare. Consider an infinitely-lived individual with subjective discount rate ρ and utility function U:

$$\text{Hicksian income} \equiv C_t + \frac{1}{U'(C_t)} \frac{\mathrm{d}}{\mathrm{d}t} \left(\int_0^\infty e^{-\rho h} U(C_{t+h}) \,\mathrm{d}h \right). \tag{3}$$

Exchanging the derivative and the integral sign gives

$$\begin{aligned} \text{Hicksian income} &= C_t + \int_0^\infty e^{-\rho h} \frac{U'(C_{t+h})}{U'(C_t)} \dot{C}_{t+h} \,\mathrm{d}h \\ &= C_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \dot{C}_{t+h} \,\mathrm{d}h, \end{aligned}$$

where the second line uses the Euler equation. This is the definition of "Real Income" in Sefton and Weale (2006). The next proposition combines this with budget constraint (1) to express Hicksian income in terms of income sources.

Proposition 1. *Hicksian income can be written as current cash flows* plus *changes in anticipated cash flows* plus *changes in anticipated trading profits:*

$$\text{Hicksian income} = Y_{L,t} + N_t D_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + N_{t+h} \dot{D}_{t+h} - \dot{N}_{t+h} \dot{P}_{t+h} \right) \mathrm{d}h. \tag{4}$$

This proposition says that Hicksian income corresponds to labor income, dividend income, and the present value of changes in future labor income, dividend income, and trading profits. The intuition for this equation is as follows. From the individual's point of view, between t and $t + dt$, two things happen: first, the individual receives some payout. Second, the set of income that will be received at each horizon changes, and so there is a money metric term for this: as shown by Fagereng et al. (2024), the cash-equivalent of a small change in labor income, dividend income, and prices at all horizons is given by the integral term in (4).

Proof of Proposition 1. Plugging the individual budget constraint (1) into the definition of Hicksian income (3) gives:

$$\begin{aligned} \text{Hicksian income} &= C_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \dot{C}_{t+h} \,\mathrm{d}h \\ &= Y_{L,t} + N_t D_t - \dot{N}_t P_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \frac{\mathrm{d}}{\mathrm{d}h} \left(Y_{L,t+h} + N_{t+h} D_{t+h} - \dot{N}_{t+h} P_{t+h} \right) \mathrm{d}h \\ &= Y_{L,t} + N_t D_t - \dot{N}_t P_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + N_{t+h} \dot{D}_{t+h} - \dot{N}_{t+h} \dot{P}_{t+h} \right) \mathrm{d}h \\ &\quad + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{N}_{t+h} D_{t+h} - \ddot{N}_{t+h} P_{t+h} \right) \mathrm{d}h. \end{aligned}$$

Using integration by parts, we have

$$\begin{aligned} -\int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \ddot{N}_{t+h} P_{t+h} \,\mathrm{d}h &= P_t \dot{N}_t + \int_0^\infty \frac{\mathrm{d}}{\mathrm{d}h} \left(e^{-\int_t^{t+h} r_s \,\mathrm{d}s} P_{t+h} \right) \dot{N}_{t+h} \,\mathrm{d}h \\ &= P_t \dot{N}_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(-r_{t+h} P_{t+h} + \dot{P}_{t+h} \right) \dot{N}_{t+h} \,\mathrm{d}h \end{aligned}$$

Plugging this formula into the expression for Hicksian income obtained above gives

$$\text{Hicksian income} = Y_{L,t} + N_t D_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + N_{t+h}\dot{D}_{t+h} - \dot{N}_{t+h}\dot{P}_{t+h} \right) \mathrm{d}h$$
$$+ \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(-r_{t+h}P_{t+h} + \dot{P}_{t+h} + D_{t+h} \right) \dot{N}_{t+h} \,\mathrm{d}h.$$

The last term in this expression equals zero given that, by definition, $r_{t+h} = (D_{t+h}+\dot{P}_{t+h})/P_{t+h}$. This concludes the proof. □

The following proposition characterizes the difference between Hicksian income and Haig-Simons income.

Proposition 2. *We have the following relationship between Hicksian and Haig-Simons income:*

$$\text{Hicksian income} = \underbrace{Y_{L,t} + r_t N_t P_t}_{\text{Haig-Simons income}} + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + N_{t+h}P_{t+h}\dot{r}_{t+h} \right) \mathrm{d}h$$

Hicksian income is equal to the Haig-Simons income *plus* the present value of the change in future Haig-Simons income due to changes in wages or interest rates going forward. A similar result is derived in Hulten and Schreyer (2010).

Proof of Proposition 2. Plugging the individual budget constraint (2) $C_t + \frac{\mathrm{d}}{\mathrm{d}t}(N_t P_t) = Y_{L,t} + r_t N_t P_t$ into the definition of Hicksian income (3) gives:

$$\begin{aligned}
\text{Hicksian income} &= C_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \dot{C}_{t+h} \,\mathrm{d}h \\
&= Y_{L,t} + r_t N_t P_t - \frac{\mathrm{d}}{\mathrm{d}t}(N_t P_t) \\
&\quad + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \frac{\mathrm{d}}{\mathrm{d}h} \left(Y_{L,t+h} + r_{t+h}N_{t+h}P_{t+h} - \frac{\mathrm{d}}{\mathrm{d}h}(N_{t+h}P_{t+h}) \right) \mathrm{d}h. \\
&= Y_{L,t} + r_t N_t P_t - \frac{\mathrm{d}}{\mathrm{d}t}(N_t P_t) \\
&\quad + \int_0^\infty \left(e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + \dot{r}_{t+h}N_{t+h}P_{t+h} \right) - \frac{\mathrm{d}}{\mathrm{d}h} \left(e^{-\int_t^{t+h} r_s \,\mathrm{d}s} N_{t+h}P_{t+h} \right) \right) \mathrm{d}h. \\
&= Y_{L,t} + r_t N_t P_t + \int_0^\infty e^{-\int_t^{t+h} r_s \,\mathrm{d}s} \left(\dot{Y}_{L,t+h} + \dot{r}_{t+h}N_{t+h}P_{t+h} \right) \mathrm{d}h.
\end{aligned}$$

□

Factor income. I now turn to the concept of factor income. Because this concept of income is defined in terms of the production technology, I need to specify the supply side of the economy. A representative firm can produce both consumption goods and investment goods, according to some technology represented by the production function $F_t(C_t, I_t, K_t, L_t) = 0$, where F is homogeneous of degree zero. Capital depreciates at rate δ and so the law of motion of capital is $\dot{K}_t = I_t - \delta K_t$. Denote R_t the net rental rate of capital in the economy, which satisfies the user-cost formula $R_t = p_{I,t} r_t + p_{I,t}\delta - \dot{p}_{I,t}$.

Factor income (national income at the aggregate level) is defined as what can be used to consume or accumulate capital:

$$\text{Factor income} \equiv C_t + p_{I,t}\dot{K}_t = Y_{L,t} + (R_t - p_{I,t}\delta)K_t.$$

In terms of income sources, it is the sum of factor payments to labor and capital (net of depreciation). Factor income consists of distributed income *plus* the portion of capital payments that firms reinvest rather than distribute to shareholders. The difference is zero in an economy in steady-state without technological growth, since capital remains constant in this case. Alternatively, factor income is Haig-Simons *minus* the change in the value of capital $K_t\dot{p}_{I,t}$. The difference is zero if the consumption good can be costlessly transformed into capital.

Table A1: Formalizing different income measures

Panel A: By income sources	
Distributed income	$=Y_{L,t} + N_t D_t$
Haig-Simons income	$= Y_{L,t} + N_t D_t + N_t \dot{P}_t$
Hicksian income	$= Y_{L,t} + N_t D_t + \int_0^\infty e^{-\int_t^{t+h} r_s \, \mathrm{d}s} \left(\dot{Y}_{L,t+h} + N_{t+h}\dot{D}_{t+h} - \dot{N}_{t+h}\dot{P}_{t+h} \right) \mathrm{d}h$
Factor income	$= Y_{L,t} + (R_t - p_{I,t}\delta)K_t$
Panel B: By income uses	
Distributed income	$= C_t + P_t\dot{N}_t$
Haig-Simons income	$= C_t + P_t\dot{N}_t + N_t\dot{P}_t$
Hicksian income	$= C_t + \int_0^\infty e^{-\int_t^{t+h} r_s \, \mathrm{d}s} \dot{C}_{t+h} \, \mathrm{d}h$
Factor income	$= C_t + p_{I,t}\dot{K}_t$

Notes. This table summarizes the results obtained in Section B by contrasting different income measures by their sources (Panel A) and their uses (Panel B). This table formalizes Table 1 in the main text.

B.2 Illustrating these different income concepts in a neoclassical growth model

I now illustrate the difference between these four income concepts in a simple neoclassical model of growth. The presence of technology growth and of a type of capital in fixed supply (here, land) will be enough to generate a wedge between all notions of income.

Setup. Consider an economy where a representative firm combines capital K_t, labor L, and land H to produce some output Y_t:

$$Y_t = A_t K_t^\alpha H^\beta L^{1-\alpha-\beta},$$

where A_t denotes the technology level, and $\alpha > 0, \beta > 0, 1-\alpha-\beta > 0$. I assume that labor and land supply are fixed. Moreover, I assume that capital depreciates with rate δ while housing does not depreciate. The output can be used to either consume or to invest, and so

$$\dot{K}_t = Y_t - C_t - \delta K_t.$$

Finally, technology A_t grows at rate η. There is a representative agent with CRRA preferences with elasticity of intertemporal substitution (EIS) ψ and subjective discount rate ρ.

Balanced growth path. I now assume that the economy follows a balanced growth path. This implies that output and capital must grow at the same rate, which I denote by g. Differentiating the production function gives

$$g = \eta + \alpha g \implies g = \frac{\eta}{1-\alpha}.$$

Denote $R_{K,t}$ the rental rate of capital, $R_{H,t}$ the rental rate of land, and w_t the wage. Profit maximization for the representative firm gives:

$$\begin{aligned} R_{K,t} K_t &= \alpha Y_t \\ R_{H,t} H &= \beta Y_t \\ w_t L &= (1-\alpha-\beta) Y_t. \end{aligned}$$

The equilibrium interest rate, r, is pinned down by the Euler equation $r = \rho + \psi g$. Finally, the return of owning capital or land must equal the interest rate:

$$\begin{aligned} R_{K,t} &= r + \delta \\ R_{H,t} &= r P_{H,t} - \dot{P}_{H,t}, \end{aligned}$$

where $P_{H,t}$ denotes the market price of one unit of land. Since, on a balanced growth path, $\dot{P}_{H,t}$ must also grow at rate g, the second equation implies $P_{H,t} = R_{H,t}/(r-g)$.

Income concepts. I now use the formulas obtained in the previous section to determine what the four income concepts are in this economy for the representative household. Distributed income is defined as the actual cash received by the representative agent, which corresponds to labor income, $w_t L$, income from renting land to the representative firm, $R_{H,t} H$, as well as the part of physical capital income that is distributed to households (as opposed to being retained by the representative firm to invest)

$$\text{Distributed income} = w_t L + (r-g) K_t + R_{H,t} H.$$

Factor income is defined as distributed income *plus* the retained earnings of the representative firm, $g K_t$:

$$\text{Factor income} = w_t L + r K_t + R_{H,t} H.$$

Haig-Simons income is defined as distributed income *plus* capital gains. Capital gains for physical capital correspond to the retained earnings of the representative firm, while capital gains for housing represent the change in the value of the housing stock $\dot{P}_{H,t} H$:

$$\text{Haig-Simons income} = w_t L + r K_t + \frac{r}{r-g} R_{H,t} H.$$

Finally, Hicksian income is defined as distributed income *plus* the present value of the change in future distributed income. On a balanced growth path with constant interest rates, this effectively corresponds to Haig-Simons income, with the addition of the shadow capital gain of human capital, $w_t L \times g/(r-g)$:

$$\text{Hicksian income} = \frac{r}{r-g} w_t L + r K_t + \frac{r}{r-g} R_{H,t} H.$$

One can use the first-order-conditions on firm profit maximization to substitute out the wage, rental price of capital, and rental price of land and obtain the following set of equations for all four income concepts:

$$\begin{aligned}
&\text{Distributed income} &&= Y_t - \delta K_t - g K_t \\
&\text{Factor income} &&= Y_t - \delta K_t \\
&\text{Haig-Simons income} &&= Y_t - \delta K_t + \tfrac{g}{r-g} \beta Y_t \\
&\text{Hicksian income} &&= Y_t - \delta K_t + \tfrac{g}{r-g} (1-\alpha) Y_t.
\end{aligned}$$

One key observation from these equations is, if $g = 0$, all of these income concepts are equalized. In this particular economy, the key driver of the wedge between these four income concepts is the presence of TFP growth — this is the key point in Barro, 2021.

It is instructive to rewrite all of these income concepts in terms of consumption, which equals national (factor) income minus investment, $C_t = Y_t - \delta K_t - \dot{K}_t$:

$$\begin{aligned}
&\text{Distributed income} &&= C_t \\
&\text{Factor income} &&= C_t + \dot{K}_t \\
&\text{Haig-Simons income} &&= C_t + \dot{K}_t + H \dot{P}_{H,t} \\
&\text{Hicksian income} &&= C_t + \tfrac{g}{r-g} C_t = \tfrac{r}{r-g} C_t.
\end{aligned}$$

These equations are consistent with Panel B of Table A1, which distinguishes the different income sources by their uses rather than their sources. Note that, on the balanced growth path, where growth rates and interest rates are constant, the notion of Hicksian income corresponds to the return on total wealth, which is the sum of the market value of capital, land, and human capital (see, for instance, Greenwald et al., 2024).

C Details on the shift-share decomposition of rising top income shares

I now derive formally the shift-share decomposition of the rise in top income shares presented in the main text. Denote $Y_{L,t}(p)$ and $Y_{K,t}(p)$ the labor and capital income in a given top percentile $p \in (0,1]$. The share of total income earned by top percentile p, denoted $S_t(p)$, is given by:

$$\begin{aligned}
S_t(p) &= \frac{Y_t(p)}{Y_t(100\%)} = \frac{Y_{L,t}(p) + Y_{K,t}(p)}{Y_{L,t}(100\%) + Y_{K,t}(100\%)} \\
&= \frac{Y_{L,t}(100\%)}{Y_t(100\%)} \times \frac{Y_{L,t}(p)}{Y_{L,t}(100\%)} + \frac{Y_{K,t}(100\%)}{Y_t(100\%)} \times \frac{Y_{K,t}(p)}{Y_{K,t}(100\%)} \\
&= \text{LS}_t \times S_{L,t}(p) + (1 - \text{LS}_t) \times S_{K,t}(p),
\end{aligned}$$

where $\text{LS}_t \equiv Y_{L,t}(100\%)/Y_t(100\%)$ denotes aggregate labor share, $S_{L,t}(p) \equiv Y_{L,t}(p)/Y_{L,t}(100\%)$ denotes share of labor income earned by top p and $S_{K,t}(p) \equiv Y_{K,t}(p)/Y_{K,t}(100\%)$ denotes share of capital income earned by top p. Hence, this last equation says that the income share of top p is a weighted average of the income share of top p across income sources, where the weights correspond to the relative importance of this income source in the aggregate. Classically, the change in a weighted average across two periods of time can be decomposed into two terms: the weighted average of the change and a change in weights times pre-existing difference in values:

$$\begin{aligned}
\Delta S_t(p) &= \Delta\Big(\text{LS}_t \times S_{L,t}(p) + (1-\text{LS}_t) \times S_{K,t}(p)\Big) \\
&= \frac{\text{LS}_t + \text{LS}_{t-1}}{2} \times \Delta S_{L,t}(p) + \left(1 - \frac{\text{LS}_t + \text{LS}_{t-1}}{2}\right) \times \Delta S_{K,t}(p) \\
&+ \left(\frac{S_{L,t}(p) + S_{L,t+1}(p)}{2} - \frac{S_{K,t}(p) + S_{K,t+1}(p)}{2}\right) \times \Delta LS_t.
\end{aligned}$$

This corresponds to the accounting decomposition discussed in the main text.

Figure A1 plots the results of the decomposition. Relative to Figure 3 in the main text, it expands the analysis to compute the result of the decomposition over larger periods, five decades from 1920 to 2020, and for a wider range of top percentiles (top 10%, top 1%, top 0.1%, and top 0.01%).

D Details on the quantification exercise

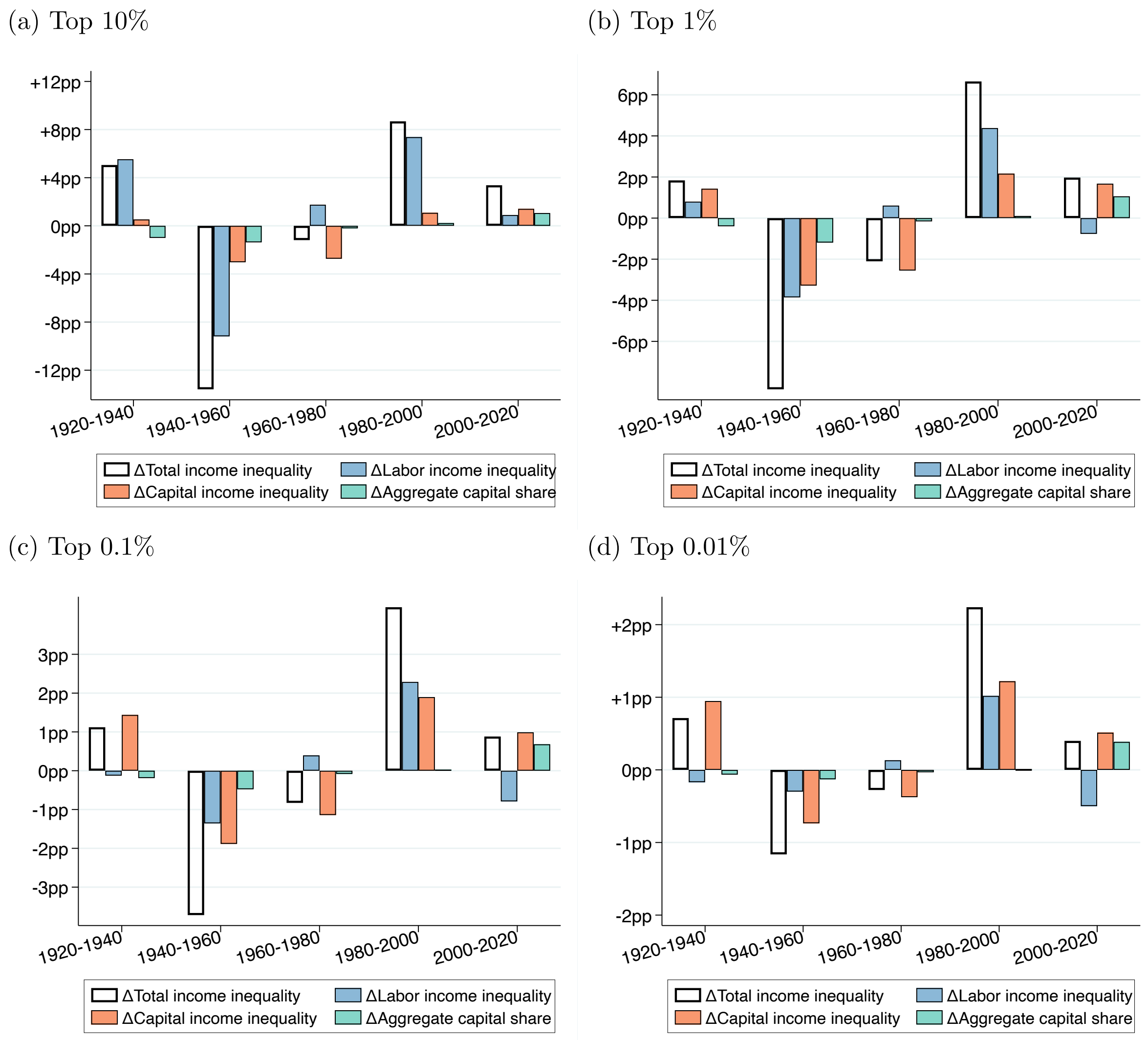
In the main text, I conduct a rough quantification of the effect of changes in the return to capital, the cost of capital, and tax rates for top income shares. While this back-of-the-envelope computation is useful for obtaining the correct order of magnitude, I now discuss some caveats.

Top versus average. The main text provides a quantification of the change in the log income of top entrepreneurs. When converting this estimate for the change in top income *shares*, the quantification implicitly assumes that the average level of income in the economy has not been impacted by these changes. In other words, the assumption is that changes in the return to capital, interest rates, and taxes have not affected the average income. One could improve these estimates by better modelling these effects.

Growth versus level effects. In the main text, I focus on the fact that higher return on capital rok_i (or a lower cost of capital r) increase the rate of entrepreneurs' capital accumulation and so their level of capital holdings after a number of years. One additional effect, however, is that higher capital returns raise current income for a given amount of capital.

Consumption. In the capital accumulation equation, I modeled consumption as a fixed fraction of capital holdings. A common alternative in the literature is to model consumption as a fraction of capital income instead (Solow, 1999, Saez and Zucman, 2016). The latter assumption implies that consumption increases with higher returns to capital. However, economic

Figure A1: Decomposing the change in top income shares over the 20th century



Notes. This figure reports the results of using a shift-share approach to decompose the overall change in top factor (pre-tax) income shares over three periods: 1962-1982, 1982-2002, and 2002-2020. The overall change in top income shares is broken down into three terms: a term capturing the change in labor inequality—LS $\times$ ΔLabor income share(p)— a term capturing the change in capital inequality—$(1 - \text{LS}) \times \Delta$Capital income share($p$)—and a term capturing the change in aggregate labor share—$\big(\text{Labor income share}(p) - \text{Capital income share}(p)\big) \times \Delta\text{LS}$. Data is from Piketty et al. (2022).

theory tells us that higher expected returns on consumption induce both income and substitution effect and the empirical literature suggests that these two forces tend to compensate at the top (e.g., Vissing-Jørgensen, 2002 and Holm et al., 2024). Hence, specifying consumption as a fixed fraction of capital, rather than as a fixed fraction of capital income, is likely a more realistic assumption for individuals at the top of the distribution.

In a standard consumption-savings model with isoelastic utility, the sensitivity of consumption to the expected return on capital is equal to one minus the elasticity of intertemporal substitution (EIS). My assumption that consumption is a fixed fraction of capital is equivalent to assuming an EIS equal to one (i.e., log utility). The alternative assumption in the literature— assuming that consumption is a fixed fraction of capital income instead— is equivalent to assuming an EIS equal to the saving rate instead.

References

Barro, Robert J, "Double counting of investment," *The Economic Journal*, 2021, *131* (638), 2333–2356.

Campbell, John Y, "A Variance Decomposition for Stock Returns," *The Economic Journal*, 1991, *101* (405), 157–179.

— **and Robert J Shiller**, "The dividend-price ratio and expectations of future dividends and discount factors," *The Review of Financial Studies*, 1988, *1* (3), 195–228.

Fagereng, Andreas, Matthieu Gomez, Emilien Gouin-Bonenfant, Martin Holm, Benjamin Moll, and Gisle Natvik, "Asset-price redistribution," 2024.

Greenwald, Daniel L, Matteo Leombroni, Hanno Lustig, and Stijn Van Nieuwerburgh, "Financial and total wealth inequality with declining interest rates," 2024. Working Paper.

Holm, Martin B, Rustam Jamilov, Marek Jasinski, and Plamen Nenov, "Estimating the elasticity of intertemporal substitution using dividend tax news shocks," 2024.

Hulten, Charles R and Paul Schreyer, "GDP, technical change, and the measurement of net income: the Weitzman model revisited," 2010. Working Paper.

Piketty, Thomas, Emmanuel Saez, and Gabriel Zucman, "Data for: Distributional national accounts: Methods and Estimates for the United States (February 2022 vintage)," 2022. retrieved from Gabriel Zucman's website https://gabriel-zucman.eu/usdina/, accessed on 2024-12-01.

Saez, Emmanuel and Gabriel Zucman, "Wealth inequality in the United States since 1913: Evidence from capitalized income tax data," *The Quarterly Journal of Economics*, 2016, *131* (2), 519–578.

Sefton, James A and Martin R Weale, "The concept of income in a general equilibrium," *The Review of Economic Studies*, 2006, *73* (1), 219–249.

Simons, Henry C., *Personal Income Taxation: the Definition of Income as a Problem of Fiscal Policy*, University of Chicago Press Chicago, Ill, 1938.

Solow, Robert M, "Neoclassical growth theory," *Handbook of macroeconomics*, 1999, *1*, 637–667.

Vissing-Jørgensen, Annette, "Limited asset market participation and the elasticity of intertemporal substitution," *Journal of Political Economy*, 2002, *110* (4), 825–853.

Vuolteenaho, Tuomo, "What drives firm-level stock returns?," *The Journal of Finance*, 2002, *57* (1), 233–264.