# RE-OPTIMIZING INEQUALITY

## HOW CAPITAL INCOME TAXES MOVE WEALTH DISTRIBUTIONS

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**Re-Optimizing Inequality: How Capital Income Taxes Move Wealth Distributions**

Abstract:

Despite famously high taxes, Sweden has exceptionally high wealth inequality. In this thesis, we aim to quantify the relation between capital income taxes and wealth inequality through counterfactual simulation based on Swedish data. We employ a structural life-cycle model adapted from Ebrahimian and Sodini (2025) and simulate wealth accumulation for different capital income tax rates, considering different behavioral re-optimization scenarios. Overall, consistent with previous literature, we find that taxes reduce inequality. In our main scenario, assuming full re-optimization, different capital income taxes in the range 0-50% can generate wealth gini variations equal to half of the variation in the data. From our baseline tax rate, every 2.08 percentage point increase yields a gini reduction of 0.01, which is significant. This indicates that capital income taxes are a fruitful policy lever, that warrant further research and political attention.

Keywords:

Wealth Inequality, Fiscal Policy, Capital Income Tax, Tax Policy, Simulation

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# 1 Introduction

The distribution of economic resources is a foundational issue in modern economies, profoundly shaping both individual life chances and broader societal stability. While income inequality has historically dominated the literature, disparities in accumulated capital are of particular interest as they present a much more rigid barrier to social mobility. This distinction is especially important in Sweden, which has a unique combination of a relatively low income inequality and a high wealth inequality (see figure A.1). For reference the Swedish wealth Gini is 0.75, putting it above the US at 0.74, whereas the income Gini is far lower at 0.29 compared to 0.42 (UBS 2025; World Bank 2021).

This discrepancy suggests that, in Sweden, wealth accumulation is more important than salary for becoming rich. Indeed, this is echoed by Roine and Waldenström (2008), who find that inequality fell sharply at the beginning of the 20th century, mostly due to drop in capital income for the top 1%, but subsequently increases at the turn of the century, again mainly attributable to capital income. Additionally, apart from the discrepancy in Gini coefficients, it is also clear that the absolute difference between the wealth- and income Gini is substantial for both the US and Sweden (as well as for the rest of the world). In Bach, Calvet, and Sodini (2020), the authors explain this as the combination of the multiplicative nature of wealth returns and the heterogeneity in returns between households. These findings make capital income a key factor when discussing inequality in Sweden, and subsequently make wealth inequality an important topic for further study.

When discussing economic inequality, taxation is often brought up as the most important policy instrument. This raises the question if the aforementioned discrepancy is related to a discrepancy in taxation. Indeed, one would expect low income inequality in Sweden considering its famously high income tax at up to 52%, putting it at the 6th highest progressive income tax globally (Trading Economics 2026b). However, Sweden also has a substantial capital income tax of 30%, which is the 8th highest in the world (PwC 2026). This seems counterintuitive, but we need to consider the fact that all capital income is not taxed equally. For instance, one can trade assets through a private company, which is taxed using the Swedish corporate tax rate of 20.6% - the 105th highest globally, just below the US at 21% (Trading Economics 2026a). Additionally, there is the Investment Savings Account (ISK) which is taxed akin to a small wealth tax (1.065%), resulting in substantial tax savings for high returns. Finally, the 30% rate does by default not apply on real

estate wealth, which is instead taxed at a 22% rate, nor on pension wealth which is taxed in an entirely different manner. This makes it difficult to draw any immediate conclusions between Sweden's tax rates and its different Gini coefficients, but it opens up an interesting avenue for research; how is wealth inequality affected by capital income taxes? Specifically, this thesis aims to answer:

- How does a standard "flat" capital income tax affect wealth inequality?
- How is this effect impacted by investor sophistication and optimal risk taking?

To answer this, we use a simulation approach. First, we introduce a model for individual wealth accumulation. Our model is based on that proposed by Ebrahimian and Sodini (2025), with the addition of a capital income tax parameter. In this model, an individual accumulates wealth from returns on risk-free and risky investments, as well as through labor income and direct cash transfers from their parents. They also consume this wealth throughout their life, and their choice between consumption and investment, as well as between risk-free and risky asset classes, is governed by optimal portfolio theory and personal preferences. The preferences that the model accounts for are risk aversion $\gamma$, discount rate $\rho$, and motivation to leave a bequest to one's children ("bequest motive") $\chi$.

After establishing the model, we simulate the resulting wealth accumulation for a sample of individuals representing the Swedish population. The individuals receive different levels of starting wealth, sampled using heterogeneous averages. Then the simulated individuals iteratively accumulate and consume their wealth according to the model. Throughout the simulation the individuals receive stochastic investment returns, again sampled heterogeneously. The variances used for these two sampling procedures are calibrated together in order to match the final baseline Gini with the underlying data.

These simulations are run for four separate specifications of capital income taxation, that account for how individuals re-optimize their portfolios in response. Indeed, we find that according to optimal portfolio theory, the individual's risk taking behavior will change with taxation in order to achieve an equivalent return profile, effectively counteracting any taxes applied on risky returns. As for consumption, there is a nontrivial effect arising from the expectation on future returns, that in our results tends to decrease consumption as taxes increase. As such, we consider the scenarios of full- and no re-optimization, as well as the two partial re-optimization scenarios for

either only risky investment or only consumption.

For the parameters that are not the subject of study in this thesis, we rely on data by Ebrahimian and Sodini (2025). The authors start with a rich micro dataset follows 4 million swedes between the years 2000-2007 containing information regarding their disposable income and savings, which is then combined with different asset valuation datasets to provide a picture of the individual's wealth accumulation. They then infer the individual preference parameters from the individual's observed decisions in accordance with the model. As this is a wealth mobility paper, these results are then aggregated into three groups based on the individual's wealth background: non-rich, rich, and very rich. It is these aggregated results that make up the data foundation for our simulations.

Although we focus on inequality in the cross-section rather than wealth mobility, we argue that sampling individuals from the group level data is important. As mentioned, return heterogeneity is highly important in order to explain the substantial wealth inequality found in the data (Bach et al. 2020; Gabaix, Lasry, Lions, Moll, and Qu 2016). Ebrahimian and Sodini (2025) find that return heterogeneity is well explained by these preference parameters. Moreover, there is also some observed differences in expected returns on risky investments between groups, which naturally also has an impact on return heterogeneity. Hence, although we will not use these groups to present our results, capturing this heterogeneity will be key in order to simulate inequality and, subsequently, assessing the effect of capital income taxes.

Running the simulations we find that, so long as individuals re-optimize (even partially), capital income taxes do reduce inequality. The magnitude of the effect is greatest for full re-optimization, where a tax rate variation of 0% to 50% corresponds to a Gini variation of 0.25 - more than half of the total wealth Gini variation of 0.44 in the data (UBS 2025). When only re-optimizing consumption, the same figure is 0.12, and for risky investment it is 0.04. Focusing on the full re-optimization scenario and considering a smaller, but still significant, capital income tax change of 5%, we get a Gini reduction of 0.023, which would move Sweden from 6th to 9th place in the UBS wealth inequality table. Additionally, by introducing heterogeneity in re-optimization behavior, we find that if individuals sampled from the top wealth groups are the only ones that re-optimize risky investments, perhaps due to better access to financial information, we get a reduced effect of taxes. Finally, if individuals sell assets too frequently, and miss out on the inherent tax deductibility from holding assets, taxes start having perverse effects on

inequality.

Furthermore, we show that our results are robust to various parameter choices. Specifically, we consider alternative values for the two standard deviations used in sampling initial wealth ($\sigma_w$) and return shocks ($\sigma_r$), as well as the baseline tax rate that is used to rescale the results. We also consider top wealth shares as an additional measure of wealth inequality, which generates some interesting differences in the results. Most notably, top wealth shares are reduced by tax rates even without accounting for re-optimization. Additionally, allowing for re-optimization of risky investments reduces the effect of taxes on inequality.

To finish, the simulation results are analyzed and policy implications are discussed. In doing so, we list some limitations of this study, and how they impact the policy discussion. Finally, we lift some avenues for further research.

# 2 Literature Review

We contribute mainly to three strands of literature: wealth accumulation, wealth inequality, and taxation.

The task of modeling household wealth accumulation has been studied thoroughly in the literature. Early attempts, based on the unfinished work by Bewley (n.d.), include Huggett (1993) and Aiyagari (1994). These so called Bewley models consider a continuum of homogeneous individuals, each trying to solve the optimization problem of maximizing expected utility by smoothing out consumption. The individual receives idiosyncratic endowment shocks, which they partially can insure against by saving and borrowing through a central credit authority with credit constraints. However, Krusell and Anthony A. Smith (1998) note that these models fail to produce the large wealth inequality that is found in the data, and remedies this by introducing return heterogeneity. Specifically, the authors extend the model by adding heterogeneous discount rates. Jumping forward a few years, Benhabib, Bisin, and Zhu (2011) develop a new type of model that, in addition to discount rates, accounts for heterogeneous bequest motives. Subsequently, this model is extended by Ebrahimian and Sodini (2025) to incorporate portfolio allocation, adding an individual risk aversion parameter. We continue this iterative development of wealth accumulation models by parameterizing capital income taxes and showing how this impacts optimal risk-taking and consumption

under different assumptions.

In the previous paragraph, two facts become apparent: wealth inequality has been a key directing force in developing wealth accumulation models, and return heterogeneity is required to generate the substantial wealth inequality seen in data. Indeed, there is a strong consensus of the latter in the wealth inequality literature. Benhabib and Bisin (2018) notes that the distribution of wealth follows a Pareto distribution with a thick tail at the top. They consider three potentially important explanatory factors: skewed earnings, stochastic wealth returns, and explosive wealth accumulation. Of these, explosive wealth accumulation - a consequence of increasing returns to wealth as well as higher savings rates among the wealthy, was found to be the most important. Bach et al. (2020) reinforce the importance of return heterogeneity, and explain that systematic risk exposure is more important than skill. In addition to explaining the wealth inequality at a given point in time, Gabaix, Lasry, Lions, and Moll (2016) also highlights the importance of return heterogeneity in explaining the rapid transitions of the wealth distributions in the data. We contribute to this discussion by considering in what way heterogeneity in how individuals respond to a capital income tax change can affect inequality.

Finally, this thesis is, of course, far from the first paper to look at the impact of capital income taxes on wealth inequality. After developing their models for wealth accumulation, Benhabib et al. (2011) and Gabaix, Lasry, Lions, and Moll (2016) both show that top wealth inequality is dampened by increasing capital income taxes. Furthermore, Benhabib et al. (2011) analyze this question in a simulated economy based on the US and find that, although the effect of estate taxes is ambiguous, higher capital income taxes substantially reduce inequality; imposing a 20% capital income tax reduces Gini from 0.78 to 0.67. Kaymak and Poschke (2016) instead considers estate and corporate income taxes. They find that the effective reduction in progressivity of these, in conjunction with increased transfers to seniors, accounts for nearly half of the sharp increase in US wealth concentration of the past 50 years. Similarly, Hubmer, Krusell, and Smith. (2021) describes the decreased tax progressivity in the US around 1980 as "by far the most powerful force for the cumulative increase in wealth inequality", and that at the current low rates the top 10% and 1% wealth shares in the US will increase by 10- and 20 percentage points respectively before 2100. Here, our contribution to the literature is two-fold. Firstly, by instead simulating wealth inequality in Sweden, we quantify to what extent that Sweden's unique discrepancy between wealth- and income inequality corresponds to a potential

discrepancy in tax rates. Secondly, and more crucially, by using the extended capital accumulation model by Ebrahimian and Sodini (2025), we are able to investigate how portfolio re-optimization moderates the effect of capital income taxes on inequality.

# 3 Methodology

This thesis employs a structural life-cycle model to simulate individual wealth accumulation over a 25-year horizon in order to evaluate the impact of capital income taxation on wealth inequality. We extend the modeling approach of Ebrahimian and Sodini (2025), which in turn builds upon the theoretical framework developed by Benhabib et al. (2011), by integrating counterfactual tax mechanics. Using this framework, we assess the resulting cross-sectional wealth inequality, measured via the Gini coefficient. This is done through a simulation that accounts for individuals' optimal consumption and investment allocations, which are driven by their distinct behavioral preferences and dynamically reshaped by these new fiscal constraints.

To ground this theoretical framework in empirical reality, we utilize comprehensive Swedish administrative registry data provided by Ebrahimian and Sodini (2025). Since this dataset is provided aggregated at the socioeconomic background level, we first artificially disaggregate the data to generate an individual-level sample. This is achieved by taking the group averages for comprehensive initial wealth and market returns and introducing random, log-normally distributed shocks.

Once this baseline simulated economy is established, we systematically introduce counterfactual tax regimes. This structured approach allows us to disentangle the consequences of capital taxation by comparing the impact of the tax in a static scenario without re-optimization against a dynamic scenario in which investors re-optimize their portfolios in the face of new fiscal constraints.

## 3.1 Model

We employ a structural life-cycle model to evaluate the distributional effects of capital income taxation. Specifically, we simulate individual wealth accumulation over a 25-year horizon, building on the theoretical framework developed by Benhabib et al. (2011).

### The Wealth Accumulation Process

The core of the simulation tracks the evolution of comprehensive wealth over time. For each individual $i$, the transition of wealth to the subsequent period $t+1$ is governed by the following equation:

$$w_{i,t+1} = (1 + r_{f_t})w_{i,t} + \left( \frac{(\mathbf{1}'\Omega^{-1}\mu) \cdot er_{i,t}}{\gamma} - a_t \right)(w_{i,t} + h_{i,t} + g_{i,t}) + y_{i,t} + p_{i,t}$$

where $w_{i,t}$ is the current financial wealth, $h_{i,t}$ is human capital, $g_{i,t}$ is the present value of future inheritances and gifts, $y_{i,t}$ is labor income, and $p_{i,t}$ represents direct parental transfers. The individual's financial behavior is determined by $a_t$, the optimal consumption-to-wealth ratio, and $\mathbf{1}'\Omega^{-1}\mu$, the precalculated optimal portfolio scalar determining the allocation to risky assets (which combines expected market returns, $\mu$, with the variance-covariance matrix of asset returns, $\Omega$). The optimal consumption-to-wealth ratio ($a_t$) is defined as:

$$a_t = \frac{\tilde{\rho}}{1 + (\tilde{\chi}\tilde{\rho} - 1)e^{-\tilde{\rho}(T-t)}}$$

This ratio is governed by the individual's specific preference parameters — risk aversion ($\gamma$), impatience ($\rho$), and bequest motive ($\chi$) — which are adjusted for the expected market conditions:

$$\begin{aligned}
\tilde{\rho} &= \frac{\rho - (1-\gamma)\tilde{r}}{\gamma} \\
\tilde{r} &= r_f + \frac{\mu'\Omega^{-1}\mu}{2\gamma} \\
\tilde{\chi} &= \frac{\left(1 - e^{-\tilde{\rho}(T_d - T)}\right)}{\gamma} + e^{-\tilde{\rho}(T_d - T)}\chi
\end{aligned}$$

where $T$ represents retirement (at age 65) and $T_d$ represents the expected time of death (at age 82).

## 3.2 Simulation

### Stochastic Parameters

To capture idiosyncratic, within-group variations, stochasticity is introduced at the individual level through log-normally distributed shocks. The log-normal distribution is utilized to correctly reflect the multiplicative, com-

pounding nature of capital accumulation. Crucially, the shocks are parameterized to preserve the mathematical mean of the baseline data. First, an initial shock is applied exclusively at the beginning of the life cycle (age 25) to the individual's comprehensive starting wealth. This is distributed as:

$$w_{i,0} + h_{i,0} + g_{i,0} \sim Lognormal\left(\log(w_0 + h_0 + g_0) - \frac{\sigma_w^2}{2}, \sigma_w^2\right)$$

Second, the annual market returns are subjected to an idiosyncratic shock in every period $t$, distributed as:

$$1 + er_{i,t} \sim Lognormal\left(\log(1 + er_t) - \frac{\sigma_r^2}{2}, \sigma_r^2\right)$$

By explicitly subtracting half the variance ($\frac{\sigma^2}{2}$) from the log-mean in both equations, the expected value of the stochastic multiplier remains exactly 1. This ensures that the introduced shock successfully disperses the distribution of wealth without artificially inflating the aggregate capital of the simulated economy.

**Taxation Mechanics**

Once the underlying wealth paths and return shocks are established, the model dynamically integrates counterfactual capital taxation directly into the individual's capital growth. The counterfactual capital income tax ($\tau_c$) is applied symmetrically to the risk-free component of wealth accumulation based on the gross, pre-tax returns ($r_{f_{pre,t}}$ and $er_{pre,i,t}$, the derivation of which is detailed in Section 3.3):

$$r_{f_t}^{tax} = r_{f_{pre,t}} \cdot (1 - \tau_c)$$

However, for capital income derived from market returns, the model introduces an asymmetric tax to evaluate the impact of loss deductibility. At the individual level, the after-tax excess return is calculated as:

$$er_{i,t}^{tax} = er_{pre,i,t} - \tau_c \cdot \max(0, er_{pre,i,t}) + \tau_c \cdot p_{reimb} \cdot |\min(0, er_{pre,i,t})|$$

where $p_{reimb}$ represents the reimbursement rate, defined as the fraction of capital losses eligible to act as a tax shield. A reimbursement rate of $p_{reimb} = 1$ simulates a perfectly symmetric tax code with full loss deductibility, while $p_{reimb} = 0$ simulates a strictly asymmetric regime where downside risk is entirely unshielded. Unless otherwise specified, $p_{reimb}$ is fixed at 1 by default across all baseline scenarios, and is only varied when explicitly analyzing the

effects of asymmetric loss deductibility.

Incorporating these fiscal parameters, the baseline wealth accumulation formula is expanded into its fully taxed form for the counterfactual simulations:

$$w_{i,t+1} = (1+r_{f_t}^{tax})w_{i,t} + \left( \frac{(\mathbf{1}'\Omega_{tax}^{-1}\mu_{tax}) \cdot er_{i,t}^{tax}}{\gamma} - a_{tax,t} \right)(w_{i,t}+h_{i,t}+g_{i,t}) + y_{i,t} + p_{i,t}$$

**Behavioral Scenarios**

To properly quantify the impact of these taxes, the model is evaluated under two distinct behavioral scenarios:

1. **Static Response:** Individuals hold their asset allocations and consumption ratios constant at their baseline pre-tax optimal levels.

2. **Dynamic Re-optimization:** Individuals behave as rational, forward-looking agents. As the tax code alters the after-tax expected return and variance, agents dynamically recalculate their optimal risky portfolio allocation and consumption to maximize utility under the new constraints.

Mathematically, the dynamic re-optimization scenario is obtained by recalculating the optimal portfolio scalar ($\mathbf{1}'\Omega_{tax}^{-1}\mu_{tax}$) and the optimal consumption-to-wealth ratio ($a_{tax,t}$) utilizing the post-tax expected returns and variance-covariance matrix. A formal mathematical derivation of these post-tax parameters is provided in Appendix B.

To further decompose the behavioral response, partial re-optimization scenarios in which agents re-optimize only the consumption while holding investments fixed, or only the risky investments while holding consumption fixed, are also evaluated.

For the deductibility counterfactual, where $p_{reimb} \neq 1$, the full re-optimization scenario is not applicable. Unlike symmetric taxation, asymmetric taxation skews the after-tax return distribution and admits no straightforward closed-form solution for optimal portfolio choices. Modeling these behavioral responses would therefore be extremely computationally intensive and unfeasible for this thesis, hence why the analysis is restricted to the consumption re-optimization scenario.

### Measuring Inequality

Once the individual wealth levels at age 50 across the whole population have been computed, the wealth Gini coefficient is calculated using the standard discrete formula for a finite, ordered population:

$$G = \frac{2\sum_{i=1}^{n} i \cdot w_i}{n\sum_{i=1}^{n} w_i} - \frac{n+1}{n}$$

where $n$ is the population size, $i$ is the individual's relative wealth rank (in ascending order; $i = 1$ represents the poorest individual), and $w_i$ is the wealth of individual $i$.

## 3.3 Data and Calibration

To ensure the mathematical model accurately reflects reality, it is heavily anchored to empirical data. Specifically, with the exception of the idiosyncratic shock parameters, all structural, financial, and behavioral preference parameters are drawn directly from an aggregated dataset provided by Ebrahimian and Sodini (2025). The underlying micro-data for their estimations primarily originates from registers maintained by Statistics Sweden (SCB), including the Wealth, Income, and Demographics registers, and the Multi-Generation Register (Flergenerationsregistret).

### Population Groups and Return Heterogeneity

The simulation tracks a representative economy of $N = 4,034,480$ individuals from the age of 25 to 50. Following the empirical classification established by Ebrahimian and Sodini (2025), the simulated population is divided into three distinct socioeconomic groups based on their wealth background: the Non-Rich (90.68%), the Rich (7.00%), and the Very Rich (2.32%).

While this thesis evaluates cross-sectional wealth inequality rather than intergenerational trajectories, retaining the three wealth background groups from Ebrahimian and Sodini (2025) is a necessary structural choice. The macroeconomic impact of capital income and taxes is highly dependent on individual savings decisions and optimal risk-taking, which together generate return heterogeneity. Crucially, as previous literature demonstrates, these financial behaviors systematically depend on an individual's socioeconomic background. By preserving these distinct groups, each calibrated with their own group-specific preference parameters (summarized in Table 1) and baseline returns, our simulation naturally generates the empirically backed

return heterogeneity required to accurately assess how capital taxes shape the wealth distribution.

Table 1: Preference Parameters by Wealth Background

| | **Risk Aversion ($\gamma$)** | **Impatience ($\rho$)** | **Bequest Motive ($\chi$)** |
|---|---|---|---|
| **Non-rich** | 10.788 | 0.119 | 0.641 |
| **Rich** | 6.222 | 0.023 | 5.419 |
| **Very rich** | 3.848 | 0.006 | 25.189 |

This table reports the behavioral preference parameters utilized in the baseline simulation, for each population group, rounded to three decimal places.

### Pre-Tax Conversions

A critical feature of the dataset is that the baseline expected market returns ($er_t$) and risk-free rates ($rf_t$) are reported net of taxes. In reality, the Swedish capital tax system applies different statutory rates across asset classes—such as a 30% tax on stock returns and a 22% tax on real estate capital gains. However, because our framework aggregates these various investments into a single market portfolio, we assume a homogenized, flat 25% capital tax rate for simplicity in our baseline calibration. To ensure that our findings are not sensitive to this homogenization, we subsequently perform robustness checks using 20% and 30% baseline rates, which confirm that our core results remain consistent.

Since the baseline data already accounts for this existing capital taxation, superimposing counterfactual tax regimes directly onto these returns would induce double-taxation, and the simulated taxes would have to be analyzed merely as deviations from an already taxed baseline. Instead, for interpretability, we reverse-engineer the gross, pre-tax returns. For each period $t$, the pre-tax excess return ($er_{pre,t}$) and pre-tax risk-free rate ($rf_{pre,t}$) are rescaled to account for the existing tax:

$$er_{pre,t} = \frac{er_t}{1 - 0.25}, \quad rf_{pre,t} = \frac{rf_t}{1 - 0.25}$$

The counterfactual tax policies, including asymmetric adjustments for loss deductibility, are subsequently applied exclusively to these derived pre-tax returns.

### Shock Calibration

The stochastic parameters are calibrated to match the empirical Swedish wealth Gini coefficient of 0.679 for the 50-year-old cohort. The market return shock is set to $\sigma_r = 0.20$, which reasonably approximates the aggregate behavior of the Swedish market, while the initial wealth shock is calibrated to $\sigma_w = 0.33$.

# 4 Simulation Results

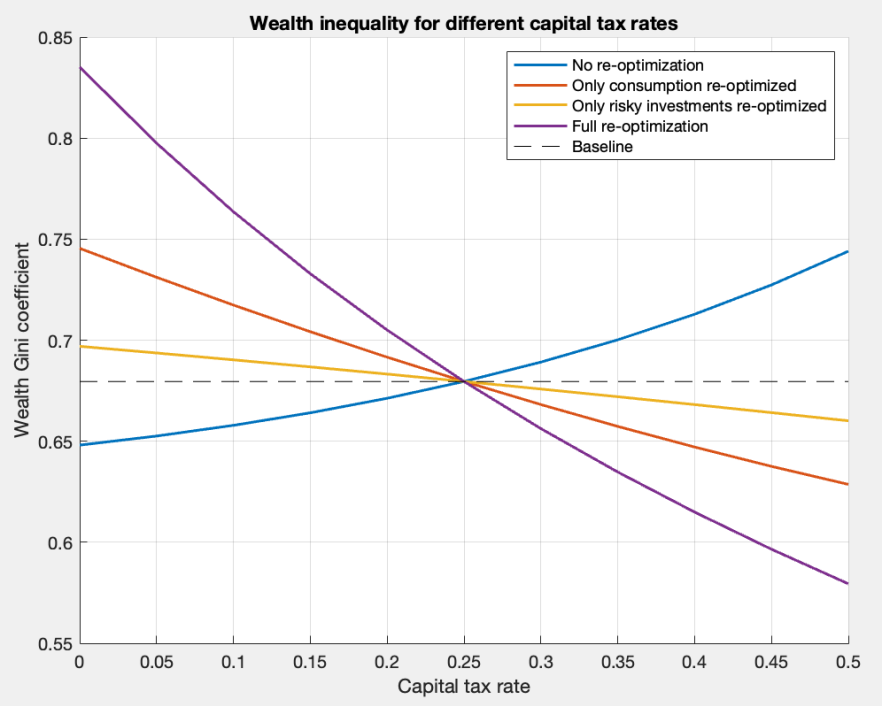



Figure 1: Plot of the wealth Gini coefficient for different capital tax rates in the range 0-50% for different scenarios of adjustment among the population. The four scenarios are: no adjustment of financial decisions, adjusting only consumption, adjusting only risky investments, and full re-optimization. The dashed line is the baseline model result assuming a 25% capital tax.

In Figure 1 we see that when individuals are allowed to re-optimize, partially or fully, capital income taxes reduce inequality as expected. This directional change is in line with previous research, and also intuitive. However, in the scenario of no re-optimization, we instead see an increase in inequality caused by taxes. Given the strong consensus in the literature that taxes

reduce inequality, we take these results to rather imply that accounting for re-optimization is necessary in our model in order to generate sensible results. As such, we focus our analysis on these cases, but we will investigate the mechanisms that generate this increasing Gini in 4.3.

## 4.1 Re-optimization Scenarios

For the magnitude of the effect, we notice a substantial difference between the scenarios. Assuming re-optimization of consumption only, the Gini falls by 0.12 (0.05 from baseline) as taxes approach 50%. However, if individuals do fully re-optimize, this effect goes up to 0.25 (0.10). These are both very significant changes in wealth Gini, the latter reaching more than half of the total variation of 0.44 in the data (UBS 2025). In the case of only re-adjusting risky investment, the effect is dampened, and although the change in wealth Gini of 0.04 (0.02) is significant, we need to consider that this is for an unrealistic increase in capital income taxes.

In order to succinctly present the effects of a realistic (small) tax change, we numerically compute the elasticities at baseline for the different scenarios. Doing so we get $-0.086$ for consumption, $-0.027$ for risky investments, and $-0.179$ for full re-optimization. For, say, a 5 percentage point increase in the tax rate, this would imply approximate Gini reductions of 0.012, 0.004, and 0.024 respectively, which very closely matches the actual model reductions of 0.011, 0.04, and 0.023. The latter of these three reductions would mean Sweden going from the 6th to 9th highest wealth inequality in the UBS wealth report (UBS 2025), which certainly is significant, but it would still leave Sweden as having the highest wealth inequality among the EU countries listed.

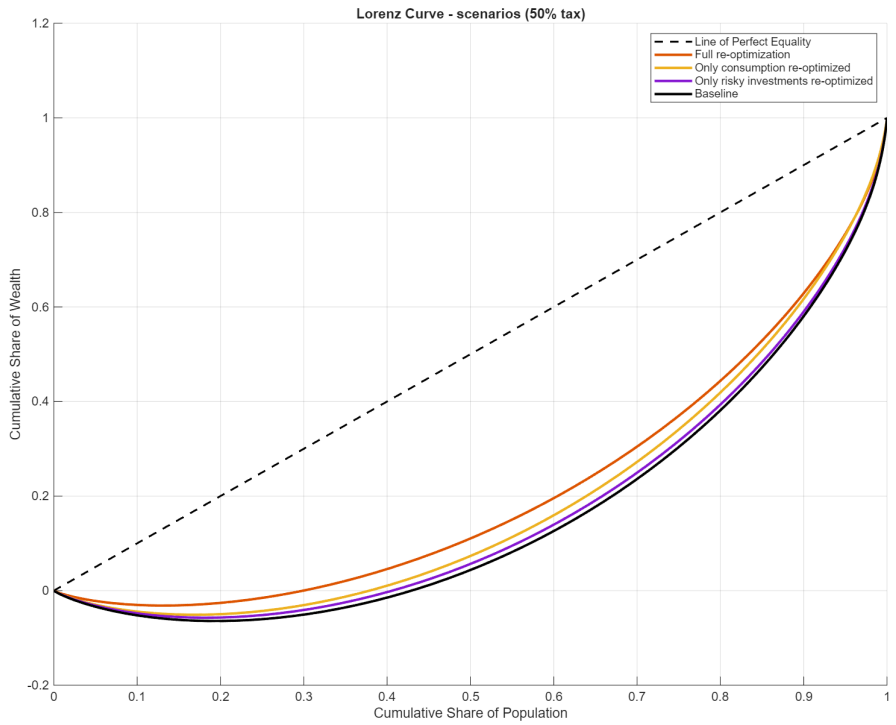



Figure 2: A plot of the Lorenz curves for our three re-optimization scenarios for a capital income tax of 50%, compared to the Lorenz curve of the baseline wealth distribution at a 25% tax rate.

Comparing these scenarios with each other also illuminates the mechanisms through which taxes impact wealth inequality. As we have established, the effect of capital income taxes is greater when individuals only optimize consumption than when they only optimize risky investment. To understand this, we plot the Lorenz curves for the different scenarios in Figure 2. One immediate observation is that for all of the re-optimization scenarios, the Lorenz curve is shifted up from the baseline 25% tax, and that most of this shift occurs for the part of the curve where cumulative wealth is negative. Since all of the scenarios have a reduced risk-free rate in common, we interpret this as that a significant part of the effect of taxes is reducing the effective interest rate paid by individuals with negative net wealth. Moreover, re-optimizing consumption causes more individuals to escape negative wealth than when they re-optimize risky investments, and a full re-optimization seems to have a greater effect than the sum of its parts.

Another observation is that all of the curves seem to approach the baseline as we approach the top of the distribution. We note that when individuals only optimize risky investments we get the fastest convergence, which

makes sense as this scenario implies an increased return variance, which will generate increased inequality that is especially pronounced at the top of the wealth distribution where individuals hold larger risky investments. Interestingly, although the full re-optimization scenario generates the largest shift in the Lorenz curve for most of the distribution, the aforementioned effect causes this scenario to approach baseline faster than when individuals only re-optimize consumption (the curves intersect around $x = 0.965$). This shows that when individuals do not optimize away the effect of taxes on risky investment returns, the taxes do have the intended effect of reducing variance, but that for overall inequality as measured by the Gini this is offset by the friction to wealth accumulation that is generated.

Finally, since the effect of capital income taxes on consumption in the model are nontrivial, it is worth looking at the simulation values to understand what effect that the consumption re-optimization has. Overall, we notice that consumption tends to decrease as the anticipated tax increases (i.e. when $rf_{\text{ave}} \cdot (1 - \tau_c)$ decreases). Accordingly, assuming re-optimization of consumption, individuals all across the wealth distribution will be accumulating wealth faster. Further, since this effect is relative to the sum of wealth, human capital, and gifts and inheritances, which is less unequally distributed than wealth alone in our data, we would expect this effect to indeed reduce wealth inequality.

## 4.2 Additional Simulations

Let us now consider the case where individuals have different re-optimization behaviors. In Figure 3 we see, assuming everyone re-optimizes consumption, that if we randomly select individuals to re-optimize their risky investment, we get a partial increase in tax effectiveness. This makes sense as within this subgroup we would expect overall higher wealth and as such a higher tax effectiveness. However, if this selection is not random, but rather that the individuals sampled from the two rich groups are the only ones to optimize, the effect of taxes is suddenly reduced. This makes sense as we are effectively reducing the effect of taxes on the high return individuals, but it is interesting as the underlying assumption is sensible. Indeed, these individuals might have better access to financial information or advice, and as such could be more likely to re-optimize. It is, therefore, important to note this potential mitigating factor to the effect of capital income taxes.

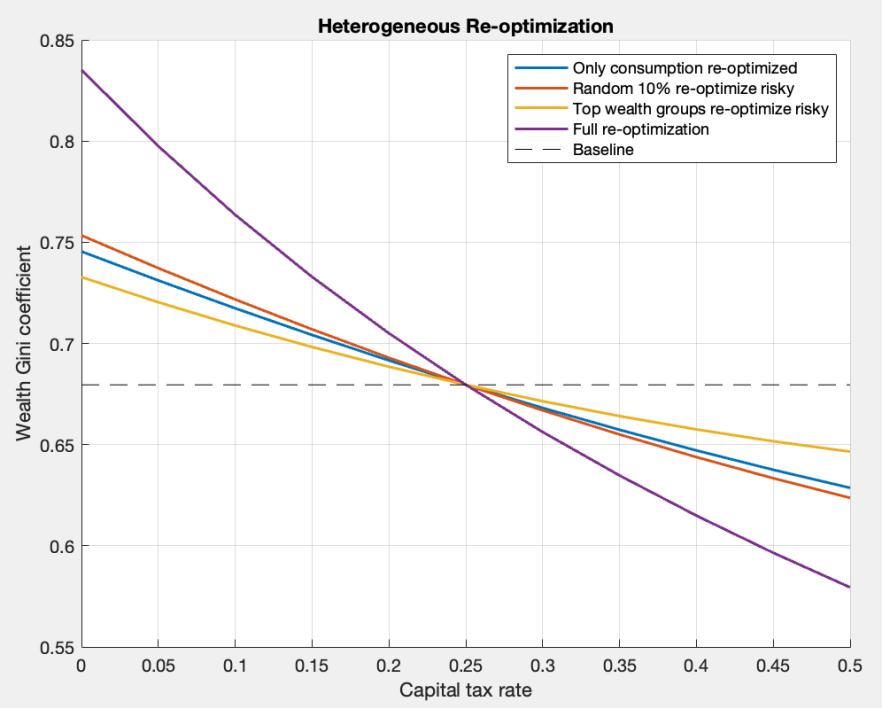



Figure 3: Same plot as figure 1, but for heterogeneous re-optimization. In all scenarios, everyone re-optimizes consumption. The scenarios are then: no-one optimizes risky investment, 10% of the population selected at random optimizes, the individuals sampled from the rich and very rich groups (roughly 10%) optimize, and everyone optimizes. Again, the dashed line is the baseline model result assuming a 25% capital tax.

As mentioned, in our application of taxes there is a parameter controlling tax deductibility ($p_{\text{reimb}}$), that has so far been set to 1 for theoretical tractability of the re-optimization scenarios. Adjusting this parameter, assuming re-optimization of consumption only, gives us figure 4, which reveals interesting macroeconomic consequences of asymmetric taxation. When capital income taxes are high but loss deductibility is very low, the Gini coefficient becomes extremely high, indicating a large presence of negative wealth, and a relatively low total wealth for the population. Indeed, in such a scenario, the effect of taxes become too harsh for individuals at any level to successfully accumulate wealth. Interestingly, at approximately 60% loss deductibility, the tax rate becomes mostly irrelevant to the overall Gini coefficient; all tax regimes produce a Gini of roughly 0.68. However, the graphs do not all intersect at the same point, so there is not a precise deductibility percentage for which the effect is reversed.

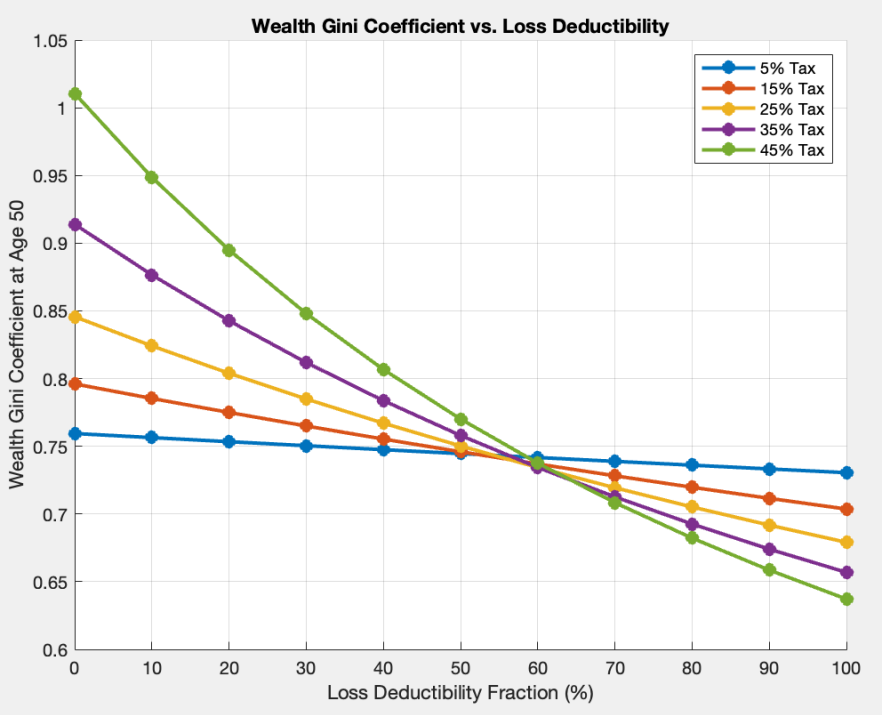



Figure 4: Wealth Gini coefficient at age 50 across different capital income tax loss deductibility percentages for different tax rates with consumption re-optimization.

To the right of the 60% threshold, the intended progressive nature of taxation finally materializes, and the higher tax rates effectively compress the top of the distribution, resulting in the 45% tax rate achieving the lowest relative wealth inequality (a Gini of roughly 0.61). It is important to recall here that Sweden, despite not having cross-period deductibility, does not necessarily fall to the left of the graph, as $p_{\text{reimb}}$ accounts for the effective deductibility that arises when individuals do not sell their assets after a loss. We do not have access to data on selling behavior, but it would be reasonable to assume a high $p_{\text{reimb}}$ in Sweden given that a substantial part of each individual's portfolio is real-estate and pension wealth, which are typically held for long periods of time.

## 4.3 Supporting Results

In Figure 5 we see the average wealth trajectories for the different scenarios. We notice a clear reduction in average wealth for the no re-optimization scenario, which seems to be the cause of the increased Gini we saw in Figure

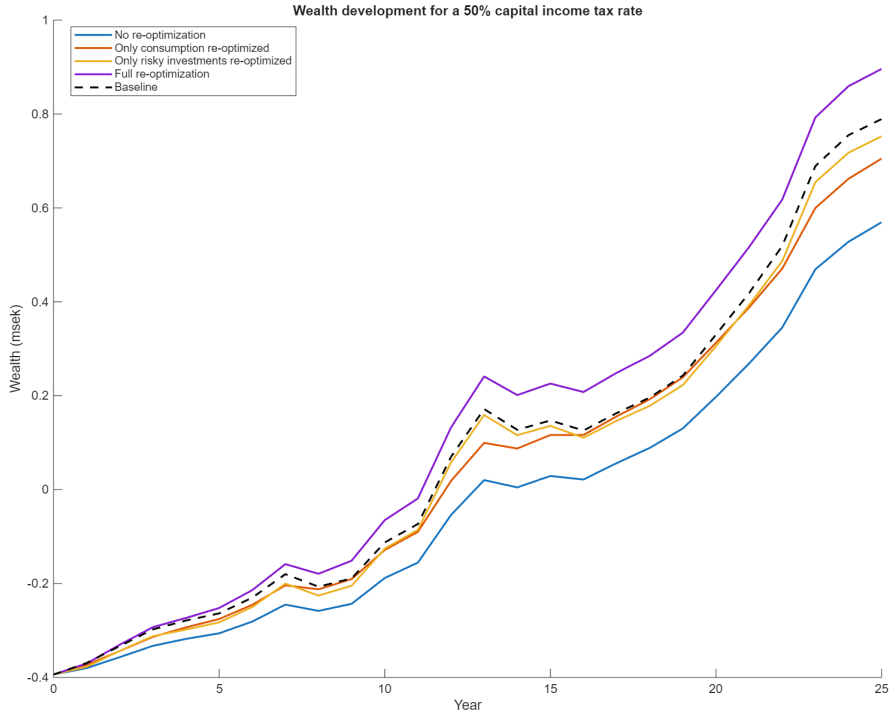



Figure 5: Average wealth trajectories for all scenarios at a 50% capital income tax rate, compared to the baseline trajectory for a 25% tax.

1. Interestingly, we also note an increase in average wealth in the full re-optimization case, likely caused by the reduction in negative wealth that was discussed for the Lorenz curve in Figure 2. Another observation is that for the two scenarios where risky investment is not re-optimized, we notice that the curve is significantly less jagged, which is reasonable as we expect return shocks to be dampened. Now, we know that shifting the average wealth up, all else equal, reduces inequality and vice versa. This tells us that, although average wealth falls in the partial re-optimization cases, this is offset by the distribution becoming more equal. Again, this tracks with the Lorenz curve plot, but it would also be interesting to display the wealth distribution in a more intuitive plot.

Accordingly, in Figure 6, we create a box plot of the wealth distributions for the different scenarios, winsorizing the data at the 90% level for readability. Again, we see that full re-optimization shifts up the median, and that no re-optimization shifts it down. Additionally, we see that in all scenarios, the total variation is reduced, with the strongest reduction for the two scenarios where risky investment is not re-optimized, again consistent

with intuition. Given that there is the least wealth variation in the no re-optimization scenario, one could expect the Gini to be lowest there, but this is not necessarily true. Indeed, the Gini coefficient is scale-invariant, and so if the shape of the distribution does not change substantially, the Gini will remain unaffected. However, the Gini is not translation invariant, and the reduced average wealth is likely to increase the Gini significantly.

This plot also shines light on how full re-optimization is driving up the average wealth. We notice that the bottom end of the distribution is shifted up substantially, while the top is only slightly elevated. Again, this increased wealth at the bottom is likely attributable to reduced interest payments as a result of the effect of $rf_t$ on negative wealth in the model. However, the increased wealth at the top, albeit small, is counterintuitive. Due to the winsorization, this is not actually the top wealth, which we can confirm does decrease from 43.6 to 41.5 Msek, but this is still the top 5% of wealth where the top 30% start with positive wealth. Further experimentation shows that this is, at least partially, caused by the fact that $rf_t$ is negative for the first 7 years, so an individual that starts with a significant positive wealth would benefit from an increased tax on this rate. Indeed, removing the tax for this period results in a (winsorized) top wealth of 2.57 as opposed to 2.59 msek in the baseline.

# 5 Robustness and Sensitivity Tests

We conducted robustness and sensitivity tests to validate the structural integrity of our findings. First, we performed a sensitivity analysis on the stochastic parameters, independently adjusting return shocks and initial wealth shocks to observe their distinct impacts on the wealth distribution. Second, we introduced a robustness check by calibrating new pairs of shocks ($\sigma_r = 0.25, \sigma_w = 0.30$) and ($\sigma_r = 0.15, \sigma_w = 0.35$) achieving the same Gini. Next, we tested the sensitivity of the model to the assumed 25% baseline capital tax rate by evaluating the wealth inequality under alternative tax rates of 20% and 30%. Across all these tests, the fundamental mechanics of capital taxation and behavioral re-optimization remained completely consistent, confirming that the primary policy insights are robust to diverse underlying risk profiles and taxation regimes. Finally, we consider top wealth shares as an alternative measure to the Gini coefficient, to avoid making the analysis overly reliant on the selected measure. This produced some noteworthy changes to the results, but the overall story of reduced inequality remained consistent.

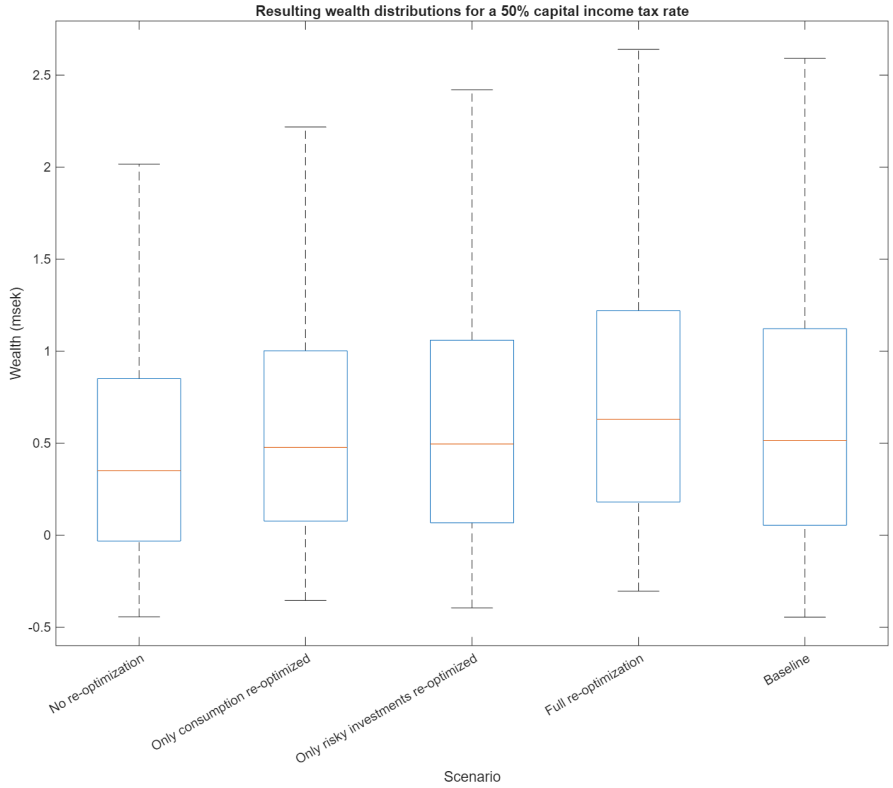
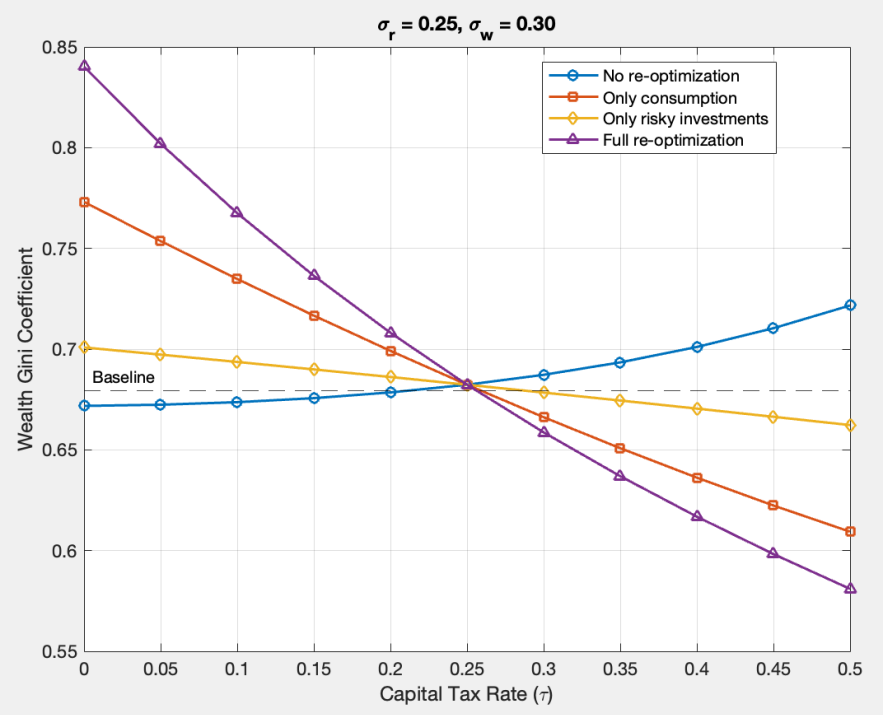



Figure 6: Boxplots of the resulting wealth distribution in our different scenarios assuming a 50% capital income tax rate. All distributions are winsorized at the 90% level for readability.

In Figures C.1 and C.2 in the appendix we plot the sensitivity of the wealth Gini to our parameters $\sigma_w$ and $\sigma_r$. For $\sigma_w$ we get a linear graph with a slope of roughly 1.2, whereas for $\sigma_r$ we get a curve, which at the baseline has an approximate slope of 0.6. These plots show that the results are fairly sensitive to these parameters, so it is important that they are tuned together to reach an appropriate target Gini, rather than trying to estimating them independently, which potentially could result in an unrealistic baseline Gini coefficient.



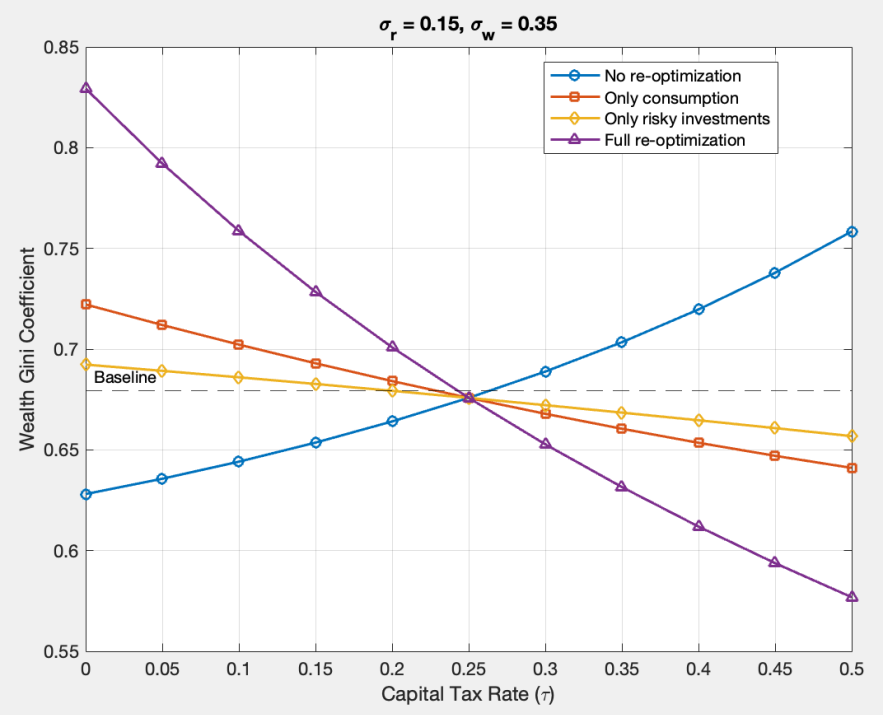
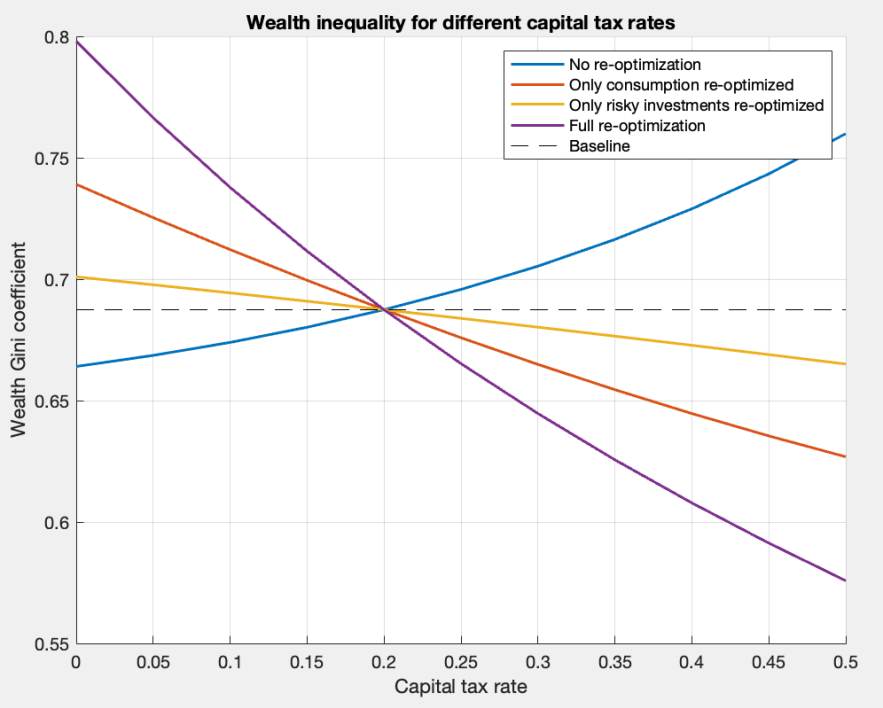




Figure 7: Robustness of wealth inequality to alternative parameter pairs achieving the same Gini (combinations of $\sigma_r$ and $\sigma_w$ that are jointly calibrated to give the baseline Swedish wealth Gini coefficient of 0.679 at age 50).

When tuning the parameters together, however, we have a degree of freedom, so let us consider the sensitivity of our results to the specific choice of pair ($\sigma_w$, $\sigma_r$). Two alternative choices that yield the same baseline Gini are (0.3, 0.25) and (0.35, 0.15), the results for which are displayed in Figure 7. These mostly generate the same results, but, intuitively, when more of the inequality is generated by random return shocks rather than initial wealth, taxes have an increased effect for the scenarios where risky investments are not re-optimized. This is to be expected seeing that, in these scenarios, capital income tax is applied to the risky investment returns, so it would dampen the inequality that is generated by return shocks. However, the other two scenarios remain seemingly unaffected by this parameter shift.



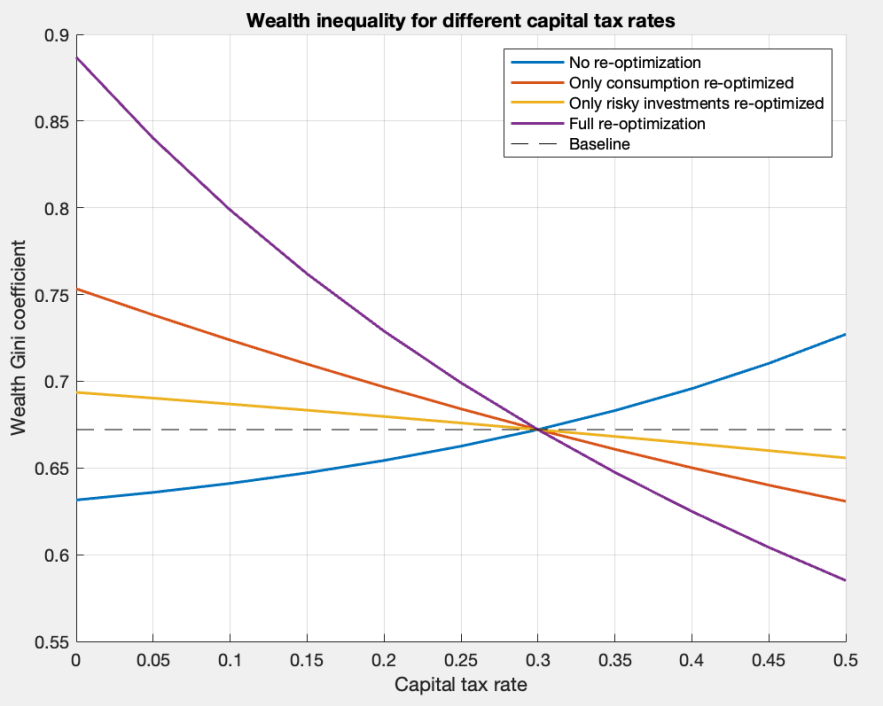




Figure 8: Robustness of wealth inequality to alternative baseline capital gains taxation of 20% and 30% respectively.

As mentioned, the underlying return data for our simulation is already taxed, and not at a flat rate since real estate and pension wealth are taxed differently. Accordingly, in order to translate our additional taxes added in the simulation into raw tax rates, we artificially divide away the underlying taxes as if they were a flat 25% rate. However, given that the choice of a 25% baseline tax rate is arbitrary, and that it will have a re-scaling effect on all our results, it is appropriate to consider some alternative rates. We do this in Figure 8, where we see that, as expected, we get the same overall results, only re-scaled. This provides a measure of precision to our estimation of Gini variance, which we now conclude should lie between 0.23 and 0.3. Regardless of where exactly this value falls in the interval, the Gini impact is highly significant, and the assertion that it constitutes more than half of the variance in wealth Gini between countries in the data remains true.

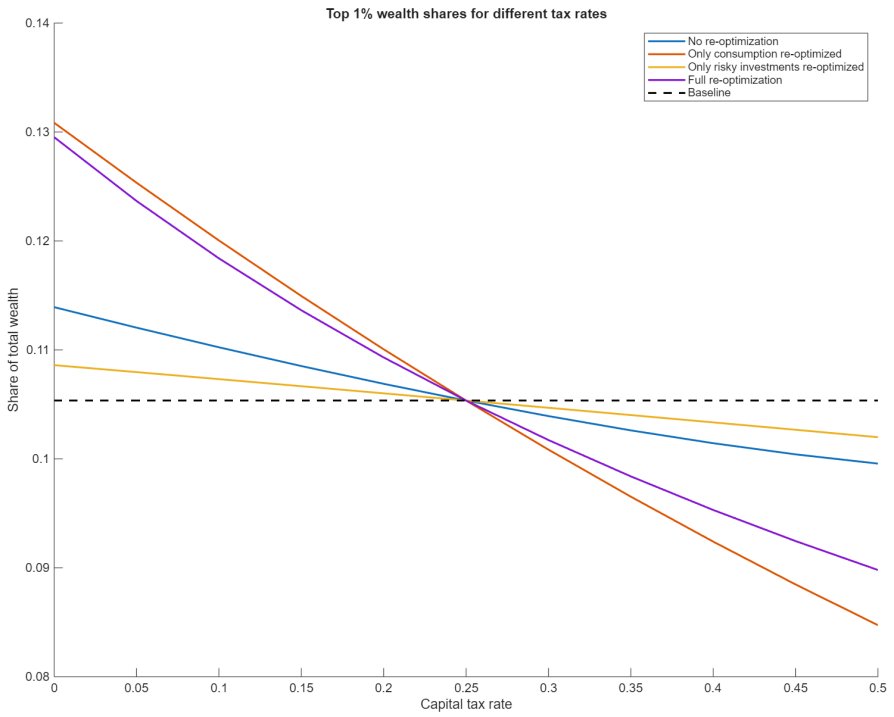



Figure 9: Plot of the share of total wealth held by the top 1% of the population for various tax rates in our different re-optimization scenarios.

Finally, in Figure 9, we immediately notice that using top wealth shares as a measure yields reduced inequality in all four scenarios. This confirms our hypothesis that Gini was increasing in the no re-optimization case due to perverse effects at the lower end of the wealth distribution. Additionally, we

notice that the effect of taxes is now largest for when only consumption is re-optimized, rather than for a full re-optimization, which is consistent with our findings from the Lorenz curve in Figure 2. This is seemingly because re-optimization of risky investment is a strong mitigating force to the effect of taxes. Although we also saw a weak tax effect for the same scenario when considering Gini, we now have a weaker effect than the no re-optimization scenario. This shows that although more wealth is accumulated at the lower end of the distribution in this scenario, wealth is also dispersed from the increased return variance, which becomes especially pronounced at the top of the distribution. Additionally, these results also hold true for the top 0.1% wealth shares (see figure C.3 in the appendix).

# 6 Analysis

The results in the previous sections are clear: higher capital income taxes do reduce inequality. The magnitude of this effect varies depending on how individuals react to the change, with the highest effect being in the scenario of full re-optimization. Given that our model builds on individuals investing and consuming optimally, this will constitute the main scenario in our analysis. Now, given that we noticed substantial effects of taxes in this scenario, this raises the question of how policymakers should react.

## 6.1 Policy Implications and Limitations

In order to approach the question of how policy makers should react to our results, we need to first establish what we want to accomplish regarding wealth inequality. This discussion might seem a formality, but it cuts deeply into the concept of fairness. Ultimately, there is no theoretical answer to such a question, so let us consider the data.

In their study, Almås, Cappelen, and Tungodden (2020) conduct an experiment where a sample of people from Norway and the United States get to re-distribute income between two workers. They find that (a) Americans accept higher inequality overall, and (b) both nationalities accept significantly higher inequality when it is merit-based. Using the Norwegian results as proxies for Sweden, we get an acceptable income Gini range of 0.167-0.322 depending on the degree of meritocracy. Interestingly the Swedish income Gini coefficient does fall in this range, as does the coefficient for e.g. Norway and Denmark.

Extrapolating from this acceptable income Gini to a corresponding wealth Gini is no easy task. Essentially, this is what we are doing in our simulations, but, as we found, this depends on other exogenous variables such as the capital income tax. What can be said, however, is that the wealth inequality stemming from differences in skill should in principle be more acceptable than that from chance. On the one hand, the literature is in agreement that most of wealth inequality stems from household return heterogeneity rather than pure chance (Krusell and Anthony A. Smith 1998; Benhabib et al. 2011). On the other hand, return heterogeneity was in turn found to not be well explained by skill, but rather systematic risk exposure and increasing investment shares (Bach et al. 2020; Benhabib and Bisin 2018). This makes wealth inequality particularly tricky to decompose into a merit- and a chance component, but doing so, as well as subsequently developing a theoretical relationship between acceptable income- and wealth Ginis, would constitute interesting further research.

Although we do not have a precise target wealth Gini, we can look at public sentiment to give us some direction. In a survey to EU countries, Hofmann, Marterbauer, and Schnetzer (2025) finds that 52% of Swedes consider the top 5% wealth share to be unfairly high, compared to 34% thinking the same for income. This indicates that some reduction of wealth inequality is desirable, and so from our results it would stand to reason that Sweden should increase its capital income tax rate somewhat. However, naturally, it is not that simple.

Firstly, as mentioned in the introduction, Sweden has an exceptionally high capital income tax rate (8th highest globally), but with certain caveats (pension, ISK, and real estate). Given limitations in the dataset of this study, we were unable to control for this inconsistent application of capital income taxes, and only know the impact of increases in the effective average tax rate. However, it remains to be determined how this average is best increased, as simply increasing the headline 30% rate might have unanticipated effects. Indeed, if a household consistently generates high returns, they will prefer an investment savings account, leaving their investments unaffected by this headline rate change.

Secondly, our results rest on some assumptions that need to be challenged. Most significantly, one consistent theme for how taxes reduced inequality in our simulations was increasing wealth levels at the lower end of the distribution. We interpreted this as capital income taxes reducing the effect of the risk free rate on negative wealth, which acts as an effective interest rate, caus-

ing individuals to escape negative wealth faster. However, for this reduction of effective interest rates to hold true the individual needs to generate sufficient capital income taxes every year in order to utilize the tax shield from their interest payments, which themselves are unaffected by capital income taxes. This is a strong assumption, and if it turns out to not be true, the effect of capital income taxes might be reduced significantly. Moreover, we fall victim to the classic assumption of rational individuals all following optimal portfolio theory. As we saw in our analysis of heterogeneous re-optimization, the effect of taxes is potentially reduced if not all individuals adjust their investments to retain optimal portfolios.

Finally, it is also worth mentioning that since our simulation strictly focuses on inequality in the cross section, any external effects of tax changes are not accounted for. Potential effects include reduced investments and emigration of talent, both being negative for the aggregate economy. Indeed, it is well established that overall higher taxes is negative for long-run economic growth (Alesina and Rodrik 1994). Further, Ferraro, Ghazi, and Peretto (2020) finds that reducing capital gains taxes by 1pp leads to an increase of 0.2pp in economic growth, stating that the personal capital gains tax effectively is a tax on corporations. These factors, of course, need to be considered alongside inequality by any policy maker. Accordingly, our results do not tell us that capital income taxes should be increased, but rather that said taxes are a promising avenue for further research and consideration.

## 6.2 Further Research

Other than developing a theoretical wealth Gini target, we propose further research to be conducted into: extending our model with more data, considering the effects and feasibility of progressive capital tax rates, and exploring other avenues of wealth inequality reduction.

First, as mentioned in the previous section, our results are calculated for changes in the effective average capital income tax rate, which is different from the headline capital income tax rate. Indeed, a policy-maker wanting to increase this effective average rate, has different rates as levers (e.g. headline rate and flat-rate tax for the ISK), and different adjustments that generate the same average rate might have drastically different effects on inequality. Running the simulations on the underlying micro-dataset, and adjusting these capital income tax rates separately, would generate more actionable results as a policy-maker would know what lever is best to adjust.

Moreover, by extending the dataset, our model could be further refined by more precisely estimating $\sigma_w$ and $\sigma_r$, as well as including a $p_{\text{reimb}} \neq 1$. For the standard deviations, we are able to calibrate them together in order to generate the final group level Gini in the data, but by having access to the initial Gini these parameters could be calibrated in sequence. Although we do not find material differences in our results when changing these parameters, it would be important if a policy-maker has access to a target wealth Gini, as they would then need to know by how much to change taxes. As for $p_{\text{reimb}}$, we found a high dependence of tax effects on the selection of this parameter, but for tractability of the model we had to set it to 1 for most of our simulations. Further research would be necessary in order to both estimate this parameter from asset trading data, as well as incorporating it into our scenarios, which is difficult as we can no longer set $\mu_{\text{tax}} = (1 - \tau)\mu$ for our derivations in appendix B.

Second, given that Hubmer et al. (2021) finds reduced tax progressivity to be the key force driving wealth inequality in the US, it would be reasonable to consider progressivity for capital income taxes. Indeed, a few countries do employ progressivity for capital income taxation, which could act as examples to study the feasibility of such a system in Sweden. There are potentially great benefits from such a scheme; Saez (2013) finds that "in contrast to linear taxation, optimal nonlinear capital taxation can have a drastic impact on the long-run wealth distribution". Extending this analysis by, as in this paper, simulating the effect of progressive capital income taxes on Swedish data would be of interest in order to assess the numeric differences in tax effects.

Finally, although capital income taxes are a promising avenue for reducing wealth inequality, there are, naturally, other policy levers that need consideration. In the literature, estate taxes are mentioned to have uncertain effects (Benhabib et al. 2011), making these an interesting consideration. Given that the wealth Gini varies by 0.44 between countries in the data (UBS 2025), and that we found capital income taxes to generate a variation of roughly 0.25 (0.23-0.3 depending on baseline tax rate), there are clearly other important factors at play. Identifying these and combining them into one model would then allow policy-makers to consider the inequality effects from combinations of these different policy levers.

# 7 Conclusion

In line with the existing literature we find that, overall, applying a flat capital income tax reduces wealth inequality. In our main scenario, capital income taxes in the range 0-50% generate a variation of roughly 0.25 in the Gini coefficient, which is substantial. However, if individuals only partially re-optimize, the effect of capital income taxes is significantly reduced, with potential further reductions for when only the high return households re-optimize. The reduction in inequality is seemingly largely driven by increased wealth at the bottom of the distribution, which in turn seems to be caused by increased tax shields generated from interest payments. Considering top wealth shares instead of the Gini coefficient gives largely the same results, but for this measure the results are more intuitive; re-optimizing risky investments reduces the effect of capital income taxes, and in the scenario of no re-optimization we still get reduced inequality from higher tax rates. Both of these findings need to be considered in conjunction, as each measure highlights a different aspect of wealth inequality.

Although it would be convenient to state that these results imply that Sweden should increase its capital income tax rate to reduce wealth inequality, the policy implications are more nuanced than that. Indeed, this thesis highlights the importance of capital income taxes for managing wealth inequality, but the results are not comprehensive enough to make such an argument. Firstly, our model needs to be developed further, differentiating between asset classes and investment vehicles that are taxed differently, and incorporating additional complexities such as allowing for $p_{\text{reimb}} \neq 1$. Secondly, when the model is capable of outputting a very precise relationship between capital income tax rates and wealth Gini, we need to establish a wealth inequality target. Finally, capital income tax needs to be compared to other policy levers to establish the best course of action, where investment skill and risk-taking are rewarded to an extent, but significant wealth movements caused by luck are mitigated. All the while, model assumptions need to be questioned, and potential external effects considered. This is a tall order, but given how heated the topic of wealth inequality has become in macroeconomic discourse during recent years, we certainly believe that this is a worthwhile topic to investigate further.

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# A Wealth- and Income Inequality

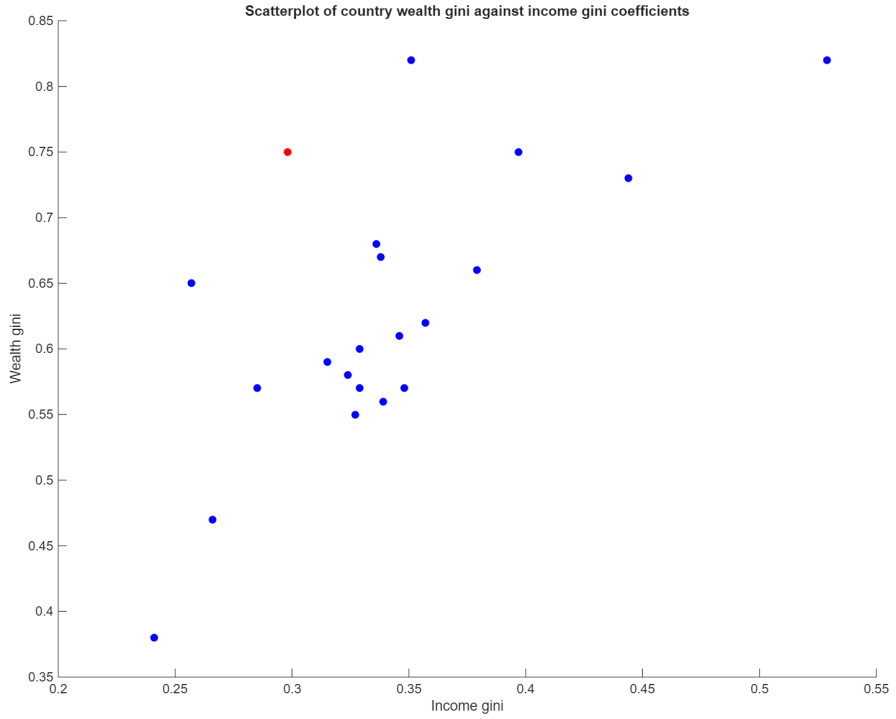



Figure A.1: Income- and wealth Gini for a selection of OECD countries. Income coefficients are from the World Bank (2021), and wealth coefficients from the 2025 UBS global wealth report. Sweden is highlighted in red.

# B Portfolio re-optimization after capital income taxes

## B.1 Risky investments

Given the individual's wealth accumulation equation

$$w_{t+1} = (1 + r_{f_t})w_t + \left(\frac{(1^T\Omega^{-1}\mu)\cdot er_t}{\gamma} - a_t\right)(w_t + h_t + g_t) + y_t + p_t$$

we are interested in showing that risky investment returns is unaffected by capital income taxes, i.e. that

$$x^* := \frac{(1^T\Omega^{-1}\mu)\cdot er_t}{\gamma} \tag{1}$$

does not change if we set $\mu_{\text{tax}} = (1-\tau)\mu$ and $er_t^{\text{tax}} = (1-\tau)er_t$.

Let us denote the risky investment return after applying capital income taxes by $x^*_{\text{tax}}$. We already know what happens with $\mu$, so let us instead look at $\Omega$, which is defined as:

$$\Omega_{i,j} := Cov(\mu_i, \mu_j) = \mathbb{E}\big[\big(\mu_i - \mathbb{E}[\mu]\big)\big(\mu_j - \mathbb{E}[\mu]\big)\big].$$

Applying a tax $\tau$ on $\mu$ then gives us

$$\begin{aligned}
\Omega^{\text{tax}}_{i,j} &= \mathbb{E}\big[\big((1-\tau)\mu_i - \mathbb{E}[(1-\tau)\mu]\big)\big((1-\tau)\mu_j - \mathbb{E}[(1-\tau)\mu]\big)\big] \\
&= \mathbb{E}\big[(1-\tau)^2\big(\mu_i - \mathbb{E}[\mu]\big)\big(\mu_j - \mathbb{E}[\mu]\big)\big] \\
&= (1-\tau)^2\mathbb{E}\big[\big(\mu_i - \mathbb{E}[\mu]\big)\big(\mu_j - \mathbb{E}[\mu]\big)\big] \\
&= (1-\tau)^2\Omega_{i,j}.
\end{aligned}$$

Consequently, assuming $\tau \neq 1$:

$$\Omega^{-1}_{\text{tax}} = \big((1-\tau)^2\Omega\big)^{-1} = \frac{1}{(1-\tau)^2}\Omega^{-1}$$

whence, in (1)

$$\begin{aligned}
\gamma x^*_{\text{tax}} &= \left(1^T\frac{1}{\cancel{(1-\tau)^2}}\Omega^{-1}\cancel{(1-\tau)}\mu\right)\cdot\cancel{(1-\tau)}er_t \\
&= (1^T\Omega^{-1}\mu)\cdot er_t
\end{aligned}$$

proving that $x^*_{\text{tax}} = x^*$.

## B.2 Consumption

As for consumption, we need to consider the definition of $a_t$:

$$a_t := \frac{\tilde{\rho}}{1 + (\tilde{\chi}\tilde{\rho} - 1)e^{-\tilde{\rho}(T-t)}}$$

where

$$\tilde{\rho} = \frac{\big(\rho - (1-\gamma)\tilde{r}\big)}{\gamma},\ \tilde{r} = r_f + \frac{\mu^T \Omega^{-1} \mu}{2\gamma},\ \tilde{\chi} = \frac{\big(1 - e^{-\tilde{\rho}(T_d - T)}\big)}{\gamma} + e^{-\tilde{\rho}(T_d - T)}\chi.$$

Clearly, the only factor that will be affected by taxation is $\tilde{r}$, where we by the same reasoning as with risky investment get

$$\tilde{r}_{\text{tax}} = r_f + \frac{\cancel{(1-\tau)}\mu^T \frac{1}{\cancel{(1-\tau)^2}} \Omega^{-1} \cancel{(1-\tau)}\mu}{2\gamma} = \tilde{r}.$$

However, this is only accounting for $\mu$, whereas in actuality $r_f$ is also taxed, resulting in a slight change to consumption determined by:

$$\tilde{r}_{\text{tax}} = (1-\tau)r_f + \frac{\mu^T \Omega^{-1} \mu}{2\gamma}.$$

# C Robustness tests: additional figures

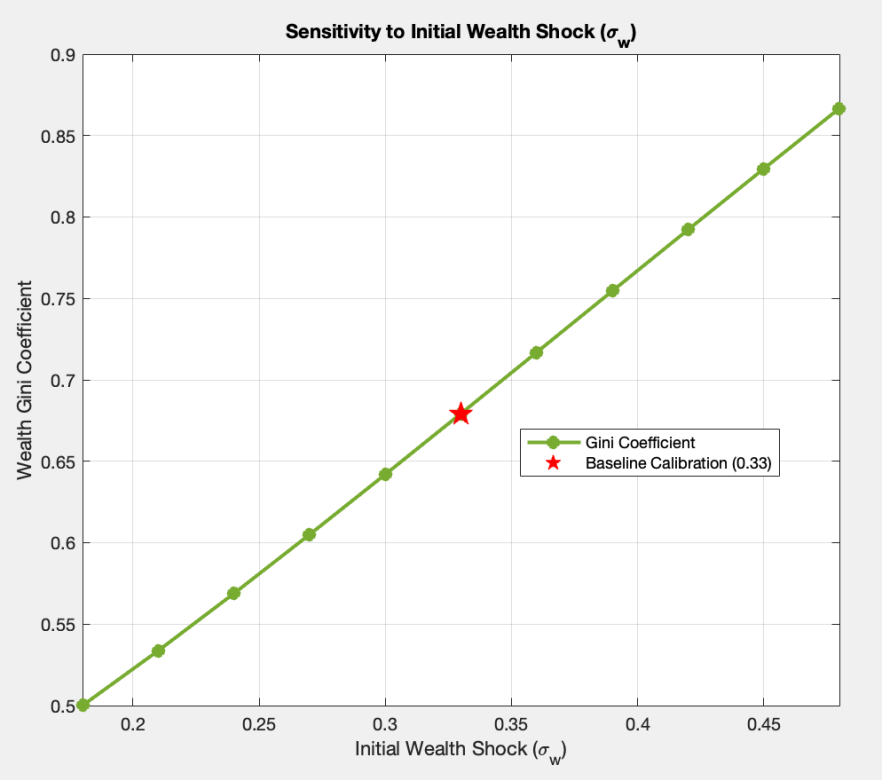



Figure C.1: Sensitivity of wealth Gini coefficient to variations in initial wealth shock magnitude around the baseline calibration of 0.33. The return shock is kept at the baseline calibration of 0.2.

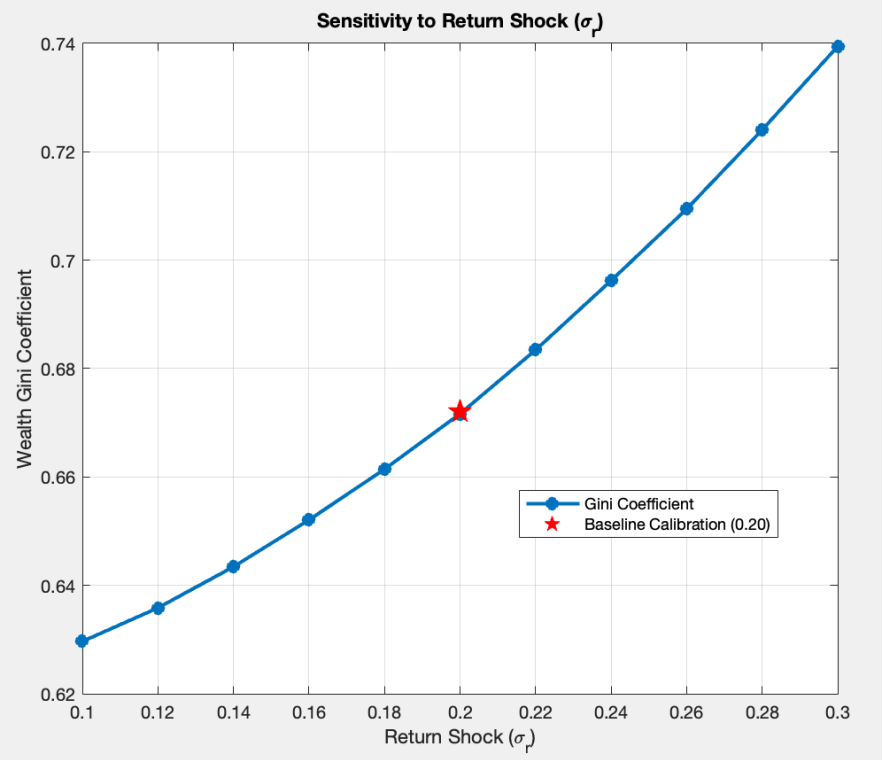



Figure C.2: Sensitivity of wealth Gini coefficient to variations in return shock magnitude around the baseline calibration of 0.2. The initial wealth shock is kept at the baseline calibration of 0.33.

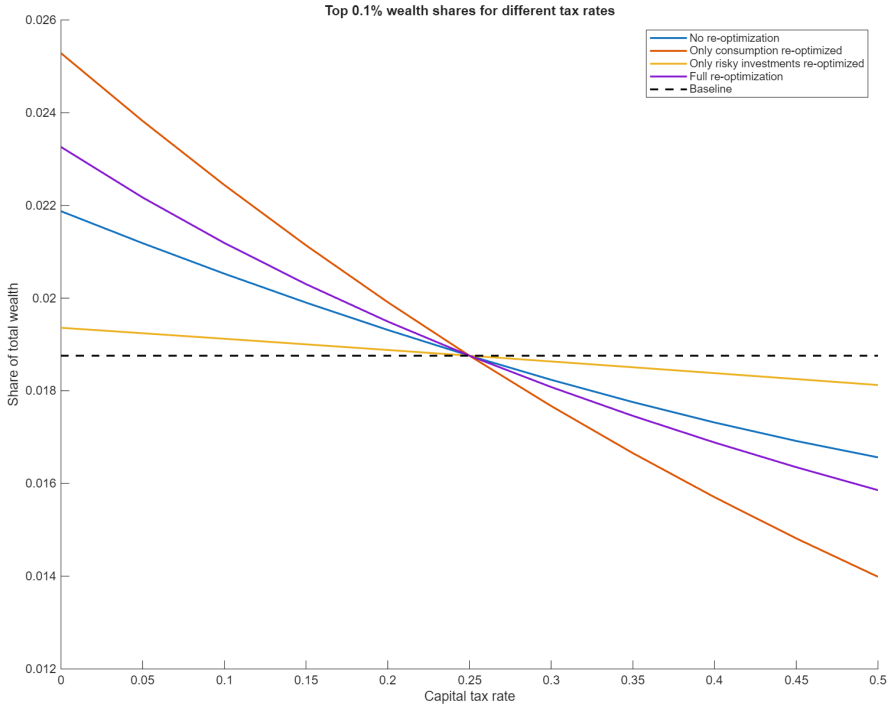



Figure C.3: Plot of the share of total wealth held by the top 0.1% of the population for various tax rates in our different re-optimization scenarios.

# D Use of AI

During the coding and writing process of this thesis, the language model Google Gemini 3.1 Pro was used as a technical assistant. The AI was primarily employed to optimize MATLAB scripts, refactor simulation loops to improve computational efficiency for the large-scale simulations, and generate visual plots. Additionally, the tool was used to proofread sections of the text for clarity and academic tone, specifically for providing synonyms and streamlining language.