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Taxing capital, but right

Why realized gains, not asset values, should guide tax policy

Florian Scheuer *UBS Foundation Professor of Economics of Institutions*

Taxing capital, but right

In a nutshell

In the current discussions about how best to tax the wealthy, one question keeps coming up: Should taxes target the fluctuating value of assets or only profits realized from sales? This policy brief highlights the need for tax policies to focus on realized capital gains rather than just the value of held assets, adapting to the various factors driving asset price changes. It also suggests to tax gains from net rather than gross transactions and to reform end-of-life provisions such as basis step-up at death, thereby eliminating distortions in portfolio choice and tackling tax avoidance strategies like "buy, borrow, die."

Opportunities for action

1
Policymakers should focus on taxing realized transactions rather than just the value of held assets whenever asset price changes are driven by factors beyond cash flows. This approach better aligns with who benefits and loses from asset price fluctuations.

2
Existing capital gains taxes often target the gross gains from each individual asset sale. Instead, we argue that a better tax base is obtained by netting across transactions in a given year. This eliminates the "lock-in" effect in portfolio choice whereby taxpayers have an outsized incentive to keep holding appreciated assets.

3
Future tax reforms should also re-evaluate policies like the "stepped-up basis," which allows resetting the value of an asset at death for tax purposes, as they enable tax avoidance strategies such as "buy, borrow, die."

In detail

The treatment of capital gains due to changing asset prices lies at the heart of many debates about the taxation of capital income and wealth. Should these gains be taxed only when realized – when the asset is sold – or as they accrue, meaning as the asset's value increases over time, even if not yet sold? Or should we perhaps tax wealth?

Prominent examples of this issue are the unrealized capital gains of billionaires like Elon Musk, Mark Zuckerberg, or Jeff Bezos. Their wealth has significantly grown due to the rising stock prices of the companies they founded. However, under the current U.S. tax system, they are not taxed on these gains until they sell their shares, allowing the increase in wealth to remain untaxed as long as they hold the assets.

This issue gained public attention in 2021 when Musk conducted a Twitter poll asking if he should sell 10% of his Tesla stock, which would trigger a considerable tax liability. This poll responded to proposals for a "billionaire's tax," which aims to tax unrealized capital gains annually, regardless of whether the assets are sold. Proponents of this tax argue that it would prevent billionaires from indefinitely deferring taxes, while opponents raise concerns about implementation challenges, potential liquidity issues for those who are "asset-rich but cash-poor," and the question how to deal with tax rebates in the case of falling asset prices.

Traditionally, most tax systems only tax capital gains when assets are sold. Yet, a long tradition in public finance has argued that unrealized capital gains should be part of the income tax base, going back to the late 19th century German lawyer Georg von Schantz and the American economists Robert Haig and Henry Simons who developed the notion of a "comprehensive income tax" in the 1920s and 30s. This idea has recently made its way into policy proposals, including by the Biden administration.[1] In the United States, such tax policies would invariably end up in the Supreme Court, which has never conclusively ruled on whether unrealized gains constitute income.[2] Because wealth changes due to asset-price movements typically dwarf ordinary saving and income flows for top wealth holders, debates about wealth taxation also often end up being about the desirability (and practicality) of taxing unrealized capital gains.

Drivers of fluctuating asset prices

This policy brief addresses the issue of finding the best way to design taxes in a world where asset prices fluctuate due to various factors. For concreteness, consider a simple asset like the stock of a company. The value of the stock reflects the present-discounted value of the flow of dividends (or profits) generated by this firm. Hence, conceptually, the stock price could fluctuate for two reasons:

1. Changes in the current or (expected) future cash flows earned by the company, or
2. changes in the discount rate used to obtain the present value of these future profits.

More generally, in this dichotomy, "discount rates" capture any source of asset price changes other than current and expected future cash flows (including time discounting but also, for instance, risk premia or investor beliefs). A key insight from modern research in finance is that the second driver of asset prices, namely changes in discount rates, is very important (Campbell and Shiller 1988). Empirically, asset prices move too much to be accounted for by changing cash flows alone, both at high frequencies and over longer time horizons (Figure 1). Indeed, over the last few decades, many countries have experienced a long-run decline in real interest rates, which has fueled a secular increase in asset valuations outpacing the rise in firm profits (Figure 2).

A key insight from modern research in finance is that the second driver of asset prices, namely changes in discount rates, is very important.

Taxing changing asset prices

Our research shows that optimal capital gains taxes must target realized trades – sales and purchases, not asset holdings – whenever asset prices fluctuate beyond movements due to cash flow changes. One simple and robust tax that works independent of the source of asset-price changes is a combination of realization-based capital gains and dividend taxes.

The reason is that, holding constant cash flows, asset-price increases redistribute

toward asset sellers who realize capital gains, away from asset purchasers who pay a higher price for a given dividend stream, while not directly affecting those who do not trade. The box on the right side provides a numerical example illustrating these effects. As a result, when asset prices rise, sellers benefit and hence need to be taxed whereas buyers lose and hence need to be compensated. This is achieved by taxing realized gains and losses. If cash flows themselves also change, they are similarly to be taxed, as achieved by a dividend income tax.

Optimal capital gains taxes must target realized trades whenever asset prices fluctuate beyond movements due to cash flow changes.

Taxes that are optimal in environments with constant asset prices cease to be optimal, or change in counterintuitive ways, when asset prices fluctuate. While a wealth tax may be optimal with constant asset prices, its progressivity needs to change whenever asset prices move and optimal taxation may even prescribe tax cuts for the wealthiest when asset prices rise. Intuitively, if the rich are net purchasers of the assets they hold, they should be subsidized rather than taxed when asset prices increase. This illustrates why the fluctuating market value of investors' wealth is a problematic target for tax policy. The box on the next page provides a numerical example. Taxing unrealized capital gains is optimal only in restrictive knife-edge cases, so that our research findings also stand in contrast to the classic Haig-Simons comprehensive income tax concept.

Unrealized capital gains and interest rates: a simple example

A significant fraction of what we call capital gains is due to variation in the discount rate rather than variation in dividend income. Who gains and loses from these capital gains? Here we provide a simple numerical example. Take a stock that pays a constant dividend of $100 per year forever, and suppose the interest rate is 10%. Then the stock price, which reflects the present-discounted value of the flow of dividends, must equal $1,000. Now suppose the interest rate falls to 5%. As a result, the stock is now worth $2,000: The stock price doubles, a massive capital gain. But notice that the dividends paid by the stock have not changed at all: They are still $100 per year. Therefore, the income and lifetime consumption possibilities for someone who does not sell have not gone up. The capital gains of $1,000 are a pure "paper gain." Of course, an investor who sells the stock can cash in on the gains, resulting in an increase in consumption. Conversely, an investor buying the stock loses: She needs to pay twice the amount for the same flow of future dividends. In sum, sellers gain, buyers lose and those who hold the stock are unaffected. This is why a tax on realized gains is aligned with who gains and loses from asset price fluctuations. By contrast, a tax on unrealized gains (or a wealth tax) would fully tax the "paper gains" of those who neither buy nor sell even though they do not benefit from their capital gains.

The one clear increase in income which should be taxed is an increase in dividends. For example, suppose dividends increase from $100 to $200 per year while the interest rate remains unchanged at 10%. This also results in the stock price rising from $1,000 to $2,000, the same capital gains as before. But now even the holders of the asset benefit: Their annual income doubles. A dividend income tax would correctly target these gains.

Wealth taxes as taxes on "presumptive income"

Wealth taxes are sometimes likened to taxes on "presumptive income" (Zucman, 2024, or the Dutch "box 3" wealth tax): For example, a 2% wealth tax is equivalent to a 40% tax on presumed capital income from a constant asset return of 5%. Here we show why taxing fluctuating wealth market values based this analogy is problematic. Consider an investor with an asset (e.g., a private business) initially worth \$100m that generates a dividend income of \$5m per year. In other words, the asset's rate of return is 5%. Suppose there is a 2% wealth tax, resulting in a tax liability of \$2m per year. Now suppose the asset value increases to \$200m so that also the investor's wealth tax liability doubles to \$4m. What happens to the investor's presumptive versus actual income? Suppose first that the increased asset value is exclusively due to higher cash flows, i.e., dividend income also doubles to \$10m per year. This means that the asset return remains constant at 5% and therefore the increase in presumptive income exactly matches the increase in actual income. However, in all other cases in which dividends increase by less than a factor of two, this is no longer true: Actual income increases by less than presumptive income. The problem is that it is incorrect to apply the same constant 5% presumed return to the new valuation of \$200m because the true return to wealth falls. In the extreme case in which dividend income remains fixed, presumptive income doubles to 5% × \$200m = \$10m while actual income is unchanged at \$5m. The unchanged dividend income corresponds to a lower return to wealth of only 2.5% so the correct income calculation would have been 2.5% × \$200m = \$5m. Thus "presumptive income" is overestimated, and wealth taxes are suboptimal whenever asset prices change for reasons other than cash flows.

Relating to capital gains taxes in practice

While our proposal for capital gains and dividend taxes is reminiscent of realization-based systems in practice, it also differs in important ways. Notably, capital gains taxes should ...

1. not only tax sellers but also provide a refund for buyers who experience "purchasing losses" when prices rise, and compensate realized capital losses and tax "purchasing gains" when prices fall,
2. tax net rather than gross transactions: Selling and reinvesting at the same price incurs no tax liability,
3. adjust for inflation, taxing only the real and not nominal gains.

Dividend taxes should …

1. include imputed rents for owner-occupied housing (as is the case, for instance, in Denmark and Switzerland),
2. treat dividends and asset price increases due to share buybacks equally, thus being neutral with respect to firms' payout policy and capital structure.

Portfolio choice and "lock-in" effects

Realization-based taxes incentivize deferring the liquidation of appreciated assets and thus distort optimal portfolio rebalancing in response to asset price changes. This is often referred to as a "lock-in" effect. For instance, consider an investor who holds an asset that has, so far, accrued an unrealized capital gain. She must decide whether to hold the asset for an additional rate of return or realize the gain and reinvest at some market rate of return. A tax on realized capital gains makes the second option less attractive, in turn making the investor willing to keep holding the asset even when the additional rate of return is less than the market return. In other words, the tax prevents the investor from rebalancing and induces her to hold a distorted portfolio purely for tax reasons.

Our research shows that an optimally designed tax system avoids such distortions even when it targets realized capital gains. It does so by targeting total net trades, i.e., netting all sales and purchases across the entire portfolio of assets, rather than taxing the gross gains from selling individual assets: When an investor sells one asset and uses the proceeds to purchase another one, there is no tax burden, thus eliminating the lock-in effect. The lock-in effect results from the fact that, in practice, the capital gains from individual gross trades are taxed. Instead, pure portfolio rebalancing trades should not trigger a tax liability. In the example above, the investor realizing the gain and reinvesting at the market rate should not be subject to a capital gains tax, which ensures that her portfolio choice is not tax-distorted.

Selling versus borrowing

An argument that frequently comes up in discussions about the effects of asset-price increases is that wealthy individuals do not necessarily need to sell their appreciated assets by borrowing against them. The Economist (2024) provides an instructive example:

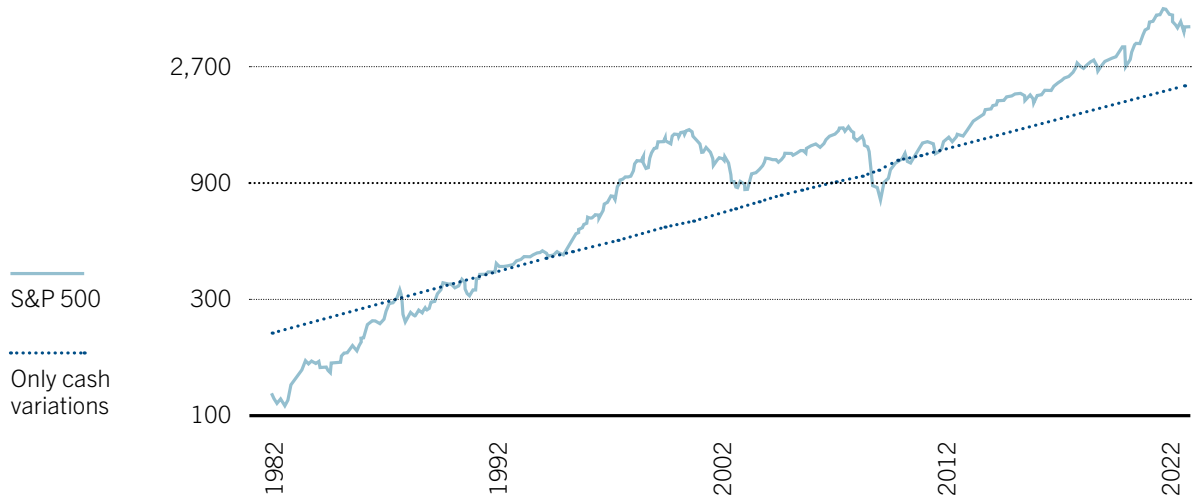
"Say you own a successful business – so successful that your stake in it is worth $1bn. How should you finance your spending? If you [...] sell $20m-worth of shares [...], the entire sum represents capital gains and will be taxed at 20%, which would mean a $4m hit. What if, instead, you called up your wealth manager and agreed to put up $100m-worth of equity as collateral for a $20m loan. [...] Returns from holding the equity, rather than selling it, would easily have covered the cost of servicing the borrowing. Because the proceeds of loans, which must be eventually repaid, are not considered income, doing so would have incurred no tax liability at all."

Perhaps surprisingly, our main insight that tax policy should target realized gains only is independent of whether and how much investors borrow against their assets. Contrary to recent proposals (for example, Fox and Liscow 2024), it is not necessary to tax borrowing. The reason (sometimes missed in the popular debate) is that, also with the option to borrow, investors need to sell their appreciating assets at some point in order to repay their loans and benefit from rising asset prices. If investors never sell their assets, they will need to repay their loans out of income they could have otherwise consumed and hence they do not benefit from the capital gains. On the other hand, if investors do sell to repay the loan, the realized trade should be taxed at that point.

Perhaps surprisingly, our main insight that tax policy should target realized gains only is independent of whether and how much investors borrow against their assets.

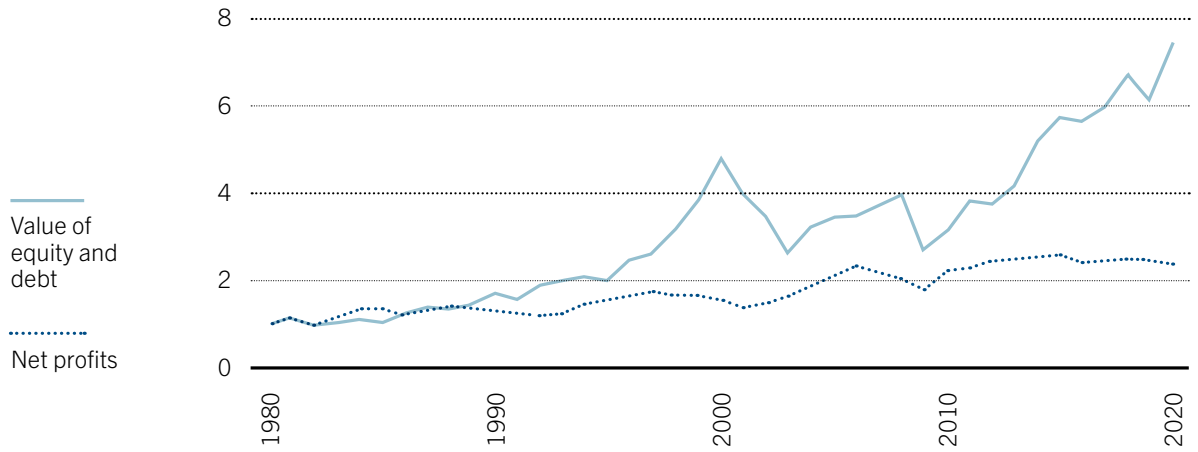
The Economist (2024) quote above emphasizes an important motive for borrowing rather than selling an asset: The asset's return often exceeds the rate at which investors can borrow. However, while such return differences are undoubtedly important, they are not specific to the case of wealthy individuals borrowing against appreciating assets. Instead, they are a feature of any levered investment strategy. For example, many homeowners with an outstanding mortgage invest some of their income in the stock market rather than prepaying their mortgage, precisely because stock returns exceed mortgage interest rates. Investors using levered investment strategies to take advantage of such return differences should not be considered tax avoidance.

Figure 1:
Capital gains from rising asset prices



Notes: This figure compares the evolution of asset prices driven by two factors: actual market performance (S&P 500) and cash flow variation alone. The solid, blue line depicts market prices, reflecting both cash flow and discount rate fluctuations. In contrast, the dotted, blue line isolates the effect of cash flow changes, assuming the discount rate remains constant. The difference between the two lines highlights the impact of discount rate variations on asset prices, illustrating how market sentiment or interest rate changes can lead to larger price fluctuations beyond fundamental cash flow growth, both in the short and long run.
Source: Bordalo, Gennaioli, Porta, O'Brien, Shleifer, 2023

Figure 2:
Corporate valuations have surged far beyond profit growth
Index (1980=1)



Notes: This figure contrasts the evolution of net profits and the market value of U.S. non-financial corporate businesses (equity plus debt) since 1980. While net profits (light blue line) have grown moderately over the past four decades, the value of equity and debt (dark blue line) has increased much more sharply, especially since the 1990s. The divergence between the two curves illustrates that much of the rise in corporate valuations stems not from higher profits, but from other factors including a secular decrease in interest rates.
Source: U.S. non-financial corporate businesses

Step-up in basis at death and "buy, borrow, die" tax avoidance strategies

The capital gains tax systems in the U.S. and many other advanced economies feature a particularity referred to as step-up in basis at death for inherited assets. This tax rule eliminates the taxable capital gain that occurred between the original purchase of the asset and the time of inheritance, thereby reducing the heir's tax liability. Effectively, it completely exempts from taxation all capital gains accrued during the original holder's lifetime if she never realizes the gains but passes them along at death. This is considered a major tax loophole, and indeed comparisons between capital gain realizations reported on income tax returns with historical stock market gains suggest that a large share of all capital gains on corporate stock was never taxed purely because of this provision.

Our findings imply that this tax rule should be abolished in favor of a "carry-over basis" approach, which makes the heirs subject to a tax on the full gains going back to the original purchase price, and which is already used by a number of countries including Germany, Italy, and Japan.

Relatedly, a tax avoidance strategy of wealthy families known as "buy, borrow, die" has received attention in recent years. The idea is to borrow against appreciating assets rather than selling them and then taking advantage of the stepped-up basis at death, thereby avoiding capital gains taxes altogether. Eliminating the stepped-up basis loophole would also close the door for this avoidance strategy.

Conclusion

This policy brief explores how modern finance principles can inform optimal capital taxation, particularly in the context of fluctuating asset prices. Traditional approaches often focus on cash flows as the main factor influencing asset prices, but our research expands the view to include changes in discount rates, risk premia, and subjective beliefs.

Prioritizing realized transactions over fluctuating asset values leads to better targeted tax policies in the complexities of modern financial markets.

It is useful to juxtapose our results with the following naive intuition implicit in proposals for wealth taxes or taxes on unrealized capital gains: When the value of Jeff Bezos' Amazon stocks doubles so should his tax liability. We show that this intuition is, in general, incorrect. Optimal taxes instead generally depend on (i) whether Bezos sells his Amazon shares and (ii) whether and by how much cash flows, here Amazon's profits, increase. Our research emphasizes that tax systems focusing solely on asset holdings, without considering transactions, are generally suboptimal. Prioritizing realized transactions over fluctuating asset values leads to better targeted tax policies in the complexities of modern financial markets.

This UBS Center Policy Brief summarizes "Putting the 'Finance' into 'Public Finance': A Theory of Capital Gains Taxation" by Mark Aguiar (Princeton University), Benjamin Moll (London School of Economics), and Florian Scheuer (University of Zurich). NBER Working Paper (2024).

Further reading

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Author

Florian Scheuer
UBS Foundation Professor of Economics of Institutions

Notes

1. U.S. Office of Management and Budget (2022), U.S. Department of the Treasury (2022), Saez et al. (2021), Zucman (2024), and The Economist (2024). Leiserson and Yagan (2021) calculate that the 400 wealthiest U.S. families paid an average tax rate of only 8.2% in the years 2010 to 2018 by including unrealized capital gains in the tax base.

2. This is despite the Supreme Court having repeatedly heard such cases since Eisner vs. Macomber in 1920. The key question is whether unrealized gains constitute income under the 16th Amendment of the U.S. constitution.

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