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CALIFORNIA BILLIONAIRES: WEALTH, TAXES, AND WEALTH TAX REVENUE ESTIMATES

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ABSTRACT

This paper documents the wealth of California's billionaires and the taxes they pay. California billionaires' wealth exceeds $2 trillion today, the equivalent of 50% of California's GDP. It has grown 144% from 2023 to 2025, fueled by the AI boom. Over the longer run, the real wealth of California's billionaire class—the 0.0002% richest households—has been multiplied by 30 from 1982 to 2025, while average real family income in California has about doubled. California billionaires pay about 0.2% of their wealth in California income tax ($3.2 billion/year), representing 2.4% of total California income tax revenue on average over 2023-2025. Using Securities and Exchange Commission data from Alphabet, Meta, Oracle, and Nvidia since 2004, we estimate the trajectory of wealth, income, and taxes paid by the top 4 California billionaires—Page, Brin, Zuckerberg, Ellison (through 2020), and Huang (since 2021)—focusing on their business wealth. This group alone holds nearly $1 trillion in business wealth, almost half of total California billionaire wealth. For this group, wealth growth (+322% over 2023-2025) and low taxation (0.04% of wealth in annual California income tax) are more pronounced. The proposed one-off California billionaire tax of 5%, payable over 5 years, is both small relative to California billionaires' wealth gains and large relative to the taxes they currently pay. We estimate that it could raise about $100 billion, with comparatively minor impacts on income tax revenue. Using empirical estimates of mobility responses to wealth taxation, we find that an annual wealth tax on California billionaires could raise substantial additional revenue even after accounting for income tax losses due to mobility.

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All the results and computations in excel format are available at
https://eml.berkeley.edu/~saez/BSZ_MainTablesFigures.xlsx
California Billionaire Wealth Tracker is available at
https://cabillionairetracker.org/

The 2026 Billionaire Tax Act initiative recently submitted the signatures required to be put on the ballot for the November 2026 elections in California. The primary goal of the initiative is to raise revenue by imposing a one-time 5% wealth tax on California billionaires to offset the large federal cuts to Medicaid (government funded health insurance for low-income families) and other programs enacted by the Trump administration and Congress in July 2025 (the act is called HR1 or OBBBA).

In principle, the state could undo the federal spending cuts with additional California tax revenue, but it is challenging for the California government to raise taxes as it requires 2/3 supermajorities in the legislature (since Proposition 13 was adopted in 1978). Hence, in recent decades, tax and spending increases in California have been driven primarily by ballot initiatives. The California billionaire tax initiative fits this pattern.

This ballot initiative has generated intense interest in the public debate. The reason for targeting specifically California billionaires for new revenue invoked by proponents is simple: their wealth has grown fast in recent years and decades and they currently pay low taxes relative to their large wealth gains. As a result, taxing billionaires can both raise substantial revenue and restore tax progressivity at the very top. At the same time, opponents worry that California billionaires may leave the state, expecting such wealth taxes to be renewed, possibly reducing future income tax revenue to the state, and its economic dynamism as the engine of tech innovation.

This paper presents a number of statistics to help illuminate this debate. Using Forbes billionaire data, we obtain seven main findings.

First, California billionaires' wealth has grown 144% in the last 3 years (2023-5) and is over $2 trillion by the end of 2025, almost half of California annual GDP in 2025. In 2026, as of May 8, it has grown a further 12.5% to $2.31 trillion and there are 250 billionaires.

Second, since 1982 and controlling for price inflation, the wealth of California's billionaire class (top .0002% richest families) has grown at 8.2% per year on average while average family income in California has grown at 1.5% per year. Hence, while Californians income has doubled on average since 1982, billionaire class wealth has been multiplied by 30.

Third, in recent years 2023-2025, we estimate that California billionaires pay about 0.2% of their wealth in California individual income tax or about $3.2 billion total per year which is 2.4% of all California income tax revenue or 1% of total local and state California taxes.

Fourth, using Securities and Exchange Commission data, we estimate that the top 4 richest (Page, Brin, Zuckerberg, Huang) pay .07% of their wealth or $0.27 billion total each year in

California individual income tax (average over 2019-2025) on their company wealth (Alphabet, Meta, Nvidia). In 2019, 2020 and 2023, Page and Brin did not pay California individual income tax on their Alphabet wealth as they did not sell stock, received no dividends, and received no compensation, while their share of Alphabet profits was about $10 billion each over these 3 years.
Fifth, including all taxes at all levels of government, we estimate that California billionaires pay about 1.1% of wealth in total taxes each year (2023-2025) which is modest relative to their average annual wealth gains of about 30% in each of those years.
Sixth, we estimate that a 5% one-time wealth tax on California billionaires can raise about $100 billion which is large relative to taxes billionaires pay yet small relative to their wealth gains, with comparatively modest income tax losses due to potential mobility.
Seventh, we estimate that a permanent wealth tax on California billionaires can raise substantial revenue even taking into account mobility responses estimated from economic studies of regional wealth taxes.

The paper is organized as follows. In Section 1, we document California billionaire wealth growth in both the short-term and long-term. In Section 2, we estimate the taxes paid by California billionaires. In particular, we show that Securities and Exchange Commission data can provide a very granular and accurate picture of the wealth, income, and taxes paid by the top 4 centi-billionaires (Larry Page, Sergei Brin, Mark Zuckerberg, and Jensen Huang) whose wealth is almost entirely derived from publicly traded stock from the companies they founded or run (Alphabet/Google for Page and Brin, Meta/Facebook for Zuckerberg, and Nvidia for Huang). Section 3 draws from the empirical literature on wealth taxation to analyze the prospects of taxing billionaires wealth as a one-time tax (in Section 3.1) or as a permanent annual tax (in Section 3.2).

1 California Billionaires Wealth Growth

In this section, we document the growth of California billionaires' wealth, first in the short-run since 2019 and second in the longer-run since 1982 using Forbes billionaires' data. Forbes has developed a sophisticated methodology to find and track billionaires' wealth. Forbes systematically uses Securities and Exchange Commission (SEC) data to track down ownership of publicly traded stock as large shareholders (owning 5% or more of a company) and company insiders (board of director members or executive officers) are required to report their ownership

and stock transactions to the SEC. This form of wealth is 2/3 of total billionaires' wealth in California today and is extremely well measured.

Short-run billionaire wealth growth

The Forbes real-time billionaire list provides daily data on the wealth of all California billionaires identified by Forbes since 2019. We include both US and non-US citizens California residents (according to Forbes) in our estimates. There are 239 CA billionaires with total wealth of $2,052 billion at the end of 2025.[2]

Table 1 Panel A provides basic statistics on California billionaires in recent years. Appendix Table A1 provides the same statistics at the US level (instead of California). Figure 1 plots the trajectory of California's billionaires' total wealth (in nominal current dollars) at the end of years 2019 to 2025, the longest time series we have for all California billionaires. It also plots the wealth trajectory of the top 4 (Larry Page, Sergei Brin, Mark Zuckerberg, and Jensen Huang) who are centi-billionaires (wealth above $100 billion). Larry Ellison is excluded from these series throughout the 2019 to 2025 period for consistency.[3] The reason for considering this top 4 group specifically is because they account for almost half—43%—of the total CA billionaire wealth (as of the end of 2025). This shows that wealth is also very concentrated within the billionaire class itself. Furthermore, because the wealth of the top 4 is overwhelmingly (97% at the end of 2025 to be precise) from the publicly traded corporations they founded and/or still run (Alphabet for Page and Brin, Meta for Zuckerberg, and Nvidia for Huang), the Securities and Exchange Commission (SEC) public disclosures allow us to estimate precisely their wealth, their income, and the taxes they pay on their company wealth. Their example illustrates very well the steep upward wealth trajectory and the comparably low taxes they pay. The top 4 are also taking part in the public debate on the California billionaire tax. Larry Page and Sergei Brin are considering leaving California because of the tax and Sergei Brin has contributed to the campaign against the tax. Mark Zuckerberg has also bought real estate in Florida which may signal a future move as well.

[2] This is a revised estimate relative to the one provided in Galle et al. (2026a) as it excludes Larry Ellison whom Forbes lists as California resident until mid-January 2026. Forbes magazine reported on February 27, 2026, that Ellison made a public declaration of domicile in Florida already in May 2023 (Liu 2026). Hence, we perform an ex-post correction to the Forbes list by discarding Larry Ellison as California resident following his change of domicile. Appendix section A provides detailed information on the estimation of California billionaire wealth.

[3] According to Forbes, he left for Hawaii in late 2020 and then moved to Florida in 2023 (see above). He was almost surely a California resident for tax purposes in 2019 (and before).

Figure 1 shows that California billionaire wealth risen sharply over the last 3 years 2023-2025 growing from $843 billion at the end of 2022 to $2,052 billion at the end of 2025. This is a growth of 144% in just three years. Annual growth was 31% in 2025, 36% in 2024 and 37% in 2023 (Table 1, Panel A). By the end of 2025, California billionaire wealth is 48% of California GDP for 2025, up from 23% in 2022. This means that the 239 California billionaires could buy about half of what California's economy has produced during year 2025. It is a useful measure of the weight of billionaires relative to the size of the entire economy. 1. In 2026, as of May 8, it has grown a further 12.5% to $2.31 trillion. We keep track of California billionaires' wealth on a daily basis here.

Table 1 shows that wealth in the form of large holdings of publicly traded stock reported through SEC forms is 67% in 2025 up from 48% in 2022. From now on, we call such SEC reported publicly traded stock as public stock wealth. We call the remaining wealth "private wealth" because it is comprised primarily of large stakes in private businesses (although it also includes all other forms of wealth including financial wealth in the form diversified stock holding, bonds, etc.). This distinction is important because wealth from large publicly traded stock holdings is both easy to spot (as it is reported to the SEC) and easy to value (as the stocks trade publicly). The large fraction of such public stock wealth in California is in large part driven by the top 4 who account for 43% of total CA billionaire wealth (as of the end of 2025) and whose wealth is almost entirely comprised of publicly traded stock. Appendix Figure A1 depicts the industry composition of California billionaires' wealth with a breakdown between SEC reported publicly traded stock vs. other for each industry. In California, the tech sector accounts for 73% of total California billionaires wealth, of which 80% reflects wealth in the form of publicly traded stock. The next largest industry is finance (which includes venture capital, private equity, and crypto currency in addition to traditional finance) which is 14% of the total (and divided half and half between SEC reported publicly traded stock wealth vs. other). The remaining industries comprise only 13% of the total and are mostly from private businesses rather than publicly traded businesses.

Figure 1 shows that this upward wealth trajectory is even more extreme for the top 4 whose wealth grows from $209 billion to $882 billion, a 322% increase, over the same three years (Table 1, Panel A). The top 4 account for 43% of total CA billionaire wealth (as of the end of 2025) and for 56% of total CA billionaire wealth growth over the last three years 2023-2025. Top 4 wealth is $1,020 billion as of May 8, 2026. The large growth in recent years is tied to the boom in Artificial Intelligence that drove up the stock prices of the large tech companies owned by the top 4 all of which are heavily involved in the AI boom: Alphabet (gemini AI), Nvidia (chips manufacturing), and Meta (Meta AI and infrastructure).

Longer-run surge in billionaire wealth

This short-run wealth increase is the extension of a much deeper and longer phenomenon of billionaires' wealth growth. We use the Forbes 400 richest Americans list compiled annually by Forbes magazine since 1982 to document the long-run surge of the wealth of the "billionaire class" US wide and in California in particular. Over such a long-run period from 1982 to 2025, it is important to control for population growth, roughly doubling over this period, and for price inflation, roughly tripling over this period, and economic growth (real incomes per family roughly doubling). To control for population growth, the simplest is to define the "billionaire class" as a fixed fraction of all US or California families, namely the top .0002% richest families.[4] This is about the richest 400 families today US wide and the richest 45 richest families in California. This is the largest group we can capture with the Forbes 400 data that goes back to 1982.

To control for both price inflation and real economic growth, we compare the "billionaire class" wealth to the size of the economy, US annual GDP or the California annual GDP, i.e. the full value of everything produced in the US or California in a year. While wealth is a stock while GDP is a flow, this is the simplest way to measure the weight of the "billionaire class" relative to the size of the economy. Table 1, Panel B reports basic statistics on long-run growth of the California billionaire class wealth and compares it with the growth of California GDP per family (appendix Table A1 reports the same numbers US wide).

Figure 2 depicts the full time series. Panel A depicts the trajectory of top .0002% wealth (top 45 families in California today) in 2025 $ billions vs. the trajectory of California GDP per family (the average economic product of families in California) in 2025 $100,000s. Both series therefore control for price inflation. California GDP per family has doubled (in real terms controlling for price inflation) from about $100,000 in 1982 to about $200,000 in 2025. Top .0002% wealth has grown by a factor 30 from slightly less than $1 billion in 1982 to $28.4 billion in 2025 (see Table 1, Panel B for exact values). As a result, California GDP per family looks almost like a flat line relative to the extraordinary growth of the billionaire class.

Figure 2 Panel B depicts the wealth of the "billionaire class" (the top .0002% families) in the US and in California relative to the size of the economy (US annual GDP and California annual GDP) from 1982 to 2025. It shows an extraordinary and long-run rise of the weight of the top

[4] A family is formally defined as a tax unit, a married couple with its dependent children if any or a single adult with its dependent children if any and also counting families who do not file income tax returns. In 2025, there are 193 million families US wide and 22.3 million families in California.

.0002% billionaire class in the economy. The top .0002% wealth was about 2% of GDP (both in the US and in California) in the early 1980s. By 2025, it is 21% in the US, a ten-fold increase and 30% in the California, a 15-fold increase. While there are peaks due to the stock-market cycle, notably the dot-com bubble in 2000 (particularly in California), the 2007 peak just before the Great Recession, the post-COVID rally in 2021, and the AI boom in recent years (particularly strong in California), the underlying trend is strongly upward and hence not tied to the boom and bust of the stock-market or the tech sector.

Another way to read this evidence is to compute the long-run annual growth rates of billionaire class wealth vs. average incomes economy wide as done in Table 1, Panel B. From 1982 to 2025 and controlling for price inflation, the average real wealth of families in the top .0002% increased each year on average by 8.2% in California (6.6% US wide). In contrast, average real income per family increased only by 1.5% in California (1.3% US wide). Therefore, California billionaire class wealth has grown 6.7 percentage points faster per year than average family incomes in California (5.3 percentage points US wide). Such large annual differential growth rates cumulated over more than 40 years generate enormous differences. While average family incomes less than doubled in real terms from 1982 to 2025 (76% increase US wide and 86% increase in California), average real wealth of the top .0002% was multiplied by 15.6 US wide and by 30 in California.[5]

2 Taxes paid by California Billionaires

In this section, we document the taxes that California billionaires pay focusing first on the California individual income tax, the most progressive state level income tax in the country, and then on all taxes at all levels of government.

California Income Taxes. We start with the California income taxes paid by billionaires because this is the key tax directly lost to California if billionaires decide to leave the state. The California corporate tax that businesses pay on their profits is not directly affected by the location of billionaire-owners because it is based on sales to customers in California. For example, if Tesla sells 20% of its US sold cars in California, Tesla pays California corporate income tax on 20% of

[5] Those numbers are directly tied to the billionaire class wealth relative to GDP. Table 1 reports the statistics for California and appendix Table A1 the US wide statistics.

its US profits, regardless of whether Elon Musk lives in California or Texas.[6] The property taxes paid within California by billionaire owned businesses on their land and buildings (e.g., a data center building in California) or by real estate property owned by billionaires (a mansion in Bel Air) are not affected either by the residence of billionaires. The sales and excise taxes that billionaires pay in California are estimated to be negligible—relative to the California income tax (see below).

Figure 3 depicts the estimated annual California individual income tax paid by all California billionaires and the top 4 (in nominal $ billions) each year from 2019 to 2025. The corresponding statistics are reported in Table 2. Table 3 reports statistics for each of the top 4. Appendix Figure A2 displays the California income tax paid by California billionaires as a percent of California wide state individual income tax revenue.

For all California billionaires, we estimate the California income tax they pay using Franchise Tax Board (the California tax administration) tabulated statistics, a Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners: (the income of top wealth holders is only 50% of the income of top income earners based on Balkir et al. (2025), see appendix for details).[7] We also add back the passthrough elective tax to California individual income tax.[8] We have verified that our methodology comes close to the findings of Balkir et al. (2025) who are able to directly match the Forbes 400 (US wide) to their individual income tax returns. If anything, our California numbers slightly overshoot California individual income tax payments by about 10% relative to the US findings from Balkir et al. (2025). We discuss this in more detail in appendix.

For the top 4, the tax is estimated using SEC disclosures on stock sales, exercised stock-options and other executive compensation, dividends received, and charitable donations of stock

[6] Formally, a corporation apportions US wide profits across states for state corporate tax purposes if it has nexus in multiple states. Nexus is triggered by any office presence in the state but also by having annual sales in the state that exceed a fairly low threshold (e.g. $750,000 in California in 2025). Hence, the large businesses owned by California billionaires are very likely to have nexus in multiple states and in particular retain nexus in California even if billionaire owner were to leave the state.

[7] Rauh et al. (2026) find higher California income taxes paid by billionaires because they assume (in their central scenario) that top wealth holders have incomes that are 78.4% of top income earners, a value higher than the 50% based on US wide direct evidence from Balkir et al. (2025) or Survey of Consumer Finance data analyzed in Saez and Zucman 2019b, p. 466).

[8] This passthrough elective tax credit created in 2021 allows California passthrough businesses to pay most of the California income tax on profits at the business level to maintain deductibility at the federal level (as state income tax deductibility was sharply curtailed starting in 2018 due to federal Tax Cuts and Jobs Act passed in 2017 by the first Trump administration). It is not included in California individual income tax statistics although on substance it is exactly equivalent to the direct individual income tax on owners' passthrough profits. Hence not including it would artificially lower individual income tax payments starting in 2021. See appendix for details.

of the main public companies they own (Alphabet for Page and Brin, Meta for Zuckerberg, and Nvidia for Huang) which accounts for 97% of their wealth in 2025 (see appendix for details).

The California income tax paid by billionaires ranges from about $2 billion to $4 billion per year in recent years with an average of $3 billion per year during 2019-2025. This represents 2.4% of all California individual income tax revenue (see appendix Figure A2), and less than 1% of California state and local tax revenue from all sources (adding sales and excise, property taxes, corporate and income taxes from all levels of governments within California). While (income) millionaires pay a significant fraction of California individual income taxes, billionaires are few--about 200 in recent years--and they manage to keep their realized incomes low in comparison to the enormous wealth gains they have experienced. The California individual income tax paid by billionaires amounts to 0.2% of their wealth per year in the last 3 years 2023-2025 (Table 2). The average across years 2019-2025 is 0.26% of wealth.

The top 4, which accounts for almost half of total CA billionaire wealth in 2025, pay on average only $0.27 billion in California income tax per year (in the period 2019-2025), or only 8.8% of the California income tax that California billionaires pay (Figure 3 and Table 2). The annual California income tax payments of the top 4 are only .07% of their wealth, a truly minuscule percentage. This implies that the top 4 (the centi-billionaires with wealth above $100 billion as of the end of 2025) are even more successful in avoiding the California income tax. The SEC disclosures and Compustat data we have used to make those computations can cast light on this issue. If the centi-billionaires leave the state of California, as some have contemplated doing, it is only a modest loss of income tax revenue for the state but it is of course a large loss for the California billionaire tax (if they manage to leave before January 1st, 2026) or any future wealth tax California may enact (see below).

Table 3 shows that the $268 million paid annually by the top 4 (average across years 2019-2025) splits $95m (Zuckerberg), $76m (Page), $52m (Brin), $45m (Huang). Since the beginning of 2019 to the end of 2025, the wealth of the top 4 has been multiplied by a factor 6.5. The California income tax they have paid over the 7 years has taken very small bites of these enormous gains: 0.37% of gains for Zuckerberg, 0.26% for Page, 0.20% from Brin, and 0.20% for Huang (Table 3, last row). Strikingly, the Alphabet founders Page and Brin had no California individual income tax on their Alphabet wealth in three of the seven years 2019-2025 because Alphabet was not paying dividends, they didn't report any Alphabet stock sale in these years (2019, 2020, and 2023), and were not getting any direct compensation from Alphabet either. Their only executive compensation from Alphabet was a symbolic $1 each year, carrying a California individual income tax of 13.3 cents. Their true economic income over these 3 years 2019, 2020,

and 2023 from their share of profits from Alphabet was actually $10.5 billion for Page and $10.0 billion for Brin. This vividly illustrates the failure of the California individual income tax to tax the very wealthiest people in the state.

In contrast to a direct wealth tax, the very progressive California income tax is unable to reach the wealth gains of the top 4 for four main reasons with all numbers reported in Table 4. First, their companies pay low dividends relative to the corporate net profits they make. As a result, only 3.7% of their after-tax corporate profits are distributed to owners as dividends (average over years 2019-2025). Second, they realize modest capital gains relative to the enormous wealth gains they are making. The top 4 collectively realized $11.8 billion over the period 2019-2025 when their wealth increased by $723 billion, i.e. they realized as taxable capital gains only 1.6% of their wealth gains. Third, their executive compensation, mostly in the form of stock-options, is also modest at a grand total of $2.3 billion over the period 2019-2025. Fourth and finally, they give appreciated stock to their foundations or donor advised funds (a total of $17.4 billion over 2019-2025). This allows them to reduce their taxable fiscal income. Charitable giving likely dwarfs personal consumption for the top 4 and benefits from a double deduction: the gains in the appreciated stock given are not part of taxable capital gains but the donations can still be deducted from taxable income (up to a limit of 30% of income that is actually often binding for the top 4, with large carry-overs to future years).

On net, over 2019-2025, the top 4 pay $0.27 billion in California income taxes per year which is 1.3% of their full economic income and 0.07% of their wealth. The full economic income is defined as their individual income plus their share of corporate profits that are not distributed as dividends.

All Taxes paid by Billionaires. While the California individual income tax billionaires pay is fairly modest, it is only one tax among many other taxes the billionaires pay. The main ones being the federal individual income tax and the corporate taxes (federal, state, and foreign) on the profits of the businesses they own. Balkir et al. (2025) match tax data and Forbes 400 data to estimate all the taxes that the US billionaire class (top .0002%) are paying. Their main conclusion is that, combining all taxes at all levels of governments, the total annual taxes paid by the US billionaire class in 2018-2020 amount to 1.3% of their wealth or 24% of their total economic income (which includes not only distributed income but also undistributed corporate profits). This 24% tax rate on economic income is lower than the overall US wide tax rate on economic income which is 30%. This implies that billionaires on average pay less taxes relative to income than the average across all American families.

The main reason is that the effective tax rate on corporate profits, the main source of billionaires' economic income, is relatively low thanks to a much lower Federal statutory corporate tax rate of 21% since 2018 (down from 35% before 2018) and generous expensing deductions which reduce taxable profits relative to full economic profits. California billionaires are likely to pay slightly higher tax rates than US billionaires because the California individual income tax is larger than in other states.

Figure 4 depicts the estimated total annual taxes paid by all California billionaires and the composition by tax type from 2019 to 2025 relative to end of year wealth. Federal and California individual income taxes are estimated using Franchise Tax Board tabulated statistics, a simple Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners. Corporate and property taxes are estimated with Compustat data for all publicly traded corporations owned by California billionaires. Corporate taxes include federal, state, and foreign corporate taxes. We impute corporate taxes for privately held C-corporations, property taxes and sales taxes following the method of Balkir et al. (2025). In the last 3 years 2023-2025, California billionaires' total annual taxes amount to about 1.1% of their wealth (down from 1.4% in 2019-2022). The largest tax is the corporate tax. The individual income taxes are small relative to wealth because billionaires realize only a fraction of their full economic income, and a minuscule fraction of their wealth gains. This illustrates why increasing income tax rates would not succeed in increasing substantially the tax contribution of billionaires.

Separately from the main analysis of California income taxes paid by all California billionaires, we estimate total taxes paid by California billionaires on income derived from public stock wealth by extending the method used for the top 4 (as outlined in detail in Appendix section C) to all California billionaires over the period 2019-2025. Public stock wealth is 61% of total wealth for California billionaires over 2019-2025 (see Table 1). Appendix Figures A3-A and A3-B depict the estimated total annual taxes paid by all California billionaires on their wealth from publicly traded stocks listed on SEC filings and the composition by tax type from 2019 to 2025. Panel A expresses taxes relative to end of year wealth and panel B relative to full economic income (individual fiscal income plus undistributed corporate profits). In the last 3 years 2023-2025, California billionaires' total annual taxes on their public stock wealth amounts to about .9% of this wealth down from 1.3% in 2019-2022. Total taxes are 21% of economic income produced by public stock wealth in 2023-25 down from 26% in 2019-2022. Those results confirm the US wide findings of Balkir et al. (2025) who find that US billionaires pay lower tax rates (24%) relative to income than the average US wide of 30%.

All Taxes paid by the Top 4. We can also estimate all the income and taxes paid by the top 4 California billionaires on their business wealth using public sources from SEC disclosures and Compustat corporate filings which helps understand why billionaires' taxes are fairly low relative to full economic income and even more so relative to wealth or wealth gains. This allows us to obtain much more precise and detailed estimates that illuminate the key mechanisms of low taxes for billionaires.

Table 4 provides detailed numbers of wealth, income earned, and taxes paid for the top 4 richest Californians (Brin, Page, Zuckerberg, and Huang) on their company stakes (Alphabet, Meta, Nvidia) over the 2019-2025 period. The bulk of their economic income comes from the corporate profits. However, only 3.7% of after corporate tax corporate profits are distributed as dividends. As a result, the most important tax they pay is the corporate tax (federal, state, and foreign) on those profits, equal to 16.6% of the profits. Overall, the top 4 pay total taxes equal to 19.5% of their economic income. This is lower than the 22.0% tax rate that Balkir et al. (2025) find for the top .00005% (the top 100 US wide) as the key mechanisms explaining low taxes for billionaires – low dividend income relative to undistributed corporate income, few capital gains realizations, little executive compensation, and large charitable contributions – are particularly pronounced among the top 4.[9] The California individual income tax (large relative to other states) accounts for 1.3 points of the 19.5% total tax rate for the top 4, i.e. less than one tenth of total taxes paid. Relative to wealth gains from 2019 to 2025, the total taxes paid are only 3.8% showing that the economic income of the top 4 captures only a fraction of their gains. Indeed, the sharp rise in their wealth is driven by expectations of even higher future profits from their companies than the current profits they make. Finally, relative to wealth, annual total taxes are about 1.0% of wealth, of which the California income tax is .07 percentage points.

Table 4 also shows that the amount of shares pledged as collateral for borrowing is relatively modest (Zuckerberg did it one year) at $3.1 billion over the period 2019-2025. This implies that adding borrowing to the income tax base would increase individual income tax payments by about 20%. But because the California income tax is so small relative to wealth, it would have a minor impact on the overall tax rate of the top 4. Hence, it cannot be a substitute for a direct wealth tax.

[9] Most importantly, Balkir et al. (2025) find that over 2018-2020, the publicly traded firms owned by the top .00005% wealthiest Americans distributed 18.9% of their after corporate tax corporate income as dividends, a higher payout rate than that of 3.7% of profits distributed by Alphabet, Meta, and Nvidia over 2019-2025. Alphabet and Meta only started distributing (modest) dividends in 2024.

Figure 5 illustrates the statistics from Table 4 on income and taxes of the top 4 richest Californians in the period 2019-2025 on their company wealth (which is 97% of their total wealth at the end of 2025). All amounts are in nominal $ billions. The top panel depicts individual income reported on individual tax returns (first bar), economic income that adds undistributed corporate profits to individual income (second bar), and wealth gain from the beginning of 2019 to the end of 2025 (third bar). The top panel depicts taxes (in light blue) paid on each of these income types and displays the tax rate. For individual income, taxes include California and federal individual income taxes. For economic income and wealth gains, taxes include all taxes at all levels of government. The figure shows that individual taxes are significant (29.8%) relative to individual fiscal income, but individual fiscal income is dwarfed by economic income which is itself dwarfed by wealth gains (due to stock price appreciation). Therefore, total taxes relative to economic income are fairly low (19.5%) and total taxes relative to wealth gains are very low (3.8%).

This shows that the California billionaire tax, set at 1% per year for 5 years, is slightly larger than the total taxes they pay annually and literally 25 times larger than the CA income tax they pay annually. Yet, the wealth tax is also small relative to the enormous wealth gains they have made as the wealth of the top 4 more than quadrupled (322% increase) just in the last 3 years 2023-2025 (see Figure 1).

Looking at the longer time series, Figure 6 depicts the estimated taxes paid by the top 4 each year from 2004 to 2025 relative to their wealth (top panel) and relative to their full economic income (bottom panel). We continuously display Sergey Brin, Larry Page, and Mark Zuckerberg in our series while we replace Larry Ellison with Jensen Huang after 2020. This is because Larry Ellison reported a change of domicile to Hawaii in December 2020. Conversely, the wealth of Jensen Huang only started increasing significantly in 2020. Hence, by replacing Larry Ellison with Jensen Huang after 2020, we consistently show wealth, income, and income taxes for the top 4 wealthiest California residents.

The top panel shows that total annual taxes paid, as a fraction of wealth, have been halved from 2.3% before 2017 to 1.2% after on average. Taxes relative to wealth were higher in earlier years because executive compensation in the form of stock-options were much larger and this is an income component that is taxed substantially just like other labor income. The higher values for 2012-3 are due almost entirely to the enormous stock-option exercise profits by Mark Zuckerberg of $5.6 billion over these two years. The California individual income tax as a fraction of wealth drops even more dramatically from .34% before 2017 to 0.10% after. This result is

explained primarily by wealth increasing faster than income as the bottom panel shows more stability of taxes paid relative to economic income which fall much more moderately from 26.0% of income before 2017 to 20.1% after.

Figure 7 compares taxes paid relative to economic income for the top 4 vs. the average economy wide. The top panel reports total taxes (relative to economic income) for the top 4 and the US wide macro-economic average. The macroeconomic average effective tax rate for the US population is computed using the updated Distributional National Accounts series (for a detailed discussion, see Saez and Zucman, 2023). The bottom panel reports the California individual income tax paid relative to economic income for the top 4 vs. the average in California. The figures show that the top 4 effective tax rates for total taxes or for the California income tax specifically have been falling overtime and have become substantially lower than the economy wide averages.

Panel A shows that, in all years, 2004-2025, the top 4 pay lower taxes relative to their economic income than the US population as a whole. For years 2019-2025, the average US macroeconomic effective tax rate equals 31.4%, while it stands at 19.5% for the top 4. Panel B shows that the difference in taxes paid by the full population relative to the top 4 is even more pronounced when focusing solely on the California individual income tax in most recent years. For years 2019-2025, total California individual income taxes paid by all California residents equal 4.4% of total economic income of all California residents while for the top 4 wealthiest California residents total personal income taxes paid equal 1.3% of their total economic income over that period. This means that over years 2019-2025 the average California resident paid three times more California individual income taxes relative to their economic income than the top 4 wealthiest California residents. This comparison shows that the existing taxes, based mostly on income (source income for the corporate tax and the portion of income distributed/realized for the individual income tax), are fairly modest relative to the true economic income of the top 4, and quite small relative to their even larger wealth gains.

3 The Economics of Taxing California Billionaires' Wealth

In this section, we discuss the economics of billionaires' wealth taxation. We start with the analysis of a one-time wealth tax, as proposed in the California Billionaire Tax ballot initiative, and then turn to the analysis of a permanent and recurrent annual wealth tax.

3.1 One-time wealth tax

The California billionaire tax ballot initiative for the November 2026 elections in California proposes a 5% one-time wealth tax on billionaires payable over 5 years.[10] The tax applies to California residents as of January 1st, 2026 whose worldwide net worth as of December 31st 2026 is above $1 billion (excluding real estate directly held which typically already pays property taxes, and most pension assets). The 5% tax applies to the entire net taxable worth.[11] The tax revenue will be dedicated 90% to health care and 10% to food security and K-14 education to offset cuts from the federal government due to HR1 (also called OBBBA).

This tax has already gathered substantial press and public attention. Galle et al. (2026a) provide economic and scoring analysis, Galle, Gamage, and Shanske (2026) respond to constitutional concerns, Galle et al. (2026b) dispel a misunderstanding about controlling shares, Galle et al. (2026c) respond to the scoring analysis in Rauh et al. (2026).[12]

The motivation for the one-time wealth tax initiative is to raise revenue to replace the health care spending cuts enacted in July 2025 by HR1 (also called OBBBA) at the federal level. These cuts target primarily the Medicaid program, which provides government funded health insurance for low income families, and covers 28% of the California population in 2024 according to KFF estimates.

A one-time wealth tax can also be seen as a way to ensure that billionaires will pay some tax to California on their enormous wealth gains. Based on our analysis in Section 2, a tax of 1% per year for 5 years, is almost as large as the total annual taxes the billionaires currently pay and five times larger than the California income tax they pay each year (Table 2). Yet, the wealth tax is also small relative to the wealth gains of 144% they have made just in the last 3 years 2023-2025 (Table 1 and Figure 1 in Section 1).

[10] One-time wealth taxes have been historically used after large economic shocks such as World War I and World War II, or more recently after financial crisis (in Iceland, Ireland, and Cyprus). O'Donovan (2021) provides an overview of the small academic literature on one-time wealth taxes.

[11] To smooth out the notch, the tax rate on total net worth ramps up linearly from 0% for a taxpayer with exactly $1 billion in taxable net worth to 5% for a taxpayer with $1.1 billion or more in net worth. E.g., a taxpayer with $1.02 billion in taxable wealth pays a tax rate of 1% on the entire $1.02 billion.

[12] Ghenis (2026) also provides a step-by-step comparison of Galle et al. (2026a) initial scoring and Rauh et al. (2026) scoring and further provides real-time updates at https://www.policyengine.org/us/california-wealth-tax. All these scores miss the non-US citizens billionaires who reside in California which are included in this paper.

80%+ of California billionaire wealth is unrealized—and hence untaxed—gains. As we saw, billionaires realize only a small fraction of their gains and hence the realization-based tax system fails to tax most of the gains of billionaires. For the 67% of California billionaire wealth (as of the end of 2025) that comes from publicly traded stock reported to the SEC, using the history of transactions since 2004, we estimate that 98.5% of this wealth is unrealized gains. The remaining 33% of California billionaire wealth is primarily private business wealth with a very high unrealized gains content as well, and then diversified holdings (often funded from prior stock sales) with a much lower unrealized capital gains content. Therefore, a conservative estimate is that at least 80% of California billionaire wealth is unrealized capital gains.[13] This implies that the 5% one-time wealth tax is similar, in terms of burden, to a one-time tax on unrealized capital gains at a rate of 6.25% (=5%/80%). This 6.25% tax rate is less than half of the California top income tax rate of 13.3% that applies to realized income and hence undershoots the tax needed to treat unrealized gains as other income in the Haig-Simons comprehensive definition of income.[14]

Comparison with the Biden Billionaire Minimum Income Tax. The Biden administration had proposed in its 2025 budget a minimum income tax of 25% at the federal level on the income plus unrealized capital gains of the ultrawealthy (with wealth above $100m), called the "Billionaire Minimum Income Tax". This tax at the federal level imposes a burden on billionaires which is at least four times heavier than the 5% one-time wealth tax in California. Balkir et al. (2025) estimate that billionaires current federal income tax rate relative to income plus the stock of unrealized gains is only 0.6%.[15] Hence, to reach 25%, the Billionaire Minimum Income Tax adds a 24.4% tax rate on income plus unrealized gains, which is 20% of wealth. Therefore, the initial burden of the federal Billionaire Minimum Income Tax proposed by the Biden administration is exactly 4 times as heavy as the California one-time 5% wealth tax.[16] Furthermore, the Biden tax is on-going rather than one-time so that it continues to tax the flow on new unrealized capital gains. Conversely, the

[13] If we conservatively assume that half of the 33% non public wealth is private business wealth with 80% unrealized gains and that the other half of the 33% is diversified wealth with 10% unrealized gains, then fraction of unrealized capital gains in total billionaire wealth is: .67*.985+.33*.5*(.8+.1)=81%.

[14] The Haig-Simons definition of income is consumption (including charitable giving) plus net wealth growth. The billionaire class is where fiscal individual income departs the most strikingly from the ideal Haig-Simons definition.

[15] They estimate that in 2018-2020 taxpayers in the top .0002% wealthiest (top 400 at the US level) pay on average $37 million in federal income tax with average realized fiscal income of $191 million and average wealth of $8015 million and hence unrealized gains of $6412 million (80% of $8015). The tax rate on income plus unrealized gains is 37/(191+6412)=.6%.

[16] The billionaire minimum income tax is payable over 9 years (instead of 5 years for the California billionaire tax). Each annual payment of the Biden tax is therefore 4*5/9=2.22 heavier than the 1% annual payments of the California tax.

Biden tax is integrated with the income tax so that realized capital gains are no longer taxable. Because annual new unrealized capital gains are on average about 8% of wealth (Table 2) while realized capital gains are only 1.4% of wealth (Balkir et al. 2025), on net the first effect dominates so that the Biden tax is more than 4 times as heavy as the California one-time 5% tax.

Behavioral responses to a wealth tax. A wealth tax can generate three types of behavioral responses. First, taxpayers may try to lower their reported wealth through avoidance or evasion, for example, by undervaluing some of their assets, or hiding some assets. The proposed wealth tax uses a comprehensive tax base precisely to make it difficult for billionaires to shelter their wealth.[17] In particular, the tax base includes worldwide wealth (except directly held real estate as it is already taxed through property taxes) owned by taxpayers so that sheltering wealth offshore is not possible.[18] Second, taxpayers can potentially leave the state to avoid state level personal income or wealth taxes. We call this behavioral response the mobility response and we discuss it in great detail below as it is the one most emphasized in the public debate. Third, a wealth tax by definition reduces wealth at the top. This erosion of wealth at the top can be either accelerated if billionaires give away or spend their wealth faster or slowed down if instead billionaires slow down their giving or spending.

Mobility responses. A one-time tax could generate a strong mobility response if announced well in advance giving time for potential taxpayers to leave the State of California.
The closest evidence we have is from Moretti and Wilson (2023) who find that state level estate taxes reduce by 35% the number of billionaires from the Forbes 400 who die in the state. A state level estate tax can be seen as a one-time wealth tax at the time of death at a rate of 8.25% on average for billionaires (per Moretti and Wilson (2023) estimation). Hence, extrapolating from this estimate, a 5% one-time wealth tax announced well in advance could reduce the tax base by (5/8.25)*35=21% through mobility responses with two important caveats. First, older and retired billionaires are likely to be more mobile as they are no longer tied to their workplace.[19] Second and most important, the estate tax is known far in advance giving time for billionaires to adjust their residency decisions.

[17] The main weakness of the European wealth taxes is that most of them excluded from the base business assets when the owner was still involved in the management (see Saez and Zucman 2019a). Effectively, such an exclusion would shelter the vast majority of billionaires' wealth.
[18] The US Foreign Accounts Tax Compliance Act (FATCA) passed in 2010 requires foreign financial institutions to report wealth held by US residents to the US IRS making offshore wealth tax evasion much harder.
[19] Consistent with this, Moretti and Wilson (2023) find smaller responses among younger billionaires.

Precisely to prevent such behavioral responses, the one-time wealth tax in the ballot initiative is based on residency as of January 1st, 2026, only about one month after the final text of the ballot was published on November 26, 2025. As a result, it is difficult if not impossible for billionaires to leave the state, i.e., meet of the stringent rules that the California tax law uses to determine that a taxpayer has effectively left the state.

There have been many press reports on billionaires signaling that they are leaving—most prominently Larry Page and Sergei Brin who are in the top 4 and account for almost 25% of total California billionaire wealth. Because the tax applies to any resident as of January 1, 2026, any efforts to move after January 1 of 2026 would not save the billionaire from paying the tax. Efforts that began before January 1 would have to include uprooting most of the individual's personal and business ties to California, not just the reincorporation or relocation of a few business assets or the purchase of real estate out of state. Successfully changing residence would have been quite difficult in the few weeks between when the California billionaire tax began garnering public attention after the initiative was formally filed on November 26, 2025 and the end of the year. Indeed, attorneys who usually represent wealthy taxpayers and actually practice in this area of law are skeptical that any billionaires have successfully changed their California residency (see Manes 2026). Therefore, only billionaires who had already started the process of leaving California well before could possibly complete the process in such a tight time frame.

Press reports argue that billionaires are planning to leave for fear of future wealth taxes in California even if they cannot escape the proposed one-time tax. It is undoubtedly true that if the ballot initiative passes and California is able to implement a first-of-its-kind billionaire tax, it will likely increase the likelihood of similar initiatives in other states, at the federal level, and in the future in California as well.

California billionaires leaving would have a modest impact on income tax revenue collections. We estimated that California billionaires pay about 0.2% of their wealth in California income taxes. Therefore, even if some billionaires leave after January 1st, the loss in income tax revenue would be very small relative to the 5% one-time wealth tax. For example, even if one-fourth of all billionaires left, it would take 100 years for the income tax loss to match the revenue from the wealth tax. In the extreme case where all billionaires left, it would take 25 years for the income tax loss to match the revenue from the tax.

Furthermore and most important, a permanent response to a one-time tax does not make economic sense.[20] Symmetrically, it would not make sense to assume that we could repeatedly impose one-time wealth taxes always surprising taxpayers. If we instead use standard rational expectations where behavioral responses are tied to expectations with quick corrections if these expectations are not met, the mobility responses of billionaires should be tied to future expected wealth taxes. If no future wealth taxes happen, the mobility response will fade away, either with leavers returning to California or simply with the California economy creating new billionaire fortunes as older fortunes fade away through normal churning. Hence, for a truly one-time wealth tax, behavioral responses are temporary.

Scoring of one-time wealth tax.

Benchmark estimate. Galle, Gamage, Saez, and Shanske (2026a) propose a very simple scoring based on the Forbes real-time billionaire list and assuming a 10% tax avoidance and evasion rate that captures all dimensions of behavioral responses. They obtain a scoring close to $100 billion based on April 15th, 2026 wealth. The actual wealth tax will be based on December 31, 2026 wealth and hence the scoring could go up or down based on business value fluctuations. Our companion website shows how the scoring has evolved on a daily basis since January 1, 2026. For our benchmark computation, we assume that all California residents as of January 1, 2026 will be taxed (even if they leave the state afterwards). We always exclude Larry Ellison because he left California before 2026 (Liu 2026), even though Forbes listed him as a California resident up to January 10, 2026. As of May 8, 2026, Forbes has changed the residency of 3 California billionaires in 2026.[21] Conversely, billionaires moving to California after January 1, 2026 are not taxed. Some California billionaires drop out of the list (when their estimated wealth falls below $1 billion) and conversely, new California billionaires appear in the list (and will be taxed). From January 1 to May 8, the number of taxable California billionaires has grown slightly from 239 to 253 and their collective wealth has grown 12% from $2.05 trillion to $2.3 trillion. In 2026 so far, California billionaire wealth has fluctuated from a low of $1.93 trillion to a high of $2.3 trillion. The website depicts both the number of billionaires and their wealth (as well as the expected wealth

[20] This is the main flaw in the scoring analysis of Rauh et al. (2026). They assume the wealth tax revenue is one-time but they assume permanent mobility responses as if taxpayers were expecting a recurring 5% wealth tax each year. As a result, the income tax loss is magnified by a factor 67 (using their discount rate 1.5%) relative to the one-time wealth tax revenue. This drives their negative scoring.

[21] The 3 movers are Lynsi Snyder (who possibly moved out in mid-2025 before the wealth tax initiative launched), Don Hankey and Travis Kalanick who both reported moved because of the wealth tax. The press reports do not include sufficient information to establish that they successfully changed residence before the January 1st, 2026 cut-off.

tax assuming a 10% evasion rate). Using the April 15 wealth value (to fix the date as in Galle Gamage, Saez, and Shanske 2026a) of $2.18 trillion, the wealth tax scores at $98 billion (=90%*5%*$2182 billion). Paying the wealth tax may require billionaires to sell some assets, triggering realized capital gains. Table 5 reports a column of this extra CA income tax generated assuming that wealth taxes will be paid one-third by selling assets triggering taxable realized capital gains (with a basis of 20% of selling price consistent with our earlier estimation that California billionaire wealth is 80% unrealized gains) and two-thirds with liquidities or debt. This extra income tax will accrue over the 5 years when the wealth tax is due.

If we assume that half of the 10% avoidance takes the form of mobility: i.e. 5% of billionaires were able to successfully relocate outside California in the narrow time window before January 1st, 2026, then we estimate that a corresponding 5% of the total California individual income tax paid by billionaires will be lost, i.e. $0.15 billion per year (using our California income tax total paid by Forbes billionaires of $3 billion, the average for 2019-2025 from Table 3). These scoring computations are reported in the top row of Table 5.

Adding missing small billionaires. While Forbes is likely able to capture well the top billionaires--who typically own larger and more visible companies, it likely misses a substantial number of "small billionaires" whose wealth is not as visible. One clear evidence that there are many missing small billionaires is the fact that the Forbes billionaires' distribution departs significantly from a Pareto distribution in the smaller billionaire range from $1 billion to $4.5 billion. The top of wealth distributions is very well captured by Pareto distributions, a robust empirical finding first established by economist Vilfredo Pareto in the late 19th century (using tabulations of wealth tax records). A Pareto distribution has the property that the average wealth above a given wealth threshold is a multiple b>1 of the threshold with b constant and independent of the threshold.[22] In the case of US or California billionaires, the parameter b is pretty stable (and around 4.5) for thresholds above $4.5 billion where Forbes is likely to capture most of those large billionaires with more than $4.5 billion in wealth. In the Forbes data however, the parameter b becomes much larger as the threshold falls from $4.5 billion (above which b is equal to 4.48 on average) down to $1 billion (where b reaches a much higher value of almost 9, i.e. the average wealth of Forbes billionaires is almost $9 billion). Appendix Figure A4-A depicts this finding using the 4/15/2026

[22] Mathematically, a Pareto distribution has power law density of the form h(z)=C/z^(1+a) where a>1 is called the Pareto parameter. The b Pareto parameter mentioned above is related to a by the formula b=a/(a-1) or a=b/(b-1). The larger b (and the closer a is to 1), the thicker the top tail of the distribution. For top wealth distributions, typically a=1.5 and b=3. With a particularly thick top tail like California billionaires, we have b=4.5 and a=1.3.

Forbes data for California billionaires. The fact that b becomes much higher below wealth threshold $4.5 billion reflects the fact that small billionaires are missing. If we assume that the tail is Pareto with constant b=4.48 between $1 billion and $4.5 billion, then this means that there should be around 617 California billionaires (instead of the 249 listed by Forbes), i.e. 368 more than found by Forbes in the range $1 billion to $4.5 billion. These 368 extra billionaires would add about $615 billion in wealth, 28% more than the total California billionaire wealth estimated by Forbes. Appendix Figure A4-B depicts the Forbes density and the one adding the missing billionaires using the Pareto extrapolation. It shows that the majority (208 out of 368) of missing billionaires are in the range ($1b, $1.5b).

In practice, tax enforcement on these less visible billionaires is going to be more challenging because the California tax administration does not have a direct way to identify them nor a Forbes wealth estimate to compare with their tax reported wealth. The California tax administration can still use the rich information it has from individual income tax returns and business tax returns to estimate wealth using a capitalization method (as in Saez and Zucman 2016) to assess who is likely to be a billionaire.[23] Assuming a higher evasion rate of 20% for those less visible billionaires would still add about 20% to wealth tax revenue and therefore increase wealth tax revenue by over $20 billion to $121 billion. The income tax loss of the 5% of leavers would correspondingly increase to $0.19 billion. This scoring is reported in the second row of Table 5.

More aggressive assumption on leavers. Many press reports have noted that a number of California billionaires have taken steps to sever their ties to California or announced their planned departures. Forbes, which closely monitors billionaires residence for its real-time database, recently tallied those potential movers as of April 28, 2026. This list of 7 billionaires includes 3 of the top 4, namely Page, Brin, and Zuckerberg as well as 4 smaller billionaires (Thiel, Hankey, Kalanick, and Andy Fang). Our reading of press reports is that Zuckerberg remains a California resident as he continues to serve as Chief Executive Officer at Meta in Silicon Valley and hence is extremely likely to be a California resident as of January 1, 2026. Brin is reported to be spending

[23] The Survey of Consumer Finance of the US Federal Reserve also uses individual income tax information to predict high wealth for its triennial wealth survey (that oversamples the wealthy to capture well the top of the US wealth distribution). Smith, Zwick, and Zidar (2023) have developed an even more sophisticated capitalization method that links individual tax returns to the business tax returns they own, and estimate business value using book value and profits reported by businesses on their tax returns, similar to how Switzerland imputes business wealth for its wealth tax administration. The California billionaire tax ballot also uses such a formula as presumptive value for private businesses.

his time half in Nevada, half in California and remains actively and physically working at Alphabet in Silicon valley as his main occupation. This would also make him very likely a California tax resident according to law. Larry Page reportedly spends most of his time in Florida with little physical presence in California since late December 2025. Therefore, he is likely the only one among the top 4 who could possibly successfully argue he left California before January 1, 2026. Among the smaller four billionaires on the Forbes list of leavers, Thiel, Hankey, and Kalanick look like they have attempted to cut their ties to California and hence may have moved before January 1. Andy Fang is reported to plan on moving and hence is almost certainly a California resident as of January 1.

The third row in Table 5 scores the wealth tax assuming that Page, Thiel, Hankey, Kalanick successfully moved before January 1, 2026 which is an aggressive assumption given how hard it is to successfully sever ties to California in such a short time frame. If those moves are successful, and these billionaires avoid the wealth tax, our benchmark wealth tax revenue estimate falls from $98 billion down to $84 billion (most of the drop is driven by centibillionaire Page). For income tax losses, we also assume that Brin, Zuckerberg, and Fang will eventually move and hence stop paying California income tax. We use Table 4 estimates for the lost income tax payment of the top 3 on their company wealth (average 2019-2025) and we assume that income tax payments are proportional to wealth for the private wealth of the top 3 and for the full wealth of the other smaller billionaires. This raises the annual income tax loss from $0.15 billion in our benchmark scenario up to $0.53 billion. Although the top 3 account for about 1/3 of California billionaire wealth, our computations in Table 4 show that they pay very little income tax on their company wealth. As a result, the annual income tax loss remains modest.[24]

Finally, the last row of Table 5 shows the scoring by both adding the missing billionaires (as in row 2) and making the aggressive assumption on leavers (as in row 3). On net, the wealth tax scoring is $109 billion as the additionally estimated wealth from missing billionaires is about twice as large as the wealth loss from potential press-reported departures before January 1st, 2026. The annual income tax loss is $0.57 billion in this scenario.

[24] Rauh et al. (2026) and Walczak (2026) find much higher annual income tax losses from the top 3 departing because they assume that income tax payments are proportional to wealth. Walczak (2026) assumes (drawing from Balkir et al. (2025) estimates for 2018-2020) a fiscal income-to-wealth ratio of 2.25% for billionaires and in particular the top 3, while our analysis using SEC data shows that fiscal income from public stock wealth of the top 3 equals 0.38% of their public stock wealth in 2025. This means that applying the California effective tax rate and fiscal income-to-wealth ratio assumed by Walczak (2026) to the public stock wealth of Brin, Page, and Zuckerberg overestimates their California income tax on public stock wealth by a factor of 6.

Table 5, like the official LAO initial budget analysis, does not take a stand on how long the annual income tax losses will last. For a truly one-time tax, such losses should be temporary as billionaires update their expectations as we discussed above. If they last say only 5 years, the duration of the wealth tax payments before any new wealth tax is considered, they those losses are likely to be smaller than the California income tax gains due to sales to pay the wealth tax. Leaving after January 1st, 2026 must be due to expectations of future wealth taxes because the one-time wealth tax is based on January 1st, 2026 residence. The threat of future wealth taxes is indeed an argument invoked by billionaires in press reports. This motivates our analysis of a permanent billionaire wealth tax below (although this is not the current ballot proposal).

3.2 Permanent Billionaire Wealth Tax

As we just discussed, permanent mobility responses to a one-time wealth tax can be justified only if taxpayers expect new wealth taxes in the future. The simplest way to study this is to analyze the economics of a permanent billionaire wealth tax where billionaires can decide to move out of state to avoid the California billionaire tax.

Mobility responses only. Economists capture mobility responses to a wealth tax using the concept of a semi-elasticity e. With a semi-elasticity of e, a permanent one percentage point additional wealth tax reduces the billionaire tax base by e% through mobility responses. In principle, e could also incorporate other forms of behavioral responses such as undervaluing wealth through tax avoidance or tax evasion, or giving away wealth to others or charitable causes. In the analysis below, we focus on mobility responses as they are the main one discussed in the public debate but the same formal analysis carries over if e also includes other forms of behavioral responses. Such behavioral responses typically arise when there are loopholes making it relatively easy for taxpayers to escape the tax. In the public debate about the California wealth tax, there is consensus that the text of the initiative is written aggressively to minimize tax avoidance and evasion opportunities.

Two countries Spain and Switzerland have sub-national wealth taxes where the parameter e due to mobility responses has been estimated. In Spain, Agrawal, Foremny, and Martínez-Toledano (2026) use the fact that all Spanish regions except the Madrid region introduced regional wealth taxes. They see an increase of 7.5% of wealthy taxpayers in the Madrid region relative to others, translating into a semi-elasticity e in the range 8 to 10. Two important differences are worth noting. First, the Spanish wealth tax applies to millionaires (and not solely billionaires)

so this population is not directly comparable with US billionaires. Second, in Spain, taxpayers sometimes use second homes to claim falsely residency outside of their true residency with limited policing from tax authorities. In contrast, California has very strong enforcement of residency.

In Switzerland, Brulhart et al. (2022) estimate a semi-elasticity of around 10 due to mobility responses across cantons due to wealth tax differentials, comparable in magnitude with the Spanish study.[25] Switzerland is much smaller than Spain, let alone the United States, making mobility across Swiss cantons comparatively easier. Again, the responses are estimated for millionaires rather than billionaires.

With a semi-elasticity e, the wealth tax rate τ that maximizes tax revenue while taking into account mobility responses is $\tau=1/e$.

The formal logic is the following. Let us denote $T=\tau Z$ tax revenue with τ the tax rate and Z the billionaire wealth tax base. Then when increasing τ slightly by $d\tau$, we get $dT=d\tau\, Z + \tau\, dZ = d\tau\, Z - \tau\, e\, Z\, dt = d\tau\, Z\, [1-\tau e]$. So more revenue is raised by increasing τ up to point where τ reaches 1/e and the term in square brackets becomes negative.
With the assumption e=10 (which is also the assumption in Rauh et al. (2026) calibrated based on Swiss study), a permanent wealth tax raises revenue until it reaches the extraordinarily high level of τ =1/e=10% per year. Because there is a pre-existing California income tax on billionaires that amounts to τ_0=0.2% of wealth per year (see Table 2 above), the additional permanent annual wealth tax that can be added is τ=10%-.2%=9.8% before migration responses start reducing total tax revenue from California income and wealth taxes on billionaires.[26]

Figure 8 depicts the revenue collected from billionaires from a permanent annual wealth tax as a function of the tax rate (on the x-axis) in the solid red line. This tax revenue estimate takes into account income and wealth tax revenue lost because of mobility responses calibrated using the empirical literature with a semi-elasticity of the tax base with respect to the wealth tax

[25] Brulhart et al. (2022) find that a 1 percentage point wealth tax differential translated into a 43% reduction in the wealth tax base and that one-fourth (24%) of that reduction comes from mobility responses so that the mobility semi-elasticity is 43*0.24=10.3. See Rauh et al. (2026) for a more detailed explanation.
[26] We count only the California income tax as pre-existing tax because it is the only tax that is avoided if the billionaire moves to another state. Other taxes such as corporate taxes, property taxes, and the federal individual taxes remain upon moving. We conservatively assume the billionaire moves to a zero-income tax state such as Florida, Texas, or Nevada. Rauh et al. (2026)'s methodology also follows this approach.

rate of e=10 (same semi-elasticity calibration as in Rauh et al. 2026). For comparison, the dashed line plots the tax revenue ignoring the mobility response. The current California income tax is about .2% of wealth for billionaires. The graph shows that adding a permanent wealth tax can raise substantial revenue even with mobility responses. Furthermore, up to moderate wealth tax rates of 1% per year, the revenue lost due to behavioral responses is modest (of less than 10%).

Given the low pre-existing income tax relative to wealth of τ_0=.2% for California billionaires that we documented above, adding an additional small wealth tax is revenue raising as long as the semi-elasticity is below the extraordinary high level of e=500 which is at least one order of magnitude larger than any semi-elasticity estimated in empirical work. Indeed, if e=500, then exempting California billionaires from California income tax entirely, would increase the number of California billionaires by a factor 2.7, implying that California would have 2/3 of US billionaire wealth instead of the current ¼ which seems clearly unrealistic.[27]

Therefore, there is no doubt that California can raise more tax revenue from its billionaires. With realistic behavioral responses drawn from the existing empirical literature, such as e=10, a 1% permanent wealth tax reduces the wealth tax base by 10% due to mobility responses. As a result, mobility responses reduce mechanically wealth tax revenue by 10% and an additional 2% is lost due to loss of income tax. On net, a 1% wealth tax collects 88% of the projected revenue absent mobility responses. This efficiency cost of 12 cents on the dollar is fairly modest.

Adding wealth erosion effects.

As mentioned above, a wealth tax can also produce wealth erosion. With a permanent wealth tax, those effects compound over time and can have a substantial long-run effect on top wealth. Following Saez and Zucman (2019a), it is possible to incorporate the fact that repeated annual wealth taxes have a mechanical de-concentration effect on top wealth. After facing an annual wealth tax for t years at rate τ, wealth is mechanically reduced by a factor $(1-\tau)^t$. Therefore, the billionaire wealth tax base is progressively eroded overtime. In the long-run, the erosion factor is given by $(1-\tau)^d$ where d is the average number of years that billionaires have been facing the tax (this average is wealth weighted). The parameter d does not become infinite because there is constantly the creation and destruction of billionaires' fortunes through normal churning. Using Forbes real-time billionaires and Forbes 400 data, we estimate that the 239 California billionaires

[27] Formally, with a constant semi-elasticity, the tax base Z is given by the formula $Z=Z_0*\exp(-\tau\, e)$ where Z_0 is the tax base absent any tax (relative to zero income tax states). With τ =0.2% the current California income tax on California billionaires and e=500, $Z=Z_0*\exp(-1)=Z_0/2.7$.

at the end of 2025 have been on the Forbes list for 15.2 years on average, weighted by wealth at the end of 2025.[28] The last line on Figure 8 adds this impact on tax revenue setting d=15. This line should be understood as the current tax revenue we would be getting in California from a permanent wealth tax at rate τ had this wealth tax existed for many decades. For larger τ, this de-concentration effect becomes large and dominates the mobility response. The revenue maximizing tax rate is $\tau = 1/(1+d+e)=1/26=3.8\%$ when both the de-concentration and mobility responses are incorporated. With a 1% annual permanent wealth tax, the de-concentration effect reduces the wealth tax base by about 15%. I.e., California billionaire wealth would be mechanically 15% lower today if an annual wealth tax at 1% had been in place for a long-time. Therefore, the de-concentration effect remains relatively modest for small (i.e. up to 1% annual wealth taxes). Simply put, a 1% wealth tax has small effects when billionaires' wealth is growing as fast as we documented in Section 1.

This illustrates one important feature of billionaire taxation. Because California (or the US) is so top heavy and billionaires current taxes are low, even a modest wealth tax has substantial revenue raising potential, but it will not have a very large impact on wealth de-concentration. A larger permanent wealth tax can deconcentrate wealth but is difficult to implement below the federal level because of mobility issues.[29]

[28] Using Forbes 400 data US wide, Saez and Zucman (2019a) estimate d=15.

[29] At the federal level, mobility issues largely go away. US citizens have to continue to pay federal taxes—including a hypothetical federal wealth tax—even if they relocate abroad (with credit for wealth taxes paid abroad). Furthermore, the US imposes a large exit tax for those who renounce citizenship: they have to pay income tax on all their unrealized gains (with a current rate of 23.8%), which is similar to a very heavy one-time wealth tax.

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Table 1. Wealth Growth of California Billionaires

A. Recent nominal wealth growth of CA billionaires (nominal $ billions)

Year	# of billio-naires	Wealth (end of year)	Annual growth	Fraction wealth public	Top 4 wealth (end of year)	California GDP	Billionaire wealth/CA GDP
2022	175	843		48%	209	3,618	23%
2023	186	1,155	37%	60%	399	3,827	30%
2024	196	1,567	36%	66%	625	4,048	39%
2025	239	2,052	31%	67%	882	4,251	48%
Growth during 2023-2025		144%			322%	17%	

B. Long-term real wealth growth of billionaire class=top .0002% richest (real 2025 $)

Year	# families in top .0002%	Top .0002% wealth (2025 $b)	Top .0002% wealth per family	# CA families (millions)	California GDP (2025 $b)	California GDP per family (2025 $)
1982	23.7	22.4	0.95	11.8	1,209	102,141
2025	44.6	1,266	28.4	22.3	4,251	190,451
Ratio 2025 to 1982	1.9	56.5	30.0	1.9	3.5	1.9
Annualized growth	1.5%	9.8%	8.2%	1.5%	3.0%	1.5%

Notes: Panel A illustrates the recent rapid growth in California billionaire wealth using the Forbes real-time billionaire data (only adjustment is that Larry Ellison is always excluded). It reports wealth in nominal $ billions as well as California annual GDP for comparison. The top 4 includes the centi-billionaires Page, Brin, Zuckerberg, and Huang. Panel B illustrates the long-term real growth of the billionaire class (defined as the richest .0002% families) from 1982 to 2025 using the Forbes 400 annual data. The average real wealth of the billionaire class has grown by a factor 30 (8.2% real growth per year on average) while California GDP per family has grown by a factor 1.9 (1.5% real growth per year on average). Appendix Table A1 provides the same statistics at the US level (instead of California).

Table 2. California Income Tax Paid by California Billionaires

All amounts in nominal $ billions

	All California Billionaires from Forbes real-time list			Top 4 (Page, Brin, Zuckerberg, Huang and their Alphabet, Meta, Nvidia wealth)		
Year	Billionaires Wealth (end of year)	Estimated CA income tax	CA income tax/wealth	Company wealth (end of year)	Estimated CA income tax from company wealth	Top 4 CA income tax/wealth
2019	821	2.0	0.24%	184	0.03	0.02%
2020	967	2.8	0.29%	247	0.06	0.02%
2021	1,212	4.5	0.37%	365	0.77	0.21%
2022	843	2.3	0.28%	188	0.27	0.14%
2023	1,155	2.5	0.21%	377	0.04	0.01%
2024	1,567	3.0	0.19%	603	0.36	0.06%
2025	2,052	4.1	0.20%	856	0.36	0.04%
2019-2025 average	1,231	3.0	0.26%	403	0.27	0.07%

Notes: This table reports the wealth of all California billionaires, the estimated California income tax they pay, for each year from 2019 to 2025, along with the average across these 7 years in the last row. For all California billionaires, this is estimated using Franchise Tax Board (California income tax administration) tabulated statistics, a simple Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners. The right-hand-side columns repeat the same statistics for the top 4 richest Californians (Page, Brin, Zuckerberg, Huang) focusing solely on their wealth from their company stakes at Alphabet, Meta, and Nvidia (which is 97% of their total wealth at the end of 2025). Over 2019-2025, California billionaires pay $3.0 billion in annual California income taxes which amount to about .26% of their wealth. The top 4 pays only about .07% of their wealth in annual California income taxes.

Table 3. California Income Tax Paid by the Top 4 on Company Wealth

All amounts in nominal $ millions

	Larry Page (Alphabet)	Sergei Brin (Alphabet)	Mark Zuckerberg (Meta)	Jensen Huang (Nvidia)	All top 4
CA income tax 2019	0	0	26	6	33
CA income tax 2020	0	0	35	20	55
CA income tax 2021	241	168	299	59	766
CA income tax 2022	120	84	3	61	267
CA income tax 2023	0	0	11	28	39
CA income tax 2024	83	54	166	55	358
CA income tax 2025	87	56	126	89	359
Average CA income tax 2019-25	76	52	95	45	268
Wealth at the beginning of 2019	41,576	40,085	47,768	2,857	132,286
Wealth at end of 2025	244,240	225,401	225,635	160,228	855,503
Total CA income tax/wealth gain	0.26%	0.20%	0.37%	0.20%	0.26%

Notes: This table reports estimates of the California income taxes paid by each of the top 4 richest Californians today (Brin, Page, Zuckerberg, and Huang) on their company stakes (Alphabet, Meta, Nvidia) each year from 2019 to 2025. Company wealth is 97% of their total Forbes wealth at the end of 2025. We use SEC disclosures for stock sales, stock donations, and stock-option exercises and Compustat data for dividends (prorated to their stakes) and executive compensation. The last column reports the aggregate for the Top 4. The last rows report the company wealth of each of the top 4 at the beginning of 2019 and the end of 2025. Over this seven-year period, total California income taxes amounted to only .26% of their wealth gain.

Table 4. Wealth, Income, and Taxes of the Top 4, 2019-2025

All amounts in nominal $ billions

	Total 2019-2025	Annual average
	(1)	=(1)/7
Wealth in 2019 (beginning of year)	132.3	
Wealth in 2025 (end of year)	855.5	
Gain in wealth during 2019-2025	**723.2**	**103.3**
Wealth (average over 2019-2025)		402.9
Fiscal individual income 2019-2025	**18.4**	**2.6**
Stock-options exercises + other comp	2.3	0.3
Dividends	4.0	0.6
Realized capital gains	11.8	1.7
Memo: Appreciated stock donations	17.4	2.5
Memo: Net collateral pledged for borrowing	3.1	0.4
Federal individual income tax	3.6	0.5
California individual income tax	**1.9**	**0.27**
Individual taxes/individual income	29.8%	29.8%
Corporate profits	128.4	18.3
Corporate taxes (federal, state, foreign)	21.3	3.0
Corporate tax rate (effective)	16.6%	16.6%
Other taxes (property, sales taxes)	1.0	0.1
Total taxes paid	**27.8**	**4.0**
Total economic income	**142.9**	**20.4**
Total taxes/economic income	**19.5%**	**19.5%**
Total taxes/Gain in wealth over 2019-2025	**3.8%**	
Total taxes/wealth (annual average)		**1.0%**

Notes: This table reports estimates of wealth, income earned, and taxes paid for the top 4 richest Californians today (Brin, Page, Zuckerberg, and Huang) on their company stakes (Alphabet, Meta, Nvidia) over the 2019-2025 period. This company wealth is 97% of their total Forbes wealth at the end of 2025. We use SEC disclosures for stock sales, stock donations, net value of shares pledged as collateral for borrowing, and stock-option exercises and Compustat data for corporate profits and taxes, and dividends (prorated to their stakes). Other taxes include property taxes paid (estimated as 1% of the net value of land and buildings in their companies and prorated to their stakes) and estimated sales taxes paid on after-tax individual income (assuming 50% of it is consumed). On net, over 2019-2025, the top 4 pay $.27 billion in California income taxes per year which is 1.3% of their full economic income (fiscal individual income plus undistributed corporate profits) and .07% of their wealth. Figure 5 illustrates the figures in this table showing that individual taxes are significant (29.8%) relative to individual fiscal income, but individual fiscal income is dwarfed by economic income (that adds undistributed corporate profits) which is itself dwarfed by wealth gains (due to stock price appreciation). Therefore, total taxes relative to economic income are fairly low (19.5%) and total taxes relative to wealth gains are very low (3.8%).

Table 5. Scoring the One-Time 5% Wealth Tax

All amounts in nominal $ billions

	# California billionaires	Wealth of billionaires	Taxable wealth of billionaires (after avoidance)	Wealth tax avoidance rate	Wealth tax revenue	Extra CA income tax from sales to pay wealth tax	Annual temporary CA income tax loss from leavers
1. Benchmark: Forbes estimates as of 4/15/2026 + 10% evasion/avoidance (half due to mobility)	249	2,182	1,964	10%	98	3.5	-0.15
2. Adding missing small billionaires. Same as benchmark + Pareto extrapolation for missed billionaires in the range ($1b, $4.5b) with 20% tax avoidance/evasion for these less visible billionaires	617	2,797	2,456	12.2%	121	4.3	-0.19
3. Aggressive assumptions for reported leavers. Same as benchmark but assuming Page, Thiel, Hankey, Kalanick successfully left before 2026 to avoid wealth tax (and income tax) and that Brin, Zuckerberg, and Andy Fang will also leave in 2026 creating further CA income tax losses	249	2,182	1,679	23.1%	84	3.0	-0.53
4. Benchmark with both adding small billionaires and aggressive assumptions on leavers	617	2,797	2,171	22.4%	109	3.8	-0.57

Notes: This table provides estimates for the scoring of the California one-time 5% wealth tax on billionaires. The first scenario uses the Forbes real-time billionaire estimates as of 4/15/2026 and assumes a 10% avoidance/evasion rate. Real-time daily tracker available here for more recent updates. Ellison is always excluded. Extra CA income tax arises assuming that wealth taxes will be paid one-third by selling assets triggering taxable realized capital gains and two-thirds with liquidities or debt. To compute income tax losses, we assume that half of this evasion comes from mobility (i.e. billionaires successfully leaving the state before 1/1/2026). This income tax loss is 5% of the total California income tax of $3 billion per year paid by billionaires (from Table 3, average 2019-2025). It is annual but temporary if the wealth tax is one-time. If the wealth tax becomes permanent, both wealth tax revenue and income tax losses would be permanent (see Section 3.2 for an analysis). The second scenario starts from the first benchmark but includes billionaires missed by Forbes in the range ($1b,$4.5b) using the simple Pareto extrapolation discussed in the text. The total number of billionaires increases by 148% but total billionaire wealth increases by only 28%. We factor in the phase-in of the tax rate for billionaires in the $1b to $1.1b range and we assume a higher 20% evasion rate for these less visible billionaires and we also assume that 5% of them left the state when factoring income tax losses. The last scenario starts from the benchmark and aggressively assumes that Page, Thiel, Hankey, and Kalanick were able to leave the state before 2026 to avoid the wealth tax (and income tax). It further assumes that billionaires who announced their departure but maintained strong links to California into 2026 (Brin, Zuckerberg, Andy Fang) will also leave the state and trigger income tax losses (these 7 were listed as leavers because of the wealth tax by Forbes on April 28, 2026). Page, Brin, and Zuckerberg income tax on their company wealth is based on Table 4 (average for 2019-2025). Income tax on the private wealth of Page, Brin, Zuckerberg and on the full wealth of other leavers is proportional to their wealth (using the average ratio income tax to wealth when excluding company wealth for the top 4). This scenario illustrates the overestimation of income tax losses by Rauh et al. (2026) and Walczak (2026) who implicitly assume that the top 3 (Page, Brin, and Zuckerberg) pay much more income tax than they actually do based on our direct SEC data analysis). The 4th scenario combines scenarios 2 and 3.

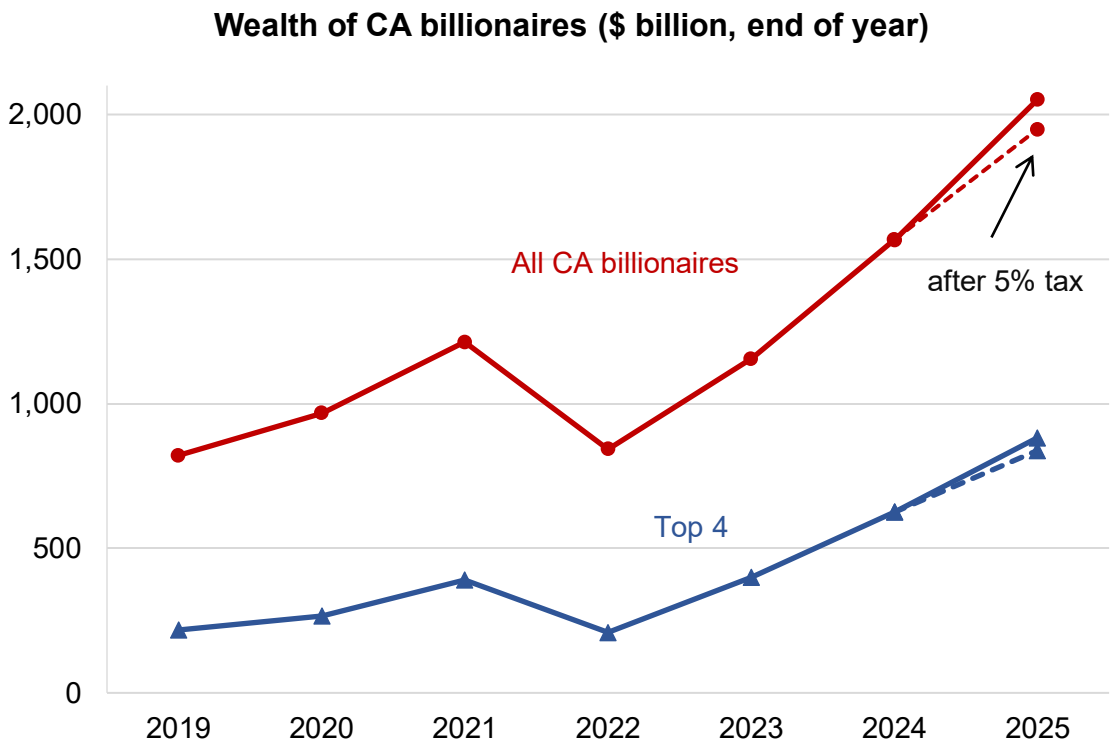


Figure 1: The Sharp Rise of California Billionaires Wealth in Recent Years
This top series depicts the wealth of California billionaires at the end of each year 2019 to 2025 in nominal $billions using Forbes real-time billionaires data. It includes all billionaire CA residents (US citizens and non-citizens) and excludes Larry Ellison throughout (who left in 2020). The second series depicts the wealth trajectory of the top 4 richest today (Larry Page, Sergei Brin, Mark Zuckerberg, Jensen Huang). They account for 43% of total CA billionaire wealth by the end of 2025 and for 56% of CA billionaire wealth growth since 2022. We also display in dashed lines the impact of a hypothetical 5% wealth tax in 2025 to illustrate that the tax is small relative to gains in recent years.

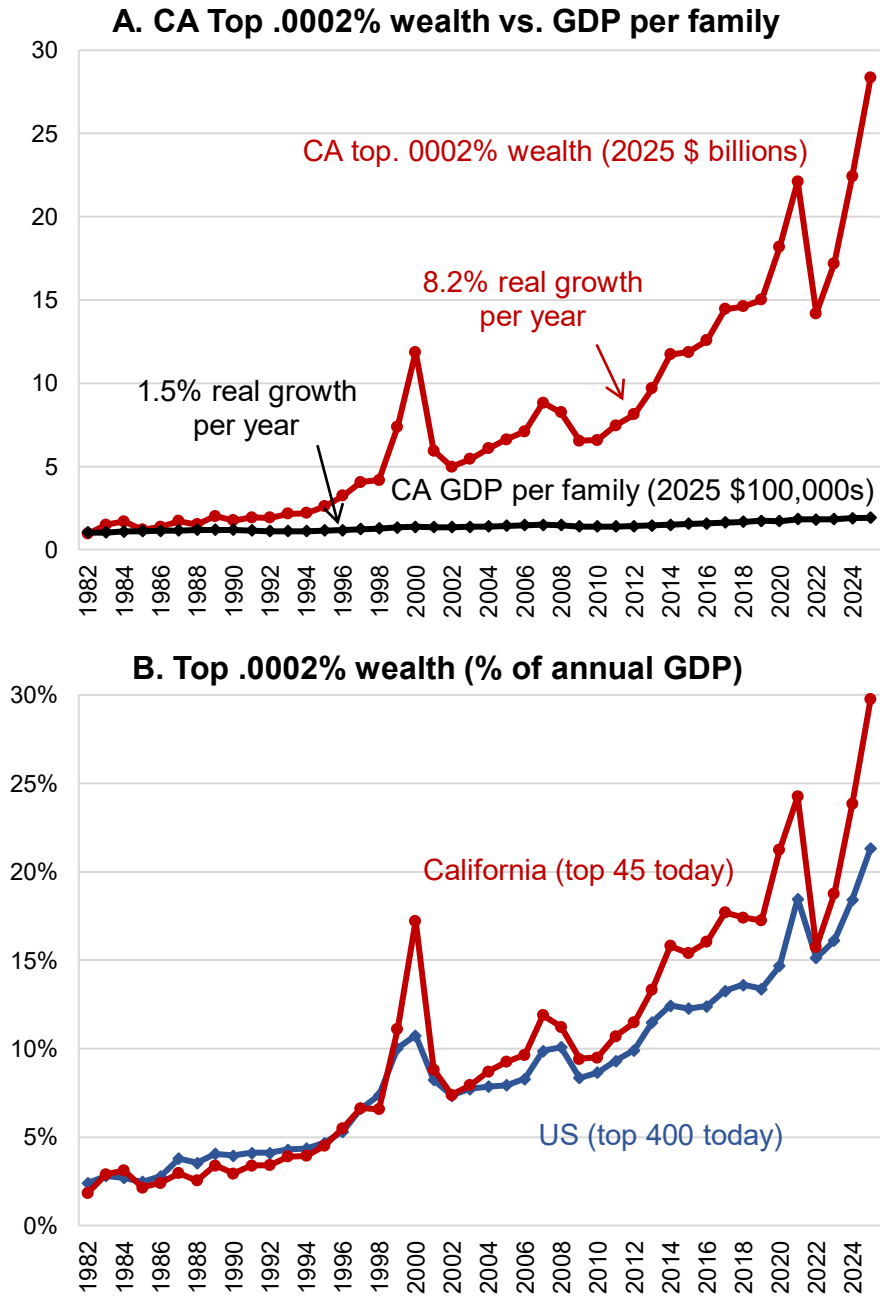


Figure 2: Billionaire Class Wealth Grows Much Faster than the Economy in the Long-Run
Panel A depicts the trajectory of top .0002% wealth (top 45 families in California today) in 2025 $ billions vs. the trajectory of California GDP per family (the average economic product of families in California) in 2025 $100,000s. California GDP per family has doubled (in real terms controlling for price inflation) from about $100,000 in 1982 to $200,000 in 2025. Top .0002% wealth has grown by a factor 30 from slightly less than $1 billion in 1982 to almost $30 billion in 2025. Panel B depicts the wealth of the billionaire class relative to the economy (measured by annual GDP) in the US (blue series) and in California (red series). The billionaire class is defined as the top .0002% richest families (the top 400 richest families for the US and the top 45 richest families for California today). Source is Forbes 400 annual lists since 1982. We exclude Larry Ellison from the California estimates after 2020.

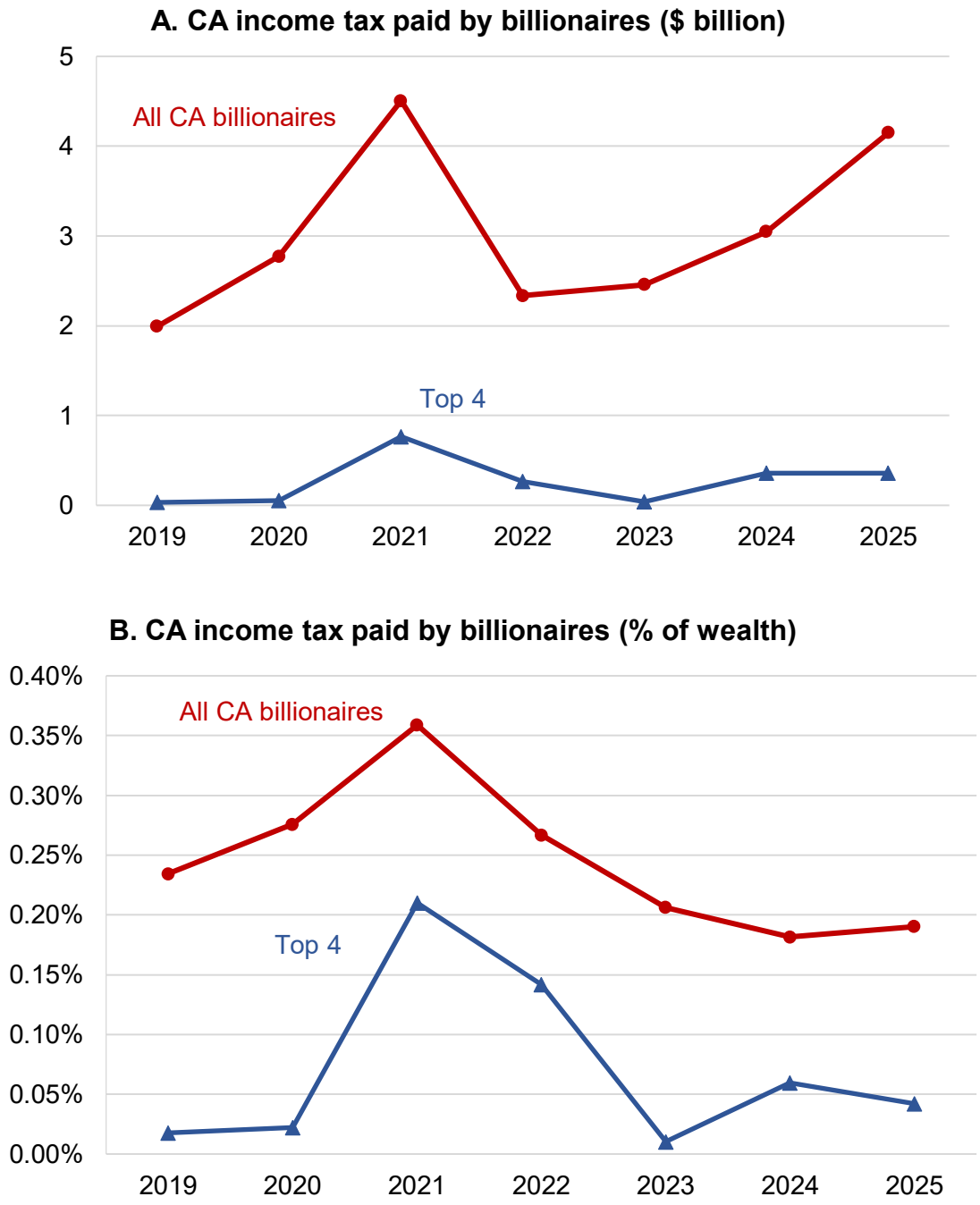


Figure 3: The California Income Tax Paid by Billionaires
This figure depicts the estimated annual California individual income tax paid by all California billionaires and the top 4 (Page, Brin, Zuckerberg, and Huang) each year from 2019 to 2025. Panel A displays amounts in nominal $ billions. Panel B displays amounts as percent of end of year wealth. For all California billionaires, this is estimated using Franchise Tax Board tabulated statistics, a simple Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners. For the top 4, the tax is estimated using SEC disclosures on stock sales, exercised stock-options, dividends received, and charitable donation of stock for the public companies they own (which accounts for 97% of their wealth at the end of 2025).

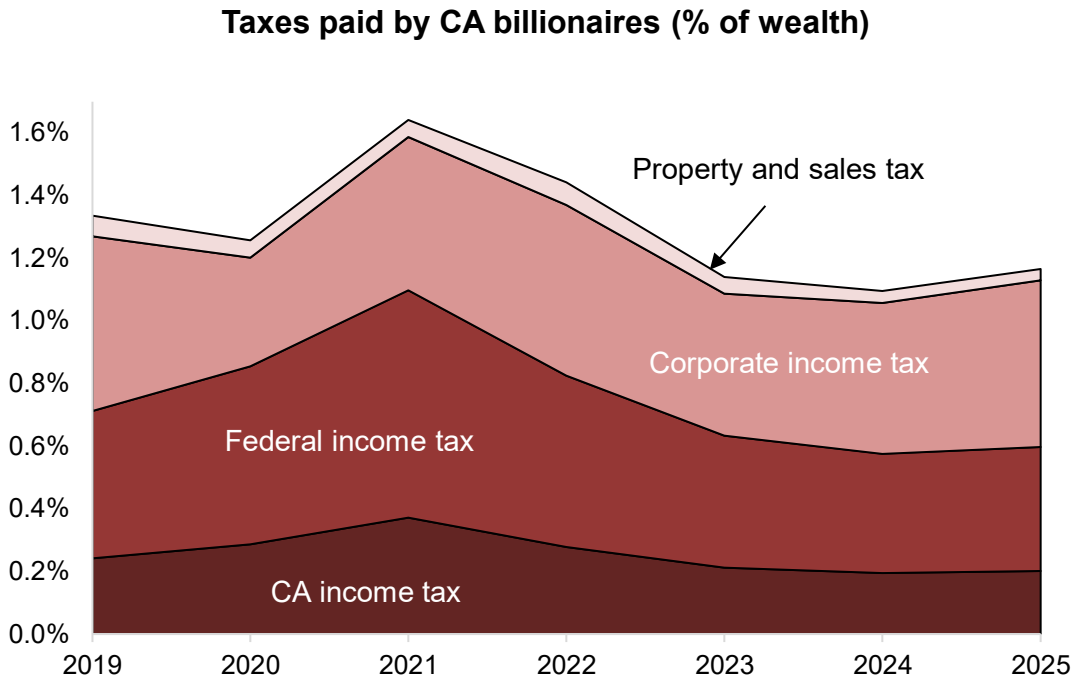


Figure 4: Total taxes Paid by California Billionaires relative to Wealth
This figure depicts the estimated total annual taxes paid by all California billionaires and the composition by tax type from 2019 to 2025 relative to end of year wealth. Federal and California individual income taxes are estimated using Franchise Tax Board tabulated statistics, a simple Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners. Corporate and property taxes are estimated with Compustat for all publicly traded corporations owned by California billionaires. Corporate taxes include federal, state, and foreign corporate taxes. We impute corporate taxes for privately held C-corporations, property taxes and sales taxes following the method of Balkir et al. (2025). In the last 3 years 2023-2025, California billionaires' total annual taxes amount to about 1.1% of their wealth (down from 1.4% in 2019-2022). The largest tax is the corporate tax. The individual income taxes are small relative to wealth because billionaires realize only a fraction of their full economic income, let alone their wealth gains. Appendix Figure A3-A produces the same statistics for wealth arising from publicly traded stock.

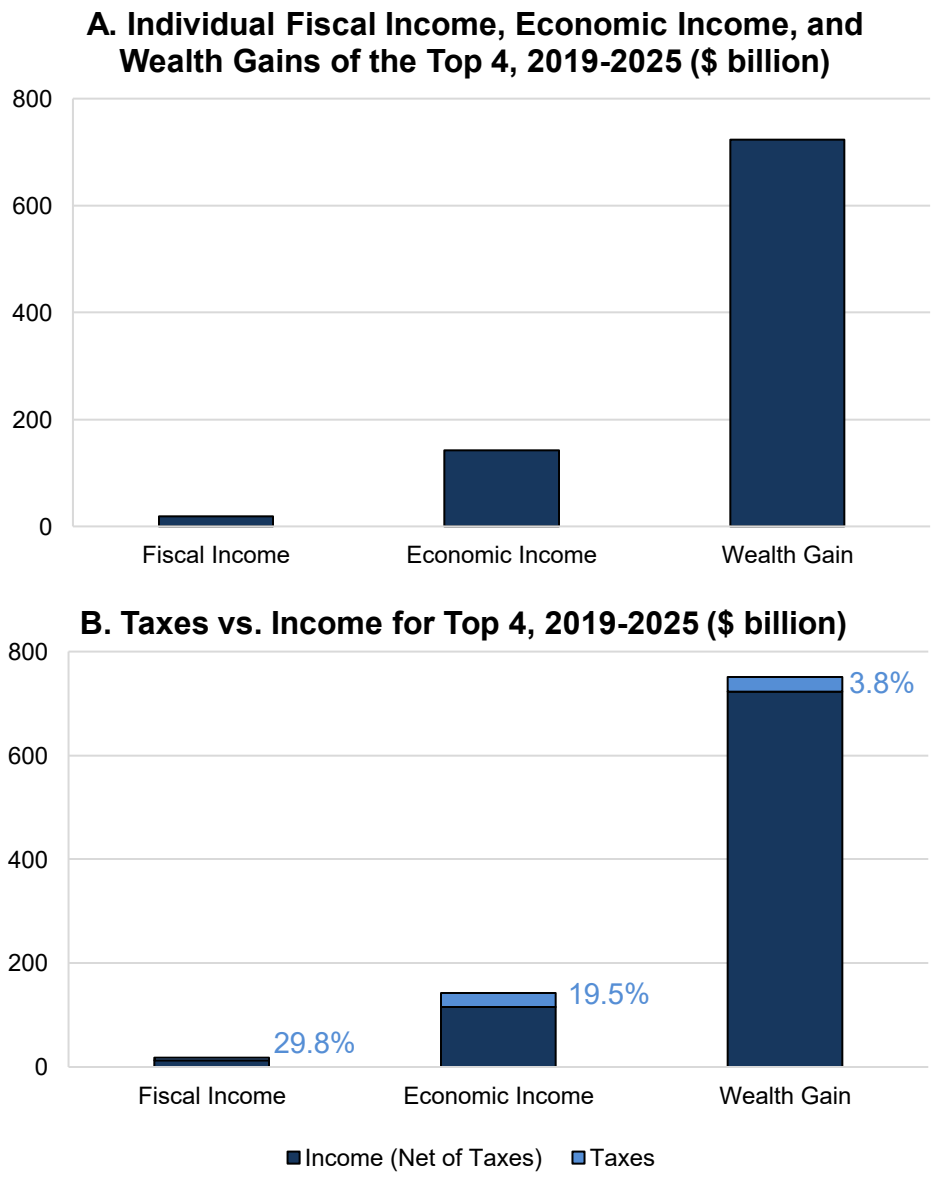


Figure 5: Income and Taxes for the Top 4 in 2019-2025
This figure illustrates the statistics from Table 4 on income and taxes of the top 4 richest Californians (Brin, Page, Zuckerberg, and Huang) in the period 2019-2025 on their company wealth (which is 97% of their total wealth at the end of 2025). All amounts are in nominal $ billions. The top panel depicts individual income reported on individual tax returns (first bar), economic income that adds undistributed corporate profits to individual income (second bar), and wealth gain from the beginning of 2019 to the end of 2025 (third bar). The top panel depicts taxes (in light blue) paid on each of these income types and displays the tax rate. For individual fiscal income, taxes include California and federal individual income taxes only. For economic income and wealth gains, taxes include all taxes at all levels of government. The figure shows that individual taxes are significant (29.8%) relative to individual fiscal income, but individual fiscal income is dwarfed by economic income which is itself dwarfed by wealth gains (due to stock price appreciation). Therefore, total taxes relative to economic income are fairly low (19.5%) and total taxes relative to wealth gains are very low (3.8%).

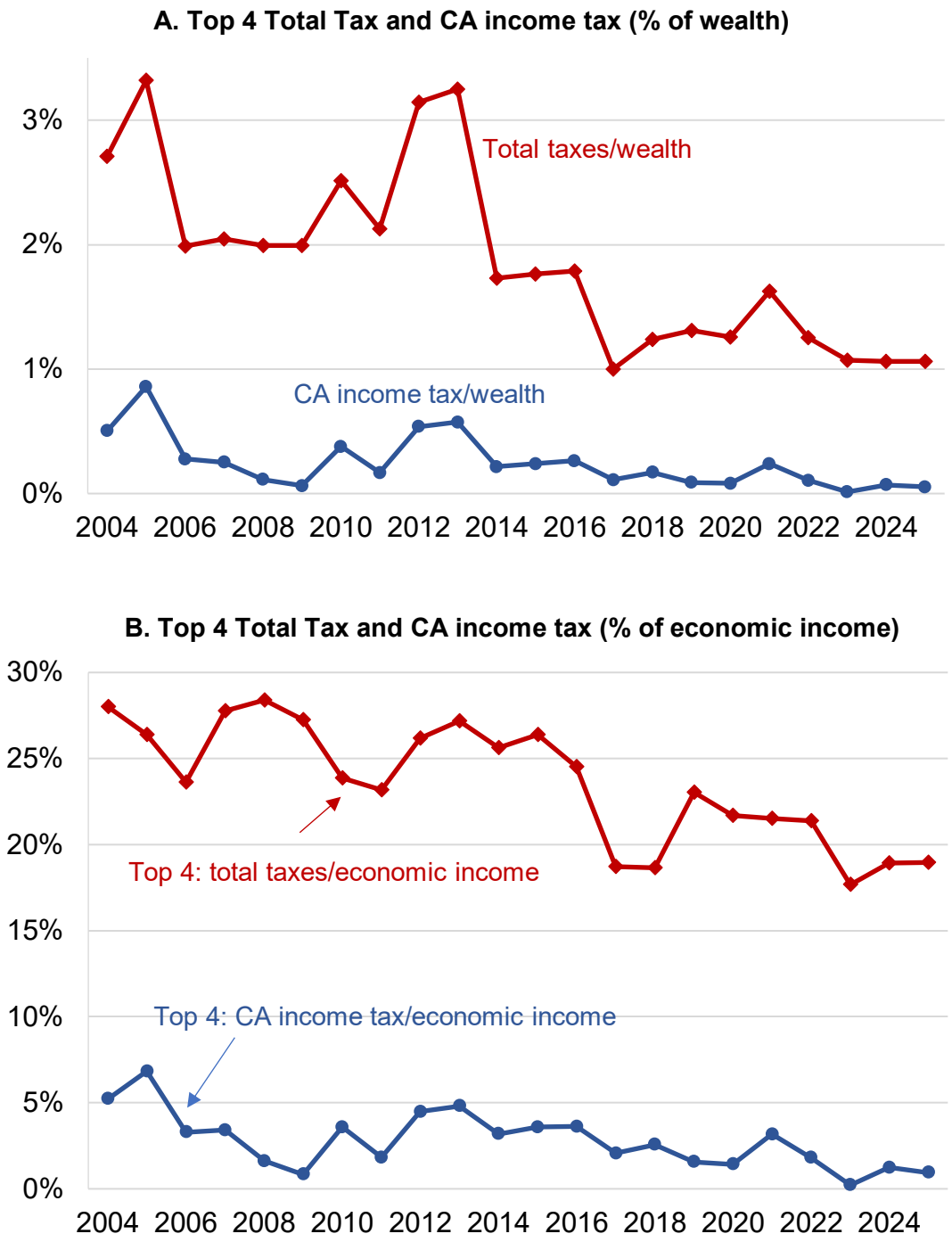


Figure 6: Taxes paid by the Top 4 Relative to Wealth and Economic Income
This figure depicts the estimated taxes paid by the top 4 each year from 2004 to 2025 relative to their wealth (top panel) and relative to their full economic income (bottom panel). Each panel also reports the California individual income tax paid specifically. Top 4 includes Sergei Brin, Larry Page, Mark Zuckerberg, Jensen Huang in 2021-2025 and replacing Jensen Huang by Larry Ellison from 2004 to 2020 (when Larry Ellison was a California resident and among the richest 4). Wealth and taxes are estimated for their wealth from their main company stakes (97% of their total Forbes wealth in 2025) using SEC disclosures and Compustat data. Wealth is measured as the average over each calendar year.

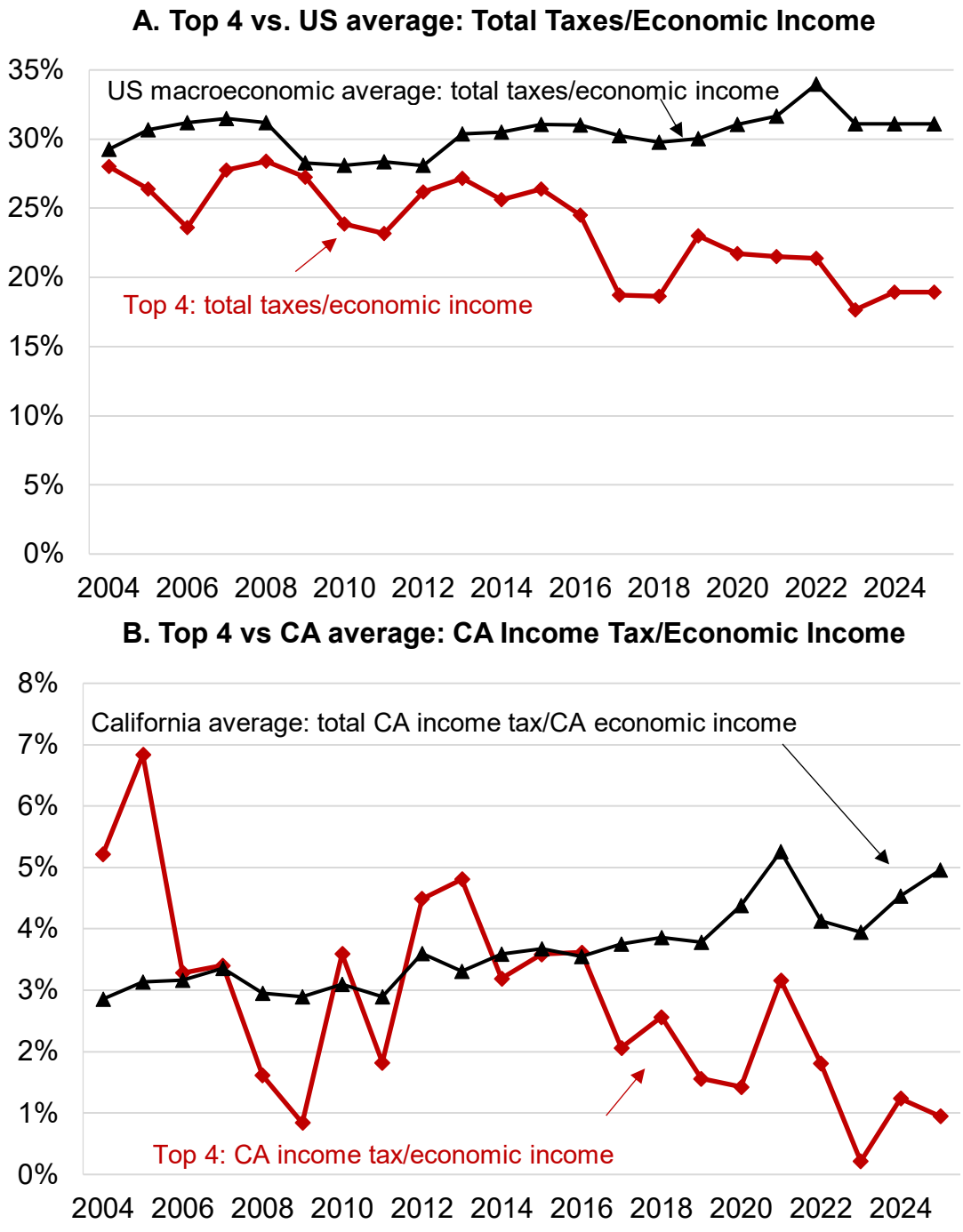


Figure 7: Comparing Taxes paid by the Top 4 to Economy Wide Tax Rates
This figure compares taxes paid relative to economic income for the top 4 vs. the average economy wide. The top panel reports total taxes (relative to economic income) for the top 4 and the US wide macro-economic average. The macroeconomic average effective tax rate for the US population is computed using the updated Distributional National Accounts series (for a detailed discussion, see Saez and Zucman, 2023). The bottom panel reports the California individual income tax paid relative to economic income for the top 4 vs. the average in California. The figures show that the top 4 effective tax rates for total taxes or for the California income tax specifically have been falling overtime and have become substantially lower than the economy wide averages.

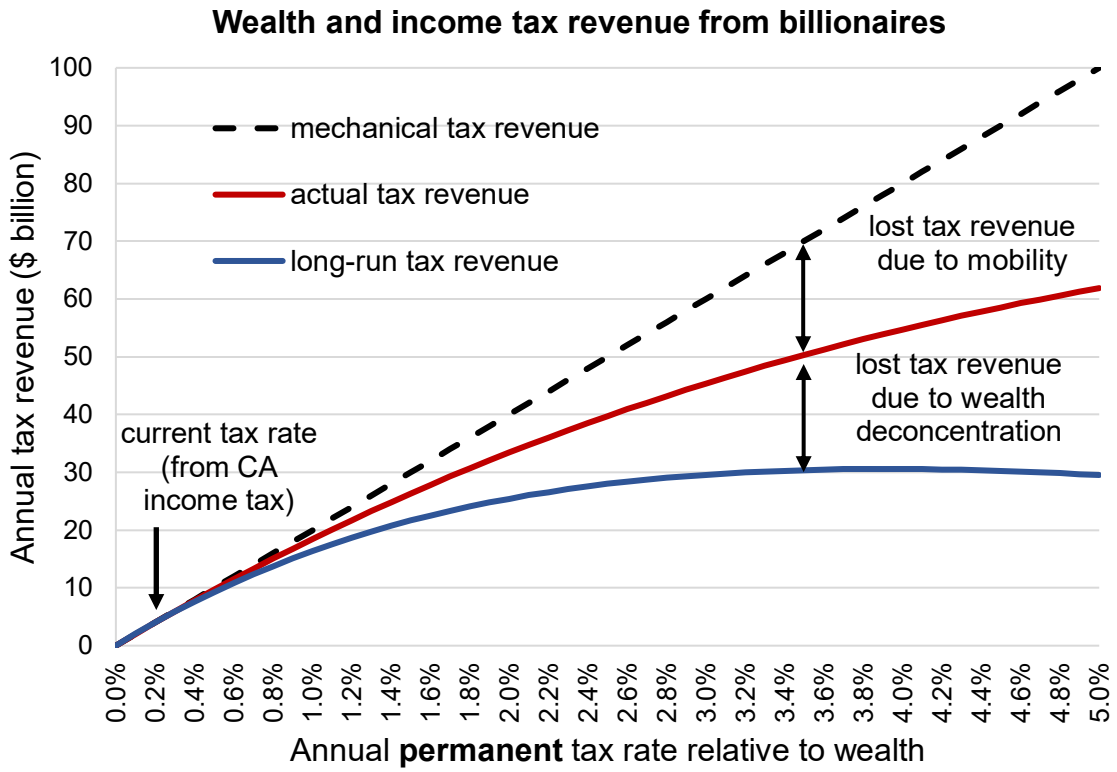


Figure 8: Does a Permanent Annual Wealth Tax on Billionaires Raise Revenue?
This figure depicts the revenue collected from billionaires (in $ billions on the y-axis) from a permanent annual wealth tax as a function of the tax rate (on the x-axis) in the solid red line. This tax revenue estimate takes into account income and wealth tax revenue lost because of mobility responses calibrated using the empirical literature with a semi-elasticity of the tax base with respect to the wealth tax rate of e=10 (same semi-elasticity calibration as in Rauh et al. 2026). For comparison, the dashed line plots the tax revenue ignoring the mobility response. The last line in blue estimates wealth tax revenue in the long-run taking into account that annual wealth taxation mechanically erodes billionaire wealth over time. It plots the expected revenue if the billionaire wealth tax had been in place for decades and had already eroded billionaire wealth. We assume, based on Forbes data that current California billionaires have been billionaires for an average of d=15 years (when weighting for wealth) so that the long-term effect of a wealth tax is to reduce billionaire wealth by $(1-\tau)^{15}$ where τ is the annual wealth tax rate. The current California income tax is about .2% of wealth for billionaires. The graph shows that adding a permanent wealth tax beyond the existing tax of .2% can raise substantial revenue even taking into account mobility responses. The effect of wealth de-concentration is also modest for moderate wealth tax rates. Furthermore, for moderate wealth tax rates of up to 1% per year, the revenue lost due to behavioral responses is modest (of less than 10% for mobility and an additional 15% in the long-run due to de-concentration). In the companion excel file posted here, readers can change the elasticity parameters e and d.

Appendix Table A1. Wealth Growth of US Billionaires

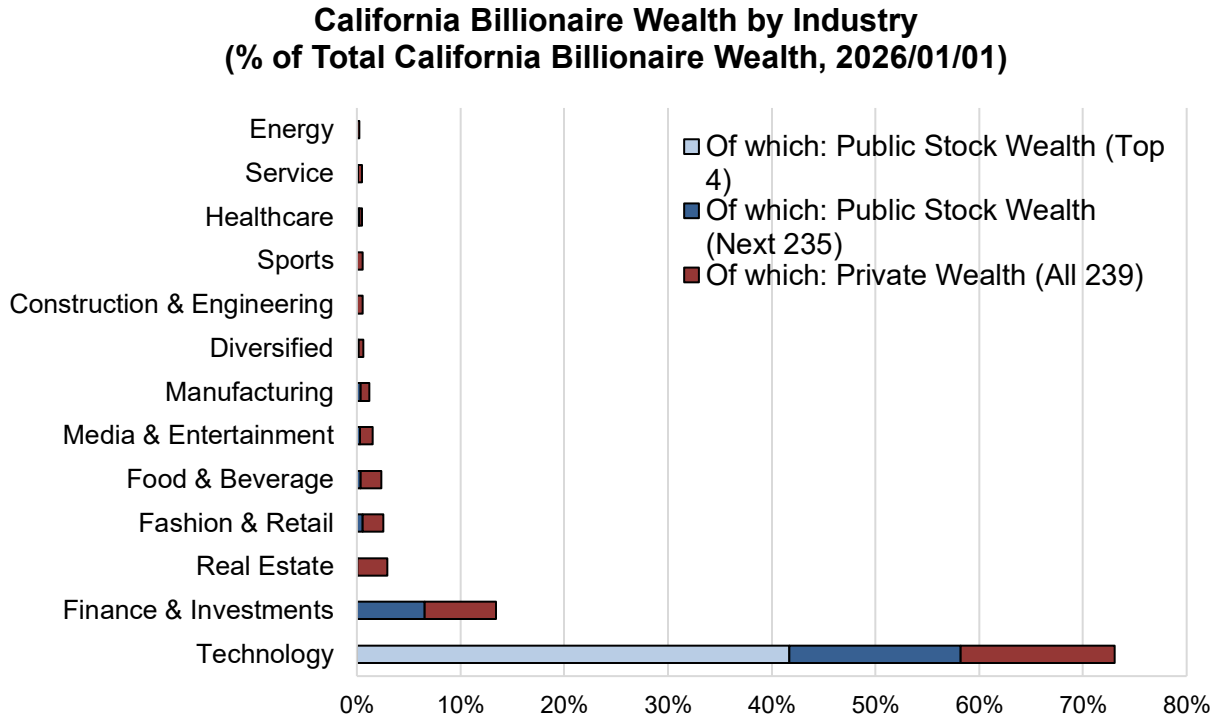
A. Recent nominal wealth growth of US billionaires (nominal $ billions)

Year	Number of US citizen billionaires	Wealth (end of year)	Annual growth
2022	717	4358	
2023	746	5247	20.4%
2024	813	6723	28.1%
2025	938	8189	21.8%
Growth during 3 years (2023-2025)		88%	

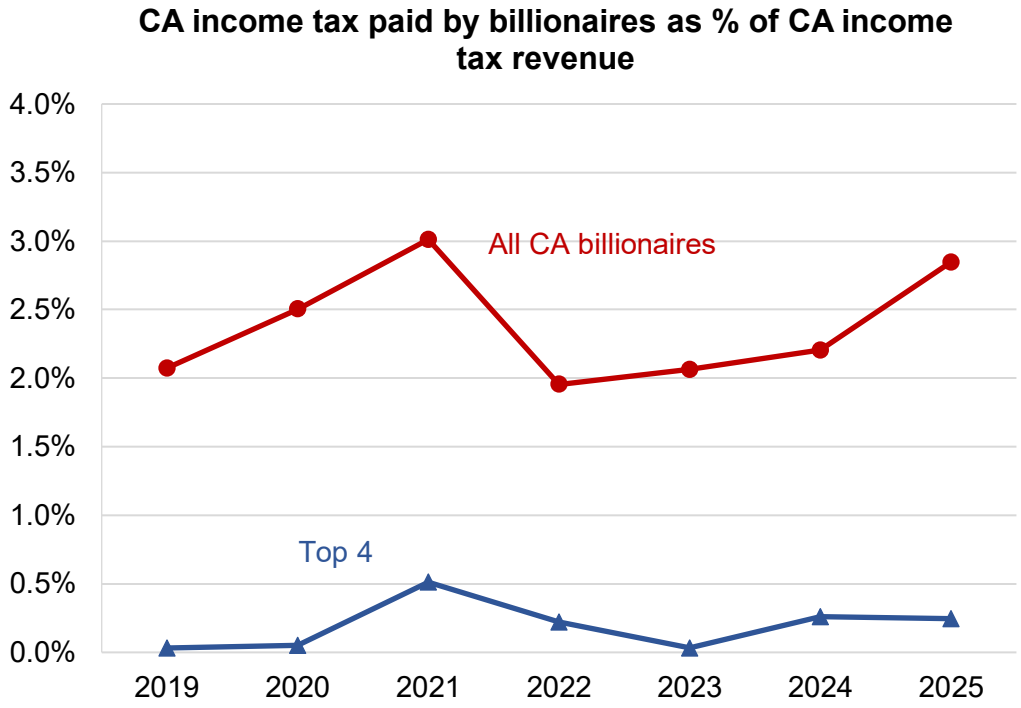
B. Long-term real wealth growth of US billionaire class=top .0002% richest (real 2025 $)

Year	# families in top .0002%	Top .0002% wealth (2025 $b)	Top .0002% wealth per family	# US families (millions)	US GDP (2025 $b)	US GDP per family (2025 $)
1982	221	240.2	1.09	110.5	9,946	89,995
2025	386	6537.4	16.9	193.1	30,644	158,726
Ratio 2025 to 1982	1.7	27.2	15.6	1.7	3.1	1.8
Annualized growth	1.3%	8.0%	6.6%	1.3%	2.7%	1.3%

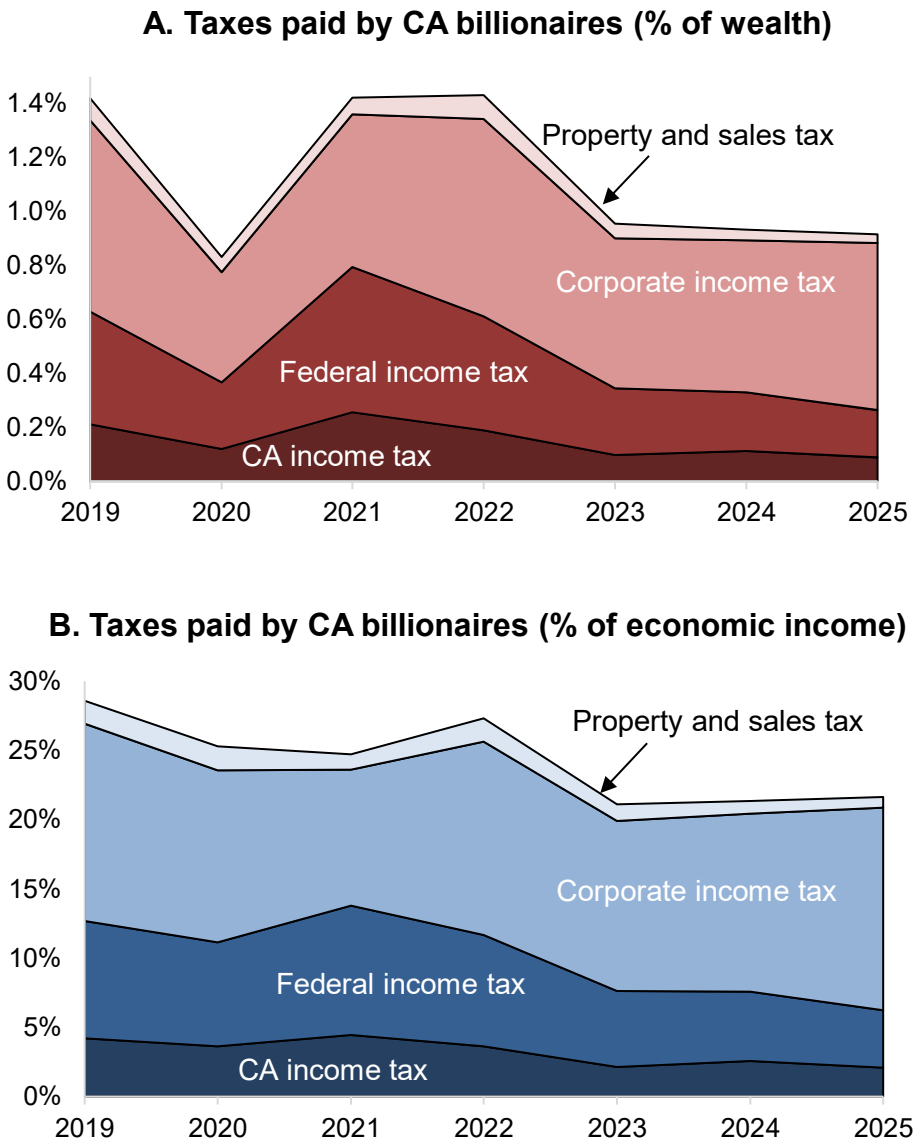
Notes: This table repeats Table 1 for all US citizens billionaires regardless of residence instead of only California resident billionaires. Panel A illustrates the recent sharp growth in US billionaire wealth using the Forbes real-time billionaire data. It reports wealth in nominal $ billions as well as US annual GDP for comparison. Panel B illustrates the long-term real growth of the US billionaire class (defined as the richest .0002% families) from 1982 to 2025 using the Forbes 400 annual data. The average real wealth of the US billionaire class has grown by a factor 27.2 (6.6% real growth per year on average) while US GDP per family has grown by a factor 1.8 (1.3% real growth per year on average).



Appendix Figure A1: California Billionaires Wealth by Industry
This figure depicts the source of California billionaires wealth by industry as reported in Forbes real-time billionaires list as of January 1, 2026. Forbes real-time billionaires provides a classification of the source of wealth by industry for each of the 239 California billionaires as of that date. Wealth by industry is shown as a fraction of total California billionaires wealth. For each industry, wealth is shown with a break-down by wealth in the form of publicly traded stock (blue bar) and wealth in the form of private, non-publicly traded, assets (red bar). The public stock wealth of the top 4 from Alphabet (Brin and Page), Meta (Zuckerberg), and Nvidia (Huang) is represented in light blue within the tech sector. The figure illustrates that California billionaires wealth in the technology sector accounts for 73% of total California billionaires wealth, of which 80% reflects wealth in the form of publicly traded stock, the majority of which comes from the top 4.

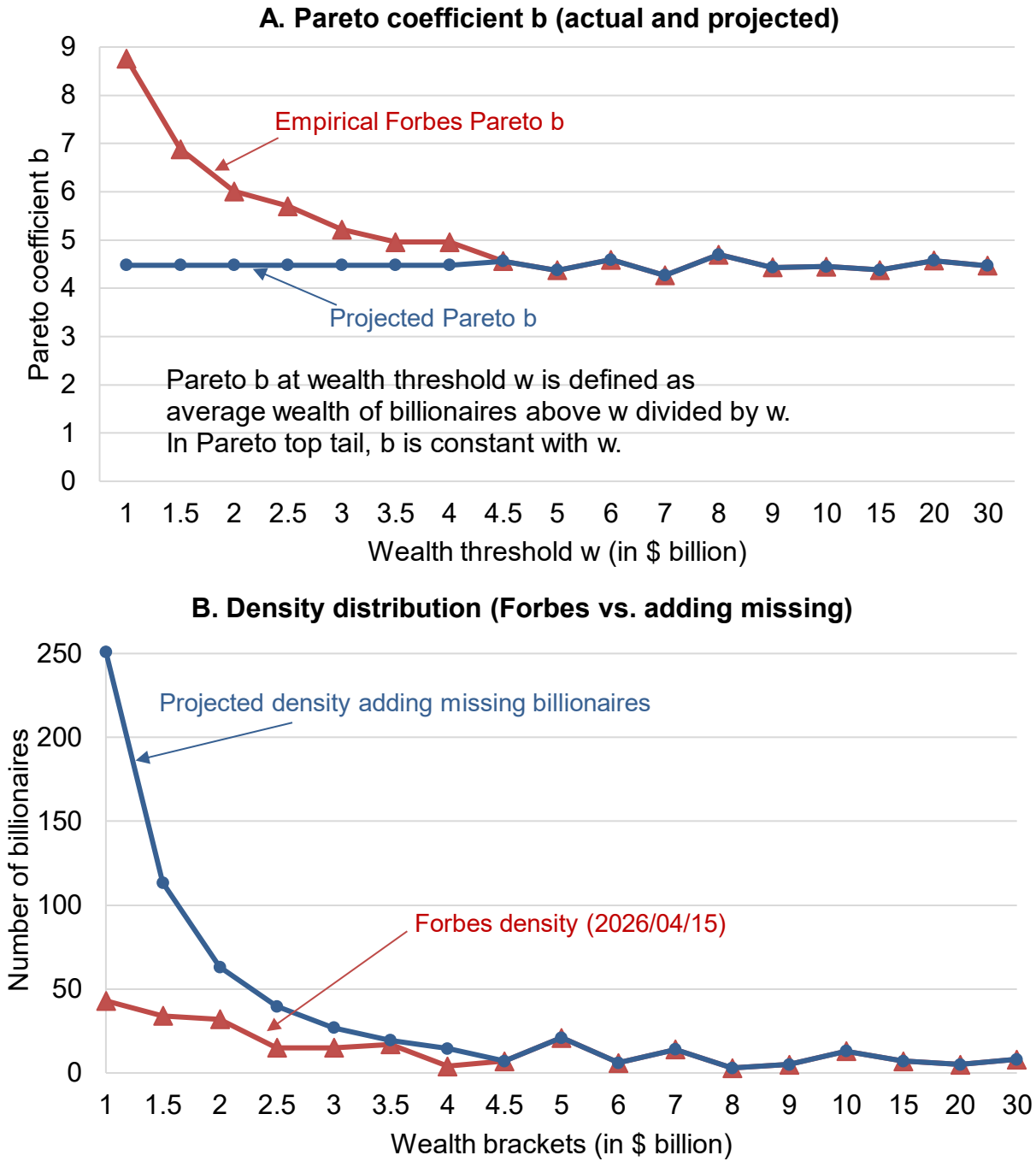


Appendix Figure A2: California Income Tax paid by Billionaires (as % of California Income Tax Revenue)
This figure depicts the estimated annual California individual income tax paid by all California billionaires and the top 4 each year from 2019 to 2025 as a percent all total California individual income taxes paid in the state. For all California billionaires, this is estimated using Franchise Tax Board tabulated statistics, a simple Pareto extrapolation, and an adjustment based on Federal tax data reflecting that top wealth holders are not top income earners. For the top 4, the tax is estimated using SEC disclosures on stock sales, exercised stock-options, dividends received, and charitable donation of stock for the public companies they own (which accounts for 97% of their wealth at the end of 2025).



Appendix Figure A3: Total Taxes Paid by California Billionaires on their Publicly Traded Stock Wealth

This figure depicts the estimated total annual taxes paid by all California billionaires on their wealth from publicly traded stocks listed on SEC filings and the composition by tax type from 2019 to 2025. Publicly traded stock wealth is 61% of total wealth for California billionaires over the period 2019-2025 (see Table 1). Panel A expresses taxes relative to end of year wealth and panel B relative to full economic income (individual fiscal income plus undistributed corporate profits). Federal and California individual income taxes are estimated using sales of stock for capital gains, dividends received, executive compensation, and donations of appreciated stock. Corporate and property taxes are estimated with Compustat for all publicly traded corporations owned by California billionaires. Corporate taxes include federal, state, and foreign corporate taxes. In the last 3 years 2023-2025, California billionaires' total annual taxes on their publicly traded stock wealth amounts to about .9% of this wealth down from 1.3% in 2019-2022. Taxes are 21% of economic income produced by publicly traded stock wealth in 2023-25 down from 26% in 2019-2022. The largest tax is the corporate tax. The individual income taxes are small relative to wealth because billionaires realize only a fraction of their full economic income.



Appendix Figure A4: Adding Billionaires Missed by Forbes using Pareto Extrapolation
Panel A depicts the Pareto b coefficient at each wealth threshold (in $ billion) using the California billionaire data from Forbes as of 4/15/2026. Pareto b at threshold wealth w is defined such that average wealth of billionaires above w is b*w. With a pure Pareto distribution, this coefficient b is constant with w which is approximately true above $4.5 billion. The fact that b is higher below $4.5 billion is evidence of missing billionaires from the Forbes list in the range ($1b,$4.5b). Panel B depicts the actual Forbes billionaire density distribution along with the density that adds missing billionaires so that the Pareto coefficient b remains constant below $4.5 billion at b=4.48, the average value of b above $4.5 billion from Panel A.

Methodological Appendix

We provide in this appendix details on our computations. Series and computations underlying all the graphs and tables presented here are posted in excel format online here. A real-time daily tracker of California billionaires' wealth and corresponding wealth tax revenue is available here.

A. Estimating California billionaire wealth

We use the Forbes magazine billionaire data. For all California billionaires from 2019 to 2025, we use the real-time Forbes billionaire data as of the end of the year. Forbes draws on various sources to compile its list of the wealthiest Americans. These include information directly shared by Forbes billionaires, official documents (e.g., Securities and Exchange Commission filings, court filings and probate records), as well as other journalistic sources (Durot, 2025). For the computation of public stock wealth, which Forbes estimates to account for 66.9% of total California billionaire wealth as of January 1, 2026, Forbes mainly relies on beneficial ownership statements that major shareholders (owning more than 5% of a US listed firm; reported through filings Form 13D/G) and insiders (irrespective of their ownership share; reported through filings Form 14A) must report to the SEC. As outlined in Appendix section C, we replicate and verify Forbes' computations of the public stock wealth of the top 4 wealthiest California billionaires.

We include both US and non-US citizens listed as California residents by Forbes. As of January 1, 2026, Forbes identifies 237 billionaires as California residents with combined net worth of $2277 billion. Of these, 25 billionaires are non-US citizens with combined net worth of $132 billion. We make the following adjustments to the Forbes list.

First, we remove Larry Ellison as California resident after 2020. Larry Ellison was listed by Forbes as California resident up to December 2020, then as Hawaii resident from December 2020 until September 2023 and again as California resident from September 2023 until January 2026. After mid-January 2026, Forbes lists Ellison as a Florida resident. However, as reported by Forbes magazine on February 27, 2026, Ellison made a public declaration of domicile in Florida already in May 2023 (Liu 2026). Hence, we discard Ellison from our analysis after 2020 (when he moved to Hawaii as he likely never came back to California and instead moved directly to Florida). This reduces total California billionaire wealth as of January 1, 2026, by $245 billion.[30]

Second, we include Daniela Amodei, Kim Kardashian, and Laurene Powell Jobs as California billionaires as of January 1, 2026. In December 2025, Forbes changes the state of residence of these three billionaires from California to missing (coded as NA). By mid-January 2026, Kardashian and Powell Jobs are again listed as California residents. There is no information on Amodei having left California, hence we keep Amodei as California resident after December 2025. Including Amodei, Kardashian and Powell Jobs as California residents adds $19.6 billion to total California billionaire wealth as of January 1, 2026. The NA classification from Forbes is likely to be a typo in the database. After performing these adjustments, we identify 239 billionaires with total wealth of $2052 billion as California residents as of January 1, 2026.[31]

B. Estimating Taxes paid by California Billionaires

[30] Rauh et al. 2026 also choose to exclude Larry Ellison from their estimates.

[31] This means that our updated estimate for total California billionaire wealth as of January 1, 2026, is 6% lower than the one Galle et al. (2026a) use for scoring analysis of the California Billionaire Tax Act. Relative to the estimate in Galle et al. (2026a), total California billionaire wealth decreases by excluding Larry Ellison, but it increases by including non-US citizens as well as Amodei, Kardashian, and Powell Jobs who were not included in initial estimates due to missing state information in the real-time Forbes data.

Using California income tax statistics (Table B4a) for the highest income bracket ($10m+ in 2021-3 and $5m+ up to 2020) and a simple Pareto interpolation, we can estimate the income of the top N California taxpayers (ranked by income) where N is the corresponding number of CA billionaires in the Forbes real-time list (at the end of the year). E.g. N=187 at the end of year 2023. N includes both US citizens and non-US citizens who are residents of California.

First, using US wide IRS data comparing Pareto extrapolations based on the income bracket $10m+ and the top .001%, we find that extrapolating from the $10m+ over-estimates the top .001% incomes by about 10%. The top .001% is about the same size (relative to population) as N, the number of billionaires in California. Hence, we apply a year specific correction based on the overshooting from US wide IRS extrapolations.[32]

Second and most important, the top N wealth holders have by definition less income than the top N income earners. Fortunately, both the US wide data from the IRS reported in Balkir et al. (2025) and Survey of Consumer Finance statistics (reported in Saez and Zucman 2019b, p. 466) both shows that top wealth holders have about 50% of the income of top income holders and this number is stable across years. Therefore, we apply this 50% uniformly.

Third, once the income of the top N wealthiest is estimated, we assume that they pay an average tax rate on this income which is 92% of the average tax rate for the $10m+ taxpayers. This 92% comes from comparing the average federal income tax rate of the top .0002% by wealth from Balkir et al. (2025) vs. the top .001% by income in IRS statistics. The wealthiest pay a slightly lower tax rate because they give a larger fraction of their individual fiscal income to charity.

Fourth, we add back to California income tax the California income tax paid by passthrough businesses at source through the passthrough elective tax credit created in California in 2021. This passthrough elective tax credit allows CA passthroughs to pay most of the California income tax on profits at the business level to maintain deductibility at the federal level (as state income tax deductibility was sharply curtailed starting in 2018 due to TCJA). The Franchise Tax Board omits this passthrough taxes at source from its individual income tax statistics. As a result, the average tax rate (total tax liability to taxable income) in the bracket $10 million and above, falls from a very stable 12.7% down to 11.1% in 2021, 9.0% in 2022, and 8.8% in 2023. We correct this applying a 12.7% tax rate on taxable income continuously in 2021 and after.

Comparing these estimated taxes to total California income taxes collected (on residents and non/part-time residents and adding the aggregate passthrough tax at source discussed above) shows that billionaires pay on average 2.3% of all CA income taxes in 2018-2023 with variations across years with a high of 3.0% in 2021 (a year of very high capital gains realizations) to lows of 2.0% in 2022 and 2.1% in 2023. As tabulations by income are not yet available for 2024 and 2025, we project estimates of the fraction of income taxes paid for these two years using the average of 2018-2023 of 2.3% for 2024 and the 2021 high of 3.0% for 2025 as 2025 is shaping up to be a year of high capital gains realizations (based on higher than expected California income tax revenue collections in early 2026).

As a robustness check, we can also use Balkir et al. (2025) statistics on income reported by the Forbes top 400 billionaires in 2018-2020 which includes about the top 90 California wealthiest, a quarter of the US total. We estimate that these top 90 wealthiest Californians pay about $1.70 billion in CA income taxes per year on average. This estimate is obtained by assuming that the top 90 wealthiest in California have an income tax rate relative to Adjusted Gross Income equal to 92% of the California income tax rate for the $10m+ bracket taxpayers (with the 92% discount due to charitable giving as discussed above). Our method described above applied to the top 90 generates an average CA income tax of $1.92 billion in years 2018-2020

[32] Similarly, extrapolating the $10m+ incomes from the $5m+ income bracket generates a moderate over-estimation. Hence, we correct for this as well in years before 2021 when the top bracket available is $5m+ in California income tax statistics.

which is about 13% higher. Hence, the Balkir et al. (2025) direct numbers suggests that our estimates are if anything on the high side. To shed further light on this hotly debated issue, these estimates could be further refined by a direct study using Franchise Tax Board data matched to lists of California billionaires replicating what Balkir et al. (2025) did US wide using internal IRS statistics.

Separately from the main analysis of CA income taxes paid by CA billionaires, we estimate total taxes paid by California billionaires on income derived from public stock wealth by extending the method used for the top 4 (as outlined in detail in Appendix section C) to all California billionaires over the period 2019-2025. This is possible for all California billionaires who are insiders of US listed firms and thus subject to SEC insider trading reporting requirements. As of January 1, 2026, there are 239 California billionaires, of which 163 billionaires (i.e. 68%) are registered with the SEC as insiders or major shareholders of a US listed firm. Appendix Figures A3-A and A3-B show total taxes paid on economic income derived from public stock wealth relative to economic income (Figure 3-A) and relative to wealth in publicly traded stock (Figure 3-B).

C. Estimating the Trajectory of Wealth, Income, and Taxes for the Top 4

We provide estimates for wealth, income, and income taxes paid by the top 4 wealthiest Californians according to Forbes over the 2004-2025 period (Sergey Brin, Larry Page, Mark Zuckerberg, Larry Ellison until 2020, and Jensen Huang after 2020). We continuously display Sergey Brin, Larry Page, and Mark Zuckerberg in our series while we replace Larry Ellison with Jensen Huang after 2020. This is because Larry Ellison reported a change of domicile to Hawaii in December 2020. Conversely, the wealth of Jensen Huang only started increasing significantly in 2020. Hence, by replacing Larry Ellison with Jensen Huang after 2020, we consistently show wealth, income, and income taxes for the top 4 wealthiest California residents.

As of 2026/01/01, Forbes reports that the top 4 hold a combined net worth of $882 billion, of which we estimate $856 billion (97% of total wealth) to be in the form of publicly traded stock of Alphabet (Page and Brin), Meta (Zuckerberg), and Nvidia (Huang). For the portion of wealth that reflects public stock wealth in these firms, we estimate income, and associated income taxes paid over the 2004-2025 period, by using publicly accessible Securities and Exchange Commission (SEC) disclosures. Section C.1 presents the raw data sources (Forbes, SEC, and Compustat) used to estimate wealth, income, and income taxes paid for the top 4. Section C.2 describes the computation of wealth, public stock wealth, and firm-level ownership shares of Brin, Ellison, Huang, Page, and Zuckerberg in Alphabet, Meta, Oracle, and Nvidia. Section C.3 documents the construction of all fiscal and economic income variables. Section C.4 describes the computation of all tax variables. The main results are provided in the accompanying excel file posted here. Variable names in square brackets refer to the variables as coded in the companion excel file.

Average tax rate and California income tax rate population wide. Figure 7 depicts the macroeconomic average effective tax rate for the US population and the macroeconomic average effective California individual income tax rate for the CA population. We compute the macroeconomic average effective tax rate for the US population by adding all taxes paid by US residents and dividing by their total economic income using the updated Distributional National Accounts series for the US (for a detailed discussion of this computation, see Saez and Zucman, 2023). For the California population, we compute effective personal income tax rates by dividing total CA personal income taxes paid by CA economic income. CA personal income taxes paid are obtained from FTB tabulated tax statistics, while California economic income is computed by scaling California adjusted gross income, as obtained through FTB tabulated tax statistics, by the ratio of US economic income to US adjusted gross income (obtained from the updated series of

the Distributional National Accounts for the United States). This assumes that the ratio of California economic income to California adjusted gross income is equivalent to the ratio of US economic income to US adjusted gross income.

C.1. Raw data: Forbes, SEC, Compustat

We use three main data sources: Forbes (Forbes 400 and Forbes Real-Time Billionaires List), SEC filings (forms 4, 13D/G, 10-Q, 10-K, and 14A), and Compustat (Daily Securities Data, Quarterly and Fundamentals Data, and Execucomp).

Forbes. Since 1982, the annual Forbes 400 lists the 400 wealthiest Americans. For purposes of estimating wealth in the form of publicly traded stock, Forbes mainly relies on SEC filings which detail the ownership shares of major shareholders, executives and chairs of board of listed C-corporations. Since 2019, the Forbes real-time billionaires list provides daily updated estimates of billionaire wealth, with a break-down of wealth into wealth in the form publicly traded stock and wealth in the form of other, non-publicly traded assets.

SEC filings. We use SEC filings form 10-K, 10-Q, and 14A reported at the firm level and SEC filings form 4 and 13D/G reported at the individual level. As Alphabet, Meta, Nvidia, and Oracle are US-listed C-corporations, they disclose their annual and quarterly income statements and balance sheets publicly on forms 10-K and forms 10-Q respectively. Annual proxy statements, including information on executive compensation and beneficial ownership of chairs of board and executives, are disclosed through forms 14A.
At the individual level, shareholders owning more than 5% of the outstanding stock of a US-listed C-corporation, must disclose their beneficial ownership of the respective firm (detailing the number of shares owned with break-down by ownership nature) on a form 13D/G. Finally, any chair of the board, executive, or major shareholder owning more than 10% of the outstanding stock of a US-listed C-corporation must disclose any trades of the firm's stock with the SEC through a filing form 4. SEC filings form 4, a key input to our analysis, are disclosed in electronic filing format only since 2004, hence we restrict our analysis to 2004-2025. Page, Brin, Zuckerberg, Ellison, and Huang are subject to these reporting requirements as insiders for their Alphabet, Meta, Oracle, and Nvidia stock.

Compustat. We access SEC filings form 10-Q and 10-K through Compustat Quarterly and Compustat North America Fundamentals database respectively. SEC forms 14A are retrieved through Compustat Execucomp. Further, we use Compustat North America Daily Securities database to obtain the daily stock prices, outstanding shares, and stock-split correction factors for Alphabet, Meta, Nvidia and Oracle.

C.2. Wealth, public stock wealth, and ownership shares.

Provided with the raw data sources described above, firm-level ownership shares, public stock wealth, and wealth are constructed as follows.

a. **Ownership shares.** We use SEC filings form 4, 13D/G, and 14A to obtain the number of shares owned, as well as the ownership shares, of the top 4 in their main publicly traded holdings. While the primary source of information are forms 13D/G, for Jensen Huang it is necessary to resort to forms 14A as Huang is below the 5% ownership share filing threshold to file forms 13D/G, while Nvidia is required to indicate Huang's ownership share on their forms 14A as Huang is CEO of the firm. Further, we resort to forms 4 to obtain the number of Alphabet Class C shares owned by Brin and Page, as these are non-voting

shares and hence not reported on forms 13D/G. We verify and replicate Forbes' estimates for number of shares owned, confirming that Forbes correctly draws on SEC filings to estimate public stock wealth of the top 4. In line with Forbes' computations, we include shares held via pass-through entities (trusts and LLCs whose income flows through the income tax returns of the top 4), but we do not include shares held by 501(c)(3) charitable organizations controlled by the top 4 (as those are tax-exempt and not part of the top 4 income tax returns). Further, we exclude shares held by other individuals, except for spouses (as married billionaires generally file income tax returns jointly with their spouses). Firm-level ownership shares are computed as the number of shares owned across all share classes divided by total shares outstanding across all share classes, including non-publicly traded shares, at year-end. Triangulating across the SEC filings, we obtain a panel for 2004-2025 of the number of shares owned as well as the ownership shares of the top 4 in their main holdings. This is a necessary input for computations of dividend income and pro-rated corporate income.[33]

b. **Public stock wealth [public_worth and public_worth_avg].** We compute public stock wealth as the product of the number of shares owned, as computed above, and price per share at year-end. Separately, average public stock wealth over the calendar-year is computed using the calendar-year average price per share. Share prices are obtained through Compustat Daily Securities data. As of January 1, 2026, the ratio of public stock wealth to total wealth is equal to 95.1% for both Sergey Brin and Larry Page, 99.7% for Mark Zuckerberg, and 98.9% for Jensen Huang. We exclude Larry Ellison's publicly traded stakes in Tesla and Paramount, as we do not observe SEC filings form 4 for trades of Ellison's stakes in these firms (i.e., we only observe Larry Ellison's insider trades of Tesla stock until he parted from the board of Tesla in August 2022).

c. Wealth [forbes_worth]. We obtain wealth estimates from the Forbes 400 list for 2004-2018, and from the Forbes real-time billionaires list for 2019-2025. For years 2019-2025, we use the Forbes real-time billionaires list as it allows us to directly compare our estimates for public stock wealth in the main holdings of the top 4 to total wealth as estimated by Forbes.

C.3. Fiscal and economic income variables.

We estimate fiscal income derived by the top 4 from their main holdings as the sum of ordinary income from executive compensation and short-term capital gains, qualified dividend income and long-term capital gains income. For the top 4, the overwhelming majority of executive compensation comes in the form of exercised stock-options. In a next step, we estimate economic income as the sum of fiscal income and prorated pre-tax corporate income, excluding dividend income to avoid double-counting with distributed pre-tax corporate income (see Balkir et al., (2025) for a discussion of this income concept). To estimate fiscal and economic income we construct the following variables:

a. **Sales of listed stock (SEC form 4) [sale].** The dollar value of sales of listed stock is computed as the product of the number of shares traded and the price per share traded for all transactions marked as open market sales of stock (transaction code *S* for sale;

[33] Forbes applies a discount to Ellison's Oracle shares which are pledged as collateral for acquisitions. Our study measures the income generated and taxes paid on the Oracle shares owned by Ellison and hence we do not apply any discount.

type *D* for disposition). We include all sales of listed stock filed by the top 4 on their main publicly traded stock including sales filed by pass-through entities (trusts and LLCs) of which the top 4 are controlling individuals. We exclude sales filed by 501(c)(3) organizations controlled by the top 4, as sales of listed stock by these entities are tax-exempt. In practice, this restriction is only necessary for sales of Meta stock reported by the Chan Zuckerberg Foundation.

b. **Purchases of listed stock (SEC form 4) [purchase].** The dollar value of purchases of listed stock is computed as the product of the number of shares traded and the price per share traded for all transactions marked as open market purchases of listed stock (transaction code *P* for purchase; type *A* for acquisition).

c. **Value realized on exercises of stock-options and vestings of restricted stock units (SEC form 4 and Compustat) [option_profit].** We estimate the dollar value of exercised stock-options and vested restricted stock units as the product of the number of shares traded and the difference between the daily closing price at date of exercise and the exercise price (i.e. price per share indicated on form 4) for all acquisitions marked as conversions of derivative securities (transaction code *M* for conversion of derivative security; type *A* for acquisition). Share prices are obtained by matching the forms 4 data to daily securities data (as obtained through Compustat Daily Securities Data).

d. **Gifts of listed stock (SEC form 4 and Compustat) [donation].** We estimate the dollar value of gifts of listed stock, relevant for income tax deductions, as the product of the number of shares traded and the daily closing price at date of transaction for all dispositions marked as bona-fide gift (transaction code *G* for bona-fide gift; type *D* for disposition). In most cases, these bona-fide gifts represent tax deductible donations of listed stock to tax-exempt 501(c)(3) organizations controlled by the top 4.

e. **Capital gains on sales of listed stock (SEC form 4 and Compustat) [kg, kg_long, kg_short, and kg_taxable].** To compute taxable capital gains on sales of listed stock, we subtract the relevant cost basis for each sale of stock. Provided with the history of acquisitions (purchases, stock-option exercises, and RSU vestings) and sales of listed stock, we estimate capital gains under the assumption that billionaires sell in priority their stock with the highest cost basis to minimize their taxable capital gains. More specifically, we compute capital gains for the period 2004-2025 by arranging the sales of listed stock of each filer-issuer combination from the filing most distant in time to the filing closest in time. For the earliest sale that is filed, we track the inventory of all previous acquisitions up until, and including, the transaction date of the sale and arrange these acquisitions from highest-to-lowest cost basis per share. For purchases of listed stock, the relevant cost basis per share is the price per share indicated on the forms 4, while for stock-option exercises and RSU vestings the relevant cost basis per share is the market price at exercise obtained through daily securities data. Then, the cost basis for the capital gain on the earliest sale is computed by iterating through the ordered inventory, up until the point where the number of shares used to compute the cost basis is equal to the number of shares sold. If a stock-split occurs between the transaction date of the sale and the transaction date of the relevant purchase used to compute the capital gain on that sale, we adjust the cost basis per share by the relevant stock-split correction factor. Following the computation of the capital gain, the inventory is updated by discarding all shares used to compute the cost basis. This

computation is repeated until the last recorded sale. As we observe the transaction date of the filing that is used to compute the cost basis for a given capital gain, this allows us to separate capital gains into long-term capital gains if the holding period exceeds 365 days and short-term capital gains if the holding period is less than, or equal to, 365 days. We also account for loss offsets, by deducting any current-year capital losses from current-year capital gains and by carrying forward unused capital losses from previous years, without time-limit, to deduct current-year capital gains. Otherwise, we discard capital losses as capital losses cannot be deducted against other income (except for capital gains income), in excess of $3000. For 2004-2025, the ratio of total capital gains (long-term and short-term) to total sales of listed stock recorded by Brin, Ellison, Huang, Page and Zuckerberg on their main holdings is equal to 77.2% (i.e. capital gains sum to $36.27 billion and sales of listed stock sum to $46.99 billion).

f. **Non-equity compensation (Execucomp) [noneq_comp].** This variable reflects the dollar value of non-equity compensation. The underlying forms 14A data Execucomp uses to report executive compensation is in fiscal-year format. For a given calendar year, we use the forms 14A data of the respective fiscal year. Forms 14A are yet to be filed for fiscal year 2025, hence we temporarily impute values from 2024 until the forms 14A for 2025 become available. As non-equity executive compensation among the top 4 is small (3.29% of total ordinary income including short-term capital gains income and income from exercises of stock-options and vestings of restricted-stock units), the imputation is unlikely to bias our results. Non-equity compensation is composed of the following variables:
    a. Base salary earned (Execucomp variable *salary*)
    b. Bonuses earned (Execucomp variable *bonus*)
    c. Compensation related to non-equity incentive plans (Execucomp variable *noneq_incent*)
    d. Preferential earnings from deferred compensation plans (Execucomp variable *pension_chg*)
    e. Other compensation received for personal benefits (Execucomp variable *othcomp*). Other compensation is mainly relevant for Mark Zuckerberg (equal to $27 million in fiscal year 2024) due to security-related costs and costs related to Zuckerberg's personal usage of private aircrafts. Beyond, other compensation also includes contributions to defined contribution plans and life insurance premiums.

g. **Qualified dividend Income (Compustat) [dividend].** We match the 2004-2025 panel of the top 4's ownership shares in Alphabet, Meta, Oracle, and Nvidia, to daily securities data obtained through Compustat. Annual dividend income is computed as the product of the number of shares owned at year-end and dividends per share (variable *dvi*) at year-end.

h. **Ordinary income [ordinary_income].** Ordinary income is computed as the sum of non-negative short-term realized capital gains income, the value realized on stock-option exercises and vestings of restricted stock units as well as other executive compensation in the form of salary, bonuses, non-equity incentives, earnings from deferred compensation plans, and other compensation.

i. **Total fiscal income [fiscal_income].** Total fiscal income adds dividend income and long-term realized capital gains income to ordinary income. Total fiscal income reflects adjusted gross income as reported on IRS forms 1040. One general method to verify our estimates for total fiscal income of the top 4 is by comparison to total fiscal income as documented in the leaked tax returns reported by ProPublica for the period 2013-2018. For the top 4 as a group over the period 2013-2018 (i.e. Brin, Ellison, Page, and Zuckerberg), our estimate of average fiscal income on main public wealth is equal to 92% of average fiscal income reported by ProPublica over that period (i.e., $3448.44 million versus $3752 million in ProPublica). This splits as follows. For Larry Ellison our estimate of average fiscal income over 2013-2018 is equal to 74% of average fiscal income reported by ProPublica over that period (i.e., $790.68 million versus $1070 million in ProPublica). For Sergey Brin this ratio equals 78% (i.e., $812.09 million versus $1040 million in ProPublica). For Larry Page this ratio equals 82% (i.e., $813.63 million versus $990 million in ProPublica). For Mark Zuckerberg this ratio equals 161% (i.e., $1055.55 million versus $652 million in ProPublica). It is possible that ProPublica missed one year of very high income (such as 2013) for Mark Zuckerberg explaining why their number is lower than the one we estimate using public filings. The residual between our income estimates and income reported in the ProPublica leaks reflects income from diversified holdings that the top 4 have acquired through past realized income from their main holdings.

j. **Corporate pre-tax income (Compustat) [w_pi].** We compute corporate pre-tax income as global pre-tax income (variable *pi*). The fraction of corporate pre-tax income accruing to the top 4 is computed as the product of the firm-level ownership share and global pre-tax income. Alphabet, Meta, Nvidia and Oracle report their global pre-tax income for fiscal quarters (forms 10-Q) and fiscal years (forms 10-K). In order to bring the data to calendar year format, we construct global pre-tax income for a given calendar year using quarterly pre-tax income (variable *piq*) of the fiscal quarters closest to the calendar quarters. In practice, this alignment only matters for Oracle, as Oracle is on a mid-year schedule with fiscal years ending on 05/31 of a given year. For instance, for calendar year 2020 we compute Oracle's pre-tax income as the sum of quarterly pre-tax income from 2019/12/01-2020/11/30.

k. **Economic income [economic_income].** Economic income is computed as the sum of total fiscal income, and prorated corporate pre-tax income, excluding dividend income to avoid double-counting with distributed corporate pre-tax income.

C.4. Tax variables.

We estimate taxes paid by the top 4 on fiscal income and economic income as estimated above. For computations of fiscal income taxes paid, we first compute taxable fiscal income [income_taxable] by deducting donations observed in SEC filings form 4 to the deductible amount [donation_deductible] (i.e., up to 30% of adjusted gross-income, with a 5-year carryforward for unused deductions that are deducted using a first-in-first-out rule). Further, up until and including 2017, we deduct California state income taxes paid from taxable income for federal income tax purposes, to account for the SALT deduction in place until 2017. Both for donation deductions and SALT deductions, we deduct ordinary income in priority. Then, we compute taxes paid as follows:

a. **California state income taxes [ca_income_tax].** California state taxes paid are computed by applying the year-specific top marginal state income tax rates to taxable fiscal income, including qualified dividend income and long-term capital gains income and before the SALT deduction (i.e., tax rates are 10.3% for 2004-2011, 13.3% for 2012-2025).

b. **Federal ordinary income taxes [fed_ordinary_tax].** Federal ordinary income taxes paid on taxable ordinary income are computed by applying year-specific top marginal federal ordinary income tax rates and adding the net investment income tax (NIIT) starting 2013 (i.e., tax rates are 35% for 2004-2012, 43.4% for 2013-2017, 40.8% for 2018-2025).

c. **Federal income taxes on qualified dividend income and long-term capital gains income [fed_preferential_tax].** As qualified dividend and capital gains income is taxed at preferential rates, we apply year-specific top marginal federal preferential income tax rates to qualified dividend and capital gains income, adding the net investment income tax (NIIT) starting 2013 (i.e., tax rates are 15% for 2004-2012, 23.8% for 2013-2025).

d. **Fiscal income taxes [fiscal_income_tax].** Total taxes paid on fiscal income are equal to the sum of California state taxes, federal ordinary income taxes, and federal preferential income taxes paid on qualified dividend income and long-term capital gains income.

e. **Sales taxes [sales_tax].** We estimate sales taxes to be equal to 3% of 50% of net-of-tax individual income. As in Piketty et al. (2018) this assumes a 50% saving rate and a tax rate on consumption of 3%, which is half of the macro tax rate on consumption of 6% as billionaire consumption is heavily tilted toward untaxed services (as our estimate for total sales taxes paid is one order of magnitude smaller than our estimate for California income taxes paid, other assumptions for computations of sales taxes would have almost no impact on our estimates).

f. **Corporate income taxes (Compustat) [w_txt].** We compute corporate income taxes as total global book taxes owed, including current plus deferred taxes (variable *txt*). As for corporate pre-tax income, we compute pro-rated income taxes as the product of the billionaire's firm-level ownership share and global book taxes owed. Further, we align the corporate income tax data to calendar year format as we do for corporate pre-tax income. We perform the following two adjustments. First, in fiscal year 2017, Oracle, Meta, and Alphabet report a large spike in global book taxes owed due to the one-time mandatory transition tax resulting from the deemed repatriation of foreign profits set forth in the Tax Cuts and Jobs Act (TCJA). On their forms 10-K for fiscal year 2017, Oracle reports $7.8 billion of income tax expense related to the deemed repatriation of the TCJA, Meta reports $2.9 billion, Alphabet reports $10.2 billion. All three firms specify that they intend to pay the one-time transition tax over an eight-year payment schedule as laid out in the TCJA. We adjust global book taxes owed by subtracting the one-time transition tax from global book taxes owed in the year it is recorded, and then we add back the transition tax in the subsequent years 2018-2025 using the year-specific rates for the fraction of profits deemed repatriated for tax purposes in each year (8% for 2018-2022, 15% for 2023, 20% for 2024, and 25% for 2025; see Wright and Zucman (2018)). Second, in fiscal year 2025, Meta reports a

one-off valuation allowance of $14.03 billion against US federal deferred tax assets resulting from the One Big Beautiful Bill Act (OBBBA). As this valuation allowance affects future tax obligations beyond 2025, we subtract it from Meta's reported global book taxes owed in 2025. Compustat also includes a variable *txpd* which corresponds to taxes effectively paid. Using *txpd* generates an average income tax rate of 17.19% which is almost identical to the 16.96% tax rate we obtain in our computation using *txt*.

g. **Property taxes (Compustat and SEC form 10-K) [w_tax_ppent].** Business property taxes paid are not reported in SEC filings form 10-K. Balkir et al. (2025) estimate business property taxes as 1% of the global tangible capital stock pro-rated by firm-level ownership shares. In fiscal years 2023-2025, Alphabet, Meta, Nvidia and Oracle, report significant investments in data and network infrastructure, irrelevant for purposes of property taxation which applies only to land and buildings. Therefore, we only include the net value of land and buildings in our computations of property taxes. This break-down is provided in the SEC filings form 10-K of Alphabet, Meta, Nvidia and Oracle, for all years 2004-2025.

h. **Total taxes [total_tax].** Total taxes are computed as the sum of sales taxes, fiscal income taxes (federal and state), and pro-rated corporate income taxes (global book taxes owed and property taxes). That is, total taxes are computed as the sum of all tax variables documented above.

Separately from the main analysis, we also retrieve the number of shares that the top 4 pledge as collateral for secured borrowing [shares_collateral]. Since 2007, US-listed C-corporations must disclose the number of shares that their insiders pledge as collateral on SEC filings form 14A. We estimate the total dollar value of shares pledged as collateral as the product of the number of shares pledged as collateral and the average price per share over the respective calendar year [value_collateral]. The value of shares pledged as collateral mechanically increases with rising stock prices, even if the number of shares pledged as collateral remains constant. Hence, we estimate the dollar value of annual net shares pledged as collateral as the annual difference in the number of shares pledged as collateral, corrected for stock-splits, multiplied by the average price per share over the calendar year [value_net_collateral]. As Meta's form 14A for 2025 is yet to be filed, we temporarily assume that the number of Meta shares Zuckerberg pledges as collateral has remained constant between 2024 and 2025. The companion excel files provide details for wealth, income, and income taxes paid of each of the top 4 for each year, as well as the top 4 as a group for each year from 2004 to 2025.