Capital Taxation, Income Shifting, and Retained Earnings: Evidence from Dividend Tax Reforms*

Yonatan Berman† Esteban F. Klor‡

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Abstract

This paper analyzes the effects of dividend tax reforms on tax revenues, income shifting, and earnings retention. It examines two significant policy changes in Israel during the 2010s. Using administrative tax records, we assess a permanent five-percentage-point increase in the 2012 dividend tax rate and a temporary tax relief measure enacted in 2017. The permanent tax hike triggered an immediate surge of over 100% in reported dividend income and tax revenues. It did not generate a lasting shift in dividend flows. In contrast, the temporary tax relief caused a sharp decline in dividend payments following its expiration. Firms increased earnings retention once the preferential rate ended. We also find evidence of income shifting via the conversion of wages into dividends for tax planning. Finally, we show that the increase in earnings retention after 2017 created a 1–2 percentage point downward bias in the top 1% income share, as unreported dividend income is omitted from tax records.

Keywords: capital tax reform; income shifting; retained earnings
JEL Codes: D3, H2

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†King's College London, London School of Economics, and IZA, yonatan.berman@kcl.ac.uk
‡Hebrew University of Jerusalem, INSS, and CEPR, eklor@huji.ac.il

1 Introduction

Over the past few decades, capital has become increasingly central to the global economy, with both the capital share of income and the wealth-to-income ratio on the rise (Karabarbounis and Neiman, 2014; Piketty and Zucman, 2014). Among the various forms of capital income, dividends have gained particular importance: in the United States, for instance, the ratio of dividend income to wages doubled from roughly 2% in the early 2000s to over 4% by 2021 (Internal Revenue Service, 2021).

These trends highlight the growing importance of capital income taxation, particularly dividend taxation, for revenue generation and redistributive policy. Given their role as an effective tool for income shifting (Miller, Pope and Smith, 2024), understanding the behavioral responses to dividend taxation, its revenue contributions, and its redistributive effects is crucial for designing tax systems in the 21st century.

In this context, Israel offers a compelling case study, having implemented two distinct dividend tax reforms during the 2010s. The first, introduced in 2012, permanently increased dividend tax rates as part of a broader effort to address budgetary pressures and enhance progressivity in the tax system. Five years later, in 2017, policymakers introduced a one-year tax relief on dividends with the stated aim of encouraging business owners to distribute accumulated profits. These contrasting reforms, one permanent and the other temporary, present a valuable opportunity to analyze how different policy designs affect dividend distributions, tax revenue, and retained earnings.

This paper studies the effect of these two reforms using administrative income data. Our analysis focuses on how changes in dividend tax rates alter the timing and labeling of income, influence decisions on retained earnings, and interact with other forms of income. By comparing the effects of a permanent rate hike to those of a short-lived tax relief, we provide new evidence on how tax policy can shape both revenue outcomes and taxpayers' behavior.

We find significant behavioral responses from taxpayers to the reforms. Dividend more than doubled in 2011, prior to the permanent tax rate increase in 2012, and again in 2017 in response to the temporary rate reduction. Notably, although both reforms triggered similar short-term responses, their longer-term effects differed. Specifically, the permanent five-percentage-point increase in the tax rate in 2012 resulted in only a temporary rise in dividend income and tax revenue, without a corresponding reduction in reported dividends in subsequent years. This is an indication for a low effect of the reform on the retention of earnings, or on other forms of income. This suggests that this reform only led to the distribution of profits retained in firms up to the change in rates, without having a major

longer term impact.

In contrast, while the temporary one-year tax reduction in 2017 also led to a substantial but short-lived increase in dividend income, our difference-in-differences analysis reveals a sharp decline in dividend payouts in the following years. Notably, there is no evidence that this decline was offset by increases in other income sources, strongly suggesting a rise in earnings retention after the reform. If this trend persists, it could result in a long-term reduction in tax revenues due to higher retained earnings.

Moreover, we find that the increase in retained earnings leads to a downward bias in income inequality estimates based on reported income. Specifically, the top 1% share of reported income declined significantly after the 2017 reform. However, this decline is largely an artifact of increased earnings retention rather than a genuine reduction in inequality.

Our paper contributes to the literature on dividend taxation and the effects of dividend tax reform (see, for example, Chetty and Saez 2005; Romanov 2006; Yagan 2015; Alstadsæter and Jacob 2016; Alstadsæter et al. 2016; Alstadsæter, Jacob and Michaely 2017; Bastani and Waldenström 2020). In particular, we are able to contribute to the understanding of behavioral responses to different types of tax reforms, and study a unique reform in which dividend tax rates were reduced for only one year. This setting enables a comparison between various policy changes and their effects on both government revenue and the withdrawal of retained earnings as dividends. Our main findings align with and extend results from earlier studies. For example, the responsiveness of dividend payments to tax cuts has been documented in the United States following the 2003 tax reform: Chetty and Saez (2005) found an "increase in dividend payments [...] following the tax cut," while Yagan (2015) reported "zero impact on corporate investment," a result mirrored by Alstadsæter, Jacob and Michaely (2017) in Sweden. Unlike these previous studies, our comparison of the permanent tax hike with the unique one-year relief suggests that the temporary reduction may have influenced taxpayers' expectations, leading to lower dividend payments even after the relief ended. This effect could be driven by high-income taxpayers and firms anticipating similar temporary tax cuts in the future, thereby increasing their incentive to retain earnings.

These contributions are particularly important in light of recent evidence favoring capital income taxation over wealth taxation. While there has been extensive debate on the feasibility of a wealth tax in recent years, evidence from a normative perspective (*e.g.*, Boar and Midrigan 2023) and a practical perspective (*e.g.*, Advani, Chamberlain and Summers 2020) suggests that capital income taxation is preferred. More systematic research is needed to reach a definitive resolution to this ongoing debate. That said, a good understanding of the effective design and collection of dividend taxes is crucial for future improvement of such tax

policies.

The remainder of the paper is organized as follows. Section 2 provides background on the dividend tax reforms. Section 3 presents the data and the main analysis, exploring the various effects of the reforms. Finally, we conclude in Section 4.

2 Background and Context

We begin with a broad description of the main features of the Israeli tax system. Israel operates a dual tax system for individual income. This system relies on a highly progressive tax schedule to tax labor income, business income of the self-employed, and capital gains. The marginal tax rates increase rapidly with individuals' income, with the top rate reaching 45% in 2011.[1]

Dividend income is taxed separately. Dividend taxes are treated as part of corporate taxation, and the revenues from both taxes are typically considered together. Following a major reform to corporate taxation in 1999, dividends are taxed at two different rates: substantial shareholders (those holding at least 10% of a company's shares) are taxed at a higher rate than minor shareholders. From the onset of the 1999 reform and until the 2012 reform, the tax rates were 20% for minor shareholders and 25% for substantial shareholders.

Dividend taxation is an important fiscal instrument for collecting revenue and redistributing income, given the substantial amount of capital flows and the concentration of capital income at the upper end of the income distribution. In Israel, this is of particular relevance due to the increase in the capital share of income over the past 25 years, especially between 2001 and 2010. The share of capital in national income increased by almost 10 percentage points between 2001 and 2020, from 27% in 2001 to 36% in 2020 (see Appendix A). This trend is partially attributed to the rapid expansion of Israel's high-tech sector, which has drawn significant capital investments over the last three decades.

An additional reason for the increase in the capital share is the rise of retained income in closely-held and single-member companies, sometimes called *wallet companies*. This refers to a company established by an individual who is its only shareholder. There are a few advantages these companies provide to their shareholder. Most notably, they help the shareholder with tax planning and tax avoidance, enabling proprietors to reclassify personal income as corporate earnings, and to deduct some of their expenses. This reclassification allows own-

[1] Individuals' labor income is also subject to mandatory contributions to the National Insurance Fund and health insurance. These contributions are equal to 7% and 5% respectively. They are capped, so they do not increase proportionally to income above the top income tax rate threshold.

ers to manipulate the amount, timing, and form of their compensation, whether as wages or dividends, or to spend the company's earnings directly on personal consumption or investments, thus circumventing the dual-taxation regime typically applied to dividend income. Among other benefits, individuals enjoy the returns of investing a share of their gross earnings, instead of their net earnings. As a result of these advantages, the number of wallet companies grew significantly over time, from none in 2002 to between 14,000 and 17,000 by 2021 (Raz-Dror and Yemini, 2024).

The expansion of wallet companies during this period coincided with a notable increase in retained earnings. Retained earnings are an important form of capital income that is missing, by definition, from official tax and income statistics. They play a dual role in the economy: they provide firms with a valuable resource to finance investments or build savings, helping to buffer against financial and economic shocks over time. However, the coexistence of traditional firms and wallet companies highlights a tension between the productive use of retained earnings, crucial for long-term business sustainability, and their potential distortionary effects as a vehicle for tax avoidance (see also Chetty and Saez 2005; Yagan 2015; Alstadsæter and Jacob 2016; Alstadsæter et al. 2016; Alstadsæter, Jacob and Michaely 2017; Miller, Pope and Smith 2024).

Several of the tax advantages discussed were addressed by legislation in the 2017 national budget (Raz-Dror and Yemini, 2024), and were, in part, a driver for the dividend tax reforms described below. However, retained earnings and the use of firm revenues for investment remain untaxed until realized. Similar structures, with comparable tax advantages, exist in other countries, such as Finland (Pirttilä and Selin, 2011), Norway (Alstadsæter et al., 2016), Portugal (Leite, 2024), Sweden (Alstadsæter and Jacob, 2016), and the United Kingdom (Miller, Pope and Smith, 2024). Therefore, while some elements are particular to the Israeli system, the reforms analyzed in this paper could offer valuable insights for capital income taxation elsewhere.

2.1 The tax changes of 2012 and 2017

During 2011, tax collection in Israel decreased at an annual rate of 3%. In response, the Israeli government implemented tax reforms aimed at increasing tax revenues and reducing the budget deficit. A significant change was the increase in the dividend tax rate: the tax on minor shareholders increased from 20% to 25%, while the tax on substantial shareholders increased from 25% to 30%. These changes were announced in 2011 and were set to take effect on January 1, 2012.

Anticipating the tax hike, individuals were paid dividends and previously accumulated retained earnings (as dividends) from firms toward the end of 2011. According to estimates from the tax authority, approximately NIS 17 billion in dividends was received by December 2011 (1.9% of GDP), boosting tax revenues by about NIS 3.7 billion (0.4% of GDP) (MOF, 2023).

In 2017, the Israeli government introduced another dividend tax reform aimed at increasing revenue collection. As part of this reform, the government offered a tax relief to incentivize individuals to withdraw retained earnings as dividends. For substantial shareholders, the dividend tax rate was temporarily reduced to its pre-2012 level of 25% for dividend income distributed during the first nine months of 2017, provided the income originated from corporate revenues accrued by the end of 2016. After this period, the rate reverted to 30%. This policy led to a sharp, temporary surge in dividend income, which more than tripled to NIS 15.6 billion in 2017 (1.4% of GDP), up from NIS 4.3 billion in 2016. However, as anticipated, the increase was short-lived, with revenue dropping to NIS 3 billion in 2018, nearly a third lower than the pre-reform level.[2]

Figure 1 illustrates the trajectory of dividend tax rates since 2008, highlighting the substantial, exogenous rate changes introduced in 2012 and 2017. These changes enable a rigorous analysis of taxpayers' behavioral responses in terms of dividend income received and retained earnings, as well as the broader implications for tax revenue, tax policy design, and the distribution of retained earnings across different income groups.

3 The Impact of the Dividend Tax Reforms

3.1 Data

We use administrative income data from the Ministry of Finance of the State of Israel. These data, organized by total gross income percentile for the years 2001–2020, were provided by the Israeli Central Bureau of Statistics (ICBS) (CBS, 2023). The dataset offers extensive information for each income percentile, including the number of individuals in that percentile, the income threshold, and average gross and net income.

In addition, the dataset provides a detailed breakdown of total income by source—wages,

[2]Additionally, in 2017, a 3% surtax was imposed on very high-income earners with taxable income exceeding NIS 640,000. However, as part of the 2017 dividend tax reform, dividend income was exempt from this surtax for that year. The surtax was initially introduced at 2% in 2012, applied starting from the 2013 tax year, and increased to 3% in 2017, though it did not apply to dividends that year, as explained.

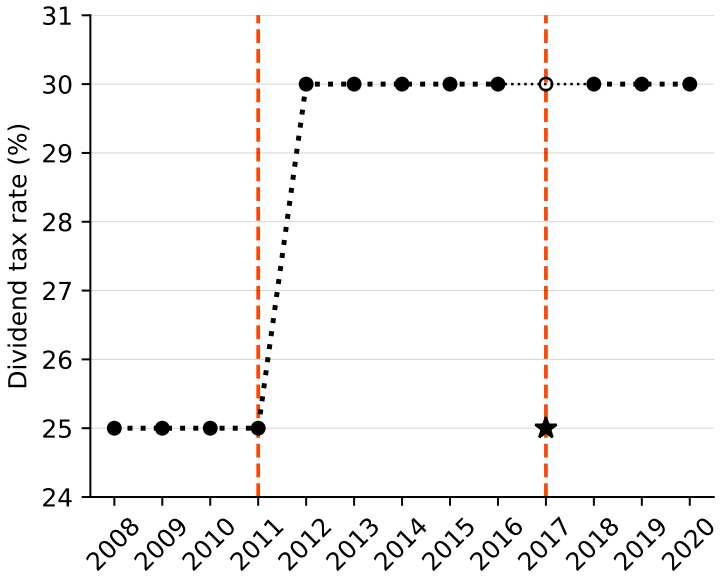


Figure 1: Dividend income tax rates for substantial shareholders in Israel (2008–2020).

Notes: In 2017, there was a temporary reduction in dividend tax rates for dividends received during the first nine months of the year, provided they were tied to corporate revenues accrued by the end of 2016. This measure also included a temporary reduction in the surtax on dividends for taxpayers subject to it.

business income, capital income, and other capital income—as well as comprehensive data on taxes paid (including health insurance, national insurance, and taxes on both wage income and other income sources). Each percentile is also characterized by demographics such as the number of females and males, their respective average ages, and the share of individuals who are employees only. We treat this dataset as a panel, where each percentile i in year t is defined by the variables described above.[3]

In our analysis, we classify *other capital income* as dividend income, although it also includes other types of capital income taxed at special rates (*e.g.*, income from registered patents). However, these additional forms of capital income are negligible relative to dividend income, particularly among the top income percentiles, who receive the vast majority of dividend income (see Appendix B for further details).

We also rely on national accounts. This information will be used for converting the income and tax reported in our main dataset to a share of national income. These data are taken from the World Inequality Database (WID, 2023).

[3]Data limitations preclude us from matching individuals over time. However, although the composition of each percentile may shift from year to year, the low rank mobility—especially among high-income earners (Kopczuk, Saez and Song, 2010; Danieli, Gilat and Leventer, 2024)—limits the impact this could have on our results.

3.2 The impact of tax rate changes on dividend income

We first address the behavioral responses to the reforms. The reforms are distinct in nature: the first was a permanent increase in the tax rate, and the second was a temporary rate decrease. However, both are intended to incentivize individuals to withdraw dividends, thereby boosting dividend income reporting. The 2012 tax hike incentivized the payment of dividends at lower rates just before the increase took effect. Similarly, the 2017 reform achieved the same goal by providing a time-limited discounted rate.

The reforms have had a substantial effect on the total value of dividends paid to shareholders. The left panel of Figure 2 illustrates a clear surge in dividend income in the years of the two reforms. The figure presents dividend income as a share of national income, and compares this share to a counterfactual share based on interpolation, excluding the year of reform. The size of the surge is calculated as the difference between the reported dividend income and the interpolated counterfactual, resulting in a significant increase of 3 to 4 percentage points of national income. In monetary terms, these excess dividends amount to NIS 35 billion (adjusted to 2021 values), or approximately USD 11 billion (2021).[4]

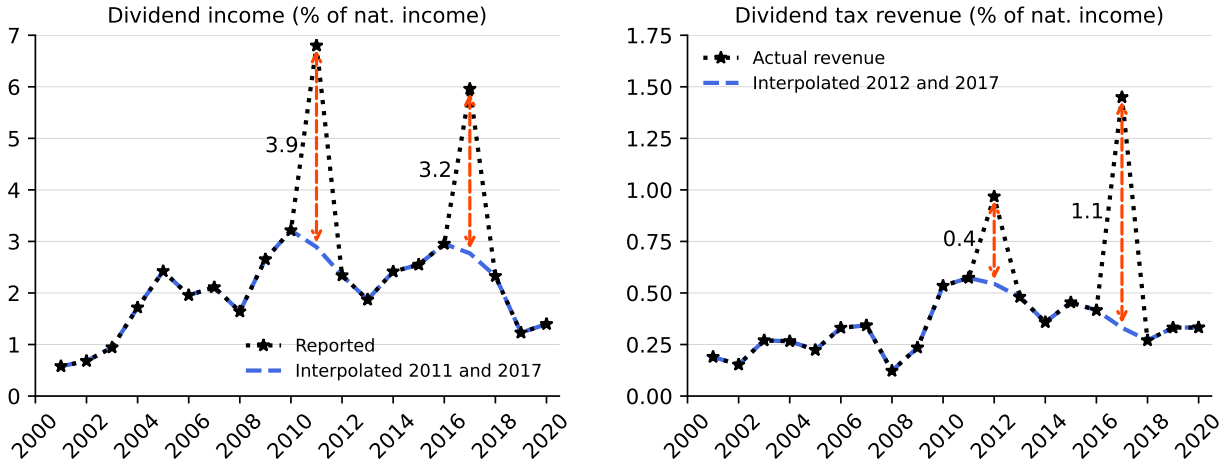


Figure 2: Dividend income (left) and dividend tax revenue (right) in Israel as a share of national income, 2001–2020.

Notes: The blue lines removed the reported data in the years 2011 (2012 for the tax revenue) and 2017, and replaced them with cubic interpolated data. The annotated red arrows indicate (in percentage points) the difference between the reported and interpolated data.

For a better-identified effect of the reform on paid dividends, we also employ a regression-

[4]The interpolation results shown in the left panel of Figure 2 are conservative. They do not account for potential anticipation or for changes in dividends paid in the year following a reform. Appendix C presents alternative interpolations that exclude the year preceding each reform—or both the preceding and succeeding years—revealing only a minor effect on the estimated impact of the reform on paid dividends or tax revenue.

based method. This approach addresses the limitations of relying solely on interpolation for counterfactual analysis, as demonstrated in Figure 2. Moreover, it allows us to evaluate whether the reforms affected all income percentiles or were restricted to a smaller segment of the taxpayer population.

For these purposes, we treat the income dataset as panel data, structured by percentiles (i) observed across multiple years (t), with each observation characterized by several variables. Using this dataset, we consider the following specification:

$$\log y_{it} = \alpha_i + \theta_t + \delta \cdot Reform_{it} + \mathbf{x}_{i,t}\beta + \epsilon_{it}\,, \tag{3.1}$$

where the outcome variable is the logarithm of inflation-adjusted average dividend income. The percentile fixed effects (α_i) capture persistent differences across percentiles, while the year fixed effects (θ_t) represent common growth rates over time. $Reform_{it}$ is a dummy variable that equals 1 for percentiles above the reform threshold in affected years (2011, 2017, or both) and 0 otherwise. Following Gibrat's law, we apply a log transformation to income to better model income dynamics. $\mathbf{x}_{i,t}$ are control variables.[5]

The impact of the reforms was unlikely to be uniform across taxpayers. For most individuals, dividends constitute only a small fraction of reported income. However, for the top 1% of earners, dividends represented a substantial share, ranging from 10% to 35% between 2001 and 2020, excluding the reform years, when they accounted for 50%–55% of top 1% income. By contrast, among taxpayers below the 93rd percentile, dividends comprised less than 1% of reported income, while for those in the 93rd to 99th percentiles, they accounted for only 1%–3.5%. Additionally, many taxpayers have limited control over dividends received as shareholders, making it more difficult for them to adjust their dividend income in response to tax reforms.

To account for the above, we set the dummy variable $Reform_{it}$ to 1 during the reform years, but only for percentiles exceeding specific income thresholds. We consider several thresholds of taxable income – the top 10%, 5%, 2%, and 1% of income earners – to capture varying levels of impact. Additionally, we control for demographic characteristics: the average age in each percentile, the share of male taxpayers, and the share of taxpayers whose wages are

[5]Gibrat's law posits that growth rates are proportionate to size, motivating the use of log transformations in modeling income (Gibrat, 1931). More specifically, this assumes that the logarithm of the quantile function of the dividend distribution is linear in the income rank, *i.e.*, that it follows a power law. This is a fairly standard assumption for capital incomes (see, for example, Fagereng et al. 2016). Equation (3.1) assumes a common growth rate across percentiles, represented by year fixed effects, and fixed exponential differences across percentiles, captured by the percentile fixed effects. The idiosyncratic error term accounts for any deviations from these assumptions in the absence of reform effects.

their sole source of income.

We also adopt a similar approach, modifying the outcome variable in Equation (3.1) from the logarithm of inflation-adjusted dividend income to three additional variables: the logarithm of inflation-adjusted wages, total gross income excluding dividends, and total gross income. This approach enables us to detect income shifting. Specifically, it is possible that taxpayers may have shifted wage income or other income sources to dividend income during the reform years to maximize the tax benefits before these benefits expired.

The results are presented in Table 1. They confirm a significant and substantial impact of the reforms on the top 1% income threshold, as hypothesized. The estimated coefficients suggest an increase of 40%–100% in paid dividends among the top 1% due to the reforms.[6]

Table 1: The reform effect by outcome type and income percentile

Outcome Type	**Reform definition**	**Top 10%**	**Top 5%**	**Top 2%**	**Top 1%**
Dividend Income	Reform (only 2011)	0.18** (0.09)	0.31* (0.16)	0.67*** (0.23)	0.99*** (0.06)
	Reform (only 2017)	0.04 (0.06)	0.09 (0.09)	0.24 (0.16)	0.44*** (0.06)
	Reform (both years)	0.11 (0.07)	0.20 (0.13)	0.45** (0.20)	0.72*** (0.06)
Wages	Reform (only 2011)	-0.01 (0.01)	-0.02 (0.03)	-0.06 (0.06)	-0.14*** (0.03)
	Reform (only 2017)	-0.09*** (0.02)	-0.11*** (0.03)	-0.16*** (0.06)	-0.22*** (0.06)
	Reform (both years)	-0.05*** (0.02)	-0.07** (0.03)	-0.11* (0.06)	-0.18*** (0.05)
Tot. income − dividends	Reform (only 2011)	-0.00 (0.01)	-0.01 (0.02)	-0.04 (0.05)	-0.10** (0.04)
	Reform (only 2017)	-0.09*** (0.02)	-0.11*** (0.04)	-0.16** (0.06)	-0.20*** (0.07)
	Reform (both years)	-0.05*** (0.01)	-0.06** (0.03)	-0.10* (0.05)	-0.15*** (0.06)
Total Income	Reform (only 2011)	0.06 (0.04)	0.10 (0.07)	0.24* (0.14)	0.43*** (0.04)
	Reform (only 2017)	-0.04 (0.03)	-0.00 (0.06)	0.09 (0.13)	0.25*** (0.07)
	Reform (both years)	0.01 (0.04)	0.05 (0.07)	0.17 (0.13)	0.34*** (0.06)

Notes: The table reports results from panel OLS regressions with three types of dependent variables: Dividend Income, Wages, Total income without dividends, and Total Income. All variables are natural logarithms of inflation-adjusted values. Regressions control for percentile fixed effects and year fixed effects, as well as additional covariates (the average age in each percentile, the share of male taxpayers, and the share of taxpayers whose wages are their sole source of income). Standard errors are clustered at the percentile level. The number of observations is 2000 for all regressions that include both 2011 and 2017, and 1800 for all other regressions. Across all cases, the adjusted-R^2 values range from 0.98 to 0.99, while the within-R^2 values range from 0.07 to 0.6. *** $p < .01$, ** $p < .05$, * $p < .1$.

When lowering the income threshold, the impact on dividends diminishes and eventually becomes insignificant. This outcome is expected, as dividends constitute only a minor portion

[6]The results in Table 1 use errors clustered at the percentile level. However, in the case where the threshold is the top 1%, there is only a single treated unit, which may introduce bias in the error calculation. Nonetheless, the results remain qualitatively identical when robust errors are used instead.

of income outside the top percentile. Additionally, a notable difference emerges between the effects of the 2012 and 2017 reforms: the 2017 reform had a weaker impact on reported dividend income than the 2012 reform. A plausible explanation is that retained earnings accumulated over many years prior to the 2012 reform were substantially larger than those accumulated during the shorter period between 2012 and 2017.

As detailed in Table 1, for income thresholds where the reforms significantly increased dividends, a corresponding decline in other income sources is evident. This effect is most pronounced within the top percentile, offering strong evidence of income shifting during the reform years, as taxpayers adjusted their income composition to take advantage of the favorable tax treatment of dividends. The estimated coefficients indicate a reduction of 10%–20% in wages among the top 1% as a direct result of the reforms.

Finally, Table 1 shows that when all income sources are accounted for, the overall impact of the reforms remains significant and positive for the top 1%. This supports the hypothesis that the most substantial effect of the reforms was to encourage the withdrawal of retained earnings as dividends, surpassing the role of income shifting from wages and other sources.

3.3 Implications for tax revenue

Our findings confirm that the two dividend tax reforms led to an increase in dividend payments, and the probable withdrawal of retained earnings as dividends. Given that dividends are taxed at special rates, as described earlier, this would have a large impact on tax revenue.

The right panel in Figure 2 shows that the two tax reforms led to a substantial increase in revenue from dividend taxation. The revenue spikes are dramatic. Between 2001 and 2020, excluding 2012 and 2017, dividend tax revenue fluctuated between 0.25% and 0.5% of national income. In 2012, however, it increased to 1% of national income, and in 2017, it increased further to 1.5% of national income. During these years, dividend tax revenue also grew as a share of the total tax revenue, reaching about 4% in 2017 (MOF, 2023).

The observed impact on reporting and revenue stemmed from firms' and individuals' behavioral responses – specifically, their incentive to pay dividends to shareholders following the changes in tax rates. However, it is plausible that alternative rate adjustments could have elicited comparable reactions. For instance, a smaller tax reduction in 2017, such as lowering the rate to 27% instead of 25%, might have achieved a similar outcome while generating higher overall tax revenues. Although it is not possible to directly estimate the relevant elasticities, this consideration is important for future tax policy design.

Moreover, while the reforms directly resulted in a notable increase in tax revenue by creat-

ing a clear incentive for dividend withdrawals, they may also have longer-term effects that could either enhance or diminish dividend tax revenue in subsequent years. To address this question, we study the broader implications of the reforms for tax design.

3.4 Implications for tax design and inequality: Increase in retained earnings

Both dividend tax reforms proved highly effective in generating significant increases in tax revenues. It is likely that these reforms incentivized the distribution of substantial retained earnings, accumulated over long periods, in the form of dividends.

As noted above, firms retain earnings for reasons beyond tax considerations, such as financing investments or maintaining liquidity. Consequently, the dividend tax reforms may have influenced firms' decisions regarding both investments and dividend distributions. In particular, the 2012 reform might have prompted income shifting from dividends to alternative sources not subject to the same rate increases. Moreover, higher dividend tax rates likely reinforced the incentive to retain rather than distribute earnings.

Furthermore, the unconventional design of the 2017 reform may have altered firms' expectations, leading them to anticipate similar short-term tax cuts in the future. Such expectations could increase the propensity to retain earnings, potentially distorting investment decisions and, over time, reducing tax revenues.

To test this longer-term behavioral effect of the two reforms, we follow a similar approach to that applied for assessing their immediate effect. We use a panel, structured by percentiles (i) observed across multiple years (t), and employ a difference-in differences approach, where the top percentile of the income distribution is considered as treated, but not other percentiles, as discussed above.

Since we consider a single treated unit observed over multiple time periods, we adapt a simplification of a standard difference-in-differences approach: Let $y_{T,t}$ be the (log) outcome of the treated unit at time t, and let $\overline{y}_{C,t}$ be the average (log) outcome of the control units at time t. The estimator measures how the treated-control gap at time t deviates from its baseline (pre-treatment) average gap:

$$\widehat{\Delta}_t = \left[y_{T,t} - \overline{y}_{C,t}\right] - \left[y_{T,\text{pre}} - \overline{y}_{C,\text{pre}}\right] . \tag{3.2}$$

This subtraction removes any systematic baseline difference and isolates the change attributable to treatment, under a parallel-trends assumption. Under the assumption that,

in the absence of treatment, the treated-control gap would have remained constant, $\widehat{\Delta}_t$ is interpreted as the causal effect of treatment in period t.[7]

To compute standard errors, we implement a permutation-based inference approach. Given that there is only one treated unit (the top income percentile), standard error estimation methods may not be reliable. Instead, we conduct a placebo test by randomly assigning the treatment to each control unit (each percentile other than the top 1%) and computing placebo treatment effects using the same difference-in-differences estimator. By repeating this process for all control units, we generate an empirical distribution of placebo effects, against which we compare the actual treatment effect. This ensures a robust inference, as it does not rely on strong assumptions about the distribution of errors.

We estimate $\widehat{\Delta}_t$ in Equation (3.2) separately for the two reforms. For the 2012 reform, we define the pre-treatment period as 2004–2010 and the post-treatment period as 2012–2014, excluding 2011. Similarly, for the 2017 reform, we define the pre-treatment period as 2004–2016 (excluding 2011) and the post-treatment period as 2018–2020. We then estimate $\widehat{\Delta}_t$ using two outcome variables: the average dividend and the average wage within each percentile. The results are presented in Figure 3.

The key finding is a sharp decline in dividend income among the top 1% of earners following the 2017 reform. Specifically, the estimated effect of $\widehat{\Delta}_t \approx 0.6$ implies a 45% reduction in reported dividends, suggesting that high-income individuals retained more earnings in response to the reform. Importantly, the pre-treatment estimates support the parallel-trends assumption.

While the 2017 reform increased tax revenue, these results suggest it also led to distortions in capital taxation. The rise in retained earnings coincided with a sharp decline in dividend tax revenues post-2017. This may have resulted in excess earnings retention equivalent to 3% of total capital income, or roughly 1% of national income. If sustained, such high levels of retained earnings could further erode tax revenues in the coming years.

Notably, Figure 3 shows no comparable decline in dividends following the 2012 reform. While dividends increased in the year before the reform for tax reasons, they did not fall afterward. This may be due to the nature of the 2012 reform – a permanent tax hike with no expectation of future reductions. As a result, the reform was less distortive than the 2017 reform and did not significantly alter firms' or taxpayers' expectations and behavior.

[7] In practice, we first compute

$$\delta_t = y_{T,t} - \overline{y}_{C,t}\,, \tag{3.3}$$

for each t, then subtract the average of δ_t in the pre-treatment period. This step ensures that any initial difference between the treated unit and controls is taken into account. Also, we remove the reform years (2011 and 2017) from the dataset as they would bias the estimation for the subsequent years.

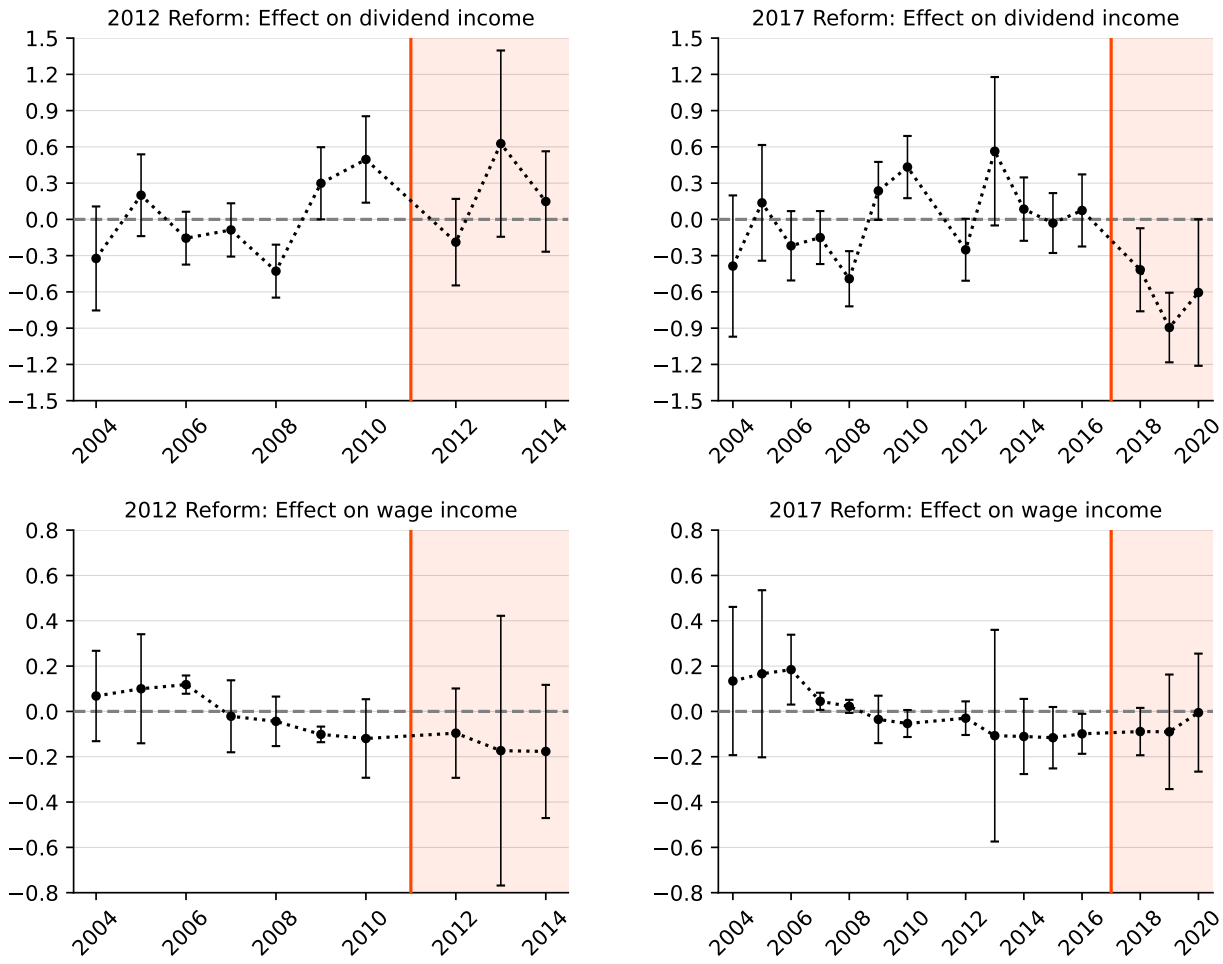


Figure 3: Post-reform effects on dividend and wage income among the top 1%.

Notes: The panels display difference-in-differences estimates, $\widehat{\Delta}_t$ (from Equation (3.2)), for four cases: the 2012 reform's effect on dividend income (top left) and wage income (bottom left), and the 2017 reform's effect on dividend income (top right) and wage income (bottom right). In each panel, the outcome is either dividend or wage income. Standard errors are computed via a permutation-based placebo test that compares the actual effect to an empirical distribution obtained by randomly reassigning the treatment among control units.

Moreover, Figure 3 provides no evidence of a lasting effect of either reform on wage income among the top 1% of earners. As shown above, we find evidence of income shifting during the reform years, as taxpayers reduced their tax burden by classifying wages as dividends, but this behavior did not persist once the reforms ended. This is expected, as there was no longer a clear tax incentive to shift income post-reform.

3.4.1 The 2017 reform impact on measured inequality

The findings also highlight a significant limitation of tax data in measuring inequality. As earnings retention increases, reported income becomes increasingly biased downward. Since retained earnings are generally excluded from tax filings, conventional measures based on these records likely understate income concentration at the very top. This issue is particularly relevant after 2017, when the dividend tax reform appears to have led to a sustained increase in earnings retention in the following years.

Using the results in Figure 3, we quantify the likely impact of the reform on this bias through the estimated increase in retained earnings. First, we compute the top 1% income share for each year, defined as the total gross income received by the top 1% of income earners in Israel divided by the total reported income for all taxpayers: $Y_{\text{Top 1\%}}/Y_{\text{Total}}$.[8]

To assess the effect of the 2017 reform, we construct a counterfactual top 1% income share series. Specifically, we add the 'missing' dividend income to the top 1% in 2018–2020 using the estimated value of $\widehat{\Delta}_t$ from Equation (3.2). More precisely, we compute:

$$\tilde{Y}^t_{\text{Top 1\%}} = N^t_{\text{Top 1\%}} \cdot \exp\left[\ln\left(Y^t_{\text{Top 1\%}}/N^t_{\text{Top 1\%}}\right) - \widehat{\Delta}_t\right], \tag{3.4}$$

where $Y^t_{\text{Top 1\%}}$ represents the total gross income of the top percentile in year t, and $N^t_{\text{Top 1\%}}$ is the number of individuals in the top percentile that year. This results in a higher total income for the top percentile: $\tilde{Y}^t_{\text{Top 1\%}}$. We also adjust the total reported income accordingly, $\tilde{Y}^t_{\text{Total}}$, and define the *no-reform* counterfactual top 1% income share for 2018–2020 as $\tilde{Y}^t_{\text{Top 1\%}}/\tilde{Y}^t_{\text{Total}}$.

Figure 4 presents the two top 1% income series, revealing a clear divergence after 2017. The unadjusted series, based on reported income, indicates a significant decline in inequality following the reform. While the top 1% income share remained relatively stable between 2004 and 2016, fluctuating between 13% and 16%, it dropped to substantially lower levels of 11%–12% in 2019 and 2020.

In contrast, the counterfactual series, where the top 1% receives additional dividend income to account for the impact of the 2017 reform, exhibits only a mild decline in inequality in 2018 and 2019. The estimated top 1% share in this series remains broadly consistent with the 2004–2016 period. This suggests that while inequality did decrease after 2017, conventional inequality measures relying solely on reported income substantially overestimate

[8] This calculation does not adjust for missing income or population and should not be interpreted similarly to distributional national accounts (Piketty, Saez and Zucman, 2018). The reported top 1% share reflects only taxpayers and reported income. In practice, the actual top 1% income share may be higher or lower when accounting for missing income and population. Danieli, Gilat and Leventer (2024) adjust for these factors and find top 1% income shares similar to ours.

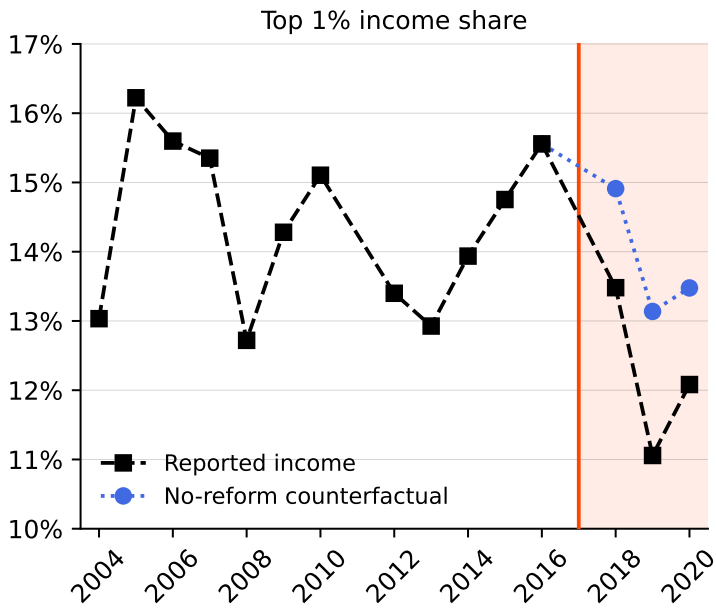


Figure 4: The top 1% income share in Israel based on reported income and the estimated impact of the 2017 reform.

Notes: The top 1% income share is calculated annually as the total gross income received by the top 1% of income earners in Israel divided by the total reported income of all taxpayers ($Y_{\text{Top 1\%}}/Y_{\text{Total}}$), based on income reported to tax authorities. The counterfactual series incorporates additional dividend income for the top 1%, estimated using the causal effect described in Figure 3. In this calculation, the added income is also included in the total reported income (Y_{Total}). The years 2011 and 2017 are excluded from the series, as reported income in these years is unusually high due to the distribution of a large amount of previously retained earnings.

the magnitude of this decline, largely reflecting higher rates of earnings retention rather than a genuine redistribution of income.

4 Conclusion

In this paper, we studied the effects of dividend tax reforms on taxpayer behavior, tax revenue, and income distribution, focusing on two major policy changes in Israel: the permanent dividend tax increase in 2012 and the temporary tax relief in 2017. Using administrative tax data, we document strong behavioral responses to both reforms, highlighting the importance of dividend taxation in shaping income reporting and earnings retention.

Our findings indicate that both reforms led to short-term surges in reported dividend income, as taxpayers adjusted the timing of distributions in response to tax incentives. However, the long-term effects of the reforms diverged. The 2012 tax increase had little impact on

earnings retention beyond its initial effect on dividend distributions, suggesting that the reform merely accelerated the payout of previously retained earnings rather than inducing a structural change in dividend policies.

By contrast, using a difference-in-differences approach, we find that the 2017 temporary tax relief not only increased dividend distributions during the period of reduced rates but also led to a sharp decline in payouts in subsequent years. This suggests greater earnings retention, likely driven by taxpayers anticipating future tax cuts and adjusting their behavior accordingly. While the short-term revenue effects of dividend tax reductions are well-documented, our findings indicate that the one-year tax relief introduced distortions with potential long-term consequences for tax revenue. This underscores the importance of evaluating both the immediate behavioral responses and the sustained effects of tax policy changes on capital taxation.

Additionally, we show that the increased retention of earnings following the 2017 reform introduces a bias in conventional income inequality measures based on tax data. The reported top 1% income share declined significantly after 2017, but our counterfactual analysis suggests that this was largely an artifact of unreported retained earnings rather than a genuine reduction in inequality. This finding has broader implications for the measurement of top-income shares, as it suggests that standard tax-based inequality metrics may systematically understate income concentration when retained earnings are not accounted for.

We also find evidence of income shifting in response to the reforms. During the years of tax changes, high-income taxpayers reclassified part of their labor income as dividends to take advantage of preferential tax rates. However, this effect was temporary, as there was no sustained decline in wage income after the reforms ended. These findings align with previous research showing that tax policy influences the composition of reported income, though primarily in the short run.

Our study contributes to the broader literature on capital income taxation and income shifting by providing new evidence on how different types of tax reforms influence taxpayer behavior. The comparison between a permanent tax increase and a temporary tax cut offers unique insights into the long-term incentives created by dividend taxation. These insights are particularly relevant given ongoing debates about the optimal design of capital income taxation. While recent work has suggested that capital income taxation may be a preferable alternative to wealth taxation, our findings indicate that policymakers must carefully consider the behavioral responses induced by dividend tax reforms.

Future research should explore the broader economic consequences of earnings retention, including its effects on investment, firm growth, and tax compliance. Additionally, further

work is needed to refine methods for incorporating retained earnings into income distribution analyses, ensuring that inequality estimates more accurately reflect the full scope of capital income.

Overall, our findings highlight the complex trade-offs involved in dividend taxation. While tax incentives can effectively influence the timing of dividend distributions, they also shape long-term taxpayer behavior in ways that may have unintended fiscal and distributional consequences. These insights should inform future tax policy design, particularly in economies where dividend income constitutes a growing share of top incomes.

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A The Capital Share in Israel

Figure A.1 displays the share of capital in national income in Israel between 2001 and 2020. It shows that the capital share increased by almost 10 percentage points between 2001 and 2020, from 27% in 2001 to 36% in 2020. The data are taken from the World Inequality Database (WID, 2023).

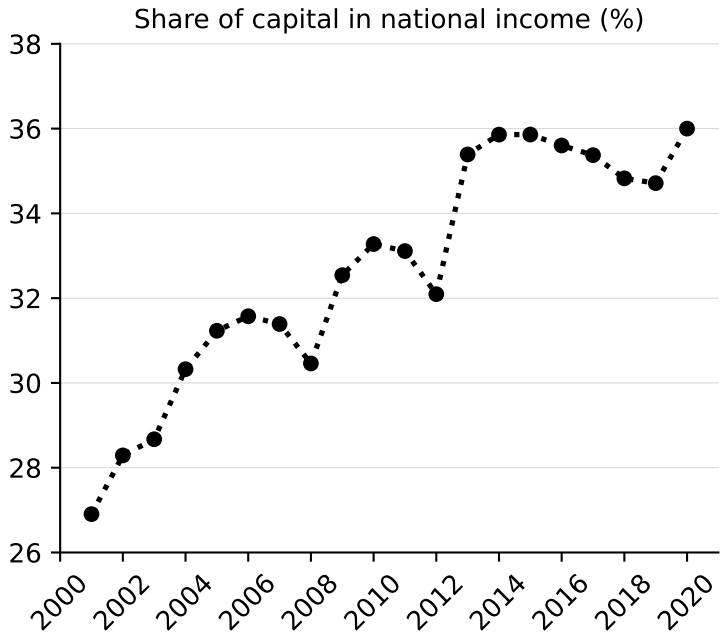


Figure A.1: The capital share of national income in Israel, 2001–2020.

Notes: The data are taken from the World Inequality Database (WID, 2023).

B Dividend Income and Other Capital Income

The primary data source for our analysis covers detailed information on the income distribution across all percentiles in Israel, categorized by income type. Dividend income is classified within a broader category termed *other capital income*, which includes not only dividends but also other forms of capital income that are subject to special tax rates, such as income derived from registered patents. To ensure that the inclusion of these additional income types does not compromise the validity of our analysis, we verify that their contributions are relatively minor compared to dividends.

For this purpose, we use data on the total reported dividends, as provided by the tax authorities from 2013 to 2020 (Raz-Dror and Yemini, 2024). These dividends are further disaggregated into those paid to individuals and those paid to other firms. Our analysis concentrates on individual dividends, as this subset is more directly comparable to the dataset employed in our study. A comparison between our dataset and the estimated total dividends paid to individuals by Raz-Dror and Yemini (2024) is presented in Figure B.1.

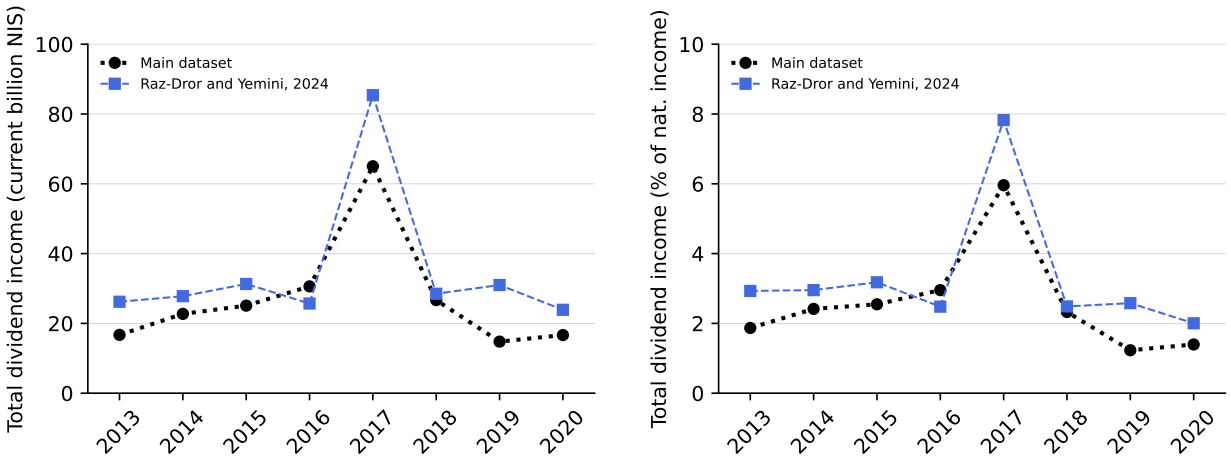


Figure B.1: Total dividend income, 2013–2020.

Notes: The left panel shows the total dividend income, or *other capital income* in our dataset (black) along with the total amount of dividend paid to individuals, as estimated by Raz-Dror and Yemini (2024). Values are in nominal billion NIS. The right panel shows the total dividend income as a share of national income in each year.

The two sources show some differences, with Raz-Dror and Yemini (2024) generally estimating amounts that are about 1 percentage point higher (in terms of national income) than those reflected in the tax data. This is even though their estimates exclude additional income components beyond dividends included in the main dataset. Notably, in 2017, this discrepancy is even more pronounced. This suggests that our estimates regarding the effect on

reporting are conservative. Moreover, the inequality estimates presented in our study might be understated, as an additional percentage point of national income, when distributed very unequally across the income distribution, is likely to result in greater inequality than what is indicated by our primary dataset.

C Robustness of Dividend Income and Tax Revenue Interpolations

In Figure 2, we use simple interpolations to estimate the excess dividend income and tax revenue resulting from the 2012 and 2017 reforms. Figure C.1 presents additional interpolation scenarios in which the year preceding each reform and the subsequent year are removed from the dataset, and the dividends and tax revenues are interpolated for these missing years. This approach accounts for both potential anticipation prior to the reform and spillover effects in the following year.

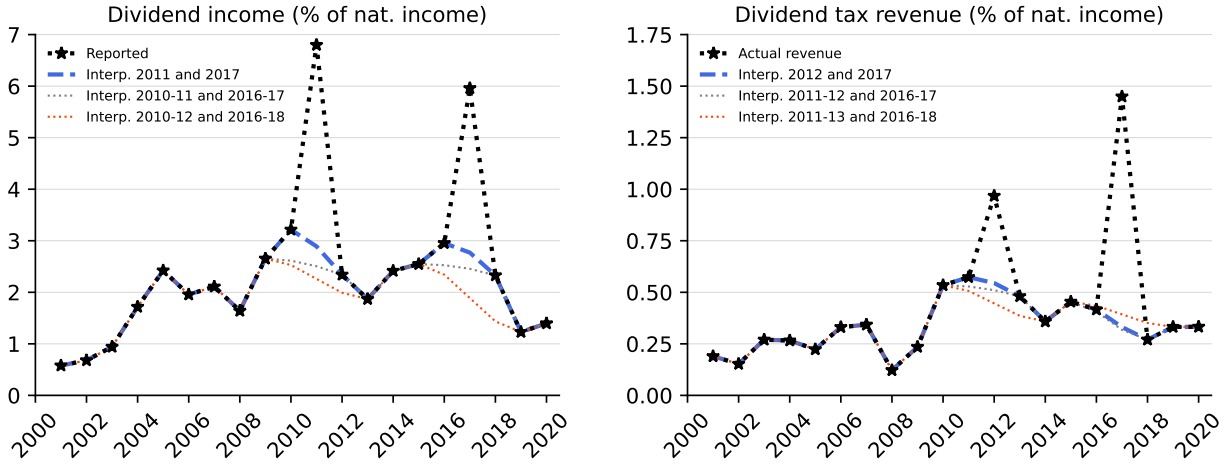


Figure C.1: Robustness of Dividend Income and Tax Revenue Interpolations.

Notes: The blue lines removed the reported data in the years 2011 (2012 for the tax revenue) and 2017, and replaced them with cubic interpolated data. The dotted grey and red lines do the same when also removing one year before each reform (grey) and also one year after each reform (red).

In nearly all scenarios, the baseline interpolation in Figure 2 provides a conservative assessment of the reforms' impact. The lone exception appears when 2016, 2017, and 2018 are omitted from the tax revenue data and interpolated, which lowers the estimated effect by 0.1 percentage point (out of a total of 1.1 percentage points). Overall, Figure C.1 shows that the baseline result remains robust under different interpolation strategies, with only minor variations in the measured reform effect.