Follow the money!
Why dividends overreact to flat-tax reforms*

Laurent Bach Antoine Bozio Brice Fabre
Arthur Guillouzouic Claire Leroy Clément Malgouyres

October 2023

Abstract

We estimate behavioral responses to dividend taxation using recent French reforms: a rate hike and, five years later, a cut. Exploiting tax data at household and firm-level as well as data linking firms and shareholders, we find very large dividend tax elasticities to both reforms. Individuals who control firms adjust dividend receipts instantaneously, accounting for most of the aggregate dividend reaction. Investment is insensitive to dividend taxation. Dividend adjustments are instead driven by corporate saving, as owner-managers treat firms as low-tax saving vehicles. Corporate profits decline following dividend tax increases, suggesting firms also serve as tax-free consumption vehicles. Our results fit the 'new view' of dividend taxation, provided an additional low-tax yet costly payout option is available that offers a tax arbitrage opportunity to entrepreneurs in control of their firms.

Keywords: Dividend tax ; Consumption and saving ; Firm behavior.

JEL codes: G35, H24, O16.

*Bach: ESSEC Business School. Bozio: Paris School of Economics (PSE), EHESS, Institut des Politiques Publiques (IPP). Fabre: PSE–IPP. Guillouzouic: PSE–IPP. Leroy: CREST. Malgouyres: CNRS, CREST and IPP. We thank Pierre Boyer, Marius Brülhart, Steve Bond, Michael Devereux, Rachel Griffith, İrem Güçeri, Etienne Lehmann, Terry Moon, Thomas Piketty, Jim Poterba, Emmanuel Saez, Nora Strecker, Mathias Thoenig and Eric Zwick for helpful comments, as well as seminar participants at the Paris School of Economics, UC Berkeley, CREST, CBT, Louvain University, St. Gallen University, GT-Fiscalité Paris, Beta Nancy/Strasbourg University, OFCE, Online Public Finance Seminar, Paris-London Public Econ. conference, HEC Montréal, HEC Lausanne, AFSE 2021 conference, J-LAGV 2021, IIPF 2021 Congress, JRC-Tax avoidance, Cergy University, and Bocconi University. The authors acknowledge the financial support of the EUR grant ANR-17-EURE-0001. Malgouyres acknowledges also financial support from the ANR through project ANR-19-CE26-0004. We thank the French ministry of finance-DGFiP for providing access to the data, as well as the CASD for secured data access (ANR-10-EQPX-17).

1 Introduction

Over the last three decades, a flurry of reforms leading to much lower dividend tax rates has taken place.[1] These reforms were generally motivated by the aim to foster private investment, stressing the efficiency cost of dividend taxes. The fact that they typically generated massive surges in the amount of dividends received by households, has been initially interpreted as an indirect evidence that these tax cuts could "pay for themselves" (Poterba, 1987, 2004). On the other hand, direct empirical evidence has failed to detect an investment response to dividend taxation (Yagan, 2015; Alstadsæter et al., 2017), and the great reactivity of the dividend response has led to the suspicion that it could be the result of an optimization response, rather than real responses motivated by a change in the cost of capital (Chetty and Saez, 2005, 2010).

The aim of this paper is to provide such a joint assessment of real and avoidance responses to dividend tax reforms. We exploit two French reforms of dividend taxation, which were both followed by large variations of total dividends in the national accounts: a tax hike which occurred in 2013, and a tax cut implemented in 2018. We investigate which households exhibit a large responsiveness, and highlight the distinctive role of owner-managers of privately held firms. We then thoroughly identify the response margins through which these households adjust their dividend receipts.

There is a data challenge in fulfilling this task. This is because dividends are the result of decisions made simultaneously by firms and households. Faced with higher tax rates, households may choose to divert their savings away from dividend-paying assets, while firms may distribute fewer dividends to favor other forms of payouts to investors. These choices may be made independently of each other, or they may instead be a joint decision as is the case when the main owner of a business is also its manager. In the latter case, opportunities for income shifting between the company tax base and the personal tax base abound, either between personal and corporate income or between the various ways in which a manager may be remunerated (Gordon and Slemrod, 2000; Kopczuk and Zwick, 2020). Investigating all those potential avoidance mechanisms requires having access to both household-level and firm-level data, and to data granular enough that one can identify the household dimension in corporate data and vice-versa.

To fulfil these data requirements, we exploit a new source of data, matching personal income tax records with firm level tax data. This unique dataset was created jointly with

[1] In the nineties, Nordic countries have been forerunners of this trend with the implementation of the so-called dual income taxation, which taxes separately capital income, with a flat rate tax set at a lower rate than top marginal income tax rates (see Sørensen, 1994). Other countries followed this trend: the US in 2003, Spain in 2007, France in 2008 and 2018.

the French tax authority (DGFiP) and the Secured data center (CASD) with the aim to evaluate capital tax reforms implemented in France since 2017 (Bach et al., 2021, 2023). It is composed of three separate sources of data that are merged together: i) the universe of French personal income tax returns matched with wealth tax files from 2006 to 2021; ii) the universe of French corporate income tax returns, covering both listed and unlisted firms from 2000 to 2022, and providing the tax situation as well as the ownership structure, complete balance sheet, and profit and loss account of each firm, and finally iii) the identification of large personal shareholders within each firm—those owning more than 10% of the equity—and the percentage of shares owned in each firm, directly or indirectly. With this data, we can identify individuals affected by dividend tax reforms at the tax unit level, know which firms they own, the degree of control they can have or not on the decisions of the firm, and assess the responses at the firm level in terms of investment, retained earnings and total payouts.

The second challenge in accounting for the tax elasticity of dividends is one of identification, as dividends are a volatile source of income (Chetty and Saez, 2005) distributed by profitable companies and received by wealthy households. To address this challenge, we exploit two large French flat-tax reforms, of opposite directions. In 2013, President Hollande abolished a flat-rate withholding tax for dividends, as a result of which the top marginal tax rate on dividend increased from 36.5% to 40.2%. In 2018, President Macron re-introduced a flat-rate withholding tax for capital income whereby top incomes may now reduce their marginal tax rate on dividends from 40.2% to 30%.[2] An additional identification challenge comes from the fact that dividend income from firm owners might be to a certain extent a latent income: individuals reporting low level of dividends could appear as natural control groups, whereas they could actually control substantial profits, and be affected in their decisions to pay out dividends. We will leverage our unique dataset to develop an empirical strategy assessing the behavioral responses of all treated households whether or not they control firms that could pay dividends.

Our empirical strategy relies on a difference-in-differences approach that we apply to both the 2018 and 2013 reforms, on our sample of households and then on our sample of firms. Among households, we can precisely identify those affected by the change in personal income tax, based on their pre-reform income, but we will show that even seemingly unaffected households who have control over firm do respond massively to dividend tax

[2]President Hollande fulfilled a pledge made during his presidential campaign: "I want to restore justice. (...) Capital income will be taxed like labor income." (*Le changement c'est maintenant. Mes 60 engagements pour la France*, pledge 14). President Macron made also clear in its campaign platform that the objective of reducing capital income taxation was to foster investment: "We will support private investment" was the headline used to present the tax reform (*Programme En Marche*, p. 11).

reforms, as they can potentially distribute dividends. As a result, we exploit our matched individual-ownership data to identify both the response from non firm owners, comparing high vs low levels of tax rates, and the response from firm owners relative to non firm owners. Among firms, our treated group consists of those for which at least 50% of the shares are controlled by individuals with enough personal wealth to be liable to the wealth tax, which were the prime targets of each reform. Our control group includes independent firms which are not directly or indirectly controlled by large individual shareholders, and hence neither willing nor able to react to the flat tax reforms we analyze.

Our main findings are as follows. First, in national accounts we find very large and conspicuous movements of dividends received by households just after both of the dividend tax reforms.

Second, we find that the very strong dividend tax elasticity is driven primarily by individuals having control over firms. The dividend response of households with control over one or several firms is much larger than the one measured for households without known firm control. Using household data, we estimate that the households that are firm owners reduced their dividends by 23% compared to those without control. Similarly, in 2018, they increase their dividend payments by 25% relatively to those without control. We do not find that those firm-controlling households affected by the 2013 reform substituted their dividends with either higher labor incomes or higher interest payments. The 2018 reform led to a slight reduction in wage payments which is orders of magnitude lower than the dividend response itself.

Third, we find that both dividend tax reforms have no noticeable causal effect on corporate investment. Indeed, we observe no reduction of investment following the 2013 tax increase, in spite of very large reactions of their dividend payouts. Following the 2018 tax cut, we do not observe any investment reaction until the Covid-19 episode hit starting in 2020. Even after 2020, the observed investment reaction is negligible in comparison with the natural cross-sectional variation in investment behavior.

Fourth, we carry out a decomposition of firms' dividend response to identify where the missing dividends may have gone in 2013, and from where the increased dividends have come from in 2018. In 2013, the decrease in dividend payouts can be explained by an increase in corporate saving, as well as a reduction in taxable corporate income. In 2018, we find that the reduction in corporate saving fully explains the increase in dividend payouts.

Our main contribution to the literature is to show that the very large dividend tax elasticity measured with these two reforms is driven primarily by firm owner-managers with sufficient control of firms' decisions, but that this high elasticity does not affect

investment decisions. We discuss our results in light of the theoretical literature. The fact we find no investment response to the two dividend tax reforms suggest that the traditional neoclassical model, or the 'old view' (Poterba and Summers, 1985), is ill suited to explain the behavioural response of firms to dividend taxation in our context. As was stressed before (Chetty and Saez, 2010; Yagan, 2015), the 'old view' model rests on the assumption that firm finance their marginal investment out of external equity, while the empirical evidence points to the fact the majority of firms (except start-ups or very young firms) fund their investment out of retained earnings. The 'new view' of dividend taxation (King, 1977; Auerbach, 1979) has thus stressed that in that case, dividend taxation should have no impact on investment, as both the opportunity cost of investment and its returns are taxed similarly by dividend taxation. However, the very large response from dividend payout to dividend tax reforms does not fit well with the 'new view' either, as dividend payouts should not react to tax changes. The main explanation provided in the literature has been to introduce agency problems to create a gap between the value of cash in the firm and for investors, with potential intertemporal tax arbitrage (Korinek and Stiglitz, 2009), or with pet projets from managers (Chetty and Saez, 2010). Our results are to some extent congruent with these revised 'new view' approaches, with the exception that most of the behavioral responses we document come from very closely held firms, where agency problems are clearly absent. We offer a simple explanation to those stylized facts by complementing the workhorse model of dividend taxation with the introduction of an alternative payout option with a lower tax rate than dividends, but available at some cost (see Appendix Section B and the associated discussion in section 6). This alternative payout option can be thought as saving through the firm with later payout as capital gains or inheritance, or as consuming through the firm. In all these cases, in the 'new view' framework —sufficient retained earnings to fund investment—investment does not react to dividend taxation, nor does total payout. However, the share of total payout in the form a dividend payouts is very sensitive to dividend taxation. This result does not require agency problems, nor only a temporary change in dividend taxation, hence it matches well the estimates obtained in our setting, as well as the behavioral responses documented in the context of other dividend tax reforms (Yagan, 2015; Alstadsæter et al., 2017) where the bulk of the estimating sample is made of private firms with fairly concentrated ownership where agency issues are likely to be second order.[3]

[3]For instance, Yagan (2015) writes: "Public corporations have much more dispersed ownership and thus may be more prone to agency problems than this paper's private corporations" (p. 3553) and "agency problems would be expected to be least severe among private corporations, whose shareholders are typically concentrated." (p.3561)

Related literature. Our work contributes to the literature in four main ways. First, this paper confirms previous papers showing that personal dividend taxation has a large impact on dividend payouts (Chetty and Saez, 2005, 2010; Jacob and Michaely, 2017), with no detectable impact on firms' investment on average (Yagan, 2015; Alstadsæter et al., 2017). Our analysis goes further as we estimate dividend tax elasticities using household-level data, while previous papers only use firm-level data and have to assume a uniform exposure of company shareholders to dividend tax reforms. Such intent-to-treat estimates by nature lead to lower elasticities than the estimates one can obtain with personal tax data. Our decomposition of the dividend response into all potential response margins at firm-level is also novel with respect to the existing literature, which does not explain where the dividend money is surging from.

Secondly, our results relate to the literature documenting income shifting from personal to corporate tax bases, especially among the self-employed and taxpayers with control over firms (Alstadsæter et al., 2014; Alstadsæter and Jacob, 2016; Pirttilä and Selin, 2011; Harju and Matikka, 2016; Miller et al., 2022). These papers typically investigate avoidance behavior among a very large set of business owners in proportion to the general population. This prevents a specific analysis of the richest business owners, even though their response disproportionately contributes to the aggregate response to dividend taxation. In contrast, our empirical analysis is made in a relatively big country, France, in which flat rates on dividends were predominantly attractive to the very highest segments of the income distribution. We show that, even in this highly relevant context in which the businesses owned may no longer be considered small, the usage of corporations as tax shelters around dividend tax reforms accounts for the bulk of the dividend response to taxation.

Third, our paper is related to the theoretical debate around dividend taxation. Previous results have highlighted that the lack of response from investment is hard to reconcile with the traditional model of the user cost of capital (Yagan, 2015). Alternative models of corporate taxation have pointed to the role of principal-agents relationship—between shareholders and managers—to rationalize the empirical impact of dividend taxation (Chetty and Saez, 2010). Our results point to a simple rationale for low or null investment responses to changes in the apparent cost of capital: the cost of capital is in reality not affected by changes in dividend taxation because payout decisions (or their lack thereof) dramatically reduce the effective impact of the tax on households' total income. Owner-managers of firms have no agency conflict and can integrate their personal finances with those of the firm. This corporate structure is widespread in the economy: the firms we study span the whole distribution of firm sizes, including corporate vehicles controlling

very important listed firms, and can explain almost all of the variation in dividend aggregates observed in national accounts.

Finally, this research is to be placed among a series of recent papers evaluating tax reforms that took place in France since 2012 using newly-available administrative data. Guillot (2019) studies the impact on the top of the income distribution of the 75% marginal income tax rate introduced in 2013, Aghion et al. (2019) exploit tax records to estimate the taxable income elasticity and Lefebvre et al. (2020, 2022) exploit household tax data to estimate behavioral responses to changes in capital income taxation in 2013. We depart from them by incorporating owner-managers and firms into the picture and identifying where the missing dividends are going.

Organization of the paper. The rest of the paper is organized as follows. Section 2 presents the institutional setting of the tax reforms we analyze. Section 3 describes the data and main variables. Section 4 analyzes responses to both reforms at the household level. Section 5 delves into responses observed at the firm level. Section 6 discusses the fiscal revenue implications and the economic interpretation of our results. Section 7 concludes.

2 Institutional setting

In this section, we briefly present capital income taxation in France, and the 2013 and 2018 reforms we analyze in this paper. A more comprehensive presentation of tax rules and reforms can be found in Appendix A.

2.1 Dividend taxation in France before 2013

Personal income taxation in France. The French income tax, called *Impôt sur le revenu* (IR), is a progressive income tax with joint taxation of members of married couples (or in civil partnership). All types of income should normally be included in the tax base, i.e., wage income, pensions, business income, rents, and other financial incomes. However capital income can fall into tax-favored or exempted schemes (e.g., tax-favored savings accounts, life insurance, pension saving accounts, etc.). In particular, dividends enjoy a 40% tax exemption. Up to 2012, the tax schedule included four brackets (5.5%, 14%, 30% and 41%), with the top marginal tax rate applying to income above 70,830 euros per tax share[4]. In 2012, a new tax bracket is introduced at the rate of 45% for income above 150,000 euros per share.

[4]Each household is divided in a given number of tax shares depending on household size and structure.

Additional contributions on capital income. In addition to the income tax, capital incomes are subject to social contributions, i.e., the *Contribution sociale généralisée* (CSG) and *Contribution au remboursement de la dette sociale* (CRDS). CSG and CRDS are two flat-rate withholding tax, earmarked to Social Security but providing no individualised benefits. In 2009, these social contributions amounted to 12.1%, and they were increased in steps to 15.5% in 2012. In 2012 an "exceptional contribution on high income", known by the acronym CEHR, was introduced at the rate of 3% for income above 250,000 euros per adult. The tax base of the CEHR includes all income. Adding social contributions to the income tax, the total marginal tax rate for dividends reached 40.2% for those at the highest income tax bracket (and 44% for those households paying the CEHR).

Optional flat-rate taxation of capital income. Since 1965, France has offered taxpayers the option of a flat-rate withholding tax on some types of capital income, called *prélèvement forfaitaire libératoire* (PFL). From 2008 onwards, dividends were included in the PFL option with a flat-rate of 18%, increased to 19% in 2011 and 21% in 2012. Selecting the PFL option can be done only once a year, before the income is received, and does not remove the mandate to report the income in the tax returns. Simulations show that the PFL option can only be advantageous for households with a very large amount of dividends or taxable income in the top bracket (marginal tax rate of 41% or 45%). Opting for the PFL in 2012 led to a top marginal tax rate on dividends of 36.5% (compared to 40.2% under the default option) for those at the top income tax bracket.

2.2 The 2013 reform

The removal of the PFL option. Fulfilling a campaign pledge to remove the preferential tax treatment of capital income, President Hollande's government cancelled the option for dividends to be taxed at the PFL with the 2013 Budget. The reform was thus announced during the presidential campaign in February 2012, with a hint that it could be applied even retroactively to income earned since 2012. The Constitutional Court's censored the retroactivity of the reform in a decision made public on December 29th 2012 (Decision no. 2012-662DC). In the end, only capital income earned after January 1, 2013 became subject to the flat-tax cancellation. Figure 1a presents the evolution of the top marginal tax rate for the income tax and social contributions from 2008 to 2019, comparing the situation if one opts for the flat-rate withholding tax or not.[5] Before 2013, the two tax alternatives are parallel, both experiencing increases in tax rates, while the 2013

[5] In Appendix A, we present changes of marginal tax rates for other income tax brackets, and for the total tax rate on dividends if one incorporates the corporate income tax.

reform removes the tax distinction. As a result, households in the top bracket, who used to opt for the PFL, experienced in 2013 a significant increase in their marginal tax rate of 3.7 ppt, from 36.5% to 40.2%, while households who did not opt for the PFL pre-2013 remained unaffected by the reform.

Anti-avoidance scheme for small businesses (SARL firms). Concomitant with the abolition of the PFL, an anti-avoidance scheme was introduced in 2013 to subject dividends of majority-owning managers (i.e., managers who also happen to own a majority of the shares of their companies) of limited liability companies (SARL is the French acronym for "*Sociétés à responsabilité limitée avec gérant majoritaire*") to social security contributions.[6] Firms not affected by this anti-avoidance scheme but affected by the main 2013 reform include in majority SAS firms (SAS stands for *Sociétés par actions simplifiées*, i.e., a simplified version of the general limited liability company), and a minority of SA firms (SA stands for *Sociétés anonymes*), the legal form mostly used by listed firms.

2.3 The 2018 reform

President Macron was elected in 2017 with a markedly pro-business platform aiming to foster private investment. The wealth tax, *impôt sur la fortune* (ISF) is abolished and replaced by a tax on real estate wealth. The flat-rate taxation of capital income is reinstated in 2018 with the creation of the *prélèvement forfaitaire unique* (PFU) at the rate of 12.8%. Adding social contributions of 17.2% amounts to a total rate of 30%.

This reform is the largest change in dividend taxation since 2010.[7] Figure 1b presents the changes in marginal tax rate on dividends around the 2018 reform. The top marginal tax rate fell by 10.2 ppt in 2018, from 40.2% to 30%. The 2018 reform leads to a bigger drop in top marginal tax rates than the 2013 reform, making the flat-rate withholding tax attractive to a much wider number of taxpayers: e.g., taxpayers in the 30% income tax bracket (with taxable income between 27,519 and 73,779 euros per share) also benefit from the flat-rate withholding tax option, albeit with reduced intensity. Compared to the drop of 10.2 ppt for the top marginal tax bracket (45%) households in the 30% income tax bracket experience a drop of 2 ppts, while the 14% income tax bracket sees an increase of 1.5 ppt.[8]

[6] See Matray (2023) for a recent analysis of this reform.

[7] The anti-avoidance scheme for majority owners of small businesses remained unchanged.

[8] The 2018 reform has increased marginal tax rates for lower income group because the flat-rate withholding tax is achieved through two flat-rate taxes, one replacing the standard income tax and another one with social contributions. It is the increase in social contributions from 15.5% to 17.2% which creates this marginal tax increase for lower income groups.

3 Data

This paper relies on a unique source of data, consisting in an exact matching of the universe of individual tax data with firms' shareholder information. This is the first time that the French tax authorities have allowed matching these two separate sources of information. We describe in turns each source of data matched while more details on the matching process can be found in Bach et al. (2021) and Bach et al. (2023).[9]

3.1 Administrative tax data matching individuals to firms

Income tax returns (POTE). The French tax authority, the *Direction générale des finances publiques* (DGFiP) at the ministry of finances, produces every year a file called POTE including the complete detail of income tax declarations for each of the 37 million French tax units, i.e., the amount recorded in each of the 3,000 items of the income tax return. We have this information at our disposal for income from 2006 to 2021 (i.e., for income declared in years 2007 to 2020). DGFiP creates an anonymous unique identifier for each tax unit between years which can therefore be followed over time.

Wealth tax returns (ISF-IFI). The DGFiP also produces a panel from wealth tax returns which can be merged with a common identifier to the income tax returns. Only tax units liable to the wealth tax report their taxable assets—with taxable assets above 1.2 million euros—, providing 350,000 tax units included every year into the panel. Taxable wealth includes all real estate and financial wealth until 2017, as the 2018 reform abolished the wealth tax for financial assets. Taxable wealth excludes professional wealth, i.e., business assets for individuals who play a managerial role in the firm they own.[10] A number of other cases can lead to a reduction in wealth taxation when individuals do not qualify for the exemption of business assets. These include collective retention commitments for family businesses (so-called Dutreil pacts), shares in firms where one pursues some activities (without qualifying for the professional assets full exemption), or when the business assets represent more than 50 % of total wealth. Such detailed information on wealth composition is available for all wealth tax payers up to 2011, and for households above a threshold of €2.57M from 2012 onwards, when a simplified declaration is introduced. It allows us to identify some of the households that are not owner-managers but own assets implying some degree of control over corporate decisions.

[9] We were granted access from *comité du secret statistique* for household data on June 27th 2019 (M481) and March 6th 2020 (ME1086), and firm data on Oct. 11th 2018 (ME390), Sept 17th 2020 (ME1144) and Dec. 16th 2020 (Point ME1170).

[10] Further details on wealth taxation in France can be found in **?**.

Corporate income tax returns (BIC-RN). The tax data we use corresponds to a matching of three separate files: the tax files of the industrial and commercial profits under the normal regime (BIC-RN, DGFiP); the tax group perimeter files (PERIM, DGFiP) and the file of financial links between group companies (LIFI, DGFiP). The PERIM and LIFI files are used to identify the legal units belonging respectively to a tax group or an economic group. The reforms of interest concern the taxation of individuals. Therefore, it is important to consider companies which are independent and susceptible of paying dividends to individuals. We consider as independent all firms which are not subsidiaries of a fiscal group, and which are not wholly owned by a single legal entity. The BIC-RN file contains a variable related to the dividends distributed for the financial year ended on a given date. We use corporate income information for years 2009 to 2022.

Shareholder information from corporate income tax. When filing the corporate income tax (CIT) files, firms have the obligation to fill information about each shareholder owning at least 10% of the social capital.[11] Information for each of these "reference shareholder" consist in the name, surname, date of birth, address and percentage of the capital owned. In addition firms need to report the total number of natural persons and institutions owning shares of the firm, and the total share of each group in the social capital.

Shareholder information from commercial data (ORBIS). Bureau van Dijk (BvD) collects shareholder information from various sources (financial press, official publication for listed firms and registry from commercial courts). When the shareholder is a natural person, his or her surname, first names, date and place of birth can be provided, in particular if this shareholder is also the legal representative of the company. As there is no public register of company shareholders in France, the source is not exhaustive in the sense that only a minority of firms is covered and only a portion of the shareholders of each company is informed. However, the source is by nature better informed for the highest professional wealth, and it is in particular through this that information that financial press compiles top wealth lists like Forbes 500, or Challenges 500 for the French case. In addition, BvD traces shareholders beyond the French residency and makes it possible to associate with a natural person residing in France with French firms owned by foreign vehicles. Finally, this data source is filled independently from the tax records, which makes it a complementary source when the tax information is missing.

[11] Forms 2059-F for firms filling the detailed CIT returns, and form 2033-F for firms opting for the simplified version.

Shareholder information from commercial courts (INPI). The legal representatives of a French company must be registered by French commercial courts. The identity (surname, first name, place and date of birth, address) and the precise function of each representative (manager, chairman, managing director, administrator, etc.) are thus recorded in a database which is then centralized by the *Institut national de la propriété intellectuelle* (INPI). Since 2017, the INPI has made all of this information available in open data. Before 2017, the same information was accessible under license and made commercially available with the ORBIS database. This data is useful to us in several ways. First of all, the definition of professional wealth for the wealth tax exemption requires verifying that the holder of shares in a company also effectively participates in its management, which the INPI database allows us to verify. Second, when the shareholder information from tax record and from ORBIS, the identity of the representatives remains of very good quality. However, it turns out that in unlisted companies the legal representatives are also major shareholders of the company in 83% of cases.[12]

Matching process. To match individual data with firm data, we have to use directly personal identifiers (name, surname, date of birth, address of residence, place of birth) that are not accessible to researchers. The procedure established with the French tax authorities has been to rely on a third party to realise the matching procedure based on these personal identifiers, which are then dropped when the matched data are delivered to the research team (Bach et al., 2021). To estimate the quality of the match, we compute various match rates. First, we can match 81% of the shareholders for whom a name and a date of birth are correctly reported in the corporate income tax forms—corresponding to 87% of total assets held by these shareholders. We also compute the match rate from the smaller sample of managers identified in the personal income tax data in 2018, who sold their business in 2019. 91% of those managers are thus matched by our algorithm.

3.2 Aggregate series of dividend income

Before turning to our analysis, we present raw aggregate series of dividend payments in France around the time of the two reforms of interest. Figure 2 represents different aggregate dividend series over the period 2009–2022. In Panel A, we report the series from national accounts depicting dividends received by French households. After the 2013 tax hike, the aggregate series drop by 13.6 billion euros, or 0.6% of GDP, while the aggregate amount of dividend received by household jumped after the 2018 tax cut

[12]This figure is computed from firms with non-zero value wholly owned by natural persons and which register their shareholders in the tax records.

from 30.6 billion to 40 billion euros, an increase of 0.4% of GDP. The increasing trend continues post-covid and the dividend received by household reached 61 billion euros in 2022, i.e., an increase of 1% of GDP with respect to 2017.

In Figure 2b, we use tax data to identify the aggregate dividend series directly received by households in the income tax returns (blue squares) and those distributed to households by firms (red diamonds). To be as close as possible to the household series, the sample excludes listed firms (which distribute a significant share of their dividends via mutual funds and life insurance products rather than directly to households). Although the aggregate series are smaller than in the national accounts—National accounts include non-taxable dividends and business income subjected to the personal income tax—the drop after 2013 and the increase after 2018 are of the same magnitude (a year-to-year variation of 9 billion euros).

Figure 2c decomposes aggregate dividends distributed by firms according to the number of physical owners recorded in their corporate tax return. It strikingly shows that the bulk of both the level and the variations of dividends distributed by unlisted firms originate from firms with either one or two owners, while firms with more that ten owners account for a very small share. This confirms that controlling owners should have a considerable weight on the dividend policy of the firms, even when they cannot be tagged as owner-managers in households' tax returns.

In Figure 2d, we show yearly aggregate dividends received by households according to whether they liable to the wealth tax (ISF) and whether they have control over a firm. We can clearly see that owner-managers, whether they are wealth tax payers or not, account for a large share of total dividends, even though they are a small minority of households. What is more, they account for an even larger share of variations following both reforms, suggesting that these taxpayers have a very large reactivity to taxation.

The combination of these facts observed at the household and at the firm level suggests that most of the dividends distributed by unlisted firms correspond to situations where agency problems should be minimal, and that the shareholders in these firms account for most of the national accounts variations which follow tax reforms. In the remainder of the paper, we investigate the responses of households affected by the tax reforms, with special attention given to the reactions of firms' owner-managers, and the consequences those reforms have on firm accounts.

4 The treatment effect of dividend tax reforms on households

z

The first empirical exercise we conduct is to estimate behavioral responses induced by both tax reforms on dividends received by households. We aim here to measure the magnitude of the dividend response as well as the potential driving mechanism, whether originating from household portfolio reallocation or linked to firms' decisions. We first present our identification strategies for both reforms, before turning to the results of our estimations.

4.1 Empirical approach

The identification challenge to estimate a dividend response at the household level is that marginal tax rates pre-reform are not informative of which households could be potentially affected by the reforms, as pre-reform dividend income does not reflect the potential dividends household could receive. In order to identify the behavioral response, we leverage the matched household-ownership data to consider the firm-owners as potentially treated by the dividend tax reforms no matter their observed tax rates, as opposed to those households who have not been identified as firm owners.

For both reforms, we estimate its effect at the household level through a dynamic difference-in-differences estimation. Our first identification strategy consists in the comparison of households depending on whether or not they own a firm. Indeed, one might expect a differential response from small shareholders of large firms who cannot control the payout policy of the firms they invested in, compared to entrepreneurs who own a large share of a firm equity and thus have more control over its payout policy. Our second identification strategy is more straightforward and compares households who were differentially affected by the reform in terms of tax incentives. For this strategy, we concentrate on the subsample of non firm-owners, where treated and non-treated households can be clearly identified.

Comparison of firm owners and non firm owners. Using the matched shareholder-firm tax data, we can link each tax unit to the firm that its member have been identified as reference shareholder in the corporate income tax files. We define a firm owner as a tax

unit that belongs to the matched shareholder-firm dataset.[13] In line with the literature on dividend taxation that has found larger response among closely-held firms, this strategy allows us to explore the role of firm ownership in driving observed responses to the tax reforms.

Comparison of differentially affected households. We then construct a more direct exposure to each reforms in order to capture the response to the change in tax incentives. This analysis is performed on the sample of taxpayers without control over a firm. We compare households based on their pre-reform taxable income, since only those in the upper tax brackets should be affected by the introduction or the removal of the flat-tax option. For the 2013 reform, opting for the flat-tax was beneficial for taxpayers in the 41% or 45% tax brackets of the personal income tax schedule. Thus, households in these tax brackets face a possible tax increase following the removal of the flat-tax option in 2013. For the 2018 reform, since the new flat-tax introduced is lower than the one that existed before 2013, the range of possibly affected households differ. Taxpayers in the medium tax bracket (30% tax bracket) should in principle benefit from the new flat-tax in 2018. The magnitude of the decrease in their marginal tax rate on dividends is however very small. We thus choose to follow the same strategy for 2018 and for 2013 and compare those in the upper tax brackets (41% or 45%) with those in lower tax brackets (30% and below).

To define treatment exposure in an exogenous way, we classify households into tax brackets not in terms of their total taxable income but in terms of the sum of their taxable wages, pensions and real estate income since these category of incomes were not eligible for both of the flat taxes. Treated households are households who fell at least once in the period pre-reform in the 41% or 45% tax bracket.

Sample selection. In the following analysis, we focus on the subsample of wealth tax payers. Before 2018, the wealth tax applied to both financial and non-financial wealth (with exonerations for business assets). Only those with a significant amount of wealth were liable to this tax. Restricting the sample to these households allows us to construct a panel of taxpayers who can potentially receive large dividends. Importantly, while these taxpayers represent less than 5% of all tax units declaring a positive amount of dividends at least once during the period, they represent about half of the aggregate amount of

[13] Note that the matched shareholder-firm data only span the 2014-2021 period. For period before 2014, we thus cannot identify past firm owners who might have changed status. Conversely, we might label as firm owner a tax unit that was not yet at the time.

dividend declared. Additionally, the evolution of aggregate dividend receipt in the 2009-2021 period was similar for the group of wealth taxpayers and for the group of non wealth taxpayers (Figure 2). Our final samples of analysis are two balanced panel of wealth taxpayers for the periods 2019-2017 and 2013-2021. Additionally, we restrict the samples to those who received at least once a sizeable amount of dividends pre-reform, namely at least 1,500 euros.

Panel A of Table 1 presents descriptive statistics of the overall sample, comparing the treated (i.e., the firm-owners) and control groups (i.e., non firm-owners) in terms of pre-reform characteristics, for the 2013 reform estimating sample. The sample size is composed of 151,088 households. The treated group receives on average more income and especially more dividends than the control group. However, there is significant common support across the two groups. Since the treated group is composed of entrepreneurs, the treated groupe is also on average younger and more likely to receive a wage than the control group, who are more likely to receive pension income. Panel B of Table 1 compares households facing high marginal tax rates (treated) to households facing low marginal tax rates (control) in the subsample of non firm-owners. Mechanically, treated households are again richer than the control group.

We estimate a dynamic specification allowing us to gauge the unfolding of the effect over time and to detect potential differential pre-trends prior to the reforms. It writes as follows:

$$Y_{it} = \sum_{\substack{d=2009 \\ d \neq 2012}}^{2017} \beta_d \times \mathbb{1}\{t = d\} \times T_i + \mathbf{x}_i' \mathbb{1}\{t = d\} \boldsymbol{\delta}_d + \mu_i + \lambda_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is our variable of interest measured for tax unit i and year t, T_i is a variable indicating firm i is in the treatment group, $\mathbb{1}_{\text{year}=t}$ a variable indicating year equals t, λ_t is a year fixed-effect, μ_i a household fixed-effect, and $\mathbf{x}_i' \mathbb{1}\{t = d\}$ a set of time-invariant household characteristics set prior to the reform and interacted with year indicators. In this specification, the β_d coefficient captures the difference between the treatment group and the control group for a given year d relative to the baseline year 2011. We control for fractiles of taxable wealth (20^{th}), taxpayer's age (20^{th}) and number of fiscal shares (4^{th}) interacted with year fixed effects. Our main outcome variable is the ratio of dividend to the pre-reform taxable wealth (defined as the maximal taxable wealth declared pre-reform). We also look at this ratio for other types of income, namely capital gains, non-dividend capital income, wages and pensions.

4.2 Household-level responses: results

Dividend responses of firm owners. We first present results comparing households who could react directly to the dividend tax reforms increase by adjusting the dividend policies of the firm they control to other households who do not have such power. Figure 3 presents raw averages (panels a and c) and difference-in-differences estimates (panel b and d) on dividends for the treatment effect associated to being a firm owner, following the specification in equation (1). We present the results for the 2013 reform (tax increase) in Panels a) and b), and the results for the 2018 tax reform (tax decrease) in Panels c) and d). We show that the households who have control over firms receive on average much larger amounts of dividends as a share of their wealth, and that they have reacted considerably to both the 2013 tax increase and the 2018 tax decrease. In comparison, households without control over firms have tended to be relatively unresponsive to the reform. Because households who control a firm and households who do not are significantly different (see Table 1), they are unlikely to be following the exact same trend in terms of dividend income. The results do show significant pre-trends for the 2013 reform, as the firm owners were before the reform on a more dynamic trend in terms of dividend receipts. As the raw data show, the drop in dividend received by firm owners is nevertheless massive, compared to the other households. We estimate that households that are firm owners reduced their dividends by 23% compared to those without control. Given the pre-trends, this estimate is likely to be an under-estimate of the true response. For the 2018 reform, there is no pre-trend as both groups had a relatively flat trend in dividend receipts. Our estimate points this time to a positive dividend response of 25% of pre-reform level.

Dividend responses of non firm owners. In Figure 4, we present the results of the estimations based on the tax treatment of the reform for the sample of households who do not have control over firms. Similarly we present in Panels a) and c) the raw averages for the high tax households (affected by the tax reform) and the low tax households (non affected), and Panels b) and d) present the difference-in-differences estimates. Results for the 2013 reform is reported in Panels a) and b), and in Panels c) and d) for the 2018 tax reform. The dividend response to the tax increase is significantly negative in the case of the 2013 reform, but its magnitude remains relatively small. Households affected by the tax increase, exhibit a decrease of 6% in their dividend income, a quarter of the magnitude observed for households with firm control. For the 2018 reform, households without firm

controls do not exhibit any response in the form of increased dividend, suggesting all the aggregate response is driven by firm owners.

Other income responses of firm owners. In Figure 5, we present the difference-in-differences estimates for other income sources (e.g., labor income, other capital income), comparing the firm owners to the non firm owners. For the 2013 Reform, we do not detect any substitution to other forms of income. The estimates for labor income and other capital income are small, and if anything negative. This result is not surprising given that the 2013 reform—an increase in taxation of dividend income—has not made wage income more attractive in terms of tax treatment, as labor income is in France always taxed at a higher rate when non-contributory social contributions are included (see Appendix A). For the 2018 reform, we also fail to detect any response from other capital income, but we detect a small negative response from labor income that starts in 2019. This is suggesting that some of the dividend response could be explained by income shifting between dividend and labor income, but one needs to stress that the magnitude of the labor income response is small and could only partially explain the jump in dividend income. Taken together, these results do not support the hypothesis that dividends received by households dropped mainly because other sources of income had become relatively less taxed at the household level, either through income shifting in the form of wages, or through mere portfolio reallocation.

Overall, these household-level results, from both the 2013 and 2018 dividend tax reforms, provide direct evidence that the key driver of the behavioral response to dividend taxation is the ownership and control of a dividend-paying firm. With this result in mind, we now turn to firm-level data to estimate the impact of the reform on firms' decisions.

5 Firm-level responses to dividend tax reforms

Given the first-order role of firms' owner-managers in explaining the massive changes in dividends received by households following both tax reforms, we naturally turn to firm-level responses to confirm the strength of entrepreneurs' payout reaction to taxes and develop a better understanding of how these cuts and rises in dividend payments translate into firms' accounts. In particular, the effect of dividend taxation on firms' investments is a longstanding question in public economics on which the *new view* (which predicts no effect of dividend taxation on investment) has received more empirical support, notably through Yagan (2015), than the *old view* (which predicts a negative effect of dividend taxation on investment).

5.1 Empirical approach

Treatment and control groups. Since the reforms we analyze concern the taxation of natural persons, the exposure of firms to tax changes depends on their ownership structure at the time of the reform. For instance, firms wholly owned by legal entities are not affected, nor are multinationals owned mostly by non-French-residents. It is usually harder to assess whether firms directly or indirectly controlled by individuals are affected by personal tax reforms. This is because not all owner-managers, only the rich enough ones, do effectively benefit from a flat tax. As a result, it is standard in the empirical literature on dividend taxation to use an *intent to treat* strategy to identify causal effects of flat tax reforms, at the risk of underestimating their effects. In this paper, we can define which firms are treated and which are not more accurately because we use a registry linking firms to their main owners and their personal income and wealth situation.

The choice of our control group deserves a thorough discussion, since several groups of firms are potentially unaffected by the reform. For instance, French listed companies have little sensitivity to the French personal income tax on dividends in their distribution policy, and as such constitute an interesting control group with respect to the dividend payment policy. However, their very large size makes them potentially less comparable to the treatment group in terms of real variables such as investment or employment, which are our ultimate estimation targets. In contrast, companies owned largely by legal entities constitute a particularly interesting control group, insofar as they are numerous and of varying sizes, but *a priori* not directly or indirectly affected by the personal income tax reform, provided that the personal owners together control only a minority of the share capital.

We build our treatment and control groups in the following way. We select all legal units with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as our treatment group. The wealth tax liability restriction makes it much more likely that the corporation's decisions will be taken with the view of maximizing the welfare of individual shareholders likely benefiting from the wealth tax. Conversely, we include in our control group all legal units with less than 10% direct or indirect ownership by individuals with substantial control. We further require that firms in our control group are not fiscal subsidiaries nor owned by a single legal entity, in order to avoid mechanical transfers of profits as dividends to the parent company. These restrictions ensure that, in the event of a joint filing of their corporate tax along with other legal units in the same business group, only the business group's parent company will be included.

In our baseline analysis, we do not consolidate accounting outcomes across the entire downstream spectrum of each business group. This approach is likely leading to overestimating the impact of personal dividend taxation on real corporate outcomes, since downstream firms' investments are more likely funded by earnings retained within internal capital markets than by ultimate owners' saving and consumption decisions. It is also making it easier to trace the distribution of dividends to ultimate individual owners, which can only happen at parent-level. One important consequence of this choice is that the relevant size metric will be the company's assets rather than its employment level (most of which may be located in subsidiaries). Another decision this comes up with is that we include as investments not only investments in tangible and intangible assets within the parent company but also equity injections made by the parent company into subsidiaries.

Assessing the channels: an accounting-based decomposition. To track the corporate responses implemented together with the change in dividend payments, we construct an accounting decomposition to assess which elements were affected as a consequence of the tax reform. Thus, denoting t the reference year and $\Delta_{t-1;t}$ the yearly changes between $t-1$ and t, this decomposition writes:

$$\text{Dividends}_t = C_t - T_t - I_t - S_t \tag{2}$$

The elements of this decomposition are defined as follows. Profits (C_t) are profits liable to the corporate tax, and represent total profits considered by the tax code available to the company's owners. T_t are the corporate taxes actually paid by the company. I_t denotes capital expenditures, *i.e.* investment in tangible and intangible fixed assets. Finally S_t is what is left of profits after corporate tax is paid, dividends are paid out and capital expenditures are made, i.e. the increase in cash holdings less the increase in external financing. The sum of S_t and I_t is equal to retained earnings so we refer to S_t as uninvested retained earnings.

To estimate the elements of the accounting-based decomposition, we estimate a static specification which allows us to summarize more concisely the several margins of adjustment firms might resort to in response to a change in dividend taxation. It writes as follows:

$$Y_{it} = \beta \times \mathbb{1}\{t \geq 2013\} \times T_i + \mathbf{x}_i' \mathbb{1}\{t = d\}\boldsymbol{\delta}_d + \mu_i + \lambda_t + \varepsilon_{it} \tag{3}$$

where notation is the same as in Equation (1) but where units i are firms instead of households. We also estimate dynamic versions, the results of which are displayed in figures.

We scale the variables in the decomposition by firms' assets normalized two years prior to the reform (that is, 2011 for the PFL/2013 reform, and 2016 for the PFU/2018 reform). We then winsorize ratios in the following way: we replace strictly positive values above the 99*th* percentile of the distribution of non-zero values, and similarly replace all strictly negative values below the 1*st* percentile of the distribution of non-zero values. This method posits that zeros are not candidates for being outliers. It avoids winsorizing in very different ways variables with different shares of zeros. This proves essential in order to obtain roughly summable point estimates in the accounting decomposition we introduce next, when our main variable—dividends—takes value 0 for more than half of the observations. Moreover, because the ownership at the individual level is measured in 2016, hence at the end of the study period for reform 2013, we balance the sample of firms for this reform. For the 2018 reform, we need not make such restriction, and only impose that firms are observed at least once before and once after the reform, thus making sure that they contribute to the estimation. An important point to note is that we use firms' accounts from both the normal and the simplified CIT regimes: since the latter became available from 2010 onward, the pre-reform period is restricted to (-2,0) for the 2013 reform while it contains (-3,0) for the 2018 reform.

Descriptive statistics. We run our analyses separately on two distinct samples of firm observations, one for the 2013 reform and the other for the 2018 reform. Table 2 provides some descriptive statistics for each sample, each time for observations belonging to the treated group alongside those belonging to the control group, measured in the penultimate observable year before the reform for each corporation. The number of firms in the 2018 sample is substantially larger than in the 2013 sample, in part because our ownership registry data restricts the analysis of the 2013 reform to companies with ownership still being reported to tax authorities by 2016. There is imbalance in the frequency of each group as between 10 and 15% of firms are control firms in our analysis. This comes with an imbalance in firm size as control firms have more than 5 times more gross assets at the median in the 2013 sample and 3 times more in the 2018 sample. Differences according to alternative metrics such as employment, turnover, value added or income are less stark, but this in part reflects the lack of consolidation. Nevertheless, in both groups firms' median age is 5 years old just prior to the reform, which suggests that on this key dimension of dividend policy which is corporate maturity the two groups are

alike, and not so old that investment opportunities would be limited in nature. On all the outcome variables we consider, there are important differences in averages but also substantial common support along the distribution. This means the credibility of our diff-in-diff design is strong provided one carefully assesses the behavior of key outcomes prior to the reforms in the treatment and control group.

5.2 Results

Dividend policy. We first present regression results using yearly dividends scaled by assets two years prior to the reform as our dependent variable, consistently with the variable we later use in the accounting decomposition. Figure 6 plots both the raw yearly averages by group and the yearly coefficients and 95% confidence intervals of the dynamic differences-in-differences estimates. Panels (a) and (c) represent the corresponding evolution of raw outcomes for each group over the period. Panels (b) and (d) present the impact of the PFL/2013 reform and the PFU/2018 reform respectively. The effects of each reform have opposite signs, as expected given that the 2013 reform is a tax hike while the 2018 reform is a tax cut. The co-evolution of dividends in the two groups is usually smooth before each reform[14] and very quickly reacts to the reform. The 2013 reform led to a decrease in dividends by 1.2 points of assets, while the 2018 reform led to an increase by 0.8 points of assets. Given the average dividend to assets ratios in the treated group according to our descriptive statistics, this corresponds to a -25% decrease in 2013 and a +33% increase in 2018. Given the net-of-tax rate on dividends declined by 6% in 2013 and increased by 16% in 2018, this corresponds to an elasticity of 4.2 for the hike versus 2.1 for the tax cut.

Investment responses. Turning to investment, we present regression results using yearly investment scaled by assets two years prior to the reform as our dependent variable. Figure 7 plots yearly coefficients and 95% confidence intervals of the dynamic differences-in-differences estimates. Panels (a) and (b) present the impact of the PFL/2013 reform and the PFU/2018 reform respectively. Panels (c) to (d) represent the corresponding evolution of raw outcomes for each group over the period. To give a glimpse of the underlying distribution of investment, graphs are shown with a scale of -.25 to +.25 standard deviations of the variable. We do not detect any significant (either statistically or economically) investment reaction to the dividend tax hike in 2013. After the 2018 tax cut, investment did not react in the first few years after the reform, but it did go up more than in the control

[14] There is a slight anticipation effect in 2012, leading treated firms to temporarily distribute more dividends in year 2012 as they expect the favorable tax regime not to last.

group in years 2020 and 2021. This last result is hard to interpret though as this was right in the middle of the Covid-19 years. Barring this important caveat, our results are in line with those found on the 2003 US reform (Yagan, 2015) and the 2006 Swedish reform (Alstadsæter et al., 2017), with no impact of dividend tax reforms on investment found in either case.

Accounting decomposition. We now delve into the adjustments made by firms jointly with their dividend policy response. Tables 3 and 4 present regression coefficients obtained from a static difference-in-differences method, i.e., estimating the coefficient associated with a variable 'Treatment $\times$ Post-reform period' of each of the variables of the accounting breakdown presented in equation (2), for each reform and differentiating the effect in the short-run, versus the medium-run versus the entire post-reform period. Incidentally, this table allows checking the validity of the accounting breakdown presented above: the sum of the coefficients associated with each of the decomposition variables (combined with the sign associated with each variable in the decomposition) should be equal to (or at least close to) the coefficient associated with the dividends paid.[15] The table confirms the previous findings. Following a tax hike, companies do not invest either more or less so the margin of adjustment is initially via increased corporate savings, followed over time by a reduction in profits. Following a tax cut, the entire reaction comes from reduced corporate savings, some of which is reinforced during the Covid years by differential increases in investments. To check that the main margins of reaction we observe in the static difference in differences do indeed develop without significant differential pre-trends, we plot jointly the estimation coefficients for these variables in Figure 8. This shows the joint reaction of dividends, profits and retained earnings (investment plus uninvested retained earnings) over time in the treated group compared with the control group for the 2013 reform (as both profits and retained earnings seem to react), and the joint reaction of dividends and retained earnings for the 2018 reform (as the whole reaction seems to originate from retained earnings). Following the tax hike, treated companies first react by retaining earnings (but not reinvesting them), but as years go by their profits gradually decline. By the end of the period, most of the dividend drop is compensated by a drop in profits rather than an increase in retained earnings. Following the tax cut, treated companies react entirely by reducing retained earnings and we do not detect a clear pattern of a simultaneous increase in profits.

[15] They may not fully correspond due to the impact of winsorizing each of the decomposition outcomes separately.

These results suggest two main margins of adjustment for firms as they cut their dividends. First, firm owners use corporate saving as a way to shift intertemporally the income they receive. Foregone dividends are stashed in firms' cash balance, then distributed either in the form of tax-favored donations and capital gains or once dividend taxes go down again. The decrease in profits following the tax hike however points to an additional reaction margin: it suggests that firm owners either reduced productive but not capitalizeable investments or they shifted part of their consumption expenses to their firm, thus leading to lower profits. This is difficult to document further with the data at our disposal because consumption at the benefit of the owner is by design indistinguishable from regular corporate expenses, which correlates a lot with its activity, and is precisely why it is also difficult for tax authorities to track. Alstadsæter et al. (2014) find a similar pattern among closely-held firms in Norway, and also put forward the hypothesis that firm owners are using their firm at their personal benefit. Leite das Neves (2023) shows that consumption through the firm by entrepreneurs is a widespread and large phenomenon in Portugal. We do not observe profits going up again after the 2018 reform, which suggests a permanent change of behavior from these entrepreneurs, in which consumption through the firm could have become a long-term substitute to dividends.

6 Discussion

6.1 Economic interpretation

To rationalize firms' behavior with respect to dividend taxation, various theories have been put forward (see for a survey Farre-Mensa et al., 2014), which differ in their prediction of the impact of dividend taxation on dividend payouts and investment. In this section, we discuss our results in light of these theories.

Signaling or agency models. Both signaling (e.g. Bernheim and Wantz, 1995; Gordon and Dietz, 2008) and agency (e.g. Chetty and Saez, 2010) models rely on a distinction between managers' interest and external shareholders. In these models, dividend payouts are set so as to send a signal about the firm's profitability or to reduce options for managers to engage in wasteful investments. However, this is expected to happen in large public companies or among private firms with fairly dispersed ownership. We find instead that the corporate response to the two reforms we study is driven primarily by private firms with concentrated ownership and that among them, firms with few shareholders appear to respond more strongly to the reform (see Figure 2c). Given our estimating sample is

overwhelmingly composed of private firms—as in (Yagan, 2015)—, agency models seem unlikely to play a major role in explaining our findings.

Traditional view vs "new view". Like others (e.g. Yagan, 2015; Alstadsæter et al., 2017), we rule out even modest investment responses to the changes in dividend taxes among the firms that account for the bulk of investment, which is at odds with predictions of "traditional" neoclassical models where firms finance investment out of newly issued equity (Poterba and Summers, 1985).

This weak investment response is however consistent with the "new view" (King, 1977), which considers a neoclassical firm financing investment out of retained earnings. In this setting, the relative cost of investment across periods is unaffected by permanent changes in dividend taxes. The new view may not be fully compatible with our results in that it predicts no response of dividend payouts to *permanent changes* in dividend taxes, while we find substantial effects on dividend payments, both at extensive and intensive margins. However, under that view a *temporary increase* in dividend tax rate can cause dividend payments to decline without affecting incentives to invest if investments are expect to payoff after the policy reversal. Our results point to adjustments in corporate net savings which are consistent with inter-temporal shifting (see Tables 3 and 4) and suggestive of agents expecting a policy reversal (Korinek and Stiglitz, 2009).[16] Nevertheless, we present below a simple amendment to the standard theory which allows to rationalize our results without relying on the change being perceived as temporary.

Change in the cost of capital vs change in relative payout taxation. Our results could also be consistent with an alternative explanation, which is that dividend taxation may not affect the cost of capital, but only the relative taxation of alternative ways of liquidating an investment. We present a formal model making this point in Appendix B. We start from a standard neoclassical of investment and payout policy and add the possibility for managers to compensate owners through perks (Gordon and Slemrod, 2000; Sarada, 2011; Leite das Neves, 2023) or by saving through the firm in tax advantaged vehicles. To the extent that such consumption or saving through the firm is a close substitute to dividend-funded consumption/savings, dividends are expected to be extremely reactive to taxes. For a class of cash-rich (new-view) firms, we show that, under a set of plausible conditions, if perks are used and dividends remain the marginal source of payout, dividend tax hikes

[16] Several papers have emphasized that each view might apply to different firm types (Alstadsæter et al., 2017), or different stages of the firm's life cycle (Sinn, 1991), and a decrease in payout taxes may decrease the investment rate of large, mature and cash-rich firms relative to smaller, younger, equity-dependent firms (Becker et al., 2013).

will generate large changes in dividend payout. These changes are however unrelated to investment decisions. The dividend tax does not enter the cost of capital, thus leaving the investment policy insensitive to changes in dividend taxes. Instead, while total payout is fixed (like under the new view), the share of payout paid through dividends goes down. The simple extension to the neoclassical model allows us therefore to rationalize easily our results, in a sample of firms where prevailing theories relying on agency cost (Gordon and Dietz, 2008; Chetty and Saez, 2010) appear unlikely to be relevant.

6.2 Implications for fiscal revenues

Our results point to tax elasticities of dividends way in excess of 1 for both reforms. This implies that the tax hike actually increased fiscal revenues, while the tax cut decreased them. Naturally, the overall impact of tax reforms on fiscal revenues will depend on how strong fiscal externalities are.

The main fiscal externality in our setting is that dividends are paid in part at the expense of future capital gains. In that context, short-run revenue implications may be different from long-run ones, and it could take years before we can measure the true effect of the two reforms on tax revenues. However, future capital gains are closely related to net corporate saving, which we measure in our decomposition exercice. Table 3 shows that the 2013 reform boosted corporate saving, while Table 4 shows that the 2018 reform reduced it. Given that the rate at which capital gains are taxed is significantly lower than dividend taxes, the fiscal externality of dividend taxation is by construction lower than the direct effect from dividend payout responses. This implies that the 2013 reform has actually decreased tax revenues (reduced income taxation of dividends larger than increased long-term capital gains), while the 2018 reform has only marginally reduced tax revenues, despite a significant drop in marginal tax rates on dividend income.

7 Conclusion

This paper uses newly-accessible tax registry data on French firms, households, and firm ownership linkages to shed new light on the old question of whether and how dividends react to changes in tax rates. We exploit two reforms which affected dividend tax rates: one tax hike which occurred in 2013, and a tax cut implemented in 2018. At the household level, we compute a large tax elasticity of dividends and show that this large elasticity stems from individuals having direct control over the dividend payout policy of firms they own. With firm data we confirm that firms owned by individuals have reacted by cutting dividend payouts when taxes increased, increased financial assets but did not respond in

terms of investment. We also find evidence of a decrease in firms' income. After the tax decrease, payouts revert to their initial level, financial assets within firms decrease, and investment is equally not affected. In both tax reforms, we find strong evidence that owner-managers are driving the very large dividend tax elasticity by using their firm as tax shelter from personal taxation.

References

Aghion, Philippe, Vlad Ciornohuz, Maxime Gravoueille, and Stephanie Stantcheva, "Reforms and Dynamics of Income: Evidence Using New Panel Data," 2019. mimeo Harvard et Collège de France.

Alstadsæter, Annette and Martin Jacob, "Dividend Taxes and Income Shifting," *The Scandinavian Journal of Economics*, 2016, *118* (4), 693–717.

_ , _ , and Roni Michaely, "Do dividend taxes affect corporate investment?," *Journal of Public Economics*, 2017, *151*, 74–83.

_ , Wojciech Kopczuk, and Kjetil Telle, "Are Closely Held Firms Tax Shelters?," in Jeffrey R. Brown, ed., *Tax Policy and the Economy*, university of chicago press ed., Vol. 28 2014, pp. 1–32.

Auerbach, Alan J., "Wealth Maximization and the Cost of Capital," *The Quarterly Journal of Economics*, 1979, *93* (3), 433–446. Publisher: Oxford University Press.

Bach, Laurent, Antoine Bozio, Arthur Guillouzouic, and Clément Malgouyres, "Évaluer les effets de l'impôt sur la fortune et de sa suppression sur le tissu productif," Rapport IPP n°36, Institut des politiques publiques 2021.

_ , _ , _ , and Clément Malgouyres, "Do Billionaires Pay Taxes?," *PSE working paper*, 2023.

Becker, Bo, Marcus Jacob, and Martin Jacob, "Payout taxes and the allocation of investment," *Journal of Financial Economics*, 2013, *107* (1), 1–24.

Bernheim, B Douglas and Adam Wantz, "A Tax-Based Test of the Dividend Signaling Hypothesis," *American Economic Review*, 1995, *85* (3), 532–51.

Chetty, Raj and Emmanuel Saez, "Dividend taxes and corporate behavior: Evidence from the 2003 dividend tax cut," *The Quarterly Journal of Economics*, 2005, *120* (3), 791–833.

_ and _ , "Dividend and Corporate Taxation in an Agency Model of the Firm," *American Economic Journal: Economic Policy*, 2010, *2* (3), 1–31.

das Neves, David Leite, "The Firm as Tax Shelter: Using Business Resources for Final Consumption," *PSE working papers*, 2023.

Farre-Mensa, Joan, Roni Michaely, and Martin Schmalz, "Payout policy," *Annu. Rev. Financ. Econ.*, 2014, *6* (1), 75–134.

Gordon, Roger and Joel Slemrod, "Are "Real" Responses to Taxes Simply Income Shifting Between Corporate and Personal Tax Bases?," in Joel Slemrod, ed., *Does Atlas Shrug? The Economic Consequences of Taxing the Rich*, russell sage foundation ed. 2000, pp. 240–280.

_ and Martin Dietz, "Dividends and Taxes," *Institutional Foundations of Public Finance: Economic and Legal Perspectives*, 2008, p. 204.

Guillot, Malka, "Who Paid the 75% Tax on Millionaires? Optimization of Salary Incomes and Incidence in France," 2019. mimeo ETH Zürich.

Harju, Jarkko and Tuomas Matikka, "The elasticity of taxable income and income-shifting: what is "real" and what is not?," *International Tax and Public Finance*, August 2016, *23* (4), 640–669.

Jacob, Martin and Roni Michaely, "Taxation and dividend policy: the muting effect of agency issues and shareholder conflicts," *The Review of Financial Studies*, 2017, *30* (9), 3176–3222.

King, Mervyn, *Public Policy and the Corporation*, London: Chapman, Hall, 1977.

Kopczuk, Wojciech and Eric Zwick, "Business Incomes at the Top," *Journal of Economic Perspectives*, 2020, *34* (4), 25.

Korinek, Anton and Joseph E Stiglitz, "Dividend taxation and intertemporal tax arbitrage," *Journal of Public Economics*, 2009, *93* (1-2), 142–159.

Lefebvre, Marie-Noëlle, Etienne Lehmann, and Michael Sicsic, "Évaluation de la mise au barème des revenus du capital: Premiers résultats," 2020.

_ , _ , and Michaël Sicsic, "Estimating the Laffer Tax Rate on Capital Income: Cross-Base Responses Matter!," CESifo Working Paper Series 9879, CESifo 2022.

Matray, Adrien, "Dividend Taxes, Firm Growth, and the Allocation of Capital," *mimeo*, 2023.

Miller, Helen, Thomas Pope, and Kate Smith, "Intertemporal Income Shifting and the Taxation of Business Owner-Managers," *The Review of Economics and Statistics*, 2022, pp. 1–45.

Pirttilä, Jukka and Håkan Selin, "Income Shifting within a Dual Income Tax System: Evidence from the Finnish Tax Reform of 1993," *The Scandinavian Journal of Economics*, 2011, *113* (1), 120–144.

Poterba, James, "Taxation and corporate payout policy," *American Economic Review*, 2004, *94* (2), 171–175.

_ and Lawrence H Summers, "The Economic Effects of Dividend Taxation," in Edward Altman and Marti Subrahmanyam, eds., *Recent Advances in Corporate Finance*, Richard D. Irwin Publishers, 1985, pp. 227–284.

Poterba, James M, "Tax policy and corporate saving," *Brookings Papers on Economic Activity*, 1987, *1987* (2), 455–515.

Sarada, Sarada, "Essays in Entrepreneurship." PhD dissertation, UC San Diego 2011.

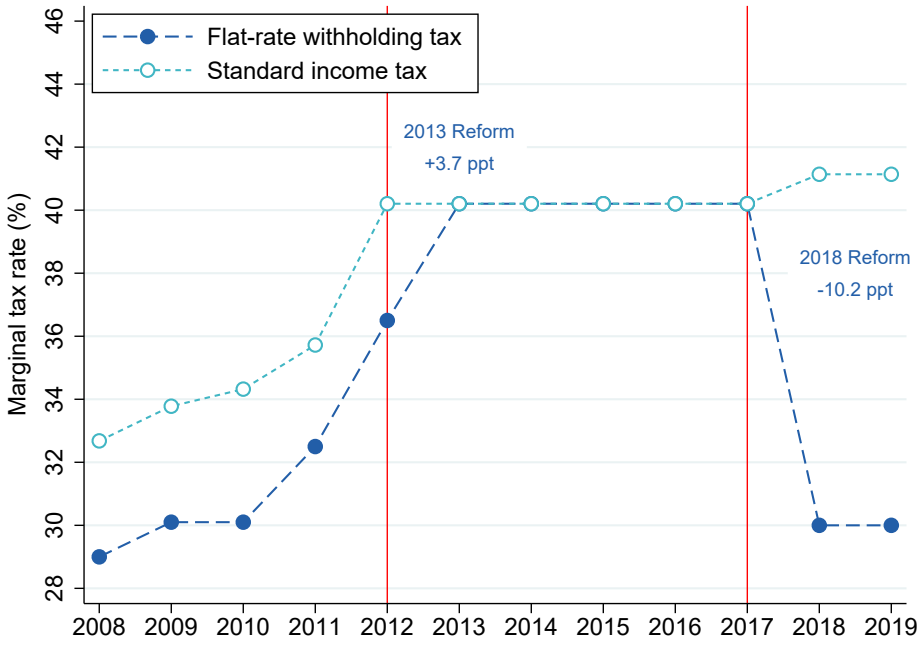
Sinn, Hans-Werner, "Taxation and the cost of capital: The" old" view, the" new" view, and another view," *Tax policy and the economy*, 1991, *5*, 25–54.

Sørensen, Peter Birch, "From the global income tax to the dual income tax: Recent tax reforms in the Nordic countries," *International Tax and Public Finance*, February 1994, *1* (1), 57–79.

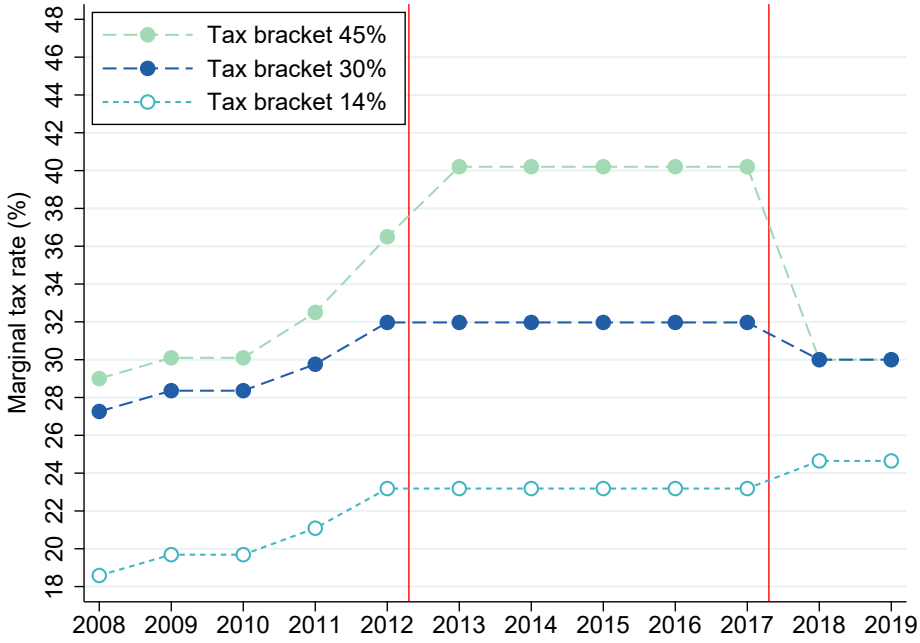
Yagan, Danny, "Capital tax reform and the real economy: The effects of the 2003 dividend tax cut," *American Economic Review*, 2015, *105* (12), 3531–63.

Figure 1: Top marginal tax rates on dividends (2008–2019)

(a) Top marginal income tax (45%) vs flat-rate withholding tax



(b) Lowest marginal tax rate for income tax brackets 45%, 30% and 14%

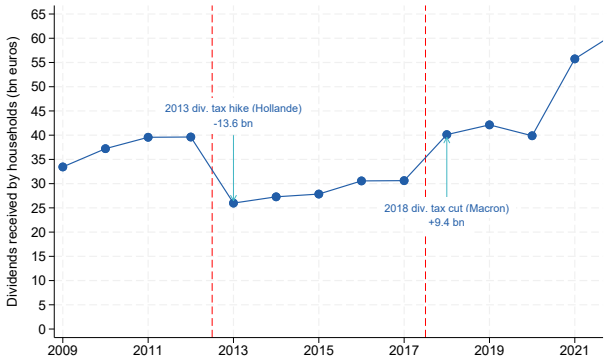


NOTES: Panel (a) shows for each year the top marginal tax rate applicable to dividend income when households opt for the flat-rate withholding tax (PFL/PFU) and when they choose to be taxed under the standard progressive tax schedule. Panel (b) compares the lowest marginal tax rate (i.e., when choosing the best available option between the flat-rate withholding tax and the standard income tax schedule each year) of households in different tax brackets.

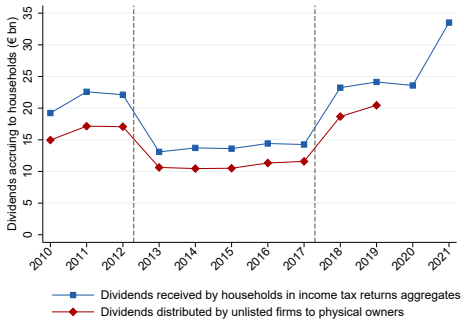
SOURCES: IPP Tax and Benefit Tables.

Figure 2: Aggregate dividends received by households and distributed by firms

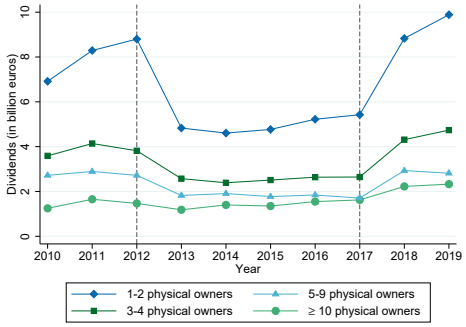
(a) Dividends received by households (France, National Accounts, 2009–2022)



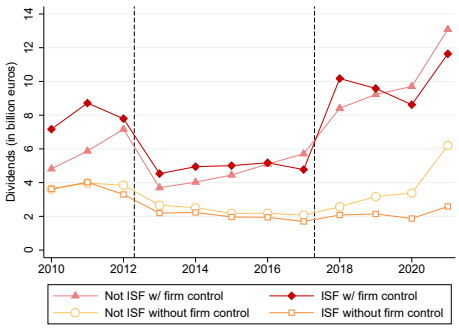
(b) Dividends received by households (France, Tax Data 2010–2021)



(c) Dividends distributed by unlisted firms according to the number of physical owners



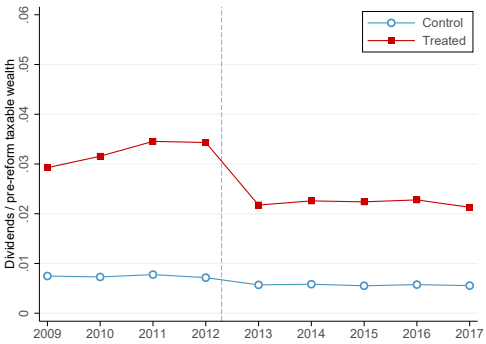
(d) Dividends received by households (France, Tax Data 2010–2021)



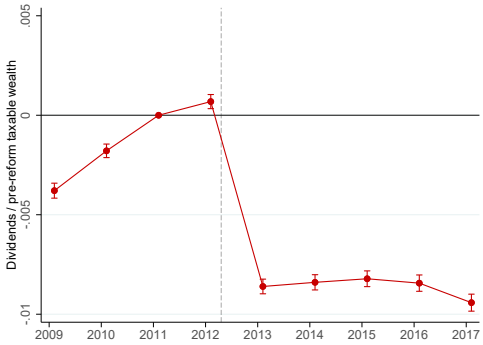
NOTES: Panel (a) represents the evolution of dividends received by households in national accounts; panel b) represents the amount of dividends declared by households in the income tax returns (blue circles) and distributed by firms, excluding CAC40 as well as firms at the simplified corporate income tax regime (red diamonds). The dividends series from the National accounts differs from the administrative income tax data because it includes non-taxable dividends from tax-favored savings plans (*Plan d'Epargne en Actions*, PEA) and business income from corporations taxed at the personal income tax. Panel (c) decomposes yearly dividends distributed by unlisted firms according to their number of physical owners. Panel (d) decomposes yearly aggregate dividends received by households according to weather they are wealth tax (ISF) payers at least once over the period, and whether they have control over a firm.
SOURCES: Insee, National Accounts, 2022; Panel POTE-ISF (DGFiP) 2010-2021 and BIC-IS 2010-2019.

Figure 3: Dividends received households – firms owner vs non firm owners

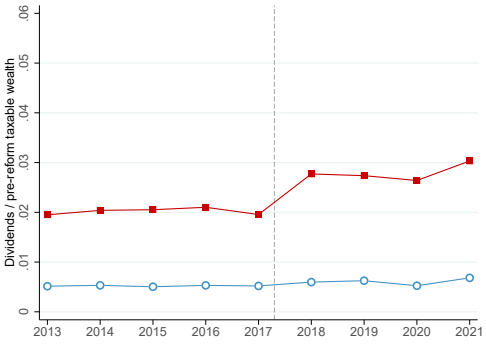
(a) 2013 Reform – Raw averages



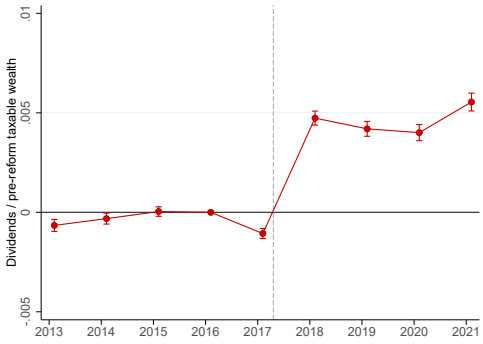
(b) 2013 Reform – DiD estimates



(c) 2018 Reform – Raw averages



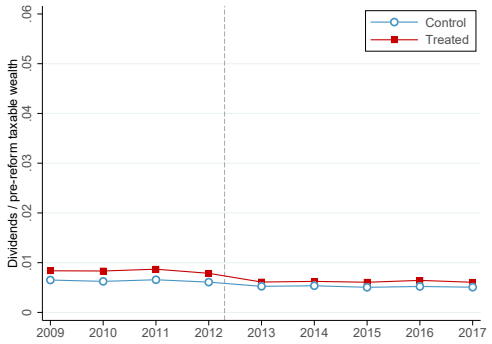
(d) 2018 Reform – DiD estimates



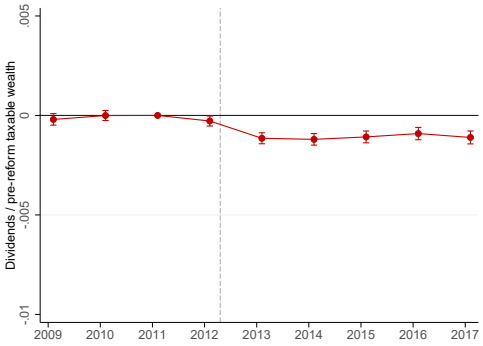
NOTES: The sample is a balanced sample of all households having received more than €1,500 and paying the wealth tax at least once between 2009 and 2012 (panels a) and b), or between 2013 and 2017 (Panels c) and d). Panel (a) represents the evolution of the average dividend over pre-reform taxable wealth (defined as the individual's maximum taxable wealth declared between 2009 and 2012) for each group. Panel (b) represents the treatment effect estimates using the controls described in Section 4.1. Panel c) and d) present the same estimates for the 2018 reform, i.e., the pre-reform taxable wealth is defined over the period 2013 to 2017.
SOURCE: Panel POTE-ISF (DGFiP) 2009-2021.

Figure 4: Dividends received by non firm owners households – high vs low marginal rates

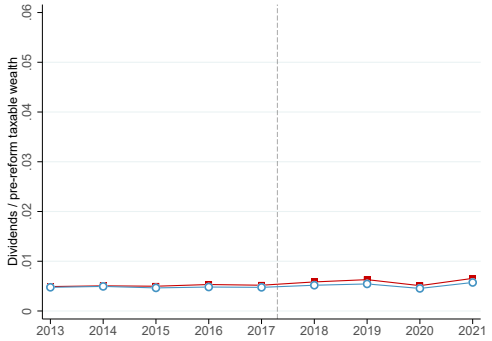
(a) 2013 Reform – Raw averages



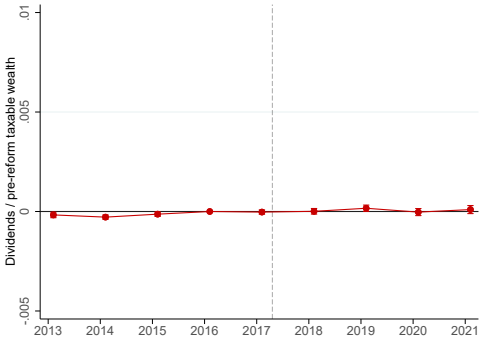
(b) 2018 Reform – DiD Estimates



(c) 2013 Reform – Raw averages



(d) 2018 Reform – DiD Estimates

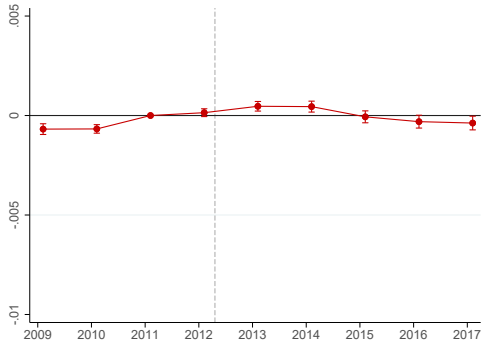


NOTES: The sample is a balanced sample of households without firm control (i.e. not present in the matched shareholder-firm tax data) having received more than €1,500 and paying the wealth tax at least once between 2009 and 2012 (panels a) and b), or between 2013 and 2017 (Panels c) and d). Treated households are defined based on their pre-reform non-capital taxable income (i.e. the sum of their wage, pensions and real estate income). Households who have sufficiently large income to fall in the upper tax brackets (i.e., 41% or above) at least once pre-reform are labelled as treated. Panel (a) represents the evolution of the average dividend over pre-reform taxable wealth (defined as the individual's maximum taxable wealth declared between 2009 and 2012) for each group. Panel (b) represents the treatment effect estimates using the controls described in Section 4.1. Panel c) and d) present the same estimates for the 2018 reform, i.e., the pre-reform taxable wealth is defined over the period 2013 to 2017.

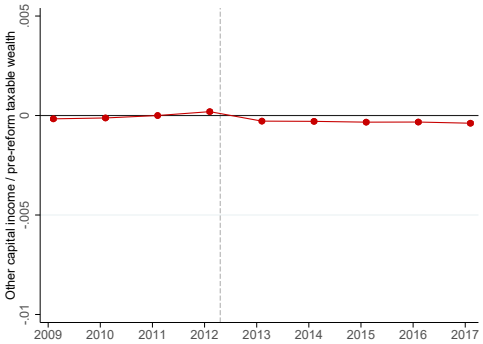
SOURCE: Panel POTE-ISF (DGFiP) 2009-2021.

Figure 5: Other incomes received by households – firms owner vs non firm owners

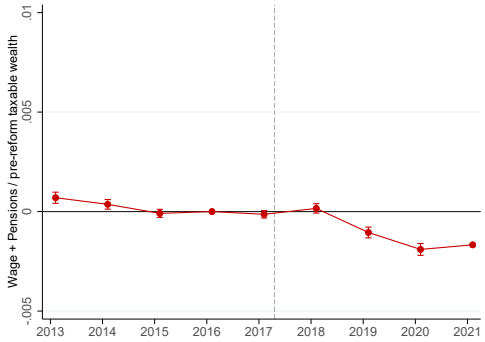
(a) 2013 Reform – Wages and pensions



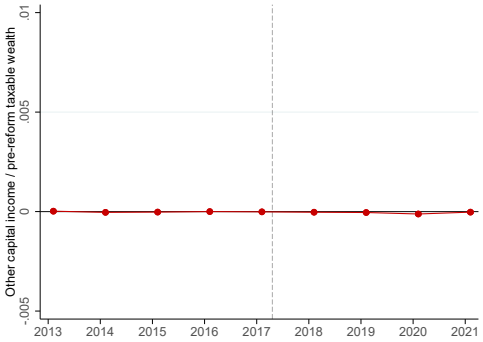
(b) 2013 Reform – Other capital income



(c) 2018 Reform – Wages and pensions



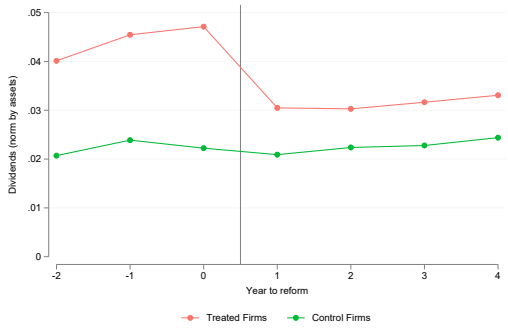
(d) 2018 Reform – Other capital income



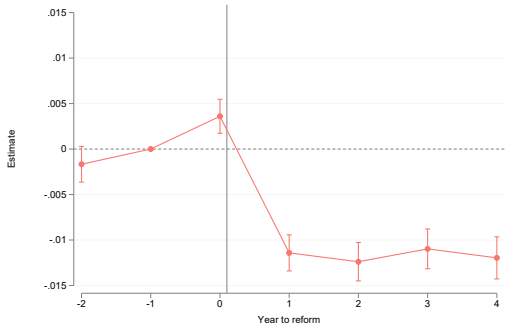
NOTES: The sample is a balanced sample of all households having received more than €1,500 and paying the wealth tax at least once between 2009 and 2012 (panels a) and b), or between 2013 and 2017 (Panels c) and d). Panel (a) represents the evolution of the average dividend over pre-reform taxable wealth (defined as the individual's maximum taxable wealth declared between 2009 and 2012) for each group. Panel (b) represents the treatment effect estimates using the controls described in Section 4.1. Panel c) and d) present the same estimates for the 2018 reform, i.e., the pre-reform taxable wealth is defined over the period 2013 to 2017.
SOURCE: Panel POTE-ISF (DGFiP) 2009-2021.

Figure 6: Firm-level impact on distributed dividends (norm. by pre-reform assets) of both tax reforms

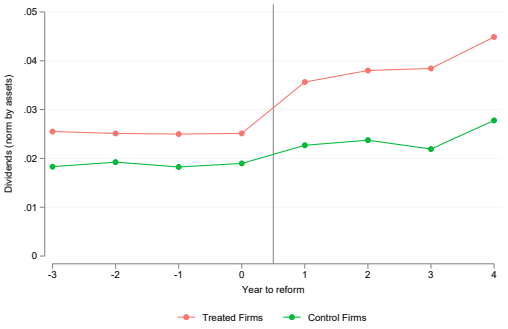
(a) Yearly averages, 2013 reform



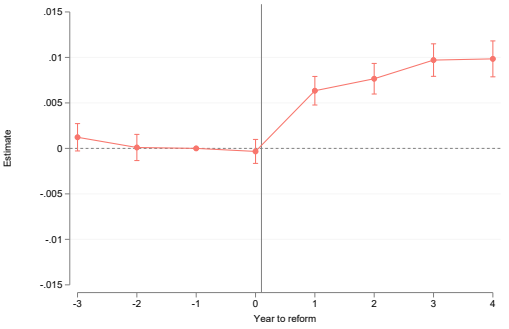
(b) DiD coefficients, 2013 reform



(c) Yearly averages, 2018 reform



(d) DiD coefficients, 2018 reform

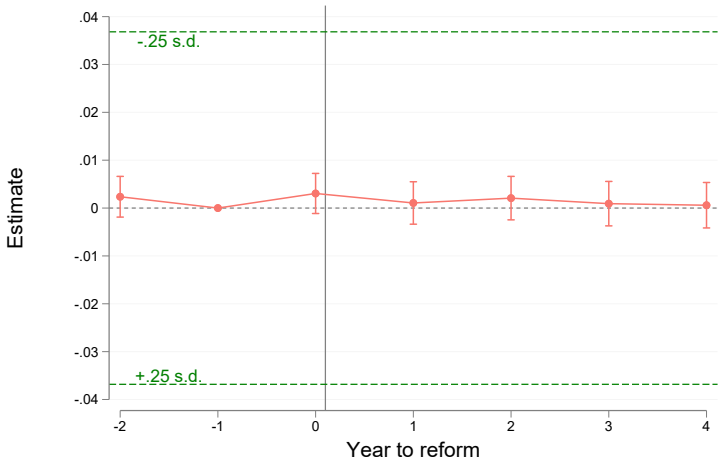


NOTES: The variable studied is the amount of dividends paid to shareholders each year, normalized by assets in year -1. Panels (a) and (c) represent annual averages of this variable in treated and control groups around the 2013 PFL reform, while panel (b) and (d) show the corresponding difference-in-differences estimates. Regressions include 2-digits industry × year, month of accounts closure × year, and age group × year fixed-effects. The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section.Additional details and restrictions on the sample are outlined in section 5.

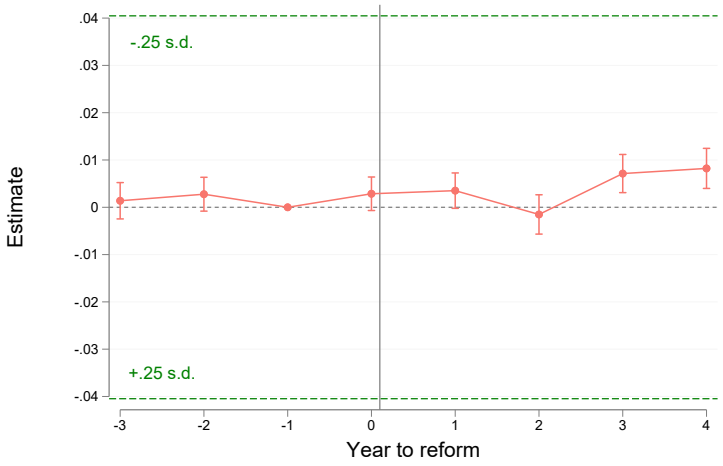
SOURCES : Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF.

Figure 7: Firm-level impact on investment of both tax reforms

(a) DiD coefficients, 2013 reform



(b) DiD coefficients, 2018 reform

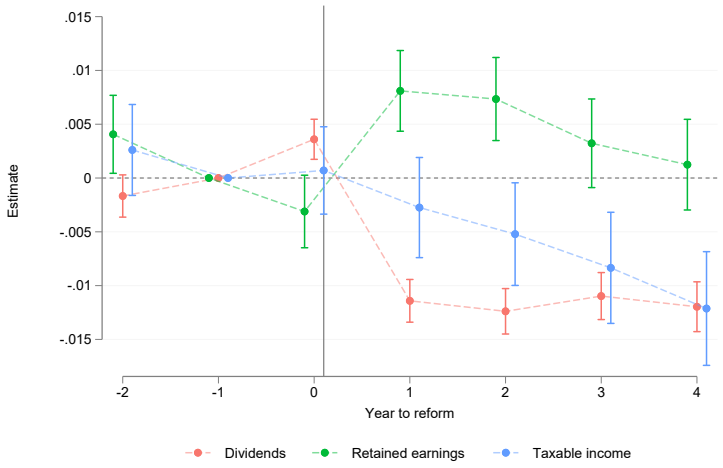


NOTES: The variable studied is investment ($\Delta_{t-1;t}$ assets) scaled by overall assets measured 2 years prior to the reform. Panel (a) represents regression coefficients obtained by dynamic difference-differences for the 2013 reform, while panel (b) represents analogous estimates for the 2018 reform. Robust standard errors clustered at the firm level are used to build the confidence intervals (95%). Year 0 is the last pre-reform year (2012 for the 2013 reform, 2017 for the 2018 reform). The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section. Regressions include 2-digits industry $\times$ year, month of accounts closure $\times$ year, and age group $\times$ year fixed-effects.

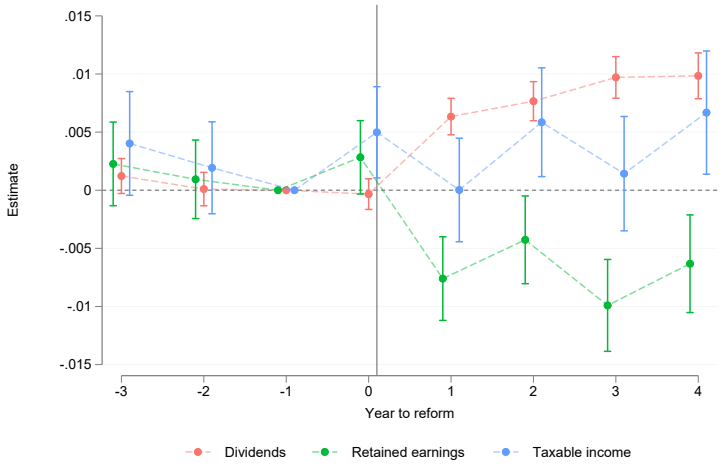
SOURCES : Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF.

Figure 8: Firm-level reaction margins for both tax reforms

(a) DiD coefficients, 2013 reform



(b) DiD coefficients, 2018 reform



NOTES: The variables studied are the variables showing significant reactions in the accounting decomposition. Panel (a) represents regression coefficients obtained by dynamic difference-differences for the 2013 reform, while panel (b) represents analogous estimates for the 2018 reform. Robust standard errors clustered at the firm level are used to build the confidence intervals (95%). Year 0 is the last pre-reform year (2012 for the 2013 reform, 2017 for the 2018 reform). The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section. Regressions include 2-digits industry $\times$ year, month of accounts closure $\times$ year, and age group $\times$ year fixed-effects.

SOURCES : Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF.

Table 1: Summary statistics of household data (2013 reform, 2011 baseline)

A. Firm-owners vs Non-firm owners

	Treated Group				*Control Group*			
	Mean	Median	1st decile	9th decile	*Mean*	Median	1st decile	9th decile
Age (main respondent)	58.29	58.00	46.00	71.00	68.45	68.00	53.00	84.00
Size of tax unit (fiscal shares)	2.43	2.00	1.50	4.00	2.01	2.00	1.00	3.00
Taxable income (per tax unit)	144561.94	69727.20	26298.00	260020.67	65622.75	40968.65	18262.50	109533.00
Wages (per tax unit)	38294.50	20803.75	0.00	89232.25	11757.25	0.00	0.00	37877.75
Wages and pensions (per tax unit)	49021.30	33570.50	7074.00	96183.50	31447.92	25040.00	5461.20	57559.50
Capital gains (per tax unit)	12552.51	0.00	0.00	1050.40	4109.91	0.00	0.00	770.67
Other capital income (per tax unit)	6469.18	1155.50	3.67	12504.50	3984.58	1228.50	21.33	8642.50
Dividends (per tax unit)	52658.39	8200.00	52.00	100018.00	10365.95	2023.00	259.75	18308.67
Dividends over taxable wealth	0.0343	0.0109	0.0001	0.1047	0.0071	0.0021	0.0003	0.0147
Share of flat-tax users (in %)		22.26				6.25		
Number of observations		63,125				87,963		

B. Treated vs Control Households among Non-firm owners

	Treated				*Control*			
	Mean	Median	1st decile	9th decile	*Mean*	Median	1st decile	9th decile
Age (main respondent)	66.19	65.00	51.00	83.00	68.78	68.00	54.00	84.00
Size of tax unit (fiscal shares)	1.89	2.00	1.00	2.50	2.03	2.00	1.00	3.00
Taxable income (per tax unit)	169446.66	102209.10	63633.75	270739.75	50588.17	37292.25	17311.33	76831.50
Wages (per tax unit)	48835.84	1480.50	0.00	125912.50	6391.58	0.00	0.00	26999.50
Wages and pensions (per tax unit)	77203.65	62472.50	13984.33	140086.75	24826.58	23303.20	4738.00	46573.00
Capital gains (per tax unit)	10987.17	0.00	0.00	3187.08	3114.69	0.00	0.00	625.33
Dividends (per tax unit)	23816.46	3158.00	238.25	38814.47	8419.51	1911.50	263.50	16168.40
Other capital income (per tax unit)	6923.64	1933.67	69.75	15038.33	3559.26	1155.33	18.00	7923.00
Dividends over taxable wealth	0.0138	0.0029	0.0001	0.0534	0.0056	0.0021	0.0003	0.0130
Share of flat-tax users (in %)		66.4				0.00		
Number of observations		11,120				76,843		

NOTES: These summary statistics correspond to the samples used to estimate the impact of the 2013 reform. The reference year pre-reform is 2011. In Panel A, the sample is a balanced panel of all households paying the wealth tax at least once between 2009 and 2012 and having received at least once a significant amount (more than €1,500) of dividends between 2009 and 2012. In Panel B, the sample is restricted to households without firm control. Treated households have pre-reform taxable income in the top brackets (41% and above), while control households have taxable income (defined as the sum of wage, pensions and real estate taxable income) that puts them in lower tax brackets. Size of tax unit corresponds to the number of "fiscal shares" (i.e., 1 for each adult, and 0.5 for each child up to two, and 1 for each additional child above two). The share of flat-tax users correspond to the share of households who opted for the flat-tax option for the taxation of their dividends in 2011.

SOURCES: POTE, 2011; ISF-IFI 2011; BADS 2014-2019.

Table 2: Summary statistics of firm-level estimation samples (both reforms)

A. 2013 reform sample (2011 baseline)

	Treated Group				*Control Group*			
	Mean	Median	1st decile	9th decile	*Mean*	Median	1st decile	9th decile
Sh. equity shareholders	0.935	1	0.800	1	0.0921	0	0	0.400
Nbr phys. shareholders	3.257	2	1	5	125.3	0	0	9
Nbr corp. shareholders	2.589	0	0	1	35.89	2	0	11
Workforce	7.303	2	0	16	67.36	3	0	98
Assets (k€)	2376498.6	572191	79226.5	3889265	287237676.1	2927046	134205	126363672
Turnover (k€)	1502921.4	241489.5	0	2709729	29073491.3	908420	0	31219048
Age	5.420	5	2	9	4.724	5	1	9
Value added (k€)	420118.0	116497.5	-3245.5	1000870.5	4784208.3	235159	-58009	8341659
Wagebill (k€)	234731.3	46595	0	540071.5	2418012.9	108749	0	3482420
Fiscal income (k€)	98439.0	18570.5	-22798.5	245225.5	-641840.7	0	-446102	987166
Div. (norm. by assets)	0.0455	0	0	0.146	0.0239	0	0	0.0581
Fiscal income (norm. by assets)	0.0841	0.0513	-0.0534	0.292	0.0204	0.0113	-0.111	0.180
CIT (norm. by assets)	0.0306	0.0111	0	0.0837	0.0203	0.00192	-0.00201	0.0606
Annual ret. earn. (norm. by assets)	-0.00505	0.00451	-0.117	0.116	-0.0286	0	-0.121	0.0631
Investment (norm. by assets)	0.0530	0.00490	0	0.146	0.0709	0.0107	0	0.195
Uninvested ret. earn. (norm. by assets)	-0.0629	-0.00793	-0.265	0.0961	-0.107	-0.0267	-0.331	0.0452
Number of observations	65710				8607			

B. 2018 reform sample (2016 baseline)

	Treated Group				*Control Group*			
	Mean	Median	1st decile	9th decile	*Mean*	Median	1st decile	9th decile
Sh. equity shareholders	0.927	1	0.700	1	0.0880	0	0	0.400
Nbr phys. shareholders	3.695	2	1	5	303.5	0	0	8
Nbr corp. shareholders	0.259	0	0	1	2318.2	2	2	10
Workforce	13.17	0	0	11	97.84	0	0	43
Assets (k€)	3540918.5	614834	65442	4836057	168561224.4	1519838.5	60827.5	60614846
Turnover (k€)	1331463.2	129555	0	2116885	15483765.2	291539	0	16096973
Age	5.345	5	2	9	5.314	5	1	10
Value added (k€)	389450.7	63856	-7192	838670	2933848.2	83479	-44548.5	4285641
Wagebill (k€)	208923.9	8100	0	466553	1472308.4	6705	0	1908501.5
Fiscal income (k€)	91468.5	5319	-33099	211778	-300869.0	0	-296462	456841.5
Div. (norm. by assets)	0.0250	0	0	0.0621	0.0182	0	0	0.0319
Fiscal income (norm. by assets)	0.0558	0.0346	-0.0719	0.247	0.000962	0.00714	-0.151	0.177
CIT (norm. by assets)	0.0268	0.00604	0	0.0711	0.0203	0.000207	-0.000413	0.0588
Annual ret. earn. (norm. by assets)	-0.0136	0	-0.113	0.106	-0.0455	0	-0.156	0.0614
Investment (norm. by assets)	0.0532	0.00173	0	0.145	0.0710	0.00373	0	0.198
Uninvested ret. earn. (norm. by assets)	-0.00728	-0.00730	-0.278	0.0887	-0.127	-0.0247	-0.411	0.0440
Number of observations	99309				15500			

NOTES: These tables present statistics (mean, median, 1st and last decile) on the characteristics of the companies in the treatment and control groups, for the 2013 and the 2018 reforms respectively. The variables are winsorized at percentiles 1 and 99 according to the methodology defined in the data section. The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section.

SOURCES: Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF..

Table 3: Firm-level results on the accounting decomposition for the 2013 reform – static difference-in-differences

	Short-run (1)	Long-run (2)	All (3)
Dividends	-0.0126***	-0.0121***	-0.0123***
	(0.000713)	(0.000841)	(0.000703)
Corporate taxable income	-0.00511***	-0.0114***	-0.00821***
	(0.00175)	(0.00207)	(0.00169)
Corporate taxes	-0.00105**	-0.00158**	-0.00131***
	(0.000536)	(0.000618)	(0.000502)
Retained earnings	0.00736***	0.00193	0.00467***
	(0.00135)	(0.00158)	(0.00131)
$\hookrightarrow$ incl. Investment	-0.000198	-0.00107	-0.000642
	(0.00156)	(0.00172)	(0.00142)
$\hookrightarrow$ incl. Uninvested ret. earn.	0.00698***	0.00276	0.00489**
	(0.00244)	(0.00281)	(0.00230)
Observations	370413	370403	518570
# firms	74083	74084	74084
# Treated firms	65710	65710	65710

NOTES: This table presents regression coefficients of a static diff-in-diff, using as our dependent variable each variable of the accounting breakdown presented in equation (2), as covariate of interest an interaction 'treatment $\times$ post reform period', and including different sets of fixed-effects. Coefficients should be interpreted per euro of assets. Column (1) presents the estimates comparing years 1 and 2 to the pre-reform period, while column (2) presents the results comparing years 3 and 4 to the pre-reform period, and column (3) presents the results comparing all the post-reform period to the pre-reform period. Standard-errors are clustered at the firm-level and indicated in parentheses. The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section. Regressions include 2-digits industry $\times$ year, month of accounts closure $\times$ year, and age group $\times$ year fixed-effects.

SOURCES: Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF..

Table 4: Firm-level results on the accounting decomposition for the 2018 reform – static difference-in-differences

	(1) Short-run	(2) Long-run	(3) All
Dividends	0.00673***	0.00957***	0.00809***
	(0.000591)	(0.000740)	(0.000569)
Corporate taxable income	-0.0000423	0.00171	0.000690
	(0.00166)	(0.00200)	(0.00155)
Corporate taxes	0.000193	-0.0000587	0.000132
	(0.000522)	(0.000616)	(0.000476)
Retained earnings	-0.00761***	-0.00913***	-0.00850***
	(0.00131)	(0.00154)	(0.00120)
↪ incl. Investment	-0.000652	0.00561***	0.00246**
	(0.00137)	(0.00155)	(0.00123)
↪ incl. Uninvested ret. earn.	-0.00593**	-0.0156***	-0.0109***
	(0.00233)	(0.00264)	(0.00209)
Observations	650773	636637	856237
# firms	113621	113596	113634
# Treated firms	99309	99309	99309

NOTES: This table presents regression coefficients of a static diff-in-diff, using as our dependent variable each variable of the accounting breakdown presented in equation (2), as covariate of interest an interaction 'treatment × post reform period', and including different sets of fixed-effects. Coefficients should be interpreted per euro of assets. Column (1) presents the estimates comparing years 1 and 2 to the pre-reform period, while column (2) presents the results comparing years 3 and 4 to the pre-reform period, and column (3) presents the results comparing all the post-reform period to the pre-reform period. Standard-errors are clustered at the firm-level and indicated in parentheses. The treatment group is composed of companies with at least 50% direct or indirect ownership by individuals with substantial control (more than 10% of cash flow rights), at least one of which liable to the personal wealth tax as; the control group is composed of companies with less than 10% direct or indirect ownership by individuals with substantial control, and neither fiscally integrated nor wholly owned by a legal person. Additional details and restrictions on the sample are outlined in the data section. Regressions include 2-digits industry × year, month of accounts closure × year, and age group × year fixed-effects.

SOURCES: Files BIC-IS, FDG, PERIM, LIFI, BADS, POTE-ISF..

(For Online Publication)

Appendix to

Follow the money!
Why dividends overreact to flat-tax reforms

Laurent Bach Antoine Bozio Brice Fabre

Arthur Guillouzouic Claire Leroy Clément Malgouyres

October 2023

This appendix presents further details for the taxation of capital income in France over the period of study (Appendix A), and additional details on the conceptual framework (Appendix B).

A Capital income taxation in France (2008–2020)

A.1 Income taxation in France before 2013

From 2008 to 2012, capital income is subject to a dual tax system in France. Such income can either be included in the calculation of net taxable income in order to be taxed on the progressive income tax scale or be taxed on the PFL at a flat rate. Whatever the tax option, the level of taxation of dividends has generally increased during this period as a result of several reforms described later in this section.

Personal income tax. During the period 2008 to 2012, several legislative changes led to an increase in the taxation of dividends taxed on the progressive scale. Dividends subject to the scale are eligible for deductions (a lump-sum allowance and a proportional allowance), in particular to correct the problem of double taxation of dividends – associated with the coexistence of income tax and corporation tax. In 2010, a tax credit to which dividends were entitled was abolished. This tax credit was 50 % of the amount declared, and capped at 115 euros (230 euros for a couple). Also in 2010, the marginal tax rate on the last bracket of the scale increased from 40 to 41%. In 2012, a new tranche is added, increasing the marginal tax rate to 45% for tax households whose net taxable income per tax share exceeds 150 000 euros. For taxpayers affected by these two reforms, these changes also imply an increase in the level of taxation of dividends under the progressive scale.

Optional flat-rate taxation of dividends. The Finance Act for 2008 [A.1] establishes an optional flat-rate withholding tax applicable to dividends. A flat-rate withholding tax in full discharge already existed before 2008 for other types of capital income such as income from fixed-income investment products. The PLF rate applicable to dividends is 18% at its inception and gradually increases between 2008 and 2012. The PLF rate increases from 18% to 19% in 2011 and to 21% in 2012 (24% for capital income other than dividends, i.e., interest on bonds and debt securities in particular). Apart from these parametric reforms, the taxation of the PFL has not undergone any major changes.

Other tax reforms. A series of reforms also affect the taxation of dividends from 2008 to 2012, regardless of taxpayers' choice between the scale and the PLF. The 2011 Finance Act creates an Exceptional Contribution on High Income (CEHR). This contribution is progressive and based on the benchmark tax income. Its rate is 3% on income between 250 000 and 500 000 euros (500 000 and 1 000 000 euros for a couple) and 4% on income above 500 000 euros (1 000 000 euros for a couple). Since the tax base of this contribution is the reference tax income, it includes all dividends, whether they are taxed on the scale or on the PFL.

[A.1] Law No. 2007-1822 of 24 December 2007 on the Finance for 2008, article 10.

Table A1: Evolution of tax parameters related to dividend taxation in France (2008–2012)

	Standard allowance	Proportional allowance for dividends	Tax credit on dividends	Optional flat-rate tax (PFL)	Social contributions
2008	1 525 €	40 %	50 %	18 %	11.0 %
2009	1 525 €	40 %	50 %	18 %	12.1 %
2010	1 525 €	40 %		18 %	12.1 %
2011	1 525 €	40 %		19 %	13.5 %
2012		40 %		21 %	15.5 %

NOTE : The standard allowance is doubled in the case of a couple. The dividend tax credit is capped at 115 euros for a single person and 230 euros for a couple. The rate of social security contributions indicated in the table corresponds to the rate at 31 December of the year, in the event of changes during the year. From 1^{er} January 2011 to 1^{st} November 2011, social security contributions amount to 12.3%. The increase in social security contributions to 15.5% will take effect from 1^{st} July 2012. The social security tax rate indicated for 2013 corresponds to the general case and does not include the case of the majority managers of SARL subject to social security contributions (see sections A.3).

SOURCE : IPP tax and benefit table, [link to webpage].

Social security contributions on capital income also increase from 2009 to 2012. The overall tax rate applicable to dividends increases from 11% in 2009 to 15.5% in 2012 (see table A1).

A.2 The 2013 reform

In order to understand the effects of the abolition of the PFL in 2013 and the introduction of the dividend scale, it is important to understand the two systems that existed before this reform and the arbitration that was available to taxpayers.

- **Option 1 : the PFL**
  In the event of a PFL election, dividends are taxed in a *flat-rate* manner, i.e. the rate applied is unique and does not depend on the household's level of resources. The PFL is also *liberative* of income tax, as it replaces the payment of this tax. The PFL is deducted at source by the banking institution when the dividends are received. However, dividends taxed on the PFL must be declared when filing the annual income tax return, in order to be included in the calculation of the reference tax income. Only persons whose tax residence is established in France can opt for the PFL. In addition, certain distributed income is subject to mandatory taxation on the scale[A.2].

[A.2]This includes dividends from exempt profits distributed by listed real estate investment companies (SIICs) and by investment companies with a preponderance of real estate with variable capital (SPPICAV) since 2011, taxable income from unlisted securities held in a PEA, distributed income taken into account in determining the taxable profit of an industrial, commercial, craft or agricultural company or a liberal profession and taxable distributed income following a correction by the tax authorities.

- **Option 2 : the progressive tax scale**
  In the event of an option for the scale, dividends are taxed at a progressive rate with other types of income (labor income, business income, replacement income etc.). Progressive taxation means that the *marginal* tax rate (the rate applied to an additional euro) increases with the household's total income. With this option, and depending on the legislation in force, it is possible to benefit from deductions, the marital and family quotient, tax credits and reductions (see table A1). It is also possible to deduct certain expenses, such as collection fees. The payment of tax on dividends is then made the year following their collection, after having filed the tax return.

It is important to underline the optional nature of the PFL: each taxpayer is free to choose this method of taxation or not, under the constraint of the rules mentioned above. The option is exercised upstream with the banking institution. It is final, in the sense that the choice of taxation method cannot be changed during the year. However, it is possible to change the option from one year to the next. The option may also be partial: the taxpayer may choose to tax part of his dividends on the scale and part on the PFL (in the case of a partial option, the taxpayer loses the benefit of the allowances). Due to the optional nature of the PFL, not all taxpayers are affected by the mandatory dividend scale in 2013.

Between the PFL and the scale, the most financially advantageous option may vary depending on the amount of dividends declared by a household, the level of its taxable income and other parameters (such as the amount of tax credits or reductions for which that household is eligible, or the nature of the dividends it receives). The equations A.1 and A.2 represent in a simplified way the arbitration faced by a taxpayer. We illustrate this arbitrage in the case of 2012 income and related legislation. The CEHR is ignored in this illustration, which affects the dividend tax rate in the same way regardless of the option chosen. By choosing the PFL, dividends are taxed at 21 % for the PFL and 15.5 % for social security contributions, i.e. at an overall effective rate of 36.5 %. By choosing the scale, dividends are taxed at a rate that varies according to the bracket in which the taxable income is located and at 15.5 % for social security contributions. Assuming that dividends are eligible for the 40 % allowance, the effective overall marginal tax rate varies from 15.5 % (in the case of the 0 % tranche that only pays social security contributions) to 41.1 % (in the case of the 45 % tranche). According to this simplified calculation, the option for the PFL is only financially attractive for tax households whose total income puts them in the 41 or 45 % bracket. In more complex cases (e.g. presence of tax reductions), the scale may remain tax-efficient for some tax households. In theory, the PFL should therefore concern few taxpayers because only 1.2 % of tax households have a net taxable income per unit that places them in the last two brackets of the income tax scale in 2012 (see table A2). Moreover, not all of these taxpayers receive dividends.

$$T(D) = (\tau^{PFL} + \tau^{PS}) \times D \tag{A.1}$$

$$T(D) = \tau^{bareme} \times \max(0, (1 - \delta^p) \times D - \gamma \times D - \delta^f) + \tau^{PS} \times D \qquad \text{(A.2)}$$

where τ^{PFL} , is the PFL rate

where τ^{PS}, is the overall level of social security contributions

where δ^f, is the lump-sum abatement

where δ^p, is the proportional abatement

where γ, is the rate of deductible social contributions (CSG)

Table A2: Distribution of tax units in 2012 across brackets of the progressive income tax schedule

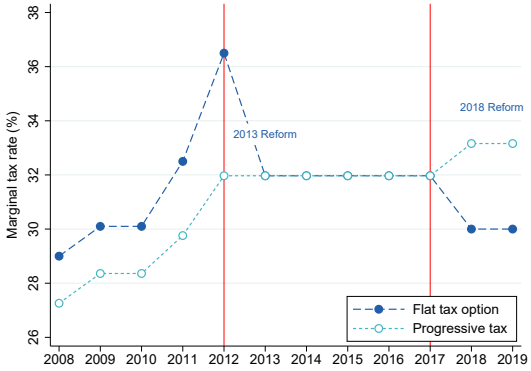
	Number of tax units	% of total
Non subject to income tax	8 741 670	23,8%
5,5 % bracket	8 866 253	24,1%
14 % bracket	14 827 094	40,4%
30 % bracket	3 877 237	10,6%
41 % bracket	350 123	1,0%
45 % bracket	57 659	0,2%
Total	36 720 036	100,0%

SOURCE : Annuaire Statistique 2013, Tableau 219, DGFiP; FELIN 2012, DGFiP. NOTE : The brackets indicate the theoretical maximal marginal tax rate faced by tax units. In practice, there are many other features of the income tax system that impact tax rates. This results in almost half of the households not paying the income tax.

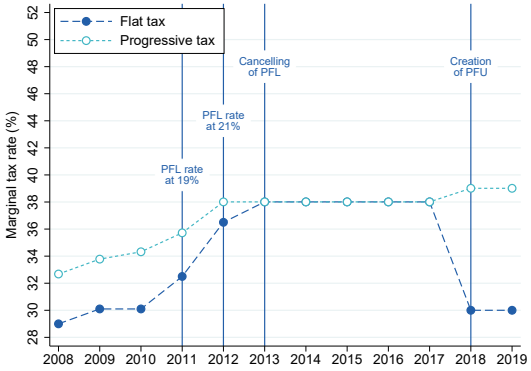
The 2013 Finance Act removes the PFL option for dividends paid on or after January 1, 2013. This applies also for the vast majority of capital income although some fixed income investment products can still be subject to a 24% PFL under conditions. In addition, life insurance products can also always be subject to a PFL, on option. Finally, certain fixed-income investment products are subject to a mandatory flat-rate withholding tax. Dividends are taxed in two stages. First of all, they are still subject to a flat-rate withholding tax of 21%. Maintaining a withholding tax avoids a cash hole for public finances. Then, dividends are taxed within the progressive income tax schedule when the annual income tax return is filed. The non-dischargeable flat-rate withholding tax (also referred to as the PFLN for *prélèvement forfaitaire non libératoire* in French) paid is deducted from the final amount of income tax. If the amount paid is too high in relation to the tax due, the excess tax paid is returned to the taxpayer in the form of a tax credit. In total, the reform increases the level of dividend taxation for taxpayers who previously opted for the PFL and who were in the top income tax brackets.

Figure A1: The evolution of marginal tax rates on dividends (2008–2019)

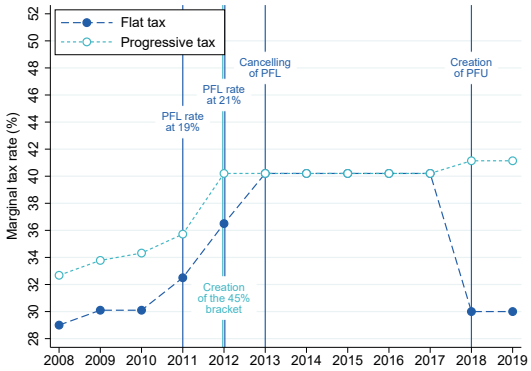
(a) 30% bracket



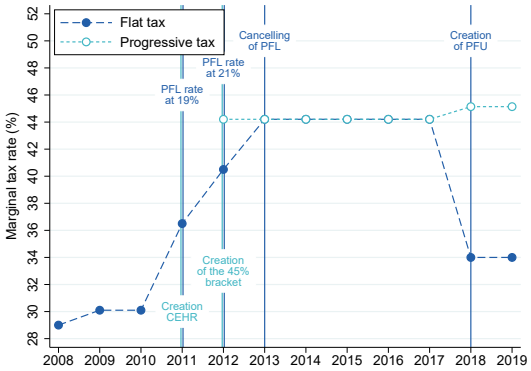
(b) 41% bracket



(c) 45% bracket



(d) 45% bracket and CEHR



NOTES: Each sub-figure shows, for a specific case of household, the evolution of the marginal tax rate for the two options: the progressive income tax schedule and the flat tax option (for the years such an option exists). These rates are computed by considering households with no tax credits or tax reductions, and assuming there is no SARL manager in the household. These marginal tax rates are computed using the TAXIPP microsimulation model.
The Figure A1b shows the case of a household whose total fiscal income, after all tax deductions, is in the 41% bracket of the progressive income tax schedule (between 70,830 and 150,000 euros in 2012 for instance). The Figure A1c shows the case of a household whose total fiscal income, after all tax deductions, is in the 45% bracket of the progressive income tax schedule (higher than 150,000 euros in 2012 for instance). The Figure A1d shows the case of a household whose total fiscal income, after all tax deductions, is in the 45% bracket of the progressive income tax schedule, and also in the scope of the CEHR.
SOURCE: TAXIPP 1.0.

A.3 Anti-avoidance scheme for SARL managers (2013)

Until 2012, dividends are subject to income tax and social security contributions on financial income. However, dividends are not subject to social security contributions because they are not considered as business income. Social security contributions on financial income are non-contributory contributions.

The table A1 shows the evolution of the social security tax rates to which dividends are subject from 2009 to 2013. In 2012, dividends are subject to the CSG at a rate of 8.2 %, the CRDS at a rate of 0.5 %, the social levy at a rate of 5.4 %, the additional social levy contribution (CAPS) at a rate of 0.3 % and the additional contribution to finance the RSA (CAPS-RSA) at a rate of 1.1 %. The overall rate of social security contributions on dividends is thus 15.5 % in 2012. Social security contributions on dividends are deducted at the time of payment of the dividend, from its gross amount (*à la source* in French). In the event of taxation of dividends on the progressive income tax scale, part of the CSG is deductible from the tax.

From 2013, dividends received by the majority managers of limited liability companies (SARL which are the French equivalent of LLCs) are also subject to social security contributions for the amount exceeding the threshold of 10 % of the company's share capital. This reform is specific, in that it only applies to certain taxpayers and certain types of companies. In fact, the SARL is the most frequently chosen status: 77 % of French companies take the form of a SARL in 2012. The legal framework of SARL does not require the majority manager to be an employee of the company. Before 2013, the majority manager can therefore choose to be remunerated only in dividends rather than in salary, thus avoiding the payment of social security contributions.

A.4 Tax treatment of share buybacks

The taxation of income distributed by a company to its shareholders depends on how it is distributed. A company may choose to pay dividends to shareholders but also to buy back its own shares. Prior to 2015, gains from share repurchases are taxed under a system known as hybrid. The taxable base of this income corresponds to the difference between the repurchase price of the shares and the initial purchase price. Initially, the difference between the amount of the contributions included in the nominal value of the repurchased securities and the initial acquisition price is treated as a capital gain and taxed accordingly. Then, the difference between the repurchase price of the shares and the amount of these contributions is treated as distributed income and therefore taxed in the same way as a dividend.

When asked about a priority constitutionality issue (QPC No. 2014-404) on the subject, the Constitutional Council ruled in June 2014 that the gains from a share buyback are in reality entirely comparable to gains on disposal. Article 88 of the Amending Finance Act No. 2014-1655 of 29 December 2014 for 2014 amends the General Tax Code accordingly. Share repurchases made since 1 January 2015 are taxed according to the capital gains tax system, i.e. the progressive income tax scale, as are dividends. However, income treated as capital gains benefits from a deduction that varies according to the length of the holding period. In 2015, the deduction for the duration of the ordinary holding period is 50 % for a security held for at least two years and less than eight years, and 65 % for a security held for at least eight years. The enhanced holding period allowance, which applies under conditions in the case of SME securities, is 50 % for securities held

for at least one year and less than four years, 65 % for securities held for at least four years and less than eight years, and 85 % for securities held for at least eight years. This allowance is generally more advantageous than the 40 % allowance for dividends. The 2015 reform could therefore encourage companies to remunerate their shareholders in the form of share buybacks rather than dividends.

A.5 The 2018 reform to capital income taxation

The 2018 Finance Act revisits the 2013 reform of mandatory dividend taxation on the scale, and reintroduces the possibility of flat-rate taxation of capital income with the creation of the single flat-rate tax (PFU).

A.5.1 The one-time flat-rate levy

Like the PFL that preceded it from 2008 to 2013, the PFU allows, on option, to be taxed at a flat-rate of 12.8 %, in full discharge of the progressive scale tax. In addition to this tax, there are social security contributions, which have been taxed at 17.2 % since 2018. In total, dividends are then taxed at 30 %. The tax rate of the PFU (12.8 %) is much lower than the rate of the PFL (which has varied between 18 % and 21 % during its existence). The SFP should thus be the most financially advantageous option for a larger fraction of taxpayers than the LFP was.

In practical terms, dividends were subject to a mandatory 21 % non-dischargeable flat-rate withholding tax (NTFP) since 2013. This levy is maintained and its rate is now 12.8 %. Dividends must then be declared at the time of the annual income tax return in order to be taxed, at the choice of a flat rate of 12.8 % or the progressive income tax schedule. Unlike the LFP, all taxpayers are subject to a flat-rate withholding tax and the option between the scale and the SOP is only exercised at the time of the annual income tax return. In order to opt for the schedule, the taxpayer must check the *2OP* box on Form 2042. The SOP is therefore designed as the default option for the taxation of capital income from 2018 onwards. In the event of an option for the scale, taxpayers benefit from the 40 % allowance and the deductibility of part of the CSG.

While the reform of the SFP may seem symmetrical to the 2013 reform that abolished the LFP, several factors put this into perspective. The magnitude of the 2018 tax shock (- 7.4 percentage points of marginal tax rate) is almost twice as high as that of 2013 (+ 3.0 percentage points). Moreover, as indicated above, the number of taxpayers affected by the PFU-related tax reduction in 2018 could be much higher than the number of taxpayers affected by the 2013 reform. Only about 115,000 tax households declared a positive amount of dividends taxed to the PFL in 2012, i.e. 0.3 % of tax households. Sources: National declarations 2042, 2012.

A.5.2 The possibilities of income shifting in 2018

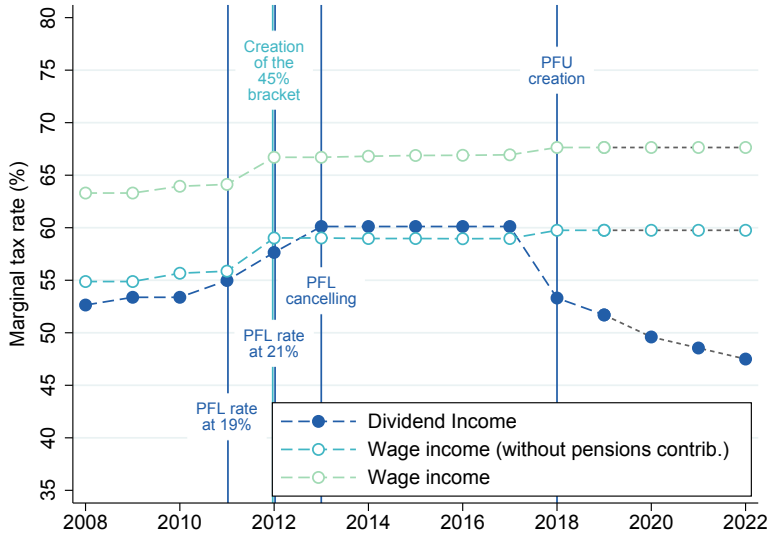
The introduction of the SOP widens the gap in the level of taxation between different types of income, in particular between wage income and dividends. The higher the gap between the taxation of wages and the taxation of dividends, the more it is in the interest of executives and employees of companies with room for manoeuvre in allocating their income between these two categories to remunerate themselves in the form of the least taxed income (the so-called " income shifting " phenomenon). The graph A2 represents the evolution of the maximum marginal tax rates applicable to wages and dividends, taking into account social and income taxes, but also social contributions and corporation tax. With regard to wages, the graph represents the total marginal tax rate as well as the marginal tax rate excluding pension contributions, which can be considered as savings rather than a tax.

The 2013 reform reduced the gap between marginal taxation of wages and dividends. Excluding pension contributions, the marginal tax rate on dividends becomes even higher than that on wages. This creates an incentive for executives with this power to pay themselves more in salaries than in dividends. However, the tax gap remains small before and after the reform. The 2018 reform, on the other hand, has a significant effect on incentives to be paid in dividends rather than wages. The tax gap between wages and dividends falls from - 1.7 to + 6.4 percentage points. This gap is expected to widen until 2022 due to the gradual reduction in the corporate tax rate from 33.33 % in 2018 to 25 % in 2022.

Based on the Swedish model, an amendment to the finance bill for 2018 was introduced by Senator Albéric de Montgolfier (No. I-625 of 24 November 2017) in an attempt to limit these optimisation behaviours. This anti-abuse amendment consisted, in the case of senior executives holding more than 10 % of the voting rights, in capping the UFP's profit to the portion of income not exceeding 10 % of the share capital and the shareholder's current account. The amendment was voted in the Senate but deleted by the National Assembly's Finance Committee, in particular on the grounds that this measure would undermine companies' flexibility in setting the timing of dividend payments. Unlike the Swedish system, this amendment did not allow shareholders to register future dividend rights when the annual amount of dividends was below the ceiling. The effect of the 2018 reform on the gap between dividend and wage taxation, and the absence of anti-abuse measures, suggest that the 2018 reform could have more income displacement effects than the 2013 dividend scale.

However, the potential incentives to shift income to dividends can be reduced by the introduction of withholding tax in 2019. Dividends were already subject to withholding tax and are not affected by this reform. Salary incomes have been deducted at source since 2019. In order to avoid income taxation in 2019 for 2019 (as a withholding tax) and 2018 (under the old tax system), wage income in 2018 is not taxed. In practice, the 2019 income tax on 2018 income is calculated according to the usual methods. Then, the tax fraction associated with the income in the new withholding tax field is returned in the form of the tax credit modernisation of the recovery (CIMR). Thus, the introduction of withholding tax may provide, for 2018 only, more incentives to receive wages rather than dividends,

Figure A2: Changes in taxes on dividends and wage income (2008–2022)



NOTES: The marginal rates represented are marginal rates applied to super gross income (gross income plus employer contributions, if any). They correspond to the case of a single person without children, employee, manager, contributor to the general social security system, not benefiting from any credit or tax reduction, and having annual taxable income between four and eight times the social security ceiling. The marginal dividend rate includes corporate income tax, social security contributions and income tax (assuming that the individual opts for the flat-rate tax in the years when this option is possible, i.e. from 2088 to 2012 and from 2018 onwards). The marginal rate on wages includes social contributions, social contributions and income tax (the amount of income in this case being high, the 10 % deduction on wages is capped in his case and the individual is in the last bracket of the scale). The marginal rate on wages excluding pension contributions corresponds to the same marginal rate as that described above minus the amount of social contributions financing pensions. This rate is the same for an individual with incomes between 4 and 8 Social Security ceilings as for an individual with incomes above 8 Social Security ceilings. Projections from 2019 to 2022 are based on announced corporate tax rates and assuming no change in the rest of the tax base.

in the opposite direction to the shift that can be expected from the SFP. Nevertheless, this possibility should be put into perspective, insofar as only so-called non-exceptional income is eligible for the White Year and the assessment of the exceptional nature of the remuneration of company directors is reinforced. Any portion of 2018 income exceeding the maximum of 2015, 2016 and 2017 income shall be considered exceptional, unless it is established retrospectively that 2019 income is higher than 2018 income.

B Conceptual Framework

A theory of dividend taxation in entrepreneurial firms. In this section, we develop a simple model of theory of dividend taxation in entrepreneurial firms. To do so, we build on the two-period version of the neoclassical model of investment and payout policy as

developed in Chetty and Saez (2010). The approach is neoclassical in the sense that it assumes a perfect alignment between the objective of the manager and that of the shareholders. This assumption is warranted by the fact in our estimation sample most firms we study have concentrated ownership with a substantial share being owned by the manager (who is in this case an entrepreneur, hence the term entrepreneurial firm).

Basic setup and notation. There are two periods, indexed 0 and 1. We consider a firm that has initial cash holdings of X at the beginning of period 0. These could represent accumulated, non-invested profits from past periods.

At time 0, the firm can issue equity (E). In the baseline version of the model, the manager can either pay out D to shareholders through dividends or invest I in a project. This project yields revenue in the next period at time 1. We note I denote the level of investment. It can be defined as a residual of cash holding minus dividend payouts: $I = X + E - D$ where D refers to the firm's dividend payment in period 0. In period 1, the project generates net profits of $f(I)$. The firm then shuts down and returns its net-of-tax profits as well as the (untaxed) principal to shareholders.

We consider an environment with double taxation of corporate profits, first at rate t_c when profits are realized by the firm and then at rate t_d when they are returned to shareholders. This environment gives rise to the following equation for the value of the firm (which closely follows equation (1) of Chetty and Saez (2010)) :

$$V = (1 - t_d)D - E + \frac{(1 - t_d)\left[(1 - t_c)f(X + E - D) + X - D\right] + E}{1 + r}, \qquad \text{(A.3)}$$

where r is the after-tax return on a risk free asset.[A.3] As mentioned above, we consider that payout and investment policies aim at maximizing the value of the firm. Following the literature, it is useful to distinguish firms depending on whether they are cash-rich $(1 - t_c)f'(X) \leq r$ or cash-poor $(1 - t_c)f'(X) > r$.

—Cash-rich firms finance their investment out of retained earnings X and face relatively little investment opportunities, as such even if they didn't raise any funds through equity issuance and invested all of their retained earnings, they would obtain a return below the risk-free interest rate r. It is therefore optimal to return cash to shareholders until the return on investment equate r. The optimal choice of dividends satisfies the following first order condition: $(1 - t_c)f'(X - D^*) = r$ which shows that the dividend tax rate t_d does not affect payout decision for these firms. As a investment is defined as $I = X - D$, we see that I is also unaffected by t_d.

—Cash-poor firms finance their investment out of equity and can be in either of two situation. Either a medium level of cash-constraint, $(1 - t_d)(1 - t_c)f'(X) < r$, in which case it is optimal for the firm to set both E and D to 0 (a corner solution exlained by the tax wedge), or a high-level of cash constraint, $(1 - t_d)(1 - t_c)f'(X) \geq r$, which

[A.3] Note that a firm which maximizes value will never set $E > 0$ and $D > 0$ simultaneously, because a firm which issued equity and paid dividends at the same time could strictly increase its value V by reducing both E and D by \$1 and lowering its tax bill by $t_d r/(1 + r)$.

case it is optimal for the firm to issue equity E^* until post-tax return equal the bond rate: $(1-t_d)(1-t_c)f'(X+E^*)=r$. In the last case, equity issuance and investment respond negatively to an increase in t_d. Dividend payouts are null in period 0 and they go down in period 1 as t_d increases. So following a dividend tax change, investment and equity issues respond immediately (period 0), and while dividends change only when the additional investment pays off (period 1).

Extension: Saving and/or consumption through the firm. We now suppose that the entrepreneur obtain benefits from the firm through another channel than dividends. We suppose that this channel payoff S, is taxed at rate t_s and is associated with an additional cost $c(S)$ which is increasing and convex.

In line with empirical evidence on the consumption of entrepreneurs (Sarada, 2011; Leite das Neves, 2023), a first interpretation of this new channel would be consumption through the firm, that is the notion that entrepreneurs compensation occurs in part through perks. This consumption through the firm, has the advantage of being taxed more lightly than dividends at rate $t_s < t_d$, especially if it is associated with deductible cost, but is associated with convex cost. The level and convexity of the cost function is likely to be increasing in the dispersion of ownership. Another interpretation of S could be saving deferred to period 1 which generate a rate of return r but is more lightly taxed than if the cash was paid out as dividends and subsequently invested in a bond. The convexity of cost of consumption and saving through the firm can be justified for instance by the fact that some forms of consumption and saving through the firm are illegal, and that the legal ones are restricted in terms of eligible items and in terms of the shareholders who can legally benefit.

The objective function is now amended as follows:

$$\begin{aligned} V = {} & (1-t_d)D + (1-t_s)S - c(S) - E \\ & + \frac{(1-t_d)\left[(1-t_c)f(X+E-D-S)+X-D-S\right]+E}{1+r}, \end{aligned} \tag{A.4}$$

where the new terms are highlighted in red. Here too it useful to distinguish cash-rich and cash-poor firms.

—Cash-rich firms are such that $(1-t_c)f'(X)<r$. It remains suboptimal to have E and D strictly positive at the same time and the firm sets $E^*=0$ and choose D, S in order to maximize the value of the firm as described in equation A.4. The first order conditions can be rearranged as follows:

$$(1-t_c)f'(X-D^*-S^*)=r \tag{A.5}$$

$$c'(S^*)=t_d-t_s. \tag{A.6}$$

The first line shows that, as before, overall investment $I^*=X-D^*-S^*$ is unaffected by dividend tax as the term t_d drop down from the first order condition on D^*. This also implies that total payout P defined as $P=D+S$ remains constant. The second

line show that S^* goes up as t_d increases as the function $c()$ is assumed to be convex ($dS = dt_d/c''(S)$). Accordingly, as total compensation remains constant $dP = 0$, we have $dD = -dS < 0$. Equation A.5 shows that the cost of capital, i.e. the before-tax required return on an asset (Sinn, 1991), is not affected by the dividend tax rate t_d.

This simple extension provides a natural setting to rationalize our results. Cash-rich firms decrease dividends and use alternative ways of compensating shareholders to maintain the compensation of shareholders. Total compensation remains constant due to this substitution and accordingly, investment is not affected by the change in t_d.

—Cash-poor firms issue equity and pay no dividends in period 0. The first order condition with respect to equity writes as:

$$(1-t_d)(1-t_c)f'(X+E^*-S^*) = r. \tag{A.7}$$

The optimal value for S will depend on the shape of the cost function $c()$, in particular on whether $c'(0) > t_d/(1+r) - t_s$. To see this, consider the derivative of V with respect to S at $S = 0$ and where E is set to satisfy equation A.7.

$$\begin{aligned}
\frac{\partial V}{\partial S}\Big|_{\substack{S=0\\E=E^*}} &= 1 - t_s - c'(S) - \frac{(1-t_d)(1-t_c)f'(X+E-S) + (1-t_d)}{1+r} \\
&= 1 - t_s - \frac{1-t_d}{1+r} - c'(S) - \frac{(1-t_d)(1-t_c)f'(X+E-S)}{1+r} \\
\text{(using A.7)} &= 1 - t_s - \frac{1-t_d}{1+r} - c'(S) - \frac{r}{1+r} = \frac{t_d}{1+r} - t_s - c'(S).
\end{aligned} \tag{A.8}$$

Equation (A.8) shows that firms will be in a corner solution with no consumption/saving through the firm if $c'(0) \geq \frac{t_d}{1+r} - t_s$. On the contrary, if $c'(0) > \frac{t_d}{1+r} - t_s$, then managers will decide to set a positive value for S^*. Overall, we can summarize the FOC for S^* as:

$$c'(S^*) \geq \frac{t_d}{1+r} - t_s, \quad \text{with equality if } S^* > 0. \tag{A.9}$$

We now can see that investment $I^* = X + E^* - S^*$ and dividends period 1 react as in the standard neoclassical case with high-level of cash constraint. The only difference is that payout in period 0 might not be 0 if S^* is positive. In that case, an additional reaction is that S^* goes up following an increase in t_d.