Did Higher Individual Taxes Spur Firm Investment?
The 2013 O'Biden Tax Increase

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Abstract

The 2013 Obama-Biden Investment Tax constitutes the largest individual-level tax increase on dividends in U.S. history. While political and regulatory analysts argued that the increase would disrupt capital formation and reduce firm-level investment activity, we find that firms most affected by this tax change reduce their dividends and increase investments relative to other firms. Specifically, the additional cash flows sourced from dividend reductions are used by R&D intensive firms to invest in additional R&D, and by non-R&D intensive firms to increase cash acquisitions. We also document that the additional R&D spending results in more impactful innovative activities. This paper contributes to the debate on whether and how individual-level taxes impact firms, and suggest that certain tax increases may have positive investment effects for some firms.

Keywords: Capital Gains Taxation, Firm-level Investment, Innovation, 2013 Tax Increase

JEL classification codes: H24, H25, O31, O38

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1. Introduction

Throughout the 2020 U.S. Presidential campaign and his administration, President Biden has advocated for a 66.39 percent[1] increase to the tax rate applying to most dividends and capital gains. Importantly, when considering major potential tax changes, politicians and regulators are highly concerned with the effects of those changes on corporate investment (Politi, 2021; Hanlon and Heitzman, 2010), which is argued to promote economic growth (De Long and Summers, 1991). While it is difficult to model the effects of a proposed change in tax law on investment (Auerbach, 1996), it is possible to gain insights by studying similar historical tax law changes made within the same jurisdiction (Mikesell, 2018). Highly historically relevant to President Biden's proposed investment tax is the 2013 tax increase passed when Biden served as Vice President under President Obama. The 2013 Obama-Biden investment tax (OBIT) raised the tax rate on most dividends and capital gains by 8.8% — from 15 to 23.8 percentage points. This constitutes a total 58.67 percent increase in investment taxation and represents the largest investment tax increase in U.S. history — judged by either percentage or percentage point terms.[2]

Over the OBIT's nearly 5-year legislative period, politicians and regulators made various arguments regarding the effects of the proposed law on corporate investments (Appendix C). Proponents of the OBIT argued that it would not impact firm behavior as the tax's effects would be entirely borne by high-net-worth investors (Weisman, 2012); effectively assuming that firms' marginal stockholder is tax neutral. In contrast, as the OBIT impacts the

[1] The percentage is estimated as (39.6% – 23.8%) / 23.8% = 66.39%. The official Biden plan (https://joebiden.com/two-tax-policies/) contrasts the current 23.8% capital gains rate (the 20% capital gains rate plus the 3.8% "Net Investment Income Tax") with a 39.6% rate supported by the Biden administration. Notably, the 3.8% Net Investment Income Tax appears to be set for repeal in this formulation of the Biden's plan. We note that negotiations are ongoing and various other potential investment tax increases have been discussed (e.g., Hunnicutt and Renshaw, 2021; Davidson, Versprille, and Wasson, 2021)

[2] Appendix B provides details on the 2013 Obama-Biden investment tax change.

majority of U.S. investment income (Appendix B), opponents of the tax increase argued that purchasing or holding the stocks of certain firms — namely high-dividend paying firms — would be less appealing after the OBIT's implementation (Raice, 2010). To avoid negative consequences to firm cost of capital, firms would most likely respond to the OBIT by reducing newly-tax disadvantaged dividend payout, locking cash within firms (Hay, 2012). This "lock in" of payout was framed negatively by OBIT opponents as it traps excess undistributed cash in firms where it may be unused or used inefficiently (e.g., Carroll, 2010). Overall, on the political and regulatory fronts, opponents argued that the tax increase would reduce firm investment due to increased cost of capital or lead to unused cash and inefficient investments, while proponents presumed that investors and firms would be tax neutral and not react to the tax increase. However, it is also possible that the OBIT positively effects investments — if the lock in of dividends occurs and the locked in cash flows are used for additional investments.

On the academic front, an increase in cash flow is generally argued to lead to increased investment (Rauh, 2006; Lamont, 1997). Concordantly, some literature on payout taxation supports the assertion that increased payout taxes lead firms to reduce payout and consequently increase investment activities (e.g., Becker, Jacob, and Jacob, 2013). In contrast, and in line with regulatory arguments that "locked in" cash is often underutilized, other studies posit that investment taxation leads to unproductive investments and deadweight costs (e.g., Chetty and Saez 2010; Yagan, 2015). Overall, based on the various political, regulatory, and academic arguments outlined above, we argue that the impact of the OBIT on firm investment remains an open question, and focus on this relationship in our study.

We study whether and how firm investment and payout policies change after the 2013 implementation of the OBIT using a sample of 10,891 firm-year observations. We focus on the firm type most impacted by the law, i.e., the Qualified Dividend Focused Firm (QDFF).[3] We capture QDFFs as those firms within the top quartile of both dividends and individual ownership, and study whether and how the payout and investment practices of QDFFs change relative to the non-QDFFs after the tax increase takes effect. We document that the OBIT leads to effects both consistent with and in opposition to the initial expectations of regulators and politicians. In line with the assertions of investment tax increase opponents, we find evidence of a "lock in" effect. That is, QDFFs reduce dividend payout in response to the OBIT relative to non-QDFFs. However, in contrast to both the expectations of proponents and opponents of the tax increases — who respectively anticipated neutral (Weisman, 2012) and negative (Raice, 2010) effects to firm investment — we find that the OBIT spurred QDFFs to increase investment, primarily in research and development. We posit that this effect is driven by QDFFs investing additional cash flows sourced from payout cuts in order to provide shareholder value in a tax efficient manner.[4]

We complete a series of additional analyses to explore our main results. First, while many opponents of the OBIT argued that firm investment would decrease in response to investment taxes (Raice, 2010), others argued that investment might increase after firms cut payout, but that these investments would be inefficient (Carroll, 2010). Thus, we explore the possibility that the R&D investment increase identified in our previous results was of low quality — potentially engaged in because of the tax-preferenced status of R&D and a lack of alternative uses of cash. We explore the quality of innovation investment via the WRDS US

[3] Qualified Dividends are dividends from U.S. firms paid to individuals who are taxed at the capital gains rate rather than the higher ordinary rate. See Internal Revenue Code (IRC) 1(h)(11) for details. QDFFs are most affected by the OBIT as they pay relatively high amounts of qualified dividends to individual taxpayers, and the law applies only when U.S.-focused firms pay preferentially taxed (qualified) dividends to individuals. That is, these investment taxes apply only to individuals. See IRC Sections 1411(a) and 1(h)(D) for details. Notably, C Corporations and similar entities are completely unaffected by these investment tax changes.

[4] Investing in R&D is highly tax efficient as R&D (and all other forms of investment studied) retained strong tax preferences throughout the sample period.

Patents database, and we find that patents filed by QDFFs after the OBIT receive a greater number of citations than patents filed before the tax increase. As patent citations are a common metric of innovation quality and economic value (Trajtenberg, 1990; Harhoff, Narin, Scherer, and Vopel, 1999; Hall, Jaffe, and Trajtenberg, 2005), this finding builds on our main result and implies that QDFFs both invest more in innovation and that this investment leads to higher-quality innovation outcomes.

Second, as we find that our firm investment results are focused on innovation and R&D, we explore whether the investment responses to the Obama-Biden investment tax increases differ between firms in R&D intensive industries and firms in non-R&D intensive industries. Splitting our sample into R&D intensive and non-R&D intensive firms (Coad and Rao, 2008; Blanco and Wehrheim, 2017), we find that R&D intensive firms use the additional cash flows sourced from dividend reductions in order to invest in additional R&D, while non-R&D intensive firms use these cash flows to engage in cash acquisitions. These findings likely indicate that firms with R&D opportunities were incentivized to use them, while other firms engaged in cash acquisition behavior as internal options for growth were not present. We note that these investments do not appear to be value-destroying. We find that the ROA of QDFFs does not significantly change after the OBIT, implying that these firms are consistently working to provide value (McConnell and Muscarella, 1985) both before and after the OBIT.[5]

Third, we note that while investment is a major use of additional cash flows, especially when investment tax incentives are present (Rauh, 2006; Lamont, 1997), it is possible that firms use a portion of the cash flows sourced from reduced dividends for other purposes. Firms might repurchase shares (Blouin, Raedy, and Shackelford, 2011), or reorganize their capital

[5] We note that ROA may increase rather than remaining stable over the longer term for R&D focused firms. This is because the full financial benefits of R&D investments are often realized 5-9 years after initial investment (Lev and Sougiannis, 1996).

structures by accumulating cash or paying down debt (Gatchev, Pulvino, and Tarhan, 2010). We do not find significant differences for QDFFs across these variables after the OBIT, implying that these firms utilized the majority of the cash flows sourced from dividend reductions to increase investment.

We complete a series of falsification tests to demonstrate that our results do not capture recurring trends among dividend paying firms.[6] In these tests, rather than using 2013 as the year in which the OBIT took effect, we utilize a number of years spanning from 2010 to 1995. The results of our falsification tests indicate that the relationships identified in our main analyses do not hold in other periods. This suggests that the firm behaviors documented in this study are not spurious responses unrelated to the OBIT. Rather, firms reduced dividend payout and increased investment in order to create shareholder value in response to the new tax incentive system imposed by the OBIT.

The contribution of our paper can be summarized as follows. First, while the prior literature finds that firms temporarily increase payout in order to benefit from the lower pre-OBIT capital gains rates (Hanlon and Hoopes, 2014; Peyer and Vermaelen, 2016), ours is the first comprehensive study of the long-term payout and corporate investment reactions to the OBIT. In line with research arguing that investment tax cuts result in higher dividends (Chetty and Saez, 2005; Blouin, Raedy, and Shackelford, 2011), we find that firms reduce payout in response to the OBIT — likely because investment tax increases make dividends less attractive to investors (Bajaj and Vijh, 1990; Denis, Denis, and Sarin, 1994).[7] We further find that firms used the cash flows sourced from dividend reductions to increase firm investment activity — primarily in R&D. In additional tests, we find that this investment in R&D leads to an increased

[6] That is, that high paying firms reduce their payout and increase investment after a period of increased payout.

[7] We note that Edgerton (2013) as well as Julio and Ikenberry (2004) argue that investment tax cuts may not be the only cause of the increased dividend payments in the early 2000s.

number of patents with relatively higher citations than before the OBIT.

Second, our paper adds to the literature studying the “traditional” and “new” views of payout taxation. Following the “traditional” view, scholars argue that higher payout taxation reduces the value of firm equity, decreases firm financing options, and pushes firms towards suboptimal capital structures and investment practices (Chetty and Saez 2010; Feldstein 1970; Poterba and Summers, 1985). In contrast, under the “new” view, scholars argue that investments are primarily financed with retained earnings and that investment taxes do not impact firm investment (Auerbach 1979; Bradford, 1981). While some combination of both views are likely present in the economy (Auerbach and Hassett 2006), few studies have empirically analyzed which view is dominant. Becker et al. (2013) find evidence consistent with the new view — in contrast to the small majority of studies findings evidence consistent with the traditional view (Dackehag and Hansson 2015; Campbell, Chyz, Dhaliwal, and Schwartz, 2013).

Various reasons may be behind these mixed results. Notably, two of the three above studies rely on an international panel of payout tax changes (Becker, Jacob, and Jacob, 2013; Dackehag and Hansson, 2015). In order to determine whether payout tax increases (decreases) lock in (free) firm cash flows, tax rates on both dividends and repurchases should increase (decrease) by the same magnitude or firms may simply shift from one form of payout to another. Notably, among the 475 country-years studied in the above manuscripts, only four represent years in which the dividend and capital gains rates moved in the same direction and at the same magnitude (Becker, Jacob, and Jacob, 2013, page 7). Another reason for these mixed results is that the world’s tax systems are not similar enough to generalize responses to tax law changes across nations (Rose, 1985). Notably, the U.S. was quick to adopt large tax incentives for R&D (Cordes, 1989), capital expenditures (Gravelle, 2004), and acquisitions (Shores, 2010), and these tax incentives may increase the value of undistributed U.S. profits relative to other nations with smaller investment incentives. As a final reason, all pre-2013 changes to U.S. payout taxation were passed into law with various other confounding tax provisions. Notably, the 2003 payout tax cut studied in Campbell, Chyz, Dhaliwal, and Schwartz (2013) comprised 11.41% of the various tax cuts implemented that year,[8] while the two tax increases comprising the 2013 Obama-Biden investment tax increase were the only major tax provisions in their respective laws. Overall, due to the mixed results and lack of generalizability of prior literature, we consider the impact of the 2013 investment tax increase an open question.

Finally, our study has various practical implications for regulators and political leaders. Most importantly, we find that investment tax increases bolstered U.S. innovation investment, perhaps indicating that individual-level capital gains taxes are not as harmful to corporate investment as observers perceive. This finding, in consort with the established finding that firm-level tax cuts for R&D increase innovation (McCutchen Jr, 1993; Berger, 1993; Czarnitzki, Hanel, and Rosa, 2011), may indicate that firm investment is highest under the setting of low firm-level taxes and high individual investment-level taxes. Under this setting, high individual investment taxation locks cash flows within firms where it can be spent in a tax-preferenced manner.

2. Data and methodology

2.1. Methodology

The OBIT took effect as of January 1, 2013. We begin our sample in 2009 to avoid the effects of the 2008 Global Financial Crisis on our results (e.g., Flynn and Ghent, 2018). Thus,

[8] That is, the Joint Committee on Taxation scored the payout tax cut as comprising 148 billion (11.41%) of the two major tax cuts that went into effect during this time window. Specifically, the Economic Growth and Tax Relief Act cut taxes by $947 billion (https://www.cbo.gov/sites/default/files/107th-congress-2001-2002/costestimate/hr330.pdf) and the Jobs and Growth Tax Reconciliation Act cut taxes by $350 billion (42% of the tax cuts in the JGTRRA, https://www.jct.gov/publications/2003/jcx-55-03/)

we define the pre-event window as the 4 years prior to the tax changes imposed by the OBIT (2009-2012). To avoid any effects of the 2017 Tax Cuts and Jobs Act which structurally changed the U.S. corporate tax system (Kalcheva, Plecnik, Tran, and Turkiela, 2020) and to keep the sample relatively balanced, we define the post-event window as the 4 years after the imposition of the OBIT (2013-2016).[9] While we acknowledge that an argument can be made that a longer time period is needed to test the effects of the tax increase on investments, we also note that the longer the period, the greater the possibility that confounding events may affect the results. For example, the global coronavirus pandemic began in late 2019 and drastically impacted the U.S. economy (He, Nagel, and Song, 2021).

Using the above-discussed sample period, we study how the firms most affected by the OBIT react to this change in tax laws. This increase in investment taxation applies when firms pay preferentially taxed (qualified) dividends to individuals, where qualified dividends are legally defined as dividends from U.S.-based firms paid to individuals that are taxed at the capital gains rate rather than the higher ordinary rate (see IRC 1(h)(11)). The economic reach of the OBIT is significant as, after the creation of Qualified Dividends in 2003, the vast majority of dividends are eligible for qualified treatment (79%).[10]

Overall, the type of firms most impacted by the 2013 OBIT are Qualified Dividend Focused Firms (QDFF) as these firms pay relatively high amounts of qualified dividends to individual taxpayers. We empirically proxy QDFFs by focusing on two key firm characteristics: high dividend payments and high individual ownership. To capture these characteristics, we estimate the firm-level four-year averages of dividend payout (scaled by total assets) and individual ownership before the tax increases took effect (2009-2012). We

[9] We note that we do not expand the sample to 2017 as a number of the TCJA's major provisions (including the major capital expenditure subsidy known as "bonus depreciation") retroactively took effect in 2017 (Kalcheva, Plecnik, Hai, and Turkiela, 2020).

[10] That is, 204,401,524/260,393,306 = 79%. Information Retrieved at: https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-returns-publication-1304-complete-report

define QDFFs as those firms in the top quartile of dividend payouts and the top quartile of individual ownership. We use the following model to assess the impact of the tax increase on QDFF type firms:

$$Dep.Var._{i,t} = \beta_0 + \beta_1 QDFF_i * Post_t + \beta_2 Controls + Firm\ FE + Year\ FE + \varepsilon_{1,it}, \qquad (1)$$

where the dependent variable is either a proxy for dividend payout or investment for firm i in year t. $QDFF_i$ is an indicator variable equal to one if firm i is in the top quartile of dividend payout and individual ownership before the tax increase. $Post_t$ is an indicator variable equal to one if the firm-year falls in a year after the tax increase took effect, i.e., the years 2013 through 2016. In this specification, $QDFF_i$ and $Post_t$ are subsumed by the firm fixed effects and the year fixed effects, respectively. The coefficient β_1, associated with the interaction term $QDFF_i * Post_t$, measures the marginal effect of the investment tax increase on the dependent variable. Standard errors are clustered by firm and year.

2.2. Sample construction and summary statistics

We begin our sample construction with the CRSP/Compustat Merged database. As U.S. tax law applies differently to firms incorporated within (outside) the U.S. (Rubinger and LePree, 2009), we focus on firms incorporated in the U.S. (i.e., those with CRSP share codes 10 or 11). We exclude financial firms (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) from this sample as these firms face unique tax and regulatory environments (Khurana and Moser, 2013). Next, we focus on firms that are listed on the NYSE, Amex, and Nasdaq stock exchanges, and exclude firms with stock prices below $5 at the end of the fiscal year. These filters eliminate small, thinly traded firms that are unlikely to have a strong reaction to changing investor pressure stemming from the OBIT (Jegadeesh and Livnat, 2006). We merge

Compustat with Thomson Reuters Institutional Holdings to obtain institutional ownership data. Individual ownership is calculated as one minus institutional ownership. We winsorize all continuous accounting variables at the 1% and 99% levels to reduce the effects of extreme outliers. Our sample starts in 2009 and ends in 2016, which allows us to compare firm behavior during the four years after the tax increase to the four years before the tax increase. Our final sample contains 10,891 firm-year observations.

Table 2 reports the sample summary statistics. Panel A reports the summary statistics for our dependent variables and Panel B reports the summary statistics for the control variables used in our regression analyses. The means for *Dividends scaled by assets*, *Dividends scaled by cash flows*, and *Dividend yield* are 0.016, 0.113, and 0.012, respectively. The mean for *Total investment* is 0.077 which comprises capital and R&D expenditures. The means for *Capex* and *R&D spending* are 0.044 and 0.023, respectively. All variable definitions and sources are described in Appendix A.

3. Empirical results

3.1. The effect of the investment tax increase on dividends

We begin our analyses by investigating whether QDFFs change their dividend payout relative to non-QDFFs after the investment tax change took effect. We perform the regression model in Equation (1) where the dependent variable is *Dividends scaled by assets*, *Dividends scaled by cash flows*, or *Dividend yield.* We report our results in Table 2. We find that the coefficient associated with the interaction term, $QDFF * Post$, is negative and significant for all three dividend-based dependent variables reported in Table 2.[11] These results show that QDFFs decrease their dividend payout after the 2013 investment tax increase relative to firms

[11] Results are robust to the inclusion of lagged dependent variables as control variables.

less affected by the tax increase. Specifically, QDFFs reduce *Dividends scaled by assets* by 1.6% 0.016,, *Dividends scaled by cash flows* by 9.3%, and *Dividend yield* by 1.3% after the tax took effect relative to non-QDFF firms. The economic magnitudes of these effects are not trivial – given that the average firm's assets in our sample is $6.8 billion, QDFFs reduce their dividends by $109 million per year on average.

Prior literature documents that firms increased dividend payout in response to the Bush-era Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) investment tax cut (Chetty and Saez, 2005; Brown, Liang and Weisbenner, 2007). However, the effect of a tax increase on dividend payout is not necessarily predictable based on this prior work because, for example, firms are generally reluctant to cut dividends (DeAngelo, DeAngelo, and Skinner, 1992, 1996). Thus, our findings in Table 2 add to the literature on the relation between investment taxes and dividend payouts.

3.2. The effect of the investment tax increase on investment expenditures

Politicians, regulators, and academicians are highly concerned with the effects of tax changes on corporate investment as corporate investments promote economic growth (Politi, 2021; Hanlon and Heitzman, 2010; De Long and Summers, 1991). In this section, we explore whether firms use the cash flows sourced from dividend reductions to engage in additional investment as captured by prior literature (e.g., Heitzman and Lester, 2021; Biddle, Hilary, and Verdi, 2009). Specifically, to examine the effect of the OBIT on firm investment, we look at whether QDFFs firms engaged in more capital expenditures, R&D expenses, and cash-based acquisitions relative to non-QDFFs. We also study total firm investment as captured by the sum of capital expenditures and R&D expenses.

While it is possible that firms will quickly exhaust their selection of positive net present value investment opportunities leading to additional cash flows being wasted (Faleye, 2004;

Jensen 1986), it is important to note that, within our sample period, firms have access to major tax incentives that dramatically increase the number of positive net present value options. Specifically, the Obama-Biden administration consistently supported a broadly available and highly beneficial version of the Research and Development tax credit (Zerbe 2010),[12] continued the tax-preferenced treatment of mergers and acquisitions (Shores, 2010),[13] and provided support for capital expenditures through "Bonus Depreciation" (Saunders 2013).[14]

To test the OBIT's impact on firm investment, we estimate Equation (1) where the dependent variables are *Total investment*, *Capex*, *R&D spending*, and *Cash acquisition*. Table 3 displays the results. The coefficient associated with the interaction term, $QDFF * Post$, is positive in all four columns but statistically significant only in columns 1, 3 and 4 where the dependent variables are *Total investment*, *R&D spending*, and *Cash acquisition*, respectively. QDFFs increase *Total investment*, *R&D spending*, and *Cash acquisition* by 0.6%, 0.4%, and 0.7% relative to non-QDFF firms after the tax increase took effect. These coefficients represent an increase of 13.6%, 12.5%, and 24.1% compared to the sample means of these variables. Overall, these findings indicate that the cash flows sourced from dividend reductions lead to firms spending their incremental dollars on total investment — primarily driven by R&D expenditures and cash acquisitions.

Our finding that firms do not engage in significantly more capital expenditures after the OBIT may relate to the long-term strategic focus on capital expenditures (Chung, Wright, and Charoenwong, 1998). In contrast to capital expenditures, R&D can be increased and decreased quickly in response to innovation or funding opportunities (Mudambi and Swift, 2011),

[12] That is, firms obtained benefits from deducting R&D expenses and also received an additional subsidy in the form of a tax credit.

[13] That is, under IRC Section 368 acquisitions are tax preferenced (often tax-free). Further, acquiring firms can benefit from the tax attributes of the target firm leading to an overall savings of taxes (Shores 2010).

[14] That is, firms obtained the benefits from deducting normal yearly depreciation as well as a large "Bonus" amount (generally 50% of the asset's price).

allowing firms to promptly react to exogenous shocks. The non-significant result for capital expenditures may also exist due to the smaller tax incentives that existed relative to alternatives such as R&D.[15]

Our overall finding in Table 3 that affected firm investment activity increased after the OBIT runs counter to the political and regulatory arguments of both OBIT opponents and proponents. Specifically, opponents argued that the tax increase would lead to unused cash and inefficient investments, while proponents argued that firm investment behavior would be unchanged.[16] Our findings in Table 3 are, however, in line with prior academic literature arguing that firms with additional liquidity are likely to engage in additional investment (e.g., Denis and Sibilkov 2010). Further, our evidence is also consistent with prior literature that has long argued that internally sourced cash reserves are critical to engaging in R&D as capital markets do not prefer to support firms engaged in high-risk innovation activities (Arrow, 1962; Himmelberg and Petersen, 1994; Schumpeter, 1942; Ughetto, 2008).[17]

3.3. R&D vs. non-R&D intensive industries

Based on the findings in Table 3 and in the context of contemporaneous tax laws, it appears possible that firms with R&D opportunities focused on this flexible and highly subsidized form of investment as their primarily vehicle to increase shareholder value in the absence of tax preferenced distributions. That is, R&D was subject to larger tax incentives than acquisitions or capital expenditures, meaning that firms in R&D industries may rely on R&D when subject to the OBIT while other firms may utilize capital expenditures or acquisitions as they lack the same opportunities to engage in R&D. We explore this possibility by analyzing

[15] That is, while R&D investments were provided 100% immediate expensing and an R&D tax credit, capital expenditures were 50% expensed and were not provided a tax credit (see the pre-2017 Section 168).

[16] In Section 4 we show QDFF firms do not engage in value-destroying activities

[17] Our arguments are consistent with Grullon and Michaely (2004) who find that firms engaging in increased repurchases invest less in capital expenditures and R&D.

R&D intensive and non-R&D intensive industries.

To study these possibilities, we estimate Equation (1) on a subsample of firms in R&D intensive industries and on a subsample of firms in non-R&D intensive industries. Specifically, we stratify the sample based on the definition of R&D intensive industries used in Blanco and Wehrheim (2017). The R&D intensive subsample is comprised of firms in the following industries: (i) pharmaceuticals (Standard Industrial Classification [SIC] code 283), (ii) industrial and commercial machinery and computer equipment (35), (iii) electronics and communications (36), (iv) transportation equipment (37), and (v) instruments and related products (38). Firms in all other industries comprise the non-R&D intensive subsample. Table 4 and Table 5 reports the results for the payout and investment behavior of R&D-focused firms and non-R&D-focused firms, respectively.

We first focus on the results reported in Table 4, which displays our findings when studying our subsample of firms in R&D intensive industries. Panel A of Table 4 reports results where the dependent variables are our three measures for dividend payout. The coefficient associated with $QDFF * Post$ in Panel A is negative and significant for 2 out of the three proxy for dividend payout indicating that QDFFs belonging to R&D intensive industries paid relatively lower dividends than non-QDFFs after the OBIT. That is, our findings in the R&D subsample are in line with our main findings presented in Table 2, and imply that R&D firms experience an increase in available cash flows sourced from dividend reductions.

Panel B of Table 4 reports results where the dependent variables are our four proxies for investment expenditures. The coefficient associated with the interaction term $QDFF * Post$ is positive and significant in Columns 1 and 3 consistent with the explanation that firms in R&D industries have various opportunities to invest in flexible, tax preferenced R&D using the capital sourced from the dividend reduction reported in Panel A of Table 4. Notably, while cash acquisitions is significant in Table 3 when studying the full sample, it is non-significant in the R&D focused subsample, implying that these firms focus on R&D rather than acquisitions.

To explore whether R&D and non-R&D firms react differently to the OBIT, we juxtapose the R&D-firm results in Table 4 with a subsample of non-R&D intensive firms in Table 5. Panel A of Table 5 reports results where the dependent variables are our three measures of dividend payout. We find that, similar to R&D intensive QDFFs, non-R&D intensive QDFFs reduced dividends relative to firms that are less affected by the OBIT. As this finding supports the assertion that non-R&D intensive QDFFs experience a positive shock to their cash flows due to reduced dividends, we explore how these non-R&D intensive QDFFs utilized this increased liquidity in Panel B of Table 5.

Panel B of Table 5 reports the results for non-R&D intensive firms where the dependent variables are our four proxies for investment expenditures. Results show that the coefficient associated with our main variable of interest, $QDFF * Post$, is positive and significant only in Column 4, and support the assertion that non-R&D intensive firms undertook cash acquisitions after the OBIT. These findings may indicate that non-R&D focused firms lacked sufficient R&D opportunities due to the industries they operate in, were unwilling or unable to modify long-term capital expenditure plans, and were left with acquisitive investment as the remaining viable use of the cash flow sourced from the reduction in dividends payments.[18]

Overall, our findings in Tables 4 and 5 indicate that both R&D intensive and non-R&D intensive QDFFs reduced dividends relative to non-QDFFs. Further, Tables 4 and 5 indicate that the positive effect on R&D expenditures reported in Table 3 is driven by firms in R&D intensive industries, while the positive effect on cash acquisitions is driven by firms in non-R&D intensive industries.

[18] In untabulated tests we find that firm Return on Assets is consistent before and after the OBIT. Thus, we do not find evidence that firms' valuations are negatively affected by inefficient acquisitive behavior.

3.4. Innovative activities after the 2013 Obama-Biden Investment Tax Increase

While regulators and politicians expected that a large investment tax increase might hamper innovation (Hungerford 2010), our findings in Sections 3.2 and 3.3 imply that a major effect of the 2013 Obama-Biden Investment Tax increase is an increase in the innovation input of R&D. That said, R&D expenditures quantify an input factor for innovative activities and may not indicate a true increase in long-term, firm-sustaining innovation (Donelson and Resutek, 2012). It is possible that, due to the two simultaneous tax benefits associated with R&D,[19] certain firms invest in R&D primarily for the tax benefits as opposed to the long-term innovative benefits (Meurer, 2008). R&D engaged in for incentive rather than innovative purposes may be of low quality and run counter to the policy goal of U.S. innovation quality.

In order to determine whether the OBIT improved the U.S. innovation environment — in contrast to simply increasing incentivized innovation inputs — we study firm patenting activities. Prior research argues that patenting activities, especially patent citations, quantify a robust measure of innovation's quality and economic value (Trajtenberg, 1990; Harhoff et al., 1999; Hall et al., 2005).[20] Therefore, we explore whether the 2013 OBIT has a positive effect on firm-level innovative activities by studying patenting activity as measured by *Log (patents)*, *Log (forward cites)*, *and Log (forward cites/patents)*. *Log (patents)* is the natural log of the number of patent applications that a firm filed during the year. While patent numbers can be viewed as a measure of innovation quality because many successful R&D programs lead to patenting, it is generally considered to be a noisy measure of innovation success (Hall, Jaffe,

[19] That is., firms receive both a deduction and a credit for R&D during all years in the sample period.
[20] It is important to note that the time from R&D investment to filing a patent application can be greater than our post-event window of 4 years. For example, in the pharmaceutical industry there is typically a 10–15 year gap between research and FDA approval (Acemoglu and Linn, 2004).

and Trajtenberg, 2005).[21] To measure innovation quality more precisely, we use the number of forward citations, measured as of December 31, 2019 and provided in the WRDS US Patents database. Forward citations capture the value of a patent in developing future innovations and arguably captures the market's perception of patent value (Hall, Jaffe, and Trajtenberg, 2005). We use both the total number of forward citations and the number of forward citations per patent. We re-run our Equation (1) for R&D-focused firms and non-R&D-focused firms where the dependent variables are *Log (patents)*, *Log (forward cites)*, *and Log (forward cites/patents)*. Results are reported in Table 6.

When studying our subsample of R&D-focused firms, the coefficients associated with our main variable of interest, $QDFF * Post$, are positive and significant in Columns 2 and 3 of Table 6, Panel A. These findings support the assertion that R&D-focused industries not only engaged in more tax-subsidized R&D spending using the cash flows sourced from OBIT dividend reductions, this increase in innovation spending leads to higher-quality innovation outcomes as measured by forward citations. Interestingly, we do not find significant results when studying patent counts (Column 1 of Table 6, Panel A), indicating that firms increased the quality of patents but not the quantity. These findings are in line with U.S. policy objectives. That is, an increase in patent quality without an associated increase in quantity is a major objective of patent regulators concerned with strategic patenting, and may indicate a healthy innovation environment (Federal Trade Commission, 2003; Merges and Duffy, 2002).[22] Finally, when studying non-R&D focused firms, we note that the coefficients associated with our main variable of interest, $QDFF * Post$, are insignificant in all columns of Table 6, Panel

[21] We focus on timing of the patent applications because according to United States Patent and Trademark Office (USPTO) the average patent application pendency is 24.6 months (https://www.uspto.gov/help/patent-help) and our post-event window is 4 years.

[22] For example, firms can file a large number of strategic, low-quality patents meant to profit of the innovation of competitors (Lu and Comanor, 1998). Firms can also file a large number of low-quality patents within a technology class in the hopes that other firms accidentally infringe on their strategically filed patents (Shapiro 2000).

B. This is likely due to the fact that this subsample of firms did not invest their OBIT-sourced cash flows into innovation inputs (R&D), and therefore were unlikely to experience an increase in innovation quality due to the absence of additional innovation investment.

Overall, counter to the predictions of various contemporaneous observers during the OBIT's long legislative period (see Appendix C), these results provide evidence that the 2013 Obama-Biden individual investment tax increase has a positive effect on the innovative activities of firms in R&D-intensive industries as measured by *Log (forward cites)*, *and Log (forward cites/patents)*. We posit that the OBIT locked cash into firms that promptly and effectively invested that cash into successful innovation projects.

4. Additional analyses

In this section we consider various additional analyses. First, while we focus on the OBIT's impact on corporate investment because of its importance to economic growth (De Long and Summers, 1991), we also consider whether some of the cash flows sourced from unpaid dividends are applied to other uses such as capital structure reorganization or cash accumulation. Second, while we find evidence that OBIT-induced investment has had long-term positive impacts on firms via increased patent quality, we also consider whether the change in investment tax law directly impacts firm performance (ROA) in the period studied.

4.1. Capital Structure

While firms may use the additional cash flows sourced from OBIT-induced dividend reductions for firm investment as suggested by our results, it is possible that firms use some portion of these cash flows for other purposes. First, in line with prior literature arguing that one possible response to a payout reduction is an accumulation of cash (Farre-Mensa, Michaely, Schmalz, 2014), it is possible that firms will not promptly find viable uses for all of the additional OBIT-caused cash flows, and may simply accumulate cash in response to the law. Second, as prior literature argues that firm payout and debt policies are interrelated (Gatchev, Pulvino, and Tarhan, 2010), firms may choose to reorganize their capital structures by paying down debt using the cash flows sourced from OBIT dividend reductions. Finally, and perhaps most directly relevant to our context, Blouin, Raedy, and Shackelford (2011) find that as dividend payments increased in response to the Bush-era investment tax cut, share repurchases decreased. It is possible that the converse occurs in our situation — that firms use the cash flows sourced from dividend cuts to engage in tax deferred share repurchases.[23] Thus, we consider it an open question as to whether net equity issuances (new equity issuance minus share repurchases) change in response to the OBIT.

We test whether the implementation of the OBIT impacts firm cash reserves, debt to equity rations, and net equity issuances, and find non-significant results across all variables of interest. This indicates that firm capital structures did not change in response to the OBIT (results unreported for brevity and available upon request). Viewed through the lens of the contemporaneous political and regulatory debates surrounding the OBIT, these findings would likely be viewed positively. That is, while some opponents of investment tax increases feared that an investment tax increase would cause capital structure changes that would lead to inefficiency (Rutledge, 2006), firms most impacted by the OBIT did not make major changes to their capital structures.

4.2. Return on Assets

While some streams of prior literature largely assume that increases to cash flows will

[23] However, as Blouin et al.'s (2011) study is based on a tax law change that provided a larger dividend tax cut than share repurchase tax cut, the results may not hold in our setting which has an equal tax increase for both dividends and repurchases.

be used productively (Rauh, 2006; Lamont, 1997), others argue that firms waste or underutilize significant portions of excess cash flows (Morck and Yeung, 2005). We explore whether QDFFs wasted significant portions of the cash flows sourced from OBIT dividend reductions by analyzing firm ROA. We leave these results untabulated for brevity, but they are available upon request.

We find that the ROA of QDFFs does not significantly change after the OBIT, implying that these firms do not engage in value-destroying investment activities (McConnell and Muscarella, 1985) either before or after the OBIT. While a stable ROA implies that firms continue to invest productively (McConnell and Muscarella, 1985), it is possible that these findings understate the impact of the OBIT. That is, many innovation investments do not directly increase firm returns for a number of years, where Lev and Sougiannis (1996) argue that the benefits of certain R&D investments are not fully realized until 5-9 years after initial investment. As we do not study the time-window 5-9 years after initial investment due to the structural change in tax law imposed by the Tax Cuts and Jobs Act of 2017, it is likely that the benefits of increased R&D spending are not fully captured by this additional analysis.

5. Falsification tests

To insure the robustness our results we also perform a series of falsification tests. Rather than centering the results on 2013 when the Obama-Biden investment tax increase was implemented, we utilize a series of dates from the year 2010 to the year 1995. Specifically, we re-run our baseline regressions assuming that the event occurred in 2010, 2007, 2004, 2001, 1998, and 1995. The results are reported in Table 7. Panel A of Table 7 reports the falsification tests related to dividend payout and Panel B of Table 7 reports the falsification tests related to investment.

The coefficients associated with $QDFF * Post$ when the placebo-event year is 2010 and 2007 are all insignificant in both panels A and B in Table 7. While the coefficients on $QDFF * Post$ are positive and significant in columns 1 and 2 in panel B, the coefficients on $QDFF * Post$ are insignificant in all columns in panel A. Overall, there is no systematic pattern in which firm dividend payout decreases and firm investment increases in any of the years studied. These results buttress the validity of our empirical design and results.

6. Conclusion

This paper studies the firm dividend and investment responses to the 2013 Obama-Biden investment tax increase. Implemented by two separate laws, the increase constituted, by both percentage and percentage-point terms, the largest individual-level investment tax increase in U.S. history. We find that firms most affected by this investment tax increase reduce dividend payout and increase investment in both R&D and acquisitions. Notably, we find that firms in R&D industries both engage in increased R&D spending and produce higher quality patents as evidenced by increased patent citations. The notion that innovation is critical for economic growth dates back to Schumpeter, who states that "earning out innovations is the only function which is fundamental in history" (Schumpeter, 1939, p.100). Thus, our result that an investment tax increase can spark innovation contributes to literature that studies factors affecting innovation (di Stefano, Gambardella, and Verona, 2012; Kalcheva, McLemore, and Pant, 2018). This finding also contributes to the strand of research studying individual-level investment taxation and firm behavior. As, in contrast to previous investment tax changes, the 2013 Obama-Biden investment tax increase is largely free of confounding tax provisions, we provide clear evidence to the debate on whether and how investment tax changes impact the investment behaviors of affected firms.

Beyond documenting the effects of a prominent tax increase that has not previously been comprehensively studied in the academic literature, our results lead to various implications for public policy. First and foremost, we find that the largest investment tax increase in U.S. history had positive innovation environment effects on the certain subsamples of U.S. businesses. This finding, coupled with the fact that our analyses did not identify negative firm-level effects, informs ongoing debates regarding the proposed Biden investment tax increase. That is, based on our analysis of the Obama-Biden investment tax increase, it is possible that the proposed Biden investment tax increase will both raise tax revenue and lock cash flows within firms — thereby spurring additional U.S. firm investment.

While our analyses in this study focus on the innovation impact of the Obama-Biden investment tax increase, it is likely that firm behavior is contingent on the contemporaneous tax law environment, implying that locked in cash flows would be used differently due to recent tax reforms. That is, while firm investment incentives remained largely constant throughout the sample period we studied and explicitly favored innovation investments, the Trump administration-era Tax Cuts and Jobs Act (TCJA) drastically shifted investment incentives. Most relevant to our context, under the TCJA capital expenditures are expensed more quickly, R&D is expensed more slowly, and the Act added new incentives for corporations exporting products from the U.S. to other nations. These incentive shifts might lead firms to engage in additional capital expenditures in response to a Biden investment tax increase as opposed to the additional innovation investment engaged in after the Obama-Biden tax increases. Future studies can consider the post-TCJA impact of investment tax increases.

Beyond the specific documented and predicted responses to past and potential investment tax increases, our study has broad implications for tax system design. If, in a developed economy, low business tax rates (e.g., via investment incentives) and high investor tax rates result in robust investment, this low business tax-high investor tax structure is arguably desirable from a public policy perspective. That is, this type of tax structure benefits both international competitiveness and effective tax collection. Regarding international competitiveness, our study implies that this tax system structure leads to increased levels of firm investment, which may increase the size of the U.S. corporations relative to international competitors. This argument is anecdotally supported by the unprecedented growth in the U.S. technology sector following the Obama-Biden tax increases. Regarding effective tax collection, while high corporate-level taxes effectively tax all shareholders at a flat rate (i.e., both wealthy and poor shareholders see the value of their shares reduced at the same rate due to corporate taxes), taxing individuals via investment taxes allows the government to target different tax rates at different income levels. The ability for a government to target higher income taxpayers which have a higher ability to pay their full tax liability generally leads to increased revenue collection and may be well accepted by the public from the perspective of tax fairness.

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Appendix A – Sample construction and variable definitions

Variable	Definition	Source
Dividends scaled by assets	Total dividends, scaled by total assets = (DVC+DVP)/AT	Compustat
Dividends scaled by cash flows	Total dividends, scaled by operating income before depreciation = (DVC + DVP)/OIBDP	Compustat
Dividend yield	Common dividends, scaled by market cap = DVC/ PRCC_F*CSHO	Compustat
Total investment	Sum of capital expenditures and R&D spending, scaled by total assets = (CAPX+RD)/AT. It is set to 0 if missing.	Compustat
Capex	Capital expenditures scaled by total assets = CAPX/AT. It is set to zero if missing.	Compustat
R&D spending	Research & development expense, scaled by total assets = XRD/AT. It is set to zero if missing.	Compustat
Cash acquisitions	Acquisitions paid in cash, scaled by total assets = AQC/AT.	Compustat
R&D firm	Indicator variable equal to 1 if the firm's industry is considered to be R&D-intensive (two-digit SIC codes 35, 36, 37, 38, and three-digit SIC code 283)	
Number of patents	Number of patents filed by the company during the fiscal year	WRDS US Patents
Forward cites	Total count of forward citations for a firm's patents	WRDS US Patents
Log (Total assets)	Natural log of the firm's total assets as of the fiscal year end	Compustat
Losses	Number of times the firm has experienced negative net income (NI) from the previous five fiscal years	Compustat
Market leverage	Total debt/(Total assets – book equity + market value of equity) = (DLTT+DLC)/(AT – CEQ + PRCC_F * CSHO)	Compustat
Cash flow to assets	Cash flow scaled by lagged total assets = OIBDP/Lagged AT	Compustat
Cash holdings	Cash holdings, scaled by total assets = CHE/AT	Compustat
Tobin's Q	(Total assets – book value of equity + market value of equity) / Total Assets (AT - sum(SEQ, TXDB, ITCB, -PREF) + PRCC_F*CSHO)/AT	Compustat
Volatility	Standard deviation of monthly market-adjusted returns for the fiscal year	Compustat
Cash flow volatility	Standard deviation of cash flow-to-assets from the previous ten fiscal years. The firm is required to have at least three observations. Cash flow-to-assets is operating income before depreciation (OIBDP) divided by total assets (AT)	Compustat

Appendix B – Obama-Biden Investment Tax Details

	Originally Proposed Obama-Biden Investment Tax Increase	3.8% Net Investment Income Tax	5% Capital Gains Tax Increase	Total Investment Tax Increase
Source	Furman & Goolsbee (2008)	PUBLIC LAW 111-152	PUBLIC LAW 112-240	
Date Law Passed		March 30, 2013	January 2, 2013	
Date Law Implemented		January 1, 2013	January 1, 2013	January 1, 2013
Law Title		Health Care and Education Reconciliation Act	American Taxpayer Relief Act	
Section of Law		Section 1411	Section 102(b)	
Percent Tax Applied	5 percentage points	3.8 percentage points	5 percentage points	8.8 percentage points
Increase in Tax relative to current investment tax	33.33 percent [1]	25.33 percent [2]	26.60 percent [3]	58.67 percent [4]
Tax Applied to	Capital Gains income earned by individuals with adjusted gross income levels over 200,000 if single (250,000 if married)	Lesser of 1) Investment Income or 2) excess of income over $200,000 if single ($250,000 if married)	Capital Gains income earned by individuals with adjusted gross income levels over 400,000 if single (450,000 if married)	
Percent of Capital Gains Income Impacted		85.41% [5]	78.42% [6]	

[1] That is, 5%/15% = 33.33%, where 15% was the capital gains rate before the various proposed and implemented tax increases.

[2] That is, 3.8%/15% = 25.33%, where 15% was the capital gains rate before the various proposed and implemented tax increases.

[3] That is, 5%/18.8% = 26.60% (using the capital gains tax including the Net Investment Income Tax). Excluding the Net Investment Income Tax and considering only the base 15% capital gains rate, this constitutes a 33.33% increase (5%/15% = 33.33%).

[4] That is, 8.8%/15% = 58.66%, where 15% was the capital gains rate before the various proposed and implemented tax increases.

[5] We base our estimate on the capital gains reported just prior to the tax's implementation (December 31, 2012). That is, $550,799,070,000 / $644,856,734,000 = 85.41%. Information retrieved at: https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-returns-publication-1304-complete-report

[6] We base our estimate on the capital gains reported just prior to the tax's implementation (December 31, 2012). That is, $505,717,664,000 / $644,856,734,000 = 78.42%. Information retrieved at: https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-returns-publication-1304-complete-report. We note that this estimate is based off of taxpayers making more than $500,000 (not $400,000 or $450,000) as this income threshold is the closest available in public IRS data. We acknowledge that is slightly understates the reported percentage but does not change our general inference.

Appendix C – Passage of the Obama-Biden Investment Taxes

Significant tax reforms are generally debated and implemented over extended periods of time (Slemrod, 2018).[1] As such, the 2013 Obama-Biden tax increase was subject to more than four years of political debate and its implementation was often considered uncertain or unlikely (Buchanan, Cao, Liljeblom, and Weihrich, 2017). This Appendix details the political process surrounding the passage and implementation of the Obama-Biden tax increase. For details on the specific taxes implemented as a result of this political process, see Appendix B.

Beginning in 2008 during Barrack Obama's presidential campaign, the general theoretical structure for the Obama-Biden tax increase was established with the feedback from various economists (Leonhardt, 2008). Specifically, early versions of the Obama-Biden tax increase featured a 5 percentage point (33.33 percent) investment tax increase targeting individuals with income over $200,000 and married couples with income over $250,000 (Furman and Goolsbee, 2008). While these two features were not applied together as initially intended, the elements of the initial plan served as the framework for the two laws that would eventually constitute the 2013 Obama-Biden tax increase (See Appendix B).

The 5 percentage point increase in the above proposed tax increase was selected as it matched (for capital gains but not for dividends)[2] the rate cut imposed by the 2003 Jobs Growth Tax Relief Reconciliation Act (JGTRRA).[3] Passed by the legislative process of budget reconciliation (which requires 50 rather than 60 U.S. Senate votes),[4] the JGTRRA was subject

[1] Barring the exception of the recent Tax Cuts and Jobs Act that had a relatively short legislative window Wagner, Zeckhauser, and Ziegler (2020)

[2] That is, the dividend tax rate was cut from 39.6% to 15% while the capital gains tax rate was cut from 20% to 15%.

[3] Public Law 108-27. Retrieved at: https://www.congress.gov/108/plaws/publ27/PLAW-108publ27.pdf.

[4] "Reconciliation is a two-step process. Under the first step, reconciliation instructions are included in the budget resolution, directing one or more committees in each House to develop legislation that changes spending or revenues (or both) by the amounts specified in the budget resolution. Reconciliation procedures during a session usually have applied to multiple committees and involved omnibus legislation. Under the second step, the omnibus budget reconciliation measure is considered in the House and Senate under expedited procedures (for example, debate time in the Senate on a reconciliation measure is limited to 20 hours and amendments must be germane).

to mandatory expiration dates on a number of its provisions — including its investment tax cut. Proponents of investment tax increases viewed the expiration of the JGTRRA as an opportunity to impose the Obama-Biden investment tax increase outlined above, as the currently proposed version of the increase would be lower (for dividends but not capital gains) than simply allowing the JGTRRA to expire (Furman and Goolsbee, 2008). In contrast, other prominent economists and regulators argued that the full JGTRRA should expire to combat inflation and the increasing federal debt and deficit (Greenspan, 2010). While the Obama administration was a strong proponent of increased investment taxation, the economy remained weak after the 2008 financial crisis despite the trillion-dollar stimulus and infrastructure bill passed in 2009 (Ramey, 2019). Therefore, despite the pressure to either impose the proposed 5% Obama-Biden investment tax increase or allow the JGTRRA to expire in full, the Obama administration fully extended the JGTRRA's Investment Tax cuts until January 1st 2013 (Dixon and Cowan, 2010) and paused investment tax increase efforts.

At the same time the proposed 5% Obama-Biden tax increase and the expiration of the JGTRRA were being debated, Obama was also focused on passing healthcare reform. On March 3rd, 2010, President Obama signed the Patient Protection and Affordable Care Act (PPACA)[5] into law — the largest U.S. healthcare reform since the institution of Medicare in 1966 (Shaw et al., 2014). As the major achievement of the Obama administration, the economic impact of the PPACA is a frequent topic of study (e.g., Borochin and Golec, 2016; Dickstein et al., 2015; Eastman et al., 2020); however, we consider the provisions of the PPACA beyond the scope of this paper. That said, the PPACA is indirectly relevant to the topic of investment taxation due to the contentious political process surrounding the Act (e.g. Jones et al., 2014).

The process culminates with enactment of the measure, thus putting the policies of the budget resolution into effect." (https://www.senate.gov/CRSpubs/95a2a72a-83f0-4a19-b0a8-5911712d3ce2.pdf 4235537a6f89.pdf)

[5] Public Law 111-148. Retrieved at: https://www.govinfo.gov/content/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf.

Specifically, throughout much of 2009 when the PPACA was being debated, the Democratic party did not have the 60 votes required to pass the full version of the PPACA as it contained structural changes not likely eligible for the 50-vote budget reconciliation process (Brown, 2009). However, on June 30th 2009, the Minnesota Supreme Court settled one of the longest Senate races in U.S. history, granting the Democrats their 58th Senator — the 60th if two independents with Democratic leanings were included (Melby, 2009). This 60-vote majority was short-lived, however, as Democratic Senator Edward Kennedy died and was unexpectedly replaced by Republican Scott Brown (Cooper, 2010). However, before Scott Brown was seated, the Democrats used their 60-vote majority to pass an incomplete PPACA (Janet and Naftali, 2010).[6]

Due to this unique legislative process, the incomplete PPACA was passed as a budgetarily non-viable bill that did not contain the necessary taxes to support increased healthcare spending. To solve this problem, the PPACA was repaired by the Health Care and Education Reconciliation Act (HCERA) of 2010, which, as the name implies, was built to be eligible for the 50-vote budget reconciliation process.[7] Thus, this bill could be passed despite the fact that Democrats had lost their 60th vote. In contrast to the PPACA, the HCERA is a tax-focused bill that has gone largely unstudied in the academic literature. The main provision of the HCERA is an increase in investment taxation via the Net Investment Income Tax (NIIT) — a tax on capital gains, dividends, interest, annuities, and other smaller investment income classes. While most tax increases apply to different forms of income differently and serve various theoretical or economic purposes, the scale of the NIIT was selected under severe time

[6] The Democrats were able to pass the incomplete PPACA even after the death of Edward Kennedy because Kenney used his finals days to lobby the Massachusetts legislature to change state law (Goodnough, 2009). The new law allowed the governor to appoint a temporary replacement for Kennedy to vote for the PPACA after his death but before an elected replacement was sworn in by January 2010 (Goodnough and Zezima, 2009).

[7] Public Law 111-152. Retrieved at: https://www.govinfo.gov/content/pkg/PLAW-111publ152/pdf/PLAW-111publ152.pdf.

constraints in order to meet the revenue needs of the incomplete PPACA (Eicher and Hitt, 2014). The NIIT applies to individuals (married couples) making more than $200,000 ($250,000), and was set to go into effect roughly three years after the HCERA's passage (January 1, 2013).

While not as large as the originally proposed 5 percentage point (33%) Obama-Biden investment tax increase, the NIIT's size is still notable in the context of U.S. tax history. Specifically, the passage of the NIIT caused a 3.8% percentage point, 25.33 percent increase to the taxation of dividends and capital gains (see Appendix B for details). This increase constituted, by both percentage and percentage-point terms, the largest investment tax increase in U.S. history at the time.[8] However, the fact that the NIIT's implementation was delayed until after the 2012 presidential election led observers to believe that it could be altered or removed before enactment — especially if the balance of congressional and presidential power shifted. This resulted in a long-running debate surrounding the NIIT even after its passage (Gleckman, 2012).

Following the above events, 2011 marked the largest shift in congressional seats since 1948, with Republicans taking a sizable majority in the House of Representatives.[9] This provided the generally anti-tax Republican Party (e.g. Prasad, 2018; Kornhauser, 2013) a greater position of power in negotiations on the implementation of the NIIT as well as the expiration of the temporarily extended JGTRRA of 2003 (both of which would occur on January 1st, 2013). These negotiations extended through the entirety of 2011 with little progress being made, and this lack of progress on how to proceed with U.S. tax policy led the Federal Reserve chair to argue that allowing the still-weak economy to be hit by a number of

[8] This excludes the temporary period in which the U.S. eliminated the preferential capital gains rate. This occurred with the passage of the Tax Reform Act of 1986 (e.g., Cutler, 1988; Downs and Tehranian, 1988).

[9] Retrieved at: https://history.house.gov/Institution/Party-Divisions/Party-Divisions/

tax increases would amount to a "massive fiscal cliff" (Bernanke, 2012). Despite the threat of the fiscal cliff, both Republicans and Democrats preferred to postpone the sensitive negotiations until after the competitive 2012 Presidential election (Calmes, 2012).[10] Delaying substantive negotiations until after the 2012 elections left the newly re-elected Republican House, Democratic Senate, and Democratic President[11] a short window to finalize a plan to avert the fiscal cliff.

With the 2012 elections completed, the divided government used November and December of 2012 to write the American Taxpayer Relief Act (ATRA) of 2012 and avert the fiscal cliff that would take effect on January 1st 2013.[12] In line with Republican goals, the ATRA primarily kept the current low-tax status quo by permanently extending the JGTRRA of 2003 passed by the Bush administration (e.g., Luscombe, 2013). Notably, however, in line with the more than 4-year-old objectives of the Obama administration, the ATRA permanently increased the tax rates on both dividends and capital gains by 5%. This additional 5 percentage point tax was set to apply to single (married) taxpayers with income of $400,000 ($450,000). See Appendix B for details.

Overall, the passage of the ATRA resulted in a 5 percentage point, 26.60 percent tax increase on the investment income of high-income taxpayers. This constitutes, by both percentage and percentage point standards, the largest tax increase on capital gains in U.S. tax history — surpassing the NIIT that held that status a day before.[13] Regarding the NIIT, as the

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[10] This was because any final negotiated result to avert the fiscal cliff would likely provide political ammunition to both Republicans and Democrats as neither side would obtain everything their party sought.

[11] That is, the 2012 election did not substantially change the party makeup in the House, Senate, or Executive Branch.

[12] Public Law 112-240. Retrieved at: https://www.congress.gov/bill/112th-congress/house-bill/8/text. This act is known as the ATRA of 2012, but actually passed in 2013. The Act was passed in 2013 due to protracted negotiations over its contents.

[13] However, we note that that the government revenue from this tax is lower than the NIIT due to the NIIT's applicability to interest and other forms of income. See, the Congressional Budget office estimates of the HCERA https://www.cbo.gov/sites/default/files/111th-congress-2009-2010/costestimate/amendreconprop.pdf and the ATRA https://www.cbo.gov/publication/43829.

ATRA made no changes to that tax, the 5% ATRA investment tax increase took effect with the 3.8% NIIT. Therefore, combining these two tax increases that were implemented over a period of two days, the taxation of most dividends and capital gains increased from 15 percentage points to 23.8 percentage points (a 56.67 percent increase). Notably, this 56.67 percent investment tax increase is far larger than the initially proposed Obama-Biden investment tax increase (Furman and Goolsbee, 2008), has remained unchanged through recent tax reforms (Kess, 2018),[14] and was one of the only substantive tax increases passed in this multi-year period — allowing us to cleanly study its effects.[15]

[14] Public Law 115–97, generally known as the Tax Cuts and Jobs Act.
Retrieved at: https://www.govinfo.gov/content/pkg/PLAW-115publ97/pdf/PLAW-115publ97.pdf

[15] That is, there are not major confounding policies in the laws that implemented the Obama-Biden investment taxes as the majority of the ATRA extended existing tax cuts while the majority of the HCERA was focused on health care.

Table 1: Summary statistics

This table presents the summary statistics of the firms in our sample, which starts in 2009 and ends in 2016. The sample includes firms incorporated in the US and excludes financials and utilities. The sample also excludes firms with stock price less than $5 at the end of the fiscal year. All variable definitions and sources are described in Appendix A. All continuous accounting variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers.

Panel A: Dependent variables	Obs.	Mean	Std. Dev.	P25	Median	P75
Dividends scaled by assets	10,891	0.016	0.029	0.000	0.004	0.022
Dividends scaled by cash flows	10,297	0.113	0.179	0.000	0.046	0.164
Dividend yield	10,891	0.012	0.017	0.000	0.004	0.019
Total investment	10,891	0.077	0.069	0.030	0.056	0.101
Capex	10,891	0.044	0.045	0.017	0.030	0.055
R&D spending	10,891	0.032	0.057	0.000	0.003	0.038
Cash acquisitions	10,399	0.029	0.063	0.000	0.000	0.023
R&D firm	10,891	0.327	0.469	0.000	0.000	1.000
Number of patents	10,891	19.781	75.403	0.000	0.000	5.000
Forward cites	10,891	68.317	275.195	0.000	0.000	10.000

Panel B: Control variables	Obs.	Mean	Std. Dev.	P25	Median	P75
Log(Total assets) $_{t-1}$	10,891	7.229	1.746	5.991	7.152	8.383
Losses $_{t-1}$	10,891	0.872	1.314	0.000	0.000	1.000
R&D spending $_{t-1}$	10,891	0.032	0.059	0.000	0.003	0.038
Market leverage $_{t-1}$	10,891	0.140	0.143	0.013	0.106	0.214
Cash flow / Lagged total assets $_{t}$	10,891	0.144	0.106	0.092	0.138	0.193
Cash/ Total assets $_{t-1}$	10,891	0.175	0.173	0.045	0.117	0.247
Tobin's Q $_{t}$	10,891	2.009	1.283	1.212	1.598	2.311
Volatility $_{t-1}$	10,891	0.096	0.053	0.059	0.083	0.117
Cash flow volatility $_{t-1}$	10,891	0.060	0.063	0.025	0.041	0.069

Table 2: Payout behavior after the 2013 Obama-Biden Investment Tax Increase

The sample consists of 10,891 firm-year observations from 2009 to 2016. *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is 2013 or after. All other variable definitions and sources are described in Appendix A. All continuous variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers. Control variables are standardized for ease of interpretation. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)
	Dividends scaled by assets	Dividends scaled by cash flows	Dividend yield
QDFF * Post	-0.016	-0.093	-0.013
	(-3.1)**	(-2.3)*	(-3.9)***
Log(Total assets) $_{t-1}$	0.001	-0.069	0.001
	(0.4)	(-3.4)**	(0.9)
Losses $_{t-1}$	-0.001	-0.014	-0.000
	(-3.0)**	(-3.5)***	(-1.0)
R&D expense $_{t-1}$	-0.001	-0.016	0.000
	(-0.5)	(-2.2)*	(0.1)
Market leverage $_{t-1}$	-0.003	-0.025	-0.001
	(-4.7)***	(-5.4)***	(-2.8)**
Cash flow / Lagged total assets $_{t}$	-0.000	-0.070	-0.001
	(-0.0)	(-10.9)***	(-2.8)**
Cash/ Total assets $_{t-1}$	0.003	0.021	0.001
	(3.5)**	(3.7)***	(2.9)**
Tobin's Q $_{t}$	0.004	0.021	-0.002
	(4.5)***	(5.1)***	(-3.3)**
Volatility $_{t-1}$	-0.000	-0.002	-0.001
	(-1.5)	(-1.0)	(-3.9)***
Cash flow volatility $_{t-1}$	-0.001	-0.010	0.000
	(-2.2)*	(-2.6)**	(0.2)
Fixed Effects	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year
N	10,891	10,289	10,891
Adjusted R^2	0.730	0.641	0.682

Table 3: Investment behavior after the 2013 Obama-Biden Investment Tax Increase
The sample consists of 10,891 firm-year observations from 2009 to 2016. *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is 2013 or after. All other variable definitions and sources are described in Appendix A. All continuous variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers. Control variables are standardized for ease of interpretation. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Full sample			
	(1)	(2)	(3)	(4)
	Total investment	Capex	R&D spending	Cash acquisition
QDFF * Post	0.006	0.002	0.004	0.007
	(2.1)*	(1.0)	(2.8)**	(2.0)*
Cash flow / Lagged total assets $_t$	-0.003	0.003	-0.007	0.013
	(-1.6)	(2.8)**	(-6.6)***	(7.2)***
Market leverage $_{t-1}$	-0.011	-0.008	-0.003	-0.018
	(-7.7)***	(-8.0)***	(-4.2)***	(-3.8)***
Cash/ Total assets $_{t-1}$	-0.002	-0.001	-0.001	0.029
	(-1.3)	(-0.7)	(-1.2)	(6.0)***
Tobin's Q $_t$	0.008	0.001	0.006	-0.017
	(4.3)***	(1.8)	(4.3)***	(-5.9)***
Fixed Effects	Firm, year	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year	Firm, year
N	10,891	10,891	10,891	10,394
Adjusted R^2	0.846	0.796	0.938	0.330

Table 4: Payout and investment behavior for R&D-focused firms

The sample consists of 3,564 firm-year observations from 2009 to 2016. *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is 2013 or after. All other variable definitions and sources are described in Appendix A. All continuous variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers. Control variables are standardized for ease of interpretation. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Payout behavior

	R&D-focused firms		
	(1)	(2)	(3)
	Dividends scaled by assets	Dividends scaled by cash flows	Dividend yield
QDFF * Post	-0.013	-0.083	-0.010
	(-2.0)*	(-1.7)	(-3.1)**
Log(Total assets) $_{t-1}$	-0.003	-0.098	-0.001
	(-1.7)	(-3.1)**	(-0.4)
Losses $_{t-1}$	-0.000	-0.009	-0.000
	(-0.9)	(-1.8)	(-0.4)
R&D expense $_{t-1}$	-0.001	-0.012	0.000
	(-1.1)	(-1.8)	(0.1)
Market leverage $_{t-1}$	-0.000	-0.010	0.000
	(-0.3)	(-1.5)	(0.0)
Cash flow / Lagged total assets $_{t}$	0.000	-0.060	-0.000
	(0.2)	(-5.2)***	(-1.7)
Cash/ Total assets $_{t-1}$	0.001	-0.000	0.000
	(1.2)	(-0.0)	(0.2)
Tobin's Q $_{t}$	0.001	0.010	-0.001
	(2.0)*	(1.8)	(-4.1)***
Volatility $_{t-1}$	-0.000	-0.003	-0.000
	(-0.6)	(-0.6)	(-2.0)*
Cash flow volatility $_{t-1}$	-0.001	-0.012	-0.000
	(-0.9)	(-1.3)	(-0.6)
Fixed Effects	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year
N	3,564	3,207	3,564
Adjusted R^2	0.742	0.655	0.688

Panel B: Investment behavior

	R&D-focused firms			
	(1)	(2)	(3)	(4)
	Total investment	Capex	R&D spending	Cash acquisition
QDFF * Post	0.015	0.003	0.011	-0.000
	(2.7)**	(1.3)	(2.5)**	(-0.1)
Cash flow / Lagged total assets $_t$	-0.010	0.002	-0.011	0.011
	(-4.3)***	(2.0)*	(-6.5)***	(4.5)***
Market leverage $_{t-1}$	-0.010	-0.005	-0.005	-0.019
	(-4.5)***	(-4.5)***	(-2.7)**	(-3.1)**
Cash/ Total assets $_{t-1}$	-0.002	0.001	-0.002	0.031
	(-0.7)	(0.7)	(-1.3)	(5.1)***
Tobin's Q $_t$	0.012	0.001	0.010	-0.015
	(3.7)***	(1.2)	(4.0)***	(-4.7)***
Fixed Effects	Firm, year	Firm, year	Firm, year	Firm
Clustered Standard Errors	Firm, year	Firm, year	Firm, year	Firm
N	3,564	3,564	3,564	3,410
Adjusted R^2	0.868	0.657	0.922	0.304

Table 5: Payout and investment behavior for non-R&D-focused firms

The sample consists of 3,564 firm-year observations from 2009 to 2016. *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is 2013 or after. All other variable definitions and sources are described in Appendix A. All continuous variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers. Control variables are standardized for ease of interpretation. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Payout behavior

	Non-R&D-focused firms		
	(1)	(2)	(3)
	Dividends scaled by assets	Dividends scaled by cash flows	Dividend yield
QDFF * Post	-0.017	-0.094	-0.013
	(-3.3)**	(-2.3)*	(-3.9)***
Log(Total assets) $_{t-1}$	0.004	-0.059	0.002
	(1.1)	(-2.4)**	(1.1)
Losses $_{t-1}$	-0.001	-0.015	-0.000
	(-2.3)*	(-3.1)**	(-0.8)
R&D expense $_{t-1}$	0.001	-0.031	-0.000
	(0.3)	(-1.9)*	(-0.4)
Market leverage $_{t-1}$	-0.004	-0.030	-0.002
	(-4.7)***	(-5.5)***	(-3.1)**
Cash flow / Lagged total assets $_t$	-0.000	-0.076	-0.001
	(-0.7)	(-12.1)***	(-2.7)**
Cash/ Total assets $_{t-1}$	0.004	0.035	0.002
	(3.6)***	(5.0)***	(3.5)***
Tobin's Q $_t$	0.007	0.027	-0.002
	(5.1)***	(5.6)***	(-2.7)**
Volatility $_{t-1}$	-0.000	-0.001	-0.001
	(-1.1)	(-0.5)	(-3.9)***
Cash flow volatility $_{t-1}$	-0.002	-0.008	0.000
	(-2.4)**	(-1.9)*	(1.0)
Fixed Effects	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year
N	7,327	7,082	7,327
Adjusted R^2	0.729	0.638	0.675

Panel B: Investment behavior

	Non-R&D-focused firms			
	(1)	(2)	(3)	(4)
	Total investment	Capex	R&D spending	Cash acquisition
QDFF * Post	0.003	0.002	0.001	0.010
	(1.0)	(0.6)	(1.0)	(2.8)**
Cash flow / Lagged total assets $_t$	0.003	0.004	-0.002	0.016
	(1.3)	(2.2)*	(-2.6)**	(7.7)***
Market leverage $_{t-1}$	-0.011	-0.009	-0.001	-0.018
	(-5.4)***	(-5.6)***	(-2.8)**	(-3.9)***
Cash/ Total assets $_{t-1}$	-0.003	-0.002	-0.000	0.028
	(-1.4)	(-1.5)	(-0.3)	(6.4)***
Tobin's Q $_t$	0.004	0.002	0.002	-0.020
	(1.5)	(1.0)	(1.9)*	(-5.8)***
Fixed Effects	Firm, year	Firm, year	Firm, year	Firm
Clustered Standard Errors	Firm, year	Firm, year	Firm, year	Firm
N	7,327	7,327	7,327	6,984
Adjusted R^2	0.814	0.810	0.931	0.347

Table 6: Innovative activities after the 2013 Obama-Biden Investment Tax Increase

This table presents the impact of the investment tax increase on firms' innovative activities. Panel A includes R&D-focused firms, while Panel B includes non-R&D-focused firms. *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is 2013 or after. All other variable definitions and sources are described in Appendix A. All continuous variables are winsorized at the 1% and 99% levels to lessen the impact of extreme outliers. Control variables are standardized for ease of interpretation. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: R&D-focused firms

	R&D-focused firms		
	(1)	(2)	(3)
	Log (patents)	Log (forward cites)	Log (forward cites/patents)
QDFF * Post	0.041	0.597	0.389
	(0.4)	(3.0)**	(3.7)***
ROA	0.018	0.002	-0.016
	(1.4)	(0.1)	(-0.9)
R&D spending	0.127	0.159	0.018
	(2.0)*	(1.7)	(0.4)
Log (Total assets)	0.432	0.356	-0.112
	(3.3)**	(1.9)*	(-1.4)
Capex	0.027	0.074	0.039
	(1.5)	(2.4)*	(1.6)
Fixed Effects	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year
N	3,564	3,564	3,564
Adjusted R^2	0.934	0.880	0.702

Panel B: Non-R&D-focused firms

	Non-R&D-focused firms		
	(1)	(2)	(3)
	Log (patents)	Log (forward cites)	Log (forward cites/patents)
QDFF * Post	-0.049	0.108	0.089
	(-1.1)	(1.3)	(1.7)
ROA	-0.008	-0.020	-0.017
	(-0.8)	(-1.8)	(-1.9)*
R&D spending	0.083	0.083	-0.015
	(1.1)	(0.6)	(-0.2)
Log (Total assets)	0.144	0.172	0.048
	(2.6)**	(2.5)**	(0.9)
Capex	-0.005	0.024	0.011
	(-0.5)	(1.6)	(1.5)
Fixed Effects	Firm, year	Firm, year	Firm, year
Clustered Standard Errors	Firm, year	Firm, year	Firm, year
N	7,327	7,327	7,327
Adjusted R^2	0.917	0.841	0.596

Table 7: Falsification tests

This table presents results of falsification tests using 2010, 2007, 2004, 2001, 1998, 1995 as the falsification year in which tax increases took effect. The sample for each test includes four years before and four years after the falsification year (e.g. sample period 2006-2013 for falsification year 2010). *QDFF* is an indicator variable equal to one if a firm is a Qualified Dividend Focused Firm, ranked in the top quartile of the sample sorted by dividends (scaled by assets) and by individual ownership. *Post* is an indicator variable equal to one if the firm-year is the falsification year or after. All control variables are included as in our baseline specifications. T-statistics are reported in parentheses under the coefficients. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Payout falsification tests

Year		(1) Dividends scaled by assets	(2) Dividends scaled by cash flows	(3) Dividend yield
2010	QDFF * Post	-0.001	-0.019	-0.002
		(-0.2)	(-0.8)	(-0.6)
2007	QDFF * Post	0.002	-0.003	0.003
		(0.7)	(-0.2)	(1.3)
2004	QDFF * Post	-0.002	-0.010	-0.002
		(-0.8)	(-0.5)	(-1.7)
2001	QDFF * Post	-0.004	-0.017	-0.003
		(-2.1)*	(-1.0)	(-1.7)
1998	QDFF * Post	-0.007	-0.040	-0.003
		(-3.2)**	(-2.6)**	(-1.8)
1995	QDFF * Post	-0.007	-0.028	-0.003
		(-3.7)***	(-2.2)*	(-2.3)*
	Control Variables	Yes	Yes	Yes
	Fixed Effects	Firm, year	Firm, year	Firm, year
	Clustered Standard Errors	Firm, year	Firm, year	Firm, year

Panel B: Investment falsification tests

		(1) Total investment	(2) Capex	(3) R&D spending	Cash acquisition
2010	QDFF * Post	0.002	0.002	0.001	0.009
		(0.7)	(0.6)	(1.0)	(1.7)
2007	QDFF * Post	0.004	0.002	0.001	0.004
		(1.3)	(0.9)	(1.0)	(1.1)
2004	QDFF * Post	0.010	0.007	0.002	-0.001
		(2.8)**	(2.3)*	(1.4)	(-0.3)
2001	QDFF * Post	0.011	0.004	0.006	0.016
		(1.7)	(1.0)	(2.0)*	(3.2)**
1998	QDFF * Post	0.011	0.009	0.003	0.005
		(1.6)	(2.0)*	(1.1)	(1.0)
1995	QDFF * Post	0.006	0.008	-0.001	0.014
		(1.4)	(2.1)*	(-0.6)	(3.3)**
	Control Variables	Yes	Yes	Yes	Yes
	Fixed Effects	Firm, year	Firm, year	Firm, year	Firm, year
	Clustered Standard Errors	Firm, year	Firm, year	Firm, year	Firm, year