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Tax News: Evidence from Google Searches and News Coverage

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Abstract

We investigate the links between stock returns, market risks, profitability, and behavioral attention on specific fiscal acts in the context of US stock markets. Behavioral attention refers to actions highlighting the importance of information, such as information-selection behavior. Using Google search activity, we focus on the impact of selected tax news on 4,157 US stocks for 2004–2017. We find that positive news is perceived by investors more strongly than negative news, and this also applies to news coverage. We also find evidence that tax news has a different effect on dividend-paying companies than on non-dividend-paying companies.

1. Introduction

Thanks to technological improvements, such as stock market trading applications and zero commission trading, there has been an increase in retail investor market participation. Retail volume now accounts for 20% of stock market activity, roughly double the rate of a decade ago (McCabe, 2021). This increase in participation can have a significant impact on other market participants. Mondria et al. (2010) have shown that the attention of retail investors affects both their investment decisions and those of institutional investors. The effect of retail investors' attention can be problematic since they frequently use nonprofessional information channels (Ben-Rephael et al., 2017) and are more likely to be biased and overreact (Barberis et al., 1998; Lo and MacKinlay, 1990).

Our paper investigates how retail investors process information on tax reforms. We focus on US tax reforms from 2004 to 2017 and analyze the impact of investor attention to tax news and news coverage on prices and profitability. There are several advantages to using Google's search data to measure investor attention. First, Google is a leader of search engines in the United States and boasts millions of searches every day. Moreover, past research (e.g., Da et al., 2015; Drake et al., 2016;

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Ben-Rephael et al., 2017) has shown that search volume by Google is a direct measure of attention. A comprehensive list of studies in the past decade is presented by Jun et al. (2018). Therefore, there is a unique opportunity to study real-time search data to capture the attention of individuals and retail investors.

In previous research, Google Trends data has been used to capture the attention to individual firms (e.g., Da et al., 2011; Joseph et al., 2011; Markellos and Vlastakis, 2012; Bijl et al., 2016; Geng et al., 2022) or earnings announcements (e.g., Drake et al., 2012). However, investors' attention to macroeconomic shock has been mostly overlooked. This is despite the rich literature investigating the impact of taxes on stock prices (Günther and Willenborg, 1999; Ayers et al., 2003; Dhaliwal et al., 2003). Barberis et al. (1998) have shown that nonprofessional investors tend to overreact to economic shocks, stressing the importance of the issue. This is further compounded by a growing problem of information overload and limited attention (Camerer, 2003). The theory of rational inattention (Sims 2003; 2010) introduced the idea that people's abilities to translate all available information into action are constrained by the finite processing "capacity". Such models explain why some freely available information is imperfectly used or not used at all. Given investors' limited ability to process information (Sims 2003), their tendency to overreact (Barberis et al., 1998), and their growing influence on the market and its participants (McCabe, 2021), investor attention to macroeconomic shocks warrants further research.

Our results show that Google search attention significantly impacts both stock prices and returns volatility. Attention focused on positive news has a positive effect on stock price. Similarly, high attention to macroeconomic shocks with high uncertainty leads to higher volatility. The results, except the attention, include newspaper coverage and show that positive news has a more significant impact on volatility and prices than negative news. Overall, the results reveal that the information is reflected differently in stock prices and volatility. It depends on whether the company pays dividends or not.

Our study contributes to the literature in two important ways. First, we extend the current literature on tax impact on prices (e.g., Ayers et al., 2003; Dhaliwal, et al., 2003) by introducing investor attention, which can be related to the uncertainty faced by investors following significant changes in tax legislation. Second, we extend the current literature on investor attention (e.g., Bijl et al., 2016; Geng et al., 2022, Cheraghali et al., 2023) by focusing on attention paid to macroeconomic shocks. Moreover, investor attention also includes the effect of anticipation before the tax reform was signed into law (see Figure 1, where all three acts have an increase in attention before the month the bill was passed.). While previous research has documented the impact of news on changes in tax on dividends on stock prices (Amromin et al., 2006; Becker et al., 2013), our study provides a comprehensive analysis covering several large macroeconomic shocks to elucidate investor attention and its effect on the reaction to legislative changes. The paper is structured as follows. Section 2 contains the literature review and hypotheses development. Section 3 provides a detailed overview of the data and estimation methods, and we report the results of our analysis in Section 4 and Section 5, where we present results for robustness check. Finally, Section 6 concludes.

2. Literature Review and Hypotheses Development

How does attention contribute to the incorporation of information in stock prices? Attention economics (Simon, 1971) states that attention is scarce and, thus, allocating attention efficiently is more important than providing more information. This is supported by Huberman and Regev (2001), who analyzed a published article in the New York Times on a new cancer-curing drug, which attracted significant public attention and increased the daily return of the given pharmaceutical stock by more than 300%. This effect occurred despite the same story previously being published several times in other newspapers. This supports the idea that the source of information, rather than the quantity, can increase attention.

Public attention can lead to permanent price pressure, even when no new information is available. This effect was supported by Tetlock (2011), who found that since new information is reflected in prices almost instantly, people tend to overreact to stale information, that has already been reflected in the price.

By analyzing the Google searches, we can detect the aggregated attention of individuals. However, such attention can turn into stale information, which leads us to specify our first hypothesis:

Hypothesis 1: Attention to news on tax reforms increases returns volatility.

Da et al. (2011) have used search intensity as a proxy for investor attention. They introduced the idea that if people are paying attention, they tend to search for information by typing individual (or groups of) keywords into the internet browser. Furthermore, Da et al. (2011) have confirmed Barber and Odean's (2008) attention theory, which states that individual investors are the net buyers of attention-grabbing stock. These findings suggest that high search volume intensity should predict higher stock prices.

However, it is essential to distinguish whether the attention is directed at positive or negative information. This idea is supported by Galai and Sade (2006), who have found that when investors search for information, they tend to accept it and reflect it in stock prices, consistent with confirmation bias. Moreover, they will avoid negative or unsupportive info about their priors. Galai and Sade (2006) have dubbed this behavior the "ostrich effect". This leads us to specify our second hypothesis:

Hypothesis 2: Positive news has a more significant impact on volatility and prices than negative news.

A rich stream of literature focuses on news articles and attention to them (For the early reference, see Simon, 1971). Thompson et al. (1987) have studied the properties of information reported in the Wall Street Journal Index and shown that it significantly impacts stock returns. More recently, Ryan and Taffler (2004) have presented evidence that firm-specific information releases are a highly significant determinant of both individual stock price changes and trade volume activity. Moreover, several studies have focused on macroeconomic news announcements (e.g., Ederington and Lee, 1993; Berry and Howe, 1994, Fisher et al., 2022, Corbet et al., 2020 or Lyócsa et al. 2020). The reaction to the number of articles or news volume depends on investors' attention to the given topic.

As such, we hypothesize that individual attention determines the focus of news on the given topic. Thus, we specify our final hypothesis:

Hypothesis 3: Investors' focus on tax reforms has a higher impact on dividend-paying companies.

3. Data and Methodology

The current study's dataset contains monthly data from January 2004 to July 2017 and includes 4,157 stocks listed on both NASDAQ and the New York Stock Exchange available on Morningstar. In this paper, we focus both on returns and volatility. Returns refer to holding period returns for the given calendar month, and volatility is defined as the standard deviation of daily returns for the given calendar month. We use OLS regression using the following calculation:

$$y_{it} = const + \beta\left(Mkt_{r,t} - R_{f,t}\right) + \sum_{s=1}^{S} \gamma_s control_{it}^{s} + \delta_t + \sum_{r=1}^{R} \zeta_r publish\ news_t^r + \sum_{b=1}^{B} \theta_b news\ searches_t^b + \varepsilon_{it}, \quad (1)$$

where $Mkt_{r,t} - R_{f,t}$ is the difference between the market return and risk-free rate. The control variables consist of cash flow or share price ratio to capture the company's profitability and firm size, defined as the firm's equity market value. The variable related to the number of published articles on tax reform, *publish news,* is calculated for specific news on tax reform, *r*. The last set of variables includes search intensity for particular information on tax reform, *b*, and time, *t*. We employ Driscoll and Kraay (1998) standard errors to control for cross-sectional dependency. Moreover, the methodology provides a solution for unbalanced panels. For volatility analysis, we include its lagged value among explanatory variables. Outliers below the 5th and above the 95th percentiles have been removed.

In this paper, we focus on US legislation related to taxes that has been signed into law during the sample period. There were three Acts introduced during this period.

In 2004, then-president Bush signed the American Jobs Creation Act into law, which reduced tax to multinationals from 35% to 5.25% and repealed the export tax incentive. Several companies took advantage of this Act by repatriating their money back to the United States (Office of the Press Secretary, 2004). However, several other companies responded with share buybacks or dividends (Simpson, 2018).

In 2009, in response to the economic crisis, then-president Obama signed the American Recovery and Reinvestment Act to cut taxes for individuals and small businesses. Moreover, the Act increased lending opportunities to encourage consumer spending. However, the effect varied among the states, as some states had more significant losses with federal assistance (Balance Money, 2021).

Finally, in 2012, there was the American Taxpayer Relief Act. This Act increased the capital gains and dividend tax rate for those who earned more than $400,000 from 15% to 20%. This Act was signed into law just as most of the 2001 and 2003 tax cuts were expiring. This Act made those cuts permanent, except for the highest-income payers. We denote these acts as the Act of 2004, Act of 2009, and Act of 2012, respectively.

We used the intensity of Google searches on the specific acts available through Google Trends to measure investor attention. The search intensity was calculated through a relative index from 0 to 100, where the maximum search value represents the highest number of searches of the selected keyword in the Google browser, whereas the highest most elevated point determines the remaining rest of the values. The usage of Google Trends has been well established in previous literature (e.g., Da et al., 2011; Bijl, Kringhaugh, Molnár, 2016; Ben-Rephael, Da, and Israelsen, 2017, or Cheraghali et al., 2022); however, most studies have referred to the search volume index for the ticker symbols of firms to capture investors' attention, focussing on firm-specific news. The assumption is that the unique ticker symbol represents attention to financial information and excludes economic agents who attempt to search for information related to other purposes (Da et al., 2011; Drake, Roulstone, and Thornock, 2011; Joseph, Wintoki, and Zhang, 2011).

We expand on the previous studies by focusing on macroeconomic shocks to understand how retail investors involve tax reforms in their investment decisions. The aforementioned Acts constitute significant macroeconomic shocks since, for example, the American Jobs Creation Act reduced tax to multinationals from 35% to 5.25% and repealed the export tax incentive.

In the application Google Trends, we start by inserting the full name of tax reform and all other combinations from Google Insights for the search to check which keyword has the most prominent search intensity. This process has been used by Markellos and Vlastakis (2012). We examine the following tax news:

Table 1 Google Trends´searches

YEAR	*POSITIVE NEWS*		*KEYWORD*
2004	1	American Jobs Creation Act	"American Jobs Creation Act"
2009	2	American Recovery and Reinvestment Act	"American recovery and reinvestment act of 2009"
YEAR	*NEGATIVE NEWS*		*KEYWORD*
2012	3	American Taxpayer Relief Act	"American taxpayer relief"

Notes: Application Google Trends provides search query data for specific themes. In other words, the data presents the highly searched issue, including all the keywords related to that theme. Thus, we apply the tool for the positive news 'American Recovery and Reinvestment Act of 2009'. A specific keyword generates the other tax news, see column KEYWORD. The location for all keywords was set up to "worldwide."

We used ProQuest to account for news articles focusing on the different Acts. Consistent with previous literature (Barber and Odean, 2008; Yuan, 2008; Da et al., 2011), we focused on the number of articles containing specific keywords from ten of the most influential US journals[2]. It is important to note that while Google Trends identifies when people are looking for information, ProQuest can only provide information on the number of articles for that day.

[2] USA Today, Miami Herald, Chicago Tribune, The Washington Post, Los Angeles Times, Boston Globe, San Francisco Chronicle, The Dallas Morning News, New York Times, The Wall Street Journal.

Table 2 News Coverage for Acts

YEAR	*POSITIVE NEWS*		*KEYWORD*
2004	1	American Jobs Creation Act	"American Jobs Creation Act"
2009	2	American Recovery and Reinvestment Act	"American recovery and reinvestment act of 2009"
YEAR	*NEGATIVE NEWS*		*KEYWORD*
2012	*3*	*American Taxpayer Relief Act*	*"American taxpayer relief"*

Notes: We put constraints on the number of newspapers (see selected newspapers in notes below). We aim to capture those articles undoubtedly related to specific tax news. Thus, we strictly use the name of the Act (see Table 2).

Moreover, we calculate variables for positive and negative acts. While the negative acts consisted of the American Taxpayer Relief Act, we specify variables for positive Acts. Variable "News coverage for positive Acts" is defined as the sum of the articles about the American Jobs Creation Act and American Recovery and Reinvestment Act. Variable "Search intensity for positive acts" is generated from the application Google Trends. We download search intensity for the keyword "American Recovery and Reinvestment Act + American Jobs Creation Act." The results include search terms for both acts because we used "+" which means "or."

In the robustness check, we define the effect of Google searches multiplied by dividend yield to show the difference between the companies that pay dividends and others. The popularity of the keywords for both Google Trends and ProQuest data is available in Figure 1.

We found that both the American Recovery and Reinvestment Act and the American Jobs Creation Act have similar trends for both ProQuest and Google searches. However, the number of articles tended to persist for longer than individual attention for Google searches. Such activity can lead to publishing stale news, which can then impact the market (Tetlock, 2011). Conversely, we found that the popularity in ProQuest and Google searches for the American Taxpayer Relief Act is significantly different, with several spikes in the number of articles before the increase in Google searches. This may be driven by the fact that this Act has increased taxes, compared to the previous two acts, so investor attention might be lower, owing to the Ostrich effect (Galai and Sade, 2006).

4. Results

4.1 Effects of Google Searches on Prices and Volatility

First, we analyzed the impact of investor attention on stock prices. We report the results of this analysis in Table A2.

When investors actively search for information, they search for confirmation of their interpretation of the information. Moreover, increased attention can signal how much of the information will be incorporated into prices. Per our second hypothesis, the effect on price can also depend on the character of the news.

Coefficients for tax reforms in 2004 and 2012 estimates for search intensity align with our hypothesis. The 2004 Act has led to either share buybacks and dividends or reduced capital gains taxes. As a result, the attention to this Act has

positively affected stock returns. Moreover, we can see that the significance is different between the two Acts, with the search activity impact for 2004 than for 2009. A possible explanation could concern how explicit those acts are for investor interpretation. For example, the Act of 2004 directly led to cash repatriation, which generally led to more share buybacks and dividends; as a result, the impact on the market has been much more quantifiable. On the other hand, the Act of 2009 was unclear since some states had more significant losses with federal assistance, and the effect on consumer spending was ambiguous. Moreover, the Act of 2009 was a response to the economic crisis, which could have dampened the impact on the market.

Conversely, the Act of 2012 increased capital gains and dividend tax rates for those who earned more than $400,000 from 15% to 20%. As a result, investors in that category might have exited the market and instead invested in municipal bonds, which can provide overall greater returns.

Overall, our results are consistent with the hypothesis that positive news has a more significant impact on volatility and prices than negative news. However, we also needed to analyze these effects on stock volatility, which we report in Table A3.

Any information arrives with uncertainty; thus, investors gather the information to confirm their interpretation. In such a context, volatility increases when it is unclear whether the information is positive or negative. The findings confirm the first hypothesis that attention to tax reforms increases return volatility. For example, the Act of 2009 had an increasing effect on volatility. Similarly, the result shown in Table A3 is driven by the fact that there is much higher uncertainty about the potential impact. The impact of the Act has varied from state to state. Conversely, the Act of 2004 resulted in the repatriation of cash, which is more quantifiable, so there is no uncertainty about the impact. This can be seen in Table A3, where the search intensity for the Act of 2004 has no effect on stock volatility.

While a higher number of newspaper articles might lead to the Act being better understood, many reports/papers/articles will report the same information, leading to stale news, as defined by Tetlock (2011). As a result, investors searching for information might react to stale news or overreact, increasing volatility.

Interestingly, the searches for the Act of 2012 did not have an impact on return volatility. While this Act has led to an increase in capital gains tax, this has only affected investors who earn more than $400,000 – a minority of investors. As such, the impact of this Act might have been limited, so it didn't increase market uncertainty.

4.2 News Coverage and Investor Attention

In the previous section, we analyse search intensity and its impact on stock prices and volatility. However, it is important to account for newspaper coverage. We report the results of our analysis of the effect on stock prices in Table A4.

In Table A4, we split the Acts depending on whether they lead to positive effects, such as the Acts of 2004 and 2009, or an increase in taxes, such as the Act of 2012. We see that the positive news and searches are robust and consistent, while the impact of an adverse tax change for the Act of 2012 is less clear across the models. We further see that there is a direct relationship between the type of attention or news

and the direction of returns, with positive attention leading to a positive effect on prices.

However, we also find that there is no effect of negative news or searches on stock prices. This is in line with the hypothesis that positive news has a more significant impact on stock prices. Since there is only a limited amount of information that investors can process (Simon, 1971), they need to select which news they will process and which they will ignore. As such, investors can ignore a significant amount of information (Akerlof, 1991). This has been coined the ostrich effect, as defined by Galai and Sade (2006). This effect describes a behavior by investors wherein they pretend that risky situations do not exist. In the context of our paper, this can mean that investors prefer not to search for information on negative news. The number of articles does not influence investors if they do not pay attention to many of them.

We further analyze the impact of news and attention on stock volatility. The results of the analysis are available in Table A5.

First, we see that positive news has no impact on volatility. This suggests that the more articles published on the topic, the more understood the Act is, which reduces uncertainty and volatility. Second, it is important to note that the Act of 2012, which is the only Act in our sample that led to an increase in taxes, has affected only a small number of individuals.

5. Robustness Check

Dividends are one form of income for investors. Minority shareholders demand a dividend as a sort of insurance. For example, dividend-paying firms outperform non-paying firms in times of recession (Williams and Miller, 2013). We highlight the effect of Google searches for companies that pay dividends by multiplying search intensity by dividend yields. The results show differences among these two groups.

The selected reforms mainly relate to dividend tax changes or affect dividend payment. For example, the Act 2004 directly led to cash repatriation, which generally led to more share buybacks and dividends. In Table A6, the searches of Act 2004 positively impact stock returns compared to searches for non-paying companies (see variables *Search intensity of Act 2004* and *Search intensity of Act 2004 dividend*).

In 2012, many firms paid special dividends in response to expected tax increases. Hanlon and Hoopes (2014) provide evidence that four times as many firms paid a special dividend relative to other months. Interestingly, the searches for the Act of 2012 increase stock returns for companies that pay dividends. Moreover, it has an opposite effect on non-paying companies. The companies tend to act with the intent to maximize shareholder wealth. These findings are in line with Table A7, where the volatility decreases in search intensity of Act 2012 (and 2004) for companies that pay dividends and increase for non-paying companies. Again, the increased tax rate was focused on minority investors. Thus, the general impact of search intensity for Act 2012 on stock returns is negative or insignificant (see Table A2, columns 3 and 4).

6. Conclusion

While previous studies have focused on the effect of investor attention on single stocks, we extend the previous studies by analyzing the impact on macroeconomic shocks. In this paper, we focus on the attention of investors on three different US acts that have had a significant effect on the stock market, namely the American Jobs Creation Act of 2004, the American Recovery and Reinvestment Act of 2009, and the American Taxpayer Relief Act of 2012.

We find that attention significantly impacts both stock return and return volatility. The Act of 2004 has had a net positive effect on investors, and the attention has had a positive effect on stock prices, while the Act of 2012, which increased taxes, has had a negative effect on stock prices. The effect on volatility is less straightforward, as attention increases volatility for the Act of 2009 and reveals no volatility for the Acts of 2004 and 2012, as volatility depends on the uncertainty of the underlying Act. While the Act of 2004 has had a quantifiable effect, the effect of the Act of 2009 has been much more challenging to measure and has varied from state to state.

We further analyze the difference in response between newspaper articles and investor attention. We find that investors tend not to search for negative news, a behavior termed the ostrich effect (Galai and Sade, 2006). Moreover, if investors do not pay attention to the news, the number of published articles can have little to no effect. Overall, our paper shows how investor attention affects how information is reflected in prices. Moreover, the dynamics between the companies that pay dividends, and the others offer interesting avenues for future research.

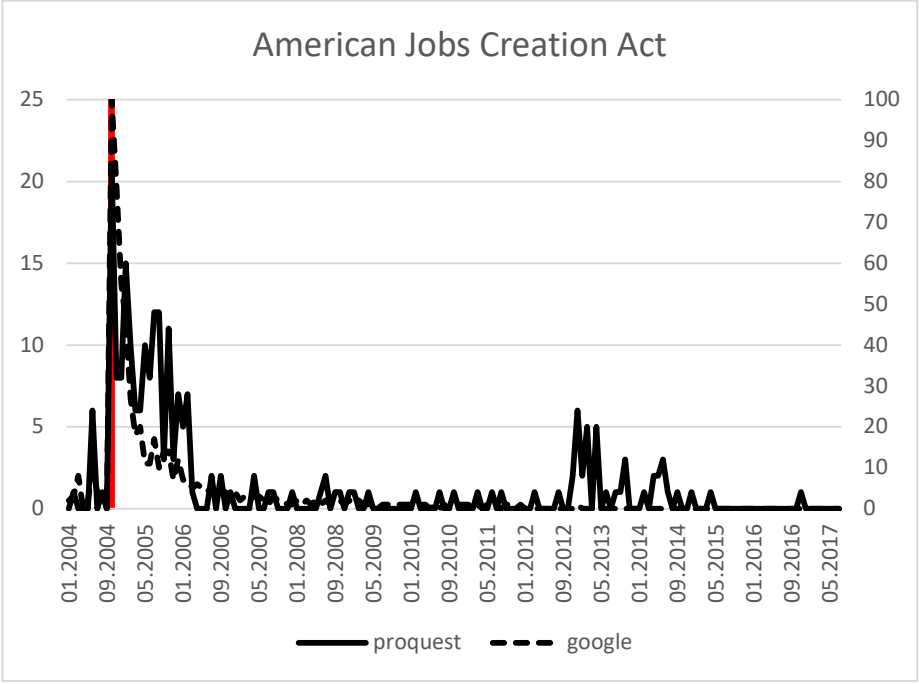
APPENDIX

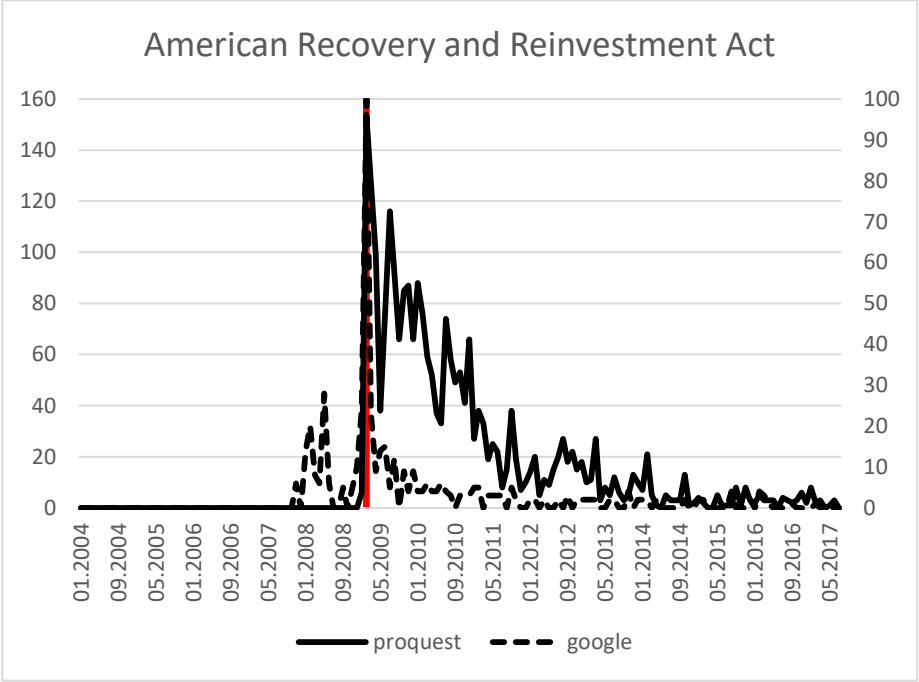
Table A1 Variable Descriptions

Variable	*Description*
Dependent variables	
Stock returns	Defined as the closed-end price for each month, as prices logarithmic differences. Data source: Morningstar
Returns volatility	Defined as the standard deviation of daily returns for the given calendar month. Data source: Morningstar
Independent variables	
Excess market return	Defined as the difference between the market return and risk-free rate. Data source: Yahoo Finance
Cash flow	Defined as a net cash inflow from operating activities plus returns on investment - Servicing of financing – taxation/weighted average no. shares in issue. Data source: Morningstar
Firm size	Defined as the firm value of equity. Data source: Morningstar
Search intensity for Act	Defined as the number of searches for the given Act. Data source: Google Trends
News coverage	Defined as the number of news articles published in the ten most influential US journals. Data source: ProQuest Central

Figure A1

The different measures of investor informativeness. The solid line, with an axis on the left-hand side, corresponds to the number of articles published focusing on the given Act. The number of articles was obtained through ProQuest. The dotted line, with an axis on the right-hand side, corresponds to the searches of the Act on Google, obtained through Google Trends. The red vertical line denotes the month the bill was passed.




American Recovery and Reinvestment Act
160
140
120
100
80
60
40
20
0
100
90
80
70
60
50
40
30
20
10
0
01.2004
09.2004
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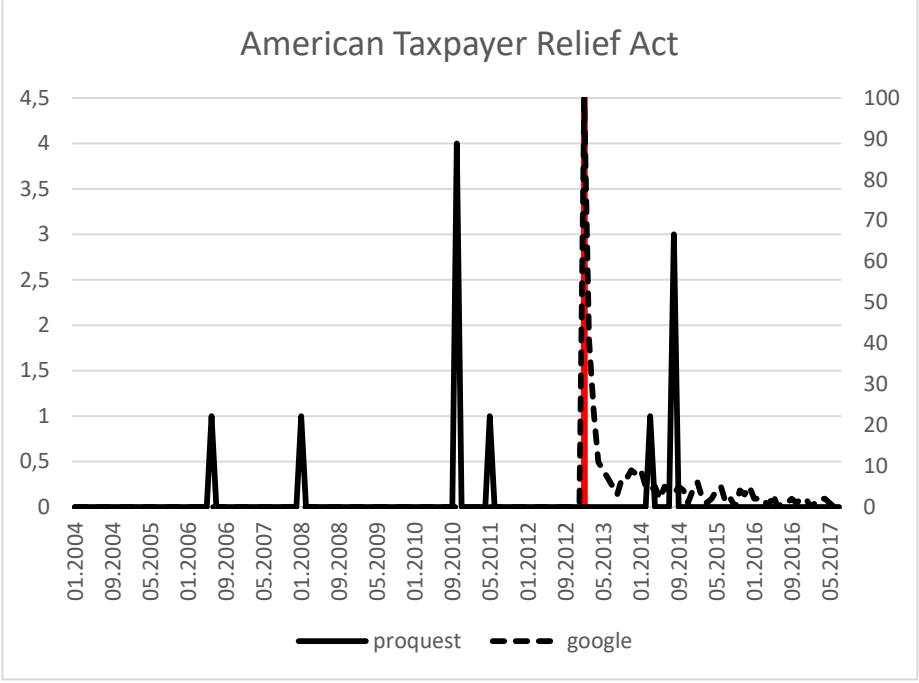
05.2017
proquest
google


American Taxpayer Relief Act
4,5
4
3,5
3
2,5
2
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1
0,5
0
100
90
80
70
60
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40
30
20
10
0
01.2004
09.2004
05.2005
01.2006
09.2006
05.2007
01.2008
09.2008
05.2009
01.2010
09.2010
05.2011
01.2012
09.2012
05.2013
01.2014
09.2014
05.2015
01.2016
09.2016
05.2017
proquest
google

Table A2 Effect of Google Searches on Stock Returns

This table shows the effect of Google searches, obtained through Google Trends, on stock returns. For each of the tax Acts, we collected information on investor attention, measured as the number of searches for the given Act, following Da et al. (2011). The stock returns are defined using monthly close-end prices as their logarithmic differences. Each model contains a set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm's value of equity), and the cash flow (scaled by the company size to account for profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	*(2)*	*(3)*	*(4)*
Excess market return	1.196***	1.171***	1.184***	1.197***
	(0.046)	(0.045)	(0.047)	(0.045)
Cash flow	-0.206***	-0.294***	-0.251***	-0.232***
	(0.118)	(0.118)	(0.119)	(0.116)
Firm size	0.180	0.051	0.133	0.256
	(0.302)	(0.271)	(0.302)	(0.299)
Search intensity for Act 2004	0.157***			0.149***
	(0.046)			(0.054)
Search intensity for Act 2009		0.056		0.063
		(0.046)		(0.046)
Search intensity for Act 2012			-0.100**	-0.021
			(0.048)	(0.055)
Constant	-1.764	-0.221	-1.705	-2.721
	(4.144)	(4.101)	(4.187)	(4.109)
Firm controls	YES	YES	YES	YES
Year fixed effects	NO	NO	NO	NO
Industry fixed effects	YES	YES	YES	YES
R2	0.166	0.165	0.166	0.166
R2 adj	0.166	0.165	0.166	0.166
N	404 800	404 800	404 800	404 800

Table A3 Effect of Google Searches on Returns Volatility

This table shows the effect of Google searches on returns volatility, obtained through Google Trends. For each of the tax Acts, we collect information on investor attention, measured as the number of searches for the given Act, following Da et al. (2011). The returns volatility is defined as the standard deviation of daily returns for the given calendar month. Each model contains a set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm's value of equity), and the cash flow (scaled by company size to account for profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	*(2)*	*(3)*	*(4)*
Lagged volatility	0.419***	0.402***	0.416***	0.401***
	(0.001)	(0.001)	(0.001)	(0.001)
Excess market return	-0.056**	-0.056**	-0.053**	-0.056**
	(0.001)	(0.001)	(0.001)	(0.001)
Cash flow	0.105***	0.091***	0.110***	0.090***
	(0.009)	(0.009)	(0.009)	(0.009)
Firm size	-0.519***	-0.486***	-0.497***	-0.481***
	(0.021)	(0.021)	(0.021)	(0.021)
Search intensity for Act 2004	-0.007			-0.013
	(0.001)			(0.001)
Search intensity for Act 2009		0.045***		0.043***
		(0.001)		(0.001)
Search intensity for Act 2012			-0.012	-0.017
			(0.002)	(0.002)
Constant	8.321***	8.026***	8.023***	7.881***
	(0.283)	(0.283)	(0.283)	(0.283)
Firm controls	YES	YES	YES	YES
Year fixed effects	NO	NO	NO	NO
Industry fixed effects	YES	YES	YES	YES
R2	0.285	0.291	0.285	0.292
R2 adj	0.285	0.291	0.285	0.292
N	404 076	404 076	404 076	404 076

Table A4 Effect of News Coverage and Investor Attention on Stock Returns

This table extends the study of news coverage and shows its effect on stock returns. We employ tax news as the number of news articles published in the ten most influential US journals each month, per Drake et al. (2012). Finally, we differentiate between positive and negative tax reforms. We believe that tax reforms reducing tax rates are associated with a positive influence on investors. Thus, the variables *Positive News* and *Positive Searches* include Acts from 2004 and 2009. The variables Negative News and Negative Searches represent the Act from 2012. The stock returns are defined as the close-end price for each month, as prices logarithmic differences. Each model contains a set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm's value of equity), and the cash flow (scaled by the company size to account for profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	*(2)*	*(3)*
Excess market return	1.158***	1.191***	1.176***
	(0.043)	(0.044)	(0.044)
Cash flow	-0.256**	-0.237**	-0.218*
	(0.115)	(0.118)	(0.113)
Firm size	-0.010	0.245	0.131
	(0.300)	(0.304)	(0.298)
News coverage for positive Acts	0.295**		0.186
	(0.130)		(0.140)
News coverage for negative Act	-0.058		-0.027
	(0.046)		(0.066)
Search intensity for positive Acts		0.151***	0.142**
		(0.056)	(0.061)
Search intensity for negative Act		-0.049	-0.014
		(0.047)	(0.053)
Constant	-0.483	-3.068	-2.007
	(4.220)	(4.193)	(4.157)
Firm controls	YES	YES	YES
Year fixed effects	NO	NO	NO
Industry fixed effects	YES	YES	YES
R2	0.193	0.166	0.175
R2 adj	0.193	0.166	0.175
N	340 495	404 800	340 495

Table A5 Effect of News Coverage and Investor Attention on Returns Volatility

This table extends the study on news coverage and shows its effect on returns volatility. We employ tax news as the number of news articles published in the ten most influential US journals in each month, per Drake et al. (2012). Finally, we differentiate between positive and negative tax reforms. We believe that tax reforms reducing tax rates are associated with a positive influence on investors. Thus, the variables *Positive News* and *Positive Searches* include the Acts from 2004 and 2009. The variables Negative News and Negative Searches represent the Act from 2012. The returns volatility is defined as the standard deviation of daily returns for the given calendar month. Each model contains a set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm value of equity), and the cash flow (scaled by the company size to account for profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	*(2)*	*(3)*
Lagged volatility	0.395***	0.415***	0.392***
	(0.043)	(0.045)	(0.042)
Excess market return	-0.051**	-0.053*	-0.048*
	(0.026)	(0.027)	(0.026)
Cash flow	0.109***	0.112***	0.115***
	(0.023)	(0.022)	(0.024)
Firm size	-0.557***	-0.490***	-0.535***
	(0.072)	(0.059)	(0.065)
News coverage for positive Acts	-0.001		-0.019
	(0.045)		(0.050)
News coverage for negative Act	-0.043***		-0.040***
	(0.011)		(0.012)
Search intensity for positive Acts		0.012	0.010
		(0.016)	(0.018)
Search intensity for negative Act		-0.008	-0.015
		(0.011)	(0.012)
Constant	8.757***	7.931***	8.488***
	(0.960)	(0.786)	(0.874)
Firm controls	YES	YES	YES
Year fixed effects	NO	NO	NO
Industry fixed effects	YES	YES	YES
R2	0.234	0.223	0.234
R2 adj	0.234	0.223	0.234
N	339 895	404 076	339 895

Table A6 Effect of Google Searches on Stock Returns – Dividend and Non-Dividend Comparison

This table shows the effect of Google searches, obtained through Google Trends, on stock returns. For each of the tax Acts, we collected information on investor attention, measured as the number of searches for the given Act, following Da et al. (2011). We define the effect of Google searches multiplied by dividend yield to show the difference between the companies that pay dividends and others. The stock returns are defined using monthly close-end prices as their logarithmic differences. Each model contains a set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm value of equity), and the cash flow (scaled by the company size to account for profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	*(2)*	*(3)*	*(4)*
Excess market return	1.109***	1.086***	1.094***	1.099***
	(0.040)	(0.037)	(0.038)	(0.036)
Cash flow	-0.171	-0.219	0.003	0.020
	(0.142)	(0.144)	(0.115)	(0.115)
Firm size	0.153	0.143	-0.077	-0.226
	(0.374)	(0.345)	(0.315)	(0.291)
Search intensity of Act 2004	-0.048			-0.129**
	(0.058)			(0.053)
Search intensity of Act 2004 dividend	0.067***			0.072***
	(0.015)			(0.013)
Search intensity of Act 2009		-0.039		-0.053
		(0.086)		(0.046)
Search intensity of Act 2009 dividend		0.022		0.035***
		(0.028)		(0.012)
Search intensity of Act 2012			-0.266***	-0.275***
			(0.056)	(0.061)
Search intensity of Act 2012 dividend			0.057***	0.077***
			(0.014)	(0.014)
Constant	-1.627	-1.833	0.877	3.440
	(5.235)	(4.866)	(4.506)	(4.144)
Firm controls	YES	YES	YES	YES
Year fixed effects	NO	NO	NO	NO
Industry fixed effects	YES	YES	YES	YES
R2	0.209	0.204	0.210	0.219
R2 adj	0.209	0.204	0.210	0.219
N	235 838	235 838	235 838	235 838

Table A7 Effect of Google Searches on Volatility – Dividend and Non-Dividend Comparison

This table shows the effect of Google searches on returns volatility, obtained through Google Trends. For each of the tax Acts, we collect information on investor attention, measured as the number of searches for the given Act, following Da et al. (2011). We define the effect of Google searches multiplied by dividend yield to show the difference between the companies that pay dividends and others. The returns volatility is defined as the standard deviation of daily returns for the given calendar month. Each model contains set of firm controls and fixed effects, respectively. Control variables include lagged volatility with a month lag (Nonejad, 2017), the market return minus the risk-free rate, the firm size (measured as the firm value of equity), and the cash flow (scaled by firm size to account for firm profitability), following Christiansen (2012). We include industry fixed effects. The regression coefficients are reported. *, **, and *** denote significance at the 10, 5, and 1% levels, respectively. Driscoll-Kraay standard errors are reported in parentheses.

	(1)	(2)	(3)	(4)
Lagged volatility	0.559***	0.540***	0.543***	0.523***
	(0.045)	(0.044)	(0.042)	(0.043)
Excess market return	-0.055**	-0.054**	-0.052**	-0.054**
	(0.025)	(0.024)	(0.024)	(0.025)
Cash flow	0.094***	0.089***	0.081***	0.069***
	(0.017)	(0.018)	(0.014)	(0.013)
Firm size	-0.400***	-0.367***	-0.350***	-0.333***
	(0.060)	(0.058)	(0.052)	(0.047)
Search intensity of Act 2004	-0.007			-0.000
	(0.013)			(0.016)
Search intensity of Act 2004 dividend	-0.003			-0.005***
	(0.002)			(0.002)
Search intensity of Act 2009		0.031***		0.034***
		(0.010)		(0.010)
Search intensity of Act 2009 dividend		0.001		-0.001
		(0.002)		(0.002)
Search intensity of Act 2012			0.017*	0.001
			(0.010)	(0.013)
Search intensity of Act 2012 dividend			-0.007***	-0.008***
			(0.001)	(0.001)
Constant	6.341***	6.021***	5.703***	5.530***
	(0.851)	(0.836)	(0.741)	(0.673)
Firm controls	YES	YES	YES	YES
Year fixed effects	NO	NO	NO	NO
Industry fixed effects	YES	YES	YES	YES
R2	0.430	0.434	0.434	0.441
R2 adj	0.430	0.434	0.434	0.441
N	235 535	235 535	235 535	235 535

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