THE IMPACT OF ATTENTION TO NEWS ABOUT TAX CHANGES ON THE STOCK MARKET

Jolana Stejskalová[1]

[1]Department of Finance, Faculty of Business and Economics, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic

Abstract

STEJSKALOVÁ JOLANA. 2017. The Impact of Attention to News about Tax Changes on the Stock Market. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis,* 65(6): 2113–2121.

We approach to point out new direction of measurement the attention of the news related to changes in taxes by using the application Google Trends. The objective of the study is to extend literature that investigates the impact of the information's search intensity provided by Google Trends on capital market. We show that increasing attention on tax changes measured by Google search decrease stock prices of the US companies listed on NASDAQ.
Moreover, we focus on abnormal Google searches related to particular shocks. The study investigates the positive relationship between attention to news about tax changes and stock prices in a specific year. The cross-sectional analysis employs data from 2004 and 2005. At that time, President George Bush enacted tax breaks for overseas corporate profits, which had a great impact on search intensity within the period.
Additionally, we differentiate between market capitalisation by using the dummy variables to put on the role changes of probability on selected datasets. The results confirmed higher impact of attention on large cap companies and point out the importance of sentiment analysis at liquid markets.

Keywords: Google trends, corporate tax, sentiment, stock price, search intensity, capitalisation, tax burden

INTRODUCTION

The objective of the paper is to demonstrate that the tax burden influences stock prices not only through changes in tax rate but also through investor attention to news about changes in taxes. There are a few facts which show the relevance of studying the attention of investor in the field of changes in taxes.

Firstly, taxation is a longstanding theme in the corporate finance literature. Taxes have impact on the companies' profits by increasing their costs. Thus there are number of questions about how taxation affects a firm's decision-making and also number of studies investigate for example whether corporate payout has any effect on a firm's investment choices (Becker, Jacob and Jacob, 2013). Some works have expressed the relationship between tax and dividend distribution (Alstadsaeter and Fjaerli, 2009; Alzahrani and Lasfer, 2012; Korkeamaki, Liljeblom and Pasternack, 2010). I look

at the demand side of the issue representing investor attention to changes in taxes.

Secondly, the theory of buyer behaviour posits that a consumer's search for information precedes his or her purchasing decision (Beatty, Smith, 1987). The significant impact on asset prices has been proven by many studies (Hirshleifer, Teoh, 2003; Sims, 2003, and Peng, Xiong, 2006). However, investors have access to huge amount of data according to the rising activity of technologies. Thus one of the main problems of economies is information overload and limited attention (Camerer, 2003). Moreover further studies have shown that non-professional investors tend to overreact to shocks in economics, thus the attention of retail investors appears to be the other variable explaining the volatility of the stock market.

Finally, Google is a leader in searching websites. Building on other works (Barber and Odean, 2008, Da et al 2011) there is group of investors – retail investors - who use more non-professional

information channels for decision-making. More likely, these investors search for all the relevant news in an Internet search. In our empirical work we are able to provide data about investors' attention from the application Google Trends.

My contribution is to shed light on investor attention to news about changes in taxes and its impact on stock prices by using this novel form of measurement. In the age of big data we are able to provide more precise evidence and extend the literature on behavioural finance. There are several studies in the field of investor attention to news about changes in taxes, especially concentrating on the amount of information in newspapers. For example Amromin *et al.* (2006) focused on the hypothesis that a decrease in tax on dividends had an impact on stock prices in 2003. The Senate reduced the maximum tax rate on dividends from 35% to 15%. They substantiated their hypothesis for example by comparing newspaper articles on the topic of stock prices developments published by 15 major American newspapers. The limitation of this approach lies in the measurement of real attention. An article does not guarantee attention unless investors actually read it. For example Huberman and Regev (2001) focus on publication of an article in the New York Times about a new cancer-curing drug, which attracted great public attention and increased the daily return on its stocks by more than 300%, even though the same story had already been published several times earlier in other newspapers. I thus presume that the novel application Google Trends is a more relevant example of a direct measure. It has several advantages. The internet browser is the market leader among search engines in United States. Secondly, if an investor searches for information on the internet, he is undoubtedly paying attention to it.

Nowadays, taxes are a much-discussed topic, especially corporate tax. In the United States the public wants the government to both reduce corporate tax and to focus on loopholes to ensure that American corporations pay as much on foreign profits as they do on profits made in the United States. Thus I have focused on corporate taxes due to relevance and related search intensity and the interest of society. The identification of market reaction to information in the media could be useful for a more efficient tax policy. Our evidence supports the studies of Kahneman (1998) and Smith (1991), which showed that increasing uncertainty leads to a more volatile investment climate. The form of publication and communication of the information represents the important role of financial institutions.

This study also focuses on differences in the processing of media information related to market capitalisation. Dummy variables allow the inclusion of specific conditions. Thus the effects are traced separately for the two groups. The hypothesis is that high capitalisation countries are more sensitive to tax-related information than low capitalisation companies. One of the explanations is that these companies are better known. The study thus presumes the availability of more information for investors. Therefore, the study's findings could also be used to achieve more efficient business valuation due to the different reaction of the companies divided by capitalisation. Our contribution is to point out the importance of separating data by specific conditions that should provide more detailed information about the impact of attention to changes in taxes. There is large body of studies presenting broad evidence that stock returns depend on sector price informativeness, among other things (Durnev *et al.*, 2003; Durnev *et al.*, 2004; Wurgler, 2000). Furthermore, the study's results could support more efficient asset-return predictability. We are in line with Peng and Xiong (2006), who proved that firms with higher investor attention had more pronounced overreaction-driven predictability.

The method extends the literature investigating the impact of investor attention provided by Google searches. Moreover the study provides a new direction in the investigation of the topic of taxes and their impact on the market.

Literature review

There are the several important groups of factors which have an impact on the stock market and these variables can explain the changes in stock prices. The fundamental factors appear to be important variables in the prediction of stock price volatility. It has been shown by Keim and Stambaugh back in 1986 and the others such as Fama and French (1989), Balvers *et al.* (1990), Chen (1991) and Lee (1992) that there is a connection between the fundamental factors (industrial production, dividend yields, etc.) and the stock market. Other studies, for example those conducted by Fama (1990), Schwert (1990) and Barro (1990), reported that several economic variables helped to predict future movements in stock returns in the United States.

Later studies focused on stock market sentiment related to the attitude of investors towards securities. Psychological factors have been invoked by many researchers; Evans and Honkapohja (2001), Evans and Honkapohja (2003), Milani (2014) and Carceles-Poveda and Giannitsarou (2008). According to the topic of the paper, the literature has witnessed many attempts to measure investor attention. The first group of studies employs questionnaires (Otoo, 1999, Charoenrook, 2005). However, there is low potential truthfully and carefully answered questions. For example, investigating concern about job losses may be a sensitive topic for a respondent (Da, Engelberg, Gao, 2014). In such a context, the responses decrease the predictive value of the study (Singer, 2002).

The second group applied proxy variables. The studies focused on catching attention via stocks experiencing high abnormal trading volume, or

stocks with extreme one-day returns (Gervais, Kaniel, and Mingelgrin, 2001, and Hou, Peng, and Xiong, 2008). In addition, Barber and Odean (2008) and Yuan (2008) used news or headlines to prove the relationship with stock prices.

In this paper we have proposed a new direct measure of investor attention by using the search volume index from Google searches. It measures the search intensity by the search volume of keywords. The application has been used in several studies which proved the influence between the searching words expressing the interest and dependent variable. Da et al (2011) have shown that the search volume has the potential to describe investor attention. Subsequently, many studies further confirmed this conclusion (Drake, Roulstone, Thornock, 2012, Joseph, Wintoki, Zhang, 2011, Vlastakis, Markellos, 2012). Most of the studies, which measured investor attention by Google Trends, provide evidence of firm specific information. They collect the Search Volume Index (SVI) for the ticker symbols of firms to capture investor attention. The assumption is that the specific symbol represents attention to financial information and excludes economic agents searching for information related to other purposes (Da et al, 2011; Drake, Roulstone, Thornock, 2011; Joseph, Wintoki, Zhang, 2011).

To sum up, studies focusing on macroeconomic announcements are less able to provide a direct measure of investor attention compared to for example Da *et al.* (2011). This paper supports these measures for macroeconomic information. Our analysis confirms the difficulty of linking search intensity and volatility to the observed topic of information. However tax rates have a significant influence on stock prices as has been proven by number of studies (e.g. Blouin, Raedy, and Shackelford, 2002; Ayers, Lefanowicz, and Robinson, 2003; Dhaliwal, Li, and Trezevant, 2003). In addition, recent studies investigated whether the tax burden has an impact on stock prices (e.g. Günther and Willenborg, 1999). Thus it appears to be the right variable for investigation. I have worked with corporate tax, which was used in several studies (Günther and Willenborg), proving the influence of taxes on corporate costs, with a reduction in tax burden leading to an increase in stock prices. Moreover, Drake, Roulstone and Thornock (2012) claim that an abnormal Google search volume is positively associated with press coverage among other things. There is large body of studies supporting this (Ryan and Taffler (2004), Hirshleifer *et al.*, 2004, Della Vigna and Pollett, 2003, Corwin and Coughenour, 2005). According to the studies, we hypothesise that not only changes in taxes but also the attention of the news to changes in tax policy have an impact on stock prices.

Most of the investigations analysed the relationship between taxes and stock prices. Several authors focused not only on changes in taxes but also on information about the tax burden and its impact on the market. The studies look at the importance of salience for proving the effect of sentiment. One of the experiments shows that commodity taxes that are included in the posted prices have larger effects on demand because consumers see them during shopping (Chetty, Looney and Kroft, 2009). Another study (Finkelstein, 2009) presents evidence of two potential mechanisms by which reduced salience may contribute to increased rates (in this case toll rates). The suggestions are based on findings from a study showing that drivers are substantially less aware of tolls paid electronically. Moreover, Alstadsaeter and Jacob (2013) used informal networks regarding the flow of information. They studied tax evasion due to the ability to process available tax information Our paper makes a contribution to the literature in the field of taxes associated with behavioural finance using the novel measurement of investor attention.

MATERIALS AND METHODS

To provide a detailed analysis of stock prices I employ panel data regressions where $prices_{it}$ represents the average stock price of company i listed on the NASDAQ stock market in year t. First, I use the generally known CAPM model with the additional regressors related to investor attention:

$$prices_{it} = \sum_{m=1}^{M} \beta_m marketindex_{ct}^m + \sum_{g=1}^{G} \beta_g google_{ct}^g + \mu_i + \theta_t + \varepsilon_{it} \quad (1)$$

where the variable *market index* represents the Nasdaq Composite Index m. The last set of variables includes Google Trends' search index in the country c g (total amount of searches in the year t and maximum values of monthly searches during the year t). The country c represents different US states and the US as a federal republic. Finally, I include company fixed effects μ_i, time effects θ_t, and an applied OLS robust estimator to estimate robust standard errors ε_{it}.

Second, I differentiate between the level of market capitalisation:

$$prices_{it} = \beta_m marketindex_{ct}^m + \sum_{g=1}^{G} D_i \beta_g google_{ct}^g + \mu_i + \theta_t + \varepsilon_{it} \quad (2)$$

where Google Trends' search index in the country c is interacted with dummy variable D for a company i. The dummy is determined by the different level of market capitalisation of the company i on the NASDAQ market.

The dataset contains yearly data from the period 2004-2015 and includes 4 788 companies located in the USA (provided by the NASDAQ Stock Market). According to the process of changes in taxes, we used a yearly period, which more precisely characterised the political system of tax policy. Outliers were removed below the 1st and above the 99th percentiles. The data were transformed

using chain indices[1] and logs. All the data are unique because of their manual searching and processing.

To understand the relationship between tax burden and stock prices we worked with a group of keywords and their search intensity using the Google Trends application. This application provides a time series index (from 0 to 100) of the volume of internet search queries for a set of keywords or phrases, generally called the Search Volume Index (SVI). The SVI is an indicator of sentiment of economic agents towards information about changes in tax rates. Recent literature deals with alternatives for the keywords in the case of firm specific information. Da et al (2011) argue that it is preferable to use the stock ticker instead of the company name. However, Markellos and Vlastakis (2012) assume applying full names of companies on the basis of two reasons. Firstly, this component is either random noise or purely deterministic (i.e. seasonality or time trend) and secondly, therefore with appropriate pre-processing of the data it should not influence the variable in a systematic manner. They start by inserting the full name of company and all other combinations from Google Insights for the search to check which keyword has the largest search intensity. We agree with the process of collecting the search intensity of the full names. In the paper, we start by inserting the full title of the change in tax policy and all the variations known to us into Google Insights for the search that provides the strongest evidence about attention. We chose the following group of keywords: corporate tax/corporate taxes, corporate income tax/corporate income taxes, corporate tax rate/corporate tax rates and provide their search intensity as investors' attention to the news about changes in taxes.

There are four variables representing the search activity of investors. The variables "Index *of search intensity by state*" and "*Index of max search intensity by state*" pertain to individual states to provide search intensity more precisely. Firstly, we start collecting investor attention through the selected keywords measured by Google searches for the whole of the USA. The application allowed the downloading of generated search intensity for each state, and thus we collected the data for specific territories. Secondly, the data about search activity was associated with a specific firm according to their office. The variables "*Index of search intensity in the USA*" and "*Index of max search intensity in the USA*" are for the whole of the USA. The advantage of the data should be the robustness of the dataset. The evidence about search intensity in each state includes missing values due to the low attention. Two of the variables are made up only of maximum values of the search intensity to present the shocks in economics. Firstly, we generated the search intensity within the period 2004 to 2015 to collect the highest search indexes in particular years.

RESULTS

Tab. I contains the basic output data used to study the relationship between the index of stock prices and variables representing investor attention. The data reveal a positive correlation between the index of stock prices and the market index,

I: *Impact of the information about tax burden on the stock market 2004-2015[1]*

VARIABLES	(1)	(2)	(3)	(4)
Market index (ln)	0.332***	0.260***	0.607***	0.607***
	(0.041)	(0.051)	(0.017)	(0.017)
Index of search intensity by state (ln)	–0.023			
	(0.016)			
Index of max. search intensity by state (ln)		–0.133***		
		(0.037)		
Constant	0.255***	0.321***	0.002	0.002
	(0.032)	(0.043)	(0.007)	(0.007)
Year - specific effects	yes	yes	yes	yes
Observations	27,358	27,358	39,133	39,133
R-squared	0.109	0.111	0.099	0.099
Number of id	2,704	2,704	3,390	3,390

Robust standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1
1 The results of models (3) and (4) were excluded due to multicollinearity.

---

1   The chain indices are composed for each variable. For example there is chain index for

stock prices: $i\_prices_{it} = \dfrac{prices_{it}}{mean(prices2009)}$, where prices 2009 represents the default data and is composed of the mean value of stock prices in the year 2009.

II: *Impact of information about the tax burden on the stock market in 2004*

VARIABLES	(1)	(2)	(3)	(4)
Y2004	0.041***	–0.001	0.045*	0.020
	(0.014)	(0.013)	(0.027)	(0.029)
Market index (ln)	0.461***	0.480***	0.486***	0.492***
	(0.021)	(0.021)	(0.023)	(0.023)
Index of search intensity in the USA (ln)	–0.172***			
	(0.019)			
Index of max. search intensity In the USA (ln)		0.041**		
		(0.017)		
Index of search intensity by state (ln)			–0.018	
			(0.015)	
Index of max. search intensity by state (ln)				0.043*
				(0.026)
Constant	0.207***	0.198***	0.179***	0.174***
	(0.008)	(0.008)	(0.009)	(0.009)
Observations	39,133	39,133	27,358	27,358
R-squared	0.065	0.064	0.073	0.073
Number of id	3,390	3,390	2,704	2,704

Robust standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

III: *Impact of information about the tax burden on the stock market in 2005*

VARIABLES	(1)	(2)	(3)	(4)
Y2005	0.143***	0.142***	0.102***	0.101***
	(0.019)	(0.019)	(0.010)	(0.009)
Market index (ln)	0.499***	0.500***	0.482***	0.496***
	(0.023)	(0.022)	(0.020)	(0.020)
Index of search intensity by state (ln)	–0.013			
	(0.016)			
Index of max. search intensity by state (ln)		0.005		
		(0.025)		
Index of search intensity in the USA (ln)			–0.100***	
			(0.023)	
Index of max. search intensity by USA (ln)				0.011
				(0.024)
Constant	0.168***	0.166***	0.192***	0.184***
	(0.009)	(0.009)	(0.008)	(0.007)
Observations	27,358	27,358	39,133	39,133
R-squared	0.076	0.076	0.067	0.066
Number of id	2,704	2,704	3,390	3,390

Robust standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

meaning that an increase in the market index is accompanied by an increase in stock prices. The results were found to be significant at the 1% significance level.

A negative correlation was found between the index of stock prices and "*Index of max. search intensity by state*" with a 1% significance level. With respect to the independent variables representing investor attention to changes in taxes, an increase in attention measured by clicking on the particular keyword on the Google website browser decreases stock prices, regardless of the nature of the information. A significant explanatory variable reflects the limits of using the Google Trends application for the study of the behavioural response of economic agents. The above results follow from the character of the data. The category only includes search frequency peaks where

IV: *Impact of the tax burden on the stock market (with capitalisation division) 2004-2015*

VARIABLES	(1)	(2)	(3)	(4)
Market index with high capitalisation (ln)	0.791***	0.726***	0.815***	0.791***
	(0.043)	(0.041)	(0.038)	(0.037)
Index of search intensity by state with low capitalisation (ln)	−0.026			
	(0.019)			
Index of search intensity by state with high capitalisation (ln)	−0.024			
	(0.024)			
Index of max. search intensity by state with low capitalisation (ln)		−0.077**		
		(0.039)		
Index of max. search intensity by state with high capitalisation (ln)		−0.324***		
		(0.041)		
Index of search intensity for the USA with high capitalisation (ln)			−0.295***	
			(0.048)	
Index of max. search intensity for the USA with high capitalisation (ln)				−0.440***
				(0.051)
Constant	0.371***	0.411***	0.248***	0.251***
	(0.021)	(0.027)	(0.015)	(0.015)
Observations	27,358	27,358	39,133	39,133
R-squared	0.136	0.138	0.127	0.127
Number of id	2,704	2,704	3,390	3,390

Robust standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

the search intensity was greatest. We are in line with Ryan and Taffler (2004), who focused only on events that produce a large amount of information. According to our evidence, investor attention to tax changes has an impact on stock prices at the time of the highest searching for keywords (corporate tax/corporate taxes, corporate income tax/corporate income taxes, corporate tax rate/corporate tax rates). In addition, Drake, Roulstone and Thornock (2012) prove that an abnormal Google search volume is positively associated with press coverage among other things.

A closer look at the individual shocks reflected by an increase in search intensity (or in the frequency of keyword appearances) supports the evidence of the significant variable from Tab. I. The above is clear from Tab. II and Tab. III. These shocks are characterised by the maximum search intensity of the economic agents over a selected time interval. The activity is represented by the variables *Index of max. search intensity for the USA* and *Index of max. search intensity by state*.

These variables can be related to the economic policy of George Bush, who enacted tax breaks for overseas corporate profits. The idea was to cut taxes on profits returned to the US and thus to induce multinational corporations to transfer their profits "back home". It was supposed to boost the economy through increasing domestic employment, research and development. Congress prohibited the use of overseas profits for repurchasing the companies' own stock and paying higher dividends to their shareholders. The tax break made it possible for

the companies to pay a tax rate of 5.25%, instead of the normal 35% corporate tax rate.

In spite of the prohibition, it resulted in money returning to shareholders in the form of increased dividends (Dharmapala, Foley, Forbes, 2009). This implies a positive correlation between the above-mentioned economic shocks as measured by investor attention, and stock prices. An increase in the *Index of max search intensity for the USA* was accompanied by a 0.041% increase in the index of stock prices. It can be concluded from the above that the tax policy of George Bush had a positive influence on the stock market.

The positive impact of information concerning the tax break is obvious in 2005, as well (see the *max search intensity* variable in Tab. III).

Tab. IV investigates the possible difference in the investor attention depending on the share of the company in the stock market. According to the assumption the data confirms the negative relationship between the attention to changes in taxes and stock prices. The division by capitalisation enabled the study of differences in investor attention, as reflected by the decrease in the index of stock prices. High capitalisation companies were found to be more sensitive than low capitalisation companies, with the results being statistically significant at a 1% significance level. The evidence is represented by "*Index of max. search intensity by state*" (further divided by capitalisation), with respect to findings of abnormal Google searches (see Tab. I) showing the impact of shocks in economics. The other significant variables "*Index of search*

intensity for the USA with high capitalisation" and "*Index of max. search intensity for the USA with high capitalisation*" cannot be compared comparison according to the character of their data.

In addition, the companies with high capitalisation are more likely to be known by non-professional investors who tend to react more sensitively to economic shocks. On the other hand, companies with low capitalisation and less public visibility tend to attract investors well-acquainted with a given company and those regularly searching for new information and studying profit-and-loss statements. These arguments are in line with Peng, Xiong (2006) who claim that more firm-specific information processed leaves public signal less valuable in predicting firms' future returns. In a

financial crisis the stability of smaller companies is more volatile than that of high capitalisation companies; therefore, these companies need investors with clear strategies and thorough knowledge, who do not overreact to information about the tax burden. Another explanation is the greater liquidity of high capitalisation companies, which means that they can better incorporate information into stock prices.

The above explains why a 1% increase in the *index of search intensity by state* caused a decrease of as much as 0.324% in the index of stock prices (as reflected by the index of max. search activity) of high capitalisation companies, but at the same time caused a decrease of only 0.077% in relation to low capitalisation companies (see Tab. IV).

CONCLUSION

Investor attention to changes in taxes is generally negative, regardless of the nature of the information, thus an increase in investor awareness decreases the values of stock prices. However, the effect appears only with abnormal Google searches (see the significant variable in Tab. I and Tab. IV). The relationship can be positive related to a specific shock representing great search intensity in a given year. This is the case with George Bush's policy in 2004. It had a positive impact on stock prices leading to their increasing. In 2005 the effect was weaker but significant despite the fact that news concerning the tax break was accompanied by negative comments from its opponents, who warned that it would deepen the deficit, disadvantage domestic firms and push even more corporate dollars offshore (Dharmapala, Fritz, Forbes, 2009).

The study investigates the limits of using data from Google Trends for the study of investor attention in terms of information about changes in taxes. Only the variable representing maximum search intensity was found to be significant, which implies that the application is useful for identification of the impact of attention only in economic shocks.

The results confirm a negative correlation between the variables of search intensity divided by capitalisation and between the index of stock prices, and thus it shows that companies with high capitalisation displaying greater volatility and generally increasing attention measured by Google searches causes a reduction in stock prices. These companies are more likely to attract non-professional investors overreacting to changes in economics and another factor could be the higher liquidity of stock which means that they are better at absorbing information from the market.

The main contribution is to obtain investor attention to changes in taxes via Google Trends. In comparison with other studies investigating the impact of taxes (or attention to taxes) on markets, this application provides demand of investor's attention more accurately. For example, in studies focusing on the number of news reports (Alstadsaeter and Jacob (2013); Amromin et al, 2006; Chetty, Looney and Kroft, 2009; Ederington and Lee, 1993; Mitchel and Mulherin, 1994) there the individuals don't have to buy the newspapers by reason of interest in the tax issues. In the case of application there is the interest of investor directly captured by active searching for keywords on the subject.

REFERENCES

AMROMIN, G., HARRISON, P. and SHARPE, S. 2006. *How did the 2003 dividend tax cut affect stock prices?* WP 2006–17. Chicago: Federal Reserve Bank of Chicago

ALSTADSÆTER, A. and FJÆRLI, E. 2009. Neutral taxation of shareholder income? Corporate responses to an announced dividend tax. *International Tax and Public Finance*, 16(4): 571–604.

ALSTADSAETER, A. and JACOB, M. 2013. *The effect of awareness and incentives on tax evasion.* CESifo Working Paper No. 4369. Munich: CESifo Group.

AYERS, B., LEFANOWICZ, C. and ROBINSON, J. 2003. Shareholder taxes in acquisition premiums: The effect of capital gains taxation. *The Journal of Finance*, 58: 2785–2803.

Alzahrani, Mohammed, & Lasfer, Meziane, 2012. Investor protection, taxation, and dividends. *Journal of Corporate Finance*,18(4), 745–762.

Balvers R. J., Cosimano T. F., McDonald B., 1990. Predicting stock returns in an efficient market. *The Journal of Finance* 45(4), 1109–1128.

BARBER, B. M. and ODEAN, T. 2008. All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. *Review of Financial Studies*, 21(2): 785–818.

BARRO, R. J. 1990. The stock market and investments. *Review Financial Studies* 3(1), 151–131.

BEATTY, S. E. and SMITH, S. M. 1987. External search effort: an investigation across several product categories. *Journal of Consumer Research*, 14(1), 83–95.

BECKER, B. JACOB, M. and JACOB, M. 2013. Payout taxes and the allocation of investment. *Journal of Financial Economics*, 107(1), 1–24.

BIJL, L. KRINGHAUG, G. and MOLNÁR, P. 2016. Google searches and stock returns. *International Review of Financial Analysis*, 45: 150–156.

BLOUIN, J. L., RAEDY, J. S. and SHACKELFORD, D. A. 2002. Equity price pressure from the 1998 reduction in the capital gains holding period. *Journal of the American Taxation Association*, 24(s1): 70–93.

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM. *Historical Data*. [Online]. Available at: http://www.federalreserve.gov/releases/h15/data.htm [Accessed: 2016, February 3].

CARCELES-POVEDA, E. and GIANNITSAROU, Ch. 2008. Asset pricing with adaptive learning. *Review of Economic Dynamics*, 11(3): 629–651

CAMERER, C. F. 2003. The behavioral challenge to economics: understanding normal people. In: *How humans behave: Implications for economics and policy*. Federal Reserve of Boston 48th Conference, June 8.–10., 2003.

CHAROENROOK, A. 2005. *Does sentiment matter?* Unpublished working paper. Vanderbilt University.

CHEN, N. F. 1991. Financial investment opportunities and the macroeconomy. *The Journal of Finance*, 46(2): 529–554.

CHETTY, R., LOONEY, A. and KROFT, K. 2009. Salience and taxation: Theory and evidence. *The American Economic Review*, 99(4): 1145–1177.

CORWIN, S. and COUGHENOUR, J. 2005. *Limited attention and the allocation of effort in securities trading*. Unpublished working paper. University of Notre Dame.

DA, Z., ENGELBERG, J. and GAO, P. 2011. In search of attention. *Journal of Finance*, 66(5): 1461–1499.

DA, Z., ENGELBERG, J. and GAO, P. 2014. *The Sum of All FEARS Investor Sentiment and Asset Prices*. Oxford University Press (on behalf of The Society for Financial Studies).

DELLA VIGNA, S. and POLLETT, J. 2003. *Attention, demographics, and the stock market*. Unpublished working paper. Berkeley and Cambridge: University of California and Harvard University.

DHALIWAL, D., LI, O. Z. and TREZEVANT, R. 2003. Is a dividend tax penalty incorporated into the return on a firm's common stock? *Journal of Accounting and Economics* 35(2): 155–178.

DHARMAPALA, D., FOLEY, F. C. and FOBES, K. J. *Watch What I Do, Not What I Say: the Unintended Consequences of the Homeland Investment Act*. NBER working Paper No. 15023. [Online]. Available at: http://www.nber.org/papers/w15023 [2016, June 21].

DRAKE, M. S., ROULSTONE, D. T. and THORNOCK, J. R. 2012. Investor information demand: evidence from Google searches around earnings announcements, *Journal of Account. Res.*, 50 (4): 1001–1040.

DURNEV, A., MORCK, R., YEUNG, B. and ZAROWIN, P. 2003. Does greater firm-specific return variation mean more or less informed stock pricing? *Journal of Accounting Research* 41(5): 797–836.

DURNEV, A., MORCK, R. and YEUNG, R. 2004. Value-enhancing capital budgeting and firm-specific stock return variation. *Journal of Finance*, 59(1): 65–105.

EDERINGTON, L.H. and LEE, B. H. 1993. How markets process information – news releases and volatility. *The Journal of Finance*, 48(4): 1161–1191.

EVANS G. W. and HONKAPOHJA, S. 2001. Expectations, Economics of. In: *International Encyclopedia of the Social & Behavioral Sciences*. Elsevier, pp. 5060–5067.

EVANS, G. W. and HONKAPOHJA, S. 2003. Expectational stability of stationary sunspot equilibria in a forward-looking linear model. *Journal of Economic Dynamics and Control*, 28(1): 171–181.

FAMA, E. K. and FRENCH, K. R. 1989. Business conditions and expected returns on stocks and bonds. *Journal of Financial Economics*, 25(1): 23–49.

FAMA, E. K. 1990. Stock returns, expected returns, and real activity. *The Journal of Finance*, 45(4): 1089–1108

FINKELSTEIN, A. 2009. E-ZTAX: Tax salience and tax rates. *The Quarterly Journal of Economics*, 124(3): 969–1010.

GERVAIS, S., KANIEL, J. and MINGELGRIN, D. H. 2001. The high-volume return premium. *Journal of Finance*, 56(3): 877–919.

GOOGLE. *Google trends* [Online]. Available at: https://www.google.cz/trends/. [Accessed: 2015, November 19].

GÜNTHER, D. A. and WILLENBORG, M. 1999. Capital gains tax rates and the cost of capital for small business: Evidence from the IPO market. *Journal of Financial Economics*, 53(3): 385–408.

HIRSHLEIFER, D., HOU, K., TEOH, S. H. and ZHANG, Y. 2004. Do investors overvalue firms with bloated balance sheets? *Journal of Accounting and Economics*, 38: 297–331.

HIRSHLEIFER, D. and TEOH, S. H. 2003. Limited attention, information disclosure, and financial reporting, *J. Account. Econ.*, 36(1): 337–386.

HOU, K., PENG, L. and Xiong, W., 2008. A tale of two anomalies: The implications of investor attention for price and earnings momentum. *Working paper, Ohio State Universitys and Princeton University.*

HUBERMAN, G. and REGEV, T. 2001. Contagious speculation and a cure for cancer: a non-event that made stock prices soar. *Journal of Finance*, 56(1): 387–396.

JOSEPH, K., BABAJIDE WINTOKI, M. and ZHANG, Z. 2011. Forecasting abnormal stock returns and trading volume using investor sentiment: evidence from online search. *Int. J. Forecasting*, 27(4): 1116–1127.

KAHNEMAN, D. and RIEPE, M. W. 1998. Aspects of investor psychology. *Journal of Portfolio Management*, 24(4): 52–65.

KEIM, D. B. and STAMBAUGH, R. F. 1987. Predicting returns in the stock and bond markets. *Journal of Financial Economics*, 17(2): 357–390.

KORKEAMAKI, T., LILJEBLOM, E. and PASTERNACK, D. 2010. Tax reform and payout policy: Do shareholder clienteles or payout policyadjust? *Journal of Corporate Finance*, 16(4): 572–587.

MARKELLOS, R. N. and VLASTAKIS, N. 2012. Information demand and stock market volatility, *Journal of Bank. Finance*, 36(6): 1808–1821.

MILANI, F. 2014. Learning and time-varying macroeconomic volatility. *Journal of Economic Dynamics and Control*, 47: 94–114.

MITCHEL, M.L. and MULHERIN, J. H., 1994. The impact of public information on the stock market. *The Journal of Finance* 49(3), 923–950.

NASDAQ COMPANIES. 2015. *Nasdaq* [Online]. Available at: http://www.nasdaq.com/screening/companies - by industry. aspx?exchange = NASDAQ&market = NCM&region = North + America [Accessed: 2015, November 19].

OTOO, M. W., 1999. *Consumer sentiment and the stock market.* FEDS Working Paper 1999–60. The Federal Reserve Board.

PENG, L. and XIONG, W., 2006. Investor attention, overconfidence and category learning, *J. Financ. Econ.*, 80(3): 563–602.

RYAN, P. and TAFFLER, R. J. 2004. Are economically significant stock returns and trading volumes driven by firm-specific news releases? *Journal of Business Finance and Accounting*, 31(1): 49–82.

SCHWERT, J. W. 1990. Stock returns and real activity: a century of evidence *The Journal of Finance*, 45(4): 1237–1257.

SIMS, C. A. 2003. Implications of rational inattention. *J. Monetary Econ.*, 50(3): 665–690.

SINGER, E. 2002. *The use of incentives to reduce nonresponse in household surveys.* Working Paper. University of Michigan.

SMITH, V. L. 1991. Rational Choice: The Contrast between Economics and Psychology. *Journal of Political Economy.*, 99(4): 877–897.

TAKEDA, F. and WAKAO, T. 2014. Google search intensity and its relationship with returns and trading volume of Japanese stocks. *Pacific-Basin Finance Journal*, 27: 1–18.

WURGLER, J. 2000. Financial markets and the allocation of capital. *Journal of Financial Economics*, 58(1–2): 187–214.

YUAN, Y. 2008. *Attention and trading.* Working paper. University of Iowa.

Contact information

Jolana Stejskalová: xstejsk2@pef.mendelu.cz