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Political Sentiment and Electoral Uncertainty in the Stock markets

Empirical Evidence from the US

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PREFACE AND ACKNOWLEDGEMENTS

This Master Thesis consummates my master studies in Financial Economics at the Erasmus School of Economics in Rotterdam. The writing of this Thesis was a long and demanding process, where I tried to apply all the valuable insights I acquired as a master student, while preserving the high standards and the quality in research Erasmus University of Rotterdam preserves. The topic of the Thesis is derived from my long-term interest in the dynamics developed between Politics and Economics and comes to contribute to the rapidly growing literature of behavioural finance. More importantly, apart from expanding my knowledge in the interaction between financial markets and politics, it leaves collateral for further research in the future.

Due to the broad scope of the topic, I choose to focus on the stocks which are more sensitive to governmental policies under different political circumstances and specifically over partisan cycles and during national elections. My utter aim is to develop a consistent story of how do politically triggered behavioural biases such as sentiment, influence the way investors think, select and eventually invest in the stock market. The reason I regard this topic intriguing and pivotal is that it can become a very useful tool in the hands of researchers and sophisticated investors as it becomes possible to establish a range of predictable patterns for stock prices movements that can be translated into profitable investment strategies.

Foremost, I would like to thank my supervisor, Professor Maurizio Montone for the excellent cooperation and communication throughout these months, his constant encouragement and comprehension at every stage of the writing process. I would like also to thank my family members and primarily my “two mothers” Sofia and Aleka for their unlimited active and moral support from the onset of this master degree until the last day. A special thanks to Kiki, for being next to me in all the difficult times. All the mistakes included in this Master Thesis are mine.

ABSTRACT

I develop a simple asset pricing model to investigate the effects of political sentiment for classes of stocks with different exposure to governmental policies. I find that in a world with rational and bounded rational investors political sentiment calls for a mispricing in the short-term period. Consistent with the theoretical predictions of my model only during Republican administrations, bounded rational investors exhibit excess demand due to political sentiment leading to a non-first-best equilibrium and subsequent low returns, predominantly for the portfolios more exposed to the governmental sector. The pattern is completely reversed during Democratic Presidencies implying a strong partisan underlying driver in the formation of the political sentiment. Moreover, political sentiment effect is more pronounced during electoral periods having a positive effect for the politically sensitive stocks when President wins re-election and negative when challenger is victorious. My empirical findings contribute also to the investor sentiment theory of Baker and Wurgler (2006), as they demonstrate that stocks sorted on government spending entail higher sensitivity at the extremes relative to the middle portfolios.

Keywords: Asset Pricing, Behavioral Finance: Underlying Principles, Political Sentiment, Government Policy and Regulation, Electoral Uncertainty, Political sensitivity

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1. Introduction

This master thesis investigates the role of political sentiment and electoral uncertainty for specific classes of stocks in the US stock market. It aspires to contribute to the growing literature of politics and finance by postulating a measure of predictable patterns in the returns of the politically sensitive stocks, underpinned by bounded rational investors who make investment allocations compatible to their political sentiment. Furthermore, it identifies specific political circumstances under which political sentiment plays an important role for investors' decision-making process.

The thesis comes to complement the existing literature in academia with special interest in the channels of influence developed between political factors and financial markets. The rapid rise of behavioral finance in the early 90s, virtually signified a radical change over how are economic affairs researched and interpreted. The departure from the rational framework and the popularization of more complex underlying mechanisms in the decision-making process, pose a new dimension on the role of politics with respect to economic affairs in the financial domain. While there is a growing body of literature on these topics, there are still unexplored research areas on which types of investments are more prone to behavioral biases triggered by political factors. Furthermore, it is relatively unclear whether such political biases persist in the presence of a major political events such as national elections and what are the implications for the (mis)pricing of the assets for different electoral outcomes. As a result, this thesis utilizes the toolbox provided by modern behavioral finance theory to shed light in the forces determining the markets' equilibrium with great concern for stocks heavily exposed to policy uncertainties.

To address the mentioned above questions, I work on a pure academic framework conducting both theoretical and empirical analysis. Consistent with the theoretical predictions of my model and with the mainstream behavioral finance theory which suggests investor sentimental waves to affect specific classes of stocks asymmetrically, I find that stock prices are affected by political sentiment with the mispricing be more pronounced for the firms more exposed to governmental policies but only during Republican Presidencies. These classes of stocks demonstrate a greater mispricing, as irrational investors influenced by political sentiment demand these stocks and inflate their prices, leading to negative returns when prices are corrected by rational investment forces. The results are completely the opposite when the Democrats are in power though, signaling that partisan affiliations and Presidential policy agendas also play a role when sentimentally influenced investors take investment decisions.

Aligned also with the prepositions of my model and the relevant literature, I find that elections intensify the dynamics caused by political sentiment: As elections loom, investors re-balance their portfolios and select stocks of different exposure according to their political sentiment, exerting a distinct pressure on particular stock prices pushing the prices towards and away from firms' fundamentals. Apparently,

political instability and electoral competition interact with political sentiment making the mispricing either more pronounced or correcting it. More specifically, when governmental party is re-elected political sentiment increases the returns of the more politically sensitive portfolios in the next quarter. Similarly, when challenger wins, investors re-balance their portfolios reflecting the new economic reality pushing the stocks back to their fundamentals.

Even though the results are statistically high significant in most of the specifications, they have a weak effect in terms of coefficients' magnitude. Attempting to convert the preliminary results into a profitable investment strategy, I establish a Long-Short strategy creating three portfolios based on the rolling portfolios of the first series of tests: "Long10-Short1", "Long5-Short10" and "Long1-Short5". Reflecting the results of the baseline regressions, I find limited significance both statistically and economically in the unconditional sample. Only the "Long1-Short5" yields a marginally positive return. Nonetheless, when I control for partisan characteristics and electoral outcomes the results are striking: Going long in politically sensitive stocks and short on stocks with low exposure, yields a positive return in all the three portfolios with statistical significance at least 10%, during Democratic presidencies. Implementing exactly the opposite during Republican administrations entails a positive return only for the "extreme" portfolio ("Long10-Short1"). Finally, during electoral periods, a change of President generate more persistent behavioral patterns as it yields a positive and statistically significant return both for the "extreme" and the politically sensitive portfolio ("Long5-Short10").

Another interesting finding regards the theory of Investor Sentiment. Close to the empirical methodological approach of Baker and Wurgler (2006), I sort the stocks according to their exposure to government spending. My results are consistent with these of Baker and Wurgler (2006), as I verify that stocks with the lower and the higher political sensitivity defined as the dependence of the firm to the government spending are more vulnerable to changes in the investor sentiment comparable to the "stable" stocks located in the middle portfolios of my dataset. Hence, this finding postulates another firm characteristic that can be inducted in the fundamental results of Baker and Wurgler (2006) expanding the battery of stocks with sentimental sensitivities.

At the first stage, I develop a theoretical asset pricing model on the roots of Capital Asset Market Pricing model (CAPM) which embeds firm's government exposure as systematic component of the overall risk. Depending on the sensitivity of firms' profitability relative to government policies, I am eligible to distinguish stocks with different political sensitivity and apply different degrees of rationality to the market participants. The baseline theoretical predictions of the model dictate that positive changes of political sentiment in one period command a negative return in the following period with the effect be stronger for the firms with the larger exposure to government's policies. Extending the former results, I embed political instability and partisan affiliations in the context of electoral uncertainty to investigate

investors' reactions and implications for asset pricing. My utter aim is to identify places of potential mispricing for stocks more sensitive to governmental policies and extract predictable patterns of agents' behavior in order to postulate a concise investment strategy: a) Over the Presidential cycle b) During electoral period and across different electoral outcomes.

Regarding the empirical approach, I test my theoretical prepositions by employing empirical methods from academia to simulate investors' behavior and investment decisions. Central argument is the construction of political sentiment index which incorporates the optimism or pessimism characterizing bounded rational investment decisions. In order to classify the stocks according to their political sensitivity, I employ the Fama and MacBeth (1973) methodology to obtain the individual time-varying stock betas and construct ten rolling portfolios sorted on the sensitivity relative to the government spending. I control for different political circumstances such as the ideological platform of the government, the pre-electoral period and the final outcome of the Presidential elections.

Both my theoretical and empirical approach have as departure the work of Montone (2014) who constructs an aggregate measure of political sentiment based on voters' Presidential approval ratings and of Belo, Gala and Li (2013) who classify firms according to their cash flow sensitivity relative to government spending. Valuable insights are also provided by Addoum and Kumar (2015) who investigate the influence of political climate f\or the stock markets and conduct empirical research at the frontier of behavioral finance and politics.

My approach differs to other approaches proposed in the literature from certain perspectives. Addoum and Kumar (2015) construct political sensitive industry portfolios by establishing a link of causality between stocks' betas (returns) and partisan characteristics. In the same spirit, Bonaparte, Kumar and Page (2012), investigate changes in investors' decision making-process on the basis of political affiliations. Contrary to these approaches, I build on the aggregate measure of political sentiment proposed by Montone (2014), to distinguish classes of stocks more prone to political sentiment for different degrees of exposure to governmental policies when these are characterized predominately by government expenditures. In addition, I take a different perspective as I regard elections as a period where due to increased uncertainty and limiting information availability, political sentiment influence on stock prices declines declaring elections a corrective force of the mispricing irrespectively of partisan affiliations.

The rest of the Thesis is organized as follows: In chapter two I briefly review the literature of the different domains while in chapter three I present a theoretical model. In chapter four, I take my theoretical predictions to the data and conclude with my main findings and investment recommendations.

2. Reviewing the Literature

This master Thesis negotiates a series of different behavioral finance's aspects in the framework of a political system. Due to the multidisciplinary character of this approach, there is a need to introduce the average reader to the broad concepts of behavioral finance and political economy in order to facilitate the comprehension of the complex behavioral dynamics and how do these interact with politics and finance. Taking all these into account, syndicating different fields seems a challenging task. For this reason, I make a short but concise citation of the most pivotal pieces from the literature that allow me to pave the path towards Chapters 3 and 4, the theoretical and the empirical part of the master Thesis. The literature review moves across two axes: On one hand, I present some of the most prominent theories focusing on the incentives and circumstances under which governments select economic policies. On the other hand, I gradually introduce relevant concepts of behavioral finance which focus on behavioral biases and asset pricing in order to establish an interface with political factors.

2.2 Political and Ideological Business Cycles: Linking Economics and Politics

Politics are inextricably linked to Economics throughout the modern history. Among the foremost who attempt to model the effects of politics on economics is Michal Kalecki (1943), who highlights the influence exerted by capital holders to the democratically elected governments in order to formulate a business cycle commensurate to the evolution of the unemployment cycle. Some decades later, the seminal works of Nordhaus (1975) and Hibbs (1977) give a new dimension to the interactions between economics and politics. According to the two fundamentally different approaches, governments employ economic instruments to attain specific political benefits such as regaining voters' trust before the elections (opportunistic political business cycle), or satisfy the electoral basis's desires and priorities (partisan business cycles). Building on these two theories, Frey and Schneider (1978), suggest that governments with concrete ideological origins could chase more opportunistic and short-sighted economic policies as elections loom, depending on the popularity the incumbent enjoys in the pre-election period.

Even though innovative, the mentioned above theories are not impervious to criticism. Their main drawback is the assumption of voters' adaptive expectations which does not allow them to be retrospective while they judge government's performance and therefore not update their expectations according to news. Rogoff and Sibert (1988) and Rogoff (1990) extend the theory of traditional business cycles by embedding rationality to voters' expectations. According to Rogoff and Sibert (1988) and Rogoff (1990) political business cycles do not disappear when there are voters with rational expectations due to information asymmetry between electoral body and government's actual competence.

Proportionally, Alesina et al., (1989) and Alesina and Rosenthal (1995) introduce the theory of rational partisan cycles where the voters from different political spectra (progressive-conservative) correctly anticipate the changes in the economic magnitudes according to the winning political party. As a result, interest rates are higher when a progressive party is expected to prevail in the elections, because markets expect higher inflation and incorporate this information accordingly.

Another dimension of governmental opportunistic behavior is to ''time the voters'' and call for elections at a moment where its popularity among the voters enable the government to enhance its parliamentary force. Ito (1989) finds that Japanese governments tend to manipulate the timing of elections in order to coincide with prosperous time periods. These findings are verified by Chowdhury (1993) who finds no evidence of manipulation of economic policies for India, but rather a tendency to call for snap elections in order the incumbent to take advantage of the current economic state. Similarly, Alesina, Roubini and Cohen (1997) observe that early elections arise in times of strongly positive inflation which is a signal of firm growth.

2.2 Political uncertainty, Elections and the Stock markets

A large body of literature in finance investigates the role of politics for the financial markets. One channel through which politics influence asset prices is the inherent uncertainty of different governmental policies while another is political affiliations and partisan agendas. A major part focuses explicitly on the role of national elections in democratic regimes and qualifies them as the underlying force of political uncertainty.

Pastor and Veronesi (2013) investigate the reaction of stock prices to political news in the context of a general equilibrium model. They conclude that political uncertainty calls for a risk premium which increases in times of economic downturns. Extending their own work, Kelly, Pastor and Veronesi (2014) focus on whether political uncertainty surrounding major political events such as summits and elections, is embedded in the option market. Their research findings are aligned with the baseline model as political uncertainty expressed by the uncertainty of the future government increases the price of the financial tools of protection against uncertainty, namely options. Close to these concepts, Brogaard and Detzel (2012) find that uncertainty encompassing the economic policies yields a negative market premium while Economic Policy Uncertainty (EPU) is associated with positive equity premium through increasing discounting rate and constant dividend growth. Perhaps, one of the most influential contributions is that of Baker, Bloom and Davis (2013) who construct an index of political uncertainty prevalently used in academia. Following an empirical approach, they utilize data from US newspaper coverage, effects of imminent federal tax expiration and dispersion in forecasters' opinion relevant to various economic

variables, and find supportive evidence for two commonly held perceptions: Increase in policy uncertainty in the aftermath of the 2007 financial crisis, and negative effects of political uncertainty on the economic recovery. Interestingly, the latter is mainly by from fiscal and not monetary factors.

Turning now to the role of national elections, Wong and McAleer (2009) find evidence of cyclicality in the stock prices in the wake of American Presidential elections, with some of the results be more pronounced for the Republican administrations. Focusing also on partisanship effects both in the US and the UK, Mukherjee and Leblang (2007) document that Democratic (Labor) governments in years surrounding national elections decrease the volatility in the prices of the stocks without however any significant partisan effect on the mean of the returns. Chen et al., (2015) on the other hand, conclude that mutual fund managers re-balance their portfolios towards assets with higher reporting quality (''flight to quality'') when political uncertainty intensifies for example during election periods while Pasquariello and Zafeiridou (2014) detect reduced trade volume before US national elections as investors are unsure about the quality of information they receive during the electoral period (*ambiguity hypothesis)*. Finally, focusing more on corporate finance aspects, Durnev (2012) highlights the role of elections on managerial investment decisions. He verifies the impact of electoral uncertainty for the sensitivity of investments and associates electoral uncertainty with eventual inefficient capital allocation predominately for the weaker democracies.

2.3 Investor Sentiment and Politics

The rapid development of behavioral finance was synonym with the incorporation of the psychology to the economic mode. The departure from the perfect and unemotional calculator, who maximizes his utility, shifted economists to alternative explanations of economic phenomena. The idea of irrational agents' who are driven in part by their emotions is broadly mentioned by Keynes (1936) who is one of the first to highlight the crucial role of psychology for the formulation of agents' economic decisions. He argues that economy's state is affected by the general sentiment which dominates the participants in the market and is specified as the irrational optimism or pessimism that essentially leads to divergence of the underlying stock from its fundamentals.

Several decades later, Shiller (1981) investigates the properties of the stock prices for a whole century and detects excessive volatility that cannot be justified from the arrival of news relevant to future real dividends, paving the path for the development of investor's sentiment literature. Building on this concept, Long et al., (1990) identify the impact of noise traders to financial markets by incorporating noise traders' activity in the decision-making process. They conclude that when rational and irrational

(sentiment-dominated) investors interact in a market with limits to arbitrage, noise traders' sentiment results in greater mispricing of the assets and therefore to higher volatility.

Indisputably, investor's sentiment theory is substantially marked by the work of Baker and Wurgler (2006, 2007). They define investor sentiment as the beliefs about future cash flows and investment risks based on factors other than fundamentals. Their findings are striking: Young firms, companies with low capitalization and growth stocks are more prone to investor's sentiment. The vulnerability of these categories of stocks to mispricing stems primarily from the difficulties investors confront to set arbitrage strategies and the difficulties lying in the valuations of these stocks. Glushkov (2005) validates these findings for specific categories of stocks and postulates that some stocks are more prone to investor sentiment due to idiosyncratic characteristics but he doesn't verify noise traders' effects, as conceived by Long et al., (1990).

Broadly speaking, political sentiment can be identified as the sensitivity of the investors to specific political circumstances. Hill (2003) probes how do investors assess political risks. She argues that political risk is heterogeneous and therefore difficult to be predicted and searches for potential explanations for the market's political risk cycle that follows a financial crisis. Among other factors she identifies, but not endorses, the role of investors' psychology to political climate through two different behavioral channels: a) ''Availability bias'' which means that investors' decisions are influenced by their recent memories regarding the political situation b) ''Overconfidence'' in a sense that investors underestimate political risks.

Recent findings of research imply some form of compatibility between investors' sentiment and political affairs. More notably, Santa-Clara and Valkanov (2003) investigate the returns of the stock market over the presidential cycle, finding that stock markets perform better during Democratic presidencies exceeding the Republican ones by a substantial 9% on average. This trend is robust to rigorous empirical tests for economic fundamentals and systematic factor risks, popularizing a "Presidential puzzle", and starting over the discussion about partisan business cycles. Building on "Presidential puzzle", Belo, Gala and Li (2013) develop a novel index to investigate the role of partisan presidencies via government spending on the US stocks. Classifying industries according to their exposures to government expenditures, they confirm the existence of ''Presidential puzzle'' for the heavily exposed industries and firms as the latter realize higher returns during Democratic elected governments. Moreover, these results are more pronounced in periods where political uncertainty is low and the governmental policies are already on track e.g during the second and the third year of the Presidential term.

Montone (2014) follows a top-down approach and defines political sentiment as the changes in US president's approval rates on a monthly basis. In his framework, bounded rational voters (investors) judge

President's job based on the current type of policies implemented and therefore any change in the prices of the assets not explained by fundamental can be attributed to the changes of the approval rates. His work sheds also light on the "Presidential Puzzle" of Santa-Clara and Valkanov (2003), as he finds that political dispersion in opinion leads to negative returns primarily during Republican administrations attributed to the fact that the latter are characterized by divided governments which make governmental policies less predictable and efficient. Closer to the concept of partisanship, Bonaparte, Kumar and Page (2012) investigate individual investors' attitude having a specific political identity, relevant to prevailing political environment and they conclude that investors tend to take more risks (i.e high portfolios betas) when the governmental party is aligned with their political affiliations. A potential explanation for this is that affiliated investors feel more confident and optimistic about government's competence to run the economy efficiently and this influences their perception towards risk. The widespread optimism in the classes of investors affiliated with the government formulates expectations for currently undervalued stocks, shifting their portfolios accordingly.

Close to this approach, Addoum and Kumar (2015) examine the impact of political climate on stocks and industries. Using an empirical analysis they construct a political sensitivity estimator and identify the segments of the market more sensitive to political climate (i.e political sentiment) producing predictable investment patterns especially when the challenger wins the elections. They conclude that investors increase the riskiness of their portfolios, when they believe their affiliated party (i.e Republicans) are about to win the elections. On the contrary, supporters of the looming loser (Democrats) express their pessimism by a ''flight towards safety'' which means increasing their purchase of bonds and other safe securities. Furthermore, retail investors, mutual funds and investment companies seem more sensitive to their portfolios composite in the period surrounding the elections relative to institutional investors.

Apart from retail and individual investors, literature looks also into institutional investors' behavior in a volatile political environment. Hong and Kostovetsky (2012) conclude that ownership levels of mutual funds affiliated to Democratic party are lower on nominal ''sin''[1] stocks which implies that even smart money's investment decisions can be object to political sentiment and biases. Francis, Hasan, and Zhu (2013) find heterogeneous behavior for different elective outcomes as institutional investors tend to increase above average their holdings in the event of a Democratic win, comparable to a Republican one.

[1]Hong and Kostovetsky (2012) classify as ''sin'' stocks a broad group of companies which are deemed as socially irresponsible (whose operations are detrimental for the society such as guns, tobacco, raw materials and firms with low KLD scores, a commercially available index designed to measure corporate social responsibility).

3. Asset pricing in a biased market: A simple model

The theoretical part of the master Thesis is devoted to the impact of political sentiment and major political events on investors' decision-making process. Motivated by the work of Montone (2014) and Belo, Gala and Li (2013), I investigate the effect of behavioral biases on stocks with different exposure to governmental policies in order to derive a concrete measure of political sensitivity based on political sentiment. In the second part of my theoretical research, I introduce a dynamic framework to investigate the influence of electoral uncertainty on the structures of investors' portfolios and consequently on the returns investors realize.

I follow a typical modern portfolio approach with different types of agents. My utter aim is to construct a static market which is comprised of fully rational (Arbitrageurs) and bounded rational agents (Noise traders) in a sense that the latter exhibit behavioral biases regarding political affairs. As a result, the prices calculated at equilibrium are ''contaminated'' by the incorporation of erroneous valuations when the market clears. My approach has as departure the "classics" of modern portfolio theory of Markowitz (1952), Sharpe (1964), Lintner (1965), and the novel approach of Belo, Gala and Li (2013) who distinguish political sensitivity across firms by focusing on the supply side of the economy and specifically on the cash flow sensitivity.

3.1 Definition of behavioral biases

The first step of my theoretical approach is to identify the behavioral biases. Following, Montone (2014) I define political sentiment (S) as the agent's individual judgment about government's performance which partly determines Noise traders' investment decisions. This implies that Noise traders can base their stock holdings on factors other than firms' fundamentals. This concept is close to those of Baker and Wurgler (2006, 2007) and Addoum and Kumar (2015), as political sentiment stands for decisions not justified strictly by firms' fundamentals and denotes the level of optimism or pessimism formed by political atmosphere on investment decisions. Such optimism could stem from investors' perception of governments' job (Montone, 2014) or political affiliations (Bonaparte, Kumar and Page, 2012). Political sentiment is embedded as an extra factor in the individual valuations of Noise traders and in essence denotes the sentimental waves of optimism or pessimism characterize them during the portfolios' decision-making process. Nevertheless, political sentiment does not call for a risk premium since it does not affect the perceived variance of the asset in other words the perceived risk, leading to inflated valuations, increased demand and eventually to a mispricing in equilibrium.

3.1.1 Supply side of the market

The economy is comprised of two firms, Firms 1 and 2, each of which produce of one risky asset. I assume that firm No1 is exposed to government's set of policies as the latter contributes to the profitability of the firm via public consumption denoted by ''g''. This implies that the government can affect the market only with its implemented set of policies which go hand in hand with the public consumption[2]. Similarly, Firm No2 produces a risky asset which by assumption has negligible or no exposure to governmental policies. Hence, the fundamentals of both firms are defined as:

$$v_1 = \Pi_1 + g \qquad g \sim N(g, \sigma_g^2)$$
$$v_2 = \Pi_2$$

where $\Pi_j \sim N(\Pi_j, \sigma_{\Pi j}^2)$ stands for the distribution of profits of a firm j=1,2, which are normally distributed. This means that any joint distribution of normally distributed variables will also be a normal distribution. Concurrently, parameter "g" is also normally distributed and can be broadly seen as the government's consumption namely, the governmental expenditures for goods and services. Finally there is a riskless asset which yields a gross safe return equal to $(1+r_f)=R$. Please note, that this is a static framework and therefore there are no time indicators. Note also that during the whole theoretical part my focus is on the effects of behavioral biases for the price of asset v_1. The inclusion of asset v_2 is used for the construction of a market and virtually represents firms which are not supported financially by any means from elected governments and can be utilized by investors for portfolio diversification along with the riskless asset.

Next, I define P_1,P_2 the prices of the assets v_1 and v_2 respectively. These prices are set in relation to the aggregate demand of the economy[3] which in turn is based on the perceived valuations of the demand side of the economy. In other words when market clears, the prices adjust to equate Demand and Supply and therefore any additional factor (e.x noise, sentiment etc.) beyond fundamentals is going to be reflected to the price levels.

Combining the two assumptions above, the expected rate of returns of the assets are:

$$E(r_1) = \frac{E(\Pi_1 + g)}{P_1} = \frac{\Pi_1 + g}{P_1} \qquad (3.1)$$

[2]Alternatively, we can think g as a parameter of technological support by the government in the form of utilities or infrastructure and more broadly as anything that facilitates the productive process and thus the profitability of the firm.

[3]The aggregate demand is the sum of the demand of the different types of agents participating to the market times the mass of each class of agent.

$$E(r_2) = \frac{E(\Pi_2)}{P_2} = \frac{\Pi_2}{P_2} \qquad (3.2)$$

where ''E'' denotes the expectations of the market participants while the variances (covariances) of the two assets are:

$$V(r_1) = \frac{V(\Pi_1 + g)}{P_1^2} \ , \ V(r_2) = \frac{V(\Pi_2)}{P_2^2} \qquad (3.3)$$

$$C\text{ov}(r_1, r_2) = \frac{C\text{ov}(\Pi_1 + g, \Pi_2)}{P_1 P_2} \qquad (3.4)$$

Interestingly V(r_1) is: $V(r_1) = \frac{V(\Pi_1) + V(g) + 2C\text{ov}(\Pi_1, g)}{P_1^2}$

The variance of r_1 implies that the higher the covariance of firm's inherent profitability with public consumption g, the greater the exposure of the asset to the public sector or equivalently the more the firm depends on the governmental policies for its overall profitability. According to the fundamentals of the firms defined above, the return of the market will be simply the realization of the expected profits with respect to the overall pricing. This means that the intrinsic values of stocks held by the investors are going to be the same no matter their valuations when they purchased the stocks. Any possible biases will again be incorporated in the prices of the stocks at equilibrium. Accordingly, the expected return of the market is:

$$E(r_m) = \frac{E(\Pi_1 + g) + E(\Pi_2)}{P_1 + P_2} \qquad (3.5)$$

This means that in equilibrium the return of the market is simply the weighted average of the stocks rates of return times their valuations in equilibrium, namely:

$$r_m = \frac{\overline{r}_1 P_1^{eq} + \overline{r}_2 P_2^{eq}}{P_1^{eq} + P_2^{eq}} \qquad (3.6)$$

Nonetheless, in equilibrium every stock must be held by the investors. This means that if the investors have any factor affecting their rationality and therefore their valuations, their demand will be also biased determining the prices at equilibrium accordingly. Moreover, the variance of the market is:

$$\text{var}(r_m) = \frac{V(\Pi_1 + g + \Pi_2)}{(P_1 + P_2)^2} \qquad (3.7)$$

Taking into account equations (3.3) and (3.4) the covariance of asset 1 with the market is simply[4]:

$$C\text{ov}(r_1, r_m) = \frac{Cov(\Pi_1 + g, \Pi_1 + g + \Pi_2)}{P_1(P_1 + P_2)} = \frac{Var(\Pi_1 + g) + C\text{ov}(\Pi_1 + g, \Pi_2)}{P_1(P_1 + P_2)} \qquad (3.8)$$

3.1.2 Demand side of the market

In this section I construct the demand side of the market. I assume there are two types of agents participating to the market: *Arbitrageurs* and *Noise traders*. Both are of equal mass in population and have a CARA utility function of the form:

$$U^i = -e^{-a^i W} \qquad \text{i=A,N}$$

where ''i'' stands for Arbitrageurs and Noise traders respectively, Greek letter ''α'' is the agent's risk aversion and W denotes the initial level of total wealth. I assume that investors have only the option to invest their wealth in assets, so their main goal is to maximize the allocation of their wealth according to the mean-variance criterion[5]:

$$E(U^i) = W - \frac{\alpha^i}{2}\sigma_w^2$$

The above equation explains the expected utility of any investor participating to the market. It is equal to the total value of the wealth-portfolio (W) of agents, minus its variance (σ_w^2).

[4]Proof in Appendix B
[5]Proof in Appendix A

Coming now to the individual features of the two classes of investors, I assume Arbitrageurs are unaffected by any political biases and correctly evaluate firms' fundamentals. On the contrary, Noise traders misevaluate the expected rate of returns as they are affected by political sentiment been unaware of their behavioral biases. Both agents demand assets, risky and non-risky, in order to optimize the allocations of their current wealth (W). So both agents aim at maximizing their total wealth which is:

$$W^i = (1 - w_1^i - w_2^i)R + w_1^i r_1 + w_2^i r_2 \qquad \text{i=A,N} \qquad (3.9)$$

Where w_1,w_2 are the weights allocated to the assets 1 and 2 respectively, R is the gross return of the riskless asset and r_1,r_2 are the rate of returns of the two risky assets for i=A,N traders. Re-arranging, I take the individual risk-premia which virtually imply that they must be positive in order any risk-averse investor to hold risky assets:

$$W^i = R + w^i{}_1(r_1 - R) + w^i{}_2(r_2 - R) \qquad (3.10)$$

Imposing expectations:

$$W^i = E^i(R) + w_1^i E^i(r_1 - R) + E^i(r_2 - R) \Leftrightarrow$$
$$W^i = R + w_1^i[E^i(r_1) - R] + w_2^i[E^i(r_2) - R] \qquad (3.11)$$

The variance of agent's total wealth W^i is respectively:

$$Var(W) = V(R) + w_1^2 V(r_1) + w_2^2 V(r_2) + 2w_1 w_2 C\text{ov}(r_1, r_2) \qquad (3.12)$$

Analyzing more, Noise traders' decisions are affected by political sentiment which as mentioned earlier is defined as assessments of government's capabilities which trigger either an optimism or pessimism on investors' valuations. For simplicity, I assume that political sentiment affects only the valuations of the firms that are more or less exposed to governmental policies.

Please note that this concept doesn't associate political sentiment with underestimation of future risk (i.e overconfidence, mis-calibration etc). Following now, the MV framework and taking First Order Conditions (FOC) with respect to the weights, I can derive the demand functions for both classes of investors:

$$w_{1A} = \gamma_A \frac{[E_A(r_1) - R] - w_2 C\,\mathrm{ov}(r_1, r_2)}{Var(r_1)}$$

$$w_{2A} = \gamma_A \frac{[E_A(r_2) - R] - w_1 Cov(r_1, r_2)}{Var(r_2)}$$

$$w_{1N} = \gamma_N \frac{[E_N(r_1^*) - R] - w_2 Cov(r_1, r_2)}{Var(r_1)}$$

$$w_{2N} = \gamma_N \frac{[E_N(r_2) - R] - w_1 Cov(r_1, r_2)}{Var(r_2)}$$

} Demand functions

Where $E_N(r^*)$ denotes the biased valuations of the assets' expected rate of returns, while γ_A,γ_N denote the risk tolerances of Arbitrageurs and Noise traders respectively. The higher the γ_N, the more aggressive this type of trader is. Re-arranging, I take the formulas for both agents:

Arbitrageurs:

$$\gamma_A[E_A(r_1) - R] = w_{1A} Var(r_1) + w_{2A} Cov(r_1, r_2) \qquad (3.13a)$$

$$\gamma_A[E_A(r_2) - R] = w_{2A} Var(r_2) + w_{1A} Cov(r_1, r_2) \qquad (3.13\beta)$$

Noise traders:

$$\gamma_N[E_N(r_1^*) - R] = w_{1N} Var(r_1) + w_{2N} Cov(r_1, r_2) \qquad (3.14\alpha)$$

$$\gamma_N[E_N(r_2) - R] = w_{2N} Var(r_2) + w_{1N} Cov(r_1, r_2) \qquad (3.14\beta)$$

Before I reach the equilibrium, I decompose the expected rate of returns for asset 1:

$$\gamma_N[E(\Pi_1 + g)P_1^{-1} + S - R] = w_{1N} V(r_1) + w_{2N} Cov(r_1, r_2) \qquad (3.15)$$

$$\gamma_A[E(\Pi_1 + g)P_1^{-1} - R] = w_{1A} V(r_1) + w_{2A} Cov(r_1, r_2) \qquad (3.16)$$

Where ''S'' is the market-wide political sentiment augmenting the current valuation of the asset

3.1.3 Clearing the market and equilibrium

Turning now to equilibrium, I follow the Warlasian method of clearing the markets described in detail by Chiarella et al., (2008) where the supplier re-adjusts her offer to meet investors' demand[6]. In equilibrium any kind of stock must be held by an investor. This also means that the total amount of shares must equal their market capitalization at equilibrium:

$$\Gamma[E(\overline{r}_1) - R] = P_1 V_{AN}(r_1) + P_2 \operatorname{cov}_{AN}(r_1, r_2) \qquad (3.17)$$

$$\Gamma[E(\overline{r}_2) - R] = P_2 V_{AN}(r_2) + P_1 \operatorname{cov}_{AN}(r_1, r_2) \qquad (3.18)$$

Where Γ denotes the risk tolerance of the overall market, $E(\overline{r}_1)$ and $E(\overline{r}_2)$ are the sum of the holdings from Arbitrageurs and Noise traders of assets 1 and 2 respectively and $V_{AN}(r_2), \operatorname{cov}_{AN}(r_1, r_2)$ are the aggregate measures of variance of asset 1 and its covariance with the second asset.

I turn now to indicate the relation between assets' excess returns and the return of the market. Having already imposed clearing at the markets, the arisen prices of the stocks in the equilibrium are simply the prices included any biases. Hence, the total market capitalization should be equal to all the holdings of the stocks times the equilibrium prices. I first aggregate, the total demand at equilibrium for both agents. Note that I assume equal mass for both classes of agents. Multiplying each equation (3.13α-3.14α) with its asset's respective price, substituting the expected rates of return and aggregating the total holdings of the two assets results in:

$$\Gamma\left[\mathrm{E}_{AN}(\Pi_1 + g) + E_{AN}(\Pi_2) - (P_1^{eq} + P_2^{eq})R\right] + \gamma_N S = V_{AN}(\Pi_1 + g) + 2Cov_{AN}[\Pi_1 + g, \Pi_2] + V_{AN}(\Pi_2) \qquad (3.19)$$

The above equation virtually describes the total market valuation over the commonly perceived risk. To put in a different way it is the expected market return over the market-wide risk. Re-arranging the terms I obtain the current market excess return:

$$E(R_m^*) - R = \frac{(P_1^{eq} + P_2^{eq})}{\Gamma} \operatorname{var}(r_m) \qquad (3.20)$$

It is apparent from equation 3.20 that there are dissimilarities with the definition of market return and variance in the first section (eq. 3.5-3.7) which imply that arisen equilibrium is not the first-best and

[6]Proof of the aggregate moments in Appendix B

presumably contains inefficiencies in other words $E(R_m) \neq E(R_m^*)$. The term $\frac{(P_1^{eq} + P_2^{eq})}{\Gamma}$ denotes the market price of risk which of course is not aligned with actual firms' fundamentals.

The market price of risk on the right hand of the equation is affected predominately by the irrationality of the Noise traders. The above equation implies that controlling for gross return R, the market premium is ''contaminated'' by the presence of the political factor and therefore variant of firms actual fundamentals. In other words, political sentiment drives the market as according to the sign of the political sentiment at a specific moment, market premium either increases or decreases.

Turning now to the risky asset with government exposure, the partial equilibrium dictates a relationship:

$$E(\overline{r_1}) - R = \frac{Cov(r_1, r_m)}{\text{var}(r_m)} \times \left[E(r_m^*) - R \right] \qquad (3.21)$$

The first term on the right hand side is the beta of the stock and the second one is the market premium. This is the return investors are going to demand according to their expectations. It is equal to the market premium, times the sensitivity of the underlying stock with the market, intuitively with the public sector. Focusing more on the covariance of the asset 1 with the market in terms of market variance and decomposing this term I obtain:

$$beta = \frac{Cov(r_1, r_m)}{\text{var}(r_m)} = \frac{Cov(\Pi_1, r_m)}{P_1^{eq}\ \text{var}(r_m)} + \frac{Cov(g, r_m)}{P_1^{eq}\ \text{var}(r_m)} \qquad (3.22)$$

The ''enriched'' beta of asset 1, namely b_1, which has an important feature. It does include the significance of the public consumption: The higher the co-variance of the asset's profitability with the public consumption, the more this asset exposed to the public sector and therefore to the any change of government policy, even if this is signified by a change in the office. This factor of systematic risk depends on the prices of the assets, formed at equilibrium and inversely to the total market risk tolerance. In other words the prices are adjusted for the assets demanded by both agents and intuitively they integrate their biases (if any). Following the classical modern portfolio theory and the theory of CAPM, the intuition is as follows: Firms or industries more dependent on the public sector command a higher required rate of return at equilibrium. The reason is that its profitability depends heavily on the variance of the public sector and therefore the risk of these firms is aggravated by the volatility of this factor. More

importantly, biases are not captured by the estimation of variances which calls for a potential misperception of risk relative to mean.

Finally going back to 3.21 and solving for the equilibrium price of the first asset:

$$P_1^{eq} = \frac{E(\Pi_1 + g) + \gamma_N S - \text{var}[\Pi_1 + g, \Pi_1 + g + \Pi_2]\Gamma^{-1}}{R} \qquad (3.23)$$

which is the augmented expected value minus the systematic (non-diversifiable) price of risk. Note that again market risk tolerance is highly important for the final assessment of risk. It becomes obvious that prices determined in equilibrium are affected by political sentiment and potentially by erroneous reception of policy signals which cause a mispricing in equilibrium. The more exposed the stocks are to governmental policy the more stocks are affected by political sentiment and the higher the correction of risk.

Hence, in the event of a positive political sentiment, Noise traders induct more stocks exposed to government sector in their portfolios, exerting an upward pressure on prices. Prices will be inflated at equilibrium (overpriced) as short sales constraints apply ex-ante in the market, which results in lower (negative) returns when prices adjust.

My next step, is compute some comparative statistics, investigating the marginal effects of S, for the equilibrium price. This unveils what investors realize when prices adjust to their fundamentals. The first derivative of the equilibrium price with respect to the political sentiment is:

$$\frac{\partial P_1^{eq}}{\partial S} = \frac{\gamma_N}{R} > 0 \quad (3.24)$$

Which means that positive attitude towards government's job increases the price of the stock. Even though political sentiment has only a first order and symmetrical effect simulating more to a broad sentimental wave, it still plays a role via the differentiation path. In other words, due to the fact that political sentiment affects predominately, the firms exposed to public sector, Noise trader investors adjust the composites of their portfolios accordingly: Noise traders increase their demand for assets exposed to public sector relative to the assets with no exposure (asset 2). Consequently, asset 2 could be depreciated

in equilibrium, to the extent that political sentiment affects only the stocks type 1. This generates arbitrage opportunities for rational investors as well as investment opportunities for Contrarian investors.

3.2 Political sentiment, partisanship and electoral competition

In the second part of my theoretical approach, I attempt to introduce a dynamic framework in order to investigate investors' behavior under the effect of political sentiment in the presence of political affiliations and electoral competition. Both topics have attracted the interest of scholars in finance, predominately for bi-partisan political systems prevalent in the US and the UK. Hong and Kostovetsky (2012) postulate that mutual fund managers' political preferences can be disclosed by the classes of stocks they hold in their portfolios as well as by their political pecuniary contributions. Addoum and Kumar (2015) associate shifts in the riskiness of investors' portfolios with political affiliations, political agendas and electoral periods.

My primary assumption is that investors come from the previous period with already formed portfolios. This means that any behavioral bias is already incorporated in the valuations of the first period and therefore in the equilibrium prices formulated in that period. Nevertheless short-sales constraints do not allow the stock prices to adjust, so the majority of investors are unaware of market-wide political exuberance (gloominess). Furthermore, I assume that Noise traders exhibit narrow framing and they judge current government's performance only from the set of policies implemented in the previous period (i.e political sentiment) which determined their current portfolio. Now, investors must decide about their portfolios in the event of looming national elections. My aim is to investigate whether political sentiment plays a role for the portfolios' composites it times of political uncertainty and when investors have concrete political persuasions.

3.2.1 Structure of the political problem

I assume a bi-partisan political system where each of the two political candidates has discrete and definite political agendas. For simplicity, I do not present the utility functions of the two parties just the product of their maximization process, which can be summarized to the estimated valuations of assets affected by their proposed set of policies. Following an extensive literature on this field (Hibbs, 1977, Alesina, 1987, Alesina, Roubini and Cohen, 1997), I define two main political parties with different political departures: Right-wing parties or ''*Conservatives*'' which generally detest governmental intervention and put more weight on stable and predictable inflation and left-wing parties or "*Progressive"* which generally highly appreciate employment and expansion of output. Let here REB the name of party representing the

conservative political platforms and DEM the progressive ones. Another way to think of the effects of political agendas on the assets of the economy, is that each candidate (incumbent and challenger) offers a different type of asset and that market participants have to choose the weights of their portfolios taking into account electoral uncertainty and potential political affiliations (if any). Additionally, I assume that current government is not engaged in opportunistic electoral behavior so its promised policy is already commonly-held and not expected to change. This implies that Noise traders do not potentially misperceive the effects of government signals leading in over-reaction or under-reactions in the demand of the stocks.

Investors have three choices to make: Invest is asset 1 whose, as in the first period, valuations are partially affected by political sentiment, asset 2 which has negligible –if any- exposure to public sector, or ‘’flight to safety’’ and invest in the riskless asset which yields gross return R. In contrast to the first part, Noise traders, can exhibit political preferences over the one or the other candidate which implicitly affects their preferences, while Arbitrageurs merely “run after the money” and weight only the probabilities for the two candidates to win the elections without expressing any political affiliations. As a result, taking these parameters into account both classes must decide: Either re-balance the portfolios or keeping a relatively stable structure.

Assuming a set of policies $g(G^{DEM})$ for party DEM and $g(G^{REB})$ for party REB this choice is illustrated as:

$$\max\left\{(V_{P_i} \mid G^{DEM}), (V_{P_i} \mid G^{REB})\right\}$$

Which means that portfolio valuation V_P of agent i, is based on the proposed political agendas of each party. Alternatively, when the elections approach this problem can be modified to:

$$\max\left\{(V_{P_i} \mid G^{inc}), (V_{P_i} \mid G^{chl})\right\}$$

Where ‘’inc’’ and ‘’chl’’ denote the political agendas of incumbent and challenger respectively. If investors find the proposed agenda of the incumbent given the probability of re-election more attractive for their portfolios, then they don’t change the composite of their portfolios substantially. Similarly, if the investors believe that challenger is the most likely winner then they change their portfolios in order to meet the standards of the new government’s set of policies. In any case a fundamentally different pattern is observed triggered by the level of electoral competition.

3.2.2 Re-defining the demand side

Starting from the Arbitrageurs, expected wealth is based only in the event of the elections' uncertainty:

$$E(V_{\mathrm{P},t+1}) = w_1^A[q\beta V_1^A(t+1)^{inc} + (1-q)(1-\beta)V_1^A(t+1)^{chl}] + w_2^A V_2(t+1) + (1-w_1^A - w_2^A)R - \frac{a}{2}(\sigma_{P_{t+1}}^A)$$

q stands for the exogenous probability of re-election of the current government and $V_1^A(t+1)$ is the evaluation of the party's aspiring policy depending on their economic priorities. Here, I also include the term ''β'' which denotes the intensity of preference for one or the other political party. Nevertheless, by assumption Arbitrageurs chase only profitable opportunities and places of the market with mispricing, therefore they are politically neutral. The inclusion of the term only facilitates the calculation of the aggregate magnitudes.

Analyzing further the set of policies each party promises to carry out:[7]

$$E(V_{\mathrm{P},t+1}) = w_1^A[q\beta E(\Pi_1 + g)^{inc} + (1-q)(1-\beta)E(\Pi_1 + rg)^{chl}]P_1^{-1} + w_2^A E(\Pi_2)P_2^{-1} + (1-w_1^A - w_2^A)R - \frac{a}{2}(\sigma_{P_{t+1}}^A)$$

The second term in the above equation is the valuation of the challenger, the second competing party which aspires to take the post. Its valuation is characterized by the term ''r'' *a multiplier of fiscal or public policy* which virtually indicates whether the challenger has a set of policies oriented in favoring the stocks whose profitability is based on government spending or not. This term is very important for the definition of the electoral problem as it signifies the type of challenger's policies. In other words, if the challenger has a multiplier >1 this automatically means that the party highly regards government spending and a possible win of the elections would increase fundamentals of stocks' exposed to public sector, more than the departing party. Concurrently, this also defines the current government whose policy multiplier is for simplicity normalized to 1. To exemplify, political parties' identity is defined as follows:

$$r\begin{cases} >1 & \text{challenger is DEM and incumbent REB} \\ <1 & \text{challenger is REB and incumbent DEM} \end{cases}$$

[7] The individual profitability of firms namely, Π_i still have the same normal distribution as in section 3.

Following again the maximization process, the demand of Arbitrageurs for the first asset is expected to be:

$$w_1^A = \frac{\Gamma^A\{[q\beta E(\Pi_1 + g)^{inc} + (1-q)(1-\beta)E(\Pi_1 + rg)^{chl}]P_1^{-1} - R\} - w_2^A\sigma_{12}^A}{(\sigma_1^A)^2} \qquad (3.25)$$

Or equivalently:

$$\Gamma^A\{[q\beta E(\Pi_1 + g)^{inc} + (1-q)(1-\beta)E(\Pi_1 + rg)^{chl}]P_1^{-1} - R\} = w_1^A(\sigma_1^A)^2 + w_2^A\sigma_{12}^A \qquad (3.26)$$

Coming now to Noise traders, I assume that their preferences are augmented by two features:

$$E(V_{\mathrm{P},t+1}) = w_1^A[q\beta V_1^A(t+1)^{inc} + (1-q)(1-\beta)V_1^A(t+1)^{chl}] + w_2^A V_2(t+1) + (1-w_1^A - w_2^A)R - \frac{a}{2}(\sigma_{\mathrm{P}_{t+1}}^A)$$

or

$$E(V_{\mathrm{P},t+1}) = w_1^A\{[q\beta E(\Pi_1 + g) + S]^{inc} P_1^{-1} + (1-q)(1-\beta)E(\Pi_1 + rg)^{chl}\} + w_2^A E(\Pi_2)P_2^{-1} + (1-w_1^A - w_2^A)R$$

where $\beta \in [0,1]$, denotes the intensity of preferences for the set of policies the two parties postulate and it implies the political attitude towards the incumbent and the challenger. The second important feature is that Noise traders' valuation is still affected by the political sentiment they hold from the previous period which I remind is based on the voters' perception about government's job and of course is something that Noise traders incorporate when they come to evaluate both parties. To ensure consistency, I assume that S is independent of political affiliation β as the former denotes investors' judgment about government's ability to run the economy while the latter an explicit preference towards the offered set of policies by either party.

Since this is a MV framework, both classes of agents' utility are affected by the perceived risk. As in previous period the political sentiment is an additional constant term S, in the variance of the valuation of the stock which does not affect the overall commonly perceived variance. Taking again first-order conditions with respect to the w_1, I derive the demand curve of the Noise traders which is:

$$w_1^N = \frac{\Gamma^N\{[q\beta E(\Pi_1 + g)^{inc} + S^{inc} + (1-q)(1-\beta)E(\Pi_1 + rg)^{chl}]P_1^{-1} - R\} - w_2^N\sigma_{12}^N}{(\sigma_1^N)^2} \qquad (3.27)$$

Equivalently:

$$\Gamma^N\{[q\beta E(\Pi_1+g)^{inc}+S^{inc}+(1-q)(1-\beta)E(\Pi_1+rg)^{chl}]P_1^{-1}-R\}=w_1^N(\sigma_1^N)^2+w_2^N\sigma_{12}^N \qquad (3.28)$$

Under which conditions the valuation of the incumbent is higher relative to the challenger's? Note that this implies that Noise traders don't change the composites of their portfolios profoundly while a stronger challenger could cause investors to restructure their portfolios. Does political sentiment play a role when it blends with political affiliations? What is the price of political sentiment that can outweigh a potential lower preference or lower probability of challenger win the elections?

3.2.3 Partial equilibrium: *Re-balance or not?*

Let's now turn to the prices determined at equilibrium. The partial equilibrium for the first asset is determined by the dynamics of fixed and elastic supply and by the demand Noise and Arbitrageur traders taking into account all the estimations of risks, or simply:

$$P_1^{eq}=\frac{q(\bar{\Pi}_1+\bar{g})(\Gamma^A+\beta\Gamma^N)+(\bar{\Pi}_1+r\bar{g})(1-q)(\Gamma^A+(1-\beta)\Gamma^N)+(q\Gamma^N\beta)S-\mathrm{cov}(\bar{\Pi}_1+r\bar{g},\bar{\Pi}_1+r\bar{g}+\Pi_2)}{(\Gamma^A+\Gamma^N)R} \qquad (3.29)$$

I focus more on 3.29 for reasons of analysis. Taking FOC with respect to political sentiment:

$$\frac{\partial P_1^{eq}}{\partial S}=\frac{q\Gamma^N\beta}{(\Gamma^A+\Gamma^N)R}>0 \qquad (3.30)$$

Note that this is a linear relationship as I work in a MV framework and there is only a first-order effect. Obvious, political sentiment (S) causes a mispricing in the fair valuation of asset 1, as it monotonically increases the price of the stock according to its sign. This means that investors experience negative returns when prices adjust with the effect been more pronounced for the Noise traders who by definition are more aggressive investors ($\Gamma^N>\Gamma^A$).

Nevertheless, this time there are two extra features which interact with political sentiment and affect the equilibrium price: probability of re-election for the current government and political affiliation with a party. The intuition behind this concept is that appropriate prices of q and β can mitigate the effect of political sentiment on prices and consequently the extent of mispricing or alternatively, they can boost the effect of political sentiment in the presence of short-sales constraints. Even when I fix political neutrality in both classes of investors (i.e β=0,5) the tension of electoral competition can still affect the political

sentiment. In other words, electoral uncertainty can reduce the effect of political sentiment or even act as a corrective force which allays the influence of sentiment on the valuations of the stocks and eventually to the prices of the stocks. From this perspective elections have a role of a catalyst and push prices back to their fundamentals through the demand channel as investors revamp their portfolios.

Next I turn to the cross effect of policy multiplier and probability of re-election:

$$\frac{\partial P_1^{eq}}{\partial r \partial q} = \frac{[(\beta - 1)\Gamma^N - \Gamma^A]g}{\left(\Gamma^N + \Gamma^A\right)R} < 0 \qquad (3.31)$$

As q increases, the price at equilibrium becomes flatter which implies that as election competition reduces due to looming victory of the incumbent the effect of policy signals of the challenger fades. Electoral uncertainty is resolved and the probability of Noise traders to keep their portfolios relatively the same increases. On these conditions, political sentiment still causes a mispricing according to the sign of political sentiment as long as short-sales constraints bind.

3.3 Revisit and prepositions

Summarizing, my theoretical framework aims at investigating the role of behavioral biases stemming from politics for stocks of different exposure to governmental policies. Utilizing the political sentiment as a proxy of bias, I conclude that political sentiment leads to inefficient capital allocations especially for the stocks more exposed to the economic policies of the government. Moreover, political circumstances such as national elections, political affiliations and promised partisan agendas can waive the influence of political sentiment via the investors' decision-making process, leading to exacerbation or mitigation of the temporary mispricing effect. This has significant implications for the asset pricing theory and the selected investment strategies over a governmental cycle and in the surrounding of major political events.

The final predictions of the theoretical model can be condensed to 3 prepositions:

Preposition No1

In a market with two classes of investors, rational and bounded rational, political sentiment calls for a mispricing in the short-run even in the absence of short sales constraints. The effect is even more

pronounced for the firms more exposed to governmental policies defined as the contribution of the public sector to the overall profitability of the firms. Similarly, firms that demonstrate lower dependence on the governmental policies might be neglected from the sentimentally influenced investors creating investment opportunities for the rational participants of the market.

Preposition No2

In the event of national elections political sentiment can still play a role as it determines the final decision of investors about the valuation of the stocks' at equilibrium. Electoral uncertainty and political affiliations can mitigate or amplify the influence of political sentiment on the stock prices via the demand channel.

Preposition No3

Electoral competition affects the composites of investor's portfolios. When electoral competition declines and the probability of one party to win the elections increases, the policy signal of the winner potentially leads to re-balances of the portfolios. If the incumbent wins a re-election, bounded rational investors are unlikely to re-balance their portfolios as they are still affected by the political sentiment of the previous period sustaining the mispricing in the presence of short sales constraints. In contrast, if the challenger wins, then investors adjust their portfolios according to the party's policy signal affecting predominately the classes of stocks which were more exposed to the predecessor's economic policy.

In the next chapter, I adjust my theoretical prepositions and convert them into testable hypotheses in order to empirically investigate the validity and the conditions under which the theoretical predictions are verified.

4. Empirical Analysis

In this chapter I conduct empirical research to test the theoretical predictions stemming from my theoretical model. The tested hypotheses examined, come as a natural continuation of the prepositions stated in the previous chapter and focus on the empirical techniques to distinguish the classes of stocks with political sensitivity and the proxy of governmental policies across different political circumstances. Providing the methodological constraints and the testability of my prepositions the final tested hypotheses are as follows:

Tested Hypothesis H1: "Political sentiment affects stocks returns in a non-uniform way. Stocks more exposed to governmental policies are more sensitive to political sentiment than the others."

Tested Hypothesis H2: "Political sentiment's effect is more pronounced during electoral periods."

Tested Hypothesis H3: "Political sentiment has a positive or no effect when incumbent wins the elections and negative when challenger wins the elections."

The first hypothesis is straightforward and clearly depicts the predictions of the first part of the model. The second and the third can be broader interpreted and need further clarification. Following the second preposition, I test whether elections can act as a corrective force of stocks' prices. In this case, I expect the subsequent adjustments of stock prices vulnerable to political sentiment to be larger as underlying political uncertainty dominates, the financial environment becomes noisier and the corrections of mispricings attributed to political sentiment are magnified. Regarding the third, I investigate another dimension of elections and specifically, whether they lead to potential re-balances of investors' portfolios affected by political sentiment. From this perspective when incumbent is ahead on the polls and eventually wins the elections, irrational investors do not re-balance their portfolios profoundly, as they are still influenced by their political sentiment and have already formed portfolios, therefore stocks are not expected to realize negative returns assuming short-sales constraints. Political sentiment should play a reduced role and if it plays conventionally should have a positive effect on the prices of the stocks as uncertainty is resolved. In contrast, when challenger wins, investors adjust their portfolios according to the challenger's policy signal, shifting away their holdings from stocks favored from predecessor's policies, moving to other stocks, or "flight towards safety" (Addoum and Kumar, 2015).

In the next two sections I present the preparation of the dataset and the empirical methods I employ to test my hypotheses.

4.1 Preparation of the dataset and descriptive statistics

I investigate an unbalanced panel dataset spanning from 1980 to 2010. My primary source of data come from the universe of quarterly stock returns of CRSP/Wharton database. Apart from stock returns, my sample includes certain other items, among them shares outstanding, trading volume and closing price at the end of each quarter. I capture systematic movements in the returns of the stocks by employing the Fama and French (1992), 3 systematic factors from Professor French's library. The risk-free rate is defined as the return of the 90-day T-bill bond downloaded also from CRSP Wharton database.

The next step is to define particular variables of interest. Following Montone (2014), I define political sentiment as the variation of the Presidential monthly approval rates for the period 1980-2010. The data is available from Gallup polls database on a national basis, and are summarized to a single question: ''Do you agree with the way President is handling the job?'' with possible answers ''Approve'' and ''Disapprove''. Additionally, I download from Bureau of Economic Analysis (BEA), the general governmental expenditures to approximate the firm's exposure to government sector or equivalently to the Presidential policies. BEA provides different categories of governmental expenditures. I use the Total expenditures as a proxy for the main analysis, as it includes the whole government consumption for goods and services as well as gross investments and capital expenditures for governmental investments. Finally, I complement my dataset with other behavioral underlying drivers by downloading the orthogonalized change in the Investor Sentiment index of Baker and Wugler (2006), from Professor Baker's website.

The predictions of my model highlight the role of political sentiment under different political circumstances, for this reason I construct three dummy variables, "Elections", "President" and "Reelection"/"Challenger" to investigate political sentiment effects under different political conditions and across sub-samples. I define the electoral period as the last 12-month period (4 quarters) the President is in office. Please note, that even though elections in US take place conventionally during the early days of November, I do not exclude the month December in the aftermath of the elections, as the new President does not assume (or retain) the office officially before the new year and therefore Presidential approval ratings still refer to the incumbent's reputation. The second dummy variable ''President'' virtually distinguishes between the different parties of President's origin and takes the value 1 when the President comes from the Democratic party and 0 otherwise. Finally, in the spirit of Addoum and Kumar (2015), I distinguish the electoral periods where incumbent retains office (Re-election=1) and when it is succeeded by the opposition (Challenger=1). Table 1 presents the electoral competitions of the last 30 years. Overall, there are 8 electoral competitions starting from 1980 with 4 ending up with incumbent retaining the office and 4 ending up with the challenger victorious.

Regarding the preparation of the dataset I exclude, as common in literature, the heavily regulated industries, namely "Financial Services" (SIC 6020-6799) and "Utilities" (SIC 4000-4999). BEA's data for government expenditures come in both annual and quarterly terms. My intention is to capture as much information as I can from variation in governmental expenditures for this reason I use quarterly observations. This means I need to adjust the observations of the other variables in quarterly terms. While, CRSP and Fama-French factors are provided in quarterly terms, President's rate of approvals and investor sentiment terms are provided only in monthly and annual terms. To address this problem, I adjust the monthly observations to quarterly, by taking the equal-weighted average of the monthly observations starting from the month January of each year. Hence, I have the first quarter observation in the end of March of year t, the second in the end of June of year t and so forth.

Table 2 demonstrates the descriptive statistics of the main variable of interests. On panel A, I present the general summary statistics and the summary statistics classified according to President's ideological origin. On panel B, I focus on the summary statistics during electoral periods and across different Presidencies. On a quick look, summary statistics show there is a partisan effect on the excess returns of the stocks. Democratic governments have markedly higher excess returns relative to Republicans (0.0073 Vs -0.0015). Even though this looks consistent with Santa-Clara and Valkanov (2003), Democratic governments are accompanied by slightly higher standard deviation (0.208 Vs 0.177). Political sentiment (S_t) is marginally negative in the overall sample but when it comes to partisan characteristics it is poles apart, as it is positive during Democratic Presidencies (0.738) and negative during Republican (-0.588). In the same spirit, investor sentiment has a positive sign during Democratic presidencies (0.0548) and negative during Republican's (-0.0543) with a marginally negative sign in the overall sample explained by the dominance of the Republican relative to Democratic observations (142.729 observations versus 199.568).

Coming to electoral periods, in panel B, I observe the same patterns with risk and reward been higher when the incumbent is the Democratic party. Consistent with Addoum and Kumar (2015), trading volume is increased in the months preceding elections especially during Republican cycles, which imply increased transactions and presumably re-allocations of stocks, in order investors to deal with the new impending economic reality or simply because they want to speculate. Another interesting finding is the large government spending of Republican Presidencies. This is aligned with Alesina, Roubini and Cohen (1997) who notice that Republican governments present increased fiscal deficits from 1980-1991.

4.2 Design of the empirical approach

My theoretical model presented in the previous sections is a variant of the traditional CAPM approach. I test my theoretical predictions by running a series of Fama and MacBeth (1973) regressions on systematic factors and behavioral factors respectively. The process is as follows: On the first stage, I regress the excess rate of the quarterly returns of each stock to obtain the individual time varying betas of each factor per stock, or more intuitively the rate of sensitivity of each factor with the stock's return. Next, I form 10 rolling portfolios sorted on the governmental expenditure betas, with the first portfolio containing the stocks with the lowest sensitivity to the governmental expenditures and the tenth the highest. In the second step, I test the equally-weighted return of the formed portfolios by running a series of regressions on the risk factors and political variables under different political circumstances and political events.

The first stage of Fama and MacBeth (1973) regressions I perform are of the form:

$$\begin{aligned} r_{it} &= a_i + \beta_{iRm} RM_t + \beta_{iHML} HML_t + \beta_{iSMB} SMB_t + \beta_{iGov} Gov.spending + \beta_{iS_{t-1}} S_{t-1} + \beta_{iI} I_t + \beta_{ivol} volume_t + \varepsilon_{it} \\ &\vdots \\ r_{jt} &= a_j + \beta_{jRm} RM_t + \beta_{jHML} HML_t + \beta_{jSMB} SMB_t + \beta_{jGov} Gov.spending + \beta_{jS_{t-1}} S_{t-1} + \beta_{jI} I_t + \beta_{jvol} volume_t + \varepsilon_{jt} \end{aligned} \quad (1)$$

Where r_{it} i=1….j is the excess return of the stock i in time t, regressed over the conventional systematic risk factors namely, market premium (RM), Fama and French (1992) risk factors "High minus Low" (HML) and "Small minus Big" (SMB), the political sentiment (S_{t-1}) expressed in one lag and the investor sentiment in time t. "Gov. spending" denotes the Total governmental Expenditures provided by Bureau of Economic Analysis (BEA) and "volume" stands for the trading volume of the stock for a given quarter. After the formation of the portfolios, I run regressions on the risk factors of the form:

$$R_{pt} = a_i + \beta_1 RM_t + \beta_2 HML_t + \beta_3 SMB_t + \beta_4 S_{t-1} + \beta_5 I_t + \beta_6 Gov.spending + \beta_7 volume_t + D_1 X_t + \varepsilon_{pt} \quad (2)$$

Where R_{pt} , p=1…10 is the return of the equally-weighted portfolio formed on its sensitivity with respect to the governmental spending in time t, X_t is a vector of political variables I use to test my hypotheses for different events and sub-samples. Such events are time periods with different political interest such as national elections, the differential effect of political sentiment providing the partisan characteristic of the President and the case where governmental party retains or loses the office from the challenging party.

The diagnostic tests I perform on the preliminary regressions indicate issues of heteroskedasticity and autocorrelation. The former is expected since I use a panel dataset. Wooldridge tests for autocorrelation in panel dataset show no evidence when my dependent variable is the excess returns of the stocks (Ho hypothesis is not rejected, p-value 0.2264). Nonetheless, when I use the equal-weighted return of the

portfolios, the null hypothesis is rejected (p-value 0.000). In order to deal with potential deficiencies in the estimation of the coefficients I use heteroskedastic and autocorrelation-consistent (HAC) variance estimates.

4.3 Results of the baseline regression analysis

Table 3 demonstrates the main results from the baseline regressions of the portfolios formed on political sensitivity across the 3 decades. Panel A reports the general results while panels B and C present the effect of political sentiment across Presidencies with different ideological departures. The results confirm at least in part the first tested hypothesis. The primary conclusion can be drawn is that political sentiment has a marginal but statistically significant non-uniform differential effect across portfolios of different exposure to governmental policies. In particular, one standard deviation change in political sentiment has a negative effect in six out of ten portfolios in at least 5% statistical significance. This is consistent with Montone (2014) who finds that higher political sentiment in one time period is followed by negative returns in the next period. The magnitude of the coefficients is small and it is difficult to extrapolate a specific pattern though. The two portfolios which contain stocks with the greatest exposure to government's spending, namely the ninth and the tenth, realize positive returns when political sentiment is increased by one standard deviation in the previous quarter.

A plausible explanation of the weak effect in terms of magnitude is the time dimension of my data. Since they are in quarterly form, by construction they contain less information relative to the sentimentally influenced demand of the investors, the changes in the composites of their portfolios and the subsequent corrective forces of the Arbitrageurs. In other words, in an efficient market this mispricing-correction process is short in duration and potentially not easily detectable from long-time formatted data as the quarterly used in the test. In support of this, Addoum and Kumar (2015) document that the performance of their politically sensitive Long-Short portfolios decrease as the holding period increases and becomes statistically insignificant after six months, a timeline compatible with my framework. As of the positive return of the tenth portfolio, this outcome can be attributed to the fact that even though I have excluded heavily regulated firms from my analysis, there are still industries which rely heavily on governmental spending for their profitability and whose operational field calls for inflexible operational expenditures such as and Aerospace, Aircrafts and Guns industries which are mandated with launching large scale programs irrespectively of the short-term fluctuations of the economy. Accounting for all these, political sentiment seems to affect investors' valuations even working in a quarter time context where the dynamics of shifts in demand and subsequent hedging corrections can be difficultly detected due to their fast pace and short-lived occurrence.

Interestingly, in this concept investor sentiment follows the same pattern as documented by Baker and Wurgler (2006, 2007), who find that stocks sorted on size and Book-to-Market are more sensitive to investor sentiment at the extremes than the "stable" stocks in the middle portfolios. Here, a marginal change of investor sentiment increases portfolios' returns with this effect be more pronounced for the first (0,0140), the second (0,0106), the ninth (0,0140) and the tenth (0,0161) all statistical significant in 1%. In addition, except the conventional systematic risk factors, other variables such as government expenditures and trading volume even tough statistical significant in the majority of the portfolios have a zero effect in terms of magnitude and therefore they are not of economic interpretation.

Decomposing the sample into different administrations sheds more light on the role of political sentiment across portfolios. Panel B and C demonstrate a distinct partisan effect of political sentiment on the returns of the rolling portfolios. Political sentiment has again a weak and statistical significant effect in 99% confidence interval on the returns of the portfolios. Nonetheless, there is distinct difference between Democratic and Republican governments. Regarding the former, one standard deviation change in political sentiment has a negative effect for the less sensitive portfolios starting mainly from the second portfolio (-0,0009, t=-26,98). Moving across the portfolios this pattern is gradually reversed and becomes increasingly positive from the sixth portfolio (0,0002, t=-8,88) to the tenth (0,0034, t=39,94). Furthermore, the trading volume is statistically insignificant in the nine of the cases. The pattern is completely opposite for the Republican administrations where the marginal effect of political sentiment is positive for the first three portfolios (0,0002 for the first and the second with t=8,36, t=9,63 and 0,0005 for the third with t=16.67) and negative for the rest with the tenth portfolio demonstrating the most negative return (-0,0008, t=-20,18).

Panel B provides full support for Belo, Gala and Li (2013) and consequently for Santa-Clara and Valkanov (2003), as firms with strong exposure to government spending realize higher and increasing returns during Democratic administrations. From this perspective, cash flow channel seems stronger than the demand channel underlined by sentimentally motivated investors implying a more active and favorable governmental economic agenda for these classes of firms. More interestingly, Panel C demonstrates a pattern in full line with the first preposition of my model. Portfolios of low exposure to governmental spending are neglected and therefore underpriced from Noise traders while they invest more heavily in stocks of high politically sensitivity. As a result, the more exposed stocks realize the lowest returns when prices adjust. Providing that my dataset is dominated by Republican administrations (20 years Vs 10 for Democrats), this finding can give a more consistent story about the role of political sentiment. Note, again that the economic impact is meager for the reasons mentioned above.

Investor sentiment plays a similar role after controlling for partisan effects. During the Democratic Presidencies is positive while during the Republican are of mixed sign with the most portfolios

demonstrate a negative one. Again, the portfolios sorted on the extremes react strongly to changes of investor sentiment relative to those located in the middle irrespectively of the government's identity.

The second preposition highlights the role of elections through the dynamics it generates for the stocks' mispricings. Table 4 Panel A, presents the test conducted during electoral periods. Panel B and C control for the cases where the incumbent was elected for an extra term and the challenger won the elections respectively. Panel A demonstrates that national elections increase the predictability of the portfolios returns as they have a more severe negative effect on the returns of the investors in seven of the ten rolling portfolios. In particular, investors realize declining negative and statistically significant returns (1% statistical significance) from the second (-0,0015, t=-26,60) to the seventh (-0,0001, t=-3,71) with the eighth be zero and statistical insignificant and the ninth and the tenth positive (0,0005, t=7,50 and 0,0003, t=2,42). Notably, the two most extreme portfolios namely the first and the tenth seem to react less to political sentiment (-0,0009, t=-13,97 and 0,0003, t=2,42 respectively). In general, these results postulate that the dynamics of supply and demand are magnified during times investors are more concerned with political affairs consistent with the second preposition of the theoretical model and aligned with Addoum and Kumar (2015).

Turning now to the trading volumes, despite their statistical significance in most of the rolling portfolios, they are marginally negative and different from zero and as a result they do not have an economic interpretation on the returns of the portfolios. Nonetheless, the value of this observation is that they imply changes in the composites of the portfolios, as investors adjust their portfolios to deal with the electoral uncertainty (Pasquariello and Zafeiridou, 2014) acting potentially according to their specific political affiliations (Bonaparte, Kumar and Page, 2012). The strongest results imply that these factors interact with political sentiment exacerbating or correcting the mispricing according to the electoral outcome.

This becomes clearer when controlling for different political outcomes of national elections providing strong support for the third hypothesis. As proposed by the theoretical model, bounded rational investors are less likely to rebalance their portfolios when probability for the current government to win the elections increases. As a result, the prices of the stocks will inflate further or will remain inflated due to political sentiment generating positive returns for the investors until Arbitrageurs take action. Panel B verifies this prediction as rolling portfolios realize escalating and positive returns more notably starting from the fifth portfolio (0,0010, t=26,41) to the tenth (0,0067, t=28,45), all statistical significant in 99% confidence interval. This finding provides also support for the first tested hypothesis, not verified in the overall sample: Stocks more exposed to government spending are more vulnerable to political sentiment.

The positive returns not justified by systematic risk factors imply inertia of Arbitrageurs. Such an assumption can be underpinned by the fact that rational investors could abstain from the market feeling

unconfident about the quality of information they possess (Pasquariello and Zafeiridou, 2014) or they prefer to seek for safer investments (Addoum and Kumar, 2015). Comparing to the results over the Presidential cycles, the underperformance of the less sensitive portfolios is higher, which can be attributed to the fact that Arbitrageurs react faster as Contrarian investors when uncertainty is resolved in the middle of the Presidential cycle. Another interpretation is that political affiliations of investors affect decision-making process and leads them to increase the riskiness of their portfolios when their affiliated party is in power (Bonaparte, Kumar and Page, 2012). This is also aligned with the fact that the portfolios which contain more systematic factors i.e more exposed to government spending realizes the higher returns. Consequently, as the probability of incumbent's re-election looms stocks which are more exposed to the current government's policy gain momentum and are in demand by investors. The hypothesis of non-rebalancing is also underpinned from the fact that in contrast to all the other tests where trading volume is statistical significant here it is insignificant in six of ten portfolios and more interestingly in the three with the highest exposure.

The pattern is completely the opposite when challenger ends up victorious. As shown in Table 4, Panel C political sentiment commands for a negative return for eight of the ten portfolios (all significant in 1% significance). The effect is more pronounced for the portfolios of low sensitivity (-0,0029, -0,0030, -0,0031) for the first, the second and the third portfolio respectively, and closer to zero for the more stable portfolios (five to seven). Only two high politically sensitive portfolios, the eighth and the ninth predict positive returns. Comparing to cases where President retains office, the economic significance of the political sentiment is markedly stronger in terms of magnitude which is aligned with Addoum and Kumar (2015) who find evidence of stronger predictability when challenger wins the elections as the elections' outcomes changes the political atmosphere radically. Moreover, contrary to the case of re-election, trading volume is negative and statistical significant in 1% predominately for the highly exposed portfolios. Even though the marginal effect is again small, it indicates the realization of financial transactions as investors adjust their investment strategies according to the expected electoral outcome and the policy signals of the impending winner. It is worthwhile to mention that the most pronounced negative effects are reported for the portfolios of low exposure to the incumbent's policies.

Finally, again investor sentiment follows a similar pattern during electoral period in the overall sample with the extremes be more sensitive. It is not consistent when I control for electoral outcomes though. When the challenger wins the elections, a standard deviation change in investor sentiment gives a stronger marginal effect at the extreme portfolios of a positive sign. Unlikely, this pattern is not observable when incumbent wins as the marginal effect is mixed in terms of magnitude and sign across portfolios.

4.4 Long-Short investment strategy

In this section I attempt to address a primary question of the mainstream behavioral finance research: whether it is possible to extrapolate predictable patterns of stock movements and convert them into concrete and profitable investment strategies. The preliminary empirical results suggest that there are mispricings caused by political sentiment and indicate the appropriate investment positions for stocks of different political sensitivity. In the spirit of Baker and Wurgler (2006) and following the results of the baseline analysis, I establish an investment strategy by constructing Long-Short portfolios sorted on political sensitivity according to the definition provided in the previous sections. The results of the first empirical section imply that political sentiment has a non-uniform marginal effect on the prices stocks but only when partisan effects are taken into account with the political sentiment having a persistent inflationary effect on the prices of the most exposed stocks during Democratic Presidencies and vice versa for the Republican administrations.

Thus, a rational strategy taking into account the effect of political sentiment and assuming a continuous re-balancing of the investors' portfolios throughout the quarter, dictates positions adjusted for the partisan effects. I construct three Long-Short portfolios by taking respective positions on the extreme portfolios and on the extremes relative to middle ones. Please note that for reasons of consistency, I form Long-Short portfolios on the political sensitivity according to the predictions of the theoretical model and not on the preliminary empirical results obtained in the first section. This does not inhibit me from giving appropriate interpretations in the obtained results and make recommendations. Table 5 demonstrates the results of the regressions controlling for different political circumstances.

The results show that it is possible to establish a profitable strategy mainly under specific political conditions. In the overall sample only one portfolio, the "Long-Short 1-5" is statistically significant and aligned with the theory yielding a mere 0,0007 (t=2,16). Nonetheless, focusing on the partisan effects, I find stronger and more consistent results with the empirical results of the previous section. Following this strategy, Democratic Presidencies give negative returns for the extreme portfolio "Long-Short 1-10" and the more politically sensitive one "Long-Short 5-10" with -0,0016 (t=-1,73) and -0,0023 (t=-2,31) respectively. Interestingly, the return of the less sensitive portfolio ("Long-Short 1-5") is positive but with statistical significance only in 10% (t=1,96). Finally, Republican administrations, demonstrate stronger results only for the politically sensitive portfolio ("Long-Short 5-10") 0,0012, (t=2,24) with the other two portfolios be at the expected sign but statistically indistinguishable from zero.

Turning now to national elections, the results show stronger results in terms of coefficients' magnitude which imply a more intense and frequent re-balance of investors' portfolios. The statistical significance is not universal though. During the electoral period only the portfolio which trades the most politically

(in)sensitive stocks has positive returns according to the theory. A standard deviation of political sentiment yields for the "Long-Short 1-10" 0,0023 (t=2,23), statistical significant in 95% confidence interval. Again, the other two portfolios that quantify the returns between the extremes and the stocks of moderate sensitivity are of the expected sign but with no statistical significance in any of the conventional levels. Concerning the elections' outcome, Long-Short strategy is lucrative for the investors only when the challenger is expected and eventually wins the elections. The strongest returns are for the "Long-Short 1-10" with return 0,0053 (t=7,66) and the political sensitive portfolio namely "Long-Short 5-10" with 0,0041 (t=12,41). In contrast, none of the portfolios yields a statistical significant return when incumbent wins the elections due to investors' dormancy. Notably, trading volume is statistical significant in most of the cases where the Long-Short portfolios are statistically significant signaling once again extensive rebalancing of investors' portfolios.

The above results recommend a diversification of investment strategies providing the stage of the Presidential cycle and the particular policies implemented by the government underlain by ideological platforms. Consequently, an optimal strategy is taking long positions on stocks with relevant high exposure to government spending and short on stocks with relevant low exposure during governmental terms associated with expansionary policies. Correspondingly, shorting stocks whose profitability is cling on the current level of government expenditures and buying stocks whose performance is independent of how much does government spend yields positive returns of 0,0012 for a standard deviation change of political sentiment. In contrast, during electoral periods, where challenger appears as the most likely winner, taking short position on stocks with relatively high exposure and long on stocks lower is even more profitable.

An issue also observed in the preliminary results is the weak effect of political sentiment on the return of the investment strategy. An explanation for this is that in order to formulate the Long-Short strategies I transformed my dataset from a pure panel data set to a time series. Providing the quarterly form of my data and the relatively short time span (1980-2010), this can result in a significant condensation of the relative information making difficult to detect movements distinguishable from zero. Even though this is on the discretion of the researcher there are arguments that even fewer than 5 observations may be sufficient (Simonton, 1977) for obtaining reliable results.

4.5 Research limitations

It is worthwhile to mention some potential limitations on the scope of this Master Thesis. Even though, financial databases such as CRSP and BEA are highly appreciated in academia due to the abundance and

the frequency of their observations, the particular multidisciplinary framework poses some constraints to the empirical investigation.

The primary limitation regards the compatibility of the Total Governmental Expenditures as a good proxy for distinguishing the firms which are more exposed to the governmental policies. Even though, I employ dependable empirical techniques to identify stocks' sensitivity, this method focuses predominately on the statistical properties and the market dynamics which eventually determine the sensitivity of the stocks. As a result, what the researcher observes is the outcome of the market financial transactions commensurate to the availability of information regarding firms' fundamentals. An alternative approach comes from the approach of Belo, Gala and Li (2013) who construct a novel index by using Input-Output matrices which capture not only the governmental expenditures for final consumption across the industries but also the added value generated from these expenditures between the industries which are in turn reflected on the stock price.

Another limitation is the particular format of the selected data as well as the time span of the sample. Regarding the former, due to the fact that "Total Government Expenditures" are available only in quarterly and annual basis, it was required to convert all the other observations into quarterly form in order to secure compatibility. This could deprive my tests of valuable information especially relative to the changes in the rate of Presidential approvals where the public opinion can vary from week to week especially during electoral periods. This can partly explain the weaker statistical significance of political sentiment's effect on stock returns comparable to Montone (2014) . In addition the time period where the empirical research takes place covers a period of 3 decades, (1980-2010) each of which is dominated only by one Presidential party. It would be interesting to extend the period of the sample, to the decades of 1970s and 1960s where the alternations in office were more frequent and therefore the transitions in political sentiment could contain more information.

A final limitation should be considered, is the lax assumption I make about the electoral competition. My theoretical model predicts that as probability for re-election of the Presidential party increases and political instability declines, bounded rational investors will keep their portfolios' composites relatively stable. In order to deal with the lack of reliable quarterly pre-election polls[8] I employ the final outcome of the elections as a pre-electoral predictor. Thus, when my dummy variable "Re-election" takes the value one, I assume that probability of re-election is higher throughout the electoral period and the same holds for the "Challenger". Even though this is not always the case especially in the early days of the electoral period where the candidates might not have obtained a vigorous dynamic, my empirical results are close to the theoretical predictions of the model and consistent with relevant findings of the literature.

[8] Gallup database makes available only pre-electoral polls up to six months before the elections. Providing the quarterly form of my dataset this would sum up to two observations per electoral period. It is evident that these are insufficient to conduct empirical analysis.

4.6 Conclusion and proposals for future research

This master thesis attempts to shed light on the interactions between politics and behavioral biases in the context of the stock markets. It comes to complement, a growing literature (Addoum and Kumar, 2015 Bonaparte, Kumar and Page, 2012, Montone 2014) focusing on the effects of political sentiment for the stock markets and the investors' decision-making process. Working on both a theoretical and empirical framework, I find that political sentiment has a weak but discrete effect on the returns of the stocks sorted on different levels of exposure to government's policies when these are defined as the contribution of the public sector to the firm's overall profitability. When I go deeper to the partisan effects, I find consistency with the predictions of my theoretical model for the Republican administrations, as an increase of political sentiment is followed by negative returns more pronounced for the more exposed stocks to the governmental sector. The pattern is reversed when Democrats are in power. These results are aligned with the findings of Belo, Gala and Li (2013) implying an interactive link between political sentiment and Presidential policies endorsing the theory of partisan cycles.

Moreover, political sentiment seems to have a more severe effect during electoral periods. This implies that elections act as a corrective force which pushes the prices back to its fundamentals as investors re-balance their portfolios either "flying towards safety" (Addoum and Kumar 2015), "flying towards quality" (Chen et al., 2015) or just by "sitting at the sidelines" (Pasquariello and Zafeiridou, 2014). Electoral competition also seems to matter for the effect of political sentiment. When President wins the re-election, political sentiment has an intensifying positive effect on the returns of the political sensitive stocks as irrational investors have already formed portfolios compatible with their sentiment. In contrast, when challengers win, investors incorporate the new information of the challenger's declared policy signals and re-adjust their portfolios accordingly. From this perspective, even if Arbitrageurs are not engaged in short-selling strategies due to political uncertainty, the correction in the prices of the stocks comes via the demand channel.

The Thesis also contributes to the seminal work of Baker and Wurgler (2006) regarding the classes of stocks more sensitive to investor sentiment. Classifying the stocks according to their sensitivity with respect to changes of governmental spending, I find that stocks with the lower and the higher sensitivity are consistently more sensitive to the changes of investor sentiment index relative to the stocks classified in the middle for different political environments and occasions. The only exception is for the case the incumbent is re-elected where the results are mixed across portfolios in terms of sign and coefficients' magnitude.

From a methodological perspective, I attempt to syndicate two fundamentally different approaches on the role of politics for the pricing and the allocation of the assets. The one of Belo, Gala and Li (2013) who focus on the supply side of the economy and the cash flow sensitivity to link returns with politics and the demand side approach of Addoum and Kumar (2015) who highlight the role of investors' portfolio decisions relative to the political climate and political events. Tracing carefully my empirical findings, I conclude that there is confirming evidence for both theories under specific conditions. For instance, I find that political sentiment impacts positively the most exposed stocks during Democratic Presidencies and has a non-significant effect in the unconditional sample. This is the central conclusion of Belo, Gala and Li (2013). Another instance provided by Addoum and Kumar (2015) is that the market dynamics are more pronounced during periods where political interest is more manifest. Both finding brings me closer to a compromise of the two approaches proposed by Addoum and Kumar (2015) that both channels can be valid simultaneously but not necessarily concurrently.

It is apparent that politics and finance will continue to fascinate researchers in the future. As long as the interactive game of power between politics and financial markets exists, this research field will offer fertile ground for controversy and debate. The employment of behavioral finance tools has reignited the discussion of this relationship and establish a new radical basis against the prevalent financial theory, as now it seems possible to extrapolate predictable patterns for financial securities under conditions which are more robust than single partisan characteristics indicate and rational expectations models postulate. The challenge is to identify the market places where behavioral biases trigger mispricing and refine the political circumstances that have the largest and most persistent impact on assets' prices.

The current master Thesis can be extended at least three main directions. Primarily, the investigation could include stocks' characteristics other than policy exposure. Baker and Wurgler (2007) for instance, mention that young, growth, unprofitable stocks are more vulnerable to investor sentiment. It would be interesting to extend the analysis of political sentiment to encompass stocks with such characteristics and see whether it is possible to verify predictable patterns under concrete political circumstances.

A second direction is to focus on the demand side of the markets and on the composites of the portfolios. My findings propose strong partisan characteristics relative to political sentiment. Furthermore, there is convincing evidence that even "smart money" exhibit some form of behavioral biases in the selections of the compositions of their portfolios closer to the notion of political affiliations (Hong and Kostovetsky, 2012). The fact that institutional investors are major market setters, increase the interest of investigation with respect to the criteria and the political circumstances under which funds' asset managers select the securities of their portfolios an formulate investment strategies.

Another option is to investigate political sentiment's effect in countries with different political culture. American political system is by construction very advantageous for empirical research from multiple perspectives. The reason is that it is a mature and well established democracy, with two major political parties competing for power while the electoral cycle is smooth and stable. This is not always the case for other developed economies especially at the European continent. Even though Europe has countries with solid democratic regimes, the governmental structure of these countries varies from multi-partisan governmental coalitions to minority governments with consequences about the electoral cycle and the life duration of these governments. As a result, it would be interesting to investigate how do political sentimental waves influence the investor decision making process in political systems where inter-governmental frictions and snap elections are component of investors' expected returns.

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APPENDICES

A. Proof of Mean-Variance framework

The analysis is derived from textbook: Sargent (1979) *Macroeconomic Theory*, 2nd. edition p. 154-155. Please note that some that symbols are adjusted to meet my current framework (C=Wealth).

For an exponential utility function of the form:

$$U^i = -e^{-a^i W} \quad , \alpha>0 \qquad \text{(A.1)}$$

where U is the individual utility of agent i and α is her individual risk aversion. Taking first and second order conditions:

$$\frac{\partial U^i}{\partial W} = ae^{-a^i W} > 0 \quad , \frac{\partial^2 U^i}{\partial W^2} = -a^2 e^{-a^i W} < 0$$

Which imply risk aversion (concavity)

Assuming that wealth is normally distributed with mean μ and variance σ^2 the density of W is given by the expression:

$$f(W) = \frac{e^{-\left(\frac{W-\mu)^2}{2\sigma^2}\right)}}{\sigma\sqrt{2\pi}} \qquad \text{(A.2)}$$

So, the expected utility is given by:

$$EU(W) = \frac{1}{\sigma\sqrt{2\pi}} \int_{-00}^{00} -e^{-aW} e^{-\left(\frac{W-\mu)^2}{2\sigma^2}\right)} dW \qquad \Leftrightarrow$$

$$\Leftrightarrow \quad EU(W) = \frac{1}{\sigma\sqrt{2\pi}} \int_{-00}^{00} -e^{-\left(\alpha W + \frac{(W-\mu)^2}{2\sigma^2}\right)} dW$$

Re-writing the long expression in terms that depend and not depend on W we take:

$$EU(W) = aW + \frac{(W-\mu)^2}{2\sigma^2} = \frac{(W-\mu+\lambda\sigma^2)^2}{2\sigma^2} + \lambda\left(\mu - \lambda\frac{\sigma^2}{2}\right)$$

Substituting this to the expected wealth:

$$EU(W) = -\frac{e^{-\lambda\left(\mu-\lambda\frac{\sigma^2}{2}\right)}}{\sigma\sqrt{2\pi}} \int_{-00}^{00} e^{-\frac{(W-\mu+\lambda\sigma^2)^2}{2\sigma^2}} dW$$

Or for all μ' it gives:

$$EU(W) = \frac{1}{\sigma\sqrt{2\pi}} \int_{-00}^{00} e^{-\frac{(W-\mu')^2}{2\sigma^2}} dW = 1$$

which includes the whole surface. Since this is so for any μ' including $\mu' = \mu - s^2$,
it follows that:

$$EU(W) = -e^{-a\left(\mu - a\frac{\sigma^2}{2}\right)} \qquad \text{(A.3)}$$

Representative agent maximizes the expected mean of his wealth losing utility for the estimated variance which is scaled by his individual aversion towards risk.

B. Marginal Moments of Mean-Variance framework

The commonly perceived market variance is the aggregate variance of each class of investor. Using the single rules of statistical summation and assuming equal mass for each class I obtain:

$$V_{AN}(r_1) = \frac{V_A(\Pi_1 + g)}{P_1} + \frac{V_N(\Pi_1 + g)}{P_1} \quad \Leftrightarrow$$

$$V_{AN}(r_1) = \frac{V_A(\Pi_1) + V_A(g) + 2\mathrm{cov}_A(\Pi_1, g)}{P_1} + \frac{V_N(\Pi_1) + V_N(g) + 2\mathrm{cov}_N(\Pi_1, g)}{P_1} \quad \Leftrightarrow$$

$$V_{AN}(r_1) = \frac{V_{AN}(g) + V_{AN}(\Pi_1) + 2\mathrm{cov}_{AN}(\Pi_1, g)}{P_1}$$

Or:

$$V_{AN}(r_1) = \frac{V_{AN}(\Pi_1, g)}{P_1} \qquad \text{(B.1)}$$

Similarly, the market covariance of the first asset with the other asset is simply:

$$\mathrm{cov}_{AN}(r_1, r_2) = \frac{\mathrm{cov}(\Pi_1 + g, \Pi_2)}{P_1 P_2} \qquad \text{(B.2)}$$

Finally, covariance of a risky asset 1 with the market is:

$$\mathrm{cov}_{AN}(r_1, r_m) = \frac{V[\Pi_1 + g, \Pi_1 + g + \Pi_2]}{P_1(P_1 + P_2)} \quad \Leftrightarrow$$

$$= \frac{\mathrm{cov}(\Pi_1, \Pi_1) + \mathrm{cov}(\Pi_1, \Pi_2) + \mathrm{cov}(\Pi_1, g) + \mathrm{cov}(\Pi_1, g) + \mathrm{cov}(\Pi_2, g) + \mathrm{cov}(g, g)}{P_1(P_1 + P_2)}$$

which entails:

$$\mathrm{cov}(r_1\ r_m) = \frac{V(\Pi_1 + g) + \mathrm{cov}(\Pi_1 + g + \Pi_2)}{P_1(P_1 + P_2)} \qquad \text{(B.3)}$$

C. Political choice problem

I cite a numerical example in order to make the policy choice example more comprehensive. As mentioned in the main section, all investors have to make a binary option, either change their portfolios substantially or not. Based on their valuations the binary problem is:

$$\max\left\{\frac{\Gamma^N(q\beta E(\Pi_1+g)+S)^{inc}}{(\sigma_1^N)^2},\frac{\Gamma^N(1-q)(1-\beta)E(\Pi_1+rg)^{chl}}{(\sigma_1^N)^2}\right\}$$

Let's assume that there are imminent national elections. The incumbent is the REB party and the DEM party has the role of the challenger. Both parties have an agenda which is common knowledge: REB weight more the private sector and the big companies, while DEM favor more the public spending and therefore the firms which more or less are exposed to governmental policies via the channel of public spending contribution to company's profitability. Inherent profitability of the firms is fixed to unity and the risk tolerance of the Noise traders is 0,6. The probability of re-election for the current government is q=0,45 and initially I assign no political affiliation to Noise traders. Finally, I assume a government multiplier for the challenger r=1,2 and a 30% exposure of the stock to the public sector. This entails that:

$$\max\left\{\left(\frac{(0.6\times0.45\times0.5\times(1+1\times0,3)+S)}{(\sigma_1^N)^2}\right)^{inc},\left(\frac{(0.6\times0.55\times0.5\times(1+1.2\times0.3))}{(\sigma_1^N)^2}\right)^{chl}\right\}$$

$$0.1755+0,135S\geq 0.2244$$

$$S\geq 0,362$$

It is evident, that when the probability q increases the investors are more likely to keep the composites of their portfolios stable as these are formed according to incumbent's policies. In this case they are not expected to shift their demand except from the specific effect of political sentiment. Interestingly, even a moderate level of political sentiment could affect Noise traders' investment decisions even in the extreme scenario where the challenger weights more the specific type of stock and probabilities for re-election are likely not against him. Selecting the former valuation (i.e of the current government) means that Noise traders are not expected to alter the compound of their portfolios formed in the previous period as long as the current government demonstrates a similar political agenda and Noise traders' valuations are sufficiently influenced by political sentiment.

Table 1. List of the Presidential elections from 1980 to 2010

Table of the Presidential elections in the United States of America. The first column shows the partisan identity of the President on the day of the Presidential elections. The second shows the date of the elections and the third the final winner. The fourth column indicates weather the party is reelected (I) or the challenger (C) wins the elections.

President	Time of Elections	Winner	Reelection
Democratic	November 1980	Republicans	C
Republicans	November 1984	Republicans	I
Republicans	November 1988	Republicans	I
Republicans	November 1992	Democratic	C
Democratic	November 1996	Democratic	I
Democratic	November 2000	Republican	C
Republican	November 2004	Republican	I
Republican	November 2008	Democratic	C

Table 2. Descriptive statistics

Summary table with the basic descriptive statistics of the main variables of interest. Panel A demonstrates the basic general descriptive statistics and summary statistics according to President's partisan origin. Panel B narrows the summary statistics to the electoral period. Excess return is the stock's excess return over the risk free rate of the 90-day T-bill from CRSP. Market premium, SMB and HML are the three systematic factors of Fama and French (1992) downloaded by Professor French's library. Political sentiment (S) is defined as the change in the Presidential approval ratings in the end of each month provided by Gallup database and expressed in a quarterly basis. Investor sentiment is the orthogonalized monthly change in the investor sentiment index of Baker and Wugler (2006) adjusted in quarterly terms. Government spending is the Quarterly Total Government Expenditures downloaded from Bureau of Economic Analysis (BEA). Orthogonalized investor sentiment data is provided from Professor Baker's website. Electoral period is defined as the last year (12-month period) of each President in office.

Panel A			Democrats		Republicans	
	Obs.	342297	Obs.	142729	Obs.	199568
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Excess return$_t$	0.0022	0.191	0.0073	0.208	-0.0015	0.177
Rm-Rf$_t$	1.809	8.755	3.640	8.272	0.499	8.856
SMB$_t$	0.770	5.404	0.213	5.174	1.169	5.529
HML$_t$	0.679	7.629	-0.0981	9.240	1.234	6.167
Size$_t$	1.956e+06	1.140e+07	1.920e+06	1.140e+07	1.981e+06	1.140e+07
Trading volume$_t$	98732	490036	89883	444008	105061	520373
S$_t$	-0.0351	6.513	0.738	6.364	-0.588	6.562
Investor sentiment$_t$	-0.0088	0.529	0.0548	0.556	-0.0543	0.504
Government Spending$_t$	3087	1269	3153	1210	3040	1307
Panel B Elections=1			Democrats		Republicans	
	Obs.	90654	Obs.	36720	Obs.	53934
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
Excess return$_t$	-0.0070	0.189	-0.0049	0.216	-0.0085	0.168
Rm-Rf$_t$	-0.446	7.030	0.576	6.607	-1.141	7.222
SMB$_t$	0.392	4.457	-0.434	4.520	0.954	4.324
HML$_t$	1.711	7.670	1.339	8.899	1.964	6.694
Size$_t$	2.011e+06	1.230e+07	1.809e+06	1.300e+07	2.149e+06	1.170e+07
Trading volume$_t$	101113	511768	58653	290644	130020	616968
S$_t$	-0.180	3.886	0.557	3.247	-0.682	4.192
Investor sentiment$_t$	-0.140	0.640	-0.0831	0.745	-0.179	0.554
Government spending$_t$	3033	1265	2557	756.1	3358	1429

Table 3. Political sensitivity and Sentiment

Regression analysis of portfolios of stocks to Political sentiment (S_{t-1}), Fama and French (1992) risk factors, trading volume, size, variation in investor sentiment and Total Government spending in the overall sample (Panel A) and controlling for partisan characteristics (Panel B and C). Ten equally-weighted portfolios are sorted according to the betas of quarterly Total Government spending derived from Fama and MacBeth (1973) rolling regressions. Portfolios' excess returns are defined as the excess returns of the portfolios over the 90-days T-bill available from CRSP. Political sentiment (S) is defined as the change in the Presidential approval ratings at the end of each month expressed in a quarterly basis. Investor sentiment is the monthly change in the orthogonalized investor sentiment index of Baker and Wugler (2006) adjusted to quarterly terms. Presidential rates of approval are available from Gallup database. Total Government Expenditures are downloaded from Bureau of Economic Analysis (BEA). Orthogonalized investor Sentiment data is provided from Professor Baker's website. *t* statistics in parentheses * p<.10, ** p<.05, *** p<.01

Panel A Overall Sample	1	2	3	4	5	6	7	8	9	10
$Rm\text{-}Rf_t$	0.0031***	0.0035***	0.0034***	0.0032***	0.0030***	0.0031***	0.0033***	0.0030***	0.0033***	0.0027***
	(120.19)	(186.83)	(256.41)	(281.92)	(232.95)	(213.47)	(252.33)	(174.35)	(136.42)	(61.99)
SMB_t	0.0043***	0.0032***	0.0029***	0.0025***	0.0030***	0.0028***	0.0035***	0.0041***	0.0047***	0.0071***
	(102.95)	(104.59)	(158.71)	(131.52)	(143.59)	(124.90)	(177.38)	(125.42)	(104.37)	(96.33)
HML_t	0.0000	0.0003***	0.0004***	0.0008***	0.0010***	0.0009***	0.0013***	0.0008***	0.0014***	0.0017***
	(0.29)	(15.06)	(23.48)	(57.71)	(74.16)	(53.88)	(86.69)	(35.80)	(43.59)	(32.21)
Trading $Volume_t$	0.0000	-0.0000*	-0.0000**	-0.0000**	-0.0000**	-0.0000	-0.0000***	-0.0000*	-0.0000	-0.0000
	(0.59)	(-1.72)	(-2.23)	(-2.38)	(-2.57)	(-1.44)	(-2.69)	(-1.95)	(-1.36)	(-0.50)
$Size_t$	-0.0000	0.0000	0.0000	0.0000	0.0000*	0.0000	0.0000	0.0000	0.0000	-0.0000
	(-0.64)	(0.39)	(0.53)	(0.38)	(1.92)	(0.79)	(0.96)	(0.96)	(1.12)	(-0.88)
S_{t-1}	0.0000*	-0.0001***	0.0001***	-0.0001***	-0.0003***	-0.0000*	-0.0002***	-0.0000**	0.0002***	0.0006***
	(1.89)	(-5.20)	(4.42)	(-11.01)	(-18.96)	(-1.92)	(-15.41)	(-2.55)	(7.59)	(14.09)
Investor $Sentiment_t$	0.0140***	0.0106***	0.0069***	0.0052***	0.0026***	0.0072***	0.0071***	0.0041***	0.0140***	0.0161***
	(36.04)	(33.39)	(27.54)	(25.25)	(12.52)	(24.63)	(32.13)	(13.75)	(30.70)	(25.20)
Gov. $spending_t$	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(60.61)	(73.80)	(109.93)	(123.69)	(120.52)	(93.62)	(108.01)	(102.06)	(71.94)	(70.19)
Constant	-0.0527***	-0.0609***	-0.0618***	-0.0594***	-0.0517***	-0.0439***	-0.0413***	-0.0393***	-0.0303***	-0.0286***
	(-134.63)	(-177.13)	(-232.09)	(-249.40)	(-214.35)	(-153.65)	(-165.08)	(-138.10)	(-70.92)	(-46.79)
Observations	32776	33450	33551	33576	33166	32584	33531	33443	33252	32481
Adjusted R^2	0.73	0.79	0.86	0.87	0.86	0.85	0.89	0.83	0.74	0.62

Panel B Demorcats	1	2	3	4	5	6	7	8	9	10
$Rm\text{-}Rf_t$	0.0027***	0.0030***	0.0033***	0.0030***	0.0027***	0.0024***	0.0026***	0.0022***	0.0020***	0.0011***
	(77.34)	(106.58)	(179.65)	(182.89)	(145.51)	(133.41)	(142.44)	(105.68)	(52.33)	(16.99)
SMB_t	0.0036***	0.0037***	0.0024***	0.0028***	0.0037***	0.0028***	0.0040***	0.0046***	0.0056***	0.0074***
	(62.02)	(79.11)	(74.96)	(97.76)	(139.74)	(75.40)	(158.68)	(131.37)	(98.46)	(104.94)
HML_t	0.0005***	0.0008***	0.0008***	0.0011***	0.0011***	0.0009***	0.0010***	0.0001***	0.0003***	-0.0009***
	(12.64)	(24.24)	(38.43)	(52.65)	(58.34)	(47.93)	(61.50)	(4.76)	(6.31)	(-14.35)
Trading $Volume_t$	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000**	0.0000	0.0000	0.0000
	(-1.31)	(-0.86)	(-1.12)	(-0.42)	(0.04)	(1.17)	(-2.16)	(0.90)	(0.39)	(1.07)
Size	0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000
	(0.37)	(0.50)	(-0.48)	(-1.30)	(-1.43)	(0.38)	(0.64)	(-0.22)	(0.93)	(-0.62)
S_{t-1}	-0.0003***	-0.0009***	-0.0006***	-0.0004***	-0.0006***	-0.0002***	0.0002***	0.0006***	0.0016***	0.0034***
	(-9.39)	(-26.98)	(-28.70)	(-20.33)	(-29.34)	(-8.88)	(9.67)	(20.46)	(38.40)	(59.34)
Investor $Sentiment_t$	0.0368***	0.0286***	0.0190***	0.0152***	0.0033***	0.0145***	0.0047***	0.0034***	0.0114***	0.0218***
	(62.94)	(69.17)	(54.66)	(44.02)	(9.77)	(38.07)	(14.07)	(8.99)	(15.60)	(30.19)
Gov. $spending_t$	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(29.46)	(36.25)	(64.21)	(74.69)	(56.95)	(69.86)	(87.68)	(85.07)	(52.03)	(57.87)
Constant	-0.0527***	-0.0584***	-0.0651***	-0.0613***	-0.0453***	-0.0427***	-0.0407***	-0.0418***	-0.0301***	-0.0387***
	(-73.97)	(-88.46)	(-135.33)	(-142.49)	(-106.42)	(-88.92)	(-106.51)	(-83.01)	(-37.73)	(-38.37)
Observations	13702	13975	13975	14010	13898	13362	13979	13941	13866	13548
Adjusted R^2	0.75	0.79	0.87	0.88	0.88	0.84	0.91	0.85	0.75	0.76

Panel C Republicans	1	2	3	4	5	6	7	8	9	10
Rm-Rf	0.0039***	0.0042***	0.0039***	0.0035***	0.0031***	0.0035***	0.0035***	0.0034***	0.0039***	0.0034***
	(132.02)	(210.80)	(210.19)	(237.88)	(180.41)	(212.14)	(199.83)	(154.81)	(147.45)	(77.26)
SMB	0.0043***	0.0026***	0.0029***	0.0022***	0.0027***	0.0029***	0.0033***	0.0039***	0.0043***	0.0068***
	(93.51)	(78.91)	(131.05)	(95.08)	(95.32)	(116.11)	(113.99)	(90.30)	(76.48)	(84.64)
HML	0.0003***	0.0008***	0.0005***	0.0007***	0.0010***	0.0009***	0.0015***	0.0013***	0.0022***	0.0040***
	(6.32)	(27.41)	(19.18)	(40.09)	(50.31)	(38.95)	(59.72)	(41.40)	(46.86)	(47.53)
Trading Volume$_t$	-0.0000	-0.0000	-0.0000**	-0.0000***	-0.0000***	-0.0000**	-0.0000***	-0.0000***	-0.0000**	0.0000
	(-0.24)	(-1.14)	(-2.47)	(-4.85)	(-3.14)	(-2.44)	(-2.84)	(-3.37)	(-2.11)	(0.37)
Size$_t$	0.0000	-0.0000	0.0000	0.0000***	0.0000***	0.0000**	0.0000**	0.0000*	0.0000	-0.0000***
	(0.18)	(-0.07)	(1.12)	(3.40)	(2.99)	(2.03)	(2.29)	(1.94)	(0.11)	(-3.27)
S_{t-1}	0.0002***	0.0002***	0.0005***	-0.0001***	-0.0001***	-0.0000	-0.0003***	-0.0003***	-0.0004***	-0.0008***
	(8.36)	(9.63)	(16.67)	(-7.32)	(-5.86)	(-1.23)	(-15.91)	(-12.15)	(-13.46)	(-20.18)
Investor Sentiment$_t$	-0.0034***	-0.0025***	-0.0001	-0.0015***	0.0023***	0.0002	0.0059***	-0.0008**	0.0064***	-0.0076***
	(-7.88)	(-7.16)	(-0.28)	(-5.99)	(8.97)	(0.61)	(21.11)	(-2.10)	(11.71)	(-9.34)
Gov. spending$_t$	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(59.66)	(68.49)	(89.02)	(87.93)	(92.69)	(77.67)	(78.16)	(81.81)	(65.31)	(58.20)
Constant	-0.0597***	-0.0666***	-0.0632***	-0.0589***	-0.0543***	-0.0459***	-0.0419***	-0.0405***	-0.0347***	-0.0381***
	(-112.56)	(-152.79)	(-176.29)	(-183.44)	(-169.04)	(-146.96)	(-128.86)	(-127.69)	(-75.54)	(-53.94)
Observations	19074	19475	19576	19566	19268	19222	19552	19502	19386	18933

Table 4. Political sensitivity, Sentiment and Elections

Regression analysis of portfolios of stocks to political sentiment (S_{t-1}), Fama and French (1992) risk factors, trading volume, size, variation in investor sentiment and Total Government spending during electoral period in the overall sample (Panel A) and controlling for the outcome of the elections (Panel B and C). Ten Equally-weighted portfolios are sorted according to the betas of quarterly Total Government spending derived from Fama and MacBeth (1973) rolling regressions. Portfolios' excess returns are defined as the excess returns of the portfolios over the 90-days T-bill available from CRSP. Political sentiment (S) is defined as the change in the Presidential approval ratings at the end of each month expressed on a quarterly basis. Investor sentiment is the monthly change in the investor sentiment index of Baker and Wugler (2006) adjusted to quarterly terms. Presidential rates of approval are available from Gallup database. Total Government Expenditures are downloaded from Bureau of Economic Analysis (BEA). Orthogonalized investor sentiment data is provided from Professor's Baker website. Electoral period is defined as the last year (12-month period) of President in office. "Re-election" is a dummy variable which take the value of 1 if the incumbent is re-elected and zero otherwise (Panel B). Similarly, "Challenger" is a dummy variable which takes the value of 1 if the challenging party wins the Presidential elections and zero otherwise. *t* statistics in parentheses * p<.10, ** p<.05, *** p<.01

Panel A Overall sample	1	2	3	4	5	6	7	8	9	10
$Rm-Rf_t$	0.0036***	0.0037***	0.0037***	0.0038***	0.0037***	0.0027***	0.0041***	0.0040***	0.0044***	0.0020***
	(62.62)	(76.13)	(88.77)	(105.87)	(122.86)	(61.11)	(98.16)	(70.12)	(53.44)	(20.39)
SMB_t	0.0036***	0.0020***	0.0022***	0.0027***	0.0032***	0.0031***	0.0033***	0.0045***	0.0053***	0.0086***
	(38.28)	(24.22)	(39.95)	(44.55)	(77.90)	(62.76)	(67.24)	(74.67)	(62.93)	(60.84)
HML_t	-0.0021***	-0.0012***	-0.0002***	0.0001**	0.0006***	0.0006***	0.0011***	0.0005***	0.0004***	-0.0002***
	(-43.27)	(-27.73)	(-8.86)	(2.35)	(34.72)	(18.16)	(33.18)	(11.30)	(7.10)	(-3.33)
Trading $Volume_t$	0.0000**	-0.0000	-0.0000*	-0.0000	-0.0000**	-0.0000**	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(2.09)	(-0.38)	(-1.85)	(-1.38)	(-2.30)	(-2.48)	(-4.21)	(-5.46)	(-5.24)	(-3.23)
$Size_t$	-0.0000	-0.0000	0.0000	0.0000	0.0000**	0.0000***	0.0000***	0.0000***	0.0000***	0.0000**
	(-0.99)	(-0.07)	(0.15)	(0.28)	(2.40)	(2.99)	(2.83)	(3.08)	(5.27)	(2.17)
S_{t-1}	-0.0009***	-0.0015***	-0.0012***	-0.0011***	-0.0006***	-0.0003***	-0.0001***	0.0000	0.0005***	0.0003**
	(-13.97)	(-26.60)	(-27.83)	(-27.52)	(-21.93)	(-7.08)	(-3.71)	(0.41)	(7.50)	(2.42)
Inv. $Sentiment_t$	0.0148***	0.0199***	0.0099***	0.0044***	0.0048***	0.0169***	0.0106***	0.0066***	0.0168***	0.0254***
	(27.82)	(40.93)	(27.40)	(11.57)	(15.58)	(38.70)	(26.52)	(13.78)	(21.59)	(28.94)
Gov. $Spending_t$	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(21.28)	(21.39)	(38.43)	(52.68)	(85.40)	(20.18)	(53.98)	(37.33)	(34.01)	(6.59)
Constant	-0.0481***	-0.0516***	-0.0590***	-0.0619***	-0.0562***	-0.0274***	-0.0441***	-0.0311***	-0.0256***	0.0088***
	(-57.10)	(-59.19)	(-98.19)	(-115.34)	(-144.53)	(-44.47)	(-70.02)	(-43.54)	(-24.81)	(6.24)
Observations	8736	8880	8907	8903	8855	8589	8898	8878	8831	8661
Adjusted R^2	0.74	0.74	0.81	0.83	0.91	0.83	0.83	0.77	0.71	0.66

Panel B **Re-election**	1	2	3	4	5	6	7	8	9	10
$Rm\text{-}Rf_t$	0.0035*** (48.66)	0.0041*** (62.92)	0.0027*** (34.76)	0.0032*** (81.15)	0.0033*** (132.42)	0.0018*** (49.61)	0.0027*** (45.43)	0.0024*** (32.42)	0.0033*** (24.75)	0.0000 (0.17)
SMB_t	0.0075*** (81.99)	0.0046*** (66.36)	0.0033*** (74.27)	0.0049*** (176.79)	0.0034*** (123.04)	0.0042*** (254.33)	0.0045*** (142.04)	0.0061*** (164.06)	0.0053*** (61.50)	0.0101*** (62.03)
HML_t	0.0016*** (24.40)	0.0018*** (30.81)	0.0004*** (9.69)	0.0016*** (37.03)	0.0010*** (66.05)	-0.0001*** (-3.96)	0.0016*** (23.37)	-0.0002*** (-3.71)	-0.0019*** (-19.81)	-0.0044*** (-23.44)
Trading $Volume_t$	0.0000*** (3.97)	0.0000 (1.33)	0.0000* (1.69)	-0.0000 (-0.16)	-0.0000 (-0.35)	0.0000* (1.77)	-0.0000** (-2.21)	-0.0000 (-0.83)	-0.0000 (-0.50)	0.0000 (0.59)
$Size_t$	0.0000 (0.39)	-0.0000 (-1.23)	-0.0000 (-1.52)	0.0000 (0.39)	0.0000 (0.48)	-0.0000 (-0.71)	0.0000 (0.14)	0.0000** (2.19)	0.0000 (1.02)	-0.0000 (-0.89)
S_{t-1}	-0.0001 (-1.60)	-0.0009*** (-10.11)	0.0009*** (11.34)	-0.0010*** (-14.84)	0.0010*** (26.41)	0.0009*** (27.73)	0.0013*** (27.26)	0.0019*** (28.57)	0.0044*** (32.27)	0.0067*** (28.45)
Investor $Sentiment_t$	-0.0109*** (-16.74)	0.0014** (2.26)	-0.0051*** (-13.81)	0.0004 (1.26)	-0.0036*** (-16.34)	0.0014*** (4.03)	0.0081*** (13.22)	-0.0026*** (-5.41)	-0.0096*** (-11.31)	-0.0006 (-0.41)
Gov. $Spending_t$	0.0000*** (46.87)	0.0000*** (32.22)	0.0000*** (49.37)	0.0000*** (56.72)	0.0000*** (117.52)	0.0000*** (98.32)	0.0000*** (69.63)	0.0000*** (73.08)	0.0000*** (51.56)	0.0000*** (28.46)
Constant	-0.0781*** (-76.88)	-0.0712*** (-65.11)	-0.0729*** (-87.35)	-0.0675*** (-91.41)	-0.0751*** (-154.24)	-0.0526*** (-122.05)	-0.0542*** (-76.58)	-0.0495*** (-68.99)	-0.0574*** (-46.70)	-0.0281*** (-11.96)
Observations Adjusted R^2	4178 0.87	4248 0.81	4267 0.83	4270 0.91	4243 0.96	4106 0.95	4260 0.90	4255 0.92	4228 0.85	4150 0.74

Panel C Challenger	1	2	3	4	5	6	7	8	9	10
$Rm\text{-}Rf_t$	0.0020***	0.0025***	0.0026***	0.0025***	0.0028***	0.0030***	0.0046***	0.0052***	0.0057***	0.0021***
	(31.34)	(49.65)	(55.44)	(58.13)	(63.84)	(40.24)	(66.24)	(53.85)	(41.73)	(16.60)
SMB_t	0.0016***	0.0006***	0.0015***	0.0018***	0.0031***	0.0024***	0.0025***	0.0033***	0.0043***	0.0066***
	(15.91)	(5.71)	(23.79)	(31.74)	(61.85)	(30.51)	(30.83)	(30.75)	(31.13)	(39.42)
HML_t	-0.0031***	-0.0019***	-0.0007***	-0.0005***	0.0003***	0.0006***	0.0010***	0.0007***	0.0008***	-0.0002**
	(-63.34)	(-40.22)	(-29.53)	(-21.59)	(15.10)	(17.25)	(29.18)	(15.15)	(12.73)	(-2.48)
Trading $Volume_t$	-0.0000	-0.0000	-0.0000*	-0.0000***	-0.0000**	-0.0000*	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(-1.02)	(-1.39)	(-1.71)	(-3.06)	(-2.50)	(-1.94)	(-4.39)	(-4.14)	(-5.94)	(-4.19)
$Size_t$	0.0000	0.0000	0.0000	0.0000**	0.0000***	0.0000***	0.0000***	0.0000**	0.0000***	0.0000**
	(1.02)	(1.33)	(1.23)	(2.49)	(3.45)	(2.71)	(3.28)	(2.13)	(3.98)	(2.53)
S_{t-1}	-0.0029***	-0.0030***	-0.0031***	-0.0027***	-0.0015***	-0.0002***	-0.0004***	0.0003***	0.0005***	-0.0016***
	(-35.67)	(-40.22)	(-62.29)	(-51.01)	(-32.84)	(-3.09)	(-5.45)	(3.25)	(3.33)	(-13.30)
Investor $sentiment_t$	0.0262***	0.0287***	0.0175***	0.0086***	0.0063***	0.0188***	0.0129***	0.0088***	0.0223***	0.0321***
	(48.15)	(56.67)	(58.51)	(24.16)	(17.02)	(33.54)	(21.67)	(10.47)	(18.77)	(35.13)
Gov. $Spending_t$	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
	(4.04)	(8.93)	(24.77)	(23.78)	(43.53)	(8.37)	(43.75)	(29.31)	(29.63)	(6.50)
Constant	-0.0454***	-0.0515***	-0.0681***	-0.0607***	-0.0520***	-0.0204***	-0.0462***	-0.0307***	-0.0326***	0.0017
	(-40.99)	(-46.91)	(-100.49)	(-92.31)	(-93.60)	(-20.25)	(-47.44)	(-23.20)	(-17.68)	(0.90)
Observations	4558	4632	4640	4633	4612	4483	4638	4623	4603	4511
Adjusted R^2	0.82	0.80	0.89	0.88	0.91	0.83	0.82	0.75	0.71	0.71

Table 5. Long-Short strategy, Political Sentiment and Presidential Cycle

Regression analysis of Long-Short portfolios of stocks to political sentiment (S_t), Fama and French (1992) risk factors, trading volume, size, variation in investor sentiment and Total Government spending in the overall sample and controlling for partisan characteristics. Equally-weighted portfolios are formed according to quarterly Total Government spending betas derived from Fama and MacBeth (1973) rolling regressions. Portfolios' excess returns are defined as the excess return of equally-weighted portfolio of stocks over the 90-days T-bill available from CRSP. Political sentiment (S) is defined as the change in the Presidential approval ratings at the end of each month expressed in a quarterly basis. Investor sentiment is the monthly change in the orthogonalized investor sentiment index of Baker and Wugler (2006) adjusted to quarterly terms. Presidential rates of approval are available from Gallup database. Total Government Expenditures are downloaded from Bureau of Economic Analysis (BEA). Orthogonalized investor sentiment data is provided from Professor Baker's website. *t* statistics in parentheses * p<.10, ** p<.05, *** p<.01

	Overall			Democrats			Republicans		
	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10
$RmRf_t$	0.0006	0.0003	0.0003	-0.0001	0.0003	-0.0003	0.0004	0.0007	-0.0003
	(1.04)	(0.77)	(0.49)	(-0.06)	(0.79)	(-0.41)	(0.64)	(1.56)	(-0.38)
SMB_t	-0.0027***	0.0011*	-0.0038***	-0.0029**	0.0003	-0.0032**	-0.0026***	0.0016**	-0.0042***
	(-3.10)	(1.77)	(-3.44)	(-2.10)	(0.35)	(-2.13)	(-2.74)	(2.24)	(-3.34)
HML_t	-0.0018**	-0.0009**	-0.0008	-0.0007	-0.0006**	-0.0001	-0.0034***	-0.0008	-0.0026**
	(-1.99)	(-2.53)	(-0.96)	(-0.63)	(-2.02)	(-0.08)	(-3.32)	(-1.29)	(-2.29)
Trading $volume_t$	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000*	0.0000	0.0000	0.0000*
	(0.49)	(0.78)	(0.13)	(-1.60)	(0.68)	(-1.86)	(1.55)	(0.04)	(1.69)
$Size_t$	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000
	(1.42)	(0.50)	(1.29)	(-0.30)	(0.26)	(-0.62)	(1.12)	(0.02)	(1.09)
S_t	0.0002	0.0007**	-0.0005	-0.0016*	0.0007*	-0.0023**	0.0012**	0.0004	0.0008
	(0.25)	(2.16)	(-0.65)	(-1.73)	(1.96)	(-2.31)	(2.24)	(0.81)	(1.13)
Investor $Sentiment_t$	-0.0047	0.0092*	-0.0139	0.0008	0.0277***	-0.0268**	0.0045	-0.0055	0.0100
	(-0.53)	(1.69)	(-1.45)	(0.07)	(4.92)	(-2.51)	(0.38)	(-0.72)	(0.70)
Gov. $spending_t$	-0.0000***	-0.0000	-0.0000**	0.0000	-0.0000	0.0000	-0.0000***	0.0000	-0.0000***
	(-3.19)	(-1.63)	(-2.24)	(0.83)	(-0.86)	(1.39)	(-3.33)	(0.02)	(-3.33)
Constant	-0.0024	0.0064	-0.0088	-0.0576*	0.0020	-0.0596**	0.0241	-0.0051	0.0292**
	(-0.18)	(0.86)	(-0.69)	(-1.94)	(0.18)	(-2.19)	(1.48)	(-0.43)	(2.01)
					g				
Observations	124	124	124	44	44	44	80	80	80
Adjusted R^2	0.27	0.28	0.29	0.37	0.53	0.50	0.43	0.26	0.43

Table 6. Long-Short strategy during Electoral period

Regression analysis of Long-Short portfolios of stocks to Political sentiment (S_t), Fama and French (1992) risk factors, trading volume, size, orthogonalized variation in investor sentiment and Total Government spending during electoral period and controlling for elections' outcomes. Equally-weighted portfolios are formed according to quarterly Total Government spending betas derived from Fama and MacBeth (1973) rolling regressions. Portfolios' excess returns are defined as the excess return of equally-weighted portfolio of stocks over the 90-days T-bill available from CRSP. Political sentiment (S) is defined as the change in the Presidential approval ratings at the end of each month expressed on a quarterly basis. Investor sentiment is the monthly change in the orthogonalized investor sentiment index of Baker and Wugler (2006) adjusted to quarterly terms. Presidential rates of approval are available from Gallup database. Total Government Expenditures are downloaded from Bureau of Economic Analysis (BEA). Orthogonalized investor sentiment data is provided from Professor Baker's website. *t* statistics in parentheses * p<.10, ** p<.05, *** p<.01

	Overall			Re-election			Challenger		
Elections=1	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10	Long-Short 1-10	Long-Short 1-5	Long-Short 5-10
$RmRf_t$	0.0045***	0.0006	0.0039***	0.0041	0.0012**	0.0029	0.0050***	0.0001	0.0049***
	(3.55)	(0.74)	(3.17)	(1.10)	(2.49)	(0.85)	(5.83)	(0.07)	(5.45)
SMB_t	-0.0053***	0.0003	-0.0056***	-0.0037	0.0019***	-0.0056*	-0.0053***	-0.0007	-0.0046***
	(-3.50)	(0.23)	(-4.01)	(-1.14)	(3.41)	(-1.80)	(-7.04)	(-0.56)	(-4.59)
HML_t	-0.0005	-0.0020**	0.0015**	-0.0001	-0.0012**	0.0011	-0.0007	-0.0028***	0.0021***
	(-0.62)	(-2.50)	(1.99)	(-0.03)	(-2.40)	(0.34)	(-1.04)	(-3.12)	(3.96)
Trading $volume_t$	0.0000***	0.0000	0.0000***	-0.0000	0.0000**	-0.0000	0.0000***	-0.0000	0.0000***
	(3.61)	(1.05)	(3.26)	(-0.14)	(2.12)	(-0.64)	(5.09)	(-0.12)	(5.49)
$Size_t$	-0.0000***	-0.0000	-0.0000**	0.0000	-0.0000	0.0000	-0.0000***	-0.0000	-0.0000***
	(-2.62)	(-0.73)	(-2.06)	(0.59)	(-0.66)	(0.79)	(-6.05)	(-0.86)	(-3.52)
S_t	0.0026**	0.0011	0.0016	-0.0028	-0.0007	-0.0021	0.0053***	0.0012	0.0041***
	(2.23)	(1.48)	(1.46)	(-0.90)	(-0.96)	(-0.75)	(7.66)	(1.40)	(12.41)
Investor $Sentiment_t$	-0.0069	0.0098**	-0.0167***	-0.0380	-0.0071	-0.0309	-0.0106***	0.0139***	-0.0245***
	(-1.11)	(2.19)	(-2.82)	(-1.09)	(-0.93)	(-0.87)	(-3.04)	(3.16)	(-7.27)
Gov. $spending_t$	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000***	-0.0000	-0.0000	0.0000	-0.0000
	(-1.38)	(-0.81)	(-1.07)	(-1.05)	(-2.62)	(-0.71)	(-0.80)	(0.70)	(-1.39)
Constant	0.0056	0.0184*	-0.0127	-0.0270	0.0515***	-0.0785	0.0055	-0.0024	0.0079
	(0.28)	(1.70)	(-0.64)	(-0.48)	(3.10)	(-1.44)	(0.61)	(-0.18)	(0.74)
Observations	33	33	33	16	16	16	17	17	17
Adjusted R^2	0.52	0.53	0.54	0.32	0.84	0.38	0.91	0.69	0.90