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ABSTRACT

Hope, Change, and Financial Markets: Can Obama's Words Drive the Market?*

Barack Obama's victory in the 2009 presidential elections in the United States is widely credited to his personal charisma and his extraordinary rhetorical powers, as revealed throughout the campaign. President Obama was inaugurated in the midst of the worst economic crisis in the country, when individuals and organizations yearned for leadership and signs of change. We code an array of rhetorical features in Obama's main speeches and press conferences and assess their impact on stock returns of the Dow Jones, S&P 500, and NASDAQ indices, at 3 and 7 day time horizons. We find that words matter. Paragraphs matter, too. We also uncover how some of Obama's rhetorical abilities that are politically effective seem to be perceived negatively by economic agents, and have a significant negative impact on stock returns.

JEL Classification: E44, G12, G14, H12 and O51
Keywords: Barack Obama, financial markets, political economy and speech content

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"I am gratified that our economy grew in the third quarter of this year. We've come a long way since the first three months of 2009, when our economy shrunk by an alarming 6.4 percent. In fact, the 3.5 percent growth in the third quarter is the largest three-month gain we have seen in two years. This is obviously welcome news and an affirmation that this recession is abating and the steps we've taken have made a difference.
But I also know that we got a long way to go to fully restore our economy and recover from what's been the longest and deepest downturn since the Great Depression. And while this report today represents real progress, the benchmark I use to measure the strength of our economy is not just whether our GDP is growing, but whether we're creating jobs, whether families are having an easier time paying their bills, whether our businesses are hiring and doing well. And that's what I'm here to talk with you about today."

Extract of a Speech by Barack Obama President of the United States.

1. Introduction

Various sources highlight President Barack Obama´s awareness of the need to present policies in a compelling way, and his ability to deliver public speeches in a politically effective way.[1] Observers noted how listeners were deeply attracted to Obama's "mixture of Martin Luther King and John F. Kennedy", as reported in The Times, 7th of June 2008. Obama speaks about hope, change, and a dream - the American Dream, refers to past achievements and suggests open opportunities in the future, establishes a bond with the audience through personal stories and anecdotes, drives points home through repetition, mentions past leaders, and evokes biblical overtones.[2] Barack Obama was elected President of the United States at a time when the country experienced its largest economic downturn since the Great Depression.[3] The public at large was attentively looking up to the American administration for leadership and action.[4] These were delivered in various forms, including "rescue packages" to the banking and automaker sectors, promises of stricter regulation, and almost unprecedented budget changes. Naturally, the public was paying careful attention to the words of leaders – most notably the President – as possible signals of change and purveyors of hope. In sum, President Obama´s renown for outstanding public speaking, associated with the urgent need for policy responses in a time of major crisis, joined forces to make Obama´s public remarks extremely important.[5]

The nature of the times, the ability of the speaker, and even the sheer frequency of

[1] See Russel (2009) and Leanne (2009).

[2] Other words used to describe Obama's style are "eloquent" and "inspiring". (19th November 2008, BBC news: Obama: Oratory and Originality.)

[3] The period was described by George Soros as "the worst financial crisis since the Second World War" (Reuters, 22nd January 2008).

[4] Boin and Hart (2003) explain how crisis, as episodes of uncertainty and impending threat, foster an inclination to look for leaders.

[5] Born, Ehrmann, and Fratzscher (2010) find that speeches and interviews by Central Bank officials had a higher impact on financial markets during the 2007-2010 crisis.

public addresses, suggest the potential for President Obama´s words to impact the economy´s outlook and stock returns.[6] This is a different issue from the intrinsic political value of President Obama´s addresses. Words that are politically effective may or may not be as effective in assuaging the markets or raising expectations about future economic performance. This paper investigates whether and how Obama´s speeches and rhetoric impact stock market returns in the United States in the 11 month period following Obama´s inauguration as president. Drawing on the popular and specialized literature, we identify the rhetorical techniques that are more often used by President Obama, and as it would seem, most appreciated. These involve the frequency of certain words, the nature of paragraphs, as well as features that affect the general character of the speech. From the full sample of the public speeches delivered by President Obama, we select a sample of speeches deemed relevant for the economy, either because they dealt with major economic issues, such as the budget or specific economic rescue packages, or because they were major speeches in themselves, such as the inaugural address. The speech content data are then coded and used to evaluate whether and how they affect stock returns as measured by the Dow Jones, S&P 500 and NASDAQ indices. The choice of stock returns as the economic variable to explain is important: on the one hand, the daily frequency of stock returns is appropriate given the high frequency of presidential speeches and remarks on the economy, and the wealth of speech indicators used; on the other hand, stock returns incorporate different informational sources, and as result, finding that words – and paragraphs – impact stock returns is a demanding test.[7]

In a sense, by following rhetorical guidelines in the selection of the variables, we are collecting the "right-hand side" variables on the basis of their political relevance. We will not, however, be judging the political effectiveness of President Obama´s speeches. Instead, one way to interpret our endeavor is that it is an assessment of how political rhetoric affects financial markets, over and above its possible political rationale.

The paper closest to ours is that of Tetlock (2007), who analyzes the impact of the content of a daily Wall Street Journal column, finding that media pessimism does, indeed, predict downward pressure on market prices. In this important paper, the author uses principal components analysis and constructs a measure of media pessimism that is then used to estimate the link between this indicator and different indicators of market performance and activity. Tetlock uses different measures of negative sentiment, such as negative words and weak words, and reports that all of the measures considered suggest a similar relationship to market activity.

[6] Wagner (2011) argues that the twin effect of the economic crisis and the competency signals advanced in the campaign changed the connection between economic conditions and political outcomes in the presidential campaign that elected Barack Obama as president.

[7] As an example, drawn from the content analysis literature, Ranaldo and Rossi (2009) find that the stock exchange is the variable that reacts the least to content in the Swiss National Bank comuniqués, when compared to the response of foreign exchange and bond markets.

Our paper is organized in three additional sections. Section 2 reviews existing results from the literature on the effects of public speaking on economic performance, mostly in the context of central bank communication. Section 3 presents our empirical results on the relationship between the content of President Obama´s speeches and financial market performance. Section 4 concludes.

2. Public Speaking and Economic Performance

The relevance of analyzing speech content is clearly revealed in Blinder et al.'s (2011) paper on central bank communication. The authors demonstrate that "*communication policy has risen in stature from a nuisance to a key instrument in the central banker's toolkit*". This is of interest to monetary and fiscal authorities, but also to any political actor possessing economic clout, such as the President of the United States. What we know of the impact of the content of political speeches on economic performance is similar to what was known about central bank communication a decade ago – "almost nothing" in the words of Blinder et al. (2008).

The economics literature on speech content has rapidly and naturally evolved from the event study literature, which identifies major events and decisions related to a potentially important issue and attempts to compute their impact on economic variables.[8] The economy may benefit from communication by office holders in different ways. First, it may increase the effectiveness of policy by making it known in a timely way, and by making it understandable and credible to a wide audience. Clarity and consistency may be the key elements in this respect. Second, office holders can communicate with the public at large to counter the noisy effects on economic and financial markets of unexpected events or even changes in the overall level of uncertainty.[9] But public communication can have also detrimental effects. Its emotional content may lead to noise and higher uncertainty in and of itself: agents may overreact, due in part to precisely the public nature of the communication, that is, the fact that a considerable number of economic agents may have received the same type of informational input.[10]

The burgeoning literature on the impact of speech content on the economy has so far concentrated almost exclusively on communication by central banks, mostly interventions by the Federal Reserve Board in the US and the European Central Bank.[11] Different researchers have found evidence that speech content indicators of central bank communications affect

[8] A notable example is Fisman (2001), who uses heart failure incidents of Indonesian President Suharto to estimate the value of the close connections that certain categories of firms had to the presidential family.

[9] As an example, Kuttner (2001) finds that changes in the Federal Reserve's disclosure policy decreased the volatility of futures markets. Blinder et al. (2008) suggest that "creating news" and "reducing noise" are two important channels through which speech content may affect economic performance.

[10] See Morris and Shin (2002), who emphasize the potentially large and noisy impact of public information, which does not draw on any type of irrationality on the part of the agents.

[11] Studies also include the Bank of Japan, the Swiss National bank, and the Bank of England.

treasury yields and interest rates.[12] These indicators include the themes of the minutes, words/phrases referring to certainty levels, pessimism, optimism, activity, immediacy, and jargon; the occurrence of words signalling intervention, such as "buy" and "sell"; the co-occurrence of words,– Boukos and Rosenberg (2006), Ranaldo and Rossi (2009), Rosa and Veerga (2007), and Siklos and Bohl (2007); the term "structure of interest rates" – Lamla and Rupprecht (2006); exchange rates – Ranaldo and Rossi (2009) and Siklos and Bohl (2007); foreign exchange volatilities – Dauchy (2000); and financial market returns – Bligh and Hess (2005), Ranaldo and Rossi (2009), and Rosa (2007). The impact depends on contextual variables – such as the level of monetary policy uncertainty, the economic outlook, and the environment in which a Central Bank operates.[13]

A study of the impact of the content of public speeches by President Obama may benefit from some conceptual advantages over the existing literature on central bank communication.[14] First, the actor is clearly identified and unchanged, which decreases the probability of contradictory statements that lead to ambiguity, unlike central bank communication where the "*predictability of monetary policy appears to be degraded somewhat when central banks speak with too many conflicting voices*".[15] Second, the idiosyncratic qualities of President Obama as a speaker suggest that the quality of communication is high. Third, we can rely on the existing literature on the rhetorical qualities of President Obama to identify which features of speeches to look at, in contrast to central bank studies, which have to suggest ex-ante what speech features to look at. Fourth, communication by central bankers might be semantically more limited than that of an executive such as the President of the United States.[16] Fifth, both the economic circumstances and the presidential position ensure a wide and attentive audience. The importance of the general public is highlighted in Blinder et al. (2008), who point out that virtually all research to date has focused on central bank communication directly with financial markets and ignored the general public. In our case, the nature of the presidential post and the nature of the speech characteristics that are coded make public opinion an important element in the analysis, in addition to financial markets.

[12] Dauchy (2000) controls for the impact of rumors of interventions by central bankers, in addition to the interventions themselves. Ranaldo and Rossi (2009) examine communications other than monetary policy announcements, including interviews with central bankers.

[13] Rosa and Verga (2007) find that ECB communication word content provides "complementary, rather than substitutable, information with respect to macroeconomic variables". Ehrmann and Fratzscher (2007) find that markets are more reactive to the European Central Bank or to the Federal Reserve relative to the Bank of England, interpreting it as evidence that a greater degree of vote dispersion makes communication less predictable.

[14] In addition to the need for further research. Blinder et al. (2008) conclude in their extensive review of the literature on central bank communication that "an overall assessment of the effectiveness of different forms of communication requires further empirical evaluation".

[15] Blinder et al. (2008)

[16] Rosa and Verga (2007) argue that the President of the European Central Bank uses "a very standardized form of language, and (. . .) a very limited number of key words or strings". In addition, Jansen and DeHaan (2006) analyze the quality and the consistency of the information conveyed by different central bankers in the European Central Bank system, and show that both have improved over time.

3. Empirics

3.1. Methodology

We first selected the main public addresses in the first eleven months of Barack Obama´s presidency, starting with the inaugural address, and including – but not limited to – speeches and press conferences on economic matters.[17] There was no selection of speeches other than by their economic relevance. All the speeches and remarks, including press conferences, which mainly address economic issues, were included. The selection for public addresses by relevance is used in the content analysis literature, as exemplified in Dauchy (2000), who concentrates on "relevant central bankers speeches". Ranaldo and Rossi (2009) examine communications by central banks other than monetary policy announcements, and find that they are statistically relevant, which supports our choice of analyzing public remarks other than formal speeches. Many of the selected speeches were previously scheduled and thus, the possibility that they are responses to events that might affect the market at the same time can be excluded. After an initial selection, we asked an independent observer to make his choice of Obama´s addresses according to relevance for the economy, and used only those speeches and remarks selected in both instances. We ended up with a set of 43 public speaking occasions.

We then identified the particular features of President Obama´s public speaking by relying on independent sources that comment on his rhetorical skills, and manually coded those public speaking techniques. Specifically, we used "The Politics of Hope – The Words of Barack Obama", by Henry Russel, reviewing Obama's career in light of his main speeches up to his election as President. In addition, we consulted "Say it like Obama", by Shelly Leane, who breaks down Obama´s speeches to focus on the specific techniques employed. The coded features include measures of relative word frequencies, paragraph style frequency, and overall characteristics of the address.[18]

The relative word frequency variables compute the absolute number of times the words "Dream" (or "American Dream"), "Hope", "Change", and "Crisis" are mentioned, and divide the number by the total number of words in the speech. "Dream" or "American Dream" draws attention to Americans' common values, helping to unite the audience in a common purpose, as in "*Those core values of common sense and responsibility, those are the values that have defined this nation. Those are the values that have given substance to our faith in the American Dream.*"[19] The emphasis on "Hope" and "Change" may resonate with the effort of Americans to see through the crisis and recession. Naturally, in a major crisis, the word "Crisis" can hardly be avoided and it is worth investigating whether mentioning

[17] See Appendix 1 for a list of speeches, with dates.
[18] See Appendix 2 for the description of the speech variables assembled.
[19] Remarks by the President on the mortgage crisis, 18th February 2009. Appendix 2 presents individual examples of all speech content coding.

it is positive, negative, or has no effect on the markets. The variable "Pronouns" computes the ratio of collective pronouns – such as "we", "us", etc., relative to individual pronouns – such as "I", "Me", etc., which conveys a sense of commonality that may be important during times of crisis. A second set of variables codes the style of the paragraphs and measures the relative frequency of paragraphs that suggest empathy by mentioning details on specific groups or individuals, including quoting the identity and personal context of these individuals. – coded as "Details"; elements suggesting that the speaker is at ease before the audience, including anecdotes, references to self, jokes, references to historical figures, and closeness to the audience – coded as "Anecdotes"[20]; the repetition emphasizes the message and makes sure it is understood by all of the audience – coded as "Repetition"[21] ;leaving no room for doubt by mentioning possible criticisms and explaining the invalidity of those objections – coded as "Objections"[22]; the use of an overall positive or negative tone – coded as either "Positive" or "Negative"[23]. Finally, a third type of variable indicates whether the speech builds up to a climax – coded as "Ending Strong". Speakers often build to a climax and then slowly come back down, however Obama structures his speeches differently: after building to a peak, he often stays there to finish strongly, with a call for action.

As mentioned above, the variables associated with the speech content were selected on the basis of literature that dissects the specific elements that comprise President Obama´s speech style.

Using the data on speech dates and speech content, we then proceed to analyze their impact on the daily excess returns of the three major stock market indices – the Dow Jones, the S&P 500, and the NASDAQ. Controlling for inflation, default, and term spread, we regress the average daily and 7-day excess returns on the different speech indicators in order that each specification can be checked for robustness for different time lags and stock market indicators. The use of immediate and 7-day responses aims to capture the impact of public addresses, which is usually compounded by media commentary in the period following the remarks. In a sense, and unlike what is valid for most event studies, the nature of speech is such that its "content" in not known "immediately", but progressively revealed in the days

[20]Anecdotes and jokes help to give a speech a more informal tone. Personal references to family and own past demonstrate how the President is also an "average individual" and that "he has been out there, he knows", just like the listener. Quoting widely-admired persons helps import authority from established figures. Past conversations or letters received also shrink the gap between the President and the audience.

[21]Especially if the audience includes individuals with different comprehension capacities – something that is probably always true. Repetition also creates a sense of unity, builds up to a peak, structures thoughts in a logical way, and makes key points memorable. A superb historical example to which Obama is not indifferent is the use of repetition in Martin Luther King's I have a dream speech. Barack Obama uses various forms of repetition; the two most used types being the Anaphora and the Epiphora. An Anaphora is the repetition of the same word or words at the beginning of sentences and Epiphora the repetition of the same word or words at the end of sentences.

[22]This technique of addressing objections, is known as Procatalepsis, and is a strong tool of persuasion. By identifying counterarguments and explaining a position, the original argument can be made stronger.

[23]President Obama's discourse often suggests hope and encourages change, but it also draws attention to problems and mistakes, including those committed by the government. Some of the paragraphs of his speeches have a very negative connotation, while others are very positive.

following the address, with the assistance of other political commentators and actors. A horizon of seven days allows for a "'reaction time" where more individuals become aware of its content, interpretation, and possible consequences. In the specifications that are meant to capture the immediate effect on the markets, we use only speeches delivered before 6 p.m. Our empirical specification is thus:

$$ExcessReturns = C + \sum_i \alpha_i * Controls_i + \beta_1 * DayofSpeech + \beta_2 * SpeechContent + \varepsilon$$

where Excess Returns refers to the excess returns on the day of the speech and to the accumulated 7-day excess returns on a specific stock market index, computed as the difference between stock return and the 3 Month Treasury Bill yield. Monthly inflation, daily term spread, and daily default spread are used as control variables for the performance of the economy and financial markets.[24] We have also used exchange rate and oil prices as explanatory variables, with no change in the qualitative results. Also, the inclusion of industrial activity did not change the results in meaningful ways.[25] The significance of our variables of interest - namely, indicators of speech content – is highly robust, and highly encouraging in the context of the demanding nature of specifications using daily data. Research on market returns used different models to quantify the impact of inflation on financial markets, with the general result that it tends to be statistically significant.[26] The Day of Speech and Speech Content are our variables of interest, where Speech Content consists of a set of twelve different indicators related to the words, paragraph style, and speech style, as mentioned above and detailed in Appendix 2.

3.2. Results

In this section we present the estimation results. In Table 1 we show results for an Ordinary Least Squares regression of excess returns on the economic and finanacial controls and the Day of Speech. Inflation appears to affect returns negatively and significantly in the 7-day horizon, which will be confirmed in all specifications. The coefficient on default spread appears mostly as insignificant, while the term spread appears as negative and signifcant in the 7-day specifications. In addition, the estimated quantitative impact on returns is extremely low. Turning to our variable of interest, the coefficient on Day of Speech is consistently negative, but often insignificant.

[24] We defined term spread as the difference between the 5 year t-bill and the 3 months t-bill. The default spread was computed as the difference between the interest rate paid by BAA firms and AAA firms.

[25] These results are available from the authors upon request.

[26] See, for instance, Kim (2003), and Engle and Rangel (2008).

Table 1.
Stock Market Excess Returns and Day of Speech
Ordinary Least Squares, with Controls

	Daily Excess Return			7 Day Cumulated Excess Return		
	S&P 500	**DowJones**	**Nasdaq**	**S&P 500**	**DowJones**	**Nasdaq**
C	-0.0203	-0.0292	-0.0239	**0.1019*** **	**0.0760***	**0.0940*** **
	(0.0667)	(0.0612)	(0.0624)	**(0.0449)**	**(0.0476)**	**(0.0443)**
Inflation	-0.0026	-0.0045	-0.0021	**-0.0318*** **	**-0.0316*** **	**-0.0311*** **
	(0.0074)	(0.0067)	(0.0069)	**(0.0056)**	**(0.0060)**	**(0.0056)**
Term Spread	0.7422	0.9591	1.0909	**-5.5708*** **	**-4.5638*** **	**-5.5112*** **
	(2.3917)	(2.1937)	(2.2368)	(1.7199)	(1.8232)	(1.6962)
Default Spread	0.0046	0.0057	0.0044	-0.0091*	-0.0077	-0.0039
	(0.0099)	(0.0091)	(0.0092)	(0.0070)	(0.0074)	(0.0069)
Day of Speech	-0.0045	-0.0050	-0.0076	-0.0092	-0.0085	-0.0107*
	(0.0126)	(0.0115)	(0.0118)	(0.0075)	(0.0079)	(0.0073)
Nr. of Obs.	42	42	42	204	204	204
R2	0.0259	0.0595	0.0451	0.1533	0.1403	0.1621
R2 Adjusted	-0.0794	-0.0421	-0.0581	0.1363	0.1230	0.1452

Note: We report standard errors in parentheses. ***Denotes significance at the 5 percent confidence level, ** at the 10 percent level, and * at the 20 percent level.

In Table 2 we add the speech content variables to the basic specification. There is no change in the sign and little change in the significance of the economic and financial controls that have been estimated accurately. The most robust result is that for "Anecdotes", which consistently has a negative impact on excess returns, at whatever horizon and for the different stock indices. Several variables affect stock excess returns on the day the speech is delivered: "Details", positive; "Objections", also positive; and "Negative", negative – while other variables have an impact only at the 7-day horizon: "Change", negative; and "Crisis",negative. Variables like "Dream", "Hope", and "Repetition" appear as positively significant, but not consistently for all market indices. When focusing on the longer horizon of 7 days, we see that the positive effect of the previously significant variables has disipated and only the negative impact of "Anecdotes" prevails, now accompanied by "Crisis" and "Change", which appear as significant and negative as well. The insignificance of the speech variable in most specifications suggests that it is not the fact that there is a speech but the way in which it is elaborated that really matters.

Table 2.
Excess Stock Market Returns and Speech Variables
Ordinary Least Squares, with Controls

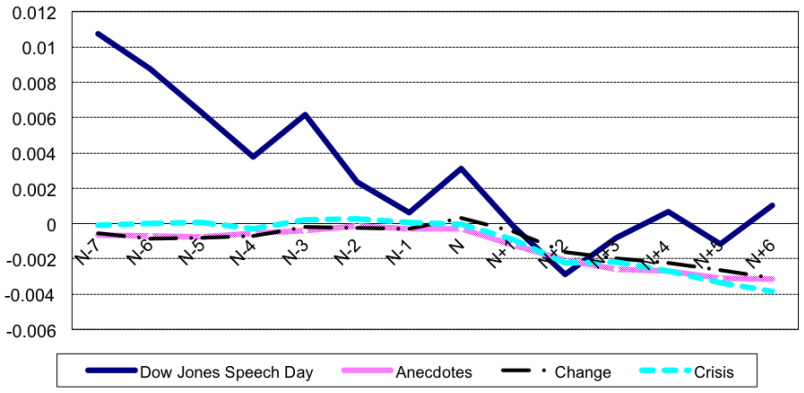
	Daily Excess Return			7 Day Cumulated Excess Return		
	S&P 500	**DowJones**	**Nasdaq**	**S&P 500**	**DowJones**	**Nasdaq**
Inflation	0.0032	0.0002	0.0018	-0.0300***	-0.0296***	-0.0300***
	(0.0079)	(0.0075)	(0.0077)	(0.0057)	(0.0060)	(0.0057)
Term Spread	2.6563	2.5054	1.8389	-5.5421***	-4.5969***	-5.8095***
	(2.6627)	(2.5392)	(2.5788)	(1.7366)	(1.8389)	(1.7261)
Default Spread	0.0129	0.0119	0.0081	-0.0081	-0.0074	-0.0044
	(0.0108)	(0.0103)	(0.0105)	(0.0071)	(0.0075)	(0.0070)
Day of Speech	-0.0342*	-0.0320*	-0.0154	-0.0267	-0.0277	-0.0019
	(0.0216)	(0.0206)	(0.0210)	(0.0351)	(0.0372)	(0.0349)
Change	-0.6430	0.5075	4.6178	-22.1102***	-20.7664***	-16.7253**
	(7.6769)	(7.3209)	(7.4351)	(9.4763)	(1.0035)	(9.4190)
Crisis	1.3529	1.0735	1.2605	-6.3811*	-8.0333*	-6.7813*
	(2.6492)	(2.5264)	(2.5658)	(4.6914)	(4.9680)	(4.6630)
Dream	11.3309*	9.9165	6.5306	5.4498	4.4206	-6.0591
	(8.2215)	(7.8402)	(7.9626)	(15.0026)	(15.8871)	(14.9118)
Hope	7.2595	6.1521	8.1544*	0.2911	1.7046	4.0915
	(6.3744)	(6.0788)	(6.1737)	(11.7811)	(12.4757)	(11.7098)
Pronouns	0.0077	0.0068	-0.0010	0.0110	0.0103	-0.0016
	(0.0071)	(0.0067)	(0.0069)	(0.0127)	(0.0134)	(0.0126)
Anecdotes	-0.0135***	-0.0120**	-0.0117**	-0.0308***	-0.0349***	-0.0298***
	(0.0064)	(0.0061)	(0.0062)	(0.0115)	(0.0122)	(0.0114)
Details	0.1108**	0.0977**	0.0743*	0.0326	0.0207	-0.0028
	(0.0548)	(0.0522)	(0.0531)	(0.0879)	(0.0931)	(0.0873)
Negative	-0.0926**	-0.0664*	-0.0741*	-0.0364	-0.0236	-0.0075
	(0.0523)	(0.0498)	(0.0506)	(0.0643)	(0.0681)	(0.0639)
Positive	0.0171	0.0184	0.0118	-0.0040	0.0109	-0.0017
	(0.0246)	(0.0234)	(0.0238)	(0.0459)	(0.0486)	(0.0456)
Objections	0.2000*	0.1673*	0.1657*	0.2215	0.2215	0.1270
	(0.1172)	(0.1117)	(0.1135)	(0.2091)	(0.2214)	(0.2078)
Repetition	0.0201	0.0101	-0.0093	0.0849*	0.0772	0.0490
	(0.0351)	(0.0335)	(0.0340)	(0.0634)	(0.0671)	(0.0630)
Ending Strong	-0.0066	-0.0057	-0.0075	-0.0009	-0.0050	-0.0021
	(0.0121)	(0.0115)	(0.0117)	(0.0186)	(0.0197)	(0.0185)
Nr. of Obs.	42	42	42	204	204	204
R2	0.4449	0.4207	0.4165	0.2361	0.2261	0.2322
R2 Adjusted	0.0897	0.0500	0.0431	0.1708	0.1599	0.1665

Note: We report standard errors in parentheses. ***Denotes significance at the 5 percent confidence level, ** at the 10 percent level, and * at the 20 percent level.

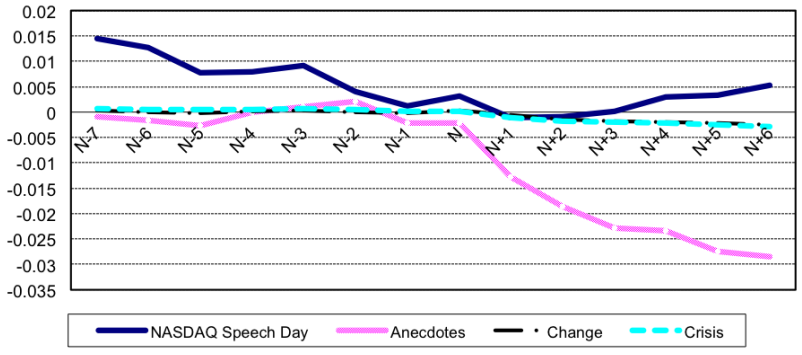
In the following graphs we seek to assess the negative impact of "Change", "Crisis" and "Anecdotes" on the markets, looking at a 2-week horizon. Each curve is identified with the name of the corresponding index, and refers to the average excess return on the day of the speech, on the 7 days before each speech, and the 7 days thereafter. Curves on different content variables are shown. They were computed as the average return for the set of days on the xx axis. Thus, the value for the "Anecdotes" curve at N+5 refers to the average return for the 5 days following each speech in which the speaking feature "Anecdotes" was put to use.

The first thing to notice is that the day of speech does not seem to be relevant. There is no noticeable difference between financial returns before and after the delivery of a speech by President Obama, regardless of the financial index used. In contrast, the use of certain content delivers a noticeable pattern, whereby returns before and after are patently different. When "Anecdotes", or the words "Crisis" and "Change", are used, we notice a falling trend in the immediate days after the delivery of the speech, a trend that was not there before. Again, this is present regardless of the financial index analyzed.

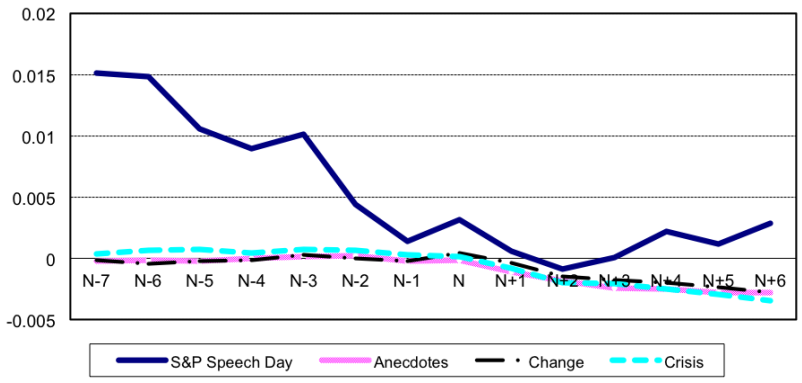
Graph 1.



Graph 2.



Graph 3.



4. Conclusions

Barack Obama's rhetoric has been widely praised. This study corroborates and quantifies the impact of President Obama´s words by analyzing their impact on stock returns in the United States. Words like "Dream" have a positive impact on returns, while "Crisis" and "Change" have a negative impact. While highlighting the crisis and the need for change may make people susceptible to accepting new economic measures and be considered a good political strategy, it does not seem to have the same effect on financial markets. Could "change" mean "uncertainty" in financial jargon? Paragraphs that draw on repetition and that confront other´s objections to recommended policies have a positive impact - suggesting the importance of consistency and certainty - while the use of anecdotes may be a clear case of "good politics" but "bad economics" in public speaking. Results are remarkably similar across market indices, though somewhat weaker for the NASDAQ, which may reflect the lower responsiveness of technology markets to subjective, ambiguous signals such as the content of presidential speeches. To a measurable extent, our results confirm that, as far as President Barack Obama and economic crisis are concerned, the message may be part of the medium.

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Appendix 1

List of Speeches and Addresses Under Analysis

Dates	Occasion
21-01-2009	President Barack Obama's Inaugural Address
28-01-2009	Remarks of President Barack Obama on the Economy
29-01-2009	Remarks by the President after meeting with the Vice President and the Secretary of the Treasury
02-02-2009	Remarks by the President and Governor Jim Douglas of Vermont before meeting to discuss the American Recovery and Reinvestment Plan
06-02-2009	Remarks of President Barack Obama Economic Recovery Advisory Board
09-02-2009	Press Conference by the President
13-02-2009	Remarks by the President to the Business Council
17-02-2009	Remarks by the President at Signing of the American Recovery and Reinvestment Act
18-02-2009	Remarks by the President on the mortgage crisis
26-02-2009	Remarks by the President on the Fiscal Year 2010 Budget
11-03-2009	Remarks by the President and Treasury Secretary Geithner After Economic Daily Briefing
13-03-2009	Remarks by the President and Economic Recovery Advisory Board Chairman Paul Volcker after meeting
23-03-2009	Remarks by the President after Economic Daily Briefing
09-04-2009	Remarks by the President After Housing Refinance Roundtable
14-04-2009	Remarks by the President on the Economy at Georgetown University
15-04-2009	Remarks by the President on Taxes
20-04-2009	Remarks by the President after Cabinet meeting
24-04-2009	Remarks by the President on Higher Education
04-05-2009	Remarks by the President on International Tax Policy Reform
07-05-2009	Remarks by the President on reducing spending in the Budget
11-05-2009	Remarks by the President on Reforming the Health Care System to Reduce Costs
12-05-2009	Remarks by the President after roundtable with business leaders to discuss employer health care costs
23-05-2009	Remarks by the President at signing of the credit card accountability, responsibility and disclosure act
01-06-2009	Remarks by the President on General Motors Restructuring

09-06-2009	Remarks by the President on “Pay as you Go”
23-06-2009	Press conference by the President
30-06-2009	Remarks by the President at National Finance Committee Fundraiser
23-07-2009	News conference by the President
31-07-2009	Remarks by the President on the Economy
05-08-2009	Remarks by the President on the Economy
07-08-2009	Remarks by the President on the Economy
25-08-2009	Remarks by the President and Ben Bernanke at the nomination of Ben Bernanke for chairman of the Federal Reserve
14-09-2009	Remarks by the President on financial rescue and reform
21-09-2009	Remarks by the President on innovation and sustainable growth
30-09-2009	Remarks by the President on the American Recovery and Reinvestment Act
09-10-2009	Remarks by the President on Consumer Financial Protection
21-10-2009	Remarks by the President on small business initiatives
23-10-2009	Remarks by the President challenging Americans to lead the Global Economy in Clean Energy
29-10-2009	Remarks by the President on Small Businesses and Health Insurance Reform
02-11-2009	Remarks by the President during the meeting of the President’s Economic Recovery Advisory Board
06-11-2009	Remarks by the President in the Rose Garden
12-11-2009	Remarks by the President on the Economy
23-11-2009	Remarks by the President on the "Education To Innovate" Campaign

Appendix 2

Data

Stock Market Returns

Definition: we computed accumulated stock returns for 3 and 7 days. The returns were computed as the variation of the index of one period to the next divided by the first period, for S&P500, Dow Jones Composite and NASDAQ. Units: percentage. Source: financ.yahoo.com

Excess Stock market Returns

Definition: we computed the excess returns for 3 and 7 days as the accumulated stock market returns minus an accumulated three months treasury bill. Units: percentage. Source: finance.yahoo; Board of Governors of the Federal Reserve System

Inflation

Definition: Inflation Rate. Units: percentage. Source: Federal Reserve Releases; inflationdata.com

Industrial Production

Definition: Inflation Rate and Industrial Production. Units: percentage. Source: Federal Reserve Releases; inflationdata.com

Day of Speech

Definition: signals the days on which speeches occurred. Units: dummy taking value 1 when speech occurred. Source: author's definition and computation.

Change

Definition: relative frequency of the word "Change". Units: ratio of total frequency by total number of words per speech. Source: author's definition and computation. "*They sent us here with a mandate for change, and the expectation that we would act.*"[27]

Crisis

Definition: relative frequency of the word "Crisis". Units: ratio of total frequency by total number of words per speech. Source: author's definition and computation. "*This was no longer just a financial crisis; it had become a full-blown economic crisis*"[28]

Dream

Definition: relative frequency of the expression "American Dream". Units: ratio of total frequency by total number of words per speech. Source: author's definition and computation. "*Those core values of common sense and responsibility, those are the values that have defined this nation. Those are the values that have given substance to our faith in the American Dream.*"[29]

[27] Remarks by the President and Governor Jim Douglas of Vermont Before Meeting to Discuss the American Recovery and Reinvestment Plan

[28] Remarks by the President on financial rescue and reform

[29] Remarks by the President on the mortgage crisis

Hope

Definition: relative frequency of the word "Hope". Units: ratio of total frequency by total number of words per speech. Source: author's definition and computation. "*What you share is an entrepreneurial spirit, a tireless work ethic, and a simple hope for something better that lies at the heart of the American ideal.*"[30]

Pronouns

Definition: (we+us+our)/(I+me+my+you+you+they+them+their) Units: ratio of first person pronouns by other pronouns. Source: author's definition and computation. "*(. . .)it is incumbent upon us to put in place those reforms that will prevent this kind of crisis from ever happening again, reflecting painful but important lessons that we've learned, and that will help us move from a period of reckless irresponsibility to one of responsibility and prosperity. That's what we must do. And I'm confident that's what we will do.*"[31]

Anecdotes

Definition: frequency of paragraphs that contain anecdotes. Units: share of paragraphs with anecdotes in total number of paragraphs per speech. Source: author's definition and computation. "*People say, oh, this is overload, we can't do this much. And I keep on trying to explain to people I don't do this just for fun. (Laughter.)* "[32]

Details

Definition: frequency of paragraphs which contain details. Units: share of paragraphs with details in total number of paragraphs per speech. Source: author's definition and computation. "*We talked to Karen Cappuccio, who is still fending off foreclosure because her mortgage company duped her into taking out two expensive loans when they had originally promised her one low, fixed-rate mortgage.*"[33]

Negative

Definition: frequency of negative paragraphs. Units: share of positive paragraphs in total number of paragraphs per speech. Source: author's definition and computation. "*Our health care is too costly, our schools fail too many – and each day brings further evidence that the ways we use energy strengthen our adversaries and threaten our planet*"[34]

[30]Remarks by the President on Small Businessess and Health Insurance Reform
[31]Remarks by the President on consumer financial protection
[32]Remarks by the President at National Finance Fundraiser
[33]Remarks by the President on Consumer Financial Protection
[34]President Barack Obama's Inaugural Address

Objections

Definition: frequency of paragraphs which contain objections. Units: share of paragraphs with objections in total number of paragraphs per speech. Source: author's definition and computation. "*You keep on hearing these folks making these arguments about how we've got to be fearful of the future. I'm not interested in being afraid of the future. I'm interested in(. . .)*"[35]

Positive

Definition: frequency of positive paragraphs. Units: share of positive paragraphs in total number of paragraphs per speech. Source: author's definition and computation. "*I am confident that our economy will recover. I'm confident that we're moving in the right direction. And I promise that I won't rest until America prospers once again.*"[36]

Repetition

Definition: frequency of paragraphs which contain anecdotes. Units: share of paragraphs with anecdotes in total number of paragraphs per speech. Source: author's definition and computation. "*There are going to be bumps in the road and there are going to be times where people get impatient. There are going to be times where folks lose heart.*"[37]

Ending Strong

Definition: signals speeches that end with a call for action. Units: dummy taking value 1 if the speech has a strong ending. Source: author's definition and computation. "*I think we're ready(. . .)This generation of young people sitting here, they have an unparalleled opportunity. We are called upon to help them seize that opportunity. That's what you're doing here at Hudson Valley Community College. That's what I intend to make sure that we do in Washington. That's what we will do as a nation.*"[38]

[35]Remarks by the President at National Finance Fundraiser
[36]Remarks by the President in the Rose Garden
[37]Remarks by the President at National Finance Fundraiser
[38]Remarks by the President on innovation and sustainable growth