WORKING PAPER 23/2017

PRESS RELEASES AND MPC MINUTES
ARE THEY ONE AND THE SAME?

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June 2017

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Abstract

In this research, using Content Analysis, we examine 48 minutes of the Monetary Policy Committee (MPC) and press releases of the Bank of Thailand from 2011 to 2016 and from 2008 to 2016, respectively. The contents of both types of documents are quantified and examined as to whether they are consistent with one another with regard to their readability and sentiments. The general conclusion is that they are consistent and do speak the same language. In particular, it is noted that with a few exceptions, their readability and network of keywords in both the press releases and minutes are indeed alike. It is also noted that the information contents tend to cluster in a similar fashion.

JEL Classification: D83, E52, E458

Keywords: Monetary Policy, Content Analysis, Economic Sentiments

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By

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1. Introduction

Typically, in a central bank, after deliberating on facts and numbers, a policy decision is made and that decision is communicated without delay through various communication channels, which include press releases, press conferences and later, minutes of the meetings of the Monetary Policy Committee (MPC) and inflation reports. No doubt, regular, clear and transparent communication is of vital importance and hence, high priority must be given to effective communication with the public (ECB, website). Accordingly, the ECB defines transparency as the 'central bank providing the general public and the markets with all relevant information on its strategy, assessments and policy decisions as well as its procedures in an open, clear and timely manner.'[1] In other words, transparency demands giving information that is consistent in both process and content so that the public understands what is going on. Consistent communication also helps to reduce financial volatility (Bulíř; Čihák and Jansen, 2016) and uncertainty about the policy path of future interest rate (Ehrmann and Fratzscher, 2013).

In this paper, we examine 48 minutes of the Monetary Policy Committee (MPC) from 2011 to 2016 and press releases from 2008 to 2016, issued by the Bank of Thailand (BoT). Both types of documents are compared to gauge whether they are consistent with one another with regard to their readability and sentiments. This is done by using content analysis which attempts to code qualitative information into quantitative measures. Content analysis can provide a rich analytical resource as central banks' press releases and minutes are carefully crafted statements to reflect policy actions and thinking about future policy (Siklos, 2013; Kahvecia and Odabaşb, 2016). In particular, we attempt to answer the following two questions objectively: Firstly, how well does the abbreviated version of press releases represent the minutes? Secondly, what is the information content of both the press releases and the minutes?

[1] European Central Bank Website on "Transparency," Available at: http://www.ecb.europa.eu/ecb/orga /transparency/html/index.en.html

These two questions are important in many aspects. Obviously these two documents reflect the policy stance of the central bank and any inconsistency could jeopardize the credibility of the institution. Secondly, how does the market react to the release of these two documents?

Content analysis has been widely used in political science but not so in economics. Programs such as the KH Coder and Gephi can help in the data mining and data visualization of texts and interview transcripts (Cybulski, 2016). In the context of central bank communication, content analysis has been used recently by Jansen and Moessner (2016) on communicating dissent on monetary policy, Kahvecia and Odabaşb (2016) on central banks' communication strategy, Bulíř, Čihák and Jansen (2014) on clarity of inflation reports on volatility of the financial markets, Siklos (2013) on central bank guidance in good times and bad, Apel and Grimaldi (2012) on the information content of central bank minutes, Rozkrut et al., (2007) on communication and monetary policy predictability and Fracasso, Genberg and Wyplosz (2003) on how central banks write their inflation reports.

2. Why Bank of Thailand

There are several reasons why this study focusses on the communication media of the BoT. Firstly, according to an independent assessment of the BoT(Grenville and Ito), it has consistently achieved an excellent performance in inflation management throughout the past 20 years. Secondly, BOT has put in place a flexible inflation-targeting (IT) framework since May 2000 and this framework demands a certain degree of accountability, transparency and external communication. The BoT is of the view that clear communication and increased transparency will enable economic agents to project 'the direction of policy with higher precision by reducing the uncertainty about the central bank's preferences (Kateratorn, 2012). The most pronounced improvement towards greater disclosure of information of policy decisions was made by central banks that embraced inflation targeting (Geraats, 2009). Thirdly, beginning January 2011, the minutes of the BoT disclose voting decisions in terms of number of votes against or for a decision of the MPC. This is of particular interest because the minutes contain information on how and why MPC members reached their decisions (Kateratorn, 2012). The publishing of dissenting votes and the rationales for these votes reveal that while a decision is majority-based, some members may have differing and conflicting views from the majority (Apel and Grimaldi, 2012).[2] The BoT is among the first Asian central banks that consistently publishes the voting ratios of the MPC members.

3. Research Methodology

The BoT issues press releases of the MPC decisions as soon as the MPC arrives at a policy decision on interest rate but the corresponding MPC minutes are only released a

[2] On the other hand, there is a valid reason for not disclosing dissenting votes such as to minimize risk of market confusion (Filardo and Guinigundo, 2008). For example, Bangko Sentral ng Pilipinas chooses to speak with one voice for its monetary stance (Fermo, 2012).

fortnight later from the meeting date. The press releases are normally in one paragraph while minutes are much more detailed. Structure-wise, the minutes consist of four sections, namely global economy, domestic economy, financial markets and monetary development/policy decision. The minutes contain greater in-depth and insightful information for arriving at a policy decision and they also comprehensively cover assessment of the outlook for the future and their associated risks.

From the BoT's website, 48 minutes of the MPC from 2011 to 2016 and press releases from 2008 to 2016 were downloaded. The readability of both types of documents was first assessed by the Flesch-Kincaid (FK) grade level (Kincaid et al., 1975) to determine their clarity or conversely, the lack of. The higher the FK score, the lower is readability and clarity. Typically, one adds 5 to the score to note the average age of a person who can fully comprehend the content. As the FK grade level increases, one needs more years of education to understand the content.

Next, the information content of both types of documents is analyzed using a quantitative content analysis program, the KH Coder program. The KH Coder is a free software for quantitative content analysis by Koichi Higuchi at Ritsumeikan University, Kyoto, Japan.[3] We then tag common co-joint words, e.g., 'financial stability' to be forcibly extracted as one word. In the same manner, we also forcibly remove common words, such as 'the', 'and' etc., and classify them as nonexistent. Each press release/minutes in this case is a unit of analysis. The units are then split into words and into a standard form called 'terms'. Based on the degree of association, similarity of terms and units can then be assessed. The program is also able to visualize correspondence and analyze the co-occurrence network. The corresponding network analysis extracts words having similar appearance and patterns and based on a chi-squared calculation of distance between terms and their frequencies, the planar coordinates of terms and units can then be identified. Meanwhile the co-occurrence analysis plots a network diagram where words with high-degree of connections are linked by lines (edges) and the degree of connections and the frequency of a particular word can be highlighted by how thick these lines are and the size of the circle (and font) respectively.

The next step is to code the documents by using multiple coding rules. From the documents, the contents are coded: (i) to reflect specific policies, monetary, fiscal and macroprudential; (ii) to construct indices to measure the various sentiments, i.e., whether the contents reflect optimism or pessimism. In particular, the following coding rules are used. Firstly, the words 'monetary policy', 'fiscal policy' and 'macroprudential policy', etc., are tagged separately as one word and extracted. If these tagged words appear anyway in the documents, they will be coded '1' and calculated as a percentage of the number of words that appear in the same paragraph. This is to reduce positive biasness of long paragraphs.

[3] In the KH Coder, the stemming approach which uses 'Snowball Stemmer', a process that cuts ends of words, according to simple rules is implemented. For example, it can extract 'inflationary' from the original form of 'inflation'.

Secondly, we select 2 key nouns of 'inflation' and 'economic growth'. This is to reflect BoT's own mandate of not only paying attention to inflation but also to economic growth and stability including financial market conditions (BOT website, 2016). The sentiments are then coded in the contents by designing a context-specific list to capture whether the contents are 'speaking' optimistically or pessimistically in the context of inflation and economic growth. For example, a content that indicates pessimism in the context of inflation (higher inflation or expectation thereof) spells a policy inclination that is *hawkish,* i.e., policymakers prefer to tighten monetary policy to rein in inflation. Conversely an index that signifies pessimism in the context of economic growth (lower economic growth or expectation thereof) indicates a *dovish* situation, where looser monetary policy is preferred to stimulate growth.

Apel and Grimaldi (2012) chose a two-word combination to derive sentiments. For example, lower inflation to reflect optimism with regard to inflation.[4] In this paper, the methodology of Apel and Grimaldi is extended to locate adjectives to describe the key nouns within a 5-word neighborhood window subsequent to the key nouns in the same sentence. This is to cast a wider gamut capture to include views on outlook and expectation. For example, in Apel and Grimaldi, the combined two words, 'lower' and 'inflation' (i.e., 'lower inflation') is coded but not 'inflation is expected to be lower'. In this analysis, however, using the 5-word rule, this will be coded. The chosen adjectives are from the top 150 of the frequency distribution of words of entire documents. Again, the code counts are a percentage of the number of words standardized by the number of sentences in each document (Table 1). We have to bear in mind that the coded optimism and pessimism is with regard to overall sentiments, not only with regard to the domestic economy.

Table 1
Definition of Sentiments

Sentiment Variables coded	Explanation	Policy Inclination
Optinf	Optimism in context of inflation	Dovish –looser MP
Optecon	Optimism in context of economic growth	Hawish, assume it is associated with higher inflation – tighten MP
Pessinf	Pessimism in context of inflation	Hawish-tighten MP
Pessecon	Pessimism in context of economic growth	Dovish-assume it is associated with lower inflation -looser MP

Using these specifications, how the sentiments in the press releases and minutes affect the degree of readability are examined in the following model:

[4] It is noted that the same objective 'lower' in the context of economic growth gives the exact opposite sentiments.

$FK_t = \alpha + \beta_1 OPTINF_t + \beta_2 PESSINF_t + \beta_3 OPTECON_t + \beta_4 PESSECON_t + \beta_5 DISSENT_t + \beta GUI_t + \varepsilon_t$ ……EQ(1)

Where FK is the Flesch–Kincaid Statistics, OPTINFM is optimistic sentiment index of inflation derived from the content, OPTECONM is optimistic sentiments of economic growth derived from the content, PESSINFM is pessimistic sentiments of inflation derived from the content, PESSECONM is pessimistic sentiments of economic growth derived from the content, DISSENT is the percentage of votes out of total votes against a monetary policy decision and GUI is global political economic uncertainty index (Baker, Bloom and Davis, 2016).[5]

We also examine whether the information content as reflected by the sentiments of both documents contain any pertinent information with regard to: (i) the financial markets; and, (ii) policy rates. Following Bulíř, Čihák and Jansen (2014), the standard deviation of the daily index returns of the Thailand Stock Exchange is calculated using a 1-3,1-5 and 1-7 days for the event windows, including the date (or the nearest date when there was trading day) the press releases and the minutes were issued.

The standard deviation is calculated as:

$$s = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$$

where i =3,5, and 7 days. As indicated by Jensen (2011), the motivation for the different time horizon (i =3,5,7 and 10) is to see the differences between the short- and long-run effect. In particular,

$STDSTI_t = \alpha + \beta_1 OPTINF_t + \beta_2 PESSINF_t + \beta_3 OPTECON_t + \beta_4 PESSECON_t + \beta_5 (PESSECON_t * DUM\_I) + \beta_6 (PESSECON_t * DUM\_d) + \beta_7 GUI_t + \varepsilon_t$ ……EQ(2)

Where $STDSTI_t$ is the standard deviation of the returns of the stock market using the 3,5 and 7 window dates, Dum_I is 1, when the MPC committee voted for an increase in policy rate, otherwise zero and Dum_D is 1, when the MPC members voted for a policy decrease.

4. Empirical Results

4.1 Sentiments in Minutes and Press Releases

In this section, the coded sentiments in both documents are presented. An obvious observation is that they are significantly correlated across documents (Table 2). Consistently, positive correlations hold for the same sentiments (e.g., optimism for inflation and economic growth in press releases is highly correlated with the same sentiments in the minutes,

[5] The Global Economic Policy Uncertainty Index (GUI) is available monthly, running from January 1997 to the present. The GUI is a GDP-weighted average of national Economic Policy Uncertainty index (UI) for 18 countries: Australia, Brazil, Canada, Chile, China, France, Germany, India, Ireland, Italy, Japan, the Netherlands, Russia, South Korea, Spain, Sweden, the United Kingdom, and the United States.

respectively) and negative for 'opposite' sentiments across documents.[6] It is then concluded through content analysis that there is no ambiguity of sentiments with respect to both the minutes and press releases, particularly those on inflation. In other words, both documents reflect concurred sentiments in inflation, be it pessimistic or optimistic.

Table 2
Correlations between Measures of Sentiments Across Documents

PESINFM	OPTINFM	-0.27 (0.074)	PESECONM	OPTECONM	-0.07 (0.631)
OPTINFP	OPTINFM	0.39 (0.007)	OPTECONP	OPTECONM	0.42 (0.005)
OPTINFP	PESINFM	-0.29 (0.058)	OPTECONP	PESECONM	-0.23 (0.127)
PESINFP	OPTINFM	-0.20 (0.180)	PESECONP	OPTECONM	0.20 (0.184)
PESINFP	PESINFM	0.65 (0.000)	PESECONP	PESECONM	0.40 (0.006)
PESINFP	OPTINFP	-0.22 (0.138)	PESECONP	OPTECONP	0.02 (0.915)

OPTINF is optimistic sentiment index of inflation derived from the content, OPTECON is optimistic sentiments of economic growth derived from the content, PESSINF is pessimistic sentiments of inflation derived from the content, PESSECON is pessimistic sentiments of economic growth derived from the content, Variables as defined above, with the last letter indicates whether it is derived from, press releases (P) or minutes (M). Figures in parenthesis are the p-value for testing the significance of the correlation.

4.2 Sentiment and Readability

4.2.1 Readability Statistics

The press releases are brief (average length of ~ 250 words) and are presented in one paragraph while the minutes (~1250 words) as mentioned earlier, contain four major sections, discussing the global economy, the domestic economy, the financial markets and monetary consideration/policy. The Flesch–Kincaid (FK) grade level is calculated for each press release and minutes (Chart 1). For the minutes, the FK index is also calculated for each subsection. As expected, it is noted that the degree of difficulty is higher (less accessible to the general readers) in the minutes than the press releases. We also see some apparent spikes in the degree of difficulty during the global financial crisis (GFC) and the euro debt crisis. Hence, there appears to be some positive correlation between readability and global uncertainty (Chart 1). For the minutes, it is noted that the sections on 'domestic economy' and 'monetary consideration' contribute most to the degree of difficulty (Table 2). It is also noted that the FK

[6] There are two 'inconsistent' correlations: (i) between PESECONP and OPTECONM (0.2); and, (ii) PESECONP and OPTECONP (.002). This could be due to the content analysis picking up sentiments reflecting the global environment. Both correlations are, however, not significant. Nonetheless, the sentiments in inflation between the documents are consistent.

indices of all component of the minutes are positively related to one another and also to the press releases (Table 3).

Chart 1
Flesch-Kincaid Statistics

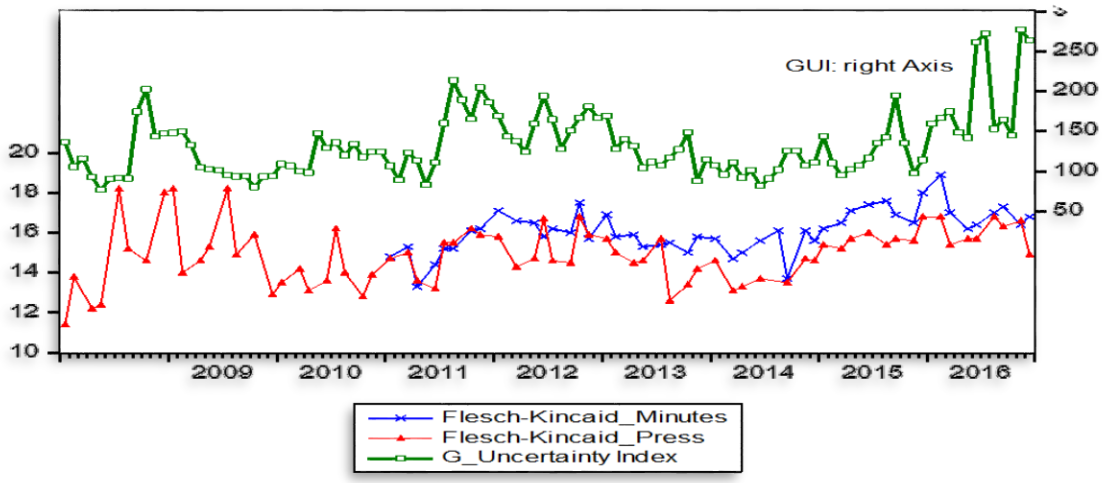


Table 2
Flesch–Kincaid Statistics for Subsection of Minutes[7]

Component of Minutes	% Contribution
Domestic Economy	0.34
Financial Markets	0.17
International Economy	0.22
Monetary Policy	0.26

Table 3
Correlation of Flesch–Kincaid Statistics for Subsection of Minutes

	Minutes	Press releases	Domestic Economy	Financial Markets	International Economy	Monetary Policy
Minutes	1					
Press releases	0.7	1				
Domestic Economy	0.74	0.47	1			
Financial Markets	0.56	0.36	0.31	1		
International Markets	0.63	0.58	0.32	0.15	1	
Monetary Policy	0.78	0.54	0.41	0.31	0.41	1

[7] The FK statistics are calculated for each component of each minutes. The percentage contribution of a component is then the KH statistics of each component over the sum of the KH statistics of all the components.

4.2.2 Readability and Sentiments

From Appendix 1, it can be gleaned from the regression results of equation 1 that the sentiments in the press releases do not affect the readability. Given the brevity of press releases, this is to be expected. For the minutes, it is noted that as pessimism on inflation increases, the minutes become more accessible to the general public. This is in contrast with pessimism on economic growth. It is postulated that this observation may be attributed to BoT's effort in trying to explain inflation in a more transparent fashion during periods of inflation pessimism. On the other hand, it is harder to explain in lay-man terms, the situation during periods of economic growth pessimism. This is also consistent with the earlier findings that the section on 'domestic economy' contribute most to the degree of difficulty of the overall minutes. It is also found that the readability of minutes is negatively related to the degree of voting dissent, indicating that the central bank can to publish minutes with information about dissent votes without sacrificing readability and transparency. However, it is found that global uncertainty makes the minutes more complicated as reflected by Chart 9.

4.3 Corresponding and Co-occurrence Analysis

The corresponding analysis of the top 100 most distinctive words of the press releases (~ a total of 11,500 words) and top 200 words of the minutes (~60,000 words) yield some interesting common characteristics (Chart 2a and 2b). It is noted that years '2013-2104' and '2015-2016' are clustered together in both documents suggesting the contents of these years are similar within clusters but significantly different between clusters. It is also noted that '2008' (in the press releases), '2011' and '2012' are isolated, not surprisingly, given that 2008 was the year of the beginning of the GFC. 2011 was the year Thailand experienced a severe flood and 2012 was the start of the euro debt crisis. Brexit was also mentioned in 2016. By further examining the distinctive words, we can also distinguish at least 3 clusters. Cluster A is mostly related to the internal developments, in particular, the high inflation environment and specific events (e.g., the big flood in 2008) causing inflation to spike. Cluster B is with regard to the external developments, during the euro debt and the global financial crisis. Cluster C refers to uncertainty in trade, with mention of China and Europe, negative inflation rates and financial stability. Again, these clustering patterns are similar across documents.

Chart 2a

Corresponding Analysis of Press Release
(Top 100 Distinctive Words)

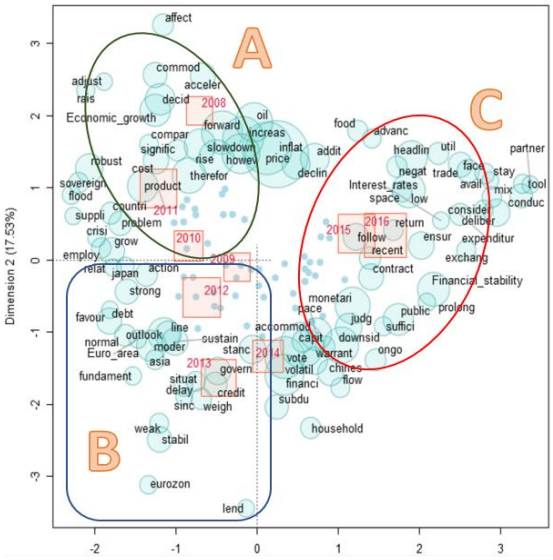


Chart 2b

Corresponding Analysis of Minutes
(Top 200 Distinctive Words)

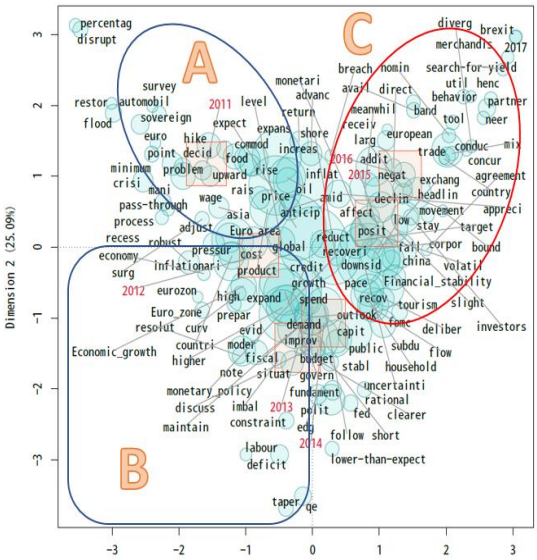


Chart 3a

Co-occurrence Analysis of Press Releases
(Centrality Degree)

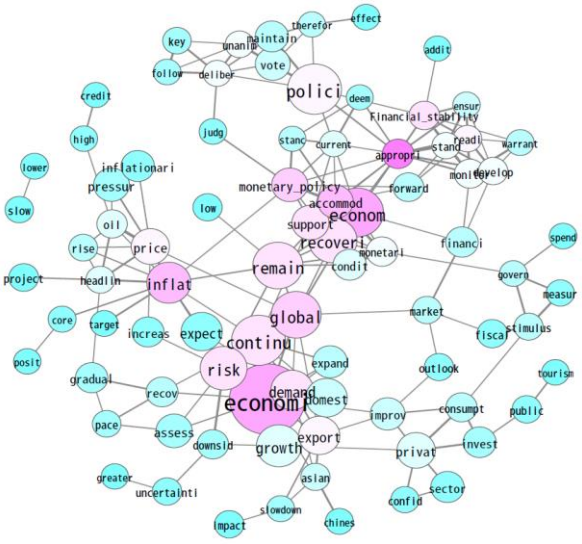


Chart 3b

Co-occurrence Analysis of Minutes
(Centrality Degree)

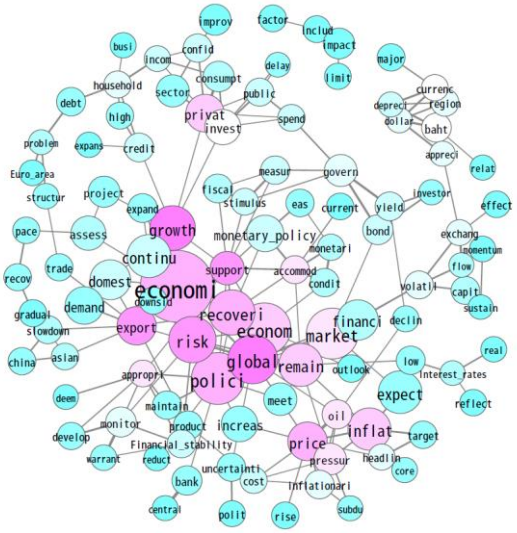


Chart 4a
Co-occurrence Analysis of Press Release
(Communities: Betweeness)

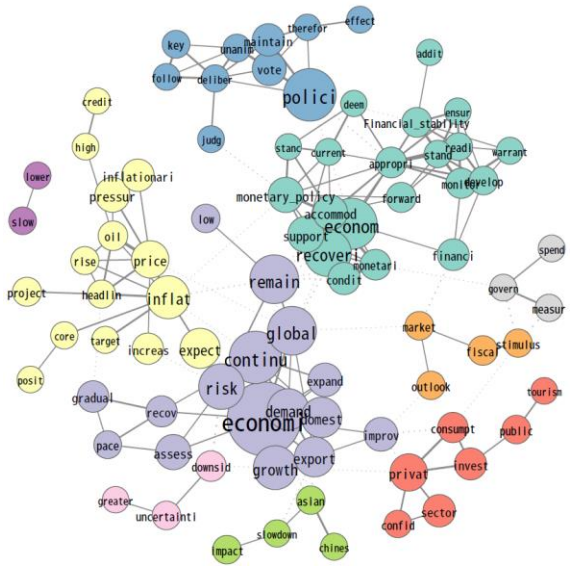
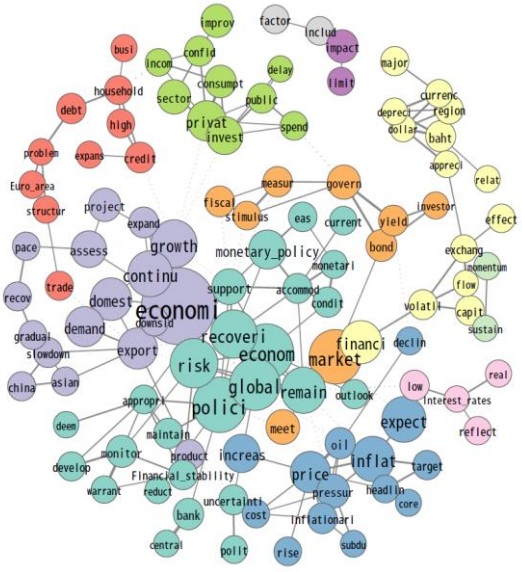


Chart 4b
Co-occurrence Analysis of Minutes
(Communities: Betweeness)



From the Centrality Degree, Chart 3a (minimum frequency=20, edge=200) and Chart 3b (minimum frequency=50, edge=200),[8] the following is noted: (i) the keywords include 'economic growth', 'inflation', 'global development', 'monetary policy', 'exports' and 'risk' in both documents, implying that these key words tend to generate networks of other words. This is confirmed with charts of different settings (see Appendix 2). While certain keywords such as 'price' has straight-forward association (e.g., with 'pressure', 'headline', 'cost', 'commodities', 'oil' and 'prices'), 'monetary policy' has much more complicated networks (Communities Betweeness of Chart 4a and 4b). It is sandwiched between 'policy', 'stance', 'recovery', 'support', 'financial' and 'markets'. It somewhat epitomizes the systemic view MPC members must possess when deciding appropriate policy rate for the economy; (ii) as expected, the longer minutes can to provide greater details on the exchange rates, capital flows, household credit and euro area in contrast to the press releases, which are much more fragmented as they are designed to give maximum coverage in fewer words.

[8] "Minimum frequency" is the minimum frequency of occurrence of a word for inclusion and "Edge" defines the number of main connections between all the words.

Chart 5

Co-occurrence Analysis of Monetary Policy (Minutes)

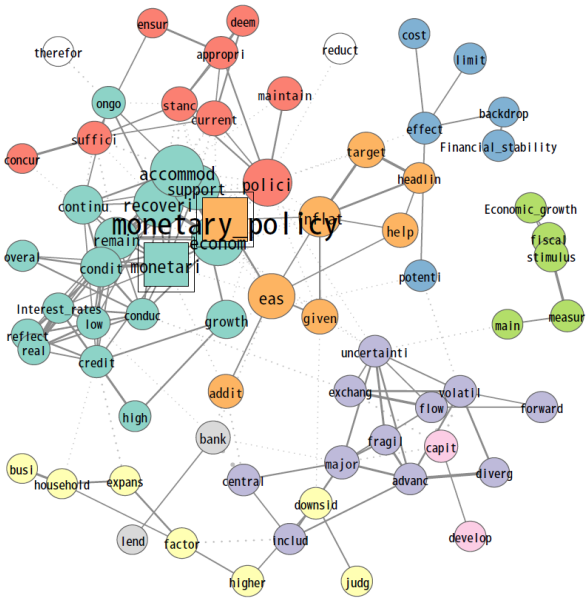


Chart 6

Co-occurrence Analysis of Fiscal Policies (Minutes)

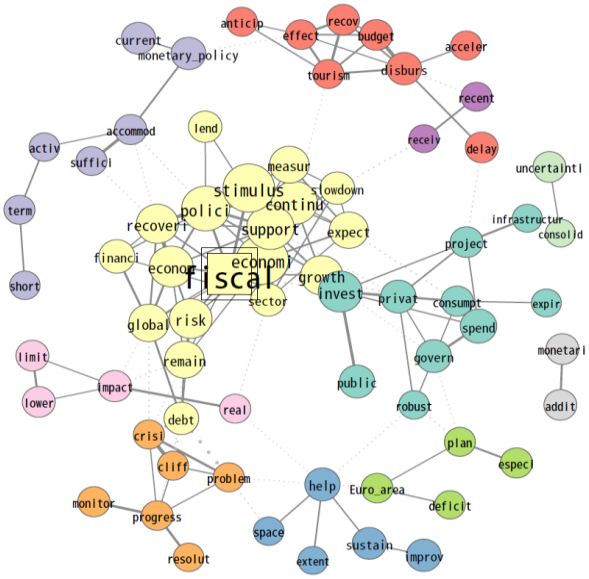
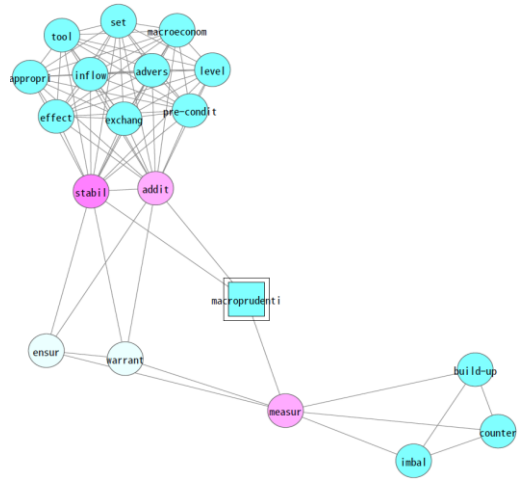


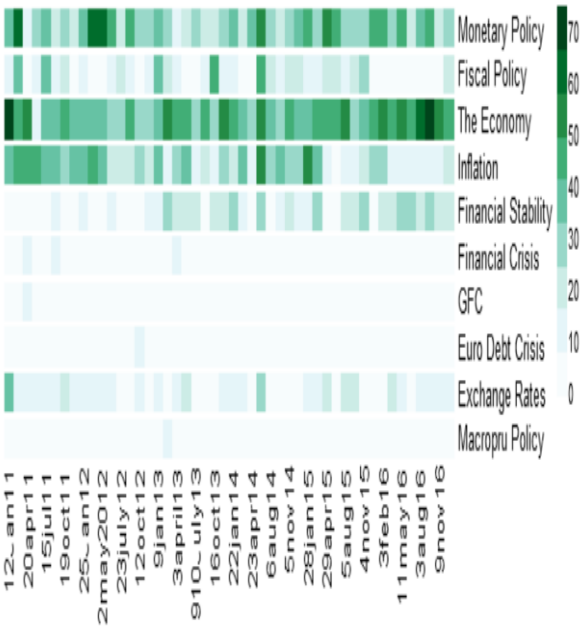
Chart 7

Co-occurrence Analysis of Macroprudential Policies (Minutes)



Next, we turn to the network analysis of three key policies, namely, monetary, fiscal and macroprudential policies (Chart 5, 6 and 7). Here, only analysis on the minutes is presented due to the longer content. It is noted that the various transmission mechanisms of monetary policy, its effects and likewise for fiscal policy, its multiplier effects and fiscal policy related to the Euro area are clearly highlighted. It is interesting to note that 'macroprudential policy' is not mentioned in the press releases and only three times in minutes (once in the Minutes of 28 November 2012, and twice on 20 February 2013 (Chart 8)). In the co-occurrence analysis, BoT sees macroprudential policy (Chart 7) as connected to the nature of policy ('additional', 'measures' and 'precondition'),

Chart 8
Heat Graph of Key Words
(Minutes)



purposes of policy ('counter', 'buildup' and 'imbalances') and end results ('inflows' 'macroeconomic' and 'stability'). Also, financial stability has begun to feature strongly during the last 3-4 years. It is also worth noting that there has been an increase in communication on fiscal policies, both domestic and foreign, during the years of the global financial crisis (Chart 8). However, they are at best described mostly in normative terms.

The degree of word association is then calculated for selected key words in both documents using the Jaccard Similarity Index (JSI).[9] Words that frequently appear together are given a bigger value. Looking at Charts 9a and 9b, we can see similarities of associations of some of these keywords. For instance, 'monetary policy', 'economy' and 'inflation' are closely related to one another in a similar fashion for the two types of documents. As expected, in the more detailed minutes, 'financial crisis' and 'GFC' are closely associated with each other.

[9]JSI is between 0 and 1.

Chart 9a
Surface Graph, Degree of Word Association within the Press Releases, 2011-2016

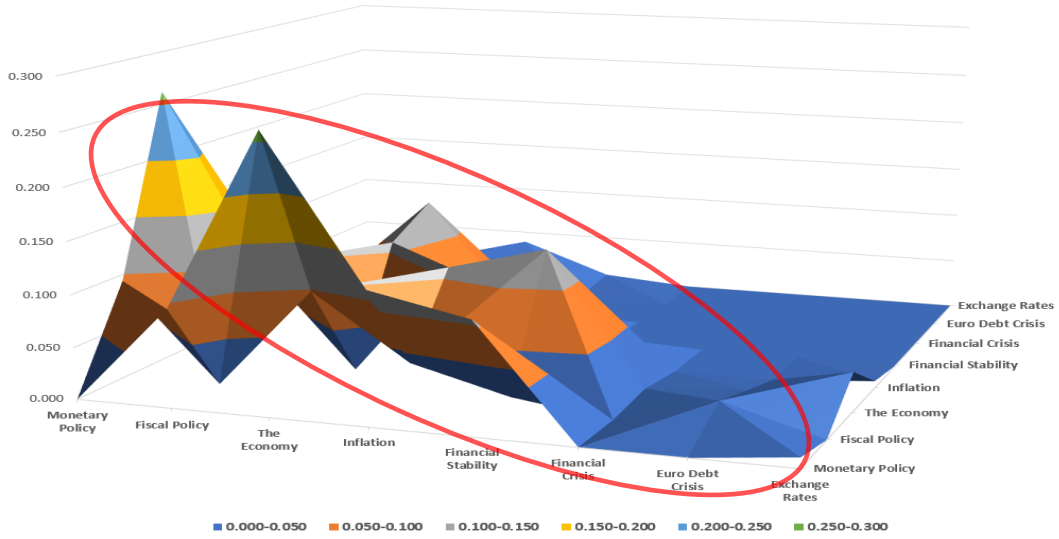
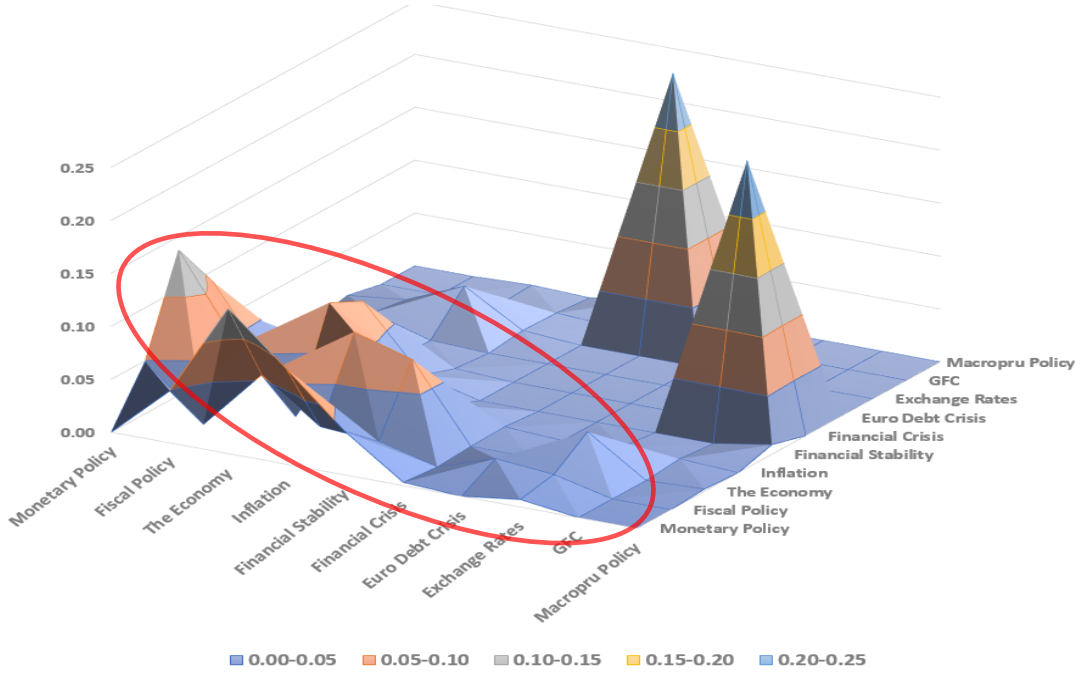


Chart 9b
Surface Graph, Degree of Word Association Minutes, 2011-2016



5. Information Content

Given the above evidence that both documents are consistent with each other, it is postulated that minutes should not matter to financial markets due to the delayed nature of their dissemination by 14 days. Indeed, the estimation using Equation 2, suggests that the various sentiments in the minutes have no effect on the standard deviation of index returns within all window periods. On the other hand, there is a positive relationship between the sentiments in the press releases and volatility of the daily stock exchange, in the short- and medium-term of 3-7 days (See regression results in Appendix 3), particularly, pessimism regarding economic growth which increases the volatility of the index returns. We then examine whether the stance of monetary policy interacts with the sentiments in the press releases to affect stock volatility. Not surprisingly, the effect of hawkish policy (policy rate increase) during the period of pessimism of economic growth on stock market volatility is significant over the longer run (i.e., 5 days onward).

Next, by using a simple VAR analysis which consists of policy rates and the various sentiments derived from the contents, it is noted that a positive 'shock' to the pessimism sentiments of inflation (hawkish) of the minutes causes a significant positive shock in policy rates, which last over three periods (see Appendix 4). However, this effect, though positive, is not significant in the case of the press releases.[10] This implies that the detailed minutes do contain pertinent information with regard to the sentiments of the MPC members, that is, there appears to be some kind of 'forward guidance' in motion.

6. Conclusion

In this study, using quantitative content analysis of the press releases and minutes, the Apel and Grimaldi (2012) methodology is extended to take into account potential statements on outlook and expectation in both types of documents. Using co-occurrence and corresponding analysis, it is found that there are significant similarities across the two documents, despite substantial length differences. In particular, it is noted with few exceptions, their readability, the networks of keywords in both the press releases and minutes are indeed alike and the information contents tend to cluster in a similar fashion. The analysis also points us to the fact that there is an alignment of sentiments between the press releases and minutes.

From the heat graph, it is noted from both types of documents that BoT is not only concerned about price stability but about other areas as well, particularly during the past 3 to 4 years where global development, risk and the state of financial stability have featured prominently. However, we note that despite their increased prominence, communication on macroprudential polices have not been so forthcoming in both types of documents. One

[10] The results are robust to the ordering of the variables.

persistent difference is that certain sentiments in the press releases affect the volatility of the financial markets in contrast to the minutes. However, it is noted that for less dynamic interactions, the minutes do contain other useful information.

From the analysis, we find that the BoT has managed to craft its press releases to be in harmony with the minutes so that consistent signals are communicated across the two mediums in two different time periods. Nevertheless, it will be interesting to carry out a similar study on both types of documents in Thai, the native language. Given that these two types of documents in English are translated versions, we postulate similar findings with the Thai versions. However, the Thai versions may be able to capture more precisely the intent of the MPC members.

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Appendix 1: Readability Regression

	Dependent Variable : FKP												Dep. Var: FKM			
Variable	coeff	Std. Er	Prob.		coeff	Std. Er	Prob.		coeff	Std. Er	Prob.		coeff	Std. Er	Prob.	
C	16.2	0.45	0	***	16.32	0.28	0	***	16.08	0.42	0	***	15.51	0.68	0	***	13.96	0.69	0	***
OPTINFM	-0.52	5.53	0.93		1.16	5.99	0.85						5.05	6.58	0.45		1.59	4.2	0.71	
PESINFM	-4.58	2.64	0.09	*	-7.87	2.6	0	**					-4.77	2.64	0.08	*	0.59	3.58	0.87	
OPTECONM	-5.16	2.97	0.09	*					-6.48	3.38	0.06	*	-4.22	2.94	0.16		-3.08	1.84	0.1	
PESECONM	8.7	2.88	0	***					9.75	3.17	0	***	8.45	3.12	0.01	***	3.08	2.16	0.16	
GUI													0	0	0.05	**	-1.03	0.81	0.21	
DISSENT													-1.65	0.97	0.1	*	0.01	0	0.01	***
R-squared	0.3				0.14				0.27				0.39				0.31			
Adjusted R-squared	0.24				0.1				0.23				0.3				0.2			
F-statistic	4.67				3.53				8.17				4.31				2.84			
DW Stats	1.78				1.49				1.53				1.84				1.94			

Where FKP and FKM are the Flesch–Kincaid Statistics of the Press releases and Minutes, respectively,

OPTINFM is optimistic sentiment index of inflation derived from the content

OPTECONM is optimistic sentiments of economic growth derived from the content

PESSINFM is pessimistic sentiments of inflation derived from the content

PESSECONM is pessimistic sentiments of economic growth derived from the content

dissent is the percentage of votes out of total votes against policy decision

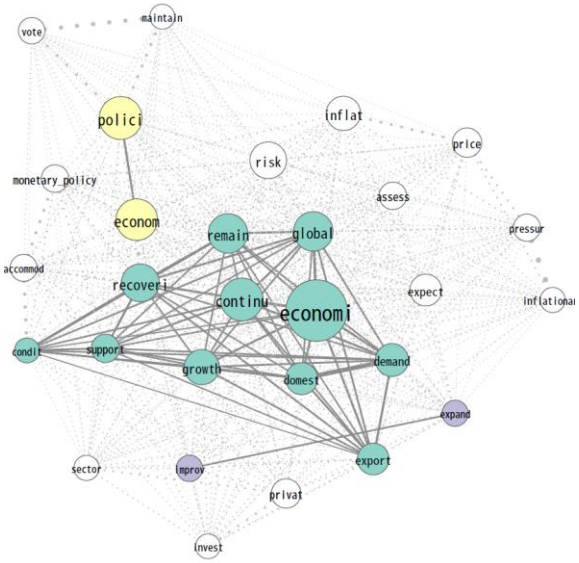
GUI is global political economic uncertainty index (Baker, Bloom and Davis, 2016)

Variables as defined above, with the last letter of derived sentiments indicates whether it is derived from Press releases (P) or Minutes (M).

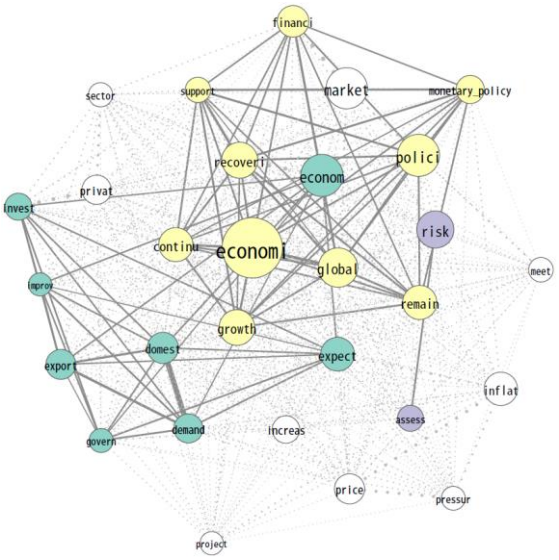
*,**,*** denote statistical significance at 10,5 and 1 percent level respectively.

Appendix 2: Co-occurrence Analysis

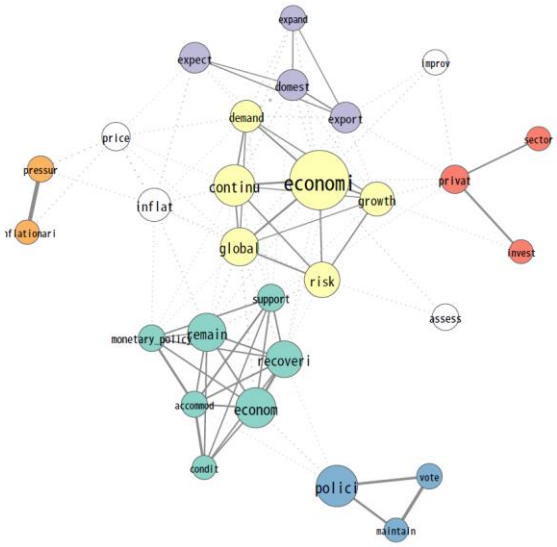
Co-occurrence Analysis of Press Releases (Degree Communities, minimum frequency =50, edge=500)



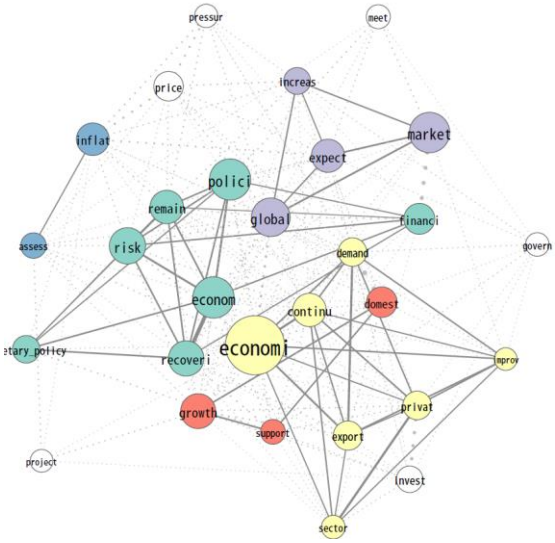
Co-occurrence Analysis of Minutes (Degree Communities minimum frequency =50, edge=500)



Co-occurrence Analysis of Press Releases (Degree Communities, minimum frequency =50, edge=200)



Co-occurrence Analysis of Minutes (Degree Communities minimum frequency =50, edge=200)



Appendix 3: Information Content Regression (of Press Releases): Financial Markets

Dependent Variable:	STDSTI3				STDSTI5				STDSTI7			
Variable	Coeff	Std. Er	Prob.		Coeff	Std. Er	Prob.		Coeff	Std. Er	Prob.	
C	0.64	0.15	0	***	0.71	0.12	0	***	0.64	0.1	0	***
OPTINFP	0.33	1.34	0.81		0.7	0.92	0.45		1.18	0.83	0.16	
PESINFP	1.64	1.19	0.18		1.58	1.05	0.14		1.88	0.9	0.04	*
OPTECONP	-0.86	0.68	0.21		-0.69	0.46	0.14		-0.38	0.42	0.38	
PESECONP	3.69	1.36	0.01	***	2.63	1.12	0.02	**	2.61	0.88	0	**
GUI												
R-squared	0.24				0.23				0.32			
Adjusted R-squared	0.17				0.16				0.25			
Prob(F-statistic)	0.02				0.03				0			
DW	2.13				2.23				2.4			

Independent Variable:	**STDSTI3**				**STDSTI5**				**STDSTI7**			
	Coeff	**Std. Err**	**Prob.**		**Coeff**	**Std. Err**	**Prob.**		**Coeff**	**Std. Err**	**Prob.**	
C	**0.68**	**0.21**	**0**	***	**0.76**	**0.16**	**0**	***	**0.73**	**0.12**	**0**	
OPTINFP	**-0.31**	**1.31**	**0.81**		**0.31**	**0.91**	**0.74**		**0.88**	**0.8**	**0.28**	
PESINFP	**1.39**	**1.34**	**0.3**		**1.27**	**1.22**	**0.3**		**1.5**	**0.98**	**0.13**	
OPTECONP	**-0.36**	**0.6**	**0.55**		**-0.31**	**0.36**	**0.39**		**-0.05**	**0.33**	**0.88**	
PESECONP	**4.57**	**1.5**	**0**	***	**3.04**	**1.44**	**0.04**	**	**2.78**	**1.08**	**0.01**	**
PESECONP*DUM_I	**2.5**	**1.57**	**0.12**		**3.13**	**1.24**	**0.02**	**	**3.73**	**0.95**	**0**	***
PESECONP*DUM_D	**-3.56**	**1.85**	**0.06**	*	**-2.23**	**1.18**	**0.07**	*	**-1.6**	**1.18**	**0.18**	
GUI	**0**	**0**	**0.58**		**0**	**0**	**0.41**		**0**	**0**	**0.15**	
R-squared	**0.32**				**0.32**				**0.42**			
Adjusted R-squared	**0.2**				**0.19**				**0.31**			
Prob(F-statistic)	**0.03**				**0.04**				**0**			
Prob(Wald F-statistic)	**0**				**0**				**0**			
DW	**1.81**				**0.83**				**2.25**			

Where STDSTI3, STDSTI5 & STDSTI7 are the standard deviation of the returns of the stock market using the 3,5 and 7 window dates respectively

OPTINFP is optimistic sentiment index of inflation derived from the content

OPTECONP is optimistic sentiments of economic growth derived from the content

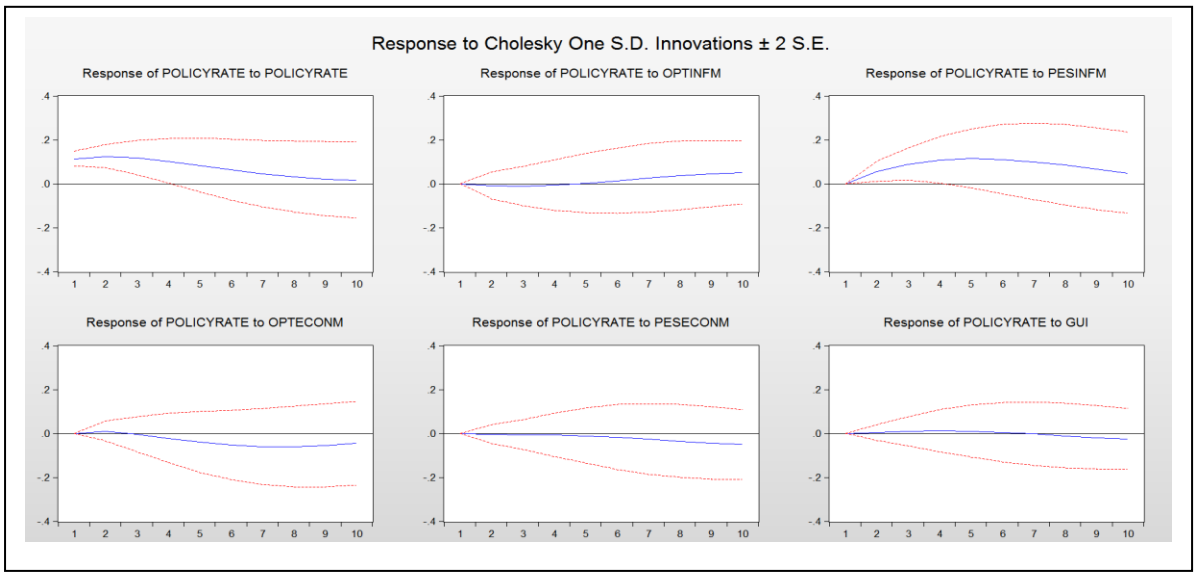
PESSINFP is pessimistic sentiments of inflation derived from the content

PESSECONP is pessimistic sentiments of economic growth derived from the content

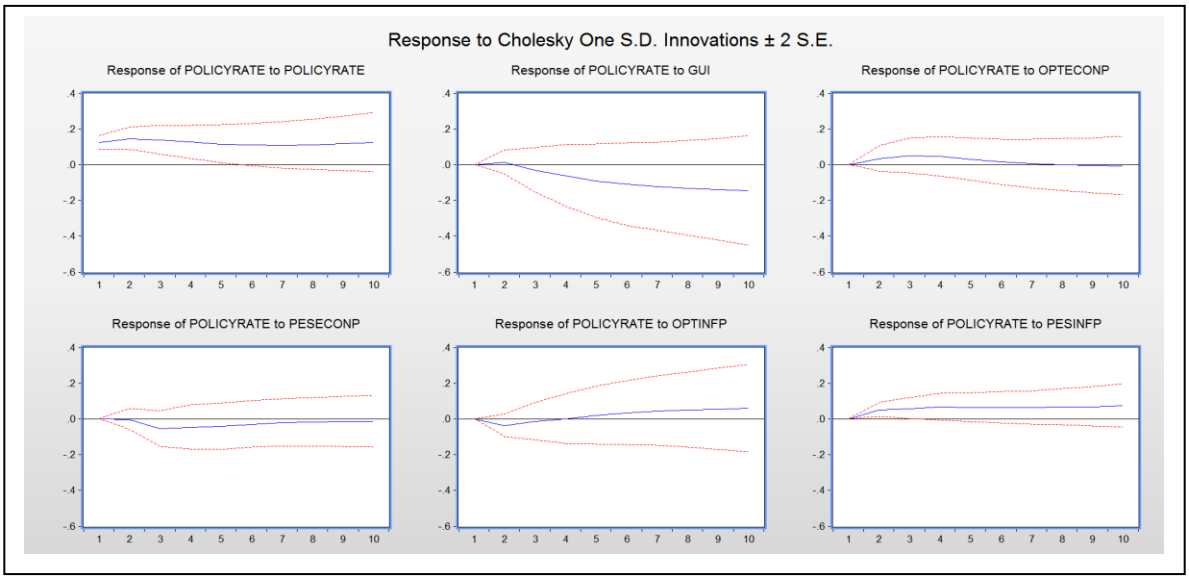
Variables as defined above, with the last letter of derived sentiments indicates whether it is derived from Press releases (P) or Minutes (M). Dum_I is 1, when the MPC committee voted for an increase in policy rate, otherwise zero and Dum_D is 1, when the MPC members voted for a policy decrease.

Appendix 4: Information Content: Policy Rates

VAR Analysis of Sentiments of Minutes



VAR Analysis of Sentiments of Press Releases



POLICY RATE is the policy rate set by MPC
OPTINF is optimistic sentiment index of inflation derived from the content
OPTECON is optimistic sentiments of economic growth derived from the content
PESSINF is pessimistic sentiments of inflation derived from the content
PESSECON is pessimistic sentiments of economic growth derived from the content
Variables as defined above, with the last letter of derived sentiments indicates whether it is derived from Press releases (P) or Minutes (M).