Eloquence is The Key – the Impact of Monetary Policy Speeches on Exchange Rate Volatility

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Abstract

During the last years the monetary policy initiatives of the main central banks have been profoundly influenced by quantitative easing (QE). Blessing, curse, effective instruments or a simple fad, these unconventional measures have occupied the center stage of academic and public attention. In this context, this paper focuses on a wide set of public speeches delivered by officials belonging to the most relevant central banks. These statements cover a large pallet of topics including areas such as QE, tapering, financial stability, unemployment or interest rates. The aim of this study is to investigate the impact that these speeches have on the volatility of exchange rates. For this purpose, the methodology relies on an econometric event study that incorporates three volatility models and intraday five-minute frequencies. The results indicate the fact that public statements have a clear, evident, significant and robust impact on the observed assets.

Keywords: monetary policy, central banks, volatility, exchange rate, official speeches
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Introduction:

Monetary policy is perceived as one of the key areas of the economy as a whole. The soundness of a central bank's monetary policy is judged both by the effects generated and by the reputation of these initiatives. Given this fact, during the last decades central banks invested an important amount of effort in upgrading their transparency and their communication with the general public. As an answer to the realities of the recent financial crisis, the main central banks adopted a series of measures, known as quantitative easing. Given the unconventional nature of these policies, the communication process of these institutions intensified.

The effects of official communications have been previously considered in the literature in studies like: Jansen and de Haan (2005), Ehrmann and Fratzscher (2007), or Hayo et al. (2010). In addition to this, investigations such as Fatum and Hutchison (2002), Connolly and Kohler (2004), or Jansen and de Haan (2007) bring to light the relation between these communications and the evolution of currency markets.

This paper extends this literature by considering a vast set of speeches delivered by officials affiliated to the main central banks and it follows the impact of these statements on the volatility of several currency pairs. The objective of the paper is to present an empirical measure of this impact. For this purpose the methodology is built around 3 models (RiskMetrics, GARCH and FIGARCH) that represent the driving force of the econometric event study. The data consists in 39 currency pairs with five-minute frequency, adjusted for periodicity and a list with the exact moments of the speeches delivered. The results are symphonized in an index that reveals the magnitude of the influence (in terms of volatility) induced by each speech on each currency pair.

The findings indicate that central bank public communications generate a powerful effect on the volatility of the considered assets.

The reminder of this paper is structured as follows. Section II briefly reviews the literature that covers the impact on news on financial markets and specifically, the influence of public statements. Section III presents the data and the methodology that characterize the empirical investigation. Section IV covers the results that derive from the analysis and the last section offers some conclusions.

Literature review:

The impact of news on financial markets represents a topic that attracted an important amount of academic interest that led to the formation of an extensive and fast growing literature. In general, this literature considers the way in which certain announcements influence the dynamics of asset prices. One powerful strain of the above mentioned literature focuses on the influence induced by announcements related to macroeconomic fundamentals.

This literature that investigates the importance of news traces its origins to the seminal study developed by Cutler et al. (1989) that explains how much of stock returns can be attributed to the launch of economic news. Other pioneering works in this area have been put forward by Engle and Ng (1993), Mitchell and Mulherin (1994) Fleming and Remolona (1999) or Bomfim (2003).

Albu et al (2014 a) and Albu et al (2014 b) focus on the impact on sovereign CDSs induced by quantitative easing initiatives issued by the main central banks. Using a similar event study approach to that in this paper, these investigations report that QE events have a significant influence on the return of the analyzed CDSs. Other comparable contributions that study the effects of quantitative easing can be observed in Lupu and Călin (2014 a) and Lupu and Călin (2014 b).

The effects of the communications issued by central banks have also become a topic of academic interest in the last period. Focusing on the initiatives carried out in the first years of the EMU, Jansen and de Haan (2003) observe the reaction in terms of mean and volatility of the EUR – USD currency pair in relation to statements made by ECB officials. The results suggest that volatility can expand with up to 25% after a statement.

Reeves and Sawicki (2005) examine the reaction of UK financial markets to communications belonging to BOE. The results indicate the fact that several publications alter the evolution of interest rate expectations.

In an approach with a similar research question to the one present in this article, Beine, Janssen and Lecourt (2007) analyze the impact of speeches and other official communications belonging to central banks officials on foreign exchange markets. The results confirm that certain speeches that can explain the intervention initiatives can generate effects in terms of dynamics of the exchange rate and its volatility.

Hayo, Kutan and Neuenkirch (2008) research the reaction of 17 emerging equity markets to communications issued by the Fed in the 1998–2009. The authors consider both formal and informal statements and use a GARCH methodology. They report that both the monetary policies and the statements about them, trigger a relevant effect on market returns. In addition to this, the authors highlight the fact that informal communications tend to have a more important influence in terms of magnitude.

Knütter, Mohr and Wagner (2011) acknowledge the notability of the communication policy of a central banks and review the main quantitative contributions brought on the topic. The authors conclude that statements and press conferences are the tools with the most efficiency in communication.

Egert and Kocenda (2014) study the influence of macroeconomic announcements and central bank statements on several

CEE currency markets. They use two approaches: a monetary model and a GARCH model for the pre-crisis and crisis period. The research reports evidence that the exchange rates of the studied states respond to macroeconomic news and central bank statements both for the pre-crisis and the crisis periods.

Data and methodology:

As stated above, the present research uses two major types of data. The first set consists in the following currency pairs: *EUR/AUD, EUR/BRL, EUR/CAD, EUR/CHF, EUR/CNH, EUR/CNY, EUR/GBP, EUR/HUF, EUR/ILS, EUR/INR, EUR/JPY, EUR/MXN, EUR/NOK, EUR/NZD, EUR/PLN, EUR/RUB, EUR/SEK, EUR/TRY, EUR/USD, EUR/ZAR, GBP/USD, KRW/JPY, NZD/USD, USD/BRL, USD/CAD, USD/CHF, USD/CNH, USD/CNY, USD/HUF, USD/JPY, USD/KRW, USD/MXN, USD/NOK, USD/PLN, USD/RUB, USD/SEK, USD/SGD, USD/TRY, USD/ZAR*. The entire data set has a 5-minute frequency and is representative for the 2.10.2014 – 3.02.2015 interval. The dynamics of the currency pairs has been obtained from the DataStream Platform.

The second data set is a table that consists in a number of 159 of speeches conducted by the officials of the central banks, accompanied by the date and time of their presentation. These elements have been collected from the press release sections of the sites of the main central banks included in this study The events cover the same interval as the currency pairs.

The methodology used follows the logic an econometric event study. It incorporates three models: GARCH (1, 1), FIGARCH (1, 1) and RiskMetrics.[2] These models have the following formulations:

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[2] For a discussion on GARCH modeling see for example Călin et al. (2014) or Lupu and Lupu (2007)

GARCH:

$$\sigma_{t+1}^2 = \omega + \alpha R_t^2 + \beta \sigma_{t+1}^2 \sigma_t^2$$

where $\alpha + \beta < 1$

FIGARCH

$$\sigma_t^2 = \omega + (1 - \beta L - \phi L(1-L)^d)\epsilon_t^2 + \beta \sigma_{t-1}^2$$

Where L derives from:

$$\sigma_t^2 = \omega + \sum (\lambda_i \epsilon_{t-1}^2)$$

RiskMetrics:

$$\sigma_{t+1}^2 = (1 - \lambda) \sum_{\tau=1}^{\infty} \lambda^{\tau-1} R_{t+1-\tau}^2$$

For

$$0 < \lambda < 1$$

Given the fact that the data consists in 5 minute frequencies, the methodology incorporates the method introduced by Boudt, Croux and Laurent (2011) for periodicity adjustments. The above mentioned models are thus calibrated on series of periodicity-adjusted returns. From this point the research follows the classical event study logic, as presented for example in Albu et al (2014a), incorporating 12 subsequent intervals after the event in order to obtain a full hour. These intervals are also used in the construction of the impact index. This index measures the number of abnormal returns (obtained in the event study) in this 12 period interval. Obviously, if the value of the volatility index is 1, it can be asserted that one specific statement had a 100% impact (on every of the 12 subsequent 5 minute intervals from its launch) on a certain currency pair.

Results:

Figure 1 shows the aggregate values of the above explained volatility index for all the currency pair including EUR, USD, GBP and JPY.

In the case of the currency pairs that include the euro, the results indicate an impact derived from the considered 192 cases of public communications delivered by officials belonging to BCE, BOJ, Fed and BOE.

Figure 1

Aggregate values for the volatility index
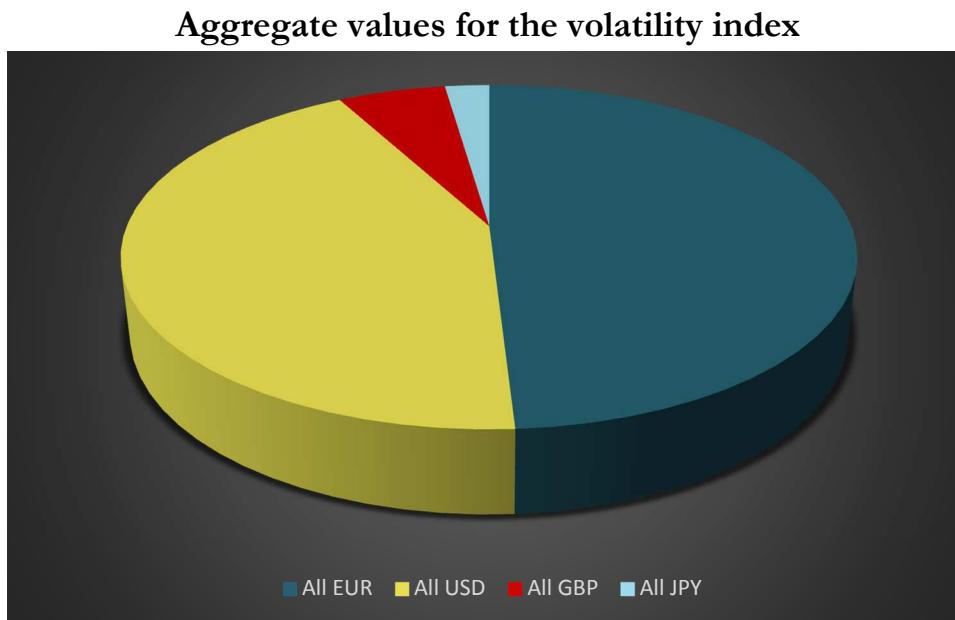
Source: Author's computation

Table 1 below shows the official statements that generated the most important impact and the asset on which this impact was recorded in the study.

Table 1

Speeches that triggered the highest impact on currency pairs containing EUR

Speech	Time moment	Asset influenced	Volatility Impact
Draghi (ECB) Speech	12/4/2014 13:30	EUR/ZAR	**0.846153846**
Constancio (ECB) Speech	11/22/2014 10:00	EUR/HUF	**0.769230769**
Draghi (ECB) Speech	12/4/2014 13:30	EUR/ILS	**0.769230769**
Lautenschlaeger (ECB) Speech	11/29/2014 10:30	EUR/HUF	**0.692307692**
Draghi (ECB) Speech	12/4/2014 13:30	EUR/MXN	**0.692307692**
Visco (ECB) Speech	10/31/2014 16:00	EUR/PLN	**0.384615385**
Mersch (ECB) Speech	11/20/2014 14:30	EUR/BRL	**0.384615385**
Van Rompuy (EU), Lautenschlaeger, Nouy Speech (ECB)	11/20/2014 15:30	EUR/BRL	**0.384615385**
Mersch (ECB) Speech	11/20/2014 14:30	EUR/BRL	**0.384615385**
Yellen (FED) Speech	12/17/2014 19:30	EUR/USD	**0.307692**

Source: Author's computation

The most visible impact derives from the speech delivered by Mario Draghi on the 4th of December 2014. The value of 0.846153846 of the

volatility index recorded for the EUR/ZAR currency means the fact that this speech induced abnormal returns in 11 of 13 periods included in the event study. The same speech impacted in a relevant manner other two currency pairs: EUR/ILS and EUR/MXN.

On the 4th of December 2014, Mario Draghi (President of the ECB) delivered an Introductory statement to an official press conference (with questions and answers), in which he announced that the ECB interest rates will remain unchained. In addition to this, Draghi affirmed at that time that quantitative easing initiatives adopted by the ECB would continue until June 2016.

The president of the ECB also tackled a battery of questions regarding details about the development of the QE programs.

Another speech that generated a significant influence is the communication presented by Sabine Lautenschläger (member of the Executive Board of the ECB) on the 29th of November 2014. The public statement covered the topic of innovation in monetary policy and induced abnormal returns for the EUR/HUF in 9 of the 13 periods included in the present analysis.

Other speeches that generated significant influences on the volatility of the studied currency pairs belong to: Vítor Constâncio, (Vice-President ECB), Ignazio Visco (Governing Council ECB, Governor, Banca d'Italia), Yves Mersch (Member of the Executive Board, ECB), Janet Yellen (Chair of the Board of Governors of FED).

Table 2 shows the speeches that led to the strongest reaction on the studied currency pairs that include the USD.

Speeches that triggered the highest impact on currency pairs containing USD

Speech	Time moment	Asset influenced	Volatility Impact
Mester (FED) Speech	12/4/2014 13:30	USD/PLN	**0.769231**
Mester (FED) Speech	12/4/2014 13:30	USD/SEK	**0.692308**
Tarullo (FED) Speech	10/11/2014 13:00	USD/RUB	**0.461538**
Williams (FED) Speech	10/11/2014 14:30	USD/RUB	**0.461538**
Mester (FED) Speech	12/4/2014 13:30	USD/NOK	**0.461538**
Tarullo (FED) Speech	10/11/2014 13:00	USD/NOK	**0.307692**
Williams (FED) Speech	10/11/2014 14:30	USD/NOK	**0.307692**
Evans (FED) Speech	10/11/2014 18:00	USD/NOK	**0.307692**
Yellen (FED) Speech	12/17/2014 19:30	USD/CAD	**0.307692**

Source: Author's computation

The event that deals the greatest impact in this data set is the speech delivered by Loretta Mester (president and chief executive officer of the Fourth District Federal Reserve Bank) on the 4th of December 2014. This communication generates abnormal returns for the USD/PLN

currency pair in 10 out of 13 estimations. Therefore, the information included in this public statement leads to a volatility index value of 0.769231.

One of the main ideas of the speech is the fact that the FOMC has observed the fact that quantitative easing can pose a series of potential risks and affect the normal conduct of financial markets. In this light, the FOMC was at that that time reconsidering its position on the correlation between monetary policy and financial stability.

The same communication has an important effect on two other currency pairs USD/SEK and USD/NOK with volatility indices of 0.692308 and 0.461538.

Another speech that has an important effect on the dynamics of the volatility of the exchange market is the intervention made by Governor Daniel Tarullo on November 20, 2014. The communication focuses on the role of liquidity regulation and bank liquidity supervision. It delivers a significant influence on currency pairs such as USD/RUB and USD/NOK.

In the case of the BGP/USD currency pair, the communications with the highest influences are: Federal Reserve's Yellen 17 December 2014 speech, the Bank of England's Inflation Report (12 November 2014), the Fed Minutes released on 8 October 2014 and the above mentioned Mester speech. All this events generate a volatility index that ranges from 0.307692 to 0.153846.

Conclusions:

The work presented in this article aimed to investigate whether speeches delivered by officials belonging to the main central banks can influence the volatility of the FOREX market.

The results indicate that the analyzed statements induced changes in terms of volatility over the first hour after the speech (divided into 12 segments according to the above specified methodology).

The greatest influence is found in the case of the Mario Draghi's speech and question and answer session which took place on the 4th of September 2014. On average, the speeches of the members of European Central Bank generate significant effects in terms of volatility for the currency pairs included in this study. A similar trend can be observed for the speeches belonging to officials affiliated to the Federal Reserve. On the other side of the spectrum, the influence of the speeches held by officials belonging to the Bank of England or the Bank of Japan have a much lower influence.

By correlating the results with the intrinsic nature of the speeches we find out that the volatility has been influenced the most by statements announcing details about quantitative easing, tapering or financial stability.

Acknowledgement

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