UNIVERSITÀ DEGLI STUDI DI PADOVA

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CENTRAL BANKS' TRANSPARENCY: WORDS AS SIGNAL

FRANCESCO CENDRON

GIANFRANCO TUSSET
University of Padova

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Central banks' transparency: words as signals

Francesco Cendron and Gianfranco Tusset*

ABSTRACT

Evidence of the evolution of ideas on central bank transparency can be found in the central bankers' speeches during the period 1997-2012. Exploratory analysis of the central bankers' speeches provides an overview of their use of language: speeches define the historical evolution of central banks' discourses, and thus suggest how the concept of transparency has evolved. The paper invites reconsideration of the role of central banks' transparency through analysis of central bankers' speeches and their use of language as a part of their communication framework. While literature on transparency indexes shows increasing central bank transparency, the semantic area of transparency in central bankers' speeches changed over the period 1997-2012. The paper investigates this evolution until recent shift towards new semantic areas pertaining more to the financial and real economy than to traditional inflation concerns.

Jel Classification: B59, E58

Keywords: central banks; transparency; language; speeches; content analysis.

Introduction

Ross Starr, a general economics and financial scholar, wrote that "money, like written language, is one of the fundamental discoveries of civilization" (Starr 2012: 1). This paper takes money and language together and focuses on the language of central bankers in order to gain better understanding of its defining effect on monetary policy making and the overall communication strategy which it backs up.

This paper examines words – particularly words uttered by central bankers in their speeches – in order to grasp how central bankers treat, consider, and discuss crucial features of their policies. We will investigate how relevant words are used in these speeches and how they can be 'grouped' together to create semantic clusters. Among these words, we will focus on 'transparency' in particular, since it is a crucial concept marking the recent evolution of central banks' practices:

> Transparency represents the most dramatic difference between central banking today and central banking in earlier periods (Dincer and Eichengreen, 2008: 105)

We will analyze how 'transparency' is presented and used by central bankers and not filtered by economic theory. Our paper focuses on *how* central banks *perceive* transparency and *how* transparency *is expressed* in the speeches of central bankers. We believe that words can reveal a central bank's marginal changes as an institution that adapts itself to an evolving economic and financial world. Words can map a central bank's evolution.

As said, transparency will be our 'key word', since it is indicative of a concrete transformation that has occurred, at least at communication level, within central banks. To bring the topic into

* Francesco Cendron is an independent researcher: f.cendron@yahoo.it; Gianfranco Tusset is at the University of Padua: gianfranco.tusset@unipd.it. The authors are grateful to participants at the Palermo meeting and the Livorno conference for their useful comments, to Marisa Cemin, Francesco Purificato, Arjuna Tuzzi, and to two anonymous referees for their suggestions. Finally, our especial thanks go to Noam Chomsky for his helpful and encouraging words. The authors you are grateful to MIUR for its financial support: 2009NXTCP9

focus, it is useful to begin with the most accepted academic view of this concept. From a theoretical perspective, Petra Geraats defined transparency as follows:

> Central bank transparency could be defined as the absence of asymmetric information between monetary policy makers and other economic agents. This means that it reduces uncertainty and this is often believed to be beneficial … Furthermore, transparency may affect the incentives that policy makers face to manipulate private sector beliefs through signaling and reputation building (Geraats 2002: F533).

Consequently, at first sight: "The aim of central bank transparency is to lessen or eliminate informational asymmetries between central bank decision-makers and the private sector" (De Haan et al. 2007: 4). But, given a context of asymmetric information, transparency in the procedures used to assess the private sector's expectations improves output stabilization (Eijffinger 2004), which may be one of the objectives of the monetary policy. So what is the aim of transparency?

It must also be established whether the reduction of information asymmetries is the main aim of transparency. The notion itself of an optimal level of transparency, which is now widely debated (Geraats, 2002; Van der Cruijseen, Eijffinger, & Hoogduin, 2010), is meaningful inasmuch as it refers to a target: "It seems to be optimal to have an intermediate degree of transparency by limiting some forms of transparency" (Van der Cruijseen, Eijffinger, & Hoogduin, 2010: 1483). If the literature agrees that increasing transparency improves economic performance, the concept of an intermediary level arises for different reasons, among which the following:

> The first reason is that a lot of transparency could lead to uncertainty. By providing too much information, people start to focus too much on the complexity of monetary policy making and the uncertainty surrounding forecasts. While the actual quality of their forecasts might not be affected, agents perceive the quality of their forecasts to be worse. The second reason is that a high degree of transparency could lead to an information overload and confusion. The assumption that individuals are capable to absorb, understand and weigh all the information that the central bank provides is probably too strong (Van der Cruijseen, Eijffinger, & Hoogduin, 2010: 1483).

According to this quote, we can assume that central bankers themselves question the optimal level of transparency – once they agree on what transparency refers to, of course. Most of the recent economic literature on central bank transparency is devoted to demonstrating that more transparency or a given level of transparency reduces inflation bias and expectations of inflation in general: "There is an optimal degree of central bank transparency at which inflation persistence is minimized" (Van der Cruijseen, Eijffinger, & Hoogduin, 2010: 1484). Although we do not dispute the importance of the transparency/inflation relationship, we shall consider transparency from a wider perspective that is open to different relationships and meanings, and which takes speeches into account as part of a more general communication strategy of the central bank.

Owing to its superior informational endowment, and according to the rational expectations paradigm, central bank's communication is a linear process between the sender and the receiver. When rational expectations are formed cooperatively between the central bank's communications and their receivers, the central bank's communication strategy corresponds to its monetary policy in the long run (Drexter, 2012).

Our analysis is carried out before considering expectation–making, and it gives insight into the sentiment of the message conveyed by the speeches. Transparency becomes speech sentiment, which will become expectations, and will feed back linearly to the speeches themselves. We are not interested in the reception and feedback process of the communication strategy: we are interested in how transparency is treated in the speeches in terms of language and not as a communication tool. Speeches are seen as objects of the central bank's rhetorical discourse: they can comment on any stage of the monetary policy decision making process, which corresponds to a specific key feature of central bank transparency (Geraats 2002). The paper also considers the potential receivers of the transparent monetary policy communication, i.e. the financial and real economy. Speeches are not a stand-alone tool of monetary policy: time-inconsistency opportunities and money-illusion are relevant only as a counter-reaction of all economic agents to the central bank's communication strategy. Since the overall monetary policy is considered symmetric with the overall communication

strategy, we break the speeches down into relative frequencies in order to understand trends in the central bank as a communication sender and focus specifically on its language.

Regardless of the optimal degree of transparency and its effect on inflation, we focus on the rhetorical style of the central bank as a communication sender, not forgetting that speeches may be processed, managed and fed back by the receivers.

Section 1 introduces the method, the corpus, and the interpretation criteria. Section 2 shows how central bank independence and transparency are considered in the speeches, and how this somehow mismatches with the current transparency indexes. Section 3 focuses on inflation targeting regime and its connection with transparency. Section 4 demonstrates how the financial economy is considered in the central bankers' speeches, while Section 5 goes into details on the real economy and speeches. The paper ends with some concluding remarks.

1. Method

This paper is based on data obtained with tools not commonly used in economics and history of economic thought. A *principal component analysis* and a *correspondence analysis* are the main techniques employed for multidimensional factorial analysis. The nature of these tools is exploratory and not probabilistic. The analyses yield a data matrix which enables interpretation of the relationships between row profiles or column profiles built by assuming given sets of variables (central banks or years). This view is contextual in the sense that it displays relationships as they exist simultaneously over a broad corpus of texts by reducing the amount of information in order to show the data in a variety of structural directions.

The Bank for International Settlements (BIS) collects and publishes the speeches of senior central bankers on its website, which is from where the final corpus was retrieved. It includes all of the 7837 speeches of central bankers from the 39 institutions[1] considered in this study during the period from 1997 to 2012. The corpus was analyzed according to the variables 'year' and 'central bank.' Basic statistical measurements show that this was a very large corpus. Words occurring with a low frequency (less than 50) were removed, but particular interesting segments[2] were included to investigate specific economic areas. Examples include financial stability, inflation targeting and real economy.

The analysis of this big corpus, or the 'big data,' required the use of specific software. We used Taltac to manage the corpus and Spad to extract the figures.

Figure 1 and Figure 2 are the two basic graphs on which we based our study.

[1] Australia, Botswana, Brazil, Bundesbank, Canada, Chile, China, Denmark, ECB, England, Finland, France, Hong Kong, India, Indonesia, Italy, Japan, Kenya, Korea, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Philippines, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Uganda, United Arab Emirates, FED.

[2] A 'segment' is composed of several words expressing a single concept. Examples: 'rate of interest' or 'financial risk'.

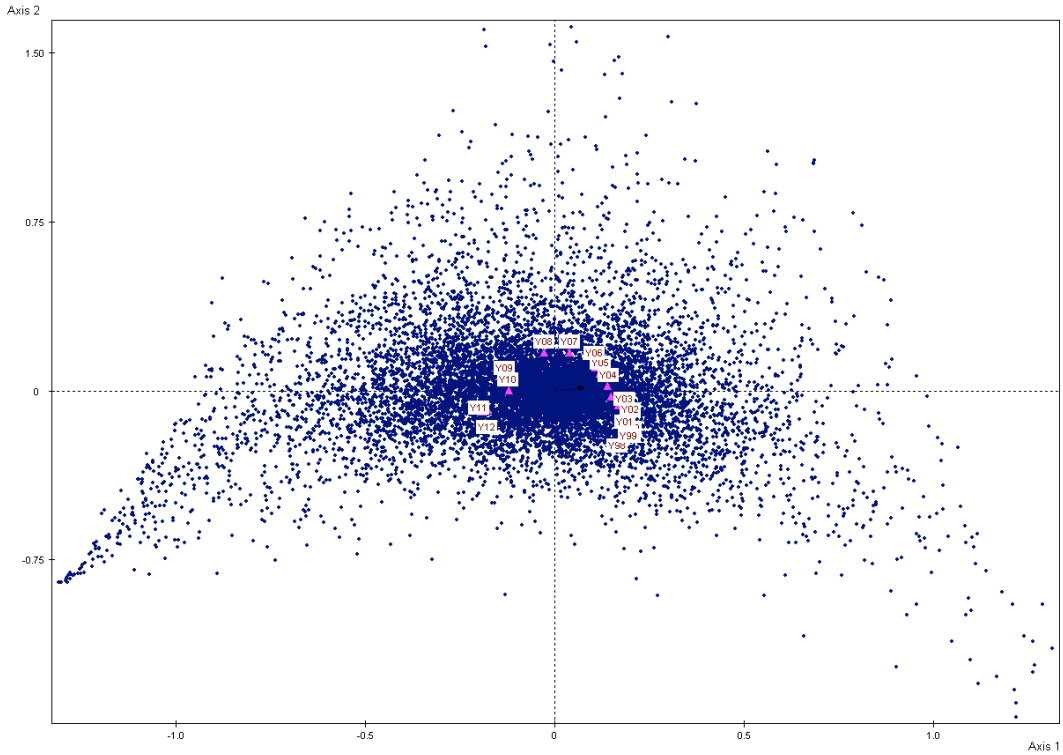

Figure 1. Years 1997-2012 (Inertia: Axis 1: 28,84%, Axis 2: 15,09%)

Figure 1 illustrates the distribution of the words and segments (the 'black dots') used by central bankers from 1997 to 2012 and which are considered in this study. In a sense, this figure shows the 'evolution' of the central bankers' lexicon. It is clear that words and discourses change.

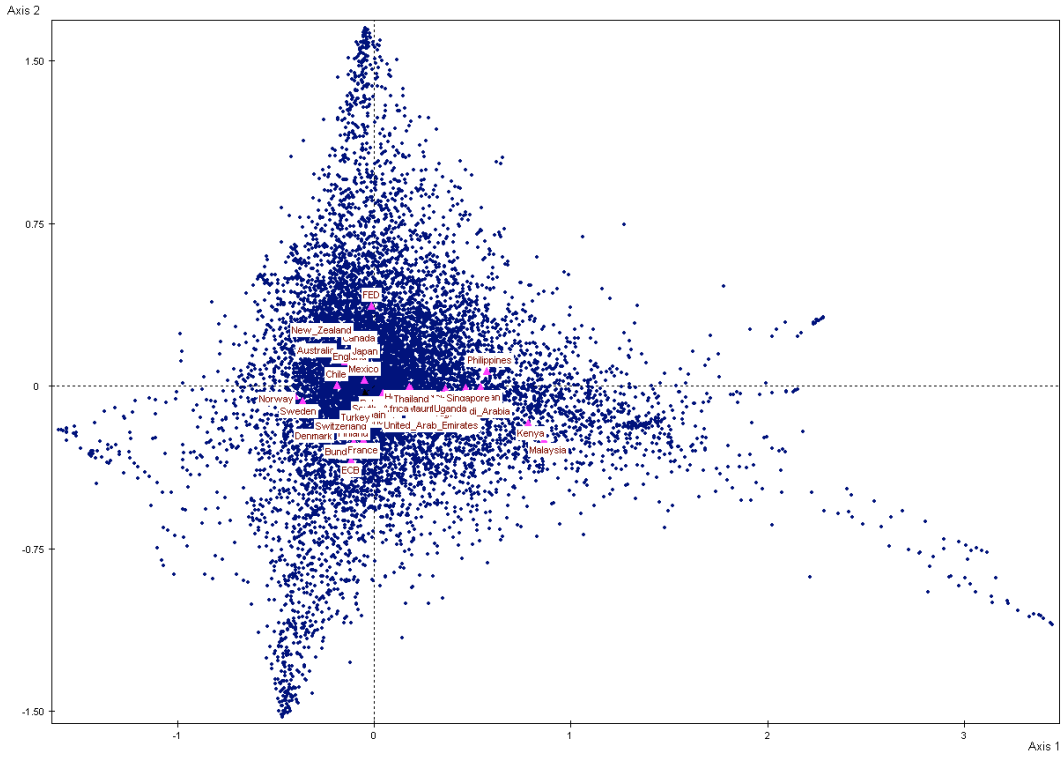

Figure 2. 39 central banks (Inertia: Axis 1: 8,78%, Axis 2: 6,98%)

Figure 2 shows words and segments grouped around the 39 central banks treated here. The software did not allow us to consider a number of central banks above this amount. The final graphical visualization represents the initial corpus in terms of statistical associability between elements. Thus, it provides an advanced text analysis tool with which to derive high-quality information from complex corpora. Since we investigate 39 central banks, we obtain 38 axes that display the words investigated according to the banks considered, and the axes can be combined to form different plans. Each plan represents part of the variability, and it shows a single synthetic outcome based on the part of variability that it represents. The small amount of inertia (roughly speaking the variability of words over the set of 39 banks) represented by the two most important axes in Figure 2 indicates that the variability is distributed quite well over the various banks: this means that each bank carries and plots a different rhetorical style.

What do these graphs represent? The interpretation criteria are well known in the relevant literature (Tuzzi, 2003; Bolasco, 2013):

- the position of words in the graph is meaningful only if considered in the global context generated by the full corpus of all words used by all banks or over the full period;
- if two words are close, this means they are similar in terms of being used with the same relative frequency by all banks or over the full period;
- if two banks are close, this means that they are similar in terms of using the same vocabulary with the same relative frequency;
- words and banks (as well as words and years) can be studied in terms of statistical associability according to the angle that they form with the axes. The more similar the angle is, the more statistically associated the elements are;
- the further the words are from the origin of the graph, the more they have determined the context which the graph represents.

Finally, this paper also includes a quantitative analysis of the simple relative frequencies for words appearing in the whole corpus.

2. Independence, transparency and speeches

The relationship between transparency and central banks is a story that began once the latter had affirmed their independence. Put simply, transparency has made the independence of central banks more effective. There follow declarations by Villy Bergström, Deputy Governor of the Sveriges Riksbank, and Bruno Gehrig, Member of the Governing Board of the Swiss National Bank:

> Independence requires openness. A very important part of our strategy … is openness and transparency as to how monetary policy is conducted. This part can hardly be reconsidered.[3]

> Essential preconditions for the independence of a central bank include a solidly based consensus concerning its mandate and a commitment to transparency and accountability.[4]

Clearly, not all central banks perceive independence in the same way. The next graph demonstrates this.

[3] V. Bergström, Deputy Governor of the Sveriges Riksbank, Stockholm, 7 November 2000
[4] B. Gehrig, Member of the Governing Board of the Swiss National Bank, Zurich, 7 April 2000

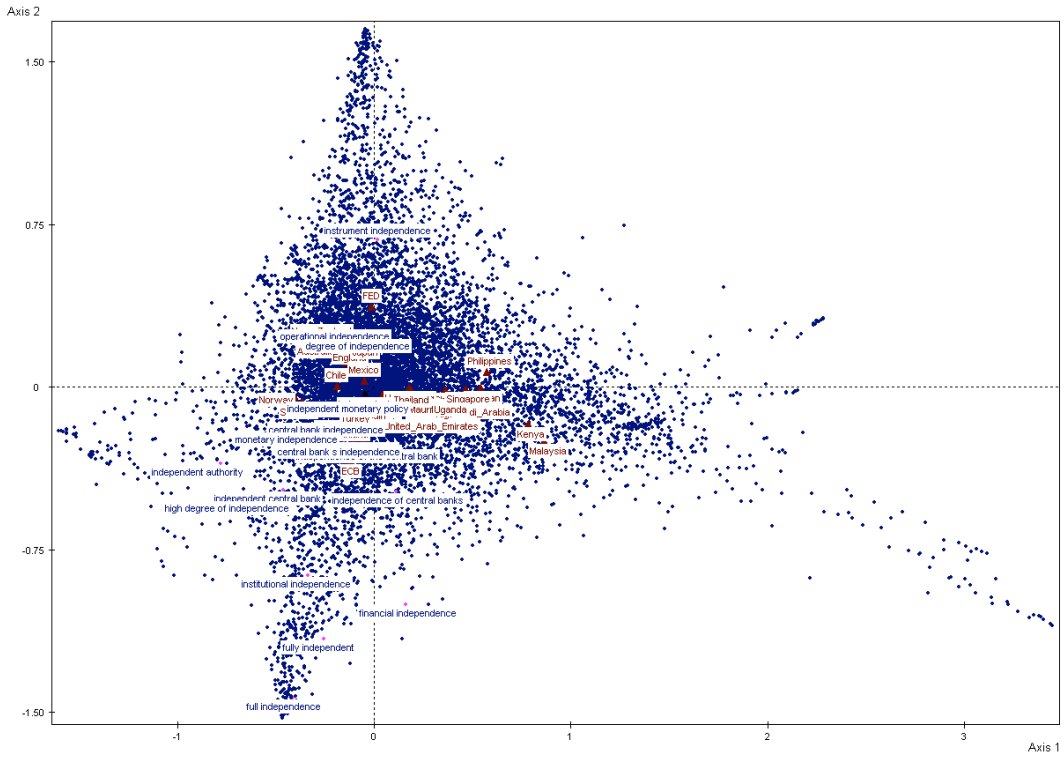

Figure 3. Independence

The word ‘independence’ creates a cluster of semantic meanings. Rapid inspection of the graph shows that words and segments involving independence are of interest to central banks placed on the left side of the vertical axis. The Organization of Economic Co-operation and Development (OECD) countries are on the left. On the right side, words expressing the independence of central banks are not often used. Although independence characterizes both the FED and the ECB, which are the two central banks determining the vertical axis, the segments ‘full independence,’ ‘fully independent,’ and ‘high degree of independence’ represent a strong characterization of the ECB and other mainly European countries (words/segments and countries present the same angles with respect to the axes origin). In the upper part of the graph, Mexico, Chile, Japan, and the FED are more concerned with the ‘degree of independence’ and the ‘instruments of independence.’ These slight differences can be understood on recalling that, according to the Bundesbank tradition, European countries and the ECB are inclined to stress the complete independence of the central bank from political power. More definite differences emerge on comparing both the FED and ECB areas with emerging countries, such as Singapore, Philippines, Malaysia, Kenya, and Arab Emirates located on the right side of the graph, which are not concerned with independence, at least not in their discourse.

If we overlap Figure 3 about ‘independence’ with Figure 4 concerning ‘inflation’, we find that when central banks discuss independence they are also discussing inflation. Yet this is an obvious connection, considering that central bank independence has been presented as a means to fight inflation. Essentially, it is well known that the debate on central bank independence was a product of inflation concerns.

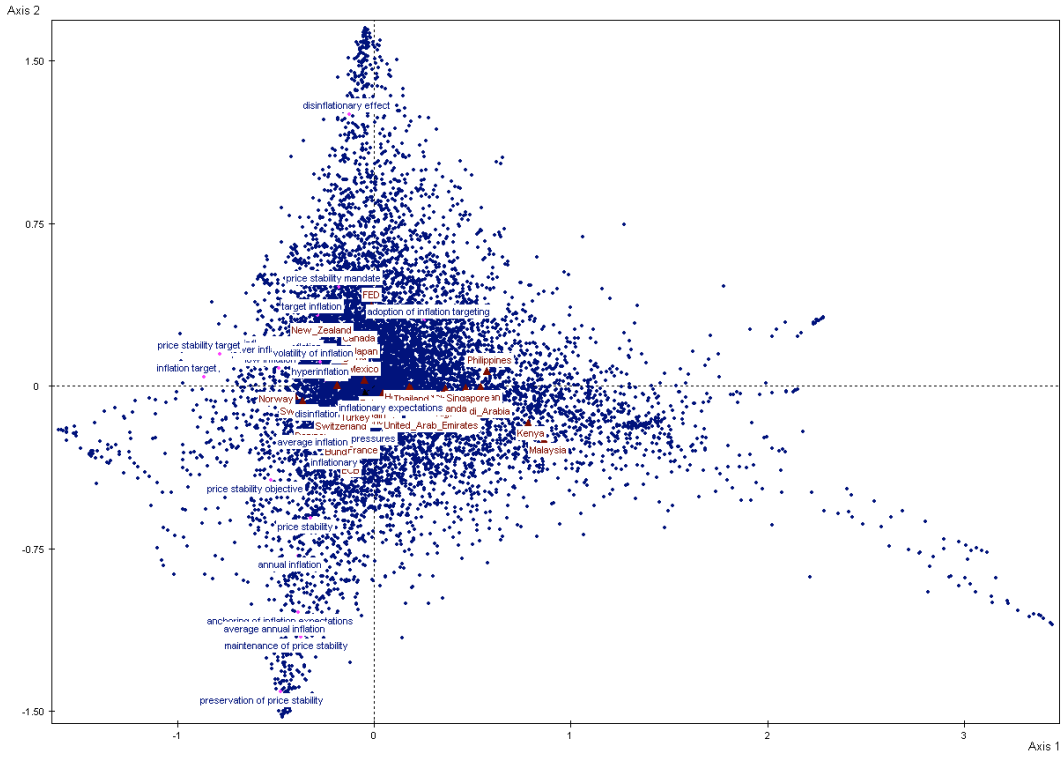

Figure 4. Inflation

African, Arab and Asian countries are less interested in inflation also in this figure, as if these countries were not affected by the phenomenon. Evidently, this is not the case. The discourses of this group of central banks are less characterized by inflation and independence because they are dominated by other topics more concerned with the real economy.

Nevertheless, if we examine the unitary frequency per year of the use of both independence and inflation issues, we observe that they become gradually less frequent in the central bankers' speeches. On the one hand, this confirms that the two issues are correlated; on the other hand, it means that the trends simply reflect the global context in which bankers have been less worried about inflation since the mid-1990s, as Figure 5 shows.

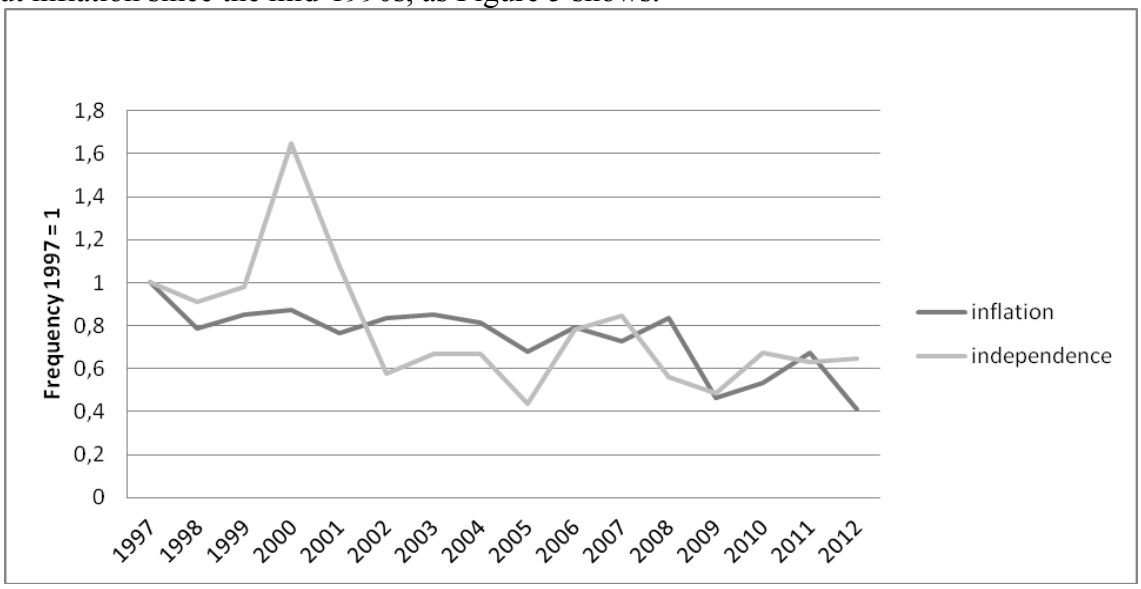

Figure 5. Inflation and Independence over the years

Clearly, the main message of the above figure is that independence is a *product* of the inflation debate in general. We maintain that, as inflation lost importance because of the diminishing trend in developed countries, independence lost importance as well because its meaning was never separated from inflationary aspects. However, the literature on this topic suggests that independence alone reduced inflation:

> Many empirical studies demonstrate that central bank independence allows the monetary authority to pursue price stability more diligently resulting in lower and less variable inflation. In brief with respect to maintaining the intrinsic value of money institutions in other words independent central banks are of key importance. Hence central bank independence is an essential requirement for monetary stability.[5]

Another product of the inflation/independence debate is the new 'must' of central banking: transparency.

The story recounted by Mervyn King, then Deputy Governor of the Bank of England, helps explain the shift that brought 'transparency' into the central banks' vocabulary:

> When I joined the Bank of England in 1991, I was fortunate enough to be invited to dine with a group that included Paul Volcker. At the end of the evening I asked Paul if he had a word of advice for a new central banker. He replied in one word: mystique.[6]

This short passage reveals much about the central banks' strategies until the end of the twentieth century. Opacity was valued over transparency. King stated: "that single word encapsulated much of the tradition and wisdom of central banking at that time."[7] The interesting outcome was the shift to a completely new approach: "it is truly remarkable how much has changed over the past decade. The mystery and mystique has given way to transparency and openness."[8] King, who attributed this shift to the role played by central banks, described three features of the 1990s:

> The communication of policymakers' intentions with a view to enhancing their credibility has come to play a central role in monetary policy. The rise to prominence of inflation targets, on the one hand, and transparency, on the other, reflect the central importance of expectations in our models of economic behavior. The third feature of the 1990s is the new interest in monetary policy in an environment of low inflation.[9]

In 2001, Roger Ferguson Jr., who gave a speech titled *Transparency in central banking: rationale and recent developments*,[10] observed that:

> The Federal Reserve and other central banks have moved considerably away from mystique and toward transparency in recent years. For example, the new European Central Bank has incorporated a number of transparency aspects in its policy process and has emphasized the importance of communications … The Bank of Japan, likewise, has taken steps toward greater transparency, particularly following the revision of its governing law in 1998. In the United Kingdom, the Bank of England act of 1998, which established the operational independence of the bank, also strengthened transparency measures that the bank had implemented earlier in the 1990s.[11]

We show that the semantic cluster based on transparency involves the same banks interested in independence. Certainly, transparency is 'product' of a central bank's independence, but we cannot say more than this.

Thus, independence and transparency are connected as the distribution of words and segments demonstrates.

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[5] A.A. Weber, President of the Deutsche Bundesbank, 26 October 2006
[6] M. King, Deputy Governor of the Bank of England, Boston, 7 January 2000
[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] R. W. Ferguson, jr, Vice Chairman of the Board of Governors of the US Federal Reserve System, 19 April 2001
[11] Ibid.

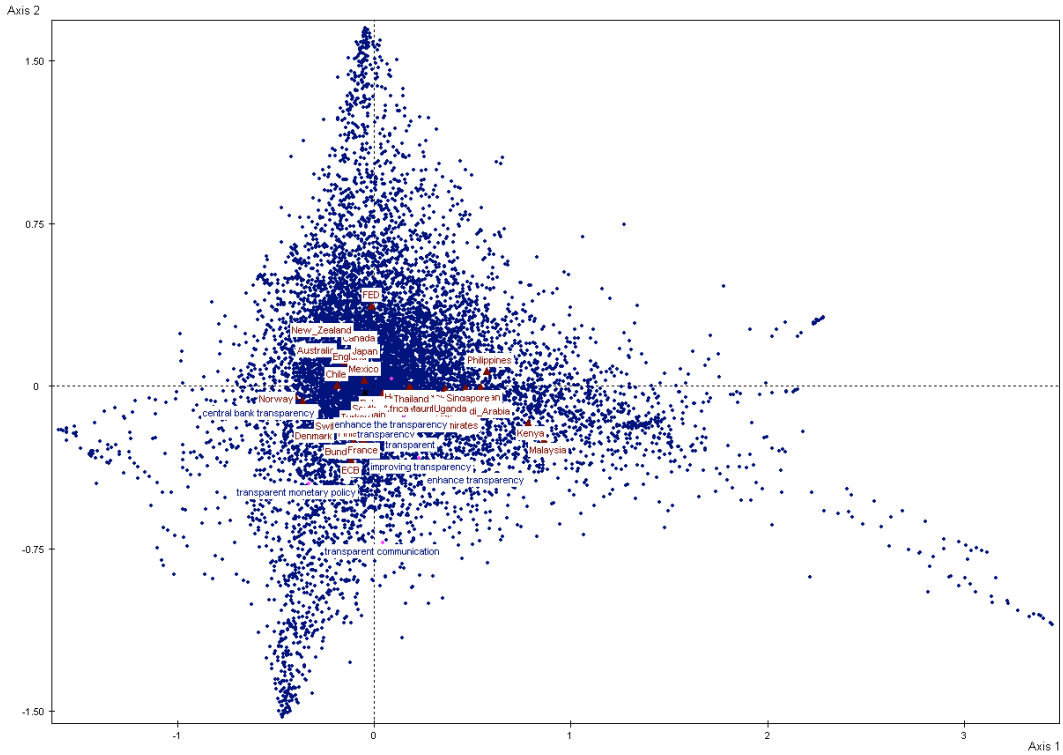

Figure 6. Transparency

Figure 3 on 'independence' and Figure 6 on 'transparency' confirm that the two topics characterize the speeches of the same central banks, although not necessarily at the same time. As in the case of independence, the European countries are those that speak most of transparency (low-left quadrant). It appears that, for central banks above the horizontal axis (upper-left quadrant), words and segments referring to transparency are not immediately significant. This does not mean that these central banks do not discuss transparency; it simply means that the word does not assume a specific meaning in their speeches. These countries include New Zealand, Chile, Mexico, and Japan, which are among those adopting inflation target regimes. We did not find segments that refer explicitly to transparency among these countries, because the notion of inflation targeting includes the idea of transparency, which, on the contrary, remains a debated point for countries that have not explicitly adopted such a regime.

We are interested not only in the distribution of words but also in their use over time.

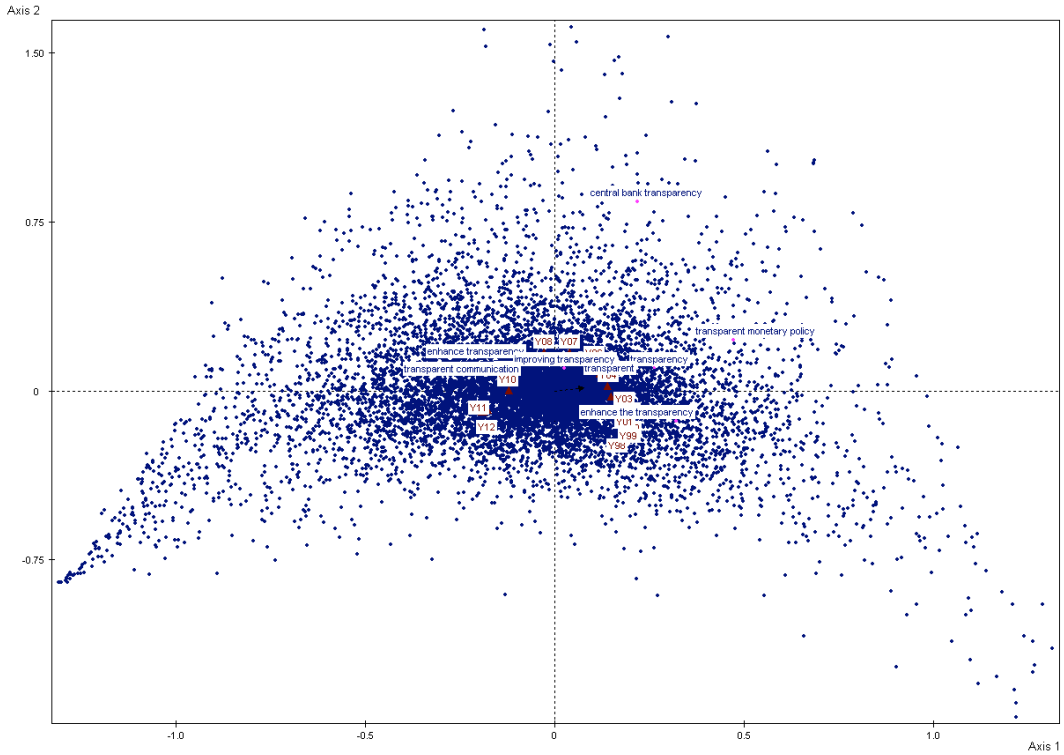

Figure 7. Transparency over the years

Figure 7, which represents the distribution of the transparency semantic cluster during the years considered in this study, confirms that transparency characterized central bankers' speeches until 2008 and 2009, after which it seemingly lost semantic importance.

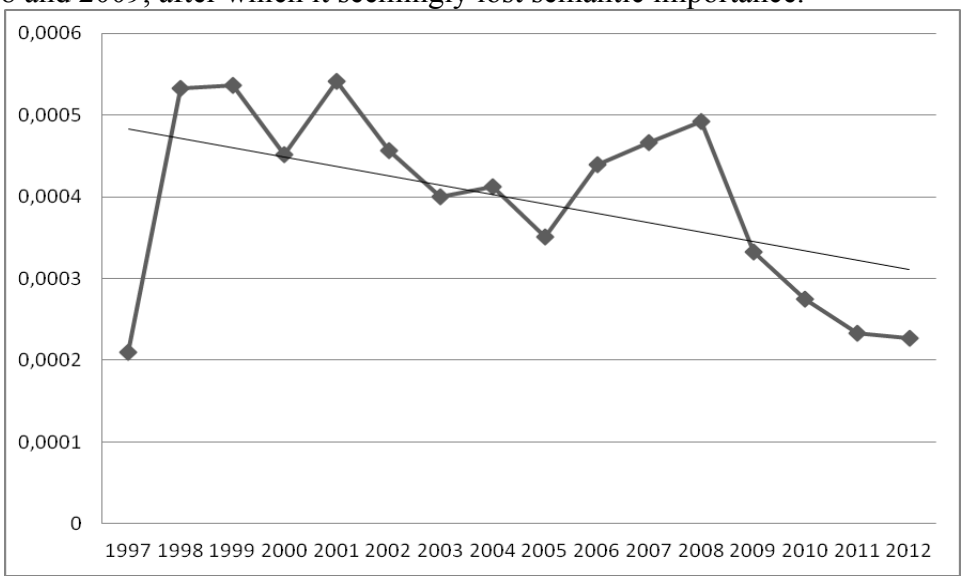

Figure 8. Frequency of words belonging to the semantic area of transparency

Figure 8 shows the downward trend of relative frequencies over time of the words connected to the semantic area 'transparency'.

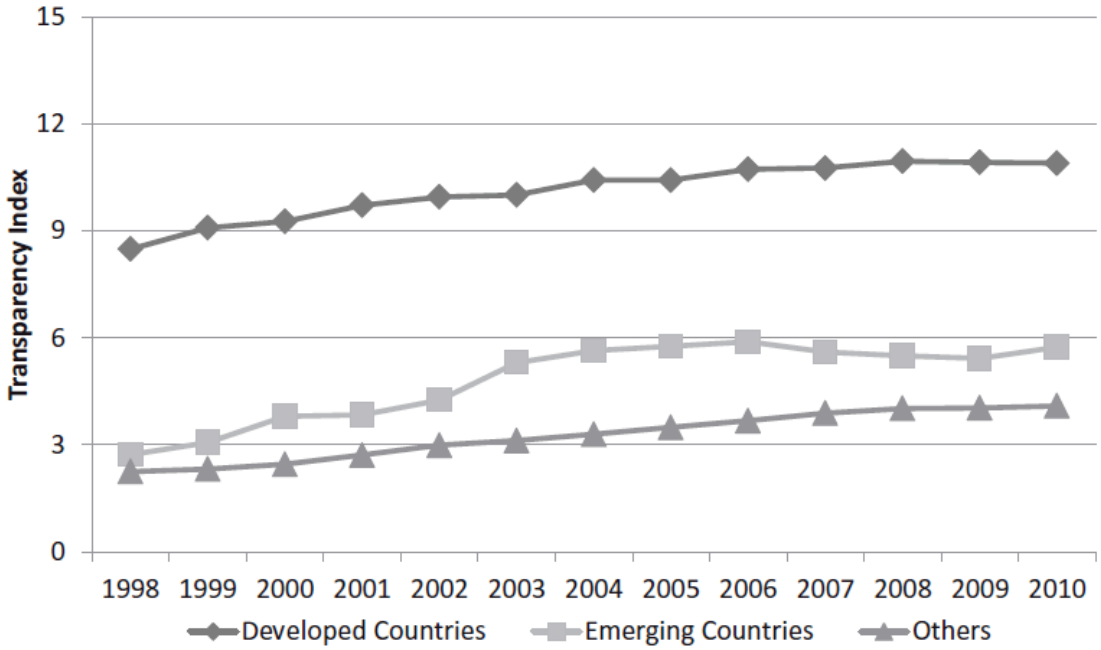

Figure 9. Transparency Index by Dincer and Eichengreen (2014: 208)

Figure 9 shows the upward trend in transparency (by level of economic development) over time according to the transparency index calculated by Nergiz Dincer and Barry Eichengreen (2014): this transparency index is based on central bank websites and annual reports and construed as in Geraats (2002). Comparison between Figure 8 and Figure 9 shows that, while transparency indexes show increasing central bank transparency, the semantic area of transparency in central bankers' speeches is increasingly less considered. This may recall the difference between language and communication: the frequency of words and their semantic areas do not necessarily match the central bankers' communication intentions.

> First, language is not identical with communication regarding its functions. Second, language provides a system of mutual orientation for both speaker and listener, a system that enables them to configure a context for communicative interaction (Muchlinski 2011: 60).

Whilst the speakers are the central bankers, the listeners are the financial markets, institutions and the real economy. This paper investigates central bankers' language and how it affects the listeners before communicative interaction takes place. In particular, we consider the relevance of transparency by analyzing the specific contexts in which it is used. This will clarify the meaning ascribed to transparency, while also providing an answer to this question: "Transparency about what?"[12] Thus, we propose to follow the central banks' discourses focusing on the meanings of transparency.

3. Transparency and inflation targeting

Transparency was a goal because central banks had to be accountable to governments and political institutions. It became a tool of monetary policy as well when it was associated with a specific objective. This first occurred with the adoption of the inflation target approach in the late 1990s and the early 2000s.

Thus, transparency was considered an essential tool to use in achieving the established policy target:

[12] This point is extensively treated by Friedman (2002).

A crucial, aspect of the new framework was the commitment to transparency and openness about both the objectives of monetary policy and the reasons for individual decisions about the level of interest rates.[13]

In this regard, the Bank of England was a forerunner in being transparent and sharing concerns with the public. Since 1993, the Bank of England has published a quarterly inflation report that represents the main vehicle by which it explains its views on the economy to the public. The Bank of England makes projections two years ahead, but only for developments in GDP and prices. Numerous central banks around the world have adopted this approach, though with some differences:

Sweden has a two-year horizon for the inflation target. The inflation report does not discuss the monetary policy stance. Instead, this is presented in the published minutes from the monetary policy meetings. The inflation report contains relatively detailed prognoses. In all inflation targeting countries, with the exception of Iceland, the interest rate is assessed at pre-announced times.[14]

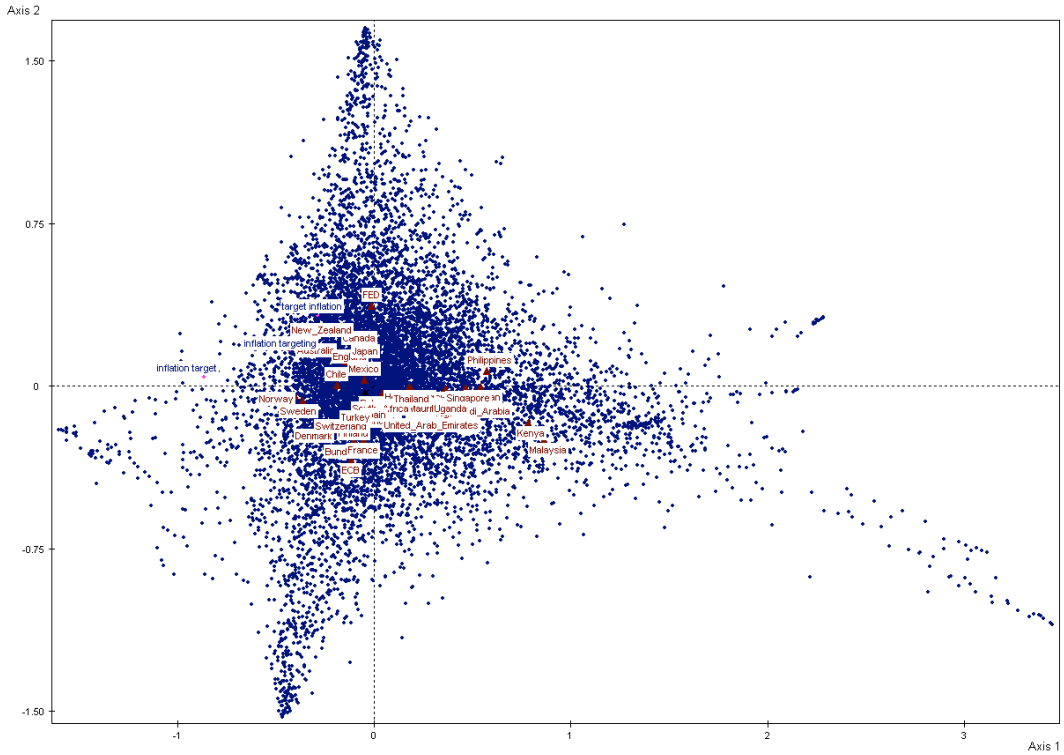

Figure 10. Inflation targeting (central banks)

Figure 10 clearly shows the connection between the inflation target lexicon and the countries concerned with it. Inflation targeting countries – New Zealand, Japan, England, Mexico, Chile, and Australia – are located in the upper-left part of the graph. The paradox is that countries adopting inflation targeting, and thus treating transparency as a crucial tool, talk about transparency less than do non-inflation targeting countries. On comparing Figure 10 with Figure 6, which represents 'transparency,' it seems that countries that adopt the inflation target are not concerned with transparency; however, this does not mean that they do not discuss transparency. This is simply implicit in the inflation targeting approach, and those central banks can be considered to discharge mainly their political transparency duties (Geraats 2002). As said, the use of words like 'transparent' and 'transparency' characterizes more those central banks that are not directly involved in inflation targeting but debate the adoption of it, as well as the level of transparency. This is what occurs with the ECB.

[13] M. King, Deputy Governor of the Bank of England, Boston, 7 January 2000
[14] S. Gjedrem, Governor of Norges Nank (Central Bank of Norway), Oslo, 7 June 2005

It must be stressed that in an inflation target regime, the inflationary objective is treated *as the* monetary policy goal, implicitly assuming that other objectives, such as output, do not involve monetary policy (see Friedman 2002). For this reason the, inflation targeting approach was not fully shared within the FED Board. Laurence H. Meyer, then Member of the Board of Governors of the US Federal Reserve System, stated that:

> The more difficult question is: how suboptimal are inflation targeting regimes that recognize the costs of excessive output variability, but nevertheless constrain monetary policymakers from responding to deviations of output from its target, except when the inflation target has already been met or when policymakers can project that it will be met in a reasonable period? In my view, such regimes are likely to remain suboptimal, compared with a more flexible dual mandate regime.[15]

Here, the differences in monetary policy regime derive from the different central bank mandates.

The view that transparency is a prerequisite for inflation targeting was also reversed. Inflation targeting was used to obtain more transparency: that is, the latter was considered to be a tool *per se*, independent from the practice of inflation targeting – as occurred in Japan:

> Inflation targeting is essentially a framework for enhancing the transparency of the conduct of monetary policy. But arguments in Japan are problematic since they regard inflation targeting as a measure to overcome deflation.[16]

Finally, Japan adopted a law stating that 'independence' and 'transparency' must be considered keywords for Japanese central banking.

This duty to publish the documents concerning the decision-making process, also independently from the inflation target adoption, is viewed as an important step in the evolution of central banking, in particular since when the circulation of data has been considered an instrument to stabilize the global financial system. Jürgen Stark, then deputy governor of the Deutsche Bundesbank, stressed that:

> For improving financial market transparency, it is in fact important that comprehensive information be made available and be analyzed and evaluated thoroughly. They strengthen the operational efficiency of the markets, investors are better able to make appropriate risk assessments, and, hopefully, the contagion risk and the associated herd instinct will be reduced. [17]

This will be the subject of the next section.

4. Transparency and financial markets

David Opiokello, Deputy Governor of the Bank of Uganda, stressed the importance of the global financial markets:

> However, there has been greater visibility, transparency and a lot more communication. There are three reasons for this development: firstly, increased independence of central banks led to the need for publicly accountable conduct. Secondly, the adoption of inflation targeting required greater public visibility and, thirdly, a mandate to the central banks, either explicitly or implicitly, for maintaining financial stability in a world where the financial markets and their expectations matter.[18]

In the academic debate, transparency was first associated with the spread of inflation target regimes, but another association with the market or the public expectations gradually emerged. Briefly, from the mid-2000s on, transparency seemed to connote the relationship between the central bank's behavior and creating expectations in the markets. As 'steering expectations' was promoted to a new practice in monetary policy, transparency was viewed as a fundamental

[15] L.H. Meyer, Member of the Board of Governors of the US Federal Reserve System, Washington, 21 May 2001
[16] M. Hayami, Governor of the Bank of Japan, Tokyo, 25 February 2003
[17] J. Stark, Deputy Governor of the Deutsche Bundesbank, 21 June 2001
[18] D. Opiokello, Acting Deputy Governor of the Bank of Uganda, Kampala, 24 May 2007.

instrument for central banks to achieve this new target, as stated by Nout Wellink, President of the Nederlandsche Bank:

So what is important for monetary policy is that a central bank can influence expected key interest rates. This calls for an open transparent communication with the financial markets. Transparency enhances the effectiveness of monetary policy since it provides more insight as to the way that a central bank interprets economic developments and why it reaches certain decisions. Transparency hence makes for less noise on the line between the central bank and financial markets.[19]

In this new climate, the central banks' control over one or more interest rates appears to be a minor tool when compared with the messages that central banks can send out (Morris and Shin, 2008, p. 89). The idea gradually emerged that if a central bank was fully to assume the role of coordinating expectations in the economy, it must be fully transparent. Therefore, transparency could be considered a tool enabling central banks to coordinate expectations.

During the mid-2000s, the focus on expectations required attention to financial markets (see Figure 11). It became clear that transparency was associated with the reaction of the financial markets to the central banks' policies.

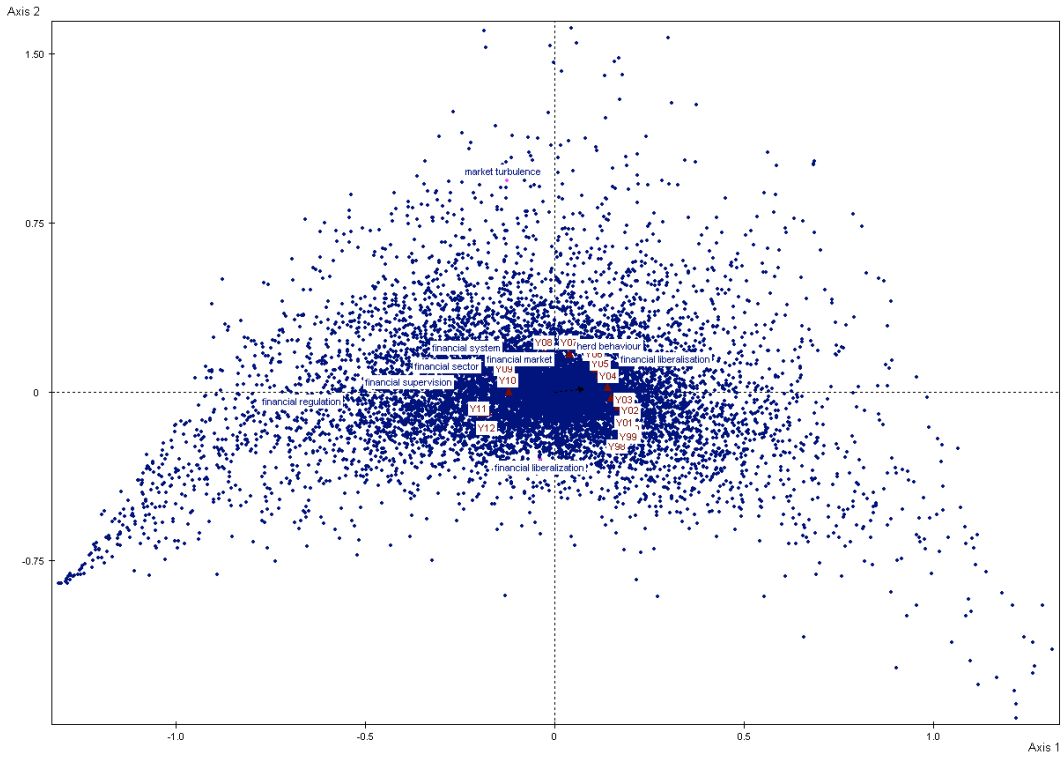

Figure 11. Finance (years)

In 2004, Ben Bernanke stated:

If effective communication can help financial markets develop more accurate expectations of the likely future course of the funds rate, policy will be more effective … and risk in financial markets should be reduced as well.[20]

This statement immediately aroused wide interest:

The innovations in information and communication technology made the speed and form of communication from central banks quite revolutionary… The effectiveness of these will crucially depend on the degree of sophistication of the financial market participants and the interlocutors. The extent of transparency in central bank communication has been dictated by the norms of openness in the body politic as well.[21]

[19] N. Wellink President of the Nederlandsche Bank and President of the Bank for International Settlements, The Hague 30 October 2003
[20] B.S. Bernanke, Member of the Board of Governors of the US Federal Reserve System, San Diego 3 January 2004
[21] R. Mohan, Deputy Governor of the Reserve Bank of India, Mumbai, 9 September, 2005

Financial markets involved a new approach to transparency:

From the operational perspective of a central bank, transparency can be regarded more narrowly in terms of the disclosure of information to a wider audience. Intuitively the release of a greater volume of more precise information in a timely manner seems beneficial because it reduces asymmetric information and uncertainty in financial markets.[22]

The analysis of the central bankers' speeches (see Figures 12 and 13) shows that the different perspectives on the financial markets can be categorized into two main views. The first is adopted by countries interested in bettering the financial markets' operation without assigning a specific role to central banks. The United States, England, New Zealand, Australia, Mexico, and Japan can be included in this group. Figure 13 identifies this group with specific 'words' or 'segments' such as 'market risk,' 'portfolio,' 'risk,' 'financial institutions' and 'financial risk'. Central banks can make the operation of the financial market more effective.

Kiyohiko G. Nishimura, Deputy Governor of the Bank of Japan, gives us an idea of this approach:

I argue that it is of utmost importance to build a liberalized transparent and deep financial market and system without arbitrary intervention whether formal or informal.[23]

Recently, Willem Buiter has stated that what he called the Greenspan-Bernanke school "favors letting credit and asset booms and bubbles run their course and using monetary policy aggressively after a bubble bursts to minimize the damage caused by these financial upheavals" (Buiter 2012: 1). This would explain why the issue of 'financial stability' does not appear as a topic characterizing FED's discourses.

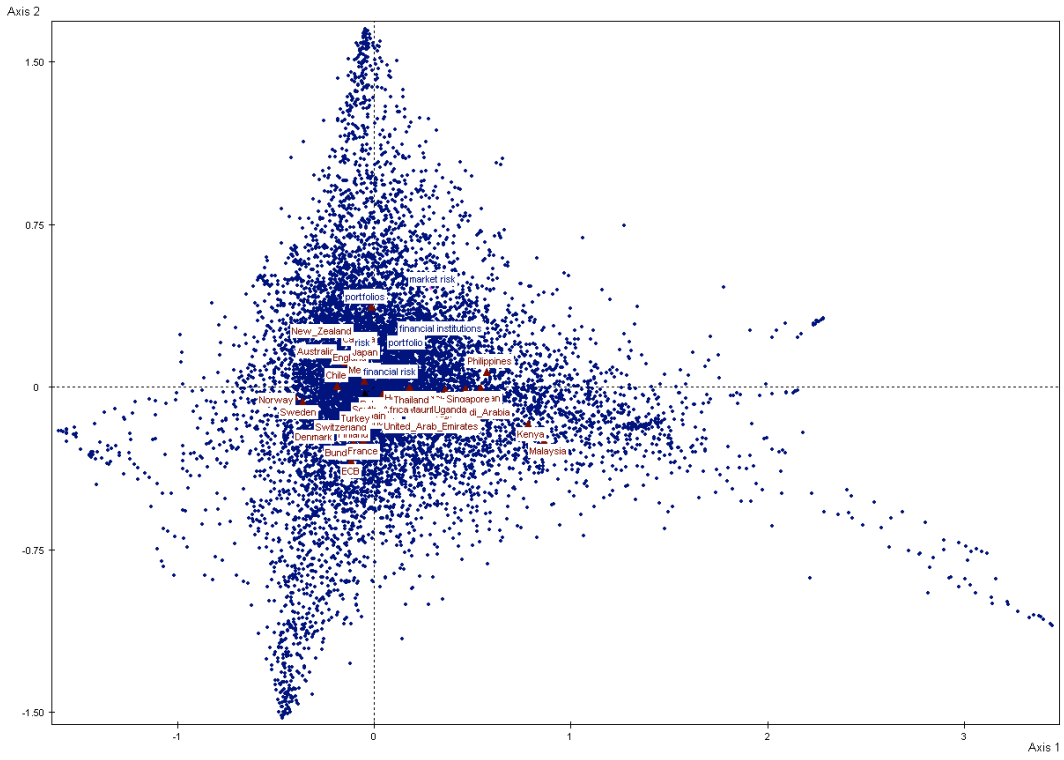

Figure 12. Financial market risk

The other group of countries located under the horizontal axis comprises those countries concerned with assigning to central banks some type of financial stabilization function. 'Financial supervision,' 'financial regulation,' 'financial stability,' 'market turbulence,' and 'herd behavior'

[22] D. Opiokello, Acting Deputy Governor of the Bank of Uganda, Kampala, 24 May 2007.
[23] K.G Nishimura Deputy Governor of the Bank of Japan, Seoul 26 May 2011

are all segments characterizing the central banks of continental Europe (Figure 13). Again, Buiter wrote that the "financial stability role of the ECB will have been enhanced to a scale not seen elsewhere since the crisis started in 2011" (Buiter 2012: 1). The following figure tells us something about the concerns of countries below the axis:

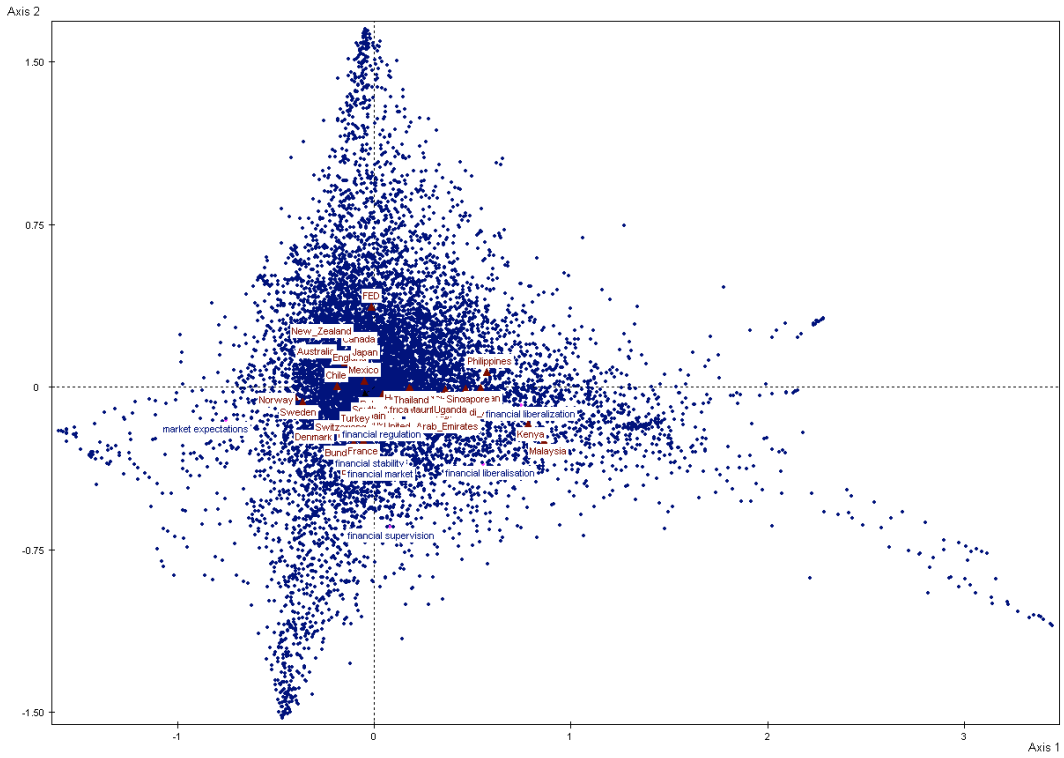

Figure 13. Financial market stability

In addition, 'market expectations' is a segment associated with financial stability because the only central banks concerned about financial stability are the institutions most involved in financial expectations management.

We can also identify a third group of emerging countries focused on the specific issue of 'financial liberalization,' including Malaysia, Kenya, Nigeria, South Africa and various Arab countries.

Moreover, concerns about financial stability increased following the 2007 financial crisis. The financial turbulence was expressively associated with the lack of transparency before 2008 when the financial crisis erupted:

> In recent years, the market of credit risk transfer has facilitated a widespread sharing of credit risk across the financial markets which in general should enhance their efficiency and stability. Nevertheless, the market turbulence confirmed previously expressed concerns about the risks stemming from the lack of transparency as to where credit risks ultimately reside in the financial system, that is, whether they have been acquired by market participants that can manage them properly and how imperfect knowledge of the distribution and concentration of risks can affect participants behavior and the liquidity of markets.[24]

In Europe, this view was widely shared:

> Adequate transparency is a necessary basis for an efficient functioning of financial markets. Recent experience has shown how perceived opaqueness or uncertainty regarding the underlying exposures, in particular of financial institutions, has translated into a loss of confidence with a resulting disruption in the interbank market. There have been recently many calls for enhanced market transparency both from banks and non-regulated entities.[25]

The former President of the ECB, Jean-Claude Trichet, was clear on this point:

[24] L. Papademos, Vice President of the European Central Bank, New York, 27 September 2007
[25] J. M. Gonzalez Pramo, Member of the Executive Board of the ECB, Madrid, 24 October 2007

Transparency because enhanced public information on institutions as well as on financial instruments is the only way we have to avoid contagion and herd behavior in times of difficulty.[26]

Trichet continued:

It will be crucial to ensure adequate transparency regarding financial markets, institutions and financial instruments. The availability of adequate information is the basic prerequisite for sound investment decisions, effective risk management and market discipline. In this way, transparency not only contributes to a more efficient allocation of capital, but is also the best insurance against irrational herd behavior and the propagation of financial turbulence.[27]

It is surprising to see that this was essentially a European demand:

Many efforts have been made to address … specific issues that are of especial importance from a longer term perspective, [among them] enhancing transparency by improving the availability of data important from a financial stability perspective.[28]

However, to understand the role that central banks aim to play in financial markets, also starting from different perspectives, it is useful to consider the speech by Philipp Hildebrand, member of Governing Board of the Swiss National Bank:

It is through the financial markets that monetary policy affects the real economy. In other words financial markets are the connecting link in the transmission mechanism between monetary policy and the real economy.[29]

Clearly, expectations play a crucial role in the transmission of monetary impulse to first the financial and then the real economy. The management of expectations is targeted on obtaining real effects. Hildebrand continued:

For example a credible and transparent central bank might indicate that on the basis of its assessment of available economic data it intends to embark on a gradual tightening or easing cycle. Such a clearly stated policy intention could lead to changes in financial market prices say long term interest rates or the exchange rate resulting in a change in the monetary policy stance without any formal change in the level of the official policy instrument.[30]

Figure 14 gives clear demonstration of how attention to transmission mechanisms from monetary to financial, and also to the real economy, has clearly grown across the years considered here.

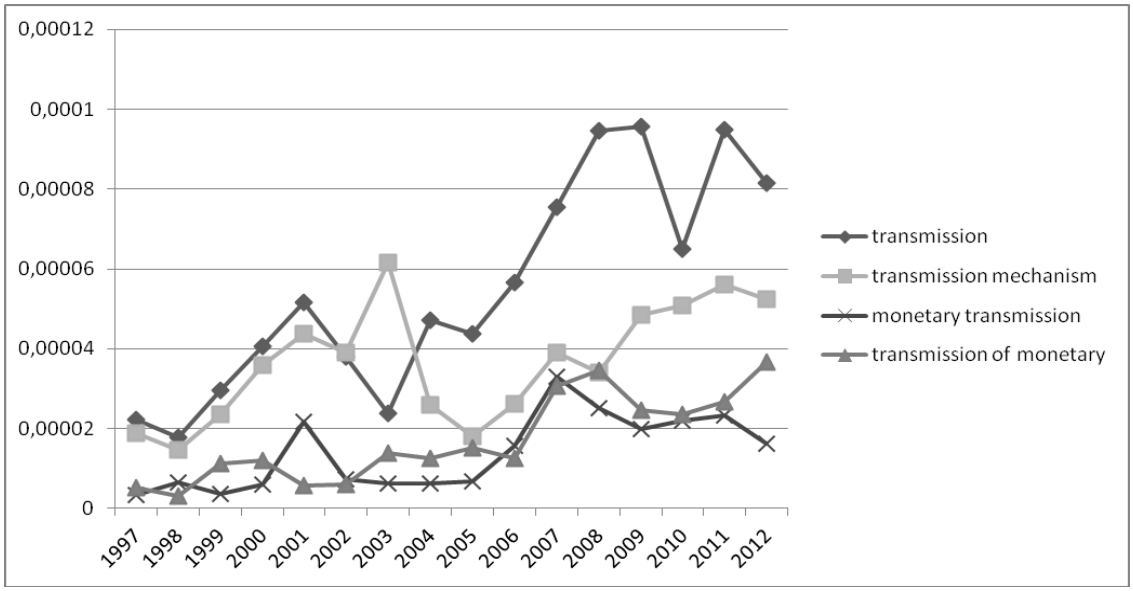

Figure 14. Monetary transmission

[26] J.C. Trichet, President of the ECB, Frankfurt am main, 13 February 2008
[27] J.C. Trichet, President of the ECB, Paris, 3 July 2008
[28] J.M. Gonzalez Pramo, Member of the Executive Board of the ECB, Madrid, 16 January 2009
[29] P. Hildebrand, Member of the Governing Board of the Swiss National Bank, Zurich, 7 April 2006
[30] Ibid.

As we will seek to demonstrate, financial space is meant to be conceived as an intermediary area between monetary and real ones, and this explains the widening of central bank interests.

It gradually became clear that transparency was contextualized in the financial world, which partially substituted the traditional references to inflation and independence.

In 2005, Svein Gjedrem, Governor of Norges Bank, wrote:

> In recent years the relationship between monetary policy and financial stability has received increased attention. Monetary and financial stability are two intermediate goals for public policy. In my view these goals are often mutually reinforcing. Financial stability has a positive influence on price stability. First it promotes a stable credit supply and capital flow which is crucial to balanced economic development. Second financial stability supports the transmission mechanisms of monetary policy. A stable financial system ensures that changes in the monetary policy instrument have the intended effects on market rates. Hence changes in monetary policy will affect the behavior of consumers and enterprises and eventually inflation and economic activity.[31]

This view was confirmed by Trichet, former President of ECB:

> […] a stable financial system is needed for an effective transmission of monetary policy and for the smooth operation of payment systems.[32]

This further testifies that the central banks' interventionist attitude towards the financial market came somewhat before the onset of the financial crisis.

In Figure 16, we analyze the trend of the words belonging to the financial semantic area (beginning with 'financ*') without distinction among countries. It is apparent that words from the financial semantic area are among the few words that have been increasingly used by central banks. According to the central bankers' speeches, finance is becoming the core of banks' interest.

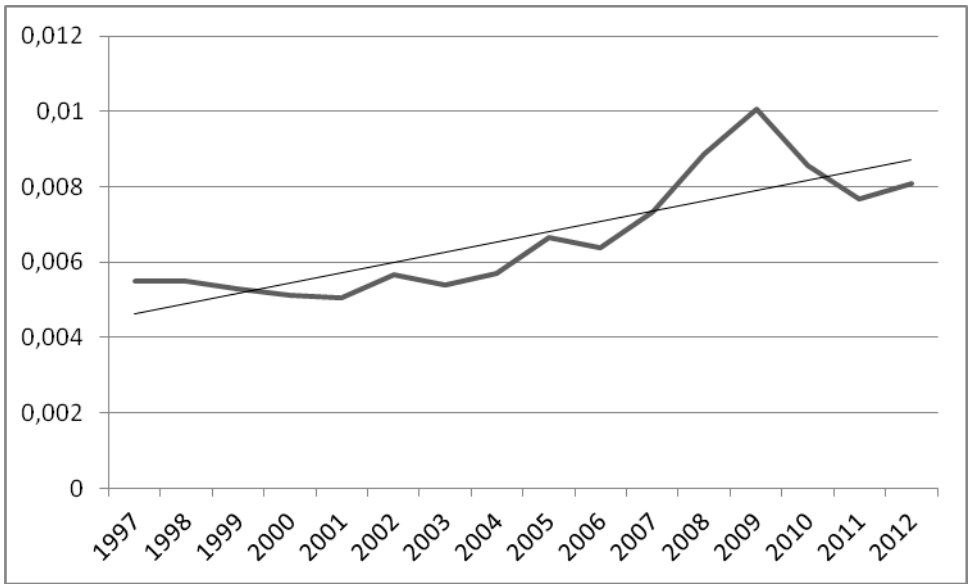

Figure 15. Upward trend of words from the financial semantic area

[31] S. Gjedrem, Governor of Norges Bank, Vienna, 12 May 2005

[32] J-C. Trichet President of the European Central Bank Frankfurt am Main, 31 May 2005

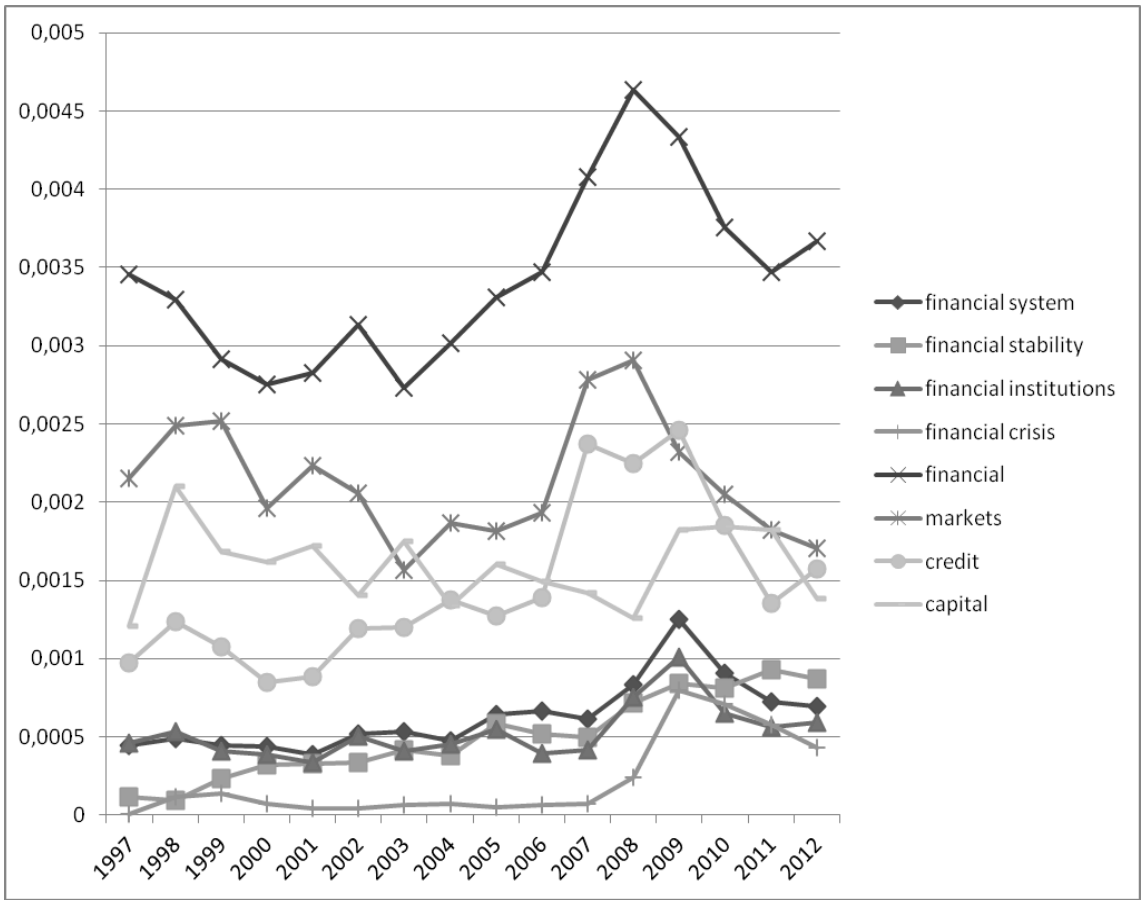

Figure 16. Financial economy

'Financial' is the most frequent word in the central banker speeches. As figure 16 shows, the focus of central banks on financial markets reached its peak in 2008: the trend of the frequencies is not particularly related to the capital markets or to their movements ('capital' is considered in terms of 'inflows,' 'outflows,' 'flows,' 'movements'), but more so to 'credit.' In 2009, the focus on the financial markets began to decline, and financial consideration moved its focus to financial 'crisis,' financial 'system' and 'financial institutions.' Therefore the initial focus on financial markets and credit in 2008 was measurably followed by consideration of the crisis affecting system and institutions. The concern for 'financial stability' has grown steadily over time.

Indeed, the monetary objective trade-off between inflation and output gap volatility has effects on the financial sector through the effect of transparency on interest rates. Niklas Westelius (2009) shows how imperfect transparency reduces interest rate volatility; and also according to Sylvester Eijffinger (2004) and Geraats (2013), greater transparency may lead to volatility of interest rates. Since "high levels of economic transparency make the interest rate more volatile, they may no longer be desirable if the central bank directly cares about interest rate volatility because of financial stability considerations" Geraats (2013: 68). This suggests that there is a preference function between economic transparency and financial stability: monetary policy should be adjusted accordingly.

Maintaining financial stability is an important objective for many central banks:

> This objective can conveniently be considered as a restriction on monetary policy that does not bind in normal times, but does bind in times of financial crises. Transparency then requires central banks to explain when this restriction does bind and how it induces deviations from normal policy. By producing and publishing Financial Stability Reports with indicators of financial stability, the central bank can monitor the degree of financial stability and issue warnings to concerned agents and authorities in due time and this way avoid deteriorating financial stability (Svensson 2003: 36).

If central banks' transparency is perfectly consistent with a growing interest in the financial world, a further final step must be made to justify our early statement about the central banks' rhetorical shift towards the real economy.

5. Transparency and real economy

Using central bankers' speeches, it can be shown that strict inflation targeting policies may be moving toward a more flexible inflation targeting, and that more consideration is being given to output gap stabilization. The evolution of consideration of financial stability can also be represented.

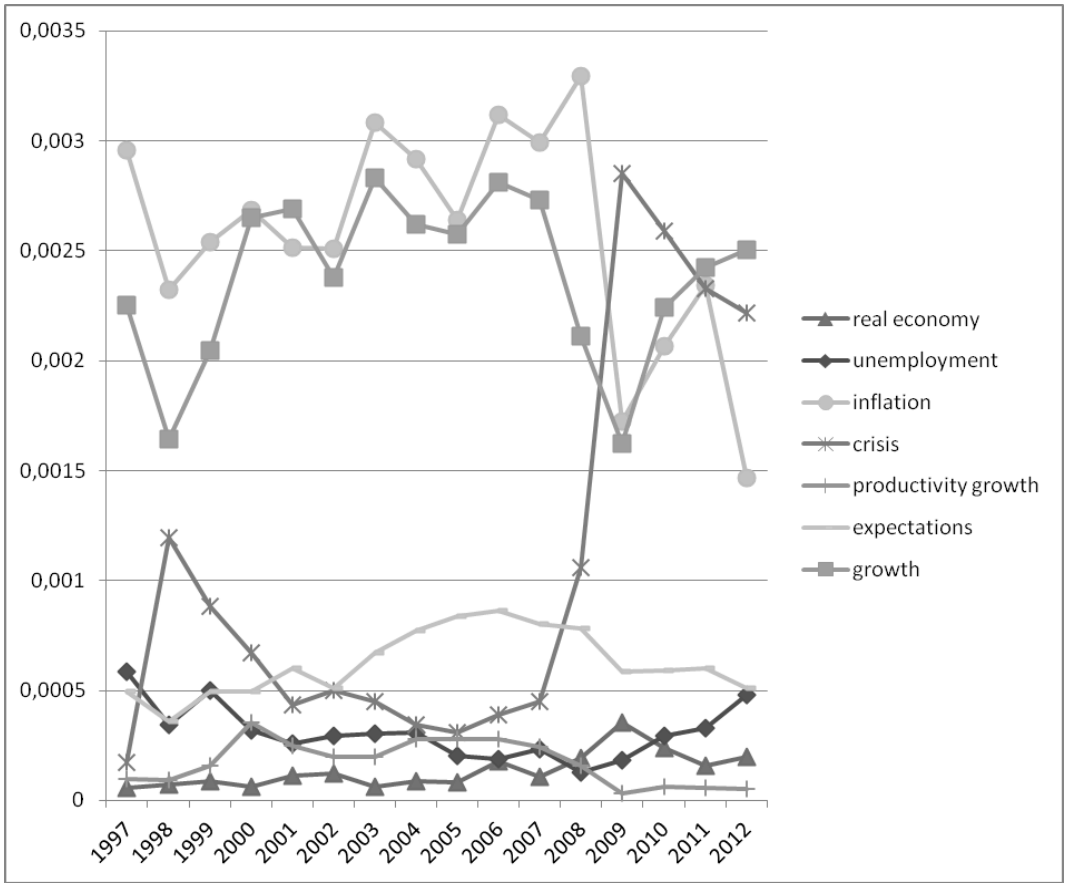

Figure 17. Inflation and real variables

Figure 17 shows the historical trends of a selected number of words connected with transparency and output stabilization. The peak of the crisis in 2009 is the great turbulence that disrupts the speeches of central bankers: the word 'crisis' rose sharply in frequency between 2007 and 2009. During and after 2009, the increasing peak of the word 'crisis' corresponded to a sudden decrease in the themes 'inflation', 'expectations', 'economic growth' and 'productivity growth'. After this 2009 sudden swap in frequencies, 'inflation' rose slightly higher, before falling back to a lower value, and 'expectations' and 'productivity growth' show a plateau at a stable value, while 'economic growth' and 'growth' increase. The peak of the crisis of 2009 is positively correlated with the 'real economy'.

There is a clearly defined pattern in this graph, and it can be taken to mean that the financial crisis absorbed the focus on inflation and immediately led to an increase of focus on the real economy output, which was followed by closer attention to the theme of growth. As regards output-related terms, the central bankers' speeches increasingly consider issues of growth.

The same conclusion can be reached giving a glance to the distribution of real variables over the years.

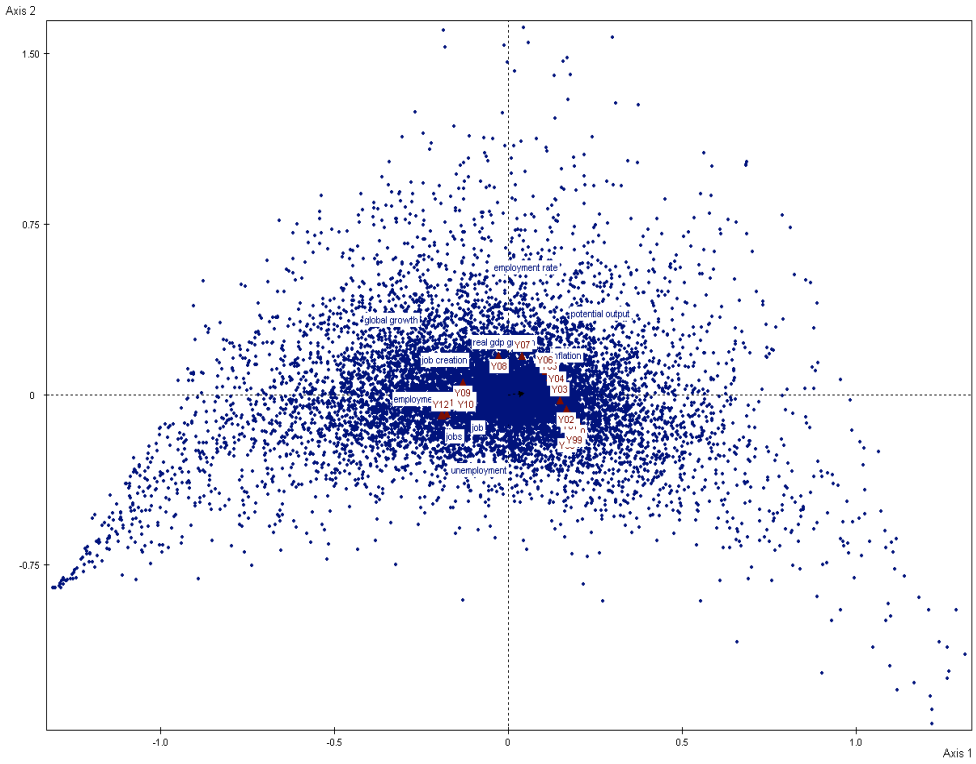

Figure 18. Real variables over years

Figure 18 shows that from 2006 onwards, the central banks' speeches were characterized by real variables that replaced 'inflation' and other strictly monetary topics. Evolution towards real variables relating to employment and growth can be shown if the corpus is observed by looking at it from different structural axes: we can observe a general increase of attention to certain words and segments connected with real variables. The volatility of their relative frequencies makes them better associated with some years rather than others, and the association may not be straightforward. For example, Figure 19 shows that an increase in the frequency of words and segments connected with employment can be observed after 2008, but this is generally mirrored by a symmetrical decrease in the period 1997-2007.

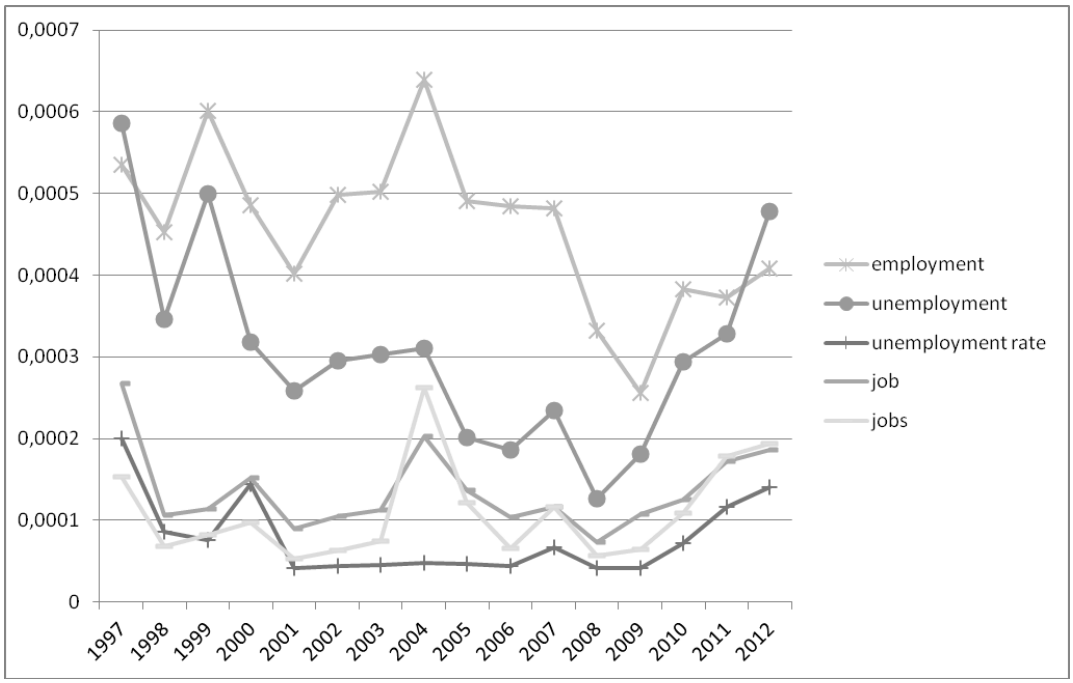

Figure 19. Employment

According to Lars Svensson (2003: 35), "central banks can improve transparency and accountability by specifying and announcing an explicit loss function for monetary policy". Loss functions are not always explicit and the release of the function depends on the political transparency of the central bank (Geraats 2002). In regard to the output target alone, while "it is optimal for the central bank not to reveal the future expected path of the output gap target" (Westelius 2009: 985), central bankers' speeches indicate that the real economy is taken increasingly into account. Desirable optimality and intermediate levels of transparency induce the central bank to make the output stabilization target opaque in order to mitigate the greater volatility of private sector inflation expectations and interest rates variability (see Geraats 2013). While output target is disguised by an opaque monetary policy in order to prioritize other objectives such as inflation target and financial stability, an increasing interest in the real economy is unconventionally detected and measured through its frequency in the central bankers' speeches.

Conclusions: beyond money and language

Aside from any commitment springing from their mandate, in the period 1997-2012, central banks gradually encroached on other territories. The financial and the real economy at large were the arrival points of this trajectory, which started well before the 2007 financial crisis. Central banks showed a *flexibility and inventiveness* that contradicted any supposed *stickiness* or *subordination* to political institutions as regards the adoption of final objectives.

To be noted is that increasing-frequency words belong to both the financial and real economy: central bankers' speeches are now shifting towards a new pattern mainly composed of semantic areas pertaining more to the financial and real economy than to inflation concerns. Central banks' objectives may be different and be given different priorities. Whatever the central bank's mandate, words show that this institution is enlarging its areas of interest and intervention. The central bank makes use of monetary tools to yield effects in areas different form strictly monetary one. The loss of interest in inflation has inevitably pushed the central bank towards other objectives, whose achievement may also involve a change of instruments.

A final issue is this: while the frequency of words like 'inflation' and 'price stability,' typical of central banking, is diminishing, why is the frequency of words drawn from the financial and real

economy increasing? And what is the role played by transparency? Is it still just a monetary tool? Further research should be carried out to develop a model which connects monetary policy making and its communication: measurements of transparency, especially political and policy aspects, should refer to the underlying language and its connection with the communication model. Language is not identical with communication and can reveal semantic patterns which are meaningful in the measurement of central bank communication as a monetary tool.

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