CENTRAL BANK TRANSPARENCY AS A CONDITION FOR EFFECTIVE MONETARY POLICY REALIZATION

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Abstract
Central bank transparency has become the topic of public and academic debate on monetary policy. However, this has been complicated by the fact that transparency is a qualitative concept that is hard to measure. This study analyzes approaches to the definition of transparency and its main characteristics. We investigate features of communication policy and the procedure of information disclosure by central banks around the world. We consider a transparency index of monetary policy that comprises the political, economic, procedural, policy and operational aspects of central banking, based on a detailed analysis of information disclosure in practice. The most transparent central banks are highlighted in the study as a result of analysis of monetary policy at the transparency level.

JEL codes: E52, E58, E59

Keywords: central banks, communication channels, transparency, information disclosure, transparency index

INTRODUCTION

Central banks have significantly improved their modes of communication with society and markets during the past two decades. Experts and researchers are paying more and more attention to the question of central bank transparency. They have realized that openness and permanent connections with society and market participants constitute a reliable basis for the effective implementation of monetary policy. These changes were triggered not only by the need for symmetrical extension of central bank accountability due to their increasing independence level, but also by the growing importance of economic agents' expectations in ensuring the effectiveness of monetary policy. The experiences of the US, Swedish, UK and Eurozone central banks are valuable in this context, since these banks use a variety of communication channels with financial markets to influence the market situation.

Experts of central banks, international financial organizations and research scholars constantly emphasize the necessity of increasing the level of monetary policy transparency. This factor concerns evidence of central banks' social re-

sponsibility. Valuable contributions to investigation of the problem were made by the academic experts *Demertzis* (2006), *Dincer–Eichengreen* (2013), *Stiglitz* (2000), *Siklos* (2002), *Egbuna* (2014) and *Warsh,* (2014).

It should be mentioned that the information policy of the central bank should be just policy, and shouldn't have a chaotic character. A comprehensive study of foreign experiences in the formation of monetary policy elements (information tools, target audience, and the volume, quality and depth of provided information) is thus necessary in the context of our research.

1. THEORETICAL ASPECTS OF THE RESEARCH

The mechanism of conducting monetary policy has undergone a dramatic transformation during the last two decades. Traditionally, central bank targets, objectives, institutional arrangements, policy models, forecasts, explicit strategy, minutes and policy decisions have been subject to considerable secrecy. Nowadays, however, most central banks have become much more open. As *Geraats* (2013) has pointed out, transparency has become a key feature of monetary policymaking and central banks consider it very important. This tendency can be partly explained by the increase in central banks' independence, which has been accompanied by formal accountability requirements.

Geraats (2013) carried out a comprehensive historical analysis and stressed that the increase in monetary policy transparency came about in two phases. The first phase towards greater openness occurred during the 1990s, when central banks started to publish their analyses and outlooks for macroeconomic developments in regular monetary policy reports. In this period New Zealand, Canada, the UK, Sweden, Finland, Israel, Australia, Spain, Norway and several developing countries adopted an inflation targeting framework for monetary policy (*Table 1* contains additional key events). *Swanson* (2006) explained that while inflation targeting is not synonymous with central bank transparency, in practice countries that adopted inflation targeting in the 1990s at the same time significantly increased the amount of information about monetary policy regularly released to the public.

According to *Geraats* (2013), the second phase towards greater transparency occurred during the 2000s. In this period openness became more widespread. The emphasis on transparency in this period is based on the concept that monetary policy is very closely connected with "management" of people's expectations. This is why we can say that the transparency and communication policies of central banks are the hallmarks of inflation targeting. At the same time, transparency has increased significantly among non-targeters as well.

Table 1

Significant changes in central banks' transparency, 1993–2013

Date	Central bank	Change in transparency
February 1993	Bank of England	First inflation report published
March 1993	Federal Reserve System	Minutes of Federal Open Market Committee (FOMC) meetings first released
November 1993	Federal Reserve System	Transcripts of FOMC meetings first released
February 1994	Federal Reserve System	Changes in federal funds rate target first explicitly announced
May 1997	Bank of England	Bank of England granted full independence Monetary Policy Committee (MPC) established
June 1997	Reserve Bank of New Zealand	First forecast of future short-term interest rates announced
June 1997	Bank of England	Independence of Bank of England formalized by Bank of England Act
January 1998	Bank of Japan	Monetary policy meetings held on monthly scheduled basis
April 1998	Bank of Japan	Bank of Japan Law introduced, clearly setting out dual mandate of sustainable growth under price stability
January 1999	European Central Bank	European Central Bank started conducting monetary policy, including some aspects of forward guidance in its "intention to maintain a 3% main refinancing operation rate for the foreseeable future"
May 1999	Federal Reserve System	First statement about economic outlook even after no change in federal funds rate target announced Fed started announcing "policy tilt" indicating most likely future interest rate action
October 2000	Bank of Japan	First report on growth and inflation outlook published
March 2001	Bank of Japan	Outcome-based guidelines for rate policy developed
October 2001	Federal Reserve System	Fed Chairman Alan Greenspan delivered speech highlighting FOMC's moves toward greater transparency
March 2002	Federal Reserve System	Votes of individual Committee members first released
August 2003	Federal Reserve System	First direct qualitative statement about future policy issued

October 2003	Bank of Japan	Document on improving transparency issued by Monetary Policy Committee, clarifying exit from quantitative easing conditions
November 2005	Norges Bank (Norway)	Norwegian central bank started publishing interest rate forecasts
February 2006	Federal Reserve System	Fed expedited release of FOMC minutes to make them available before subsequent FOMC meeting
March 2006	Bank of Japan	The "understanding" of medium to long-term price stability introduced in numerical form; a range of 0–2 percent, encompassing individual understandings, emerged from the exercise
February 2007	Riksbank (Sweden)	Swedish central bank started regularly publishing interest rate forecasts
March 2007	Central Bank of Iceland	Central Bank of Iceland started regularly publishing interest rate forecasts
November 2007	Federal Reserve System	Fed increased frequency and expanded content of economic projections
July 2008	Bank of Japan	Bank of Japan started to release statements after every meeting; to announce balance chart more frequently; to announce minutes before subsequent meeting
April 2011	Federal Reserve System	Chairman held first press conference following FOMC decision
February 2012	Bank of Japan	Inflation goal set
July 2013	European Central Bank	Forward guidance introduced
August 2013	Bank of England	Forward guidance introduced

Source: compiled by author based on *Swanson* (2006), *Holmsen–Qvigstad–Røisland–Solberg-Johansen* (2008), *Novak–Krušković* (2012), *Vayid* (2013), *Dincer–Eichengreen* (2013)

The term "transparency" is used in the specialized literature to indicate a state of complete awareness and information disclosure about a particular object or process (*Chub*, 2008).

Based on analysis of the relevant economic literature, we found a common approach lacking in the interpretation of the term "transparency." Academic experts who do attempt to define transparency offer a wide variety of definitions, usually to suit the distinct purpose of their work. Definitions run from minimal meanings to multiple embedded meanings. In the context of our study, we consider it appropriate to analyze the following approaches in more detail:

– transparency as it relates to information flow (*Stiglitz*, 2000*)*;
– the system of relations concerning disclosure of information and its use (*Khubiiev*, 2009);
– availability, completeness and accuracy of information (*Litovskikh*, 2006).

In our opinion, the first approach is not grounded enough, because it is impossible to identify the terms "transparency" and "information." In this case there is no answer to the question: "What does information mean, and for whom is it designed?" It also should be mentioned that some academic experts identify transparency as a characteristic feature of public information (*Benkler,* 2006). Transparency can also be examined using a systemic approach (in the legal field) as a system of relations. Supporters of the third approach consider that transparency is determined by the availability, completeness and accuracy of information. In our opinion, these are characteristic features of openness, defined as a degree of disclosure. However, it is possible to publish information that is unclear to the public. In this case, the term "transparency" cannot be used.

In the context of our study, according to the opinion of experts of the ECB, transparency can be defined as an environment in which the central bank provides the general public and markets with all relevant information on its strategy, assessments and policy decisions, as well as its procedures, and does so in an open, clear and timely manner (ECB, 2011).

Scholars identify four main characteristics of transparency, which include:

– Accessibility (openness) of information – provision of information in open access or on first request;
– Completeness of information coverage – provision of a sufficient volume of information to explain past and future actions of a central bank;
– Timeliness – information should be provided with a minimum delay (including forecasts for the future);
– Integrity of information – tools and channels of information policy should be consistent and coordinated with each other (*Migus*, 2013; *Michener–Bersch*, 2013).

However, in our opinion, this list is not complete, because the listed characteristics reflect only the amount and structure of provided information, and this does not always indicate its usefulness to consumers. We propose to add an important characteristic, namely the quality of provided information. No matter how often a central bank publishes information, if it is confusing or useless to society, monetary policy will not be considered transparent. In addition, the presence of "information intermediaries" has been ignored in the analyzed scholarly literature.

The role of information intermediaries (comprising a variety of media: TV, radio, periodicals, etc.) is to transfer information from the central bank to consumers. If information is distorted by intermediaries, the public perception of central bank actions will itself be distorted.

2. TOOLKIT OF THE MECHANISM SUPPORTING TRANSPARENCY IN MONETARY POLICY

In his study, *Demertzis* identifies two main channels through which central banks provide information to market participants. The first is the "reassurance" channel, meaning the bank's attempts to inform the public of the correctness of its intentions and to confirm adherence to declared objectives. The result is a reduction of economic uncertainty in the short term. The central bank tries to reassure market players and to stabilize expectations by forming an information picture of the environment and by announcing its goals. The second channel is the "provision of details" through which a central bank provides information about economic developments that make planning easier and more effective (*Demertzis*, 2006).

Central banks communicate with the public using a wide range of information tools: chairman's speeches, press releases, provision of information through television and radio channels, pages on the internet, periodicals, reports, etc. It should be noted that each specific instrument is designed for a specific audience and for the disclosure of a specific type of information. As a result, various aspects of monetary policy should be disclosed in different ways in terms of presentation style, specification of information and communication tools. The combination of tools should cover the whole audience of a country, from households to professional players in financial markets.

In *Table 2* we compare the information policies of central banks in various developed countries according to the information that is disclosed.

Table 2
Information disclosure by central banks

Country	Publication of minutes			Publication of forecasts		Decisions announced immediately	Press conferences	Press releases	Accountability
		Time lag	Identification of votes		Frequency				Frequency
Sweden	+	2 weeks	+	+	Quarterly	+	+	+	Once in six months
New Zealand	-	-	-	+	Quarterly	+	+	+	Quarterly
Hungary	+	2-3 weeks	+	+	Quarterly	+	+	+	Once in six months
Czech Republic	+	8 days	-	+	Quarterly	+	+	+	Once in six months
United Kingdom	+	2 weeks	+	+	Quarterly	+	+	+	Every two months
Israel	+	2 weeks	-	+	Quarterly	+	+	+	Once in six months
Eurozone	-	-	-	+	Quarterly	+	+	+	Quarterly
Canada	-	-	-	+	Quarterly	+	+	+	Quarterly
USA	+	3 weeks	+	+	Quarterly	+	+	+	Once in six months
Australia	+	2 weeks	-	+	Quarterly	+	-	+	Once in six months
Switzerland	-	-	-	+	Quarterly	+	+	+	Regularly
Japan	+	4 weeks	+	+	Once in six months	+	+	+	Once in six months
Norway	-	-	-	+	Quarterly	+	+	+	Annually
Iceland	+	-	-	+	Quarterly	+	+	+	Quarterly
Poland	+	2 weeks	+	+	Quarterly	+	+	+	Quarterly

Source: compiled by author based on data of official websites of central banks

We detected similarities in the practice of information disclosure by central banks in that information is announced in all material aspects. It should be noted, however, that regulators in some countries do not publish minutes of meetings, but

this applies only to the legal aspect. In reality, central banks announce decisions taken at meetings, but not in the minutes, but only in information sheets.

An example of this is the communication policy of the European Central Bank. The data in Table 2 confirms that the main channels of the ECB's communications are monthly press conferences (held by the President and Vice President) and monthly bulletins. The President, members of the Executive Board and the Governing Council give interviews and deliver speeches to different audiences (*Trichet*, 2005). Every year a large number of representatives of the general public, as well as experts from various state and private institutions, visit the ECB. The central bank also aims at open dialogue with the scientific community. Results of scholarly research are published by the central bank in the form of staff reports and articles. In addition, the ECB publishes a wide range of the euro area's statistical data.

The importance of the transparency principle in implementation of monetary policy is quite thoroughly supported in the report of former ECB President *Jean-Claude Trichet*. He notes that the Maastricht Treaty has granted the ECB full independence in the pursuit of its mandate, and it is the duty of independent central banks to be transparent and to communicate. According to Trichet, transparency is not only a duty for a central bank, but also contributes considerably to the efficiency of its policies. A high level of monetary policy publicity helps to anchor the inflationary expectations of financial markets and the public. With the help of efficient communication, central banks can reduce inflationary uncertainty and the costs associated with such uncertainty for consumers and investors (*Trichet*, 2005).

In 2014, representatives of the Reserve Bank of New Zealand published a comparative analysis of the decision-making process in a number of developed countries (the US, Eurozone, UK, Japan, Canada, Switzerland, Israel, Sweden, South Korea, Norway, New Zealand) and developing countries (Brazil, Chile, Mexico) (*Aldridge–Wood*, 2014).

In particular, the following important aspects of central bank communication policy were studied: publication of economic forecasts, publication of transcripts of Monetary Policy Committee meetings, accountability to legislative bodies, functions of the higher authorities of central banks, use of informal methods of communication, etc. The authors concluded that the decision-making process in the field of monetary policy and the mechanisms of governance and accountability in the surveyed countries differ significantly. Many of these differences are due to historical peculiarities and differences in views on the optimal structure of public sector management in general. However, the past two decades have seen a convergence of approaches to the issue of balancing central bank operational independence and effective accountability mechanisms. The economic essence of central banks' monetary policy objectives, despite formal differences in their formulation, is very similar. According to the results of analyzed research, we

can draw the conclusion that the ECB follows some of the world's best standards in ensuring transparency in monetary policy, and often even acts as a pioneer in this field.

As a result of critical study of the literature and the information policies of central banks (Table 2), we summarized the components of transparency in the monetary policy of central banks and defined indicators of these components (*Table 3*).

Table 3
Components and indicators of monetary policy transparency

Component of transparency	Content
Political transparency	Information about the goals and quantitative reference points of a policy
Economic transparency	Publicity of macroeconomic data, models and forecasts that are used in the decision-making process
Procedural transparency	Disclosure of internal decision-making processes, including transcripts, minutes or reports of the Monetary Policy Committee
Policy transparency	Disclosure of information about measures to achieve policy goals
Operational transparency	Disclosure of the results and effects of policy, as well as the errors and costs of regulation

Source: compiled by author based on *Crowe* (2008) and *Demertzis* (2006)

3. ASSESSMENT OF THE MONETARY POLICY TRANSPARENCY OF CENTRAL BANKS

The level of monetary policy transparency can be estimated by using two main approaches. The first is based on the methodology of the International Monetary Fund (IMF). In 1998 the IMF, working together with the Bank for International Settlements, representatives of central banks, financial intermediaries, other relevant organizations and academic experts, developed a Code of Good Practices on Transparency in Monetary and Financial Policies. This identifies eligible transparency practices for monetary regulators and other financial agencies in their conduct of monetary policy and financial policies. In 1999 the Code was adopted as a guide for central banks to increase transparency in the conduct of monetary and financial policies (IMF, 2000).

The Code of Good Practices on Transparency in Monetary and Financial Policies is premised on four broad principles:

– Clarity of roles, responsibilities, and objectives;
– An open process for formulating and reporting policy decisions;
– Public availability of information on policies;
– Accountability and assurances of integrity (IMF, 2015).

These principles are closely connected with the components and indicators of monetary policy transparency which we have already analyzed (Table 3).

In the context of implementing the Code, the IMF stimulates country authorities to participate in a detailed assessment of the transparency of monetary and financial policies within the Financial Sector Assessment Program (IMF, 2015).

We have defined the key features of the transparency assessment methodology of the International Monetary Fund according to the *Supporting Document to the Code of Good Practices on Transparency in Monetary and Financial Policies (Part 2),* namely:

– A fairly detailed and comprehensive set of assessment criteria;
– No formal requirements for the presentation of results (country authorities prepare reports in free form);
– Impossibility of comparing a large number of countries (information presented in text form without summarizing);
– Coverage of almost all components that must be disclosed by the monetary regulator;
– Insignificant probability of distortion or subjective evaluation (experts do not carry out a comparative analysis of monetary policy transparency, but only describe the activities of different central banks in ensuring high levels of transparency).

The second approach to estimating the level of transparency is based on a special index.

These two approaches could be considered within the methodology of qualitative (IMF approach) and quantitative (index method) analysis. The latter (in contrast to the IMF's methodology) is more suitable when we need to compare the monetary policy transparency levels of different central banks.

It should be noted that the first index method was used to determine the degree of central bank independence. A similar approach was then used to assess the accountability and transparency of monetary regulators.

The first index of transparency was published in 2002 by *Siklos*. It consisted of 11 variables related to the method of providing information, understanding mon-

etary regulation, publicity of monetary policy procedures and independence of central banks (*Siklos*, 2002).

Eijffinger and *Geraats* identified five main components of transparency (political, economic, procedural, policy and operational transparency). Evaluation was carried out using binary parameters (0 and 1) (*Eijffinger–Geraats*, 2006). A similar method of estimating the level of transparency was chosen by *Dincer* and *Eichengreen*, but their research was based on analysis of 150 central banks (not 20 as in the previous case) (*Dincer–Eichengreen*, 2013).

The peculiarity of the index proposed by Stasavage lies in its components, based on four questions about the form of publications, disclosure of long-term forecasts, publication of information about risks, and discussions concerning past mistakes (*Stasavage*, 2003).

In should be noted that the majority of researchers use the technique of transparency index calculation proposed by Eijffinger and Geraats (*Eijffinger–Geraats*, 2006).Consequently *Bini-Smaghi* (2000) and *Warsh* (2014) use the five components mentioned in Table 3. For each component they define a list of indicators.

Egbuna and a number of scholars from the West African Monetary Institute concluded that the index proposed by *Eijffinger* and *Geraats* has several drawbacks:

– It is impossible to assume that all components of policy transparency are equally important;
– The interchangeability of separate transparency indicators is not included;
– The peculiarities of different countries are not taken into account (*Egbuna*, 2014).
– However, in our opinion, this index also has its advantages, the most important being:
– It is a method based on independent experts' analysis of information disclosure by central banks (if the analysis is carried out by employees of central banks, the result might be distorted);
– The index covers almost all components which must be disclosed by monetary regulators.

In 2013, *Dincer* and *Eichengreen* published an analysis of central bank transparency in 120 countries and calculated a transparency index based on 15 indicators (*Dincer–Eichengreen*, 2013) that characterizes the level of monetary policy transparency according to the method proposed by *Eijffinger* and *Geraats* (2006) (*Table 4*).

Table 4
The level of monetary policy transparency of central banks, according to Dincer and Eichengreen

	Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	Rate of increase 2010/2002 %
Developed countries	Sweden	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	0.00
	New Zealand	14	14	14	14	14	14	14	14	14	0.00
	Hungary	9	9	9	10.5	11	12	13.5	13.5	13.5	50.00
	Czech Republic	10	11	11.5	11.5	11.5	11.5	12	12	12	20.00
	United Kingdom	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12	12	-4.00
	Israel	8.5	8.5	8.5	8.5	10	10	11	11	11.5	35.29
	Euro area	10.5	10.5	11	11	11	11	11	11	11	4.76
	Canada	10.5	10.5	11	11	11	11	11	11	11	4.76
	USA	10	10	10	10	11	11	11	11	11	10.00
	Australia	9	9	9	9	9	9	11	11	11	22.22
	Switzerland	8	9	9.5	9.5	9.5	9.5	9.5	10.5	10.5	31.25
	Japan	8	8	9.5	9.5	9	9	10.5	10.5	10.5	31.25
	Norway	7.5	7.5	8	8	9	10	10	10	10	33.33
	Poland	6.5	6.5	7	8	9	10	9	9	9	38.46
	South Africa	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0.00
	Denmark	5.5	6.5	6.5	6.5	6.5	7.5	8	8	8	45.45
	Romania	4.5	4.5	7	7	7.5	7.5	7.5	7.5	7.5	66.66
	Bulgaria	4.5	4.5	5	5.5	5.5	5.5	5.5	5.5	5.5	22.22
	Latvia	7	7.5	7.5	7.5	8.5	8.5	8.5	8	9	28.57
Post-Soviet countries	Armenia	4	4	4	4	7.5	7.5	7.5	7.5	8.5	112.50
	Moldova	6.5	6.5	6.5	6.5	6.5	6.5	7	7	8	23.08
	Georgia	3	4	4	4	4.5	5.5	6.5	7.5	7.5	150.00
	Kazakhstan	3.5	3.5	3.5	6	6	6	6	6	6	71.43
	Belarus	5	5	5	5	5	5	5	5	5	0.00
	Ukraine	3	3	3	3	3.5	3.5	3.5	3.5	5	66.67
	Russian Federation	1.5	1.5	3	3	3	3	3	3	3	100.00
	Tajikistan	1.5	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.5	66.67

Source: compiled by author based on *Dincer–Eichengreen* (2013)

After analyzing data from the table, it should be noted that the Swedish Riksbank, the Reserve Bank of New Zealand, the National Bank of Hungary (MNB), the Czech National Bank and the Bank of England were the most transparent in 2010. Among the post-socialist camp we would emphasize the examples of Latvia, Armenia, Moldova and Georgia, which each have a high index of transparency (almost on the same level with Norway), proof of the constant increase in information disclosure requirements.

The results of our own transparency index calculations for a number of developed and developing countries are shown in *Table 5*.

The official websites of central banks served as the information base for our research. Calculations were made on the basis of *Eijffinger and Geraats* (2006) methodology, which was supplemented by additional indicators:

– the indicator "disclosure of components of explicit monetary rules with detailed explanation" was added to the component "procedural transparency";
– the indicator "publication of central bank's staff research" was added to the component "economic transparency";
– the indicator "central bank presence on the internet" was added to the component "policy transparency."

It should be noted that two of the three additional indicators directly relate to the transparency of monetary policy, and one indirectly.

We would like to explain the importance and meaning of additional indicators. In our opinion, in the current conditions of economic liberalization policy in general (and monetary policy in particular), using monetary policy rules as the main alternative to discrete regulation in the field of monetary policy gains increasing relevance. The key idea of *John Taylor*'s article (in which he proposed a formula of monetary policy rules for key central bank interest rates) is the substantiation of advantages of policy rules in comparison with discretionary regulation (*Taylor*, 1993). Focusing on the application of monetary policy rules provides for a reduction in the weight of the subjective (voluntary) component in the monetary policy decision-making process.

Central banks should find a balance between discrete measures and monetary rules during implementation of monetary and communication policies. Exclusively discrete (situational) use of monetary policy instruments will lead to non-public decision-making mechanisms, active use of administrative methods of regulation and the impossibility of influencing phases of the economic cycle. On the other hand, following explicit monetary policy rules will ensure substantial transparency and take into account market trends (including phases of economic cycles). Explicit monetary rules should be clear for all economic agents. This is why all their components should be disclosed with detailed explanations.

The next indicator concerns publication of the research of central bank staff. The majority of central banks have strong research teams in their structure. These teams develop forecasting approaches, methods of comprehensive analysis of monetary statistics, and so on. Disclosure of key scientific results in simplified form will increase trust in the decision-making process of central banks and help form rational expectations.

The last indicator shows central banks' use of internet channels to increase the level of monetary policy transparency. Central banks' experience of using modern internet communications is summarized in Table 6 (based on the official websites of central banks).

Table 5
The level of monetary policy transparency of central banks*

	Australia	Canada	Euro area	Japan	United Kingdom	New Zealand	Sweden	USA	Hungary	Georgia	Ukraine
1. Political	**3**	**3**	**3**	**1.5**	**2.5**	**3**	**2.5**	**1**	**3**	**3**	**2**
a. Formal objectives	1	1	1	0.5	0.5	1	0.5	0.5	1	1	1
b. Quantitative targets	1	1	1	0	1	1	1	0	1	1	0
c. Institutional arrangements	1	1	1	1	1	1	1	0.5	1	1	1
2. Economic	**2.5**	**4**	**4**	**2.5**	**3.5**	**4**	**4**	**3.5**	**4**	**2.5**	**2**
a. Economic data	1	1	1	1	0.5	1	1	1	1	1	0.5
b. Policy models	0	1	1	0	1	1	1	1	1	0	0
c. Central bank forecasts	0.5	1	1	0.5	1	1	1	0.5	1	0.5	0.5
d. Scientific research	1	1	1	1	1	1	1	1	1	1	1
3. Procedural	**1**	**2**	**2**	**2**	**3**	**4**	**2**	**4**	**2**	**1**	**1**
a. Explicit strategy	1	1	1	0	1	1	1	1	1	1	1
b. Minutes	0	0	0	1	1	1	1	1	1	0	0
c. Voting records	0	0	0	1	1	1	0	1	0	0	0
d. Transcript of monetary rule components	0	1	1	0	0	1	0	1	0	0	0
4. Policy	**2**	**3**	**2.5**	**2**	**2.5**	**4**	**3.5**	**4**	**3**	**1**	**1.5**
a. Prompt announcements	1	1	1	1	1	1	1	1	1	1	1
b. Policy explanation	0.5	1	1	0.5	0.5	1	1	1	1	0	0
c. Policy inclination	0	0	0	0	0	1	1	1	1	0	0
d. Internet activity	0.5	1	1	0.5	1	1	1	1	0.5	0.5	0.5
5. Operational	**2**	**2**	**2**	**1.5**	**2.5**	**1.5**	**3**	**1.5**	**1.5**	**1.5**	**0.5**
a. Control errors	1	1	1	0.5	1	0.5	1	1	0.5	1	0
b. Transmission disturbances	0.5	0.5	0.5	0.5	1	0.5	1	0	0.5	0	0
c. Evaluation policy outcome	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5
Total	**10.5**	**14**	**14**	**9.5**	**14**	**16.5**	**15.5**	**14**	**14**	**9.5**	**7**

Note: *based on methodology of Eijffinger and Geraats, expanded with author's components

Table 6
Analysis of modern internet communications used by some central banks

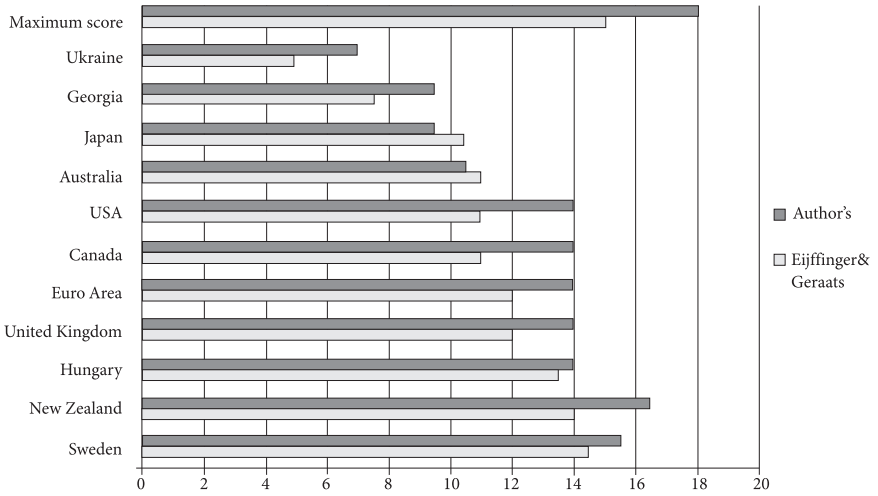
	Twitter	YouTube	Facebook	Flickr	LinkedIn	RSS	E-mail	Videos	Audios	Function share	Mobile version	Chat
Australia	+	+			+	+	+	+				
Canada	+	+		+	+	+	+	+		+		
United Kingdom	+	+	+	+	+	+	+	+	+	+		
Belgium	+	+		+		+	+	+			+	
Sweden	+	+	+		+	+	+	+		+		+
USA	+	+	+	+	+	+	+	+			+	
Eurozone	+	+	+	+	+	+	+	+		+		
Hungary		+	+			+	+	+				
Ukraine	+		+	+		+	+	+				
Georgia	+	+	+	+		+	+	+				
New Zealand	+	+	+			+	+	+	+	+		
Japan	+					+	+	+			+	

Source: compiled by author based on data of official websites of central banks (cut-off date 26.01.2016)

After analyzing data from the table, it should be noted that all central banks use some internet channels. The most popular are Twitter, YouTube, RSS, e-mail and videos. We also concluded that activity levels in using internet communication channels in the analyzed countries differ significantly.

We consider it appropriate to compare our results with the results of *Dincer* and *Eichengreen* (2013) (*Figure 1*).

Figure 1: Comparison of Dincer and Eichengreen results with authors' results



To analyze the figures, we should take into account differences in the study period. The relevance of our results extends to the end of the second quarter of 2015, while the transparency index calculated by *Dincer* and *Eichengreen* (2013) covers data till the end of 2010. We can thus estimate the dynamics of transparency as explained by two factors: 1) changes in 15 indicators (which we analyzed using a similar method) in the last five years; and 2) consideration of three additional parameters, which automatically leads (in the case of a positive evaluation) to an increase in the number of points for our methodology.

As we can see from Figure 1, central banks have increased the transparency level of their activities in general and of monetary policy in particular. The central banks of Japan and Australia have shown a negative trend, however. This situation is explained by two factors:

– The central banks of these countries do not publish transcripts of monetary rule components. Although there is a widespread tendency to use monetary policy rules, these bring a positive effect only in developed countries with stable financial markets and a high level of trust between the government, monetary regulators and economic agents. This is why Japan and Australia have chosen a strategy of gradual introduction of monetary policy rules;

– The central banks of Japan and Australia have only a moderate level of internet activity. For example, they do not have their own accounts on Facebook, Flickr or LinkedIn.

4. CONCLUSIONS

In terms of the intensification of the globalization process and significant volatility on the world's financial markets, the communication policies of central banks should be systematic and responsible. The objectivity, completeness and timeliness of information provided by central banks determine the direction of economic decisions made by individuals and entities, which in turn shape the dynamics of macroeconomic indicators and determine the effectiveness of monetary policy.

The main characteristics of transparency were analyzed in this article. The authors offered two additional characteristics: the quality of information provided, and the effectiveness of information intermediaries. We also analyzed key aspects of the transparency of the European Central Bank.

During the last year, the National Bank of Ukraine has implemented a number of projects that will contribute to a significant increase in its transparency level and will form a reliable basis to ensure the necessary level of efficiency in the context of achieving inflation targets. This conclusion is confirmed by the calculation of the transparency index.

In this paper we analyzed tools and channels of information disclosure. It is necessary to use a wide range of information policy tools in order to transfer quality information about monetary policy to society in a way that allows participants to receive it in time and correctly interpret its content. A comparative analysis of information disclosed by the central banks of developed countries shows constant improvement in the requirements for the level of monetary policy transparency. We also estimated the level of transparency of central banks around the world using the *Eijffinger–Geraats* (2006) methodology, extended by three additional indicators. We found that Sweden, New Zealand and Hungary are the countries with the most transparent central banks.

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