

“Transparency of Central Banks in Supporting Financial Stability”

AUTHORS

Paulina Sotomska-Krzysztofik
Olga Szczepanska

ARTICLE INFO

Paulina Sotomska-Krzysztofik and Olga Szczepanska (2006). Transparency of Central Banks in Supporting Financial Stability. *Banks and Bank Systems*, 1(3)

RELEASED ON

Thursday, 05 October 2006

JOURNAL

"Banks and Bank Systems"

FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

© The author(s) 2026. This publication is an open access article.

TRANSPARENCY OF CENTRAL BANKS IN SUPPORTING FINANCIAL STABILITY

Paulina Sotomska-Krzysztofik, Olga Szczepanska

Abstract

The article aims to present the methods and tools of central banks' communication with financial markets and the public as regards the financial stability function. Based on the experience of 35 central banks, a transparency index has been proposed. The considerable span of the index, suggests that central banks differently perceive transparency as part of the efforts to assure the financial stability.

Based on a review of the banks' experiences, three factors have been distinguished, which may affect the central banks transparency as regards the financial stability. These factors are: banking crisis experience, involvement in the supervision over the banking sector and experience in the field of transparency related to the adoption of the DIT strategy.

Key words: transparency, financial stability, central bank.

JEL classification: E58, E59.

Introduction

Since early 90s we have witnessed a specific revolution in the method of communication between central banks and financial markets and the public. The times when the policy of central banks was pursued behind closed doors have long been gone. The issue today is not whether to inform but how to inform¹. The role of central bank communication in pursuing the monetary policy, especially in the context of the direct inflation targeting strategy (DIT), has been extensively discussed in the literature. However, little focus has been devoted so far to the issue of central bank communication as part of the financial stability supporting functions, given the fact that this area of central banks activity has been recently gaining on importance.

This article aims to present the methods and tools of central banks communication with financial markets and the public as regards the financial stability functions. Based on the experience of 35 central banks from all over the world, a transparency index has been proposed. It enables evaluation and comparison of the openness degree of individual central banks as concerns the issues of the financial system stability.

Central bank transparency

In this article transparency means that the central bank provides the general public and the markets with all relevant information on its strategy, assessments and policy decisions as well as its procedures in an open, clear and timely manner². The purpose of transparency is to enable the public and financial markets participants to understand the policy pursued by the monetary authorities. This should eventually help the central bank shape markets expectations and improve the effectiveness of achievement of its goals. Transparency reduces the asymmetry of information between the central bank and the outside world, thus leading to increased confidence of the public and the financial markets in the central bank as a public institution³.

¹Cf. W. Poole, Fed Transparency: How, Not Whether, The Federal Reserve Bank of St. Louis Review, Vol. 85, No. 6, November /December 2003.

² www.ecb.int/ecb/orga/transparency/html/index.en.html

³ P. Geraats, Central Bank Transparency, Economic Journal, Vol. 112, No. 483, November 2002.

In this context, unbiased information about the central bank's planned achievements, as well as its capabilities and limitations, plays an important role in building the credibility of the central bank. This principle has been accurately worded by M. King: "do as you say and say as you do".

It is worth mentioning however that transparency also entails costs and additional responsibilities for the central bank. It requires self-discipline so that the published assessments of developments, the decisions taken and the explanations of events, are coherent. A bad decision or improper interpretation of facts, not supported by appropriate explanation of the reasons thereof, may cost the central bank a loss of its reputation. Furthermore, a transparent central bank must engage extra human and financial resources to prepare various informational materials.

At the same time, avoidance of informational noise should become a part of the rational policy of central banks. Excessive specialist information violates the fundamental rule of simplicity, known as KISS² (Keep It Simple, Stupid), which is based on the assumption that people prefer simple messages that are easily understood and remembered.

Central bank transparency as part of financial stability support

At the beginning of this section it is worth to explain what "financial stability" means. There is no one universal definition of financial stability³, but in this article we use the definition provided by the ECB, which consider financial stability as "a condition whereby the financial system is able to withstand shocks without giving way to cumulative processes, which impair the allocation of savings to investment opportunities and the processing of payments in the economy". The ECB does not define financial stability in narrow sense of banking stability only, having in mind however that banks play a crucial role in the soundness of the financial sector⁴. The definition can also be simplified: financial stability means maintaining confidence in the financial system or lack of instability.

As regards efforts to support the financial stability, central banks are facing numerous dilemmas related to the information policy. The most important are as follows:

- ◆ Financial stability cannot be measured and it is not unequivocally defined⁵. On the other hand, a lack of a precise definition of the goal and a horizon, when it would be achieved, makes the evaluation of the effectiveness of the efforts difficult.
- ◆ The role of the central bank consists in supporting market mechanisms rather than guaranteeing – by any means – stability within the system. To a large extent, financial stability should result from the market discipline.
- ◆ Stability within the financial system must not be perceived solely as a result of appropriately pursued policy of the central bank, thus a crisis does not necessarily result from erroneous actions undertaken by the central bank.
- ◆ The central bank is not the only institution supporting financial stability. In this regard, it shares responsibilities with other institutions comprising the safety net; mainly with institutions supervising the financial sector, as well as with the government and deposit guarantee schemes.

There is a risk that the central bank transparency may generate more costs than benefits in certain areas. Some information is recognised as particularly market-sensitive and publication thereof may weaken market discipline and cause moral hazard.

¹ M. King, Minutes of the Bank of England's 6th Central Bank Governors' Symposium, 4th June 1999.

² F. Mishkin, Can Central Bank Transparency Go Too Far?, Reserve Bank of Australia, Conference on "The Future of Inflation Targeting", Sydney 2004.

³ Read more in: G. J. Schinasi, Defining Financial Stability, Working Paper WP/04/187, IMF, 2004.

⁴ T. Padoa-Schioppa, Central banks and financial stability, Remarks in Jakarta, 7 July 2003.

⁵ S. Oosterloo, J. Haan, A Survey of Institutional Framework for Financial Stability, Occasional Studies Vol. I./No. 4, De Nederlandsche Bank, 2003.

As regards the issues concerning the lender of last resort and crisis management, a majority of central banks use the constructive ambiguity principle¹. This principle is based on the assumption that limited information on the terms and conditions of emergency liquidity assistance supports market discipline². In relation to the above, central banks strive to make sure that in the event of problems, commercial banks do not expect public institutions to support them automatically. Furthermore, constructive ambiguity allows central banks to be more flexible in their operations. Each crisis is different, therefore it requires an individual approach and an analysis of benefits against costs of various undertaken measures. Such an approach has been confirmed by the International Monetary Fund and the BIS in the "Code of Good Practices on Transparency in Monetary and Financial Policies"³ and by ECOFIN in the "Report on Financial Crisis Management"⁴.

Components of the central bank transparency

Declaration of the goal

The information about the goal and the performed functions constitutes the basic element of the central bank transparency. It has a direct impact on the issues related to the responsibility for their performance, and in effect, on building credibility of an institution. Furthermore, the definition of the goals and functions entails the need to communicate the methods and instruments serving those purposes.

Information on goals and functions of central banks may be communicated in the form of legal provisions. It may also take on the form of an expanded interpretation of legal provisions or an open declaration of the central bank of the goals which it is trying to achieve. Financial stability – in contrast to price stability – is not always explicitly stated in legal regulations. Therefore, in an attempt to meet the need for greater transparency, central banks inform about their actual involvement in activities supporting the financial stability, and treat it as their implicit goal, even where there are no relevant legal provisions.

Publication of the financial stability report

Efforts in safeguarding of financial stability are reflected by the increasing involvement of central banks in macro-prudential analyses of the financial system. The analyses are aimed at early identification of systemic threats and provide for the possibility of taking appropriate preventive steps. The effects of these efforts are published on a regular basis in the financial stability reports. In these reports, central banks present their evaluations of the standing of the financial system and the potential threats to the stability of the sector⁵.

The first report on stability of the financial system was published by the Bank of England in mid-1996, and subsequently by the Sveriges Riksbank in 1997. Other central banks followed after 2000 and the list is constantly growing longer.

Governors' speeches

Public speeches and lectures of central bank governors and board members constitute an important source of information on how the central bank perceives significant problems concerning the financial stability, and on the weight of these issues in the overall activity operations of the bank. Speeches are delivered at seminars and conferences organized by central banks and external institutions, such as universities and international organizations. The language and the contents of such speeches can be adjusted to the circumstances and to the needs of specific recipients. This consti-

¹ This principle has been formulated by the then New York FED President, E.G. Corrigan, in Future Priorities in Banking and Finance, Remarks before the 62nd Annual Mid-Winter Meeting of the New York State Bankers' Association, January 25, 1990, FRBNY Quarterly Review/Winter 1989-90.

² Cf. Financial Stability and Central Banks, Bank of England, Routledge, 2001.

³ Code of Good Practices on Transparency in Monetary and Fiscal Policies, IMF, 1998.

⁴ Report on financial crisis management, EFC Economic Paper No. 156. July 2001.

⁵ Cf. Financial Stability Report and Financial Stability Review, NBP, www.nbp.pl.

tutes an additional quality of speeches as a communication tool. It has recently been used more and more frequently by central banks communicating with the public and the financial markets. The frequency of lectures devoted to the role of the central bank in creating the conditions for the stability of the financial system, has also increased. This should also be perceived as a sign of the growing importance of these issues for central banks.

Press releases

Press releases are the fastest means of communicating information. That is why their usefulness rises in crisis situations. One of the advantages of an announcement is the fact that it facilitates quick communication of the same message to all financial markets participants, thus mitigates the problem of asymmetry of information. The central bank may use announcements to inform that it has controlled the developments and that, if necessary, it is ready to take appropriate steps. The press release made by FED during the stock exchange crisis in October 1987¹ may serve as an example. Before the financial markets opened on October 20, 1987, the FED made the following announcement: "The Federal Reserve System, consistent with its responsibilities as the nation's central bank, affirmed today its readiness to serve as a source of liquidity to support the financial and economic system"².

More recently, press announcements made by central banks were particularly significant after the September 11, 2001 and subsequently after the war in Iraq broke out.

Website

Introduction of the Internet was a breakthrough in the way of communication and it facilitated immediate transmission of information to an unlimited number of recipients. This technological innovation has become an important agent supporting the information policy of the central banks. A website is a platform on which basic pieces of news and documents concerning the central bank operations are published.

Some central banks (such as the Bank of England, the Riksbank) have distinguished bookmarks named "financial stability" on their websites. Such graphic form of the website facilitates quick and easy search of specific information. These bookmarks link a visitor to resources containing general information about the mission and the formal goals of the central bank as regards support of stability of the financial system. Furthermore, they link to separate publications related to the financial stability, i.e. financial stability reports, materials and analyses, speeches delivered by representatives of the bank authorities and press releases.

Transparency index

The selection of factors that affect the transparency of the central bank is always subjective. Being aware of these difficulties, some of the authors construct different transparency measures. They make it possible to illustrate the degree of involvement of central banks in the communication with the financial markets and the public. The indexes which have been developed so far apply to the central bank transparency of the monetary policy³. The experiences of central banks in the world show that – just as in the case of the monetary policy – the central bank transparency of financial stability issues is also growing.

The hereby presented index has been developed on the basis of the most important factors affecting the level of the central bank transparency of the financial stability field. The main objective of the index is to facilitate comparisons between the banks and to indicate the areas where the communication policies of central banks vary the most.

¹ O. Szczepańska, P. Sotomska-Krzysztofik, M. Pawliszyn, Banki centralne wobec kryzysów w systemie bankowym [Central Banks vs. crisis situations in the banking system], Materials and Studies No. 179. NBP, 2004.

² The October '87 Crash Ten Years Later, FRBSF Economic Letter 97-32, October 31, 1997.

³ Cf. S.C.W. Eijffinger, P.M. Geraats, How Transparent are Central Banks, Discussion Papers No 3188, CEPS, 2002; L. Mahadeva, G. Sterne, Monetary Policy Framework in a Global Context, Bank of England, Routledge, 2000.

Structure of the transparency index

Ten criteria reflecting the central bank transparency in the area of financial stability have been selected to construct the index¹. These include:

- 1) the goal specified in the act on the central bank or another legal document,
- 2) declaration of the goal by the central bank,
- 3) publication of the financial stability report,
- 4) frequency of publication of the financial stability report,
- 5) information about the function of the lender of last resort (LOLR),
- 6) information about the terms and conditions of emergency liquidity assistance,
- 7) information about crisis management,
- 8) press release in situations of risk to the stability of the financial system,
- 9) speeches delivered by the representatives of the bank's authorities concerning the financial stability,
- 10) financial stability as a separate page on the central bank's website.

In the process of calculating the value of the index, each central bank receives 1 point for each applicable criterion. In effect, each bank may earn a minimum of 0 points and a maximum of 10 points². Equal weights have been assumed for each of the index criteria. It has been decided on purpose not to differentiate the level of significance of subsequent components and not to assign weights to each index component. It has been found disputable which component of the information policy is more important and thus should have greater weight assigned to it. A lot depends on the actual situation. For instance, in the event of a threat such as the terrorist attack on the WTC on September 11, 2001, the announcement made by the central bank that it was ready to extend liquidity to the financial markets was more important than the statutory provision on the financial stability supporting functions.

Criteria 1 and 2. Financial stability as the formal goal and declaration of the goal

Both a formal provision in the act assigning the financial stability supporting functions to the central bank and an open declaration of the bank on this issue (on the website or in official publications, such as information bulletins, reports) have been included in the index as separate components and have been assigned 1 point each.

Criteria 3 and 4. Publication of the financial stability report

Two situations related to the publication of the financial system stability report have been differentiated in the transparency index: (a) where the central bank publishes the report, and (b) where the report is published more frequently than once a year. The fact of the report being published itself and the frequency of the publications score as separate components of the transparency index. It has been resolved that a higher frequency of publication of financial stability reports is of great importance, as it allows the central bank to submit the markets with more up-to-date data, information and commentaries than in the case of the reports being published once a year.

Criteria 5, 6, 7. Crisis management

Crisis management is considered a particularly sensitive issue of the information policy of central banks. Therefore, three crises management-related situations have been differentiated in the transparency index:

- ◆ where the central bank only provides information that it acts as a lender of last resort – without any other instructions,

¹ This list does not show all possible elements. It has been resolved that the selected criteria cause the least doubts and are relatively easy to be verified – all information about each criterion is obtained from official publications and web sites of the central banks.

² A score of 10 points should be interpreted as the maximum score on the suggested scale and not as the maximum possible level of transparency of the central bank.

- ◆ where the central bank provides information about the terms and conditions of granting loans as part of its function as the lender of last resort,
- ◆ where the central bank publishes information about crisis management, going beyond the role of the lender of last resort and explaining the main principles of involvement in crisis management as well as indicating the role of other safety net institutions.

Each of the above situations has been assigned 1 point.

Criterion 8. Press release

The need for central banks to publish special announcements usually occurs in a situation of direct crisis risk. This situation recently occurred on September 11, 2001 and directly after the war in Iraq broke out. Central banks were awarded 1 point in the transparency index for publishing the announcement – regardless of whether the bank published an announcement at both occasions or only at one of them. In this case the central bank's reaction to the threat itself was taken into account, considering the fact that both situations affected particular countries and their central banks to a different extent.

Criterion 9. Governors' speeches

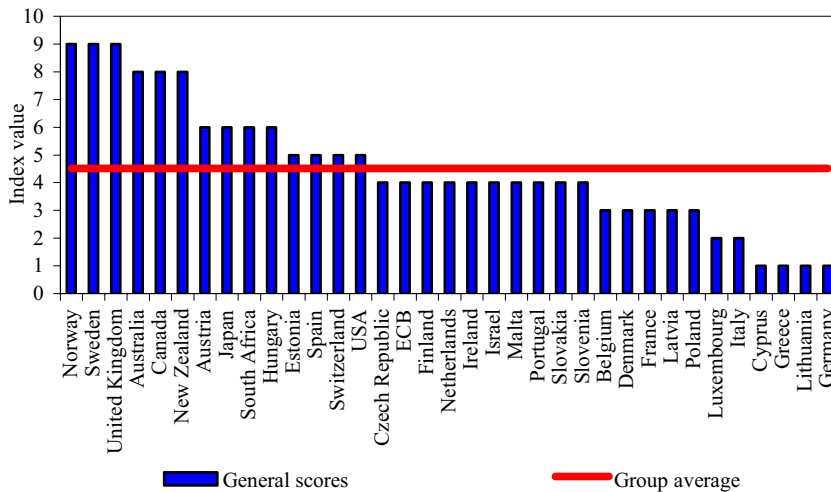
1 point has been given to the central banks in the transparency index for publishing speeches that discuss financial stability, delivered by representatives of the bank authorities.

Criterion 10. Website

1 point has been assigned to the central bank, whose website has a page dedicated solely to financial stability. It has been assumed that a separate page on the website devoted to financial stability proves that the central bank considers the financial stability to be a significant part of its information policy.

Results

35 central banks were examined: the ECB, 15 banks from the "old" EU countries (EU-15), 10 banks from the new member states (EU-10) and 9 central banks from outside of the EU. The end of 2004 has been adopted as the cut-off date for calculating the index¹.



Source: Own calculations.

Fig. 1. Transparency index

¹ Several central banks significantly improved their scores while this research was being prepared; e.g. financial stability reports were published or the structure of their websites changed.

Table 1 (continuous)

1	2	3	4	5	6	7	8	9	10	11	12
Poland	0	1	1	1	0	0	0	0	0	0	3
Portugal	1	1	0	0	0	1	0	0	0	1	4
Slovakia	0	1	1	0	0	1	1	0	0	0	4
Slovenia	1	1	1	0	0	1	0	0	0	0	4
South Africa	0	1	1	1	0	1	1	0	0	1	6
Spain	1	1	1	1	0	0	0	0	0	1	5
Sweden	0	1	1	1	1	1	1	1	1	1	9
Switzerland	1	1	1	0	0	1	0	0	0	1	5
USA	0	1	0	0	0	1	1	0	1	1	5
TOTAL	17	29	24	14	8	18	9	3	9	27	

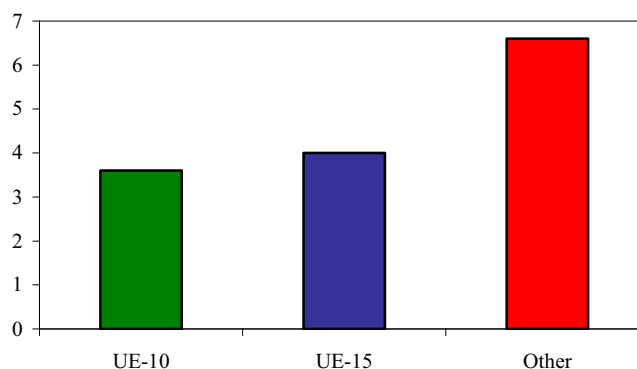
The countries can be divided into 3 groups based on the index's value:

- ◆ the banks with a low index value, between 1 and 3 points,
- ◆ the banks with a medium index value, between 4 and 6 points, and
- ◆ the banks with the highest index value, between 7 and 9 points.

Most central banks (18) obtained a medium score. The least numerous group includes the banks with the highest score (6).

In terms of their location in particular economic zones, the central banks have been divided into the following groups:

- ◆ central banks from the EU-15 and the ECB,
- ◆ central banks from the EU-10,
- ◆ central banks from other countries: Norway, Switzerland, the USA, Canada, Australia, New Zealand, Japan, South Africa and Israel.



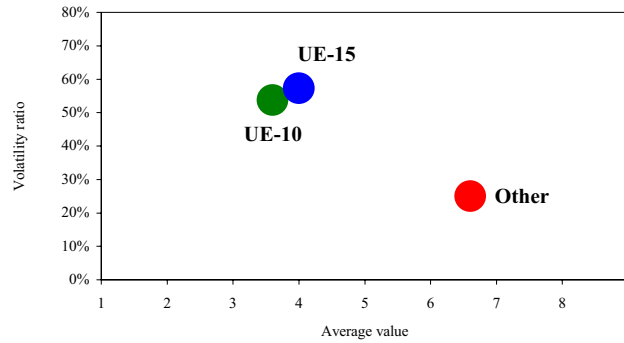
Source: Own calculations.

Fig. 2. Average transparency index for country groups

The group of central banks from outside of the EU proved to be the most transparent as regards the financial stability functions. The average value of the index in this group amounts to 6.6 points. Furthermore, the central banks from this group vary the least in terms of individual scores. The highest score (8 points) was obtained by the central banks of Canada, Australia and New Zealand, whereas the Bank of Israel obtained the lowest score (4 points).

The central banks of the new EU member states obtained the lowest average score of 3.6 points. The highest score of 6 points was given to the Central Bank of Hungary and the lowest score of 1 point – to the Central Bank of Cyprus and Lithuanian central bank.

The average score given to the banks from the EU-15 countries amounted to 4.0 points, where this group varies the most as regards individual scores. It includes 2 countries with the highest individual scores, but 7 of the central banks belong to the group of banks with the lowest score between 1 and 3 points.



Source: Own calculations.

Fig. 3. Average level and variability of the transparency index in country groups

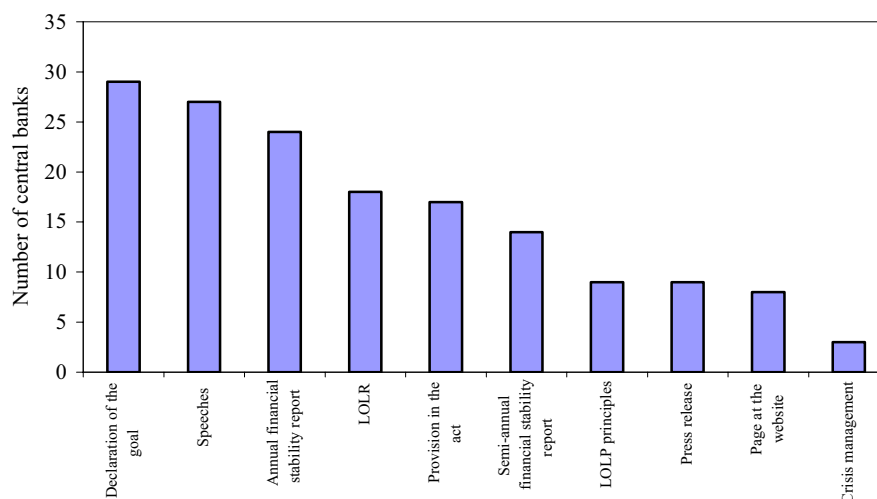
Table 2

Variability of the transparency index in country groups

Country group	Average index value	Standard deviation	Volatility ratio
EU-10	3.6	1.9	54%
EU-15	4	2.3	57%
Other	6.6	1.6	25%

Source: Own calculations.

The most frequent component of the central bank transparency index is the declaration that the financial stability is an important goal of the banks' operations (regardless of whether there is an appropriate provision in the act). In the sample under review, 29 central banks have published such a declaration. The speeches delivered by the banks' authorities (27 banks) and publications of financial system stability reports (24 banks) constitute another important component of the central bank transparency. Only 3 central banks publish information on crisis management.



Source: Own calculations.

Fig. 4. Transparency index components

Conclusions

Information policy is thought of as an active tool of achieving the central banks' goals. However, the considerable span of the transparency index, between 1 and 9 points, may mean that not all central banks equally perceive transparency and the importance of the information policy as part of the efforts to assure the stability of the financial system.

Based on a review of the banks' experiences, three factors have been distinguished, which may affect the information policy of central banks and their transparency as regards the financial stability supporting functions. These factors include:

- ◆ banking crisis experience,
- ◆ involvement in the supervision over the banking sector,
- ◆ experience in the field of transparency related to the adoption of the DIT strategy.

Banking crisis experience

The highest level (9 points) of the transparency index has been obtained by 3 central banks: the Riksbank, the Norges Bank and the Bank of England. There were these countries which experienced serious threats to the stability of the financial system in the past. The Scandinavian central banks can still vividly recall the recent course and costs of the banking crisis of the early 90s, and from this point of view, the issue of financial stability is particularly important to them. The Bank of England was also involved in the efforts aimed at restoring the stability of the financial system in the early 90s (crisis affecting small and medium commercial banks), and in resolving the crisis concerning BCCI and the Barings Bank.

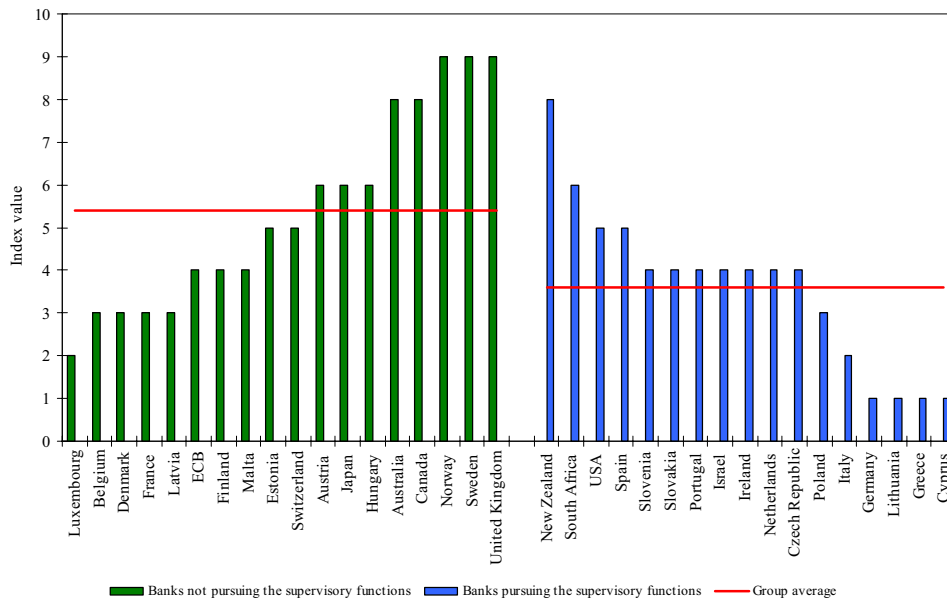
DIT strategy

All the central banks with the highest transparency index apply the DIT strategy as part of their monetary policy. A statistical analysis indicates to a relation between the value of the transparency index and the DIT strategy applied by the central bank. It may be assumed that the increased openness of the central banks, resulting from adoption of the DIT, also had an impact on the overall information policy of the banks. Experience in communication with the environment, gained as result of the conducted monetary policy, has been used by the banks in their support of the financial system stability. To this end, the central banks use the already developed and tested communi-

cation channels and tools. The financial stability reports, which may be deemed to constitute counterparts to the reports on inflation, are a template example.

Banking Supervision

On the basis of an analysis of the transparency index value for the individual central banks, a hypothesis has been formulated that the central banks which do not supervise the banking system pursue a more open information policy as regards the financial system stability than those involved in the supervision. The average value of the index for the central banks performing supervisory functions is 3.6 points, whereas the corresponding value for the central banks not involved in supervision is 5.7 points. A statistical analysis confirms the existence of a relation between the supervisory functions of the bank and the value of the transparency index.



Source: Own calculations.

Fig. 5. Transparency index – breakdown by supervisory functions

In the group of banks pursuing supervision of the financial sector, the banks publishing financial system stability reports constitute a significant minority. Out of the 17 banks in the group, only 6 (i.e. 35%) publish reports on stability, whereas out of the 18 central banks under review that do not fulfil the supervisory functions, 15 (i.e. 83%) publish the reports.

The growing transparency of the central bank is a natural consequence of its goals laid out within the framework of the monetary policy. However, the banking supervision has a different approach to transparency. It focuses on individual banks and the microprudential approach¹. This is the reason for its obligation to observe the banking secrecy, which means that it is particularly cautious about publishing any information. Thus, the nature of the tasks of the banking supervision may affect its overall approach to transparency.

It may be assumed that the central banks that are involved in the banking system supervision are still partly influenced by the supervision authorities' perception of transparency. Hence these banks are less open as regards financial stability issues.

¹ C.A.E. Goodhart, The Organisational Structure of Banking Supervision, FSI, Occasional Papers No. 1, November 2000, BIS.

Summary

The interest of central banks in the financial stability issues has significantly increased in the last decade. This trend has been accompanied by a growth in the transparency of central banks in this regard. The transparency index proposed in this article shows that the variation of the index's value for banks in the world is considerable. At the same time, however, the communication methods and tools are dynamic and change over time. According to J.C. Trichet¹, communication is an on-going challenge to central banks, hence it should be expected that the degree of transparency of the banks as regards their efforts to support financial stability will maintain its upward trend. The diversity of the instruments that central banks use to communicate with the public may also be expected to increase.

References

1. Code of Good Practices on Transparency in Monetary and Fiscal Policies, IMF, 1998.
2. Corrigan E.G., Future Priorities in Banking and Finance, Remarks before the 62nd Annual Mid-Winter Meeting of the New York State Bankers' Association, January 25, 1990, FRBNY Quarterly Review/Winter 1989-90.
3. Eijffinger S.C.W., P. M. Geraats, How Transparent are Central Banks, Discussion Papers No 3188, CEPS, 2002; L. Mahadeva, G. Sterne, Monetary Policy Framework in a Global Context, Bank of England, Routledge, 2000.
4. Financial Stability and Central Banks, Bank of England, Routledge, 2001.
5. Financial Stability Report and Financial Stability Review, NBP, www.nbp.pl.
6. Geraats P., Central Bank Transparency, Economic Journal, Vol. 112. No. 483. November 2002.
7. Goodhart C.A.E., The Organisational Structure of Banking Supervision, FSI, Occasional Papers No. 1, November 2000, BIS.
8. King M., Minutes of the Bank of England's 6th Central Bank Governors' Symposium, 4th June 1999.
9. Mishkin F., Can Central Bank Transparency Go Too Far?, Reserve Bank of Australia, Conference on "The Future of Inflation Targeting", Sydney 2004.
10. Oosterloo S., J. Haan, A Survey of Institutional Framework for Financial Stability, Occasional Studies Vol. I/No. 4, De Nederlandsche Bank, 2003.
11. Poole W., Fed Transparency: How, Not Whether, The Federal Reserve Bank of St. Louis Review, Vol. 85, No. 6, November /December 2003.
12. Report on financial crisis management, EFC Economic Paper No. 156. July 2001.
13. Schinasi G.J., Defining Financial Stability, Working Paper WP/04/187, IMF, 2004.
14. Szczepańska O., P. Sotomska-Krzysztofik, M. Pawliszyn, Banki centralne wobec kryzysów w systemie bankowym [Central Banks vs. crisis situations in the banking system], Materials and Studies No. 179. NBP, 2004.
15. The October '87 Crash Ten Years Later, FRBSF Economic Letter 97-32, October 31, 1997.
16. Trichet J.C., Communication, Transparency and the ECB's Monetary Policy, Keynote speech at the New Year's reception of the International Club of Frankfurt Economic Journalists on 24th January 2005, Frankfurt.

¹ J.C. Trichet, Communication, Transparency and the ECB's Monetary Policy, Keynote speech at the New Year's reception of the International Club of Frankfurt Economic Journalists on 24th January 2005, Frankfurt.