EUROPEAN CENTRAL BANK

EUROSYSTEM

CENTRAL BANK STATISTICS AS A SERVANT OF TWO SEPARATE MANDATES – PRICE STABILITY AND MITIGATION OF SYSTEMIC RISK

SIXTH ECB CONFERENCE ON STATISTICS
17 and 18 April 2012

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CONTENTS

FOREWORD

In April 2012 the ECB hosted its sixth biennial conference on statistics, entitled "Central bank statistics as a servant of two separate mandates – price stability and mitigation of systemic risk". The conference attracted a wide range of policy-makers, including a number of members of the ECB's Governing Council and users and compilers of statistics from central banks, supervisory authorities, statistical institutes, international institutions, academia, the media and the financial industry.

The conference provided an opportunity to discuss ways of strengthening the information basis for the fulfilment of the mandates given to the ECB and to the European Systemic Risk Board. The topics included: i) the supply of statistics in multi-purpose data collection, for both monetary policy and macro-prudential oversight; ii) the use of micro data in macro measurement and iii) issues related to the use of economic statistics by financial market participants.

I firmly believe that good data are essential for making good decisions. Producing high-quality statistics on the financial sector is a core activity of central banks, both for policy-making and for communicating their decisions and thus also for the credibility of our actions.

Today, the key challenges for the central bank statistical community concern the growing need for accurate, timely and granular data, and the necessary availability of adequate resources to address complex organisational and conceptual changes in statistics. It is vital to collect more data consolidated at the level of banking groups or insurance groups and more data to monitor unregulated financial institutions and markets. Aggregates alone are not sufficient, as policy-makers and analysts need access to the underlying micro data owing to the increased policy relevance of and emphasis being put on, data "outliers" and so-called "tail risks". Moreover, since the boundaries of the phenomena under investigation are changing quickly, a high degree of adaptability among statistics' compilers is required. An important issue in this respect concerns the confidentiality of individual data, and supervisory data in particular. In this context, conference participants discussed how to find the right balance between the need for confidentiality and the possibility of data sharing.

There is also an increasing need for statisticians to present their results in a meaningful way and to communicate clearly with users, the press and the general public. Data revisions in particular have rightly or wrongly captured the limelight and need to be explained carefully. All this entails good cooperation not only at the European level but also at the national level between central banks, statistical institutes and supervisory authorities, and requires efficient data transmission and processing between different organisations and consistency with initiatives taken at the global level.

As witnessed by the quality of the contributions collected in this book, the Sixth ECB Statistics Conference has made a significant contribution to the better

understanding of the statistical demands created by the financial and sovereign debt crises. I hope this will provide valuable food for thought for future initiatives by statisticians aimed at meeting the needs of policy-makers in the fields of monetary policy and financial stability, and I trust that other readers of this book will equally benefit from these insights.

Mario Draghi
President

PROGRAMME

1 p.m. - 2.30 p.m.	Registration and lunch reception
2.30 p.m. - 3 p.m.	**Introductory speech** Mario Draghi, President, European Central Bank
3 p.m. - 4.30 p.m.	**Session 1** **Future challenges for monetary statistics in a changing environment** Chair: Ignazio Visco, Governor, Banca d'Italia
	Muhammad bin Ibrahim, Deputy Governor, Bank Negara Malaysia
	Aycan Özek, Deputy Director Statistics Department, Central Bank of Turkey
	Discussants: András Simor, Governor, Magyar Nemzeti Bank
	José Luis Malo de Molina, Director General Economics, Statistics and Research Department, Banco de España
4.30 p.m. - 5 p.m.	Coffee break
5 p.m. - 6.30 p.m.	**Session 2** **How fit for use are statistics for macro-prudential oversight?** Chair: Choongsoo Kim, Governor, Bank of Korea
	Vítor Constâncio, Vice-President, European Central Bank
	Andreas Ittner, Executive Director, Oesterreichische Nationalbank, and Vice-Chair of the Advisory Technical Committee of the European Systemic Risk Board
	Discussants: Jean-Philippe Thierry, member of the General Council and Vice-Chair, Prudential Supervisory Authority, Banque de France
	Philipp Hartmann, Deputy Director General Research, European Central Bank
7 p.m. - 8 p.m.	Welcome reception
8 p.m.	Dinner hosted by José Manuel González-Páramo, Member of the Executive Board, European Central Bank
	Keynote speech Andreas Dombret, Member of the Executive Board, Deutsche Bundesbank

WEDNESDAY, 18 APRIL 2012

8 a.m. - 8.30 a.m.	Registration and coffee
8.30 a.m. - 10.30 a.m.	**Session 3** **Micro-foundations of macro data** Chair: Klaas Knot, President, De Nederlandsche Bank Andrea Enria, Chair, European Banking Authority Enrico Giovannini, President, National Institute of Statistics, Italy Discussants: Hugo Frey Jensen, Governor, Danmarks Nationalbank Irena Križman, Director General, Statistical Office of the Republic of Slovenia
10.30 a.m. - 11 a.m.	Coffee break
11 a.m. - 1 p.m.	**Session 4** **Financial market participants as users of economic statistics** Chair: Jozef Makúch, Governor, Národná banka Slovenska Natacha Valla, Chief Economist and Executive Director, Goldman Sachs Jens Larsen, Chief European Economist, and James Ashley, Senior European Economist, Royal Bank of Canada Claudia Buch, University of Tübingen, and Cathérine Tahmee Koch, University of Zurich Walter Radermacher, Director General, Eurostat Discussants: Adelheid Bürgi-Schmelz, Director, Statistics Department, International Monetary Fund Mark Beatson, FTI Economic Consulting
1 p.m. - 1.30 p.m.	**Concluding speech** José Manuel González-Páramo, Member of the Executive Board, European Central Bank
1.30 p.m. - 2.30 p.m.	Lunch
2.30 p.m. - 3.30 p.m.	Preview of a book on ESCB statistics to mark the twentieth anniversary of the ESCB Statistics Committee. Presentation by Peter Bull.
3.30 p.m.	Close of conference

SUMMARY OF CONTRIBUTIONS

AUREL SCHUBERT, PAOLO POLONI AND RICHARD WALTON

The themes discussed during the Sixth European Central Bank (ECB) Conference on Statistics focused on the supply of statistics for monetary policy and macro-prudential oversight, the use of micro data in macro measurement, and communicating statistics.

This introduction provides a summary of the contributions and discussions contained in the rest of this volume. The conference started with an introductory speech given by the ECB President Mario Draghi, and it was structured into four sessions:

1. Future challenges for monetary statistics in a changing environment.

2. How fit for use are statistics for macro-prudential oversight.

3. Micro foundations of macro data.

4. Financial markets participants as users of economic statistics.

Andreas Dombret, member of the Executive Board of the Deutsche Bundesbank, delivered a keynote speech between the second and third sessions, and Jose Manuel González-Páramo, member of the ECB's Executive Board, gave the closing speech. The conference offered also a preview of a book on European System of Central Banks (ESCB) statistics to mark the 20th anniversary of the ESCB Statistics Committee, which was presented by Peter Bull.

In his opening address, Mario Draghi reflected on the key statistical challenges arising from the financial crisis and the role of statisticians. He then mentioned selected initiatives aimed at filling in data gaps, bearing in mind constraints related to reporting burdens and data confidentiality.

The key challenges concern the need for very timely and granular data, and complex conceptual changes in statistics. For instance, traditional monetary statistics are unable to gather information on financial groups that operate across borders and through non-bank subsidiaries. For this reason, it is vital to collect harmonised data, consolidated at the level of banking groups or insurance groups, including dispersion measures and micro data. Cooperation among the ECB, the European Systemic Risk Board (ESRB) and the three new European supervisory authorities (ESAs) is crucial to meet the challenge of timely, frequent and high-quality data for their macro-prudential functions.

Moreover, there is an increasing need to collect more data to monitor unregulated financial institutions and markets. Indeed, the data perimeter may change again in the future.

Statisticians should also keep their work consistent with the worldwide dimension, in particular the G20 recommendations on the measurement of risks in the financial sector, international financial linkages and the communication of official statistics. The ECB President also stressed that, while public scrutiny is good for statistics, it also brings new challenges for statisticians. Alongside their more traditional role of collecting data and assisting in the correct interpretation of data, statisticians also need now to be more involved in the communication of results – to the markets, to the media and to the wider public. The role of dashboards and the narrative use of data are examples of tools where the input of statisticians is clearly essential.

As examples of statistical initiatives aimed at supporting the fulfilment of the ECB's mandate to deliver price stability and the ESRB's mandate to mitigate systemic risk, the President mentioned the development of an securities holdings statistics database, the matrix of the integrated sector accounts, and work to align ECB statistics with international statistical standards. The problems faced in such initiatives are often very complex, and progress takes time. For example, as supervisory data on consolidated group structures are currently not fully harmonised within the European Union, efforts are needed to make these data comparable across countries and across time. The quality and timeliness of such data requires efficient data transmission and processing between different organisations.

The ECB is aware of the costs borne by reporting agents and compilers, as well as the risks associated with a lack of good quality information on which to base decisions. The trade-off between these two considerations is reflected in a "merits and cost" procedure. The data collection regime should avoid multiple collection of the same information by different statistical authorities and should encourage the re-use of existing information for multiple purposes. This requires effective coordination among the authorities in charge of collecting data for monetary policy, macro-prudential and other statistical purposes. Moreover, the quality and timeliness of such data requires efficient data transmission and processing between different organisations.

Mr Draghi acknowledged that these coordination efforts were more difficult when dealing with the confidentiality of individual data, and supervisory data in particular. The protection of confidentiality is sacrosanct for all statistical activities: it is enshrined in the relevant ECB legal texts, and reporting agents are informed about the use of the confidential information they are providing. At the same time divergent practices in the protection of data and sometimes conflicting legal frameworks are not justified and are often counter-productive. Since these constraints may damage information-sharing and confuse what is confidential with what is market sensitive or what is simply inconvenient, the ECB President invited statisticians and legal experts to ensure that legal frameworks and existing practices find the right balance between the need for confidentiality and the need to share data.

Mr Draghi concluded his speech by emphasising that producing high-quality statistics on the financial sector is a core part of policy-making and the communication of decisions and thus key to the credibility of central bank

actions. Statisticians will increasingly have to produce statistics which can serve both the pursuit of price stability and the support of financial stability.

In the first session of the ECB Statistics Conference, "Future challenges for monetary statistics in a changing environment", the Chair Ignazio Visco (Governor, Banca d'Italia), began the discussion by noting the impressive progress that has been made over the past two decades in developing comprehensive, harmonised and high-quality monetary and financial statistics for monetary policy-making. Until recently, macroeconomics has paid relatively little attention to the financial sector. This was under the mistaken assumption that financial markets are perfect and that price information is sufficient for analytical purposes. Since new challenges are emerging for which new sets of information are necessary, it is important, however, to ensure interaction between financial experts and statisticians, and to provide adequate resources for statistical work.

Mr Visco highlighted the importance of interlinkages and cross-border exposures and asked the panel about their views regarding the work of international institutions in trying to provide guidance on and a harmonised framework for detecting the main links that policy-makers need to consider. Mr Visco concluded that the collection of a large amount of data from different areas is necessary, but so are the contributions coming from economists. There are many initiatives looking at the interaction between those who collect the data, those who produce the statistics and those who analyse the statistics and try to describe the complex global system.

In the session's first presentation, Muhammad bin Ibrahim (Deputy Governor, Bank Negara Malaysia) presented the lessons learned from the crisis from a global perspective, stressing that monetary policy and financial stability surveillance are mutually reinforcing (lesson 1), that surveillance must keep up with increasing financial market sophistication (lesson 2) and that better awareness of risks from greater global interconnectedness is necessary (lesson 3).

He noted that the crisis had revealed information gaps in terms of coverage, granularity, timeliness and standardisation of data and he commented on some current initiatives. Surveillance for monetary policy purposes and surveillance for financial stability purposes are broadly similar in coverage, but the latter normally requires more granular data. Data collection should, therefore, be undertaken with sufficient flexibility in data dimensions for the information to be organised to meet the surveillance needs of both monetary policy and financial stability.

Mr bin Ibrahim's view was that statisticians should be proactive in identifying and collecting indicators in an evolving environment, and that there is a need for collaboration between statisticians, policy-makers, supervisors and economists. His paper also discussed current initiatives to meet data needs and whether they are sufficient. Moreover, it offered some principles to guide the process of designing, compiling and disseminating statistics.

On the statistical implications of some central banks moving from monetary targets to inflation targets, Mr bin Ibrahim made the point that Bank Negara Malaysia does not target inflation, but focuses on both monetary and financial stability. Indeed, the revamp of Malaysia's Central Bank Act formalised the important role of financial stability. Mr bin Ibrahim also commented on the Asian experience. First, there is the very welcome initiative by the supervisory colleges in Asia to divide banks into two groups: those with cross-border linkages within Asia and those with linkages to countries outside Asia, allowing the sources of risk that could originate from those two groups to be assessed separately. Second, regarding cross-border liquidity arrangements, liquidity access at any point in time and against any collateral is provided to banks with cross-border activities through bilateral operations, which has proved to be very useful.

In the second presentation of the Session, Aycan Özek (Deputy Director, Statistics Department, Central Bank of Turkey) noted that, following the financial crisis, new statistical needs had emerged and existing data gaps needed to be closed. The quality of central banking statistics should be improved, covering different phases of the statistical process, such as design, interpretation and communication. Data compilation approaches should be flexible enough to cope with future challenges arising from innovations in the financial system.

Ms Özek emphasised that the impact of the crisis had varied across countries, depending on the initial conditions of their economies, so priorities should be set which take into account their different needs. In this regard, she shared her experience of filling data gaps by providing concrete examples of how the Central Bank of Turkey continues to work on broadening the coverage of financial sector data, providing a breakdown of new instruments, and improving the quality of monetary and financial statistics, in order to better support the changing monetary policy framework and to meet the increased focus on financial stability. Her paper discussed, in particular, studies on national financial accounts and the security-by-security database on government issues.

Ms Özek also stressed the importance of sectoral accounts in identifying interlinkages between sectors and for cross-border analysis, as highlighted by the recent crisis.

András Simor (Governor, Magyar Nemzeti Bank), as discussant of the previous speakers, agreed with Ms Özek that priorities in statistics differ from country to country. He also appreciated Mr bin Ibrahim's presentation, which highlighted the linkages and synergies between monetary policy and financial stability. He noted that, while monetary and financial statistics have to follow the needs of central banking and provide an adequate basis for monetary policy decisions, over the last decade the main tasks of central banks and the methods used to carry them out have evolved. Moreover, one of the most important lessons learned from the crisis is that new statistical requirements have emerged for macro-prudential oversight purposes. The increasing data needs of various users (e.g. financial stability) are raising the question: what is the definition of monetary statistics? With the decreasing importance of monetary aggregates, the definition of monetary statistics needs to be reconsidered. Monetary statistics

are much more than statistics on the balance sheets and interest rates of central banks and monetary financial institutions. Monetary statistics should provide information not only on all sub-sectors of the financial sector, including insurance companies, pension funds, investment funds and other financial intermediaries, but also compile data series adequate for macro-prudential oversight and for other purposes. Mr Simor provided some examples of user requirements for new, or more detailed statistical information: 1) statistical information regarding government bond, swap, uncovered loan, repo, and FX spot transactions; 2) financial accounts statistics; and 3) data on derivative transactions.

On the role of monetary statistics under an inflation targeting regime, Mr Simor stressed the importance of the drivers of the transmission channel. He pointed out, for example, that in a small, open economy like Hungary, with high levels of household and corporate debt in foreign currency, the exchange rate plays an important role. He believes that monetary statistics should serve the needs of policy-making, but, beyond that, the analysis and breakdown of balance sheet data for the whole banking system could become even more important than pure monetary aggregates.

He concluded that supporting monetary policy and financial stability simultaneously in a cost effective way is very challenging for monetary and financial statistics.

The second discussant in this session, José Luis Malo de Molina (Director General Economics, Statistics and Research Department, Banco de España) agreed with Mr bin Ibrahim that one lesson of the crisis was the increased interconnection between monetary policy and financial stability. Even though monetary policy should not be the first line of defence against financial instability, he supported the thesis that it needs to be made more flexible by applying one of two opposite strategies – "leaning against the wind" or "mopping-up after" – depending on the specific circumstances. This flexibility is very demanding in terms of statistical requirements. The "leaning-against-the-wind" mode requires misalignments and macro-financial imbalances to be identified well in advance. For that to be feasible, the central bank would need to have at its disposal, inter alia:

• comprehensive aggregate information on monetary and financial variables, particularly on credit aggregates;

• exhaustive data on asset prices, including housing prices;

• micro data on households and non-financial corporations; and

• information on structural changes in the financial system.

While the above may look, at first glance, like the minimum standard "shopping list", the crisis has revealed the existence of many "information gaps" in the euro area, both from a strategic perspective and from the perspective of Eurosystem initiatives to fill them. He concluded his presentation by stressing that the interlinkages between monetary policy and financial stability should lead to close

cooperation between macro-prudential and monetary authorities, including in the field of information sharing.

Mr Malo de Molina emphasised that the priority for monetary policy is price stability, but that financial stability is also crucial for monetary policy to play its role in the context of a crisis. Unlike in the past, the contribution of monetary policy to financial stability now goes beyond ensuring price stability. This also explains the non-standard measures used by central banks to repair transmission mechanisms during the financial turmoil. From a statistical point of view, this implies that the conduct of monetary policy needs more than just aggregated data. The sharing of firm-level information is something that should be arranged within the framework of the institutional relationships between central banks, macro-prudential authorities and micro-prudential supervisors.

In the second session of the Conference, "How fit for use are statistics for macro-prudential oversight?", the Chair, Choongsoo Kim (Governor, Bank of Korea) spoke of the importance of the initiatives to globally define and collect comprehensive and harmonised data for macro-prudential surveillance. The latter comprises the identification of vulnerabilities; the availability of a comprehensive set of financial stability tools and concepts; and appropriate institutional arrangements. These three elements were clearly missing before the recent financial crisis. Moreover, since there is no formula to measure systemic risk, there is no assurance that currently available data will suffice in the future.

Vítor Constâncio (Vice-President, European Central Bank) focused his presentation on the data needs for macro-prudential analysis. He stressed that the financial crisis has demonstrated the need for a coherent and well-articulated macro-prudential policy framework at the national, European and global levels. In this respect, it had exposed deficiencies in the information base on which macro-prudential oversight was conducted.

First, he recalled that the macro-prudential oversight function consists of three main components: 1) identification of important sources of risks and vulnerabilities; 2) assessment of the potential costs should some combination of the identified risks and vulnerabilities materialise; and 3) the possible policy response. He then summarised the considerable progress being made in the enhancement and development of new statistics at the euro area, EU and global levels. Specifically, at the euro area level, he recalled the work on securities holding statistics and the centralised securities database. These initiatives can contribute to providing a better picture of interconnectedness in the financial system and in each sector of the economy. In the context of the ESRB, he recalled that data-sharing agreements had been put in place to allow the regular provision of aggregated information to the ECB in support of the ESRB's work by the three ESAs – the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). A number of datasets have already been, or are about to be, made available by the ESAs, and cooperation is under way to ensure that the new legislative initiatives of the ESAs incorporate ESRB requirements to the extent that they can be addressed by using supervisory data. Moreover, the

ECB's own legal powers in the field of statistics have been extended to cover its financial stability function.

Mr Constâncio underlined the need for a change in the financial stability surveillance paradigm, by moving towards a better and more comprehensive disclosure policy for financial institutions. This change would also provide a concrete signal of increased transparency to market analysts and participants, but would require considerable changes to the existing confidentiality regime. He also flagged a number of data gaps that prevent the proper monitoring and assessment of systemic risks. A range of important data was needed for macro-prudential analysis relating to firm-specific data on financial firms. More data were also needed on securities-financing transactions, financial conglomerates, the activities of the shadow banking system, and over-the-counter (OTC) derivatives markets. Mr Constâncio was clear that sufficient information had indeed been available to foresee the financial crisis. Moreover, the development of the crisis showed that there were also many grey areas, e.g. as regards the credit default swap market (who was ultimately liable?), the repo market and the "shadow banking" (or non-regulated) sector. He reflected that some data were not provided because, at the time, there was no demand for them; no one knew they were needed.

Andreas Ittner (Executive Director, Oesterreichische Nationalbank), in the second presentation, addressed the challenges posed for statistics by macro-prudential oversight and the ways to respond to those challenges, including future tasks for policy-makers. First, he described the main features of the Austrian financial system, its supervisory structure and the integrated financial stability analysis conducted. He agreed with Mr Constâncio that macro-prudential oversight calls for an extensive dataset that is partly not covered by current reporting frameworks, for timely and consistent data of high quality, and for macro- (or aggregate) and micro-level datasets.

He explained that in order to meet fundamental changes in data demands, the Oesterreichische Nationalbank (OeNB) is implementing an integrated common data model and an efficient and flexible data structure to cope with multiple requirements in statistics, in supervision and in public disclosure. The OeNB decided to delve deeper into the data, increasing the granularity, and thereby capturing and defining data input at a level of detail which makes it possible to cope with partly different output definitions. This data model which has been inspired by solutions used in other countries, such as Italy, Finland and Slovenia, aims to ensure a precise, simple and unambiguous definition of information relevant for reports. It also allows an improvement in data timeliness in the medium term. The model is rather complex and has implied an adaptation of the organisational structure for statistics.

These changes in the data content and in the organisational structure have positioned the OeNB's Statistics Department as a centre of expertise and competence for all financial statistics and their analysis in Austria (creating a "one-stop shop"). A consistent implementation of the "one-stop shop" idea is intended to ensure that all financial data required for macro-prudential analysis

are collected and stored in an effective and efficient way in one place and made available to users in a timely manner and with high quality. Moreover, since a strong micro-prudential basis is essential for systemic risk monitoring, the new data model may also enable users to integrate data more effectively and at different levels of granularity.

Mr Ittner emphasised that data gaps were not the most important factors in the recent financial crisis, but rather, the lack of a comprehensive macro-prudential assessment framework and the prevailing financial market dogmas (e.g. market efficiency and self-regulation). New data requirements should be carefully assessed to avoid "overdoing it" and introducing an unnecessary reporting burden.

The discussant, Jean-Philippe Thierry (Member of the General Council and Vice-Chair, Prudential Supervisory Authority, Banque de France), provided some insights from a Banque de France perspective on the use of statistics for macro-prudential purposes. A better use of the information available is one of the main challenges for financial stability. He pointed out some avenues to improve the statistical function, namely to work towards quality, relevance and adaptability to changing circumstances. Moreover, continuous efforts should be devoted to monitoring the quality of already existing indicators or of new ones. Their predictive power should be measured against past crises, which calls for long and consistent historical time series which would allow the identification of specific events, such as extreme shocks.

Statistics should be an essential part of the toolbox to develop the financial education and awareness of the general public and decision-makers. In this context, statistics functions in central banks and international organisations have a key responsibility in enhancing the dissemination of information. Central banks also have the responsibility of ensuring that the business models of statistical functions remain suitable and efficient. This is linked with the public good of statistics. Indeed, there is a need for statisticians to play the role of interface between users and reporters, which requires a wide range of skills to understand the requirements of the former and the constraints of the latter. The need to invest in such fields is well recognised in times of crisis, but should also not be forgotten in calmer times.

Close interaction between the various areas involved in statistical issues should be promoted (research, economics, monetary policy, financial stability, payment systems and market operations), since modern statistics cross-check micro and macro analyses in order to deal with economic issues as effectively as possible. International fora in which data users can interact with data producers should be developed. A good example in this regard is the Irving Fisher Committee.

In his concluding remarks, Mr Thierry emphasised that making better use of available information is one of the main challenges of financial stability. In view of the irreplaceable knowledge contained in existing information, statisticians have a key role to play in macro-prudential analysis. The statistical function should therefore pass from the "back office" to the "board room".

Philipp Hartmann (Deputy Director General Research, European Central Bank) discussed the issue from a research angle. In his view, financial stability analysis and tools are currently comparable to those used in monetary policy in the 1950s. Further research and empirical analysis would therefore be beneficial. To carry out such an analysis, additional micro (panel) data would be needed, for example, as regards the mortgage market, credit aggregates and the various financial intermediaries.

Andreas Dombret (Member of the Executive Board, Deutsche Bundesbank), delivered his keynote speech on "Macro-prudential surveillance and statistical challenges" during the conference dinner. He began by saying that statistics for macro-prudential surveillance should follow four principles: i) data requests should be analytically driven; ii) micro and macro data should be reconcilable; iii) single entity and consolidated data are equally important; and iv) data "gaps" should stay on top of the statistical agenda. Europe is setting high standards for macro-prudential surveillance, based on three key elements: i) a legal mandate for safeguarding financial stability; ii) macro-financial analysis requirements which include all relevant statistics to deliver early warnings and clear recommendations; and iii) additional responsibilities for central banks. At the European level, he saw a need to reconcile the goal of completing a Single Market for financial services with the need for flexibility in addressing country-specific or sectoral risks. This is what was guiding the implementation of national macro-prudential oversight in Germany.

Mr Dombret illustrated the provision of granular data, for micro and macro analysis. A case in point is the Centralised Securities Database (CSDB) of the ESCB and the new ESCB project to develop a securities holdings statistics database. Furthermore, data were required on a single-entity and consolidated basis, to focus on the corporate and in particular the interrelationship between branches and subsidiaries.

Mr Dombret found two areas of data "gaps" particularly challenging: i) the lack of transparency and need for improved statistics on the "shadow banking" sector; and ii) the scarcity of insurance statistics. Regarding statistics on the "shadow banking" sector, there was an urgent need for central banks to be given an extended mandate for the collection of data, not only from banks but also from non-bank financial institutions. In the short-term this involved i) an extended analysis of flow of funds data which was currently underway at the International Monetary Fund (IMF) and ECB, and ii) the analysis of disaggregated counterparty sector balance sheet statistics with other financial entities. He noted initiatives, in the context of the Bank for International Settlements (BIS) consolidated banking statistics, where positions vis-à-vis "other financial institutions" were identified separately, and the collection of detailed counterparty data in other BIS surveys, notably OTC derivatives statistics, where data on credit default swaps were broken down into, among others, positions vis-à-vis insurance firms, special purpose vehicles (SPVs) and hedge funds. With regard to hedge funds, the operational definitions have proven to be difficult to agree on, so the issue of classification has been left to the discretion of reporting agents, which was far from the optimal solution. The Deutsche Bundesbank, therefore, was calling for the development of an international business register.

The scarcity of insurance statistics had prompted the Eurosystem to launch an initiative geared to setting up new statistics on insurance companies and pension funds at the European level. Even after the implementation of Solvency II, blind spots will continue to exist. For instance, there will be no new data on pension funds. Moreover, data timeliness and data frequency will have to be improved significantly. This means that there is still need for an additional ECB regulation on insurance statistics.

The case for a statistical cooperation, accountability and responsibility between statistical institutions was strong. Mr Dombret was clear, in this regard, that, in the current debate on the future of the Committee on Monetary, Financial and Balance of Payments statistics (CMFB), everyone in Europe fully appreciated the immense value of good partnership. The CMFB is not only a body, but rather a concept, and he was sure that no one in Europe would understand why it should be a good idea to abolish the CMFB, especially in times like these, when a strengthening of its role is absolutely necessary.

The third session, "Micro foundations of macro data", was introduced by its Chair, Klaas Knot (President, De Nederlandsche Bank). He reflected that every new crisis provoked calls for more and better information. A major insight gained from the recent crisis is that statistics at the aggregated level offer an inadequate perspective on the risks present in the financial system, and we have only a limited understanding of the interdependencies and mutual cross-links that exist within the financial system, i.e. of the systemic risk. Macro aggregates on, for instance, solvency ratios, mask underlying distributions and hide potentially destabilising tail risks. We should make effective use of micro information, to better understand macro-prudential risks. One such initiative is the common data template for global systemically important banks, developed by the Financial Stability Board (FSB) at the request of the G20. Access to high-quality and consistent information on financial linkages and concentrations of exposure reinforces both micro- and macro-prudential supervision, and supports crisis management. Other examples are the Key Risk Indicators (KRIs) and the EU-wide stress tests of the European Banking Authority (EBA). Within the ESCB, the development of statistics on the holders of individual securities, based on the CSDB, is a significant step towards providing more insight into existing exposures. The development of a Legal Entity Identifier (LEI) and of registers such as the Register for Institutions and Affiliates Database (RIAD) will further facilitate the development and interpretation of micro statistics.

These initiatives require integration within existing frameworks to enhance international comparability and consistency, and a model of data sharing between regulators at both the national and international level – facilitated by eXtensible Business Reporting Language (XBRL) and Statistical Data and Metadata eXchange (SDMX) standards – would enhance the effectiveness of prudential policies. The efforts of the EBA and the European Insurance and Occupational Pensions Authority (EIOPA) to create uniform EU-wide supervisory reporting standards are fully in line with this principle. Initiatives that do require a new reporting framework should be coordinated as much as possible.

As regards micro-data exchanges, the EU supervisory system may benefit from the experience gained in over ten years by statisticians within the ESCB. During recent years in particular, progress has been made within the statistical system regarding the ability to exchange micro data among central banks and between central banks and the ECB. This has taken time and effort, and the confidentiality of individual parties' information is firmly embedded in the statistical legal framework. The FDI Network is an example of how sharing micro information can promote the quality of statistics. For financial stability purposes, it is intended to start exchanging data on the securities holdings of large banking and insurance groups within the ESCB.

Regarding confidentiality, Mr Knot noted that many of the confidentiality rules are outdated, but at De Nederlandsche Bank, full access is provided to statistical micro data in the interest of prudential supervision within the central bank at both the micro and macro level. Conversely, micro-supervision reports are used for statistical purposes and for macro-prudential policy.

In his concluding remarks, Mr Knot referred to a situation in which all regulatory authorities in Europe acted as one single system, within which information was freely shared. Looking back, a few decades from now, the structural and effective use of micro information may be regarded as one of the key achievements that came out of this crisis.

In the session's first presentation, "Micro data for micro- and macro-prudential purposes", Andrea Enria (Chairperson, EBA) made a case for the effective use of all available information for the pursuit of micro- and macro-prudential objectives. In particular, he argued that micro-prudential data of intermediaries can serve two different purposes to the extent they are based on common definitions and harmonised reporting standards. It is very important to agree on harmonised formats for financial reporting. Harmonisation of the reporting framework – the form and content of disclosure – is a high priority for macro-prudential analysis. He gave the example of the implementation of COREP and FINREP. The former has a basis in the Capital Requirements Directive and Regulation, which provide a common regulatory framework for all reporting institutions. The EBA is strongly committed to delivering a European reporting framework, by developing a draft implementing technical standard (ITS) on supervisory reporting which sets standards for uniform supervisory reporting. The ITS will cover the reporting of capital adequacy, financial information, liquidity, large exposures and leverage ratios and will specify uniform formats, frequencies and reporting dates as well as IT solutions to be applied by credit institutions and investment firms across Europe. The draft ITS – which was the subject of a public consultation in the first quarter of 2012 – will be submitted to the European Commission next summer and will enter into force in 2013.

With regard to the dissemination of micro data, the EBA has made significant efforts to increase transparency. In 2010 the EBA started publishing the results of the EU-wide stress tests and in 2011 released a broad set of information on the banks participating in the exercise. Thanks to a common data structure – disclosed ahead of the publication of the results – market participants were in a position to

perform their own analyses, understand the drivers of the stress test results, and simulate the impact of alternative assumptions. To some extent, the stress test – which is mainly a supervisory tool – has also been used to fill information gaps created by poor disclosure practices. Furthermore, a set of principles has been issued to further improve the quality of banks' public risk disclosure.

Mr Enria looked forward to the disclosure by banks of financial information based on common definitions and according to fully harmonised templates. A strengthened Pillar 3 is crucial, but disclosure of banking data should go well beyond Pillar 3, including, for instance, detailed information on asset quality. In that respect, the EBA may play a role in setting up a pan-European data hub, bringing together in a common database the reports of top EU banks.

Finally, the mandate of the EBA covers the development of the single rule book ensuring that banks in different Member States are subject to the same requirements, apply them in virtually identical ways, and report to their national supervisors and according to common frameworks. Once the single rule book is in place, no significant differences will distort the assessment of risks: micro-prudential supervision will benefit from highly comparable data, macro-prudential surveillance will benefit from data that can be aggregated consistently, and they will both become more reliable and timely.

The second presentation during this session was delivered by Enrico Giovannini (President, Italian National Institute of Statistics). In "Micro foundations of macro data – increasing data quality and exploiting the 'true wealth' of national statistical institutes", he discussed: i) the use of micro data to generate macroeconomic and social statistical information, and several initiatives undertaken by national statistical institutes (NSIs) and Eurostat concerning statistical micro data; ii) some new ways of using micro data in national accounts; iii) similar opportunities in the field of short-term economic statistics; iv) the use of micro data in structural business statistics and in the development of statistical registers; and v) opportunities to evaluate the impact of macroeconomic policies and risks in the use of micro data for statistical and research purposes, especially in the context of the European Statistical System (ESS).

The "Italian approach" to estimating national accounts, based on the integration of different sources at the micro level was fundamental, especially for small enterprises, in the estimation of underreporting and to overcome inconsistencies between different sources, for example concerning employment figures, which were used to estimate irregular working positions. More recently, with the development of European regulations on structural business statistics (SBS) and international trade, direct use of micro data is both necessary, because estimation domains used by national accounts are different from those established by legislation concerning SBS, and beneficial, because the process used to improve the quality of national accounts estimates with the aid of survey data complements the process of the survey itself, resulting in greater accuracy and improved quality. More recent examples of integration are in household accounts, social accounting matrices and the income-based measure of human capital. A significant enhancement of micro-level estimates is now underway

at the Italian National Institute of Statistics, using more detailed data on educational attainments and further integrating individual records with micro-level information on sectors of activity.

Integration is also being used in other fields of economic statistics. The examples given included analysis of inflation using data on the consumer price index (CPI) and linking export and business registers to assess the impact of exogenous shocks. For structural economic analysis, there were several examples of collaboration within the ESS, between NSIs and research centres, including the Blue Enterprises and Trade Statistics (BLU-ETS) project, which addresses research on and dissemination of improvements in business data collection, accessibility and re-use across the EU. Another example was the ESSLimit project, in which 15 European NSIs participate, which gathers information from different sources with the aim of exploring the relationships between information and communication technology (ICT) usage, innovation patterns and enterprise dynamics, and of producing multi-source indicators for Eurostat on these issues. Aggregated micro data are shared within the group for common research, and the setting up of a repository for micro-aggregated information open to external researchers is envisaged. Changes in collection techniques, improvements in archives and more extensive use of administrative sources allow for longitudinal analyses. In several EU countries, labour force surveys permit the tracking of patterns in labour market dynamics at the micro level by comparing the occupational status of single units over time.

A remarkable prospective improvement in the area of business registers is promised by the Euro Groups Register (EGR) project led by Eurostat, which is creating a network of national business registers focused on multinational groups. It will become the coordination frame for all European statistical authorities, NSIs and national central banks (NCBs) for sampling populations in the production of statistics on globalisation, starting from statistics on foreign affiliates (FATS) and on foreign direct investment. It will offer statistical compilers access to integrated, up-to-date register data on multinational groups with a presence in Europe.

Under "further developments", Mr Giovannini discussed access to micro data for research purposes and national data archives. He pointed to a specific threat to the availability of micro data, presented by the Commission proposal for a General Data Protection Regulation (COM(2012) 11 final). This Regulation is aimed at simplifying and unifying the current legislative setting and at the same time reinforcing protection for citizens, but it unintentionally creates some serious concerns for data producers – NSIs in the first place, but also central banks – which affect both policy-makers and the research community. More generally, there are two serious obstacles to the better exploitation of the potential of existing micro data for statistical and research purposes. The first obstacle is due to the separation between the ESS and the ESCB, which means that the exchange of micro data between NSIs and NCBs can still be complicated. In some countries, the exchange of micro data is left to agreements established at national level, if the legislation allows for this possibility. In Italy, for example, this is the case for non-anonymous data, and this limitation has a

clear impact on the efficiency of statistical activities and on the quality of results. It is important to address this issue in the forthcoming revision of the European Statistics Regulation (Regulation (EC) No 223/2009). A second serious obstacle to the improvement of European statistics is the absence of legislation that allows the free exchange of statistical micro data between NSIs participating in the ESS. In the view of Mr Giovannini, these limitations mainly come from the weakness of the institutional framework in which European NSIs and Eurostat work. The only way to build a strong ESS is to mirror the structure of the ESCB and to transform the current ESS into a European system of statistical offices (incorporating all the NSIs and Eurostat).

The key messages of the discussant Hugo Frey Jensen (Governor, Danmarks Nationalbank) on the paper by Mr Enria, "Micro data for micro- and macro-prudential purposes", were that: 1) harmonisation and comparability of reporting frameworks – consistent definitions and methodologies – for macro-prudential purposes are desirable in order to obtain more comparable data; 2) future data needs should focus on micro data of counterparty sectors of financial institutions to enhance interconnectedness and, in particular, the coverage of the "shadow banking sector", maturity and liquidity mismatches and leverage, data on new financial products and on financial markets, and exposures through derivatives and innovative forms of funding; and 3) efficiency in statistical collection and dissemination should encompass: a) more sophisticated models for the checking of more granular data – security-by-security and loan-by-loan – which are closer to banks' internal models and may therefore reduce the reporting burden, and b) the sharing of confidential data, disseminating statistical aggregates which describe the micro foundations of the aggregates, including distributional statistics and analyses based on micro data.

Experience has shown that detailed data for regular statistical reporting on a consolidated basis and supervisory data are the two main sources of micro data on financial institutions. Both sources are important for the purpose of enhancing data coverage for macro-prudential analysis. The work on reconciliation of reporting requirements for statistical and supervisory purposes is important, and Mr Jensen was pleased that the EBA and the ECB have decided to renew the mandate of the Joint Expert Group on Reconciliation of credit institutions' statistical and supervisory reporting requirements (JEGR). Understanding and, ideally, also reducing the differences between reporting for statistical and supervisory purposes will provide more uniform access to data. The next step could be to consider the value added of further integrating the reporting platforms used for the two types of reporting.

Mr Jensen discussed two examples of the use of micro data for the assessment of financial stability: the financial situation of households (through a study in Denmark on household-level data on income, assets and debt) and the use of micro data on securities holdings. With respect to securities statistics, he welcomed the initiative to establish a common European database of issuers and holders of securities to complement the CSDB. Such a database has the potential to become a very powerful tool for the assessment of exposures to counterparties and of the liquidity and solvency of individual financial institutions as well as of

the financial system. Data should be shared on an ad hoc basis and aggregates could be shared on a more regular basis.

Finally, sharing of confidential data among public institutions is an important issue. Central banks, supervisory authorities and international organisations may develop alternative arrangements for information exchange, subject to the introduction of suitable arrangements to protect sensitive information. To this end, clear policies governing access and data sharing will be needed.

Irena Križman (Director-General, Statistical Office of the Republic of Slovenia), in discussing the paper by Enrico Giovannini, "Micro foundations of macro data – increasing data quality and exploiting the 'true wealth' of national statistical institutes", posed the following questions: 1) Do we need common institutional legislation for the ESS and the ESCB regarding European statistics? 2) Should an obligation for the exchange of confidential micro data be included in the revision of the European Statistics Regulation? 3) Do we need more trust and cooperation between the ESS and the ESCB and, in this context, what would be the new role of the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB)? 4) Are the inhibitions regarding the exchange of micro data focused more on the separation of supervision and statistics in central banks?

Ms Križman concentrated on the exchange of micro data between the ESCB and the ESS. Owing to national legislation and working practices, the exchange of confidential micro data between the two systems is very limited. The reasons lie in legislative and organisational barriers, cooperation modes and probably also in a lack of mutual trust between the institutions, at both national and European level. While the former can be addressed through legislation, the latter cannot be made legally binding, but can be achieved only through cooperation, respect, and an understanding of the culture and needs of the other institution.

Slovenia has managed to remove barriers, implementing good practice from the legal point of view and establishing mutual trust between the central bank and the statistics office. The Bank of Slovenia is an important partner of Statistics Slovenia in 1) the production of macroeconomic and financial statistics, 2) the provision of micro data for research, and 3) the use of micro data for research by the Bank of Slovenia.

In Slovenia, the National Statistics Act allows the exchange of confidential micro data for statistical purposes. In many other EU Member States this is not the case. This has implications not only for the exchange of micro data between the ESCB and the ESS, but also for the exchange of micro data within the ESS. Slovenia recognises the need for a "general exception" for statistical data in the Commission's proposal for a General Data Protection Regulation.

Ms Križman encouraged further work in harmonising reporting requirements for statistical and supervisory purposes. She pointed out that data consistency at the micro level is undoubtedly a prerequisite for high-quality aggregates and, therefore, it is important to encourage further harmonisation across the EU in this respect, and she referred to the work of the ECB in the reconciliation of

the statistical and supervisory data requirements in the JEGR. As a number of countries – including Slovenia – have already achieved considerable results in respect of decreasing the reporting burden in joint data reporting of financial institutions at national level, the continued pursuit of these goals is strongly recommended. The increased cooperation between the supervisory bodies and statisticians in the EU is to the benefit of both data providers (saving costs) and data users (having integrated data of increased quality and applicability).

The final session, "Financial market participants as users of economic statistics", was introduced by Jozef Makúch (Governor, Národná banka Slovenska). He invited the audience to consider the communication and presentation of data to users and the needs of those users, including their clear understanding of the data received.

Natacha Valla (Chief Economist and Executive Director, Goldman Sachs), in her review of "Financial market participants as users of economic statistics", addressed the issue of the current need for statistics in the areas of public finance, monetary policy and structural reforms. The main challenge in the area of public finance statistics is to assess with clarity the definition of the public sector and to understand public sector accounting in this context and the context of national accounting methodology in the ESA 95, and thus to provide impartial and comparable data on and revisions to, public deficits and debt and structural deficits in excessive deficit procedure accounting. As regards structural reform data, Ms Valla noted the importance to markets of ensuring careful and correct evaluation of progress in correcting macroeconomic imbalances and monitoring the economic effects of structural reforms, but with a higher, close to real-time frequency. Finally, improving the availability of statistics on the structure of central bank balance sheets, collateral provided, risk allocation within the ESCB, and counterparties in refinancing would facilitate an improved assessment of the risk borne by central banks.

In "How things have changed – financial market economists as users of economic statistics", Jens Larsen (Chief European Economist, Royal Bank of Canada) and James Ashley (Senior European Economist, Royal Bank of Canada) argue that, since the onset of the financial and sovereign debt crises, the way statistical data are used by financial market macroeconomists has changed substantially from a narrow interpretation of the data in the context of a canonical economic model. There is a strong case for moving the emphasis away from the provision of high-frequency updates of macroeconomic variables, and towards a broader provision of data which are comparable across country, sector and time. Better access and presentation should also be given higher priority.

As the economic environment has changed, financial market economists have become more demanding of improvements in the accessibility, presentation, coverage and comparability of data. They require access to higher-quality data, comparable across country, sector and time, and a better presentation of more complex and richer datasets in accessible, interactive formats to provide a broader-based narrative, rather than an increasing number of high-frequency indicators. The ECB interactive and dynamic yield curve tool is an example of

how complex, multi-dimensional data can be made available in a user-friendly format. A financial market economist's job can be made easier if the providers of statistics continue to provide more of the same, while striving – as ever – to raise the overall quality of the statistics being produced. Who would not want more timely GDP estimates that are less prone to revisions?

In the light of pressure on resources and changing priorities, there are arguments for reconsidering whether the current trade-off between timeliness and accuracy of statistics is optimal. Mr Larsen and Mr Ashley venture that there would be few complaints from financial market economists if, in certain specific cases, data were less timely but more accurate as a result.

European statistical provision is comparatively well-advanced, but even here there are gaps in what we consider basic macroeconomic statistics that need filling. One example is the lack of comparable and comprehensive data on the income side of the national accounts. This is important in telling the story of how the key sectors in the economy are responding to crisis conditions. These data are even more relevant when looking at individual economies across the euro area, and the lack of up-to-date and harmonised information across euro area economies has long been problematic in analysing deleveraging of the private sector across large swathes of the euro area. The absence of comparable and comprehensive statistics across economies in a timely fashion presents a significant challenge, and our analysis suffers.

Other such examples include the ECB balance sheet, and, at a time when the Eurosystem's balance sheet is expanding significantly, it remains a tricky task to assess the balance sheets of individual euro area central banks on a comparable basis.

The authors of "Causes and effects in international banking – what can we learn from micro data?", Claudia Buch (University of Tübingen, IAW and CESifo), Cathérine Tahmee Koch (University of Zürich) and Michael Koetter (University of Groningen), analyse all modes of entry into foreign markets, not only entry through mergers and acquisitions. The authors found that being active in a large number of countries increases rather than decreases bank risk. Understanding the risk/market power trade-off for internationally active banks is crucial for policy-makers. Another finding of this study is that the greater the volume of a bank's foreign assets, the greater its market power at home.

In "Economic statistics at the service of financial market participants", Walter Radermacher (Director General, Eurostat) highlighted the increasing demand for timely and detailed financial statistics, public finance statistics and economic statistics. Among the frameworks that meet such a need is one of coherent and consistent financial and non-financial statistics, which at the European level is represented in the shape of the quarterly Euro Area Accounts as a joint product of Eurostat and the ECB. Furthermore, the public statistical system remains indispensable in producing macroeconomic statistics on flows or stocks, since no private agent can have access to all the resources needed to develop financial statistics for a country or a region. In order to meet the needs of financial

market participants and analysts, Eurostat, in cooperation with the ECB and the European Commission Directorate General for Economic and Financial Affairs (DG ECFIN), publishes many macroeconomic indicators in the main areas of analysis – the Principal European Economic Indicators (PEEIs). In addition, in the context of promoting smart, sustainable and inclusive economic growth under the Europe 2020 Strategy, it is important to emphasise two processes for which timely and high-quality statistics are essential: first, the monitoring of public finances in the excessive deficit procedure, and, second, the Macroeconomic Imbalance Procedure, which is based on a scoreboard of indicators relating to external imbalances and competiveness as well as internal imbalances.

Finally, Mr Radermacher noted efforts by Eurostat, together with NSIs, to improve accessibility and communication. Eurostat has developed cooperation with Google, to further facilitate statistical data searches. Eurostat is now present on Twitter, and has developed applications for mobile devices. These developments allow key indicators to be found quickly, such as the rate of inflation in the euro zone, the production index for the construction sector or the minimum wage in individual countries. Eurostat regards the improvement of the quality of its services as a continuous task. In the specific area of financial statistics, Eurostat intends to go further and explore new ways to make improvements in cooperation with the ECB.

The discussants – Adelheid Bürgi-Schmelz (Director, Statistics Department, International Monetary Fund) and Mark Beatson (Director-Economics, FTI Consulting) – saw statistics as crucial to inform the financial markets.

Ms Bürgi-Schmelz, in discussing the paper "How things have changed – financial market economists as users of economic statistics" by Jens Larsen and James Ashley, pointed to the needs of many data users for high-frequency data. There was also a need for harmonised data and to close data gaps, including the IMF work on financial soundness indicators. Indeed, the work of the Inter-Agency Group on Economic and Financial Statistics (IAG) on a G20 GDP growth aggregate has highlighted the need for comprehensive and comparable statistics. It took almost three years until the regular monthly publication of the G20 GDP growth aggregates was launched in March 2012. The efforts of the G20 Data Gaps Initiative, coordinated by the IAG, to improve sectoral accounts data are in full swing, but this costs resources and thus will take years to bear fruit.

In discussing the paper "Economic statistics at the service of financial market participants" by Walter Radermacher, Ms Bürgi-Schmelz illustrated the need for coherence between financial and non-financial statistics and for access to data from non-resident financial institutions. In addition, there was a need to undertake macro-prudential analysis, including developing network models on transmission channels, tail risks, and emerging vulnerabilities in the system and a need for access to more granular data. Financial data disaggregated by country, sector, instrument, maturity, and currency denomination would facilitate the identification of interest rate and exchange rate risks. To the extent that national laws do not adequately address the balance between confidentiality and data

access, authorities may need to consider revising such laws to facilitate the closing of data gaps under the G20 Data Gaps Initiative.

Finally, the availability and coherence of statistical indicators must be supported by further improvements in terms of accessibility and communication. Making information readily available through mobile devices facilitates the use of data and many statistical agencies are moving in this direction. Indeed, the Principal Global Indicators (PGI) website http://www.principalglobalindicators. org/default.aspx now allows data access via an iPad or iPhone. Similarly, given the many sources of data, it is important for statisticians to give a clearer sense of the sources and methodological strengths/weaknesses of the data used.

Mark Beatson noted in discussing the presentation by Natacha Valla, "Financial market participants as users of economic statistics", that better data were needed for: i) public finances, giving the example of a greater scrutiny of data on economic forecasts and public finances in the United Kingdom by the independent Office for Budget Responsibility; ii) the impact of structural reforms, noting the difficulties in isolating structural from cyclical developments and the approaches to comparison metrics for sub-sets of policies and to market-specific measures of efficiency for monitoring policies; and iii) bank lending and the challenge of deciding which information is the most relevant and how to present it in informative, standardised formats. Finally, there was the question of what is the appropriate division of work between national and European statistical agencies: the national governments responsible for implementation, and organisations such as the European Commission, the OECD and the IMF that monitor the actions of their members?

In discussing the paper by Claudia Buch, Cathérine Tahmee Koch and Michael Koetter, "Causes and effects in international banking – what can we learn from micro data?", Mr Beatson highlighted the finding of a review of data on German banks' international activities via subsidiaries that there is a reduction in market power at home, because the costs involved in monitoring a diverse portfolio may be large relevant to the gains from diversification. The more detailed results show, however, why it is necessary to have large datasets with enough detail and observations to permit sub-sample analysis: i) the results are driven by the cooperative banks in the sample, but how they behaved in that particular period might not be typical either of German banks as a whole, or even of the same cooperative banks in a different period, and ii) the results are driven largely by the fourth-size quintile. Finally, the issues addressed are of importance to policy-makers. There is an active debate about whether or not there is a trade-off between competition and stability in the banking system and about the types of regulatory and market arrangements that should be pursued to optimise the balance.

The closing address of the conference, "Future challenges for central bank statistics", was delivered by José Manuel González-Páramo (Member of the Executive Board, ECB) who first recalled that, under Article 3 of the Statute of the ESCB and of the ECB, the ESCB is responsible for contributing to the stability of the financial system. This is why he greatly appreciated the focus and title chosen for this conference which reflects the contribution of central banking statistics to both the maintenance of price stability and the mitigation of systemic risks.

For the purposes of macro-prudential analysis, he argued that it would be more useful if data were consolidated at the level of individual banking groups. In addition, not only banks, but also insurance companies, pension funds and, ideally, the entire financial system, including the shadow banking sector, should be covered in order to effectively help policy-makers identify potential sources of systemic risk. Furthermore, data with sufficient granularity are necessary in macro-prudential analysis in order to take into account both averages and distributions. The micro foundations of aggregates must also be explored.

Work is under way to help reduce the number of overlapping data collection efforts and to establish harmonised data collection frameworks common to central banks and supervisory authorities. A prominent example of the former is the work being carried out under the auspices of the ECB and the EBA to reconcile credit institutions' statistical and supervisory reporting requirements. In this context, Mr González-Páramo noted that the second version of the classification system linking the requirements of the ECB's monetary and financial statistics with the supervisory reporting templates (FINREP, COREP and Large Exposures) developed by the EBA was published in March 2012 on the websites of both the ECB and the EBA. The sharing of confidential data collected for supervisory purposes with statisticians under strict protection procedures will require changes in legislation. The purpose of such a legal framework and such arrangements must be to avoid duplication of data requests, in order to reduce the reporting burden, and to ensure that policy actions by decision-makers are not rendered ineffective owing to lack of access to information that has already been collected. He, therefore, counted on the support of the European and national authorities, as well as the industry, to overcome confidentiality constraints and obstacles to the exchange of data and to support the tasks of decision-makers.

Concerning economic data, the excessive deficit procedure and the new alert mechanism put in place by the European Commission to detect and correct macroeconomic imbalances on the basis of a scoreboard of indicators are adding pressure on statisticians to deliver high-quality statistics. In this context, Mr González-Páramo stressed the importance of establishing good cooperation between central banks and NSIs, both at the EU and the national level.

In conclusion, he emphasised that the ESCB will further develop its statistics to better fulfil the mandates given to the ECB and to the ESRB.

STATISTICS TO DELIVER PRICE STABILITY AND MITIGATE SYSTEMIC RISK

MARIO DRAGHI

On behalf of the Executive Board, I would like to welcome you to our sixth biennial European Central Bank (ECB) statistics conference. I am very pleased to see that the event has once more attracted many distinguished participants.

Let me take the opportunity to share with you some thoughts on the topics on the agenda.

As policy-makers in the fields of monetary policy and financial stability, we are deeply dependent on the work being done to maintain a stream of timely, relevant and reliable data.

Today and tomorrow you will have the opportunity to discuss ways of further strengthening the information basis for the fulfilment of the mandates given to the ECB and the European Systemic Risk Board (ESRB).

KEY CHALLENGES

The financial crisis has dramatically increased the need for very timely granular data. And it has led to a rethinking of a number of organisational and conceptual aspects in statistics.

To give just one example, the traditional monetary statistics derived from individual banks' balance sheets are insufficient to gather information on financial groups that operate across borders and through non-bank subsidiaries. This is because the monetary statistics cover only the euro area and do not focus on the various kinds of risk to which banks are exposed and the adequacy of their capital in view of these risks. This means that it is vital to collect data consolidated at the level of banking groups or insurance groups.

Some of these data are already available at the national level for micro-supervisory purposes, but they are not always comparable across countries. The ECB, the ESRB and the three new European Supervisory Authorities (ESAs) are all working to fill remaining data gaps and to meet the challenge of producing timely, frequent and high-quality data for their macro-prudential functions.

Moreover, there is an increasing need to consider measures of dispersion, not just averages, and to consider micro data as well as macro aggregates. For financial stability purposes in particular, a wider variety of granular data and indicators are needed, and more emphasis needs to be put on data "outliers" and so-called "tail risks".

As we have learned, systemic risk may stem from any part of the financial system, including the shadow banking sector. That is why we also need more data to monitor unregulated financial institutions and markets.

In recent years, significant steps have been taken to identify the data gaps and to fill them by gathering more and more detailed quantitative information. But we are just at the beginning of this process, and I know that statisticians are all too well aware of the fact that the data perimeter may change again in the future.

It is vital that the work done at the European Union level is consistent with the worldwide dimension. In 2009 the G20 endorsed a report on "The Financial Crisis and Information Gaps". That report contains 20 high-level recommendations on the measurement of risks in the financial sector, international financial linkages and the communication of official statistics.

Quite some progress has been made in implementing these recommendations. For example, accounts for economic sectors, statistics on securities, and the Principal Global Indicators website supported by seven international organisations, including the ECB. But it is still necessary to continue with these efforts, in particular on quarterly government finance statistics and on the Financial Stability Board (FSB) common template for systemically important global financial institutions. And the transposition of the new rules into all national legal systems needs to proceed swiftly.

THE ROLE OF STATISTICIANS

Going beyond the pure data challenges, the statistical community is still coming to grips with the fact that their work is now more than ever in the spotlight of public debate. "Statistical errors" were once something in which only specialists were really interested. Now, they can receive headline coverage, sometimes even more so than everything else coming out of both official and non-official statistical sources.

Public scrutiny is good for statistics but it also brings new challenges for statisticians. Alongside their more traditional role of collecting data and assisting in the correct interpretation of data, statisticians also need now to be more involved in communicating the results – to the markets, to the media and to the wider public. The role of dashboards and the narrative use of data are examples of tools where statisticians' input is clearly essential.

SELECTED ECB STATISTICAL INITIATIVES TO FILL DATA GAPS

Together with the rest of the Eurosystem, the ECB is undertaking a number of important statistical initiatives to support the fulfilment of the ECB's mandate to deliver price stability and the ESRB's mandate to mitigate systemic risk. The initiatives will also help other policy-makers and decision-makers.

Let me briefly mention three of these initiatives.

First, the Eurosystem is developing a securities holdings statistics database. The financial crisis has highlighted the lack of transparency in a number

of financial markets as well as difficulties in assessing financial exposures and linkages between institutions. Securities holdings represent a field where exposures are often concentrated, and a lack of sufficiently comprehensive, consistent and granular information has been identified.

The aim of developing a detailed dataset on securities holdings is to combine holdings of large players in the euro area with information on the individual issuers across the world. This will provide a potentially very useful tool for both monetary policy and macro-prudential analysis.

Second, the Eurosystem has been extending its database to provide more detailed information on the activities of financial institutions and instruments. This covers more detailed balance sheet information on banks but also on investment funds, insurance corporations and pension funds. Complex securitisation operations, which played a major role in the financial crisis, are reflected in new data on the activity of financial vehicles resident in the euro area.

Information on who is lending to whom in the euro area economy can help us to better understand the process of financial intermediation. It is now published on a quarterly basis in the matrix of the integrated sector accounts. The provision of quarterly information on cross-border holdings of financial assets and liabilities by euro area residents allows users to detect cross-border exposures.

Third, the Eurosystem is amending its statistical legal acts to align its economic and financial statistics with the recently revised international statistical standards. These revised standards aim at achieving consistency between domestic sector accounts and statistics for the rest of the world. This consistency will give users a much more complete view of interlinkages between the rest of the world and the domestic sectors of the economy.

REPORTING BURDEN

The ECB is well aware that closing information gaps requires significant efforts by all parties involved – the statisticians, the reporting agents and the data users. It is also clear now more than ever that a lack of good quality information on which to base decisions can be far more costly to society than the collection of new, additional data.

In any case, all data collections by the Eurosystem are subject to a prior, strict "merits and cost" procedure. Importantly too, there is a strong emphasis on ensuring that there is no duplication of effort by different statistical authorities collecting the same information and that, as far as possible, existing information serves multiple purposes.

These data collections must be detailed and comprehensive enough to meet the various current and potential future statistical needs. When banks or other agents report the raw data, aggregates and distribution measures for monetary policy, macro-prudential and other statistical purposes can be compiled by the respective statisticians and be used for several purposes. The reporting agents thus can be spared these compilation exercises – saving them resources and cost.

Of course, this requires effective coordination between the various statistical authorities to ensure their data needs are matched. As an example, the ECB is working with the ESRB and the ESAs in aiming to achieve the highest possible coordination and synergies with regard to data for supervisory purposes, macro-prudential analysis and monetary policy.

A good example of this is the recent collaboration of the European System of Central Banks and the European Banking Authority (EBA) through the Joint Expert Group on Reconciliation of credit institutions' statistical and supervisory reporting requirements. The second edition of the group's report has just been published on the websites of the ECB and the EBA.

The problems faced in such initiatives are often very complex, and progress takes time. For example, as supervisory data on consolidated group structures are currently not fully harmonised within the European Union, efforts are needed to make these data comparable across countries and time. The quality and timeliness of such data requires efficient data transmission and processing between different organisations.

CONFIDENTIALITY

One of the thorniest issues in such coordinated activities concerns the confidentiality of individual data, and supervisory data in particular.

The protection of confidentiality is sacrosanct for all statistical activities. It is enshrined in the relevant legal texts of the ECB and it is central in standard practices for all official statistics. Where "Chinese walls" need to exist, they are strictly respected. Reporting agents should know and should have the right to know where the confidential information they are providing is to be used.

But a big effort is needed to ensure the harmonisation of divergent practices in the protection of data and sometimes conflicting legal texts in the different fields of competence and in different countries.

Restrictive "blanket" confidentiality rules that cover all types of information, irrespective of whether there are real risks of a breach of confidentiality, are often counterproductive. They end up not only being damaging to information sharing and disclosure, but also to the real protection of confidentiality where and when this is needed. These rules confuse what is truly confidential and what needs strong protection with what is possibly market sensitive or what is simply inconvenient.

So here is yet another area of activity on which statisticians and legal experts need to focus. They need to ensure that legal frameworks and existing practices find the right balance between the need for confidentiality and the benefits of data sharing.

CONCLUSION

Let me conclude. As I hope all of my remarks have illustrated, statistics is a core activity of policy-making, and central banking in particular. Right now, it is also a highly dynamic activity.

I personally attach great importance to progress in the areas I have mentioned. I am convinced that your discussions today and tomorrow will offer valuable contributions on how best to face the challenges and how to take advantage of the opportunities.

Producing high-quality statistics on the financial sector remains a core task of a central bank. It is a central input not only for our decision-making processes but also for communicating our decisions, and thus, for the credibility of our actions.

In the light of these challenges, the central bank statisticians of the future will have to serve both areas – the pursuit of price stability as well as the support of financial stability.

I wish you a very fruitful conference and very much look forward to the results of your deliberations.

I   FUTURE CHALLENGES FOR MONETARY STATISTICS IN A CHANGING ENVIRONMENT

INTRODUCTORY REMARKS

IGNAZIO VISCO

Let me make just a few introductory remarks on this session before giving the floor to our distinguished speakers and discussants.

First of all, as a member of the European System of Central Banks, I would like to start by recognising the outstanding work that has been done in the past fifteen years to set up a comprehensive, harmonised, high-quality system of monetary and financial statistics. Even acknowledging these achievements, however, we are all aware that the target keeps moving faster and faster, something we, as central bankers, were scarcely accustomed to. What used to be a perfectly fine information set for performing our duties as policy-makers may no longer be good enough. The body of monetary and financial statistics that may be needed in conducting monetary policy seems to have been very greatly enlarged.

A second, related issue is whether the new perimeter of monetary and financial statistics is already clear and it is just a matter of statisticians being more proactive and flexible in adapting their frameworks to the evolving financial system; or whether, instead, we also need to recognise that a regime change is under way in defining monetary policy and consequently monetary and financial statistics.

At this point, my tendency is to err on the second side, although statisticians can surely improve their ability to keep up with financial innovation and shorten the "time to market" of new data; an issue of flexibility that is touched upon in this session and, I imagine, in the others as well.

I believe I am not too far off the mark saying that macroeconomics has paid too little attention to the financial sector, both in theory and in policy practice. This failing needs to be remedied, as it could well have an impact on our very understanding of how to conduct monetary policy and how to collect monetary and financial statistics.

While statisticians in central banks are starting to cope with all these developments – and the two presentations in this session provide much more than a scent of the scope of this endeavour – I believe they will need substantial help from users (in the broad sense, i.e. economists, central bankers, market practitioners). A longstanding tradition in the Bank of Italy is the closest possible cooperation between economists and statisticians; a mutual and fruitful exchange of information. This will surely continue in the future, and I suspect it may be worthwhile to extend this cooperation to macro-prudential analysis if we want more in-depth and more timely understanding of developments that

may affect our monetary and economic analysis. In this case too, there must be a two-way channel in which users help statisticians to spot new developments worthy of systematic statistical coverage and statisticians flag data warranting further analysis.

A third and final point is that all these initiatives to overcome current data gaps and better prepare for the future require adequate resourcing of statistical work. I think this conference provides a good opportunity to remind us all that a key to addressing this issue is further improvement of international coordination to avoid overlapping of datasets and to set our statistical priorities properly.

In practice, of course, this will be no easy task.

To quote from a poem by the Polish Nobel Laureate Wislawa Szymborska, aptly titled "A Word on Statistics" (translated by Joanna Trzeciak):

Out of every hundred people,
those who always know better:
fifty-two.
Unsure of every step:
almost all the rest.

Let us hope, then, to be in the small residual belonging to neither of these two groups.

It is now time to start our session: Mr bin Ibrahim will describe how we could rethink monetary analysis and statistics in the near-to-medium term, analysing current and prospective data gaps in the light of the interlinkages between the tasks of monetary policy and financial stability, and Mr Malo de Molina will be his discussant. Ms Özek will then touch upon emerging statistical needs following the crisis, giving us a concrete example of how the Central Bank of Turkey has already begun to broaden the focus of its monetary statistics, with a multi-pronged effort (including sector and instrument coverage, security-by-security data collection and the completion of fully fledged financial accounts). Her analysis will be the basis for the discussion by Mr Simor.

I think we can expect a very fruitful session.

FUTURE CHALLENGES FOR MONETARY STATISTICS IN A CHANGING ENVIRONMENT – RE-THINKING MONETARY ANALYSIS AND STATISTICS

MUHAMMAD BIN IBRAHIM[1]

I   INTRODUCTION

The financial crisis in the advanced economies and the ensuing recession that has affected the global economy in recent years has been a defining moment for macroeconomic policy. The crisis brought home important lessons for macroeconomic policy formulation and forced us to re-think policies that were considered sacrosanct and led to the adoption of more pragmatic policies, some of which had previously been regarded as unconventional. It is encouraging that there are already efforts to re-think the features that should characterise a new macroeconomic policy framework.[2] While this area of work progresses, equally important are efforts to identify our information needs and to address any data gaps in a systematic and comprehensive manner. With new data and the information they would yield, we would be in a better position to capture trends and identify potential risks facing us.

The focus of attention with respect to data gaps has been on financial stability. This paper attempts to explore issues relating to monetary analysis and statistics. Monetary and financial stability analysis and related data requirements are highly interrelated. As such, the paper will not limit its comments to monetary analysis and statistics alone.

This paper is in four parts. The first reviews the lessons of the recent crisis and the implications for monetary and financial analysis. The second part assesses the implications for future data needs. The third discusses current initiatives to meet evolving data needs and their sufficiency. Finally, the last part offers some principles to guide the process of designing, compiling and disseminating statistics.

1   Deputy Governor, Bank Negara Malaysia. The views expressed in this paper are those of the author and do not necessarily represent the stance or policy of Bank Negara Malaysia. The author would like to thank Paul Van den Bergh, Dr Norhana Endut, Toh Hock Chai, Raja Syamsul Anwar, Rubin Sivabalan and Ili Sarah Aspar for their assistance and research input.
2   See, for example, Blanchard, Dell'Ariccia and Mauro (2010), Caruana (2011) and Hannoun (2012).

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2   LESSONS FROM THE GLOBAL FINANCIAL AND ECONOMIC CRISIS

The recent crisis episodes have illustrated how increasingly complex and interconnected the world has become. The failure to contain a housing bubble, abetted by unfettered financial market innovation, has resulted in the most severe global recession since the Great Depression. Noteworthy has been the extent of contagion and spillover effects, whereby a mortgage and banking crisis in one country contributed to financial and sovereign debt crises in others, and induced a worldwide recession.

There are at least three important lessons for central banks arising from these observations. First, monetary and financial surveillance are mutually reinforcing. This implies that monetary analysis must expand beyond looking at medium-term risks to growth and inflation in order to take account of long-term risks from financial imbalances and balance sheet vulnerabilities. Second, information gaps remain large and have to be closed, including with regard to large off-balance sheet operations. Third, a more interconnected world, especially financially, means that the impact of crises and policies is not isolated to a single country or region. This paper would elaborate briefly on each of these lessons.

2.1   LESSON 1: MONETARY POLICY AND FINANCIAL STABILITY SURVEILLANCE ARE MUTUALLY REINFORCING

Developments in recent years have demonstrated that, in many ways, monetary policy and financial stability are intertwined. Early on, there was recognition that monetary stability and price stability are prerequisites for financial stability.[3] Limiting fluctuations in the inflation rate will also tend to limit financial instability by lessening the information problems, uncertainties and distortions associated with making investment and consumption decisions.[4]

It has now been amply demonstrated that the monetary policy setting also has a direct and significant bearing on financial stability by influencing the build-up of financial imbalances. An interest rate level that remains too low for a prolonged period creates distortions in the form of under-pricing of risks, excessive yield-seeking activities, over-investment in certain markets, and asset prices that depart substantially from their fundamental values. As such, while the objective of monetary policy is price stability, its stance must be calibrated so that it will not lead to the build-up of financial imbalances. In other words, a narrow focus on price stability may be inconsistent with the attainment of sustainable medium to long-term macroeconomic stability.

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3   See, for example, Schwartz (1995) and Bordo and Wheelock (1998).
4   Inflation encourages speculative investment and borrowing because of expectations that prices will continue to rise. However, when disinflation sets in, the nominal returns on investment will be lower than anticipated and the real burden of debt will be higher. The lower return on investment may prove insufficient to repay loans, causing defaults which, in turn, reduce the equity of lenders.

The recent financial crisis also showed that the relationship between monetary policy and financial stability runs both ways. Given the pivotal role of the financial system in the intermediation process, a breakdown in financial stability can disrupt the monetary policy transmission mechanism by disturbing financial intermediation and the flow of credit to the economy. Increasingly, however, the direct impact of financial instability on overall macroeconomic stability has become more apparent. For example, the collapse in house prices during the US sub-prime mortgage crisis had a significant impact on household balance sheets. The loss in household wealth resulted in a sharp cut-back in private consumption and in overall economic activity.

Given this deep relationship, the crisis has prompted an examination of ways in which synergies between monetary policy and financial stability can be realised.[5] In the sphere of surveillance, two areas stand out.

First, better information on regulated banking and the financial sector can facilitate a more complete macroeconomic risk assessment. This in turn allows the central bank to act pre-emptively to prevent imbalances and to ensure timely responses during times of crisis. Given that monetary policy is a blunt tool that affects overall lending in the economy, macro-prudential policy provides central banks with a broader range of powers and instruments to pre-emptively address financial imbalances or undertake policy fine-tuning.

Second, supplementing conventional monetary analysis with assessments of financial imbalances and balance sheet vulnerabilities allows surveillance at longer horizons and facilitates the assessment of long-term macroeconomic sustainability. Central banks have generally focused on assessments of macroeconomic data to ascertain short to medium-term risks to growth and inflation. The global crisis, however, has proven that long-term risks from the build-up of financial imbalances and balance sheet vulnerabilities cannot be ignored. This implies the need for further layers of monetary analysis.

There is a need for deeper analysis of monetary aggregates and financing activity, as the build-up of financial imbalances is usually rooted in the excessive growth of credit.[6] Credit booms tend to amplify internal financial imbalances by fuelling excessive demand, inflationary pressures and speculative asset bubbles.[7] This implies an important role for monitoring and perhaps containing credit in avoiding the creation of asset bubbles.

Unlike traditional analysis, which is based on the examination of *flow* variables, there is also the need for a perspective which focuses on the *stock* variable, namely analysis of a country's sectoral and aggregate balance sheets. Balance sheets play an important role in macro surveillance, as balance sheet weaknesses

5   Even before the recent crisis, however, there were already discussions on this. For example, Borio and Lowe (2002) had suggested that greater cooperation between monetary and prudential authorities should not just be in the management of crises, but also in preventing their emergence.
6   See Kaminsky and Reinhart (1999).
7   See Allen and Gale (2000).

Chart 1 Balance sheet assessment of various crises, 1990-2011

Balance sheet / Country	Finland (1991)	Sweden (1991)	Mexico (1994)	Argentina (1995)	Japan (1995)	Thailand (1997)	Korea (1997)	Indonesia (1997)	Malaysia (1997)	Russia (1998)	Brazil (1999)	Turkey (2000)	Argentina (2001)	Uruguay (2002)	US (2007)	Iceland (2008)	Ireland (2009)	Greece (2011)
Households	■	■			■				■						■		■	
Firms	■	■	■			■	■	■	■									
Financial institutions	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	
Central bank																		
Government			▨			▨				■	■	■	■	■	▨			■

■ source of vulnerability
▨ constraint on recovery

Sources: Internal estimates, list of crises from IMF-FSB Early Warning Exercise (September 2010).

can contribute to the creation and propagation of crises and can affect the efficacy of and scope for counter-cyclical policies.[8]

Examination of major crises from 1990 to the recent euro debt crisis in 2011 reveals that most crises can be partly attributed to one or more balance sheet vulnerabilities (Chart 1). In the 1990s, vulnerabilities were concentrated mainly in the balance sheets of households and firms, as seen in the Asian financial crisis, while the government balance sheet was generally healthy. Crises in the 2000s have centred on the government balance sheet, as seen in the euro debt crisis, which can be more costly as there is limited scope for counter-cyclical policies and thus a more protracted crisis. It is also notable that almost all crises are rooted in financial institutions through leverage.

2.2 LESSON 2: SURVEILLANCE MUST KEEP UP WITH INCREASING FINANCIAL MARKET SOPHISTICATION

The recent global financial crisis highlighted several important lessons in the area of financial regulation. First, there was the failure to regulate excessive speculative activity. Lack of oversight of rapidly growing financial innovation meant that the surge in financial market innovation and complex structured products was left to grow unchecked and unhindered. In terms of gross market value,[9] the over-the counter (OTC) derivatives market is estimated to have tripled from USD 9.8 trillion in December 2006 to USD 35.3 trillion in December 2008. At the same time, financial institutions became highly leveraged, increasing their appetite for risky investments and reducing their resilience against losses.

Second, financial innovation contributed to the mispricing of risks in the financial system. The use of off-balance sheet items, structured products and securitisation

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8   See Allen, Rosenberg et al. (2002) and Singh (2011).
9   Data from the BIS. Gross market values are calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties.

enabled institutions to seemingly offload and minimise risks. This may in turn have contributed to higher risk-taking activities. In 2007 it was estimated that the shadow banking system in the United States, which supported securitisation activity had overtaken the traditional banking system in terms of the size of its assets.[10]

Third, the impact of the crisis was worsened by the interlinkages and interdependencies between financial market players. Financial innovation multiplied the number of agents exposed to any single underlying asset, because the asset could be broken up, repackaged and resold an almost infinite number of times. This made the financial system more vulnerable to individual failures. During the global financial crisis, the uncertainty surrounding the exposure of institutions to toxic financial assets and the failure of Lehman Brothers in 2008 triggered a freeze in credit and money markets, which also made it difficult for other unexposed institutions to obtain funding to meet short-term liquidity obligations. This shows that systemic risk should not be underestimated. Even if an institution is judged to be sound on its own, it may still be affected by the failure of another institution, either directly, such as through debt holdings, or indirectly, such as through access to market funding.

Despite the sweeping changes in the financial system, it is evident that there was a failure to understand the nature of risk inherent in complex financial products and an underestimation of the overall build-up of risks in the financial system. Policy-makers need to ensure that the regulatory and surveillance framework continues to evolve, so that it is able to accurately capture the risks from complex instruments and to account for hidden risks such as off-balance sheet items and systemic risk.

2.3   LESSON 3: BETTER AWARENESS OF RISKS FROM GREATER GLOBAL INTERCONNECTEDNESS IS NECESSARY

Increasing globalisation and financial integration have made financial markets more interconnected. As a result, the reach of a crisis is not isolated to a single country or region. This raises the question of whether currently available cross-border statistics are adequately robust and timely to detect the build-up of risk arising from factors that are beyond national borders.

The financial crisis of 2008 has shown that there are multiple contagion and spillover channels formed through higher degrees of integration between financial markets across borders.[11] For example, the tightness in the US interbank credit market during the crisis forced US banks to cover liquidity shortages by deleveraging from emerging market economies (EMEs), causing a liquidity drain in EMEs. The global equity market also exhibited interdependency as major stock markets around the world plummeted in the wake of the crisis. In such an environment, high-quality cross-border statistics play an important role in detecting contagion and spillover channels and anticipating the transfer of risk to the domestic financial market.

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10   See Geithner (2008).
11   See, for example, Lee and Park (2008).

3 INFORMATION GAPS UNCOVERED BY THE GLOBAL FINANCIAL AND ECONOMIC CRISIS

Having highlighted some of the information gaps in monetary and financial surveillance, this paper will now attempt to shed light on some of the types of data needed to fill those gaps. In a general sense, the three perennial issues facing authorities are the extent of data coverage, its granularity and its timeliness. Indeed, it has been noted that the element of surprise at the onset of a financial crisis is often due to the lack of comprehensive, high-quality data.[12] Insufficient coverage and depth of information can also potentially put policy-makers at risk of arriving at the wrong conclusion and thus prescribing the wrong policy measures. Timeliness of data is equally important to enable the authorities to detect and respond to risks in an effective manner, while standardisation allows easy comparison to detect idiosyncratic peculiarities. The remainder of this section elaborates on some of the enhancements to statistics that are needed to support a monetary surveillance framework that is more relevant in the current environment.
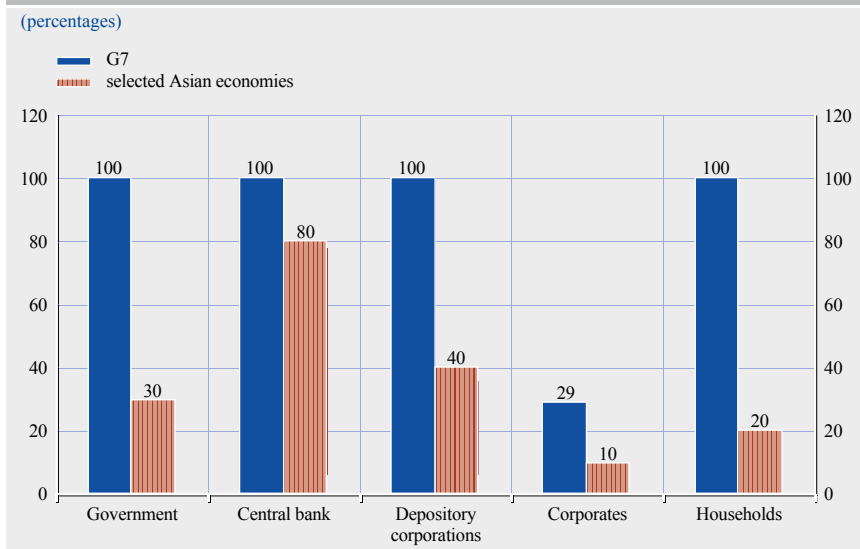
4 MONETARY POLICY AND FINANCIAL STABILITY SURVEILLANCE

It must be recognised that surveillance for the purposes of monetary policy and surveillance for financial stability are broadly similar in coverage, with a high degree of overlap. The main difference is in the focus of the surveillance. For example, in the case of credit, monetary policy assessments of credit are carried out to ascertain the sustainability of economic growth or to assess the inflation risk from overheating. This may also require aggregate credit data or credit data broken down by the various sectors of the economy. Recently, more granular data are also being used to assess risks to macroeconomic stability. For financial stability purposes, assessments of credit are also carried out to ascertain whether credit growth is excessive and could contribute to financial imbalances and the build-up of institutional or systemic risk. This may require credit data at a more granular level, including a breakdown by locality or by income group, as well as by financial institution. Data collection should therefore be undertaken with sufficient flexibility in the data dimensions for the information to be organised to meet the surveillance needs of either monetary policy or financial stability.

As indicated above, both monetary policy and financial stability analysis and surveillance need to look not only at flows but also at amounts outstanding or stocks. While balance sheets for depository institutions are widely available for advanced economies and some Asian economies, it must be noted that the data do not cover other financial institutions, such as hedge funds, pension funds and insurance companies. As seen during the US sub-prime crisis, the absence of balance sheets for the shadow banking sector is a blind spot which could limit a country's ability to anticipate or respond to shocks to the economy. The results of our survey also suggest that the availability of balance sheets is, in general, more

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12 For example, Edwards (2008) noted that the Asian crises revealed major gaps in statistical coverage of the domestic financial sector and the external sector that permitted serious vulnerabilities to remain undetected.

Sources: Internal estimates, national authorities (central bank and office of national statistics), IMF and OECD.
Notes: Survey of published sectoral balance sheet information of seven advance economies and ten emerging economies. Data as at 15 March 2012.

limited in Asian economies than in advanced economies. This gap is especially observed for households, financial corporations and government balance sheets. This deficiency poses challenges to policy-making and complicates the detection of vulnerabilities, build-up of risk and propagation of shocks from one sector to another.

Of particular concern are the major deficiencies in balance sheet data for corporates in both the advanced and emerging economies (Chart 2).[13] Of the countries surveyed in this paper, only Korea, the United States and Germany publish extensive data on corporate balance sheets which include balance sheets of small and medium-sized enterprises (SMEs). This is particularly concerning in view of the current literature which suggests that corporate balance sheets play a very significant role in determining the likelihood and depth of external crises.[14]

5   FINANCIAL MARKET SURVEILLANCE

Many central banks now have expanded mandates which encompass financial stability. To perform the expanded role effectively, data weaknesses must be

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13 In order to assess the accessibility of balance sheet data, this paper undertakes a survey of published balance sheet data obtained from various sources. Data on central banks, financial corporations and depository corporations were obtained from IMF International Financial Statistics and OECD Statistics which consolidate data from national authorities. The balance sheets of households and businesses were sourced from national authority websites, including central bank and national statistics websites.
14 See Mulder, Perrelli and Rocha (2002).

addressed, especially in detecting speculation, evaluating risk, and identifying interlinkages. It is difficult to separate investments made for hedging purposes, for economic activity, and for speculation. An effective way to improve the detection of excessive speculation would be to introduce finer categorisation for reporting financial transactions. Better information regarding investor profiles, in terms of leverage, duration and maturity would facilitate understanding of the exposure of domestic markets to internal and external factors. As the number and complexity of financial intermediaries has increased, especially in the unregulated areas of the financial system, information on OTC derivatives, structured products, and off-balance sheet items is needed to identify institutional and systemic risks more accurately and to get a better sense of interlinkages, both domestic and international.

6   INTERNATIONAL DIMENSIONS OF DATA

Cross-border statistics are very useful to detect risks that may arise from factors beyond national borders such as capital flows and banking system risk exposures. While many forms of cross-border statistics are made available by commercial data providers, national statistical offices and organisations such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS), they are often inconsistent and incomparable across different sources.[15] In addition, available cross-border data still falls short in terms of timeliness: data frequency does not match the daily movements of the financial market and there are lags in published data. Even though efforts are being made to standardise data, for example through BIS banking statistic and the IMF's Coordinated Portfolio Investment Survey, there is still a glaring lack of participation in key countries and a lack of granularity which limit the usefulness of the data. These limiting factors

Table 1 Information gaps and complications

Information gaps	Complications	Useful information
Granularity	Dimensions of data collected still limited; difficult to detect pockets of imbalances Aggregated data masked vulnerabilities in certain segments, e.g. low income	Granular data with expanded dimension to include, for example, localities and income groups
	Inability to differentiate investments for hedging, for real activity, or for speculation Unclear picture of inter-institutional exposures Unclear picture of probability of cascading failure	Deeper categorisation into investment purpose Deeper coverage of non-resident presence in domestic markets, products, type of investment, duration and maturity profile
	Standardised and published cross-border data still lack granularity, restricting scope of analysis	Non-resident holdings of domestic securities Portfolio flows by sector and instrument

15 See González-Páramo (2006).

Table I Information gaps and complications (continued)

Information gaps	Complications	Useful information
Coverage	Significant gaps in balance sheet and cash flow data; difficult to detect vulnerabilities and anticipate transmission of shocks	Balance sheet of corporates, including SMEs Balance sheet of FIs to including non-depository corporations Complete cash flow information, including outlays Data on wealth dispersion
	Inability to accurately detect excessive speculation Incomplete datasets that do not enable the correct assessment of individual risk or separation from systemic risk	Wider coverage of OTC derivatives, structured products, leverage ratios, and off-balance sheet items Exposure of unregulated institutions, like hedge funds and corporations Coverage of size and structure of unregulated shadow banking
	Not all countries participate in data reporting; layers of risk not apparent	Bank flows data with higher participation by EME countries Immediate and ultimate holder of risk
Timeliness	Published balance sheet data are low frequency, so lags and infrequent data complicate surveillance	More frequent and more timely information on balance sheets
	Banking system/financial market movements are high frequency, so lags and infrequent data complicate surveillance	Close to real-time portfolio and bank flows data
Standardisation	Different regions have different levels of coverage and granularity in terms of domestic market information	Have a standard format in reporting non-resident holdings, off-balance sheet items, and purpose of investments
	Countries compile and calculate data differently; difficult to benchmark	Standardised data e.g. across BIS consolidated statistics, IMF Coordinated Portfolio Investment Survey, EPFR country flows

■ monetary policy and financial stability   ■ financial markets   ■ international dimension
Source: Internal assessment.

make it difficult for regulatory authorities to anticipate the build-up of risk in the financial systems of both creditor and debtor countries and to design remedial measures. Closing these information gaps would allow a fuller assessment of cross-border data, including more up-to-date analysis and benchmarking processes, which are key components of an effective surveillance system.[16] Until then, market analysts and policy-makers should improve their understanding of and make better use of the already substantial amount of information available in this area.

7   STATISTICAL INITIATIVES TO FILL INFORMATION GAPS

Looking back at the history of financial crises, each crisis has revealed different causes and information gaps, which in most cases led to various calls for statistical

16 The recommendations from the FSB and the IMF to the G20 address the gaps in cross-border data.

initiatives to be implemented. Although most of the information gaps in the Asian financial crisis were addressed by various statistical initiatives at the national and international level, this did not avert the next crisis. In fact, every financial crisis has revealed information gaps in different areas.

The recent financial crisis has led to a collective call by various national authorities and multilateral agencies, such as the IMF, the World Bank, the BIS, the ECB, the Financial Stability Board (FSB), the G20, Basel III and the International Organisation of Securities Commission (IOSCO), to address the information gaps through new statistical initiatives. The report to the G20 on the financial crisis and information gaps by the IMF and the FSB in 2009 identified a lack of information in three key areas: the build-up of risks in the financial sector; international financial network connections; and the vulnerability of domestic economies to shocks. The report also presented 20 key recommendations to address the information gaps and to improve the communication of official statistics. Although the focus of the report is on systemically important economies, such as the G20 countries, the recommendations are also applicable to other jurisdictions for implementation at the national level. Efforts to implement the recommendations across various jurisdictions and to monitor the progress of the initiatives are continuing. Moreover, there are also initiatives to improve the collection of micro data such as data on income, credit and securities holdings at the national and international levels.

Although the current initiatives point in the right direction and will significantly improve the coverage, granularity and timeliness of data for policy-makers, more needs to be done, both by statisticians and by policy-makers, to clearly identify information gaps and to put economies in a better position to pre-empt or avoid another crisis. Statisticians need to be proactive in identifying advance indicators for collection to facilitate early analysis and surveillance by policy-makers. Policy-makers and statistical analysts must have a sound understanding of the data, must conduct active and early analysis of data to identify risks and weaknesses, and must implement measures to avert a crisis. The available data can already facilitate good analysis, in the areas of both monetary and financial stability and at both the national and the international level. Efforts should be made to exploit and mine existing data to the fullest possible extent and to analyse these data from different angles and perspectives.

8   GUIDING PRINCIPLES FOR EFFECTIVE DESIGN, COMPILATION AND PUBLICATION OF STATISTICS

In the light of the new data requirements identified in the earlier discussions, this section outlines some guiding principles from the design stage to collection and to dissemination to ensure the effective and cost-efficient compilation of statistics.

First, at the design stage, there should be clarity about what is needed. Collecting data can be costly, and having too much information could also be a problem. Data collection is made even more complex when it entails coordination with other authorities. The costs and benefits of collecting data should be carefully weighed up.

Second, there is a need to understand and transcend data limitations. For example, even with sophisticated systems, one cannot fully capture the risks inherent in the economy and the financial system as a whole. Hence, the challenge is to find ways to work around these limitations. Third, data collection should also be pre-emptive. Foresight will be required to ensure that new data requirements will help prevent the next generation of crises and are not just focused on plugging current gaps.

Fourth, during compilation, integrity and reliability are important in producing high-quality data. Data should be reported honestly and without tampering. Fifth, this in turn should be complimented by reporting-compliance requirements and the cross-checking of information to ensure data reliability.

Finally, at the dissemination stage, access to data should be made as wide as possible to ensure better risk management and analysis at all levels. In this regard, access to data must also be intuitive and timely to facilitate the analysis and detection of risks. Available statistics, together with improvements made and new developments in data management, need to be communicated effectively and in close collaboration with policy-makers, analysts and the financial industry.

9   CONCLUSIONS

This paper examines some of the lessons from the recent global economic and financial crisis, and draws some lessons in terms of monetary surveillance and the resultant future data needs. The recent crisis in the advanced economies and the global economic recession have underscored how important it is that monetary surveillance takes into account the deep interaction between monetary policy and financial stability, the growing sophistication of financial markets, and the increased global economic and financial integration. This in turn implies a pressing need to close information gaps in terms of coverage, granularity, timeliness and standardisation of data. At the same time, it must be acknowledged that current statistical initiatives are moving in the right direction to close some of these gaps. Nevertheless, where possible, more should be done. Lastly, to be effective and to minimise the costs, data collection must be guided by best practices from the design stage to collection and all the way to dissemination. In this regard, data collection must have clarity, transcend limitations, be pre-emptive, have a high degree of integrity and appropriate oversight and have user needs and accessibility in mind.

In this changing environment, statistical compilers, policy-makers, supervisors and economists need to work in close collaboration in order to better understand financial innovations and practices and be able to identify new trends and advance indicators for effective surveillance of monetary and financial conditions. Armed with good data and a sound understanding, policy-makers can implement swift and firm anticipatory measures to avert a crisis.

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EMERGING STATISTICAL NEEDS AFTER THE CRISIS – A CENTRAL BANKING PERSPECTIVE[1]

AYCAN ÖZEK AND GÜLBIN ŞAHİNBEYOĞLU

1   INTRODUCTION

The financial crisis has revealed, once again, the importance of information. Today, there is a consensus that better statistics could have helped to moderate the global crisis and lead to its better management. The availability of a wide range of economic and financial statistics which are timely, consistent, and – in a globalised world – comparable across economies and borders is essential to public and private sector decision-making. One more lesson from the recent crisis is that new approaches in data compilation should be flexible enough to anticipate future challenges. This means that databases should be compatible with and as innovative as the financial system. International initiatives addressing the data gaps that individual countries have to close reflect our awareness of the importance of these issues.

From a central banking perspective, as the international agenda gradually focuses on coordinating macro-prudential policy at an international level, the role of central bankers as statisticians becomes more significant given the central banks' core responsibility in compiling monetary and financial statistics. The financial crisis has shown that there is room for improvement in the quality of central banking statistics, covering different phases of data servicing such as construction, interpretation and communication. Therefore, the changing environment after the crisis has increased central bank data requirements while adding to the pressures on central bank statisticians.

The impact of the financial crisis has varied across countries depending on the different initial conditions of their economies. Therefore, in addressing data gaps, priorities should be set by considering the different needs and capacities of the countries and institutions. In Turkey, domestic banks dominate the financial system. Moreover, because of the comprehensive measures taken during the domestic financial crisis almost a decade ago, Turkey's banking sector seems relatively well prepared for the current global financial tensions. However, domestic financial institutions are not totally immune to the second-round effects of the financial crisis which, in 2008 and 2009, led to a global recession and

directly affected the Turkish real sector. Although the presence of a relatively sound financial system has limited the relevance and scope of the data gap initiatives in Turkey, especially compared with other emerging economies, partner institutions – such as the Turkish Treasury, the Central Bank of Turkey (CBT), the Banking Regulation and Supervision Agency (BRSA), the Turkish Statistical Institute and the Capital Markets Board – have made a coordinated effort and taken individual responsibility within the scope of their areas of expertise to meet these new data requirements and to improve the quality and dissemination of monetary and financial data in Turkey.

This paper focuses on the current practice of the CBT in compiling and disseminating monetary and financial statistics, sharing the new approaches implemented in recent years, and outlines the projects underway to strengthen the CBT's data service. First, we give examples of how and where the CBT has improved the coverage and dimension of statistical applications, with a special focus on the G20 Data Gaps Initiative recommendations (Annex 1). We describe the adjustments for expanding the coverage of financial sector data and providing the breakdown of new instruments. The following sections describe the major challenges we face in obtaining clear and reliable monetary and financial statistics. Studies on national financial accounts and the security-by-security database on government issues are specifically discussed. The last section concludes.
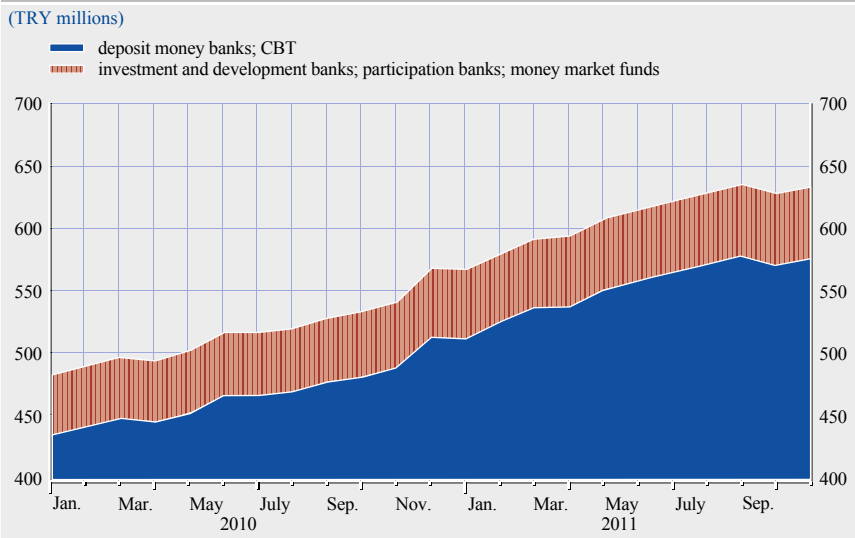
2   CBT'S EXPERIENCE: WHAT HAS BEEN DONE SO FAR?

As the main compilers of monetary and financial statistics, central banks are now adjusting their traditional data collection and dissemination systems. However, considering the emerging statistical needs, there has been a widespread consultation with official users of economic and financial data in G20 countries and with other international institutions. A broad consensus has been reached on the information gaps that need to be filled. One key recommendation is to monitor the vulnerability of domestic economies to shocks. Doing this means strengthening the sectoral coverage of national balance sheet and flow of funds data, and promoting more timely and comparable financial statistics, standardised across countries. Data on non-bank financial institutions is an additional priority (International Monetary Fund and Financial Stability Board (2009), pp. 4-5). In this section, the CBT's recent actions to improve monetary and financial statistics are described (Annex 2).

2.1   EXPANDING MONETARY SECTOR COVERAGE

The traditional classification of monetary aggregates followed the incorporation of claims in the order of liquidity, thus capturing the ease of settlement of transactions. In addition to the usual motivations for compiling monetary statistics – links to the real economy and to inflation – there is a need for better designed monetary aggregates that capture financial stability issues. In line with developments in financial markets and harmonisation efforts with regard to internationally accepted statistical standards, the CBT has expanded its monetary

(TRY millions)

- deposit money banks; CBT
- investment and development banks; participation banks; money market funds

Source: CBT.

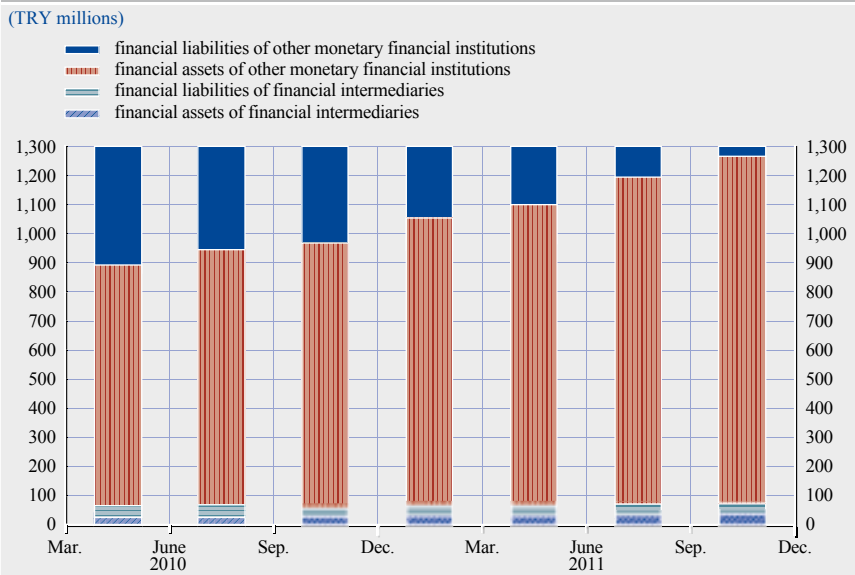Note: Last observations relate to November 2011.

sector coverage. Since 2007, coverage has been extended from a monetary sector comprising the CBT's monetary liabilities and deposit money banks resident in Turkey to include investment and development banks, participation banks operating under Islamic banking rules and money market funds.[2] Thus, by extending coverage in this way, the monetary liabilities of the money-creating sector – excluding inter-sector transactions – have increased by almost 10% (Chart 1).

2.2   STATISTICS BEYOND THE MONETARY SECTOR

The G20 Data Gaps Initiative supports data collection from institutions falling outside the regulatory perimeter in the overall flow of funds. Besides obtaining from-whom-to-whom information beyond the monetary sector, the CBT also compiles statistics on non-bank financial institutions, namely leasing, factoring and finance companies. The data compilation process encompasses data flow from the BRSA and converts them to an internationally comparable format. The dataset gives information on the size of financial intermediaries and financial flows with other sectors of the economy (Chart 2).

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2   Although investment and development banks do not receive deposits, they are "money creators" as they issue bonds and grant loans for their own account. Participation banks receive deposits in the form of participation accounts. Money market funds also issue close substitutes for deposits in the form of short-term capital market paper fulfilling transferability, convertibility, certainty and marketability criteria.

Chart 2 **Turkey: Financial flows by financial intermediary**

(TRY millions)

■ financial liabilities of other monetary financial institutions
▦ financial assets of other monetary financial institutions
▤ financial liabilities of financial intermediaries
▨ financial assets of financial intermediaries

Source: CBT.

Another effort to compile statistics beyond the monetary sector is the work by the Organisation for Economic Co-operation and Development (OECD) to issue more frequent questionnaires on institutional investors – on a quarterly instead of annual basis – with the aim of measuring and analysing the increasing role of institutional investors in capital markets. In response to this questionnaire, the CBT compiles and reports data on investment funds, insurance companies and pension funds, and liabilities (loans) of households.

2.3   EXPANDING INSTRUMENT COVERAGE

Financial derivatives

Valuation differences of financial derivative assets and liabilities have been covered as an on-balance-sheet item in the Uniform Chart of Accounts for Banks since 2007. However, data on separate financial instruments have not been available in the monetary statistics, but rather included in "unclassified" items. Since 2009, the CBT has defined financial derivatives as separate financial instruments and counterparty information has been compiled to indicate sectoral accounts.

Financial derivatives recorded a net liability position throughout 2010, but turned into a net asset position by end-2011. Transactions abroad dominate the market. Unlike the foreign sector, domestic sectors incurred net assets where non-financial corporations are the major domestic players (Charts 3a and 3b).

Chart 3a Turkey: Financial derivative assets and liabilities

(TRY millions)

- financial derivatives net (right-hand scale)
- financial derivative liabilities
- financial derivative assets
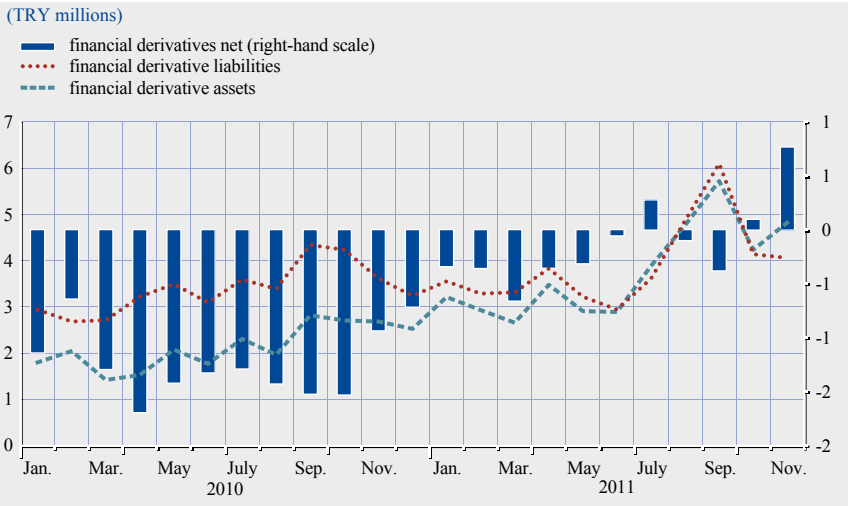
Source: CBT.

Note: Last observations relate to November 2011.

Chart 3b Turkey: Financial derivatives by counterparty

(as at November 2011; percentages)

Financial derivative assets

banks 2
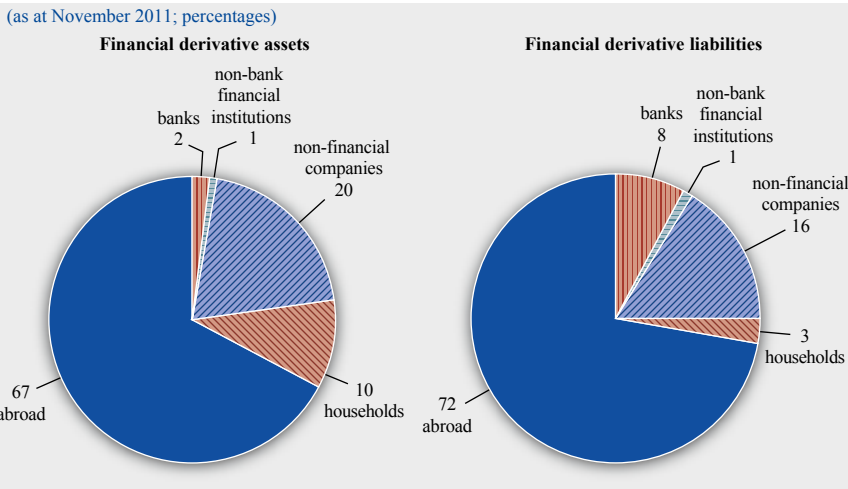non-bank financial institutions 1
non-financial companies 20
10 households
67 abroad

Financial derivative liabilities

banks 8
non-bank financial institutions 1
non-financial companies 16
3 households
72 abroad

Source: CBT.

Banking sector debt securities

Turkish banks, until recently, have been infrequent issuers in the domestic capital markets. However, in order to take advantage of rapid growth in the demand for mortgages and consumer credit, and to boost competition in project financing, long-term funding has been improved. In that respect, Turkish banks have been issuing Turkish lira-denominated bonds on the domestic market since the BRSA granted authorisation in October 2010. Although this bond issuance is relatively small in size and secondary trading is still low, this source of funding is likely

Chart 4 **Turkey: Debt securities of the banking sector**

(TRY millions)

- debt securities (right-hand scale)
- M3
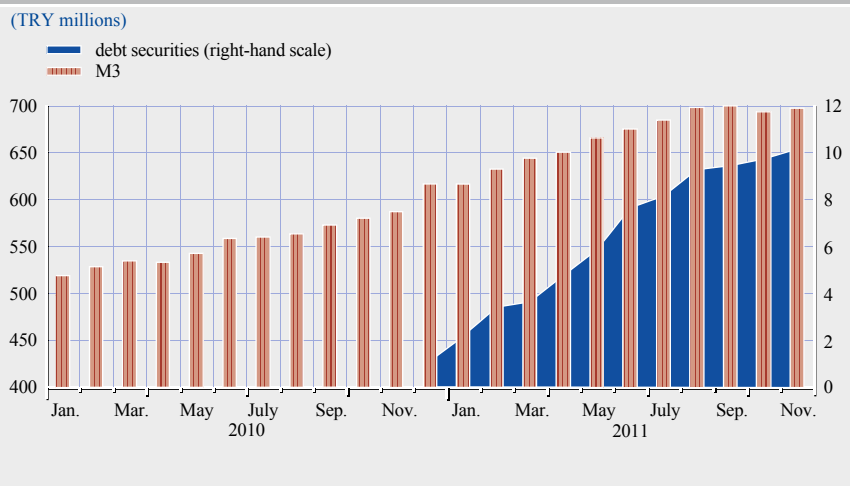
Source: CBT.
Notes: Last observations relate to November 2011.

to increase. On the statistical front, owing to the high degree of liquidity and low price fluctuations in banks' debt securities issues, the CBT expanded the coverage of monetary aggregates in 2011 to include those with a maturity of up to two years being a component of M3 (broad money) (Chart 4).

2.4 IMPROVING TIMELINESS OF BANKING STATISTICS

The G20 initiative supports the work of the International Monetary Fund (IMF) to promote Standardized Report Forms for monetary and financial statistics, targeted to improve the timeliness, frequency and country coverage of the related datasets. According to the IMF's Special Data Dissemination Standards (SDDS), the timeliness requirement for the analytical accounts of the banking sector is one month following the reference period. Previously in Turkey, banking sector data were compiled based on a complete set of reporting files – the Banks' Supervisory Reporting Package – which banks reported within 23 business days after the reference period and which were then disseminated with a two-month lag. With the close cooperation of Turkish banks, in 2011, the CBT shortened the submission period for monetary statistics to 15 business days, so that data is disseminated within one month, thus fulfilling the SDDS criterion (Annex 1).

3 TASKS AHEAD

3.1 COMPLETION OF NATIONAL FINANCIAL ACCOUNTS

The recent global financial turmoil has demonstrated the importance of financial stability analysis, and of identifying the links between sectors and the channels through which shocks may propagate through the financial system. Awareness of

the need to understand the network of interlinked exposures – which can reveal the vulnerabilities of interconnected sectors – is growing (Castren and Kavonius 2009). Information on sectoral financial accounts and balance sheets can improve the analysis of systemic risks and vulnerabilities, as well as our understanding of the interrelationship between the real and financial sectors. The importance of sectoral data has also been highlighted by the crisis and is being addressed by the G20 Data Gaps Initiative (International Monetary Fund and Financial Stability Board (2009)). While financial balance sheets enable an assessment of financial interrelationships within the domestic economy and vis-à-vis the rest of the world, financial accounts are an important instrument to monitor the transmission process of monetary policy owing to their link with capital and the use of income accounts (European Commission (Eurostat) (2011)).

For Turkey, another motivation for compiling financial accounts is the harmonisation of statistics in line with the opening of negotiations with the EU in June 2007 (Financial Control and Statistics). The CBT is the coordinating agency for the consolidated national financial accounts (Turkish Statistical Institute (2008)). Several institutions share responsibility for compiling the other financial accounts, as follows: i) the CBT for financial corporations excluding insurance companies and pension funds, households, non-profit institutions serving households, and the rest of the world; ii) the Treasury for insurance companies and pension funds; iii) the Ministry of Finance (MoF) for general government; and iv) the CBT and the Turkish Statistical Institute (Turkstat) jointly for non-financial corporations (see table).

Compiling these financial accounts has many steps:

(i)   identify accurate data sources for each sector and/or instrument;
(ii)   build bridge tables to codify source data under ESA 95 codes and sectors;
(iii)   derive stock data from source data;
(iv)   compile counterparty information and flow data;
(v)   consolidate figures at the instrument and sector levels;
(vi)   report and publish data.

The CBT has established a working group of experts with the partner institutions and set out a multi-year programme. The group meets regularly and works towards fulfilling the sectoral coverage of the national financial accounts in line with ESA 95. Currently, data on the financial assets and liabilities of the CBT, other monetary financial institutions (MFIs) and financial intermediaries are compiled and reported annually to Eurostat and quarterly to the OECD. For the financial auxiliaries sector, the CBT collects financial accounts from the major players. In that respect, data on capital market dealers are compiled in cooperation with the Association of Capital Market Intermediary Institutions of Turkey. In order to complete the financial auxiliaries sector, balance sheet data on the Savings Deposit Insurance Fund will be adjusted according to ESA 95 classifications.

The studies conducted with partner institutions cover insurance companies and pension funds, and the general government sectors. The former is being studied

Financial institutions					Non-financial corporates	Households	Non-profit institutions	Rest of the world	General government
Central bank	Other monetary financial institutions	Financial intermediaries	Financial auxiliaries	Insurance companies and pension funds					
Step 6	Step 6	Step 6	Step 4	Step 3	Step 4	Step 4	Step 1	Step 1	Step 3

The CBT is in charge. Data are available and regularly reported to the OECD and Eurostat.

The MoF and the Treasury are in charge. Compilation studies are ongoing.

The CBT (with Turkstat for non-financial corporations) is in charge. Compilation studies are ongoing.

The CBT is in charge. Compilation studies are ongoing.

Source: CBT.

in conjunction with the Turkish Treasury, the supervisory authority for the sector, while for the central and local government sector, a coordinated study is being carried out with the MoF; stock data have already been compiled and converted to ESA 95, figures should be disseminated by end-2012 (see table above).
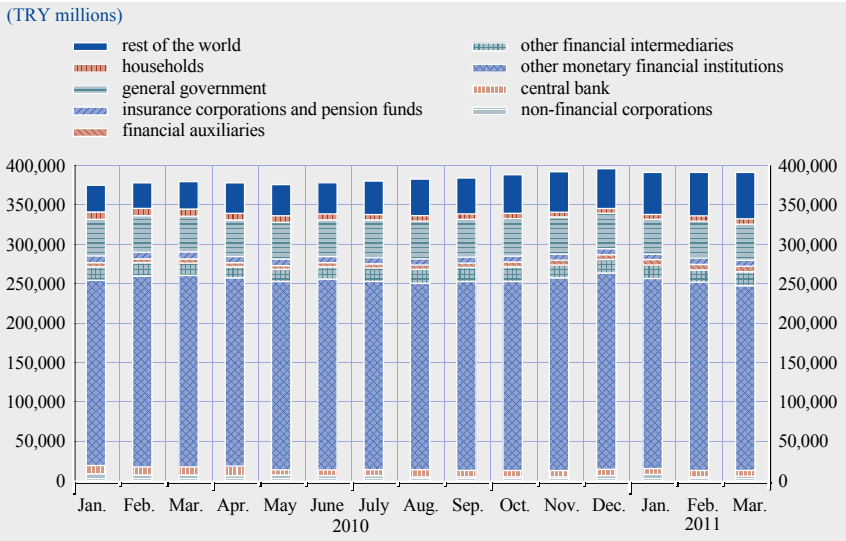
Concerning the remaining sectors, the CBT has provided preliminary tables on household financial accounts identifying counterparty information mainly from MFI sector data, the CBT's internal securities database, the Central Registry Agency (CRA), international investment position statistics and statistics on non-bank financial institutions. For non-financial corporates, the CBT and Turkstat are jointly working to determine appropriate data sources and methodology. Rest of the world figures will be compiled from balance of payments statistics (see table above).

3.2 SECURITY-BY-SECURITY DATABASE PROJECT: HOLDINGS OF GOVERNMENT SECURITIES

Statistics on the issuance of securities complement monetary statistics and are an essential tool for understanding flows in the financial system, and thus for guiding monetary policy. The transmission mechanism of monetary policy (in particular, the "credit channel") can be affected by shifts between direct finance (via the securities market) and indirect finance (via bank lending), where these shifts may reflect structural changes in the country's financial system. The database reveals the sectoral breakdown of the issuer which distinguishes demand for government and for private sector debt, while data on the outstanding stock of securities reveal the depth of the market.

In this context, the CBT and the Treasury have initiated a joint project aimed at establishing a comprehensive security-by-security database on government securities. Within this study, flow data on government securities by holder on the asset side of the financial accounts and stock data on the liabilities of central government at market value are derived. The CBT's database on government securities by holder, compiled from data from MFIs and dealer companies, is matched with detailed Treasury information on the interest rate, coupon rate

Chart 5 Turkey: Holders of government securities

(TRY millions)

- rest of the world
- households
- general government
- insurance corporations and pension funds
- financial auxiliaries
- other financial intermediaries
- other monetary financial institutions
- central bank
- non-financial corporations

Jan. Feb. Mar. Apr. May June July Aug. Sep. Oct. Nov. Dec. Jan. Feb. Mar.
2010   2011

Source: CBT.

and payment period of each security. Aggregated figures form the sectoral information at investor level (Chart 5).

3.3 IMPROVEMENTS TO THE BIS INTERNATIONAL BANKING STATISTICS

The recent financial crisis has brought a new set of questions and monitoring needs concerning banks' balance sheets. The BIS (Bank for International Settlements) international banking statistics (IBS) are a widely used dataset for monitoring the cross-border balance sheet positions of internationally active banks. The four main IBS datasets are grouped as: locational by nationality; locational by residency; consolidated on an immediate borrower basis; and consolidated on an ultimate risk basis. The CBT started contributing to the BIS IBS in 2000.

As a result of the increased demand for better data on funding and lending patterns in the banking system, cross-currency investment and funding concentrations of banks as well as country-level linkages that can lead to international transmission of shocks have become increasingly important. In the "Financial Crisis and Information Gaps Implementation Progress Report", Recommendation 10 encourages the BIS to continue to improve the coverage of significant financial centres in the IBS and Recommendation 11 suggests that the BIS consider improving the information required to track funding patterns in the international financial system (International Monetary Fund and Financial Stability Board (2011)). Consistent with these recommendations, the BIS has designed a two-stage approach for improving the IBS. Stage 1 enhancements focus on broadening statistics coverage by adding banks' domestic currency positions against residents, further refining the currency breakdown and adding

a full counterparty matrix to the "locational by nationality" statistics to show the entire geography of banks' assets and liabilities. Stage 2 enhancements are designed to improve the IBS to better monitor the credit exposures of national banking systems and track trends in the supply of bank credit and banks' funding patterns. The CBT is currently working to comply with these new requirements. Priority is given to Stage 1 enhancements. After fulfilling Stage 1, the technical skills and data needs required for Stage 2 enhancements will be determined.

4   THE CHALLENGES

4.1   METHODOLOGICAL REVISIONS

The System of National Accounts (SNA) offers an internationally agreed and standard set of recommendations for classifying transactions and sectors, which can be integrated into statistical systems across countries. The changing economic environment, which has become increasingly globalised since the 1990s, has required methodological changes and more advanced measurements in national accounts; hence the SNA has had to be revised and improved. In the 2008 SNA, although the definition of institutional units is similar to the SNA 93, the sub-sectors of financial corporations are more detailed and financial instruments and assets have been more broadly defined to cover innovations in financial services and markets.

In the CBT's current practice, the monetary statistics framework is based on the SNA 93. The institutional coverage and sectors used for monetary statistics are broadly in line with the respective international guidelines and outlined in the "Institutional Sector List (ISL)" published by the CBT. The ISL was last updated in June 2010 in consultation with Turkstat, the MoF and the Treasury. Reporting banks were informed. At present, although recommended by the 2008 SNA, there is no separate reporting to distinguish between money market funds and non-money market investment funds. Similarly, the ISL does not cover sub-sectors of insurance companies and pension funds.

4.2   DATA QUALITY

Data quality covers various aspects of data collection, processing and dissemination. The international standard – the IMF's Data Quality Assessment Framework (DQAF) – sets uniform standards for assessing data quality and suggests improvements for data compilation and dissemination. The main criteria include: assurances of integrity; methodological soundness; accuracy and reliability; serviceability; and accessibility (IMF 2003). The DQAF also forms the basis for the data module of the "Report on the Observance of Standards and Codes" (ROSC) which summarises the IMF's assessment of the observance of selected standards in data dissemination and transparency.

During the most recent ROSC mission to Turkey, monetary statistics was one of the six datasets assessed using these criteria: 19 out of 22 key practices were considered to meet the DQAF statistical standards without any significant deficiencies. The remaining three practices were classified as largely covering

the DQAF standards, without substantial departures. The CBT has taken concrete steps to address these concerns and to improve the data (Annex 2).

There are additional issues not fully covered by the DQAF, but relevant for the CBT. The changing legal and institutional environment as well as production costs and burdens on respondents are additional constraints on data quality.

• Several data sources are involved in compiling financial accounts: public accounts, balance of payments data and balance sheets of financial and non-financial corporations. Residual and counterparty sectors are estimated. Any change either in the legal framework or the institutional structure requires adjustments to the related datasets which are quite time-consuming and costly. For instance, when there is a change in an external data source, the sectoral classification of institutional units in central government has to be revised, requiring the adjustment of the bridge tables and financial accounts. In cases where various data sources are involved in constructing a single set of accounts, it is crucial to have flexibility in reporting to enable adjustments in accordance with changes in statistical standards.

• The CBT's compilation of monetary statistics relies on banking sector supervisory datasets developed for both supervisory and statistical purposes, and which are reported by banks to the CBT and BRSA simultaneously. The size and number of branches constrain banks' flexibility in reporting, especially in the light of the changing reporting requirements and need for more timely statistics.[3] The report forms for compiling monetary statistics are collected directly by the CBT from the banks, and the CBT cooperates with the BRSA when there is a need to change the forms and/or the associated instructions. Despite the close collaboration between the CBT and the BRSA, the banks currently report to them in different formats. The separate submission processes thereby not only increase the reporting burden, but also create possible areas of mis-reporting. Therefore, the CBT and the BRSA have initiated a comprehensive project that will streamline data reporting and create a common database.

5   CONCLUDING REMARKS

The global crisis of 2008-09 has widened the scope of the monetary policy framework as concerns over financial stability have deepened. Coordinating macro-prudential policy at an international level has become a top priority. Central bankers, as the main compilers of monetary and financial statistics, face a more complicated and closely integrated financial system and have had to adjust their traditional ways of collecting and presenting data. Moreover, new statistical needs have emerged at a global level, following internationally coordinated initiatives launched to identify and address the information gaps that individual countries need to close.

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3   The Turkish banking system consists of 47 resident banks and 10,441 domestic branches, as at December 2011. Three public banks have almost a 30% share in total assets, covering 2,877 branches.

In Turkey, in line with the evolving international statistical standards, the CBT has already adjusted its data compilation practices to improve the quality of financial statistics, so that data can better support the changing monetary policy framework, taking into account the goal of financial stability. In that regard, monetary aggregates have been extended to include MFIs other than the CBT and deposit money banks; data on non-bank financial institutions are provided on a from-whom-to-whom basis. The instrument breakdown has been refined to include financial derivatives and banking sector debt securities. Moreover, the CBT also coordinates and contributes to the multi-agency task force on the national financial accounts, in which data for the major sectors should be published in 2012. The compilation of security-by-security information on holdings of government securities is another ongoing comprehensive database project carried out by the CBT, together with the Treasury. Last but not least, the CBT is working closely with the BRSA to create a common monetary and financial database to improve the efficiency of data collection and reduce the reporting burden on banking sector.

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	CBT's actions (up to February 2012)
Monitoring risk in the financial sector	
Recommendation 2	
The IMF to work on increasing the number of countries disseminating Financial Soundness Indicators (FSIs), including expanding country coverage to encompass all G20 members, and on other improvements to the FSI website, including preferably quarterly reporting. FSI list to be reviewed.	The BRSA is the main body collecting and disseminating data on FSIs. The CBT and the Treasury contribute in related areas.
Recommendation 4	
Further investigation of the measures of system-wide macro-prudential risk to be undertaken by the international community. The BIS and the IMF to complete their work on developing measures of aggregate leverage and maturity mismatches in the financial system, drawing on inputs from the Committee on the Global Financial System (CGFS) and the Basel Committee on Banking Supervision.	The CBT, the Treasury, the BRSA and the Savings Deposit Insurance Fund have signed a Memorandum of Understanding and a related protocol on systemic risk management in order to strengthen coordination, cooperation and exchange of information among related parties in identifying systemic risk.
Recommendation 5	
The CGFS and the BIS to undertake further work in close cooperation with central banks and regulators on the coverage of statistics on the credit default swaps markets for the purpose of improving understanding of risk transfers within this market.	Turkey participates in the triennial BIS survey.
Recommendation 7	
Central banks and, where relevant, statistical offices, particularly those of the G20 economies, to participate in the BIS data collection on securities and contribute to the further development of the BIS-ECB-IMF Handbook on Securities Statistics (Handbook). The Working Group on Securities Databases to develop and implement a communications strategy for the Handbook.	As part of an ongoing project, the CBT reports government debt securities issues by providing breakdowns on the issuing sector, currency and the market. Moreover, the CBT continues to participate actively in the Handbook review group.

	CBT's actions (up to February 2012)
International network connections	
Recommendation 8	
The Financial Stability Board (FSB) to investigate the possibility of improved collection and sharing of information on linkages between individual financial institutions, including through supervisory college arrangements and the information exchange being considered for crisis management planning.	The CBT contributes to the work of committees and working parties tackling issues related to systemically important global financial institutions (G-SIFIs). A representative of the CBT was seconded to the FSB and the CBT continues to participate in the working group on Data Gaps and Systemic Linkages.
Recommendation 9	
The FSB, in close consultation with the IMF, to convene relevant central banks, national supervisors and other international financial institutions to develop by end-2010 a common draft template for systemically important global financial institutions for the purpose of better understanding the exposures of these institutions to different financial sectors and national markets. This work should be undertaken in concert with related work on the systemic importance of financial institutions. Widespread consultation would be needed, and due account taken of confidentiality rules, before any reporting framework can be implemented.	

	CBT'S actions (up to February 2012)
International network connections	
Recommendation 10	
All G20 economies are encouraged to participate in the IMF's Coordinated Portfolio Investment Survey (CPIS) and in the BIS's international banking statistics (IBS). The IMF and the BIS are encouraged to continue their work to improve the coverage of significant financial centres in the CPIS and IBS respectively. The IMF, in consultation with the IMF's Committee on Balance of Payments Statistics, to strive to enhance the frequency and timeliness of the CPIS data, and consider other possible enhancements, such as the institutional sector of the foreign debtor.	(i) The CBT has participated in the CPIS since 2001 and reports the portfolio investment assets by sector of the holder country of non-resident issuers and the currency breakdown on a quarterly basis. (ii) The CBT has contributed to the BIS international banking statistics since 2000: i) on a locational basis by gathering quarterly data on international financial claims and liabilities of bank offices in the reporting countries and providing breakdowns by currency, sector, country of residence of the counterparty and nationality of reporting banks; and ii) on a consolidated basis, by gathering quarterly data on immediate borrower and ultimate risk bases. Data are available by sector, maturity and country breakdowns.
Recommendation 11	
The BIS and the CGFS to consider, amongst other improvements, the separate identification of non-bank financial institutions in the consolidated banking data, as well as information required to track funding patterns in the international financial system.	
Recommendation 12	
The IMF to continue to work with countries to increase the number of International Investment Position (IIP) reporting countries, as well as the quarterly reporting of IIP data. The Balance of Payments and International Investment Position Manual, sixth edition (BPM6) enhancements to the IIP should be adopted by G20 economies as soon as feasible.	The CBT plans to implement the BPM6's methodological standards starting from 2014 for data of the reference year 2013, both for balance of payments and IIP statistics.

	CBT's actions (up to February 2012)
Sectoral and other financial and economic datasets	
Recommendation 15	
The Inter-agency Group on Economic and Financial Statistics (IAG), which includes all agencies represented in the Inter-Secretariat Working Group on National Accounts, to develop a strategy to promote the compilation and dissemination of the balance-sheet approach (BSA), flow of funds, and sectoral data more generally, starting with the G20 economies. Data on non-bank financial institutions should be a particular priority. The experience of the ECB and Eurostat within Europe and the OECD should be drawn upon. In the medium term, including more sectoral balance sheet data in the data categories of the SDDS could be considered.	Balance sheets and financial accounts are not compiled for a complete set of sectors. The CBT has established a working group including representatives from Turkstat, the Treasury and the MoF to produce a full set of financial accounts. The coordinated studies are continuing.
Recommendation 19	
The Inter-Secretariat Working Group on Price Statistics to complete the planned handbook on real estate price indices. The BIS and member central banks to investigate dissemination on the BIS website of publicly available data on real estate prices. The IAG to consider including real estate prices (residential and commercial) in the Principal Global Indicators (PGI) website.	The CBT will publish a Residential Property Price Index (RPPI) in March 2012, based on assessments by real estate companies. Commercial banks provide the CBT with monthly information on houses sold with mortgage financing. The data start at January 2010.

Sources: IMF and FSB (2009, 2011), and CBT expert studies.

	Harmonisation with ESA 95	Harmonisation with IMF's MFSM 2000	Harmonisation with ECB statistics	G20 Data Gaps Initative	IMF SDDS requirement	Explanation
What we have done so far						
Expanding the monetary sector	√	√	√			Better designed monetary aggregates in the interest of financial stability.
Statistics beyond the monetary sector	√	√		√		Enables sectoral data on financial intermediaries.
Disaggregation of financial derivatives	√	√	√	√	√	Enables sectoral information and separate financial instruments.
Defining debt securities			√			Better designed monetary aggregates in the interest of financial stability.
Improving timeliness of banking statistics				√	√	More timely data for users.
Tasks ahead						
Financial accounts	√	√	√	√		Compilation of sectoral accounts with from-whom-to-whom information identifies links for financial stability purposes and highlights analysis of systemic risk.
Security-by-security database for government securities	√		√			Measures flow data on government securities for the purpose of compiling financial accounts.
Improving the BIS international banking statistics				√		Provides global data on the balance sheets of internationally active banks and enables better data on banking systems' funding and lending patterns.

Source: CBT.

DISCUSSANT'S REMARKS

ANDRÁS SIMOR

on

AYCAN ÖZEK AND GÜLBİN ŞAHİNBEYOĞLU, *Emerging statistical needs after the crisis – a central banking perspective*

MUHAMMAD BIN IBRAHIM, *Future challenges for monetary statistics in a changing environment – re-thinking monetary analysis and statistics*

I   INTRODUCTION

Statistical information is vital for central bank efforts to achieve price stability and a stable financial system.

It is crucial to identify and analyse future challenges, especially in the area of statistics, because the implementation of any change in statistics takes years from the defining of user requirements and amending data collection to achieving appropriate data quality in the new statistics.

Given this characteristic of statistics, the strategic cooperation between central bank statisticians and monetary and macro-prudential analysts is of great importance.

2   COMMENTS ON THE CHALLENGES FACING MONETARY STATISTICS PRESENTED BY THE REPRESENTATIVES OF THE CENTRAL BANK OF TURKEY AND BANK NEGARA MALAYSIA

I fully agree with Aycan Özek that the impact of the financial crises has varied across countries depending on the different economic conditions, and, therefore, the priorities of the emerging statistical needs are different from country to country, while, at the same time, important international initiatives (e.g. the G20 recommendations) to address data gaps should be taken into consideration.

Regarding the achievements and tasks of the statistics function of the Central Bank of Turkey, we think that filling in data gaps on non-bank financial institutions, the use of national financial accounts, the establishment of security-by-security statistical data collection, and improving the timeliness and quality of statistics are essential. These efforts are in line with international initiatives and with practice in Hungary, where the collection of data on financial derivatives is given high priority.

Ms Özek's presentation provided a good description of the new requirements and solutions in connection with the financial crisis, but I would like to share our ideas on the evolution of the approach used in the implementation of monetary policy, on the subsequent changes in the focus of monetary statistics, on the lessons learned from the financial crisis and, finally, on the necessity of balancing information requirements and costs.

Muhammad bin Ibrahim highlighted the fundamental links and potential synergies between monetary policy and financial stability. The harmonisation of macro-prudential and monetary surveillance is one of the most important challenges facing central banks. From the point of view of statistics, the strategy and the extent of this harmonisation will have a big impact, owing to the similar data needs, but different approaches followed. Mr bin Ibrahim pointed out with regard to the current data gaps that recent initiatives might not be sufficient, and that further improvements will be needed to support compilers, owing to the evolving financial environment. Policy-makers need to have a better understanding and perform early analysis of statistics to identify potential risks.

3   A CHANGING FOCUS AND INCREASING DATA DEMANDS AS A RESULT OF A CHANGING ENVIRONMENT

3.1   MONETARY STATISTICS AND CENTRAL BANK STATISTICS – WHAT ARE THEY?

For central banks, the main purpose of collecting and compiling statistical information is to provide an adequate basis for monetary policy decisions. For many decades, monetary statistics have been seen as one of the most important outputs of central bank statisticians.

Monetary statistics consist of the following three building blocks:

– The balance sheet of the central bank and the monetary base (money issued by the central bank)

– The balance sheets of monetary financial institutions (MFIs) and monetary aggregates (M1, M2 and M3 – money issued by MFIs)

– Interest rate statistics

Additional major components of central bank statistics are balance of payments statistics and financial accounts. Central bank statistics on the financial affairs of the economy complement the statistics traditionally produced by statistical offices on the state of the economy (including information on the output of different sectors, GDP, employment and inflation).

3.2   THE GOLDEN AGE OF MONETARY AGGREGATES

The functions of central banks have evolved over time in different geographic regions. One of the oldest functions of central banks is the oversight of the payments system

and the issuance of banknotes. Central banks also used to help fund government debt, and they act as lenders of last resort in times of financial stress. Since the high inflation in the 1970s, price stability has become the most important goal of central banks, but they have also kept the role of lender of last resort. Ideas about how price stability can be achieved have evolved significantly in recent decades.

Following the Great Depression, the transmission mechanism – the process by which changes in the money supply affect the level of aggregate demand – was the centre of interest for economists. One important lesson learned in the Great Depression was that central banks failed to play the role of lender of last resort, and the resulting fall in the monetary base and monetary aggregates were to blame, at least partly, for the severe and long-standing impact of the crisis.

Although Keynesian and monetarist economists see the process differently, they both believe that the monetary base and monetary aggregates play a critical role in the equation. According to a simplified money supply model, the monetary base of the central bank has a direct impact on the money supply or monetary aggregates through the money-multiplier mechanism, which is mainly influenced by the minimum reserve requirements set by the central bank. For many years, the most important targets used by central banks were growth targets for monetary aggregates and targets for short and long-term interest rates.

3.3   INFLATION TARGETING AND MONETARY AGGREGATES

By the end of the 20th century, inflation targeting had become the principal strategy of central banks. The transmission mechanism was still at the centre of economic interest, although most central bankers and economists believed that the mechanism whereby a central bank can have an impact on the economy was more complex than previously thought. Many researchers suggest that growth of monetary aggregates should not be an operating target, and in many circumstances it is not even seen as a useful variable in forecasting inflation.[1]

The ECB has a "dual pillar" monetary policy strategy: within the inflation forecasting pillar, monetary aggregates still have a prominent role. This means that, in parallel with the analysis of money growth in relation to the reference value, a broadly-based assessment of the outlook for price developments and the risks to price stability in the euro area play a major role in the strategy of the Eurosystem.[2]

3.4   LESSONS LEARNED FROM THE FINANCIAL CRISIS
IN 2008-2009

In the 2008-2009 financial crisis, central banks built on the experience from the Great Depression. Unlike in the Great Depression, the focal point this time was not a run on deposits, but the drying up of the interbank market.

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1   See Komáromi, A. (2008), "A monetáris aggregátumok szerepe a monetáris politikában" (The role of monetary aggregates in monetary policy), *MNB Occasional Papers*, No 71, Magyar Nemzeti Bank, January.
2   See European Central Bank (1999), "The stability-oriented monetary policy of the Eurosystem", *Monthly Bulletin*, January, pp. 39-50.

In addition to traditional monetary policy measures, central banks introduced many unconventional measures, such as increasing liquidity provisions to financial institutions, intervening directly in a wider segment of the financial market, purchasing long-term government bonds and supporting specific financial institutions, in order to avoid the collapse of financial intermediation.[3] The sharp increase in the monetary base resulting from the application of these unconventional measures was not followed by a surge in monetary aggregates. The unconventional measures introduced in the past few years are currently seen as temporary in nature, and central banks plan to phase them out as soon as they pose a risk to their primary objective of maintaining price stability.[4] The financial crisis highlighted the need for further research in respect of the monetary policy transmission mechanism. Observers of the crisis widely agree that the current theoretical models of bank behaviour in the transmission process are inadequate.[5]

One of the most important lessons of the crisis is that, in order to ensure the stability of the financial system, there is a need for a new macro-prudential oversight mechanism that builds heavily on cooperation among and the experience of central banks and financial supervisors, with an enhanced perspective on links between the financial and the real economy in order to ensure the possibility of intervening at a macro-prudential level in case of necessity. The European answer was the establishment of the European Systemic Risk Board (ESRB) and the European System of Financial Supervisors (ESFS). Monetary policy also has to adapt to the new age. The crisis has not prompted significant calls to replace the current inflation targeting model adopted by the majority of central banks around the world with a new regime. It is commonly thought, however, that, in order to maintain an effective monetary policy, more emphasis should be given to macro-prudential stability, and, in order to achieve this goal, macro-prudential tools need to be developed and introduced.

Another important lesson is the necessity of monitoring credit aggregates: overheated credit growth is an early indicator of a financial crisis.

3.5   STATISTICAL CONSEQUENCES

The effects of globalisation, the development of new financial instruments and the financial crisis have changed the views of central banks on the mechanism of monetary policy transmission and the information needed to support monetary policy.

The increasing data needs of various users (e.g. for financial stability) are raising the question: what is the definition of monetary statistics? Is it statistics supporting the implementation of monetary policy in a narrow sense or statistics on financial

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3   See Minegishi, M. and Cournède, B. (2010), "Monetary Policy Responses to the Crisis and Exit Strategies", *OECD Economics Department Working Papers*, No 753, OECD Publishing.

4   See European Central Bank (2010), "The ECB's monetary policy stance during the financial crisis", *Monthly Bulletin*, January, pp. 63-71.

5   See Gioanne, D., Lenza, M., Pill, H. and Reichlin, L. (2011), "Non-standard monetary policy measures and monetary developments", *Working Paper Series*, No 1290, ECB, January.

institutions? Due to the decreasing importance of monetary aggregates, the definition of monetary statistics needs to be reconsidered. Monetary statistics are much more than statistics on the balance sheets and interest rates of MFIs. Monetary statistics should not only provide information on all sub-sectors of the financial sector, including insurance companies, pension funds, investment funds and other financial intermediaries, but also provide data series which are suitable for macro-prudential oversight and for other purposes.

4   NEW USER REQUIREMENTS WITH REGARD TO FINANCIAL SECTOR INFORMATION

4.1   THE INFORMATION NEEDED FOR THE IMPLEMENTATION OF MONETARY POLICY IN THE NARROW SENSE

In the current changing environment, the information needed to facilitate monetary policy decisions has become more complex and overlaps with statistical information used for macro-prudential analyses.

Owing to the development of new financial instruments, as highlighted in the years of the crisis, monetary analysis already uses new statistical information on securitisation, investment funds, insurance companies and pension funds and other financial intermediaries. There are examples of collecting data on credit lines and of efforts made to extend securities holdings statistics on a security-by-security basis. In general, statistics on the financial sector have been enriched with new breakdowns.

There are (or soon will be) requirements from users for new, or more detailed statistical information. Let me give you some examples:

• For the correct assessment of the liquidity and operability of interbank markets, statistical information regarding government bond, swap, uncovered loan, repo, and foreign exchange (FX) spot transactions are essential. In Hungary, we have security-by-security and transaction-by-transaction data collection on these markets, including information on volumes, denomination, maturity, interest rates and counterparties. In addition to these, there is a new demand for standardised data on counterparty risk limits.

• Monetary policy implementation relies more and more on financial accounts statistics. From 2014, the implementation of the revised European System of Accounts (ESA 2010) will bring significant challenges, of which the most important is the modification of the definitions of the sub-sectors of the financial sector.

• Data on derivative transactions are becoming more and more useful. In Hungary, for instance, FX swaps might have more importance than in other countries. For some years before the crisis, owing to interest rate differences, foreign currency loans became very popular in Hungary and FX lending increased substantially, and now the majority of mortgage loans are

denominated in foreign currency. Hungarian banks have closed their open FX positions, partly with FX swaps, and these swaps are having a significant impact on the monetary policy transmission mechanism, partly via the cost of FX resources of domestic banks, and partly through the cost of domestic currency for foreigners. As a result of this, from the monetary analysis point of view, new information which extends interest rate statistics is necessary on the denomination, maturity, outstanding amount and implicit interest rates of FX swaps. There is daily data collection on FX positions and derivative transactions of credit institutions in order to monitor the FX market and its effect on Hungarian forint market interest rates. As various government initiatives, by decreasing the level of FX loans, had a significant effect on the liquidity of banks, the data collection was extended for the purpose of supporting necessary central bank actions. The daily frequency of this data collection was particularly useful during the crisis, not only for monetary analysis, but also for macro-prudential oversight.

Data collection on derivative transactions is a good example of a possible future role for monetary statistics: whenever the economic environment changes, there is a strong demand for quick modifications of data collection, and even for short-term, or ad hoc data collections, to support monetary policy decisions and actions.

4.2 NEW REQUIREMENTS DUE TO THE FINANCIAL CRISIS AND MACRO-PRUDENTIAL OVERSIGHT

The macro-prudential challenges facing statistical information are the subject of the next session, but, as a part of the new tasks of monetary statistics, a brief overview is warranted here. Financial stability has become a more important goal for central banks, so adequate statistical information is needed for macro-prudential oversight, analysis and actions. There are various major international initiatives in response to this need, such as the implementation of the 20 recommendations of the G20 finance ministers and central bank governors, efforts made by the International Monetary Fund (IMF), the Financial Stability Board (FSB), the Bank for International Settlements (BIS), the ECB and central banks to close information gaps, and the information requirements of the European Systemic Risk Board (ESRB). Apart from the international demand for data, additional new statistics are needed for national central bank actions to maintain the stability of the financial system, since the effects of the crisis varied from country to country.

In order to meet these data requirements, it was necessary to extend the data collection framework of monetary statistics in terms of content, reporting agents, methodology, granularity and frequency.

Monetary statisticians had to become familiar with the data of national supervisory authorities on solvency and portfolio quality in order to use them for statistical purposes. The link between monetary statistics and financial stability analysis has become stronger and stronger, and this is the clear path for the future.

As I have already mentioned, Magyar Nemzeti Bank was in a relatively comfortable position regarding the monitoring of the FX positions of banks, but, in order to gain a forward-looking picture of the liquidity situation of individual banks, we have, in co-operation with the Hungarian Financial Supervisory Authority (HFSA), introduced daily reporting on 30-day Treasury cash-flows, and daily balance sheet data reporting for major banks. These new reports are able to support liquidity monitoring on a daily basis, supplementing the other data submissions already available. Moreover, the portfolio developments drew our attention to some relevant issues, from which a need to monitor loan restructurings has become apparent.

Traditionally, monetary statistics were focused on MFIs, but the importance of other financial institutions (i.e. investment funds, insurance companies and pension funds, other financial intermediaries and financial auxiliaries) has increased, as the current crisis has highlighted the role of "shadow banking". The compilation of statistics based on data on individual reporting agents and consolidated data on banking groups is challenging.

In order to provide more information on interconnectedness, granularity has become a very important aspect of statistics. Macro-prudential analysis needs increasingly granular information, and even micro data are needed in some cases. In Hungary we have transaction-by-transaction data collection for derivative transactions.

4.3 THE ART OF BALANCING THE GROWING APPETITE FOR MORE DATA AND KEEPING THE BURDEN ON FINANCIAL INSTITUTIONS AT AN ACCEPTABLE LEVEL

On one hand, data collection entails substantial costs, but, on the other hand, we have a great need for data for the above-mentioned purposes. Rapidly growing information needs are pushing statisticians to optimise the efficiency of statistical systems, especially data collection. Before we let the costs of data collection rise out of control, it is now time to think over the whole process, and we need to find a way to reorganise data collection frameworks to keep the reporting burden at a sustainable level.

One of the strategic ways to avoid increasing the reporting burden is to establish common data collection frameworks for central banks and supervisory authorities. The partially overlapping data collection activities of supervisory authorities (e.g. FINREP in the European Union) and central banks impose additional burdens on reporting agents, and an integrated data collection system could help reduce the costs of redundant data processing.

The idea of integrating different data collection systems could also be advantageous in other areas; there are examples of common balance-of-payments and monetary statistical data collection frameworks.

Granularity in data collection can decrease the reporting burden via flexibility of the reporting, at least in those cases where the granular information is already

available. Some countries are already exploiting the advantages of credit registers for monetary statistical data collection and reporting.

As a consequence of the initiatives on integrated data collection and increasing granularity, there are visions of common data warehouses for reporting financial institutions, central banks and supervisory authorities.

For monetary statistics, the tasks of simultaneous projects aimed at fulfilling the requirement to support monetary policy decisions, macro-prudential oversight, and methodological improvements in a cost-effective way is more than a challenge.

DISCUSSANT'S REMARKS

JOSÉ LUIS MALO DE MOLINA

on

MUHAMMAD BIN IBRAHIM, *Future challenges for monetary statistics in a changing environment – re-thinking monetary analysis and statistics*

I   INTRODUCTION

Mr bin Ibrahim's presentation reviews the implications for statistical work of the increased interdependence between monetary policy and financial stability, in a context of increasingly sophisticated and interconnected global financial markets. First, the presentation identifies in some detail the existing statistical gaps affecting the granularity of data, its coverage, timeliness and degree of harmonisation. It then reviews whether current statistical initiatives suffice to fill the identified gaps. Finally, it suggests some guiding principles for future statistical work.

Mr bin Ibrahim's presentation is very comprehensive and authoritative, and there is not much to disagree with. Therefore, I will focus my comments on five specific points to complement the presentation with the Eurosystem's experience and perspective.

In Section 2 of these comments, I will address the consequences of the increased interconnection between monetary policy and financial stability, in the context of the Eurosystem's monetary policy strategy. My thesis in this regard is that I do not see the need for central banks to choose between the two polar strategies to deal with bubbles and financial imbalances – "pricking bubbles pre-emptively" and "mopping-up after" – which were discussed in the academic literature preceding the global financial crisis. Going forward, central banks will have to make a more flexible use of both policy approaches, depending on the specific circumstances. That flexibility is, however, very demanding in terms of information requirements. In Section 3, I will review the information requirements that arise from the "leaning against the wind" approach, and will discuss some of the gaps identified at the beginning of the crisis in the case of the euro area. In Section 4, I will consider the information requirements that arise from the "mopping-up after" mode of monetary policy, with examples taken again from recent experience in the euro area. In Section 5, I will refer to statistical requirements arising from macro-prudential policy. Finally, I will comment on the importance of some features of the institutional framework.

2   INCREASED INTERCONNECTION BETWEEN MONETARY POLICY AND FINANCIAL STABILITY

I agree with Mr bin Ibrahim that one of the lessons from the crisis is the increased inter-connection between monetary policy and financial stability. In my view, however, this does not imply that monetary policy should be the first line of defence against financial instability. First, the objective of price stability must remain paramount and great care is needed to make sure that it is not jeopardised by the risks of confusion and the communication challenges that may arise if (against the Tinbergen principle) monetary policy were to become overburdened with multiple objectives. Second, identifying misalignments and financial imbalances in real time continues to be a very difficult task. And third, interest rates may be too bold an instrument to deal with specific financial stability imbalances.

These are all elements that cemented the pre-crisis consensus that central banks should remain focused on their primary objective of preserving price stability and act only afterwards to counter the fallout: limiting collateral damage and ensuring financial stability ex post. Having said that, it is also clear to me that the "Great Recession", from which advanced economies have not yet recovered, has challenged this view in a fundamental way. For it has been a powerful reminder of the enormous welfare costs that financial instability inflicts on societies and of the difficulties of countering episodes of severe financial turmoil using monetary policy. Also, from today's perspective, it is clear that the long period of stable, non-inflationary growth experienced by the global economy during the "Great Moderation" made us forget that the vulnerabilities that lead to macroeconomic instability emerge and build up precisely during good times, characterised by excessive optimism. With the benefit of hindsight, we may conclude that these elements, at the root of the previous mopping-up consensus, were not well calibrated.

The implication going forward is that monetary policy will need to take a flexible attitude and place itself between the two polar strategies: pricking bubbles pre-emptively or mopping-up after. In keeping with its mandate to preserve price stability over the medium to long-term, monetary policy will have to take more into account the endemic pro-cyclical characteristics of the financial system and of boom-bust cycles in asset prices, while avoiding the perils of short-termism (for instance, by avoiding fixed, short-term policy horizons for monetary policy) and the temptations of excessive fine-tuning and asymmetric responses during upswings and downturns.

Under some circumstances, exceptional as they may be, the central bank may consider that the case for leaning against the wind of the financial cycle is strong enough and, accordingly, decide to act pre-emptively to counter the medium and long-term risks associated with the emergence of macro-financial imbalances, in particular when those risks arise from the banking system. On other occasions, the central bank may decide that it is appropriate to remain focused on its primary objective of preserving price stability and act only to mop up the fallout of the bubble burst.

From the point of view of statistical tasks, the option of keeping flexibility is very demanding. Ensuring that monetary policy can choose effectively which strategy is optimal on a case-by-case basis involves large information requirements.

3   THE INFORMATION REQUIREMENTS OF "LEANING-AGAINST-THE-WIND"

The "leaning-against-the-wind" approach requires that misalignments and macro-financial imbalances are identified well in advance. For that to be feasible the central bank would need to have at its disposal, inter alia:

• comprehensive aggregate information on monetary and financial variables, particularly on credit aggregates;

• exhaustive data on asset prices, including housing prices, which have played such a prominent role in the crisis that my country, Spain, is still going through; and

• micro data on households and non-financial corporations, since on many occasions aggregate information is not enough to fully appraise emerging risks.

Also, monitoring the structural changes the financial system is undergoing at each point in time entails specific challenges concerning information requirements.

While, at first glance, the above may look like the minimum standard "shopping list", the crisis has in fact revealed numerous "information gaps". Mr bin Ibrahim mentioned many of them in his presentation, such as shadow banking. But the truth is that when the global financial crisis started in 2007 there were many others, at least in the case of the euro area. For instance:

• data on securitisation or on credit lines were not widely available at the start of the crisis;

• data on real estate prices were scarce and sometimes of sub-standard quality;

• few central banks had comprehensive individual data at their disposal on non-financial corporations (comprising balance sheets, income statements, employment and salaries, financial ratios, etc.), such as those provided in Spain by the Central Balance Sheet Data Office survey, which covers around 2,000 companies; and

• even fewer countries conducted state-of-the-art surveys on household finance, such as the one conducted by Banco de España since 2002 that links information on income, assets, debt and consumption at the household level.

The Eurosystem is catching up on many of these fronts and some of the existing gaps have been, or are in the process of being, filled. For example, detailed information on securitisation is now available, and the Eurosystem is developing

a household wealth survey in all euro area countries which follows a methodology similar to the Spanish survey on household finance. In some cases, such as the last one I mentioned, collaboration between economists and statisticians is a prerequisite to obtain the best results.

Closer collaboration would also be beneficial to fill the gaps existing in the availability of "soft data" coming from surveys on credit institutions (such as the ECB's quarterly bank lending survey conducted since 2003 with the aim of improving our understanding of bank lending behaviour in the euro area) or on non-financial corporations (such as the survey on the access to finance of small and medium-sized enterprises, carried out in cooperation with the European Commission since 2009). The demand for this soft data has increased enormously since the crisis started.

4   THE INFORMATION REQUIREMENTS OF "MOPPING UP AFTER"

The information requirements of the "mopping-up after" approach are perhaps better understood in relation to the non-conventional measures adopted by central banks in developed countries in response to the crisis, either to combat incipient deflation risks or to repair essential elements of the transmission mechanism that had become blocked. In the Eurosystem context, central bank liquidity provision policies became prominent after the outbreak of the financial tensions in August 2007, whose effects were felt with particular virulence on the interbank markets which stopped functioning as efficient liquidity distribution mechanisms in 2008. The sovereign debt crisis has prolonged this situation over time.

The ECB responded by increasing the supply of liquidity in order to meet the system's gross liquidity needs directly, broadening the range of acceptable collateral in monetary policy operations and lengthening the terms at which liquidity was supplied to the market. As a result, its consolidated balance sheet has expanded unprecedentedly, as has been the case in other advanced countries.

Non-conventional monetary policy was in uncharted waters and, as the crisis unfolded, many new information requirements arose. To mention just a few:

• risk management considerations made it necessary to collect information on the solvency situation of individual counterparties;

• individual bank data were also required to assess the damage caused by the crisis to key components of the monetary transmission mechanism and to analyse the effectiveness of some of the non-conventional measures, in particular the two three-year longer-term refinancing operations (LTROs) of December and February this year;

• access to ad hoc information on cross-exposures was crucial, especially in the case of the Lehman bankruptcy; and

- in the case of Greece, assessing the risks to financial stability involved in restructuring the country's debt required detailed knowledge of "who held what".

A common theme is that more granular data, sometimes even at the level of individual institutions, were needed. Some initiatives pointing this way had already been taken before the crisis, like the Centralised Securities Database containing security-by-security data to help provide swift answers to ad hoc requests and which will be soon complemented with similar data for securities holdings, or the project to compile a detailed register of financial institutions including data on groups and interlinkages. Other initiatives are being developed, such as harmonised information on loans obtained from credit registers.

5 THE STATISTICAL REQUIREMENTS ARISING FROM MACRO-PRUDENTIAL POLICY

Another lesson from the financial crisis is the need to address systemic risks through macro-prudential policy, thus complementing traditional macroeconomic policies (which have not paid enough attention to financial stability considerations) and micro-prudential policies (which have failed to provide a holistic view of risks brewing in the global financial system). The idea is to combat the so-called "fallacy of composition" – i.e. if each individual bank is sound, the entire banking system must be sound – since during crisis periods correlations across assets and banks' balance sheets can increase sharply, creating systemic risk.

However, macro-prudential policy is still in its infancy. Its framework (including a more precise definition of its objectives), its toolbox and the way it interacts with other policies are not yet completely settled. "Learning by doing" will be the rule.

But, it seems clear that this new policy will place additional demands on statistics. Mr bin Ibrahim's presentation provides many examples of such demands, also putting due emphasis on the dynamic nature of the information requirements in this field.

I agree that some of the principles put forward at the end of the presentation can be useful guides for future statistical work in this regard. There is a risk that the difficulty in defining users' requirements ex ante makes us arrive at a wrong decision when we have to balance the intrinsic value of information against the cost of its collection. The granularity of the data required and the need to focus on interconnections increase enormously the amount of information needed for a forward-looking assessment of risks to financial stability. And the need to keep up with the evolving financial environment, subject to continuous structural change, poses formidable challenges.

6 THE IMPORTANCE OF THE INSTITUTIONAL FRAMEWORK

The re-discovered interlinkages between monetary policy and financial stability should lead to closer collaboration, also in the field of information sharing,

between macro-prudential and monetary authorities, which do not always coincide. Indeed, at the international level the institutional framework is very diverse. According to International Monetary Fund data, only in 40% of the cases are central banks responsible for macro-prudential policy (see the chart). Other institutions that have macro-prudential mandates are separate regulators or supervisors, financial stability councils/committees or even ministries of finance.

The European Systemic Risk Board (ESRB) – which was created as a response to the financial crisis and is part of the European System of Financial Supervision – is the independent EU body responsible for macro-prudential oversight of the financial system within the EU. Both national central banks (NCBs) and the ECB participate in the ESRB, with the ECB ensuring the ESRB's Secretariat. Some NCBs are bank supervisors, and have a national mandate for ensuring financial stability and/or implementing macro-prudential policies. The ECB's Statute mentions contributing to financial stability, which is, however, without prejudice to its primary objective of maintaining price stability over the medium-term in the euro area. Also, as an important financial authority, the ECB devotes substantial efforts to promoting European financial integration and stability.

The new arrangement keeps the central banks closely involved in macro-prudential policy, reflecting their expertise in monetary and macro-financial issues, their privileged position in the surveillance of the banking and financial system and, in many countries, their reputation for professionalism and independence.

To enable the synergies to be reaped in full and, in line with the lesson drawn from the crisis of increased interdependencies between monetary policy and financial stability, information sharing between the different institutional actors

Share of total number of macro-prudential mandates across 21 countries

(percentages)
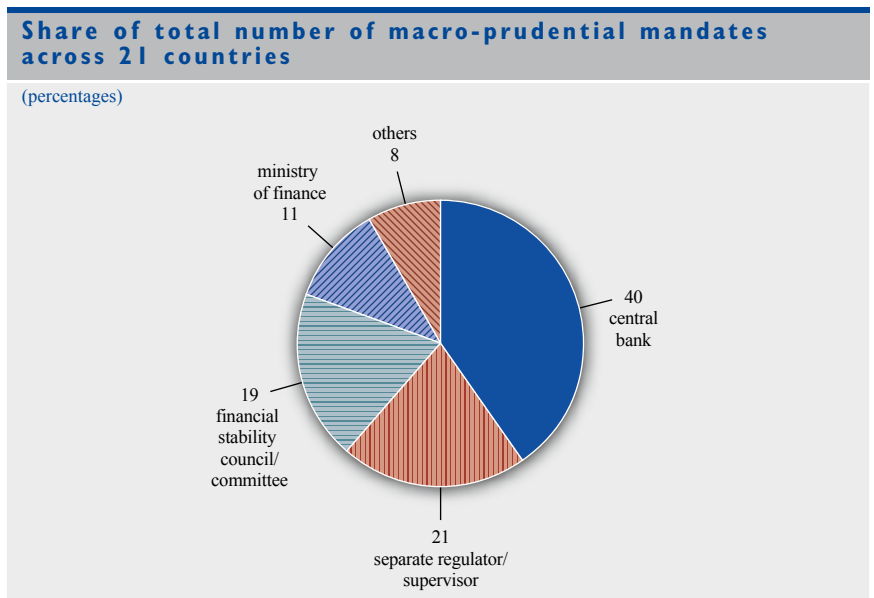
Source: 2010 IMF Survey of 21 countries that use explicit, or implicit, macro-prudential mandates.

will need to be enhanced substantially. This is even clearer when we understand that there is an intrinsic discrepancy in some key concepts to compile the information required for macro-prudential policy and monetary analysis as Mr bin Ibrahim points out: consolidated versus solo basis, or detailed data versus broad aggregates. In this field also we will have to "learn by doing" and I am sure that the principles that Mr bin Ibrahim described at the end of his presentation can provide useful guidance in this respect.

DISCUSSION SUMMARY

In his introduction, **Ignazio Visco** (Governor, Banca d'Italia) opened the session by noting that, with the impressive progress that has been made over the past two decades, comprehensive, harmonised and high quality monetary and financial statistics, which are needed for and used in monetary policy-making, are available. He noted, however, that the target is moving fast and new challenges are emerging for which new sets of information are necessary. To overcome the data gaps, not only the interaction between financial experts and statisticians is fundamental, but also the provision of adequate resources for statistical work.

Muhammad bin Ibrahim (Deputy Governor, Bank Negara Malaysia) presented the lessons learned from the crisis from a global perspective, stressing the deep interaction between monetary policy and financial stability, the growing sophistication of financial markets, and the greater economic and financial integration. He noted that the crisis has revealed information gaps in terms of coverage, granularity, timeliness and standardisation of data and he commented on some current initiatives. He believes that statisticians should be proactive in identifying and collecting indicators in an evolving environment, and that there is a need for collaboration between statisticians, policy-makers, supervisors and economists.

Aycan Özek (Deputy Director, Statistics Department, Central Bank of Turkey) noted that, following the financial crisis, new statistical needs have emerged and existing data gaps need to be closed. She emphasised that the impact of the crisis has varied across countries, depending on the initial conditions of their economies and, therefore, priorities should be set which take into account their different needs. In this regard, she shared her experience of filling data gaps by providing concrete examples of how the Central Bank of Turkey continues to work on broadening the focus and improving the quality of monetary and financial statistics in order to better support the changing monetary policy framework and the increased focus on financial stability.

András Simor (Governor, Magyar Nemzeti Bank), as discussant of the previous speakers, agreed with **Aycan Özek** that priorities in statistics differ from country to country. He also appreciated **Muhammad bin Ibrahim's** presentation highlighting the linkages and synergies between monetary policy and financial stability. He noted that, while monetary and financial statistics have to follow the needs of central banking and provide an adequate basis for monetary policy decisions, over the last decade the main tasks of central banks have evolved, as have the methods used to carry them out. Moreover, one of the most important lessons learned from the crisis is that new statistical requirements have emerged for macro-prudential oversight purposes. He summed up that supporting monetary policy and financial stability simultaneously in a cost effective way is very challenging for monetary and financial statistics.

José Luis Malo de Molina (Director General Economics, Statistics and Research Department, Banco de España), also as discussant, agreed with

Muhammad bin Ibrahim that one lesson of the crisis is the increased interconnection between monetary policy and financial stability. Even though monetary policy should not be the first line of defence against financial instability, he supported the thesis that it needs to be made more flexible by applying one of two opposite strategies – "leaning against the wind" or "mopping-up after" – depending on the specific circumstances. This flexibility is, however, very demanding in terms of statistical requirements. He continued by presenting the data gaps existing in the euro area for both strategies and the Eurosystem initiatives to fill them. He ended his presentation by stressing that the interlinkages between monetary policy and financial stability should lead to close cooperation between macro-prudential and monetary authorities, including in the field of information sharing.

In the discussion, **Ekaterina Prokunina** (Central Bank of the Russian Federation) asked the panel about the future of classical monetary statistics as the basic source of information for policy-making. She also wondered about the implications in terms of statistical needs of some central banks moving from monetary targets to inflation targets. In this regard, **Muhammad bin Ibrahim** made the point that Bank Negara Malaysia does not target inflation, but focuses on both monetary and financial stability. Indeed, the revamp of Malaysia's Central Bank Act after the financial crisis formalised the important role of financial stability. On the role of monetary statistics under an inflation target regime, **András Simor** stressed the importance of the drivers of the transmission channel. He pointed out, for example, that in a small open economy like Hungary, with high levels of household and corporate debt in foreign currency, the exchange rate plays an important role. He believes that monetary statistics should serve the needs of policy-making, but, beyond that, the analysis and breakdown of balance sheet data for the whole banking system could become even more important than pure monetary aggregates.

Ignazio Visco highlighted the importance of interlinkages and cross-border exposures and asked the panel about their views regarding the work of international institutions in trying to provide guidance on and the harmonised framework for detecting the main links that policy-makers need to consider. **Muhammad bin Ibrahim** commented on the Asian experience. First, there is the very welcome initiative by the supervisory colleges in Asia to divide banks into two groups, those with cross-border linkages within Asia and those with linkages to countries outside Asia, allowing the sources of risk that could originate from those two groups to be assessed separately. Second, regarding cross-border liquidity arrangements, liquidity access at any point in time and against any collateral is provided to banks with cross-border activities through bilateral operations, which has proved to be very useful. **Aycan Özek** also stressed the importance of sectoral accounts in identifying interlinkages between sectors and for cross-border analysis, as highlighted by the recent crisis.

Gabriel Quirós (ECB) invited **José Luis Malo de Molina** to elaborate further on what contribution monetary policy would make to financial stability. Mr Malo de Molina replied that the priority for monetary policy is price stability, but that financial stability is also crucial for monetary policy to play its role in the context

of a crisis. Unlike in the past, the contribution of monetary policy to financial stability now goes beyond ensuring price stability. This also explains the non-standard measures used by central banks to repair transmission mechanisms during the financial turmoil. From a statistical point of view, this implies that even the conduct of monetary policy needs more than aggregated data. The sharing of firm-level information is, therefore, something that should be arranged within the framework of the institutional relationships between central banks, macro-prudential authorities and micro-prudential supervisors.

Ignazio Visco concluded that the collection of a great amount of data from different areas is necessary, but so are the contributions coming from economists. There are many ongoing initiatives looking at the interaction between those who collect the data, those who produce the statistics and those who analyse the statistics and try to describe the complex global system we are living in.

2   HOW FIT FOR USE ARE STATISTICS FOR MACRO-PRUDENTIAL OVERSIGHT?

INTRODUCTORY REMARKS

CHOONGSOO KIM

In this session we will discuss the development of statistics for macro-prudential oversight and their usefulness. Before we start our discussion, I would like to make some brief remarks on the topic.

To curb systemic risk, over the past couple of years the international community has sought responses from a macro-prudential perspective, and these efforts have taken tangible form as a macro-prudential overlay, one of the important pillars of Basel III. As a result, Basel III is seen as embodying the international community's commitment not to "waste" its experience from the crisis.

As you are well aware, the main objective of macro-prudential policy is to maintain the stability of the financial system as a whole by limiting the build-up of systemic risk. Macro-prudential policy can be built on the basis of three main blocks: the identification and monitoring of systemic risk, the designation and calibration of instruments, and institutional and governance arrangements.

The discussion on macro-prudential oversight started with the identification and measurement of systemic risk, which leads to the issue of data availability. In reality, however, there are limits to the policy authorities' ready acquisition at any time of data for risk identification. To address this data gap issue, the Financial Stability Board (FSB) and the International Monetary Fund (IMF) have presented four core tasks involving 20 key recommendations.[1]

The four core tasks:

- capture in advance the build-up of risk in the financial sector, including the diffusion of financial soundness indicators and the development of standards for tail risk measurement;

- improve data on international financial network connections;

- monitor the other sectors that act to increase vulnerability; and

- improve the communication of official statistics, including reducing gaps in the availability of national statistics.

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[1]   See *The Financial Crisis and Information Gaps – Report to the G-20 Finance Ministers and Central Bank Governors*, FSB and IMF, Basel/Washington DC, October 2009.

We must also bear in mind that the financial system is global and so systemic risk is a global problem. The infrastructure for effective macro-prudential oversight should, therefore, be established from a global point of view. Accordingly, the relevant statistics and information should be comprehensive and specific enough to assess the risks to the financial system as a whole.

The establishment of clear and flexible principles for gathering and sharing data is also important in order to promote the effective use of these enhanced statistics for macro-prudential oversight. This calls for a widening and deepening of cooperation and communication among countries around the world.

In this context, the FSB has, for example, recently pushed ahead with the setting up of the central data infrastructure ("hub") within the Bank for International Settlements (BIS) and is preparing a multilateral agreement for sharing data.

In Korea, access to data of non-bank financial institutions has been improved. Korea revised the Bank of Korea Act as a way to resolve data gaps, granting the Bank of Korea the right to request the submission of data from insurance companies, securities companies, mutual finance companies and savings banks.

Needless to say, data are the basis of all analysis, and no progress can be made without accurate data. However, it is doubtful that data alone, no matter how abundant, could forestall a crisis in a new form.

There was no formalised concept of systemic risk before the global financial crisis. Even if the relevant data had been acquired, identification of systemic risk on the basis of those data would not have been possible, so the data could not have helped prevent the crisis.

As Gillian Tett, assistant editor of the Financial Times, noted in her column on 8 March 2012, it is important that regulators have the resources to use acquired data properly. If not, providing the data would only place an unnecessary burden on financial institutions. More attention and effort needs, therefore, to be devoted to finding ways to make proper use of the data acquired.

I now have the honour of introducing two eminent speakers to shed light for us on these issues. They are Vítor Constâncio, Vice-President of the ECB, and Andreas Ittner, Executive Director of the Oesterreichische Nationalbank. Jean-Philippe Thierry, who is a member of the General Council and Vice-Chair of the Prudential Supervisory Authority of the Banque de France, and Philipp Hartmann, Deputy Director General Research at the ECB, will act as discussants to help kick off the exchange of views and ideas among us.

HOW FIT ARE STATISTICS FOR USE IN MACRO-PRUDENTIAL OVERSIGHT?

VÍTOR CONSTÂNCIO

I INTRODUCTION

Macro-prudential analysis and oversight are not new tasks for central banks. In broad terms, the objective of macro-prudential analysis and oversight is to identify and prevent systemic risk, so as to minimise the costs that financial instability can impose on the real economy. Pursuing this objective calls for the definition of qualitative and quantitative intermediate goals, which can pose considerable analytical and informational challenges.

Over the past few years, the financial crisis has clearly illustrated just how devastating the materialisation of systemic risk can be for the financial sector and the broader economy. In particular, the financial crisis has demonstrated the need for a coherent and well-articulated macro-prudential policy framework at the national, European and global level. In this respect, it exposed deficiencies in the information base on which macro-prudential oversight was being conducted. It is on this latter topic that I will focus my presentation today.

In assessing the question as to *how fit statistics are for use in macro-prudential oversight*, I will outline the data needed for macro-prudential analysis, touching upon the ECB's responsibilities in the field of macro-prudential oversight. I will then move on to reflect on what has been achieved so far, paying particular attention to the macro and micro-dimensions of data requirements. Finally, I will highlight what is missing and mention a number of important ongoing initiatives that could help to overcoming the key challenges in terms data that we still need to deal with.

2 THE MACRO-PRUDENTIAL OVERSIGHT FUNCTION AND THE ROLE OF THE ECB

Let me start by reflecting on the macro-prudential oversight function. There are three main components in the macro-prudential oversight process. The first concerns the surveillance needed to identify plausible and (systemically) important sources of risks and vulnerabilities on the basis of an analysis of the individual and collective strength and robustness of the constituent parts of the financial system – institutions, markets and infrastructures. The second involves the assessment of the potential costs and the ability of the financial system to cope with these costs should some combination of the identified risks and vulnerabilities materialise. This requires the ability to measure (and model) the potential costs and to calibrate the plausibility and importance of the various risks. The third component is the possible policy response that needs to be

clearly justified and interlinked with systemic risk assessments. In particular, it should inform policy decisions on the appropriate timing of interventions and the selection of tools.

The role that the ECB and the national central banks of the EU Member States play in contributing to financial stability is set out in the Treaty on the Functioning of the European Union. In the wording of the Treaty, the ECB is requested to contribute to the smooth conduct of policies pursued by the competent authorities with respect to the prudential supervision of credit institutions and the stability of the financial system. Furthermore, the ECB's financial stability function is also related to its responsibility for overseeing financial market infrastructures. The legal framework under which the ECB collects statistical data has in fact recently been extended to expressly recognise its powers to collect data for this purpose.

In 2011 the EU institutional framework was revised to explicitly address both macro and micro-prudential supervision. This led to the establishment of the European System of Financial Supervision, the three new European Supervisory Authorities (ESAs) and the European Systemic Risk Board (ESRB). The ECB is in charge of providing analytical and statistical support to the ESRB, notably by collecting and processing information that feeds into discussions within the ESRB.

3 WHAT HAS BEEN ACHIEVED SO FAR?

In recognition of an increasingly interconnected financial system, considerable progress is being made in the enhancement and development of new statistics at the euro area, EU and global level.

At the euro area level, improvements in ECB statistics are notable with regard to, in particular, the development of enhanced statistics relating to monetary financial institutions (MFIs) and to shadow banking (e.g. securitisation vehicles). Securities holdings statistics can also contribute to providing a better picture of interconnectedness at the financial system level and for sectors of the euro area economy. In the same vein, the new Centralised Securities Database of the European System of Central Banks that holds complete and consistent reference information on individual securities is a major step in the direction of a better understanding of the map of cross-exposures through securities holdings.

Further work on enhancing statistical sources and output has been carried out in recent years. A high priority has been given to the development, collection and maintenance of conceptually sound and consistent granular data, and – by exploiting sources of micro data – to monitoring credit exposures, especially those of large financial groups. In addition, efforts have been made to obtain a consistent picture on securitisation and credit risk transfers in general. At the same time, work is being undertaken in cooperation with the European Statistical System (Eurostat and national statistical institutes) to improve the availability of macroeconomic data, as well as financial and non-financial accounts statistics.

In the context of the ESRB-related work, data-sharing agreements have been put in place to allow the regular provision by the ESAs of aggregated information to the ECB in support of the ESRB's risk analysis. A number of datasets have already been, or are about to be, made available by the ESAs:

• banking sector data, collected by the European Banking Authority (EBA) on a quarterly basis, relate to: supervisory data on solvency, credit risk and asset quality, earnings risk and balance sheet structure *(key risk indicators)*, as well as to data on large exposures, broken down by instrument and by sectoral and geographic counterparty, for samples of EU large banking groups;

• insurance sector data collected by the European Insurance and Occupational Pension Funds Authority (EIOPA) on an annual basis and, possibly, at a higher frequency relate to aggregate solvency and profit-and-loss data for large EU insurance groups;

• quarterly data provided by the European Securities Markets Authority (ESMA) refer to the number of shares admitted to trading in the European Economic Area (EEA), by country and by market, as well as to the list of EEA markets.

The ECB, in turn, is in the process of making datasets available to the ESRB and the ESAs that meet their requirements. These cover, in particular, monetary and financial statistics, namely MFI balance sheet data, MFI interest rate statistics, investment funds statistics and statistics on securitisation, as well as consolidated banking data. Information from market data providers, available via the ECB's market database, as well as from international institutions such as the Bank for International Settlements (BIS), Eurostat or the International Monetary Fund (IMF), which is part of the datasets collected by the ECB, complements the set of information to support the ESRB's analysis and deliberations.

Cooperation is under way to ensure that the new legislative initiatives of the three ESAs incorporate ESRB requirements to the extent that they can be addressed by using supervisory data. Extensive work has already been carried out with the EBA and EIOPA on the new supervisory templates to be introduced in the next few years. Given the need for agility in responding to new data to cover ESRB requests for information, work on procedures to conduct ad hoc surveys has been carried out, ensuring that the confidentiality issues are duly resolved.

All this work requires a very close and ongoing cooperation not only within the ESCB, but also with the ESAs and national supervisory authorities, within other collaboration fora and with many other stakeholders, in particular in the industries concerned, as well as with international organisations in the context of the G20 initiatives. This cooperation is ensured through a contact group recently appointed by the ESRB Steering Committee at my request, and it has already proved to be very useful. Inter alia, this cooperation will allow longer-term data requirements of the ESRB to be met. In the future, a key issue in connection with minimising the reporting burden of the financial sector is the ability to exchange relevant datasets. Procedures are in place to ensure that confidentiality

is protected. At the moment, however, these procedures are unduly cumbersome. Appropriate ways to exchange the data and protect their confidentiality more efficiently will be considered.

Against the background of increasing demand for rigour and quality in systemic risk analysis, it was to be expected that the ECB's legal powers in the field of statistics would be activated in order to improve the information base that is available, with a focus on the euro area. To some extent, this has already been undertaken by developing enhanced statistics on MFIs, as well as statistics on securities holdings. In fact, the amendment of Council Regulation (EC) No 2533/98, governing the ECB's powers to collect statistical information, in 2009 enables the ECB to impose requirements on euro area banks and insurance companies to provide data, also for financial stability purposes.

4   MACRO AND MICRO-DIMENSIONS OF DATA REQUIREMENTS

The use of the prefixes "macro" and "micro" in the context of the new institutional environment may create some confusion on the nature of the work to support systemic risk analysis and related data inputs. There is no such thing like a clear separation of macro – or aggregated – data inputs that are used in macro-prudential analysis from micro data, i.e. data at the level of individual firms, used in micro-prudential analysis. As mentioned before, a range of important data needed for macro-prudential analysis relate to firm-specific data on financial firms. Risk assessment tools for example, such as stress tests to assess the relevance of specific risk scenarios, are labelled macro stress tests (as opposed to the "micro" tests run by banks individually at the request of the regulator). Nevertheless, the usefulness of these tools depends on the quality and detail of the bank-specific data. The relevance of the results for macro-prudential purposes is, of course, to be found in the aggregated figures (the impact on banking sector capital) and their subsequently interplay with the macro-financial environment, lending activities and overall growth.

For stress testing tools, selected supervisory data are important for achieving reliable results. However, for other types of analytical tools and indicators, the use of publicly available information may be sufficient, or even preferable for reasons such as the comparability of data across financial firms or transparency. In official financial stability publications, for example, it is often considered important that readers and market analysts are able to replicate analyses with information in the public domain.

Generally speaking, while it is essential that supervisory data are well protected, there would be merit in distinguishing between different layers of confidentiality and, thereby, to facilitate that selected supervisory information is made available for macro-prudential analysis. Furthermore, in view of the importance attached to publicly available data, there is a need for this information to be harmonised and provided in a standardised format that is easy to access. As in any other policy field, the higher the quality of the input data, the more reliable are the results of analytical work, and thus the policy decisions.

In addition, there is the definition of data confidentiality. Taking an extreme view, all information that has not been published could be labelled "confidential", while the other extreme would be to make everything public. It would be fair to say that the "definition" used in Europe appears to be stricter than that in other jurisdictions. For example, some regulators such as the US Federal Financial Institutions Examinations Council publish selected supervisory information on banking institutions operating in the US market, including on subsidiaries of European banking groups, regularly (on a quarterly basis). Parts of these data are "confidential" in Europe, but this is not so on the other side of the Atlantic. As mentioned earlier, a change in attitude by EU financial regulators would greatly benefit the quality of the risk-monitoring and risk-evaluation work undertaken by macro-prudential bodies. In addition, it would provide a concrete signal of increased transparency to market analysts and financial market participants. In turn, it would help significantly to minimise the reporting burden of the industry.

Let me try to illustrate my point with some examples.

- The breakdowns of banks' credit exposures by type of collateral or counterparty sector (e.g. central government, non-financial institutions, financial institutions, small and medium-sized enterprises (SMEs), residential mortgages or commercial property) are reported to supervisory authorities, but these breakdowns are not part of regular harmonised public financial reporting. Hence, surveillance indicators and assessment exercises based on publicly available credit exposure data may by impaired by the high level of aggregation of the information disclosed. For example, if early warning signals were to point to risks emerging in commercial property or the SME sector, it would be important to assess the relevance of banks' exposures to this particular asset class in a systematic way. This is not possible if all credit exposures are disclosed in aggregate. Furthermore, the breakdown of credit exposures can be rather important for monitoring banks' risk profiles in the macro-prudential context. In risk assessment work, the quality of top-down stress testing results may be compromised if the distribution of credit exposures by bank across the main exposure classes needs to be approximated. Likewise, information on credit risk parameters, notably on incurred losses by type of exposure, would need to be consistently disclosed by banks, or to be made available to macro-prudential authorities from supervisory sources. In turn, owing to the importance of such credit exposure data, I much welcome the efforts being undertaken to harmonise the datasets in existing credit registers, subject also to an improved coverage, even if this can only complement extensive supervisory reports.

- The analysis of financial institutions' sovereign debt exposures constitutes another example where (regular) publicly available information has proved to be insufficient to carry out a reliable macro-prudential analysis. On the eruption of the sovereign debt crisis, market participants reacted abruptly to any news concerning those exposures. Analysis on the basis of aggregated data on banks' consolidated foreign claims vis-à-vis the public sector in several countries proved to be too imprecise. When the individual exposures

to sovereign debt of the largest players in the European banking system were released by the EBA in the context of the stress test exercise in July 2011, spillover effects diminished and markets started to differentiate across the banks. In this case, enhanced transparency proved to be helpful in influencing markets and market participants' behaviour.

- Examples of indicators where individual bank data would sharpen macro-prudential analysis are numerous. In the context of the analysis and assessment of funding vulnerabilities, reporting on banks' reliance on retail and wholesale funding has ample scope for improvement. Details of banks' deposits, interbank, senior and subordinated debt are poorly disclosed, and the analysis based on loan-to-deposit ratios, currently the best proxy for maturity mismatches, can provide an only incomplete picture of possibly emerging imbalances. A critical area is also that of asset quality indicators, the comparability of which is very poor across banks in Europe on account of different definitions of non-performing assets and loan loss provisions. A more granular disclosure of data could allow the construction of more meaningful sets of indicators and prevent misleading comparisons across institutions. On the analysis of capital adequacy, uncertainly about the computation of risk-weighted assets is shifting the focus to indicators calculated on the basis of total assets or tangible assets, balance-sheet equity and leverage ratios.

Clearly, in the medium-term, a higher quality of data for financial stability surveillance and assessment may also be achieved through a better disclosure policy on the part of financial institutions. Benefits would come also from timely and harmonised reporting.

5   WHAT IS MISSING: REMAINING DATA GAPS AND OTHER CHALLENGES CONFRONTING MACRO-PRUDENTIAL ANALYSIS

While data gaps can never be closed in full – also because they are a moving target – attempts to reduce these gaps are vital.

With respect to macro-level data, efforts to improve the effective coverage of the so-called shadow banking sector – i.e. of credit intermediation, liquidity and maturity transformation activities that take place outside the regulated banking system – need to be continued. Important components of the shadow banking system include certain money market funds, structured investment vehicles, off-balance-sheet vehicles (reliant on banks' credit lines) and securities lenders. Although some progress has been made, data gaps remain that render the proper monitoring and assessment of systemic risks arising from securities financing transactions (notable via repurchase agreements and securities lending) unfeasible. Challenges also arise from the activities of the shadow banking system that go beyond a specific group of entities or types of business. Regular information on margins, on other risk management practices and on the use of the various types of collateral, as well as on the maturity and liquidity profiles, is important for assessing the risks associated with securities lending activities from a qualitative and quantitative point of view. Surveys on credit terms in

securities financing and over-the-counter (OTC) derivatives markets, as have been launched by a number of central banks (around the world) and, soon, by the ECB, are a step in the right direction. The Financial Stability Board (FSB) is also monitoring efforts to improve data on shadow banking and OTC transactions.

Even in the case of the regulated sector, objectives have not yet been met. At present, most efforts relate to harmonising, increasing the frequency, achieving more granularity and extending the coverage of the data for financial sectors in the EU.

Given the important role played by contagion in the recent crisis, data should enable analyses of the interlinkages – notably across financial institutions, and between them and the shadow banking system. Information on interlinkages between important players in the financial system, including counterparty credit exposures in different forms, funding exposures of individual financial firms, as well as detailed information on their maturity mismatches and leverage, is necessary. This is because vulnerabilities can stem, for example, from common exposures in lending activities, from securities transactions, from positions in derivatives markets, from funding relationships, or from settlement and clearing functions. More data on the granularity of balance-sheet exposures and across types of financial instruments are essential inputs for evaluating propagation effects with contagion and spillover models. Recent initiatives in central bank statistics also address interlinkages beyond the sample of large players – for example, by means of so-called "from whom to whom" information on deposits and loans from financial corporations, or through securities holding statistics with a view to also creating "who to whom" data for various sectors of the economy in the Euro Area Accounts. Dedicated ad hoc surveys, for example in the context of the ESRB's work at an EU-wide level, should also contribute to shedding light on this topic. Sufficiently granular information would facilitate linking the regulated financial sector with the shadow banking sector.

In addition, enhancing information on financial conglomerates – banking groups with substantial activities over and beyond the banking sector – would be essential, as non-banking activities may be systemically important. In the case of financial conglomerates, contagion and concentration risks can be exacerbated by the increased intra-group complexity and potential conflicts of interest.

At the micro level, improvements to data for characterising interconnectedness are being pushed forward by several initiatives with different objectives and time lines. Let me mention three: (i) the revision of the reporting framework for large exposures by the EBA (for micro-prudential supervision), (ii) the FSB's common template (limited to a small number of globally systemic institutions) to improve data on global banking interlinkages and (iii) a UK exercise to collect interbank data on recovery and resolution plans (with very detailed instrument and maturity breakdowns). While these initiatives address primarily micro-prudential data needs for the time being, their use for macro purposes could be envisaged, provided that data confidentiality is preserved and that requests are duly justified. For macro-prudential oversight, the importance of reducing gaps in the data on credit and funding exposures beyond jurisdictions and the sample

of global players, appears particularly relevant. As the crisis has illustrated, the structure of bank liabilities and the way in which assets are funded are of utmost importance for understanding maturity mismatches and interlinkages.

Related to funding, data gaps also arise from limited information on the degree of asset encumbrance stemming from secured funding, as well as from inadequate data on the levels and characteristics of innovative sources of funding used by banks. At present, these elements are essential for analysing fragilities in the funding models of banks established in the EU. Uncertainty about the level of banks' asset encumbrance is also hampering market participants' capacity to assess banks' creditworthiness, thereby reducing the availability and increasing the costs of unsecured funding. Risks to financial stability can also stem from novel sources of funding such as exchange traded funds (ETFs) or liquidity swaps. There is no consistent framework at the EU level for collecting data on the use of these instruments, but attempts to limit information gaps on this topic in the EU are under way, possibly by means of ad hoc surveys under the aegis of the ESRB.

6   CONCLUDING REMARKS

As mentioned earlier in my remarks today, data challenges would be far more modest, and the need for supervisory information reduced, if the level of public disclosure, the quality and the accessibility of, and consistency in, financial public reporting were more satisfactory. This would also benefit market participants at large – notably by reducing uncertainty with respect to counterparties. Further encouragement and guidance by national authorities (in addition to another FSB initiative on disclosure) could be provided to improve the financial reporting of institutions and to enhance the quality of disclosures.

On another front, the establishment of a common legal entity identifier (LEI) that is applied universally should contribute greatly to the quality of macro-prudential analysis. It would, for example, facilitate the aggregation of the single-name counterparty risk at the level of the system and can, for example, help in the identification of the building-up of concentrations towards single counterparties. Unique identification codes at the EU level will be valuable for meaningful data aggregations, and would allow the use of this information for macro-prudential purposes. In fact, the demand for micro-prudential datasets for macro-prudential analysis also results from the fact that the form in which existing aggregated data can be disseminated is often of poor quality, is not sufficiently granular and is not suited for analytical purposes.

Ahead of reaping the benefits from the various initiatives that are under way at the global, EU and euro area level to limit data gaps, there is a need for close interinstitutional cooperation between supervisory authorities and macro-prudential bodies, at the national and supra-national level. This calls for more interaction and data-sharing between the ECB (also when acting on behalf of the ESRB) and the ESAs that have access to supervisory reporting data and can collect ad hoc data more easily upon request. Procedures for the secure transfer

of information and appropriate legal provisions need to be in place to safeguard confidentiality.

More broadly, it is important that the pace at which efforts are being made to address current information needs – at the macro and micro levels – does not slow down. At the same time, improvements in datasets already in use for macro-prudential analysis should continue to be given priority. This needs to be done in an innovative way, reusing existing information where possible, so as to minimise the reporting burden, whilst serving the increased demands of users. Furthermore, challenges in ensuring that the appropriate statistical basis is available for macro-prudential oversight cannot, by definition, be addressed in full as datasets are dynamic, in the same way that the risks they capture evolve over time. Agility in the collection of statistics will therefore continue to be essential so as to accompany innovation in the financial industry and the associated vulnerabilities.

STATISTICAL CHALLENGES FOR MACRO-PRUDENTIAL OVERSIGHT – THE AUSTRIAN CASE

ANDREAS ITTNER

I INTRODUCTION

Recently, on 13 April, Ben Bernanke, in a speech at the Russell Sage Foundation Conference on "Rethinking Finance" in New York, commented on the vulnerabilities and weaknesses in the financial system that served to propagate and amplify the initial shocks of the financial crisis. He said, among other things, that his "list of vulnerabilities would include gaps in the regulatory structure that allowed systemically important firms and markets to escape comprehensive supervision; failures of supervisors to effectively apply some existing authorities; and insufficient attention to threats to the stability of the system as a whole (that is, the lack of a macro-prudential focus in regulation and supervision)".

The importance of macro-prudential oversight is acknowledged all around the world. What we need, however, for effective macro-prudential oversight are data. As such, the key question of this session "How fit for use are statistics for macro-prudential oversight?" is of the utmost relevance.

It is thus a pleasure for me to share with you the ideas of the Oesterreichische Nationalbank (OeNB) about:

- the challenges posed for statistics by macro-prudential oversight;

- the ways to respond to those challenges; and

- future tasks for policy-makers.

2 AUSTRIA'S FINANCIAL SYSTEM, SUPERVISORY STRUCTURE AND FINANCIAL STABILITY ANALYSIS

In Austria, banks account for the bulk of the financial market. Their consolidated total assets amount to €1,200 billion or about 400% of Austria's GDP. By comparison, insurance companies' total assets are about €100 billion. Since banks are of key importance to the Austrian economy and to the financing of small and medium-sized enterprises (SMEs), which have only very limited access to market financing, Austrian banks have traditionally been subject to a high degree of supervision.

With Austrian banks increasingly pursuing cross-border activities in central, eastern and south-eastern Europe (CESEE), as an extended home market, it has become more and more important for Austria's supervisors to cooperate across borders with other supervisory authorities. In addition, owing to the large number of small banks, which is a consequence of Austria's decentralised banking structure (with, for example, cooperative banks like Raiffeisenbanken and Volksbanken), efficient prudential supervision is of the essence.

In Austria, the financial supervisory reform in 2008 established the prerequisites for keeping step with the rapid evolution of financial markets. The new banking supervisory structure is split into a fact-finding function, including overall risk assessment, which is carried out by the OeNB, and a decision-making function, which is performed by the prudential authority, the Finanzmarktaufsicht (FMA). The OeNB is in charge of conducting on-site inspections and off-site analysis of all banks, and acts as a central hub for supervisory reporting by Austrian banks. The FMA has retained its status as an independent and autonomous integrated financial supervisor for banks, insurance companies, pension funds, mutual funds, securities and markets. Hence, the OeNB is best placed to conduct integrated financial stability analyses (of banks, insurance companies, other financial intermediaries and markets).

The OeNB has been conducting integrated financial stability analyses since long before the issue was explicitly taken up in the National Bank Act in 2008. Moreover, since the supervisory reforms came into effect on 1 January 2008, the OeNB's financial stability mandate has been specified in the National Bank Act. To fulfil this mandate, the OeNB has been given access to data on non-bank financial intermediaries (in particular, data on insurance companies provided by the FMA) which it uses in comprehensive stability analyses. Supervisory data on banks were already used for banking supervision (on- and off-site analyses) and for financial stability analyses, including stress testing at the micro and macro levels.

The OeNB devotes special attention to issues such as the assessment of risk in CESEE countries and liquidity. Stress tests to assess the stability of the financial sector have been refined and enhanced. Important steps have been taken to assess financial linkages:

- between insurance companies, banks and sovereigns by using data provided in the securities statistics, and

- between all components of the Austrian economy, including households, non-financial corporations, banks, insurance companies, government and the rest of the world by using balance of payments data.

In addition, systemic and single bank analyses have been linked more closely. In this regard, there is a regular exchange of information and views between the banking supervision and financial stability functions. There are also regular meetings with statisticians at which data, revisions, methodologies and the new data requirements of supervisors and financial stability experts are discussed.

3   THE STATISTICAL NEEDS OF MACRO-PRUDENTIAL OVERSIGHT

In line with what has been said by Vítor Constâncio, I agree that macro-prudential oversight calls for:

- an extensive dataset that is partly not covered by current reporting frameworks;

- timely and consistent data of high quality, and

- macro- (or aggregate) and micro-level datasets.

These are of the utmost importance for conducting macro-prudential analysis and assessment in order to effectively address systemic risk in a timely and adequate manner. For example, the Austrian authorities have recently implemented measures to strengthen the sustainability of the business models of large, internationally active Austrian banks. Data played a very important role in the whole process of measures which have been implemented and monitored. Again, the monitoring will depend on the information provided by statistics.

4   FACING THE CHALLENGE – A NEW INTEGRATED DATA MODEL

Fundamental changes in demand call for equally profound changes in the way we produce statistics and statistical analyses. In accordance with the requirements which I have just outlined, the OeNB has decided to introduce changes at two levels, regarding both content and organisational structure.

Regarding content, we are in the process of introducing a new integrated common data model that distinguishes between a "basic cube" and "smart cubes".

The main ideas for a new data model are as follows. There are (at least) two strategies to cope with increasing demand for data from many different sources (not only from macro-prudential oversight, but also from many other domains, such as, for example, individual bank supervision, monetary policy, etc.).

- One alternative is to strive for maximum harmonisation or even complete uniformity of demands in terms of definitions and regulations for data outputs (e.g. the concept/definition of a bank loan would be the same in all kinds of statistics). It goes without saying that the efforts to this end should be continued, and I will come back to this issue.

- The other (complementary) alternative is to delve deeper into the data, increasing the granularity, and thereby capturing and defining data input at a level of detail which makes it possible to cope with partly different output definitions.

The second of these ideas is the basis for our data model:

- The data model has been inspired by solutions used in other countries, such as Italy, Finland and Slovenia, to name but a few, which we have studied in the course of a benchmarking exercise.

- The model relies on the idea of defining standards at a very granular, transaction-based level together with banks (as our main reporting institutions). This granular, standardised data model forms the "basic cube".

- As suggested by its name, the basic cube forms the basis for all multi-dimensional "smart cubes". These contain the (usually much less granular) output data that are required to fulfil various national and international reporting obligations.

- The new model is intended to reduce the reporting burden in the light of increasing demands on both respondents and reporting institutions. Regarding the latter, banks have confirmed that the new model would have cost advantages.

In more detail, the entire new data model may be characterised by the following key features:

- The "basic cube" is the foundation of the new model.

- The basic cube provides an exact, standardised, unique and hence unambiguous definition of individual business transactions and their attributes.

- As the core banking systems of different institutions are in most cases not comparable, the basic cube establishes a harmonised database model at a very granular level.

- Consistency, absence of redundancy and ease of expandability are key features of the basic cube.

- As suggested by its name, the basic cube comprises the primary data for all kinds of statistics, both supervisory and monetary.

- The establishment and maintenance of the basic cube falls under the responsibility of each and every reporting financial institution.

Data stored by each bank in its own basic cube are the source of data for "smart cubes".

- The smart cubes are limited in number and specifically designed to satisfy the various current national and international reporting obligations in a consistent manner at the required level of aggregation.

- Technically speaking, smart cubes are multi-dimensional data models.

- They are generated by the reporting banks by applying specific aggregation and selection algorithms to the set of data in the basic cubes.

- Smart cubes may be enriched with additional, integrated micro data, originating from other data sources hosted by private and public providers and vendors.

For example, current supervisory reporting standards require data which are collected in several reports, such as COREP, FINREP, credit registers (which mainly serve supervisory purposes in Austria), various reports on banks' individual risk profiles in accordance with the Austrian Banking Act, and many more. These data are collected at different frequencies and different levels of aggregation. Furthermore, in view of the number of different reports, they are not free of redundancy. Under the new data model, however, it is our aim to collect all the various data required for banking supervision and for the ECB's monetary statistics, which are currently spread among many different individual reports, by means of a limited number of "smart cubes" that have their roots in one uniform "basic cube".

What are seen as the advantages of the new data model?

First and foremost, the model aims to ensure a precise, simple and unambiguous definition of information relevant for reports by means of the basic cube. With the consistency of basic and smart cubes, we expect the quality of reports to improve. This is achieved by using harmonised and unambiguous definitions, a collection method that is free of redundancy, and by eliminating the need to cross-check individual reports from one and the same reporting institution. With a single basic cube and a limited set of smart cubes, the new data model is both frugal and clear. Furthermore, the basic cube is based on the idea of holding passive data within each reporting institution. This has the following advantages.

- As the basic cube defines data at an extremely granular level, changes in the level of aggregation may be implemented with greater ease.

- We expect the model to be sustainable. It should be easy (or at least easier) to meet new data requirements not yet covered by the reporting framework by amending the basic cube.

Because the basic cube defines data at a very granular, transaction-based level and has been developed in cooperation with the banks, one clear benefit is that banks can also use the basic cube for their own internal reporting purposes.

Finally, timeliness should also increase in the medium term as:

- certain quality checks may become redundant and hence be omitted as previously outlined, and

- the reporting burden should decrease (through the replacement of a vast number of different reporting obligations by a limited number of smart cubes).

One constraint is that the complexity of basic and smart cubes increases with the number of attributes/dimensions specified by international and national reporting requirements. In other words, the scale of the cubes expands to the extent that various international or national regulations are heterogeneous and hence not fully consistent in their definitions. We estimate that the number of dimensions currently required to generate the smart cubes by means of the aggregation algorithms is around 30 to 50. For example, as long as the concept of a simple bank loan is defined differently in supervisory statistics and monetary statistics, at least two attributes are needed instead of one to satisfy both reporting obligations (and to correctly classify individual transactions).

It is common wisdom that organisational structure should always follow strategy. Our strategy relates to the integration of the entire process chain, ranging from data input to the final communication of the output. We regard statistics not simply as the supply of data, but as the provision of services characterised by the supply of data enriched by interpretation. Thus, the efficient and effective production of statistics and statistical analyses requires an adequate organisatrian framework. Facing the challenges of statistics, we have therefore decided to implement a new organisation and structure. The entire concept is built on the functional organisation principle, also incorporating the concept of a "one-stop shop" for both reporters and customers.

The new Statistics Department comprises three divisions:

The Statistical Information Systems and Data Management Division (SIDAT) is the single point of contact for all reporting entities from all economic sectors, as well as all public and private data providers. Its main tasks are:

- the reception and processing of all data transmissions from reporting entities;

- the central management and servicing of master data;

- quality control and quality assurance of all kinds of data;

- the development and maintenance of the new integrated data model; and

- to be the system owner of all statistical IT systems.

The reason for integrating all tasks associated with the collection and quality control of all kinds of data, instead of following the "stove-pipe" model, is straightforward: one body should compile all data to ensure its availability and usability for multiple users.

Once quality-assured primary data have been made available by SIDAT, two further divisions take over in the value chain of the statistical production process. Their functions are the production of statistical analyses and the compilation of statistical end-products, which most notably include a statistical interpretation of the outcomes.

Each of these two divisions is targeting and serving a distinct set of customers. The Supervisory Statistics, Models and Credit Quality Assessment Division (SAMBA) focuses on statistical analysis and data interpretation for macro- and micro-prudential analyses. As such, SAMBA's main responsibilities are:

- the production of secondary statistics based on supervisory reporting obligations, such as the Bank for International Settlements (BIS) consolidated banking statistics, BIS locational banking statistics, ECB consolidated banking data, the International Monetary Fund (IMF)'s financial soundness indicators, and the European Banking Authority (EBA)'s key risk indicators etc.;

- communication with national and international institutions on all issues regarding methodology of reporting standards;

- the provision of primary data and standard reports for international and national supervisory bodies;

- the production of holistic, interlinked and integrated statistical analyses for micro- and macro-prudential supervision;

- the development and maintenance of (all kinds) of statistical models used in supervision and risk analysis; and

- the assessment of the credit risk of individual Austrian firms.

The second division devoted to statistical analyses is the External Statistics, Financial Accounts and Monetary and Financial Statistics Division (SAFIM). The focus of its activities is on statistics for monetary policy preparation and implementation. As such, its main responsibilities, based on quality assured primary data, are:

- the provision of financial accounts statistics;

- the production of balance of payments, international investment position and foreign direct investment statistics; and

- the production of monetary and minimum reserve statistics.

The perceived advantages of the new organisation are as follows.

- The simplification of material concepts achieved by the new data model is reflected in and complemented by the organisational structure.

- The structure ensures a clear and unambiguous allocation of responsibilities – SIDAT is the sole body maintaining contact with data providers and reporting institutions, and it collects all kinds of data. The concentration of these tasks in one division is meant to ensure that both the data being processed and the systems used to process the data are free of redundancy.

- By targeting distinct customers of high-end statistical products, SAMBA and SIDAT can devote themselves to their particular customers' needs and thus increase service quality.

The above mentioned organisation principles can also have drawbacks.

- Frictional losses may arise at the interface between data collection and quality control (carried out by SIDAT) and statistical analysis and interpretation (falling under the responsibilities of SAMBA and SAFIM). In particular, the bodies responsible for statistical analysis do not have direct contact with the reporting institutions, so they lack the potentially relevant additional information restricted to those responsible for data collection and quality control.

In view of this, we aim to mitigate the problem by actively managing the interfaces. Measures to this end include:

- new features in IT systems allowing the storage and tracking of relevant information for the collection phase;

- flexible job rotation for staff between SIDAT and the divisions devoted to statistical analysis; and

- centralisation of communications (to consolidate information which would otherwise only be available at the individual division level).

Such a project requires substantial investment, which will pay off in the medium or long run when new challenges are able to be tackled without requiring additional resources.

5   STATISTICS AT THE OENB AND MACRO-PRUDENTIAL ANALYSIS

As I have previously explained, we have decided to make very substantial changes, both in form and content and in organisation and structure, to meet the huge challenges facing statistics. In doing so, the ultimate vision we had in mind was to position the OeNB's Statistics Department as the centre of expertise and competence for all kinds of financial statistics and their analysis in Austria.

What are seen as the benefits for macro-prudential analysis?

- A consistent implementation of the one-stop shop idea is meant to ensure that all financial data required for macro-prudential analysis are collected and stored in an effective and efficient way in one place, the Statistics Department, and made available to users in a timely manner with high quality.

- Macro data are not sufficient for comprehensive macro-prudential analysis. The relevance of an individual institution to systemic risk is dependent on its size, its substitutability and its interconnectedness. Thus, in the

pursuit of sufficient and effective macro-prudential oversight, a strong micro-prudential basis is essential. A deep knowledge of "big player" influence on markets, of financial products, and of sectoral and segmental specificities is required in order to identify possible systemic risks. The new data model may also enable us to integrate data more effectively at different levels of granularity.

An important challenge in the near future will be meeting new and rapidly changing data requirements. With constant innovations in dynamic and integrating markets, the existing reporting framework may face more changes than have been experienced in the past. As a consequence, new data dimensions will have to be covered. Without underestimating the effort required, we are confident that the new "basic cube", representing the idea of passive data, gives reporters and respondents more flexibility when collecting data, whether on an ad hoc or on a continuous basis. Furthermore, a clear definition of the basic cube facilitates the collection and analysis of data at a very granular level, since complexity often increases with the level of detail. This is the reason why recent changes beneficial for macro-prudential analysis have been made to, among other things, the credit register. Our credit register contains not only granular information on loan exposures and the credit risk inherent in these exposures, as measured by a set of parameters to be reported, such as probability of default (PD), loss given default (LGD), expected losses, and risk-weighted assets (RWA), but also detailed information on structured finance and securitisation as well as on off-balance sheet positions, such as credit default swaps (CDSs).

It has often been mentioned that broader access to selected supervisory information for macro-prudential analysis would be desirable. With this in mind, it is our goal to foster the multiple use of the various datasets and data sources, such as monetary statistics, supervisory statistics, balance of payments statistics, etc., while being mindful of legal constraints which I should like to address a little later. Similarly, the integrated data model, plus a suitable organisational structure, should enable the multiple use of analyses, thereby generating holistic, linked and integrated insights for micro- and macro-prudential supervision.

Having discussed the expected benefits, let me now turn to the challenges we are facing. Neither the new data model nor the new organisational setup provides a solution for the following problems that still remain unsolved. Much stronger international and national cooperation is needed in the future. At the national level this cooperation should include the many different public bodies active in the area of statistics, such as the various ministries, national statistical institutes, etc., always with the clear goal of avoiding redundancy, harmonising data and sharing available information and thereby reducing the burden on all parties involved. At the international or European level this means even closer cooperation between the ECB and national central banks (NCBs), and between the European Systemic Risk Board (ESRB) and the European Supervisory Authorities (ESAs). In this respect, it puts the focus on the following issues.

- We have to make sure that future data requirements are coordinated and aligned even better than today to ensure the maximum attainable harmonisation of definitions.

- We have to make sure that already existing and available data can be shared effectively.

- We have to put even more emphasis on reconciling already existing reporting requirements. The Joint Expert Group on Reconciliation of credit institutions' statistical and supervisory reporting requirements (JEGR) is a promising first step. What we need, however, are many more of these initiatives, covering, for example, the further harmonisation of other data areas or sources, such as credit register data or general data from reporting institutions other than banks (e.g. insurance companies, non-financial corporations, etc.).

- We also have to think about harmonisation on the input side, as envisaged under the JEGR's new mandate. In this context, we should strive at aligning the level of granularity and the set of dimensions for input data in order to avoid duplication of work.

- We have to think even more intensely about how we can make efficient use of excellent decentralised structures to avoid a duplication of work at the central level. In particular, from a statistical perspective, this relates to core functions, such as the collection, storage and quality control of data, statistical analysis and interpretation, etc., for which we already possess efficient and effective infrastructure at the decentralised level.

- We have to evaluate the need for our statistical products on an on-going basis. It is my impression and experience, that new data requirements come into existence frequently, whereas existing reporting obligations are never abandoned. Do we really need everything we request? Do we use everything we receive? Do we have the capacity to analyse and assess everything we have? Is it necessary to maintain all the different statistical and accounting concepts (monetary statistics and supervisory statistics, security holding statistics and credit registers, reporting obligations based on national GAAP and based on IFRS, etc.)?

Similarly, closer cooperation with data providers and reporting institutions is required in order to follow market trends and gain a clear picture of what is possible in terms of statistics, and at what price. A further important issue is of a legal nature. Speaking from a purely statistical perspective, we often find that existing legal regimes obstruct economically efficient solutions. For example, the multiple use of data is often restricted by data protection laws. Of course, these laws are very important. Put very simply, however, it sometimes appears that the new micro- and macro-prudential architectures, together with their respective mandates, may not yet be fully reflected in the relevant legal frameworks governing statistics. Or, put another way, one could also say that the mandates of prudential authorities

do not optimally take into account existing regulations governing statistics and data protection. There appears to be a trade-off between economic and legal considerations. What we need are balanced solutions, which require intensified effort and closer cooperation with the relevant legislative authorities.

The concentration of statistical responsibilities, the new organisational setup and the way data are treated within the new data model calls for a new, cutting-edge technological setup. In particular, more extensive datasets resulting from a trend towards micro data require more powerful IT systems to process and interlink these vast amounts of data. Substantial investment in technology must therefore be made.

6   CONCLUSIONS

To sum up, my final suggestions for policy-makers are as follows.

- Harmonisation of definitions is essential for the efficient production of statistics.

- This can be achieved by even closer collaboration among the international and national parties involved.

- In this context, optimising the legal framework for the multiple use of data is essential.

- Moreover, in order to avoid duplication of work, optimal use should be made of existing structures and networks at a decentralised level. Cooperation (instead of duplication) starts with how data are defined and then ranges from data collection and the mutual exchange of analytical results and their interpretation to common macro-prudential measures.

Finally, let me highlight the fact that we already have excellent data. However, we are still facing enormous challenges, particularly in macro-prudential analysis. These challenges have their roots mainly in the changing environment and not in statistics. As statisticians, we still face a long road ahead, which we must take together with all the other parties involved in the new European supervisory architecture.

DISCUSSANT'S REMARKS

JEAN-PHILIPPE THIERRY

on

VÍTOR CONSTÂNCIO, *How fit are statistics for use in macro-prudential oversight?*

ANDREAS ITTNER, *Statistical challenges for macro-prudential oversight – the Austrian case*

It is a great pleasure to address such a distinguished audience and follow the excellent speeches made by Vítor Constâncio and Andreas Ittner. As Vice-President of the French Prudential Supervisory Authority and a member of the General Council of the Banque de France, I am very glad to provide some insight into the use of statistics for macro-prudential purposes.

At the Banque de France, we collect, produce and disseminate an impressive range of economic and financial statistics. In addition to monetary statistics, balance of payments data and national account statistics, this includes data computed from business surveys and statistics on the corporate sector and payment systems.

I would like to address three points.

I BEYOND THE REGULAR AND USUAL IMPROVEMENTS, STATISTICS IN GENERAL DO NOT SUFFER FROM A DECISIVE LACK OF QUALITY OR COVERAGE HAMPERING FINANCIAL STABILITY ANALYSIS

Macro-prudential oversight encompasses two dimensions of risk: risks of contagion (cross-sectional dimension) and pro-cyclicality (time dimension). In my view, the financial crisis was *not* directly caused by a major lack of information on these two elements. Based on the ex post knowledge that we have now about the roots of the crisis, we are able to identify useful indicators that could have helped us to take action earlier.

In particular, many elements pointed to strong imbalances before the sub-prime crisis began. These included, for example, the deviations of asset prices and the credit-to-GDP gap. Looking back, I think that more attention should have been paid to internationally-comparable property prices, loan growth volumes and balance sheet information at the consolidated and global level.

The aftermath of the financial and economic crisis offers an invaluable window of opportunity to improve our statistics. However, it is fair to say that

it is a permanent concern for statisticians to strike the right balance between overburdening respondents and collecting enough detailed information to monitor financial stability. This is a difficult task. Clearly, the balance generally needs to be tilted towards quality and relevance, which are both crucial if statistics are to help mitigate the risks of financial bubbles or a financial crisis. Indeed, comparing the costs of statistics with the formidable burden for the economy of a financial crisis immediately calls for such an orientation. This, however, does not imply going too far in data compilation. In other words, quality, relevance and adaptability to changing circumstances seem to me to be three major directions to be followed in the statistical field.

2   A KEY CHALLENGE IS TO PROMOTE AN OPTIMAL USE OF EXISTING STATISTICS

Statistics have a key role to play as early warning signals to maintain financial stability.

The crisis showed that there were a lot of difficulties in interpreting, in a consistent and relevant manner, the signals given by monetary and financial statistics. This reinforced the difficulties in taking remedial action, on time. Different reasons can explain such difficulties. For instance, it is no easy task to define a fixed threshold above which credit booms should be considered as bubbles, rather than as an indication of the financing of an expanding economy. This does not mean that statisticians should not pursue their efforts to provide high quality data; their use for financial stability purposes raises issues related to data quality, frequency and availability.

As for quality, interesting research papers have shown that real-time decisions based on data that were consequently revised afterwards could lead to erroneous decisions.

As for frequency, crisis management calls for precise real-time information on the various linkages within the financial system. Market data are known to be noisy and may overshoot news; this may call for more frequent non-market-based data.

Finally, a continuous effort should be devoted to monitoring the quality of already existing indicators or of new ones. As their predictive power should be tested against past actual crises, this calls for long and time-consistent historical time series allowing specific events to be identified, such as extreme shocks.

Statistics should be an essential part of the toolbox to develop the financial education and awareness of the general public and decision-makers. In this context, statistics functions in central banks and international organisations have a key responsibility in enhancing the dissemination of information. The Banque de France Directorate General Statistics works to develop public information and awareness, as do many of our colleagues.

3 REACHING THESE OBJECTIVES STILL REQUIRES A LOT OF EFFORT, WHICH REPRESENTS THE CHALLENGE AHEAD

Such goals put some strain on central banks' internal organisation and are particularly demanding for the statistical function. First, there is a huge responsibility for central banks to maintain the business model of statistical functions as suitable and efficient. This is linked to the public good of statistics. Indeed, there is a need for statisticians to play the role of interface between users and reporters, which requires a wide range of skills to understand the requirements of the former and the constraints of the latter. The need to invest in such fields is largely recognised in times of crisis but should not fade in calmer times.

Close interaction between the various areas involved in statistical issues should be promoted (research, economics, monetary policy, financial stability, payment systems and market operations), although they may operate with different time horizons. Indeed, modern statistics cross-check micro and macro analyses in order to deal with economic issues as pertinently as possible.

International fora in which data users can interact with data producers should be developed. The Irving Fisher Committee has a lot to offer in this regard, as it is designed to be "a forum of central bank economists and statisticians, as well as others who want to participate in discussing statistical issues of interest to central banks".

In conclusion, I would like to underline that a better use of available information is one of the main challenges of financial stability. In view of the irreplaceable knowledge conveyed by the existing information, statisticians have a key role to play in macro-prudential analysis. In short, I believe that one of the lessons of the crisis is that the statistical function should pass from the "back office" to the "board room".

DISCUSSANT'S REMARKS

PHILIPP HARTMANN[1]

on

ANDREAS ITTNER, *Statistical challenges for macro-prudential oversight –
the Austrian case*

I thought I would contribute by raising some issues on Andreas Ittner's
presentation before throwing a research angle on the theme of this panel. I will
compare the present roles of statisticians and researchers in the macro-prudential
arena and list the three main items on our researchers' data wish list.

I   TWO COMMENTS

I knew very little about Austrian supervision and the role of data processing
in Austria before Mr Ittner's presentation. I am impressed by the very logical
and very rational way in which the system has been set up. I do not have many
comments, except to say that in the next step, it is important that what is in the
"basic cube" – in the right formatting – is also used to the maximum benefit
of the competent European bodies, notably the European Systemic Risk Board
(ESRB) and the European supervisory authorities (ESAs). I am confident that
this enormous centralised resource will be used effectively also at the European
level.

My second point on the presentation relates to the household sector. In his speech,
Mr Ittner referred to non-financial corporations, financial corporations, the
government sector and non-profit organisations, but not explicitly to the household
sector. It is, of course, a challenge to integrate household information into such
systems, in particular given the sheer volume of information and its granularity,
but, considering the role mortgage markets have played in past financial crises,
I thought it might be worthwhile mentioning this important sector too.[2]

2   THE ROLES OF RESEARCHERS AND STATISTICIANS IN
BUILDING MACRO-PRUDENTIAL OVERSIGHT

Let me go from here to the issues that concern my function at the European
Central Bank (ECB), namely the research function. I will first compare the roles
of researchers and statisticians in the current environment at the start of an era

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1   I would like to thank Stefano Corradin, David Marques and Paolo Poloni for valuable
    comments and input.
2   Statisticians and research economists are, for example, collaborating at the level of the
    euro area in the context of the Household Finance and Consumption Network, which also
    establishes surveys of relevant granular household information (see http://www.ecb.europa.
    eu/home/html/researcher_hfcn.en.html).

of macro-prudential supervision. There is a fundamental lack of economic and analytical frameworks for macro-prudential policies. Indeed, it is often said that financial stability analysis is currently at a comparable stage to monetary policy analysis in the 1950s and 1960s. Therefore, much progress is required if we are to have comparable frameworks for financial stability. Of course, progress is fast, but we are still nowhere near where we are in monetary policy analysis. As a consequence, it is clear that macro-prudential policies will have to rely much more on data, market intelligence and judgement at the current juncture, rather than on research tools and models. We contribute with models and tools where we can, but in an imperfect way compared with where we would like to be in the near future.

This means that there is a tremendous need for research and development (R&D) investments. The ECB is coordinating an EU-wide network, called the Macro-prudential Research Network (MaRs), launched by the European System of Central Banks (ESCB) in spring 2010. MaRs aims to develop core conceptual frameworks, models and/or tools that provide research support in order to improve macro-prudential supervision in the EU. We try to undertake a significant part of R&D investment in a coordinated way with all the national central banks of the European Union.[3] We hope that we will be able to report on MaRs' results after two years of work in the autumn of this year when a large conference will be held.

The statisticians' present role is not only to rapidly provide an important part of the information basis needed for practical macro-prudential supervision. As Mario Draghi already mentioned this morning, statistical functions also need to feed researchers with the data required to carry out the R&D investments I mentioned earlier. In particular, to provide us with the data we need to make the investments from an empirical angle and not only from an abstract, entirely theoretical angle. In other words, it is also important that the fast improvements on the statistics side – frequently mentioned in previous discussions today – also feed into our R&D efforts, leading to empirically well-designed models and tools that can be used in practical policy analysis in the future.

Next, on the role of data and statistical developments, market intelligence could also benefit from the statisticians' work. There is room to make market intelligence more quantitative or more systematic, by using surveys, for example. So we can also improve our framework in this regard. Tremendous efforts have been made to develop market intelligence at the ECB (more systematic and wider coverage, and a higher frequency of market contacts, etc.), but we should also consider whether we can be more quantitative and whether surveys can be used more effectively, like we already do for monetary policy analysis. The ECB bank lending survey, for example, which covers credit availability, is very useful for both monetary policy and financial stability work, but we probably can go much further than that in terms of quantitatively assessing the risk environment based on market participants' views and perceptions.

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3   See www.ecb.int/home/html/researcher_mars.en.html

3 RESEARCHERS' SPECIFIC NEEDS

Having defined the relative roles and, say, timing of researchers versus statisticians, let me discuss three examples where researchers are longing for better data and for more data. The three examples are my preferred choice from a longer "wish list" put forward by economists from the ECB's Financial Research Division when I polled them about what they needed for their macro-prudential work. They are: i) granular data on mortgage markets, ii) credit aggregates – believe it or not, something as fundamental as that – and iii) individual data on financial intermediaries and their granularity in the coverage of on and off-balance sheet items.

3.1 MORTGAGE MARKETS

Mortgage markets can be central for systemic risk. One important lesson from history is that many systemic crises were preceded by bubbles in housing or mortgage markets. Accordingly, loan-to-value limits for mortgage credit are one of the primary policy instruments discussed in the macro-prudential context.

We would like to develop tools and models for assessing the effectiveness of these types of policy instrument. So what do researchers need to develop such models and tools? We need detailed information on loan contracts, detailed information on the characteristics of households with these loan contracts and, of course, less problematic information on the macroeconomic environment. This information then needs to be considered in relation to mortgage defaults (including defaults in securitised pools). At the present juncture, we are not able to do this at the European level. Indeed, we are not able to do this even for a number of important European countries individually.

By means of an example, let me cite a study from the United States. A recent NBER Working Paper, entitled "A model of mortgage default", contains an analysis of the determinants of mortgage market defaults.[4] The authors calibrate a dynamic model of a household's decision to default on its mortgage to US micro data and calculate default rates, distinguishing different mortgage types and varying values for mortgage parameters. The default rates that the model predicts are consistent with the ones recently observed in granular individual data for the United States, highlighting a number of aspects relevant for setting loan-to-value limits. Loan-to-value ratios, i.e. the demand for equity in a house purchase, are a contributing factor to mortgage default. The more equity is available, the less borrowers default. But loan-to-income ratios also emerge as relevant, an instrument that has been used in Hong Kong and Singapore and other countries as a second tool in addition to loan-to-value ratios. A smaller loan-to-income ratio is associated with a lower probability of default and the same holds for mortgage payment-to-income ratios. All of these effects are quantified. We also want to be in a position to do this type of study, ideally for all European countries.

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4   Campbell, J. and Cocco, J. (2011), "A model of mortgage default", *NBER Working Paper*, No 17516, October.

There are other mortgage data issues which were also mentioned by previous contributors. In particular, it is baffling that, in the European context, we do not have long time series for real estate market valuation indices for a large number of countries. This applies both at the nationwide level and at the level of regions within countries. We in research try to develop indicators of mortgage bubbles for different countries and need longer series to do reliable research. We are only able to test such indicators for two or three European countries, and in these cases the indices are not really comparable across borders. I am, of course, aware that efforts are going in the right direction. Our researchers are eager to benefit from the results.

3.2   CREDIT AGGREGATES

I will not dwell on why credit aggregates are important for financial stability analysis. This crisis and many previous crises have been preceded by credit bubbles, mortgage or other. It is important to know which sectors these bubbles are funding. It is also important to distinguish demand and supply in order to identify whether or not a bubble exists and, if so, its source.

There are three areas in which researchers currently need better data or want more progress to be achieved. One is the general comparability of series of credit aggregates around the globe, in Europe, the United States and Japan. Often the components of aggregates in different countries are not clear in international financial statistics, or the definitions change or series are discontinued. A major issue for macro-prudential analysis is the heterogeneity of credit aggregates across countries. Second, in the European Union, improvements could be made in the breakdown of credit by production sector, i.e. if one looks at where the credit is flowing. My third point concerns securitisation in credit aggregates. The treatment of securitisation in stocks of credit is not homogenous across borders, for example when one compares European countries with the United States (as well as some other jurisdictions).

3.3   INDIVIDUAL DATA ON FINANCIAL INTERMEDIARIES AND THEIR GRANULARITY

Individual data on a range of financial intermediaries are central to macro-prudential supervision. They are important for banks, because banks tend to be central to systemic crises. They are also important for non-bank financial intermediaries, in particular where they serve as a means to evade the heavy regulation applicable to banks and contribute to credit creation as part of the so-called "shadow banking" sector. As mentioned by Vítor Constâncio, one of the main objectives of macro-prudential oversight is to close all the loopholes in the regulatory perimeter.

From a research angle, it is essential to better understand the systemic importance of non-bank intermediaries. However, this is not really possible without granular individual data. An important example concerns hedge funds. While it may be true that, alone, most hedge funds are not systemic, the sector may still play a significant role in the build-up of imbalances and the transmission of financial

instability. Against this background, I have never understood why hedge funds did not have balance sheet reporting requirements. This will now change with the European directive on alternative investments,[5] but it will be a number of years before enough data have been accumulated for study purposes.

Granular individual data are also necessary for researchers to contribute effectively to the policy debate. They enable large panel datasets to be compiled, i.e. datasets that have a wide cross-sectional dimension and a "long enough" time dimension. With such datasets it is possible to control for many more factors (including individual and time effects) than with data that only have a time series or a cross-section dimension. If panels are used, one can address causality issues much more convincingly.

A recurring argument is that collecting a lot of data and information hampers financial innovation. However, understanding a financial sub-sector is not identical to regulating or suppressing it. The financial sector is too important, as we painfully experience, to leave huge areas of it unclear.

Therefore, I close my discussion by citing Francis Bacon, the English philosopher, writer and politician of the late sixteenth and early seventeenth century. In his "Novum Organum" he created the now widely-known phrase "knowledge is power". I find what the interpreters of Francis Bacon say very interesting. He wanted to understand nature, but he did not want to understand nature to subject it to humanity. He wanted to understand nature in order to improve the faith of humans. This is how we should look at the data-reporting burden for individual financial intermediaries. The aim is not to subjugate them to some public authority and thereby stifle financial innovation. We just need to understand well enough where and how innovations serve the public interest and where the risks and distortions lie.

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5   Proposal for a Directive of the European Parliament and of the Council on Alternative Investment Fund Managers and amending Directives 2004/39/EC and 2009/…/EC (COM(2009) 207 final).

DISCUSSION SUMMARY

In his introduction, **Choongsoo Kim** (Governor, Bank of Korea) spoke of the importance of the initiatives to globally define and collect comprehensive and harmonised data for macro-prudential surveillance. However, he doubted that data alone would be sufficient to identify and mitigate systemic risk without a comprehensive set of financial stability tools and concepts, which were clearly missing before the recent financial crisis.

Vítor Constâncio (Vice-President, European Central Bank) focused his presentation on the data needs for macro-prudential analysis in the context of the ECB's responsibilities. He underlined the need for a change in the financial stability surveillance paradigm by moving towards a better and more comprehensive disclosure policy by financial institutions. This change would also provide a concrete signal of increased transparency to market analysts and participants, but would require considerable changes to the existing confidentiality regime. He also flagged a number of data gaps that still do not allow for the proper monitoring and assessment of systemic risks: securities financing transactions, the activities of the shadow banking system, and over-the-counter derivatives markets.

Andreas Ittner (Executive Director, Oesterreichische Nationalbank) addressed the challenges facing the Austrian financial system and supervisory structure with regard to data needs in the context of a fast-moving environment. The innovative Austrian integrated common data model aims at providing an efficient and flexible data structure to cope with multiple requirements, namely statistical, supervisory and public disclosure. This framework should ensure quality and integration, as well as a reduction in the overall reporting burden.

Jean-Philippe Thierry (Member of the General Council and Vice-Chair, Prudential Supervisory Authority, Banque de France) provided some insights from a Banque de France perspective on the use of statistics for macro-prudential purposes. A better use of the information available is one of the main challenges for financial stability. Moreover, he pointed out some avenues to improve the statistical function, namely to work towards quality, relevance and adaptability to changing circumstances.

Philipp Hartmann (Deputy Director General Research, European Central Bank) discussed the issue from a research angle. In his view, financial stability analysis and tools are currently comparable to those used in monetary policy in the 1950s. Further research and empirical analysis would therefore be beneficial. To carry out such an analysis, additional micro (panel) data would be needed, for example, as regards the mortgage market, credit aggregates and the various financial intermediaries.

In the discussion, **Vítor Constâncio** shared the view of **Jean-Philippe Thierry** that sufficient information had indeed been available to foresee the financial crisis. However, the development of the crisis showed that there were also many

grey areas, e.g. as regards the credit default swap market (who was ultimately liable?), the repo market and the shadow banking (or non-regulated) sector. He reflected that some data were not provided simply because at the time there was no demand for them; no one knew they were needed.

Andreas Ittner agreed with previous comments, highlighting that data gaps were not the most important factors in the recent financial crisis, but rather the lack of a comprehensive macro-prudential assessment framework and the prevailing financial market dogmas (e.g. market efficiency and self-regulation). New data requirements should be carefully assessed to avoid "overdoing it" and introducing an unnecessary reporting burden.

MACRO-PRUDENTIAL SURVEILLANCE AND STATISTICAL CHALLENGES

ANDREAS DOMBRET

I INTRODUCTION

Thank you for inviting me to speak to you tonight. Many of the statistical challenges that are related to macro-prudential surveillance have already been addressed this afternoon. Allow me to offer some thoughts from the point of view of a macro-prudential practitioner, who is also involved in statistics.

It is a crucial aspect of macro-prudential surveillance, as we see it in Europe, that macrofinancial analysts receive all the information relevant for them to do their job. From my point of view, four aspects stand out:

1. Data requests must be analytically driven.

2. Micro and macro-views should be reconcilable.

3. Single entity and consolidated data are equally important.

4. The data gaps issue needs to stay on top of the agenda.

2 THE SIGNIFICANCE OF MACRO-PRUDENTIAL SURVEILLANCE

There is, more than ever, a strong case for mutual understanding and close ex ante coordination, because in recent years we have witnessed nothing less than a significant change in the paradigm of macro-prudential surveillance. Three steps can be distinguished.

As a first step, in the spring of 2009, an international reform agenda was agreed upon, and the Financial Stability Board was assigned a key function.

Then, at the beginning of 2011, the European Systemic Risk Board took up its work.

And, as a last step, we are in the process of national macro-prudential mandates being drafted in several European countries. In fact, at the end of last year, the ESRB released an explicit recommendation on the macro-prudential mandate of national authorities.

Macro-prudential surveillance, at the European level, can be characterised by a three-part approach.

– First: a legal mandate exists for safeguarding financial stability. Europe is setting standards with respect to macro-prudential policy.

– Second: macro-prudential surveillance pursues an indirect approach to surveillance. This means that macrofinancial analysts are entitled to receive the totality of relevant information in order to be able to deliver early warnings and clear recommendations. Meanwhile, all operative, micro-prudential instruments remain in the hands of the relevant supervisory agencies.

– Third: central banks are to take on additional responsibilities.

The draft of an act to strengthen German financial supervision that was released just a few days ago follows along these lines exactly.

However, the indirect approach, which is a crucial element in the European concept of macro-prudential surveillance, is far from being completely implemented. It remains an important challenge to find a system of rules and procedures for applying macro-prudential instruments to address country-specific or sectoral risks. It is important to reconcile the goal of completing a Single Market for financial services with the need for sufficient macro-prudential flexibility.

Moreover, formidable challenges refer to the acquisition of what I have called the totality of relevant information. It is against this very background that statistics enter the stage. Statistics, together with IT, are probably the most important means for macrofinancial analysts to meet their information needs.

3   CONCEPTUAL CHALLENGES

The G20 Data Gaps Initiative aims at both strengthening existing statistics and developing new ones. As regards the development of new statistics, the task is quite challenging. Take, for instance, the initiatives on enhancing information on financial linkages, on mapping exposure and funding patterns or on identifying the activities of non-bank financial institutions, to mention just a few. Off-the-rack blueprints on how to proceed do not exist. The legal framework for data collection needs to be broadened in some countries. Confidentiality issues will have to be addressed. And, last but not least, analytical guidance is necessary for the collection of data and for the prioritisation and coordination of statistical activities.

3.1   DATA REQUIREMENTS NEED TO BE BASED ON SOUND ARGUMENTS

Any request for statistical data should be analytically driven. To be provocative: "do you really need the data that we do not have?" This means that the goal of any research must be clearly defined, and that at least some preliminary ideas of how to proceed must be developed in advance. It is a prerequisite for statisticians

to set priorities when employing their resources in their search for data that are fit for purpose. For the macro-prudential analyst, though, it is often the other way around: developing good ideas requires having at least some stylised facts before theorising. This is a prerequisite for macro-prudential analysts.

However, it has to be recognised that financial stability cannot be easily defined. To give an example: the measurement of financial distress requires a broad and open concept with many dimensions which evolve over time. What is necessary, therefore, is an iterative approach that addresses individual aspects of financial stability step by step and tackles the subject from a number of different directions.

3.2 MARRYING MICRO AND MACRO DATA

Macro-prudential surveillance has a lot to do with gaining a bird's eye view of the individual market players and their interlinkages. Consequently, what the analysts need is an approach that appropriately integrates micro and macro data.

This observation presents a case for a more in-depth use of statistical micro data. To give an example: if we look at the balance sheet of a bank as reported to statistics, we know that it is precisely this data that are used to derive national and euro area money and credit aggregates, financial accounts referring to the banking sector, external positions, BIS locational banking statistics and so forth. This guarantees a high degree of consistency for analytical purposes. Not least for this reason, statisticians have begun to put additional emphasis not only on the provision of aggregates, but also more and more on the provision of granular data that can likewise be used for micro and macro analysis. A case in point is the ESCB's well-established Centralised Securities Database and the new ESCB project of a Securities Holdings Statistics Database.

3.3 RECONCILING SINGLE ENTITY AND CONSOLIDATED DATA

If macro-prudential analysts are to rely more heavily on statistical micro data, statisticians will have to adopt a dual approach. They will have to provide data on a single-entity basis as well as on a consolidated basis. Both approaches are necessary to get the full picture.

Ideally, the analysis of consolidated data would be compatible with single-entity analysis. This would enable us to take a look from the corporate perspective while keeping in focus the interrelationship between branches and subsidiaries. It is up to the statisticians to develop viable solutions.

4 FILLING IMPORTANT DATA GAPS

As to the issue of data gaps, there are two areas which, both from a statistical and from an analytical point of view, appear particularly challenging. These are the scarcity of data on the shadow banking system and the unsatisfactory progress being made in building a broader database on the insurance sector.

4.1 SHADOW BANKING SYSTEM

Credit intermediation via shadow banking has been producing serious financial distress, which contributed to the crises and which continues to be a risk factor for the stability of the financial system. Moreover, risks for the financial system tend to be systematically stemming from this sector, making its macro-prudential analysis very important but difficult to handle, statistically as well as conceptually. This situation presents extraordinary challenges for supervisory and regulatory authorities as highlighted in an FSB report to the G20 in October of last year, and, only recently, in the European Commission's Green Paper on Shadow Banking. The pressing concern with shadow banking is thus its lack of transparency. What are our options for charting the territory of shadow banking?

Shadow banking involves entities and activities outside the regular banking system, and statistical data collection in many parts is still quite sketchy. Obviously, there is an urgent need for central banks to be given an extended mandate for the collection of data not only from banks but also from non-bank financial institutions.

What can be done in the short term? There are two standard prescriptions frequently recommended as an initial remedy. The first of these is an extended analysis of flow-of-funds data. The second is an evaluation of counterparty information from balance sheet statistics. As regards the flow of funds, these transmit an idea of the main structures of the financial system: no more, but no less. Building on this feature, the G20 Data Gaps Initiative suggests that flow-of-funds information be amended by detailed sectoral accounts in the form of "from-whom-to-whom" tables, and, in fact, the IMF has already presented a pilot by submitting a standardised report form, based on what they call the "balance sheet approach". A similar project is underway in the ESCB with promising results. Nevertheless, the critical point is that our basic statistics on financial institutions outside the regular banking system be improved.

As regards counterparty information from balance sheets, these allow the mapping of exposures between the reporting institutions and financial entities elsewhere. In order to shed more light on shadow banking activities, a more disaggregated sectoral breakdown is needed. Initiatives have been launched, for instance, in the context of the BIS Consolidated Banking Statistics, where we will see positions vis-à-vis "other financial institutions" being shown separately. Some other BIS surveys have made considerably more ambitious attempts at collecting detailed counterparty data, notably the OTC Derivatives Statistics, where you can find data on credit default swaps broken down into, among others, positions vis-à-vis insurance firms, SPVs and hedge funds. The problem here is that operational definitions − say, for hedge funds − have proven to be difficult to agree on, and, therefore, the issue of classification has been left to the discretion of reporters. This is far from being an optimal solution. The Bundesbank therefore is calling for the development of an international business register.

4.2 INSURANCE SECTOR

Insurance companies are a key focal point for macro-prudential surveillance because of their function as risk brokers and their role as financial intermediaries. However, there is a striking contrast between the economic and financial relevance of insurance companies and the relatively scarce amount of statistical data at hand. This has prompted the Eurosystem to launch an initiative geared to setting up new statistics on insurance companies and pension funds at the European level. Actually, initial sets of data have been produced, but as many central banks lack their own data collection systems for insurance data, much of the information has to be imported, on an aggregated basis, from supervisory sources. This necessitates the data having to be heavily supported, for analytical purposes, by in-house estimates. But, to be clear on this point: statisticians have to abstain from becoming "nowcasters" or "forecasters".

Even after the implementation of Solvency II, blind spots will continue to exist. For instance, there will be no new data on pension funds. Moreover, data timeliness and data frequency will have to be significantly improved. This means that there is still a need for an additional ECB regulation on insurance statistics.

5 A STRONG CASE FOR STATISTICAL COOPERATION

The days when statistics was just about number crunching clearly are history. I regard a statistician as someone who is confident in his skills, well trained in economic analysis, and closely integrated into an institutional network ruled by proven, time-honored principles. Moreover, a cooperative spirit is called for, paired with a sense of accountability and responsibility. And these are the same construction principles to be followed when it comes to building stable bridges between the various statistical fora and systems. Seen against the background of the current debate on the future of the Committee on Monetary, Financial and Balance of Payments statistics (CMFB), let me express my hope that everyone in Europe fully appreciates the high value of good partnership. In that respect, the CMFB is not only a body, but rather a concept. I am sure that no one in Europe would consider it to be a good idea to abolish the CMFB, especially in times like these, when a strengthening of its role is absolutely essential.

6 CONCLUDING REMARKS

Let me summarise my main messages:

• Europe is setting standards with respect to macro-prudential policy. Germany is about to implement national macro-prudential oversight.

• Macro analysts are entitled to receive all relevant information in order to be able to deliver early warnings and clear recommendations.

- Statistics are the most important means for macrofinancial analysts to meet their information needs.

- Micro and macro data should be happily married.

- A dual approach is needed: single-entity and consolidated data are equally important.

- Throwing light on the shadow banking system and the insurance sector requires our special attention.

- There is no alternative to good partnership between statistical institutions and systems.

- Politicians should support our work.

At the end of the day, there can be no question that macro-prudential surveillance is dependent on solid statistical groundwork. On the basis of the discussed prerequisites, priorities and principles, I am confident that we will master the future of macro-prudential statistics.

Thank you for your attention.

3   MICRO-FOUNDATIONS OF MACRO DATA

INTRODUCTORY REMARKS

KLAAS KNOT

It is almost self-evident that every new crisis provokes calls for more information. Crises often bring to light the fact that important developments have escaped our attention, as a result of which we failed to see problems looming and could not intervene effectively. The ensuing crisis prompts efforts to fill in such information gaps. A crisis also provokes a sense of urgency, so the consensus needed in order to obtain more and better statistical information is often achieved much faster than in more tranquil times. In the past, such leaps forward in times of crisis have more than once brought important statistical innovations. A case in point is the Great Depression in the 1930s, which prompted the design of a system of national accounts which up to this day serves as an essential input for macroeconomic policy.

The financial crisis of recent years is no exception to this rule. One initiative has come from the G20, which has identified and addressed a large number of crisis-related data gaps.[1] A major insight gained from the recent crisis is that statistics at the aggregated level offer an inadequate perspective on the risks that are present in the financial system. Macro aggregates on, for instance, solvency ratios mask underlying distributions and hide potentially destabilising tail risks. Even more importantly, the credit crisis has shown that we have only a limited understanding of the interdependencies that exist within the financial system, i.e. the systemic risk. To some extent, this is unavoidable: the financial system has become highly complex and is characterised by continuous innovation. Yet we might significantly tighten our grip on systemic risks if we made systematic use of *micro data*. Global financial activity is dominated largely by a few dozen internationally operating institutions that are highly interconnected. The vulnerabilities inherent in these interconnections did not become fully apparent until the crisis erupted, revealing how far the effects of the collapse of Lehman Brothers reached and the key role played by an institution like AIG. There is a clear need for intensified monitoring of such institutions and the links between them. Such information also helps to bring into focus the unsupervised "shadow banking activities".

This broadly felt need has sparked several initiatives to make effective use of micro information to gain a better understanding of macro-prudential risks. One such initiative is the common data template for global systemically important banks, developed by the Financial Stability Board (FSB) at the request of the G20. Access to high-quality and consistent information on financial linkages and concentrations of exposure reinforces both micro and macro supervision, and supports crisis management. Other examples of micro data that are also used for

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1   See *The Financial Crisis and Information Gaps – Report to the G-20 Finance Ministers and Central Bank Governors*, FSB and IMF, Basel/Washington DC, October 2009.

macro supervision purposes are the key risk indicators and the EU-wide stress tests of the European Banking Authority (EBA). Within the European System of Central Banks (ESCB), the development of statistics on the ownership of individual securities, based on the Centralised Securities Database (CSDB) is a significant step towards providing more insight into existing exposures. The development of a legal entity identifier and of registers such as the Register for Institutions and Affiliates Database (RIAD) will further facilitate the development and interpretation of micro statistics.

Efficient integration of such initiatives within the statistical system is in the interest of both the authorities and the reporting institutions. There is a strong temptation to use the current sense of urgency to precipitate the development of new statistical and reporting frameworks. However, to prevent fragmentation and duplication of activities and reporting requirements, integration within existing frameworks should be sought wherever possible. Great improvements can already be achieved through the refinement and international harmonisation of existing frameworks. This will enhance international comparability of micro and macro data and improve the linkage between data on individual institutions and aggregates. The efforts of the EBA and the European Insurance and Occupational Pensions Authority (EIOPA) to create uniform EU-wide supervisory reporting standards are fully in line with this principle. Initiatives that do require a new reporting framework should be coordinated as much as possible.

From the point of view of efficiency and comparability, it is of the utmost importance that micro data are optimally shared between regulators at both national and international level. One could think of a model where centralised data hubs hold granulated and harmonised data to which all relevant supervisory institutions have the fullest possible access. Further development of eXtensible Business Reporting Language (XBRL) and Statistical Data and Metadata eXchange (SDMX) standards may facilitate this process. Extensive data sharing will not only enhance efficiency, but also greatly expand the possibilities for data analysis and comparison, thereby enhancing the effectiveness of prudential policies.

As regards data sharing, the relatively young EU supervisory system may benefit from the experience gained in over ten years by statisticians within the ESCB. In particular, in recent years, progress has been made within the statistical system regarding the possibilities of exchanging micro data between central banks and the ECB and among central banks. This took some time and effort, as the confidentiality of individual parties' information is also firmly embedded in the statistical legal framework. The establishment of the FDI Network is an example of how sharing micro information can promote the quality of statistics. Within this network, statistics compilers in all EU countries have exchanged monthly mirror data on individual foreign direct investments for some years now. The crisis has highlighted the need to share micro-level information within the ESCB, including as an input for policy-making, which is, after all, the main reason for producing statistics. For an effective implementation of monetary policy, there was felt to be a need to monitor the effects of crisis management measures on the lending policies of major banks in the euro area. This will lead to

the exchange of harmonised data on individual banks between ESCB institutions. For financial stability purposes, it is firmly intended to start exchanging data on the securities holdings of large banking and insurance groups within the ESCB as soon as they are available. Facilitating a similar mode of micro data exchange among financial regulators would ensure that information used for micro- and macro-prudential purposes is not collected elsewhere, thereby enhancing transparency as well as efficiency.

Given the right mindset, it should be possible to remove technical impediments to data sharing within the supervisory system. In the event of perceived legal impediments, and if the existing legal framework is found to be inflexible, laws can also be amended. Many of the current confidentiality rules are outdated, particularly from the perspective of financial stability policy. Moreover, it is hard to explain to the public that an accident in the financial system might have been prevented if available data had been more adequately shared among the responsible authorities. Indeed, at De Nederlandsche Bank, this argument has led to the decision to provide full access to statistical micro data in the interest of prudential supervision within the central bank at both the micro and macro level. Conversely, micro supervision reports are used both for statistical purposes and macro-prudential policy. Of course, confidentiality rules apply to the use of these data. In the Netherlands it took some time and debate before the existing "Chinese walls" could be torn down. Yet here, too, it was the crisis that gave the final push.

The Netherlands, furthermore, enjoys the added "benefit" of having both the prudential supervision and the central bank tasks housed under a single roof. The effectiveness of micro- and macro-prudential policies should not, however, depend on the institutional set-up. Whether the supervisory tasks are exercised from within or outside the central bank should be irrelevant. With the current sense of urgency and the experience gained within the ESCB, it should be possible at this juncture to make the leap forward to a situation in which all regulatory authorities in Europe act as a single system within which information is freely shared. Then, a few decades from now, the effective structural use of micro information might well be regarded as one of the key achievements to come out of this crisis.

MICRO DATA FOR MICRO-
AND MACRO-PRUDENTIAL PURPOSES[1]

ANDREA ENRIA

I   INTRODUCTION

A post mortem of the financial crisis points, among other things, to a possible lack of effective macro-prudential oversight, which could have detected, at an early stage, the build-up of the vulnerabilities that led to the eruption and propagation of the turmoil, and could also have prompted action to prevent or mitigate the crisis.

Macro-prudential oversight in the form of monitoring the stability of the financial system was performed mainly by central banks. Findings on potential risks were disseminated in financial stability reviews in order to raise the awareness of both policy-makers and market participants. However, the analysis relied mainly on market intelligence and central banking statistics, and seldom benefited from bottom-up supervisory inputs. Moreover, the findings had for the most part an analytical nature and often stopped short of putting forward hard-hitting policy messages or recommendations for specific supervisory measures, particularly since central banks had no institutional mandate to encroach on supervisory matters.

Thus, after the crisis, there was consensus at the global level to elevate macro-prudential supervision as a pillar of the financial stability framework and to empower the bodies entrusted with this policy with new and effective tools. In the EU, there was a strong commitment to change gear and move towards a new institutional set-up that would address the weaknesses found in the conduct of financial supervision. The starting point was the de Larosière Report,[2] which recommended the establishment of a European System of Financial Supervision (ESFS) comprising a macro-prudential body and three new micro-prudential authorities responsible for the banking, insurance and securities markets, respectively. These have since been set up in the form of the European Systemic Risk Board (ESRB) and the three European Supervisory Authorities (ESAs).

In the field of financial stability, the ESAs have been entrusted with a number of tasks and instruments for dealing with systemic risk. The financial stability tasks of the ESAs are justified by the need to also consider the build-up of risks in micro-prudential supervision. The ESAs therefore monitor and assess risks and vulnerabilities in their respective financial sectors. For this purpose, they

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1   I wish to acknowledge the assistance of Meri Rimmanen and Mario Quagliariello in the preparation of this paper. I would also like to thank Hugo Frey Jensen and the other participants at the Sixth ECB Statistics Conference for their comments.
2   Report of the High-Level Group on Financial Supervision in the EU chaired by Jacques de Larosière, Brussels, 25 February 2009.

must develop – in cooperation with the ESRB – a number of tools, including regular stress testing and a "risk dashboard" comprising a set of indicators to identify and measure systemic risk. Moreover, the ESAs have to identify criteria for measuring the systemic risk of financial institutions.[3] The potential for a certain degree of overlap with the work of the ESRB is addressed through mutual cooperation among the ESAs and the ESRB, including in the field of information sharing.

Data are a key component of these activities, and this scarce and expensive resource merits wider discussion. Risk assessment – whether micro- or macro-prudential – requires a significant amount of good quality and reliable data, with different granularity and at different levels of aggregation and analytical information. Indeed, information gaps limited the ability of authorities to identify the build-up of vulnerabilities at the core of the financial crisis. One shortcoming was the limited data on specific institutions and markets, but most information gaps were due to the inadequate use of existing resources and information, largely owing to the fragmentation and non-harmonisation of certain macro- and micro-financial data across jurisdictions. The challenge, therefore, is to strike the right balance between the need to improve the quantity and quality of financial data and the reluctance to over-burden financial institutions with excessive reporting obligations. In this paper, I argue that the way forward is to make good use of the statistics we already have or that are being developed – not only monetary, but also supervisory – and to enhance their ability to serve a variety of purposes: price stability and the mitigation of idiosyncratic and systemic risks.[4]

2   MICRO DATA FOR MICRO-PRUDENTIAL PURPOSES

A. HARMONISATION AND COMPARABILITY OF DATA

In most jurisdictions, micro-prudential supervisory authorities require banks and other financial intermediaries to submit data in connection with their institutional responsibilities. Most data are thus collected under legal reporting requirements. In addition, intermediaries make some non-obligatory reports available on a voluntary basis. Supervisory reports are the most comprehensive source of information, encompassing data on risks, capital positions and profitability. These data are typically collected on a fully consolidated basis, since this is essential for a comprehensive assessment of the intermediaries' risk profiles.[5]

From the micro-prudential standpoint, the comparability of data across intermediaries is an essential feature, since it is the precondition for carrying out peer analyses and benchmarking exercises. This is easier said than done, particularly across national borders. Accounting and reporting rules have traditionally represented a concrete way of strengthening the reliability of data

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3   See Enria and Texeira (2011).
4   See Philip Davis (1999).
5   Full consolidation – which is acknowledged as best practice for micro-prudential supervision – also makes supervisory data more suitable for macro-prudential supervision than monetary statistics, which tend to be unconsolidated.

and making cross-sectional comparisons meaningful. However, for a long time the definition of these standards has been nationally driven and convergence in practices has not reached a level where consistency is possible. While international accounting and reporting standards – International Accounting Standards (IAS)/International Financial Reporting Standards (IFRS) – aim to deliver high-quality, transparent and comparable financial reporting across firms and across time, their primary objective is the relevant and faithful representation of firms' financial condition. Since relevance may require some flexibility for reporting institutions, common templates for disclosure are not provided under the accounting standard. This reduces comparability and makes the aggregation of firm-specific data more challenging.

In 2005, in order to enhance comparability within the EU, the Committee of European Banking Supervisors (CEBS) – the predecessor to the European Banking Authority (EBA) – published a standardised financial reporting framework (FINREP) for reporting the consolidated financial accounts of EU credit institutions using IFRS. The common framework for reporting capital adequacy data for supervisory purposes (COREP) was published in early 2006. FINREP and COREP are good examples of the efforts made to harmonise and streamline reporting requirements in Europe. They are, however, only a partial success, since they have been implemented under the Lamfalussy architecture as non-binding guidelines. The forms banks have to complete to report their position with respect to the capital requirements have remained different across jurisdictions, with some countries deciding to adopt FINREP and COREP and others preferring to retain national reporting standards.[6] The reporting dates, taxonomies and IT platforms for submitting information to supervisors also differ across countries.

The lack of a single rule book has made it very difficult to organise the micro-prudential assessment and supervision of cross-border groups in a truly coordinated fashion. This not only limits the cross-country comparability of financial information, but is also perceived by cross-border banks as a dead-weight cost, hampering the integration of financial markets in the EU. It also raises issues of efficiency, since having the same requirement implemented in different ways at national level fragments the compliance process for cross-border groups, thereby increasing administrative costs without any obvious benefit in terms of safety and soundness. Moreover, when regular reporting is perceived as not fully reliable, there is a tendency to use frequent ad hoc data exercises, which are extremely costly in relative terms over the long run.

In addition to working on the harmonisation of reporting requirements, the EBA has liaised with the ECB on the reconciliation of supervisory and statistical reporting requirements. This is aimed at reducing the reporting burden for entities that are required to deliver data to both the Eurosystem and to supervisory authorities. More importantly, this analysis contributes to a better understanding of the links

6   COREP has been applied in all EU Member States, but to different extents and with some national features. For FINREP, most countries have implemented at least some of the templates, but the extent and coverage vary significantly.

between different data sources and frameworks and highlights potential synergies between databases originally designed for different purposes.

B. THE EXPERIENCE AT THE EBA

The EBA's main tasks in micro-prudential risk assessment include the identification at an early stage of trends, potential risks and vulnerabilities stemming from the banking sector, the monitoring of market developments, and the identification of potential systemic risks.

In that respect, micro-prudential information on an institution-by-institution basis is essential and – since the very first year of the EBA's existence – we have devoted significant resources to the establishment of a framework for gathering such information, covering both regular and ad hoc data collection. In close cooperation with national experts, we have defined the data needs and set up an IT infrastructure for reporting. The analysis of the data gaps has benefited from discussions at the ESRB/ESAs joint group on data. The data items that the national authorities are expected to report to the EBA were agreed with a view to aligning to the maximum extent possible the EBA's and ESRB's requirements and avoiding duplication of reporting obligations.

The outcome of this work has been the identification of a core set of 53 key risk indicators (KRIs), which represent the first pillar of our analysis and provide early warning signs of potential risk events. The KRIs are reported quarterly by national authorities and cover 57 banks from 20 countries in the European Economic Area (EEA). In terms of coverage, the banks in the sample represent at least 50% of the banking sector in each country and time-series have been collected, on a best-effort basis, since the last quarter of 2008. The definitions of the variables are consistent with COREP and FINREP and – for jurisdictions where these standards have not been implemented – authorities have been encouraged to map local reporting standards to these common EU frameworks. The indicators represent the minimum metrics required for effective monitoring of risks in the European banking system, providing an overview of the solvency, profitability, balance sheet structure, credit portfolios and asset quality of EU banks. In EU-wide stress tests, the KRIs are also used for putting the results into historical context, as well as for back-testing and benchmarking. The KRIs, in aggregate form, are shared with the ESRB to inform its systemic risk analysis, demonstrating the complementarity of micro-prudential and macro-prudential oversight needs.

Whilst the KRIs are a "key" element in understanding risks and vulnerabilities, they are also very basic indicators with limited breakdowns. Moreover, they suffer the same limitations as all supervisory data: they tend to be backward-looking and – notwithstanding gradually more timely reporting dates – lagging indicators. They are, therefore, only the starting point for our analysis, and are not enough on their own. In the medium term, we plan to expand the scope of supervisory reporting to the EBA, but we are currently complementing the KRIs with the qualitative information we gather from our active participation in the colleges of supervisors and with market data and intelligence.

Moreover, regular reporting is necessarily accompanied and supplemented by ad hoc data collection. This allows us to gather more focused and granular information on specific risks and to carry out thematic reviews of risks and forward-looking stress tests. Wide-ranging information on banks' exposures, risk parameters and funding structures has been an essential component in the EU-wide stress tests as well as in the finalisation of the recapitalisation exercise. This data allowed us to deepen our understanding of EU banks and to develop benchmarks for cross-checking banks' bottom-up results. A subset of the data collected for the bottom-up stress tests has been shared with the ECB and the ESRB – under strict confidentiality agreements – and used for performing top-down stress tests. The results of the top-down simulations were, in turn, an input into the quality assurance process carried out by the EBA on banks' results.

Since – for obvious reasons – not all potentially interesting data can be reported, it is necessary, when setting up the framework for ad hoc data collection, to identify the risks and vulnerabilities that are most likely to hit the banking sector at a given juncture. The trade-off here is between the authorities' willingness to receive more data and the burden on reporting institutions. The analysis of costs and benefits is an integral part of the process for introducing new statistical requirements.

Looking forward, the main challenge from the micro-prudential perspective is how to merge quantitative data and "softer" supervisory information into a synthetic assessment of banks' financial condition in order to create reliable early-warning systems and share this aggregate analysis with the macro-prudential authorities. This represents, in my view, the added value that micro-prudential supervisors can bring to the assessment of financial stability.

3   MICRO DATA FOR MACRO-PRUDENTIAL PURPOSES

As discussed above, the new institutional setting in Europe gives emphasis to the role of macro-prudential analyses and policies. Strengthening the analytical tools used to gauge the build-up of systemic risks is, therefore, a priority for the ESFS. However, better analyses and models require the enhancement of the information base. As noted by Vítor Constâncio (2010) in his speech to the Fifth ECB Conference on Statistics, "the statistical function provides a key underpinning for the effective implementation of macro-prudential policies. In particular, a comprehensive and granular information base is required to facilitate the timely detection of the build-up of vulnerabilities, such as financial imbalances. Furthermore, the accuracy and reliability of data largely determines the quality of the systemic risk assessments that inform macro-policy decisions."

The main issue is to what extent we can rely on existing data for macro-prudential purposes and whether micro-prudential data can be also the *servant* of macro-prudential oversight. In that respect, I agree with Claudio Borio (2010) that every crisis creates demand for more data and that this opportunity should not be missed. I also share his view that cost/benefit analyses of new data requests tend to be biased towards inaction in good times.

We should, however, still be sparing in setting the new data requirements and try to make as much use as possible of existing sources of information. What is crucial is that the quality, reliability and comparability of statistics are improved. While it is true that the crisis has revealed the presence of important data gaps and serious shortcomings in the identification of systemic risk, at least a significant component of this relates to the unregulated components of the financial sector (FSB/IMF, 2009). For the regulated intermediaries – and particularly for banks – the problem lies at least as much with the volume and coverage of data as with the lack of harmonisation and, thus, with the challenges in comparing and aggregating data. Data consistency at the micro level is a prerequisite for meaningful aggregation and, therefore, for the macro-prudential use of micro-prudential information. I have already argued that the harmonisation of the reporting framework is the priority for micro-prudential purposes. However, and this is not a paradox, harmonisation is even more important for macro-prudential analyses. Standardisation of data reporting allows the aggregation of bank-level data and makes macro-prudential monitoring more accurate. In that respect, our experience with the KRIs is instructive. The EBA already provides the ESRB with a set of country-level aggregate KRIs, but the systemic analysis is hampered by approximations in the raw data when reporting banks do not follow common standards. For this reason, investing in maximum harmonisation should be perceived as a "win-win" game, where the advantages are widespread and involve both micro- and macro-prudential supervisors as well as reporting institutions.

The EBA is strongly committed to delivering a truly European reporting framework over the coming months by developing a draft implementing technical standard (ITS) on supervisory reporting, setting standards for uniform supervisory reporting. The ITS will cover reporting of capital adequacy, financial information, liquidity, large exposures and leverage ratios. This ITS will specify uniform formats, frequencies and reporting dates as well as IT solutions to be applied by credit institutions and investment firms across Europe. The draft ITS – which was the subject of a public consultation in the first quarter of 2012 – will be submitted to the European Commission next summer and will enter into force in 2013.[7]

Uniform reporting requirements are necessary to ensure a level playing field for cross-border institutions. It is crucial that all credit institutions and investment firms are subject to the ITS to ensure adequate information and coverage for both micro- and macro-prudential purposes.[8] At the same time, it is important to fully implement the proportionality principle: the requirements have been developed taking into account the nature, scale and complexity of institutions' activities in order to reduce the reporting burden on smaller and less sophisticated players.

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7   The ITS has been developed on the basis of the existing reporting frameworks for COREP, FINREP and large exposures that have already been implemented in various Members States.

8   The ITS will cover all credit institutions and investment firms in the EU, both on an individual and on a consolidated level, with the exception of financial information for which the scope is currently under discussion.

4   DISSEMINATION OF MICRO DATA AND TRANSPARENCY

The harmonisation of the reporting standards should be complemented by a process for making relevant data available to the various stakeholders and, more generally, to the public, insofar as this does not compromise bank confidentiality. In many respects, authorities have a responsibility to disseminate financial information – subject to rules on confidentiality and with due regard to the commercially sensitive nature of some data – as it is a public good that has the potential to reinforce market discipline (Burgi-Schmelz et al., 2011). This is what happens, for instance, in the United States, where the Federal Financial Institutions Examination Council (FFIEC) is empowered to prescribe uniform principles, standards, and reporting forms for the federal examination of financial institutions by, among others, the Federal Reserve System, the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency. The FFIEC's data repository provides any user with financial and structural information on most regulated entities. The EBA has made significant efforts to increase transparency. In 2010 we started publishing the results of the EU-wide stress test. In 2011 we released a broad set of information on the banks participating in the exercise. Overall, we have provided market participants with about 3,400 data points – in editable and interactive format – for each of the 90 banks that consented to the publication of the information. Transparency is a fundamental component of the stress test and complements our stressed scenario analyses. Thanks to a common data structure – disclosed ahead of the publication of the results – market participants were in a position to perform their own analyses, understand the drivers of the stress test results, and simulate the impact of alternative assumptions. Our efforts have been appreciated both by analysts and by the public at large. Some recent empirical analyses (Petrella and Resti, 2011) find evidence of significant market reactions, both on various pre-release announcement dates and upon the release of the stress test results, and show that disclosure provided investors with relevant information, thus contributing to reducing the uncertainty and opacity of banks' condition. To some extent, the stress test – which is mainly a supervisory tool – has also been used to fill information gaps created by poor disclosure practices.

Coming back to the *leit-motiv* of this paper – the need for harmonisation – transparency and disclosure are certainly important, but they do not come without risks. They work only if the underlying data is consistent, of high quality and reliable. Complete and detailed metadata can help in the interpretation of the data, but harmonisation of the form and content of the disclosure is crucial. This is true for authorities as well as for individual intermediaries.

Since the outbreak of the crisis, the CEBS and EBA have published several papers presenting the results of assessments of banks' public disclosure. In one of the most recent analyses (EBA, 2011), we noted the progress made by banks in implementing Pillar 3 requirements. However, there are still important areas where improvements are needed. First, as regards the content, it is necessary to broaden the range of information released to the market (for instance on the composition of own funds, back-testing information on credit risk, and remuneration). Second, as regards the form, the presentation of the data is still very diverse, which raises comparability issues for users. As the result of this stock-take, we issued a set

of principles which are intended to further improve the quality of disclosure – particularly in times of crisis – in terms of substance, presentation and consistency. These principles are a starting point: they encourage enhanced quality of disclosure without amending, duplicating or adding to existing disclosure requirements.

Improving transparency is always a challenge. We have had lively discussions on the level of disclosure regarding the stress test results and we expect the debate on this issue to continue. The EBA stands ready to actively participate to this debate, building on the very positive feedback we have received so far. The assessment of banks' risk disclosure is already included in our work programme as a regular task. In 2011 we explored the level of interaction between Pillar 3 and IFRS disclosure, and in 2012 we plan to run an assessment of disclosure on Basel III implementation. These thematic reviews help us to identify and promote best practices.

The final outcome of the debate is uncertain at this stage, but I look forward to a steady-state in which banks themselves will disclose financial information based on common definitions and according to fully harmonised templates. A strengthened Pillar 3 is crucial, but disclosure of banking data should go well beyond Pillar 3, including, for instance, detailed information on asset quality. In that respect, the EBA may play a role in setting up a pan-European data hub, bringing together in a common database the reports of top EU banks. At that point, stress tests may perhaps return to being mainly an assessment tool for supervisors rather than a public event.

5   CONCLUSIONS

In this paper, I have made a case for the effective use of all the available information to pursue micro- and macro-prudential objectives. In particular, I have argued that micro-prudential data can serve two different purposes, to the extent they are based on common definitions and harmonised reporting standards. Standardisation of the reporting framework, however, is only one condition for full comparability and aggregation of data: if the prudential and accounting rules remain different, no reporting framework can complete the job. The most vivid example is the implementation of COREP and FINREP. The former has a solid basis in the Capital Requirements Directive and Regulation, which provide a common regulatory regime for all reporting institutions. The latter is still based on different accounting standards and the ITS needs to take into account the fact that definitions and formats may vary across jurisdictions.[9] Even if harmonisation of the underlying valuation methods is still to come and goes beyond the EBA mandate, it is very important that we agree on harmonised formats for financial reporting.

I would like to conclude by encouraging ambition in planning for the future. The mandate of the EBA covers the development of the single rule book as well

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9   All publicly listed institutions are required to apply IFRS in their consolidated accounts. In addition, 21 Member States require non-listed credit institutions to apply IFRS, or national GAAPs which are close to IFRS, in consolidated statements, and 18 Member States also in unconsolidated statements.

as micro-prudential risk assessment. I see these two tasks as interlinked, with the single rule book ensuring that banks in different Member States are subject to the same requirements, apply them in virtually identical ways, and report to their national supervisors according to common frameworks. Once the single rule book is in place, no significant differences will distort the assessment of risks: micro-prudential supervision will benefit from highly comparable data; macro-prudential surveillance will benefit from data that can be aggregated consistently; and they will both become more reliable and timely.

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MICRO-FOUNDATIONS OF MACRO DATA: INCREASING DATA QUALITY AND EXPLOITING THE "TRUE WEALTH" OF NATIONAL STATISTICAL INSTITUTES

ENRICO GIOVANNINI

I   INTRODUCTION

For decades, the main output of national statistical institutes (NSIs) has been macro data. Economic and social indicators, national accounts data, census data, etc. have been disseminated in statistical tables, disaggregated by, for example, sector of economic activity, sex or territory. Users have used them to carry out analyses adopting different socio-economic conceptual frameworks, as well as statistical and econometric tools, and to evaluate policies and make forecasts.

Of course, NSIs calculated macro data starting from micro data collected through statistical surveys or derived from administrative processes. For example, national accounts are based on datasets coming from a very wide range of sources. Indeed, the dream of every national accountant is to produce final data just summing up micro data (and from a conceptual point of view this is what the accounts should do) but, in practice, they have to use imputation and other statistical methods to transform the available data into a coherent set of macroeconomic aggregates.

Maybe this is why for a long time micro data were just considered to be raw materials useful to produce the final results, rather than the "true wealth" of NSIs. Until not many years ago, when computers were not readily available or powerful enough, managing micro data was complicated for statisticians, and especially for national accountants. In a similar fashion, the analysts' attention was focused on macro data, since statistical and econometric tools for exploiting micro data were not well developed. Finally, policy-makers were mainly interested in macroeconomic policies and tools, so there was little incentive for NSIs to make micro data available.

Over the last two decades the world has dramatically changed in this respect as well. The power of computers and of statistical and econometric tools makes the management of huge datasets very easy. Micro datasets are generated daily by economic and social activities and can be exploited for commercial and analytical purposes. We live in the "information society" and the opening of new frontiers is announced daily by experts in data generation and management. In this new perspective, NSIs (and national central banks – NCBs) are confronted with a very quickly growing demand for micro data and have tried to develop new ways of exploiting and disseminating them.

In this paper, we will discuss some new frontiers in the use of micro data to generate economic and social statistical information, as well as the challenges that NSIs are facing in this area. In particular, the second section is devoted to national accounts and some new ways of using micro data in this context, while the third section deals with similar opportunities in the field of short-term economic statistics. The fourth and fifth sections deal with the use of micro data in structural economic analysis and in the development of statistical business registers. The sixth section discusses some opportunities and risks in the use of micro data for statistical and research purposes, especially in the context of the European Statistical System (ESS). Some conclusions are then drawn in the final section.

2   NATIONAL ACCOUNTS

As already mentioned, national accounts (NA) departments within NSIs have the mission of estimating data which go far beyond the information contained in the collection of their micro-level data ancestors. Rooting the production process in micro data themselves significantly enhances the quality and wealth of information produced. A good example in this area is the process of "data integration" developed by the Italian National Institute of Statistics (Istat) almost 25 years ago for producing economic accounts, and especially "exhaustive" estimates of GDP taking into account the large share of the underground economy existing in Italy. The "Italian approach" of estimating national accounts based on the integration of different sources at micro level has become a practice recommended by Eurostat and the Organisation for Economic Co-operation and Development (OECD).[1]

During the general revision of national accounts carried out in the 1980s, Istat moved from estimation models of value added by sector, based on the macro results from primary sources (at that time, mostly censuses and structural business statistics (SBS) surveys), to a methodology based on micro-level information and a wide range of sources. The analysis of micro data became fundamental, especially for small enterprises, in order to estimate under-reporting and overcome inconsistencies between different sources (for example, concerning employment figures), which were used to estimate irregular working positions.

More recently, with the development of European regulations on SBS, international trade, etc., the direct use of micro data is necessary because the estimation domains used by national accounts are different from those established by legislation on SBS. This in turn implies using specific data control and correction methods owing to the difference in the concept of quality between SBS surveys and NA estimates: the process used to improve the quality of the NA estimates

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1   Organisation for Economic Co-operation and Development (2002), *Measuring the Non-Observed Economy: A Handbook*, available at http://www.oecd.org/dataoecd/9/20/1963116.pdf

from survey data complements that of the survey itself.[2] For example, error and coherence checks are performed in NA, with corrections for larger enterprises and re-estimation based on integration with other sources for small and medium-sized enterprises. This process results in:

– greater accuracy in economic accounts, owing to finer estimation domains with respect to the original ones;

– quality improvements for both NA and revised SBS data, as feedback is provided to the department in charge of SBS estimates;

– enhancement of the information produced, with estimates of the irregular component within employment and of the contribution from the "non-observed economy" to value added.

Of course, maximising the benefits of this process requires a strict interaction between the statisticians in charge of NA and SBS statistics respectively. Also, improving the accessibility and quality of additional sources – in particular administrative records – for statistical purposes is of paramount importance.

A few more recent examples of the extent of the integration and enhancements in this field can be mentioned. In the area of household accounts, after the "Stiglitz Commission" report was published in 2009,[3] Eurostat and the OECD set up an expert group to produce estimates of disparities between groups of households in a NA framework, based on existing micro data. This work is expected to lead to the publication of household accounts split by main source of income (five sub-groups), by adjusted income quintiles (five sub-groups) and by type according to household size, the presence of children and the age of adult members (seven sub-groups).

Similar but more ambitious is the work to calculate social accounting matrices (SAM), based on the full use of national account matrices (NAMs). A pilot project was carried out in Europe at the beginning of the last decade, but has since remained dormant. Only the Netherlands is currently publishing SAM on a regular basis.[4]

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2   Of course, the two aspects tend to overlap partially (see, inter alia, Puggioni, A. (2000), "L'analisi di qualità delle stime di contabilità nazionale", *La nuova contabilità nazionale – Istat workshop*, 12-13 January, Rome, Italy. Controls on micro data are both preliminary and integrated in the estimation of NA aggregates and in the analysis of their accuracy as, generally, they provide good indications of the entity of errors influencing the estimates. In particular, the integration of the sources in the NA enables possible errors in micro data to be identified, and the components of non-sampling error (coverage errors, measurement errors, non-response errors) to be evaluated.

3   Stiglitz, J.E., Sen, A. and Fitoussi, J-P., *Report by the Commission on the Measurement of Economic Performance and Social Progress*, available at http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf

4   Leadership group SAM (2003), *Population and social conditions 3/2003/E/N 23, Handbook on social accounting matrices and labour accounts*, Leadership group on Social Accounting Matrices under the co-ordination of Statistics Netherlands, European Commission, available at http://www.cbs.nl/NR/rdonlyres/F5AA0D6D-1257-48B1-9B07-72D6979FAB68/0/2011 socialaccountingmatricesandlabouraccounts.pdf

Another project, carried out by several NSIs under the auspices of the OECD,[5] relates to the income-based measurement of the stock of human capital. Individual records on education, gender and age were integrated to achieve estimations of human capital remuneration trajectories at the macro level. An estimate of the stock of human capital in 2006 was produced – using the lifetime labour income approach developed by Jorgenson and Fraumeni – by age, gender and educational level, computing ratios to GDP and physical capital.[6]

Istat is significantly enhancing micro-level estimates by using more detailed data on educational attainments and further integrating individual records with micro-level information on sectors of activity. This should overcome some of the shortcomings of the Jorgenson-Fraumeni approach and lead to the production of satellite accounts on human capital within the national accounting system, comparable with other aggregates at the international level.

3   SHORT-TERM ECONOMIC STATISTICS

Micro data is also being increasingly integrated in other fields of economic statistics. This aims at adding value to the information produced, but also reflects users' changing priorities, both at policy and research levels. More and more policy-makers require information about how policies or other economic and social changes influence the behaviour of enterprises and consumers; to do that it is necessary to go beyond macro-aggregates, investigating micro datasets. On the other hand, analysts are no longer satisfied with the cross-tabulations performed by NSIs but want to explore new ways of aggregating micro data, following experimental classifications not yet included in the standard classifications used by NSIs.

The use of record linkage to produce integrated sets of annual indicators is quite common in most NSIs and international organisations. For example, more than 15 years ago Istat published data on exports disaggregated by size and other characteristics of enterprises, which were produced by linking international trade data and business register data, an approach that has subsequently become a recommended practice at international level.[7] Several activities could be mentioned here: some of them require the availability of a fully-fledged business register, others can be carried out without. In this section, two recent examples developed at Istat will be described to illustrate the opportunities available to NSIs to satisfy new users' requirements in the area of short-term economic analysis. The first one does not require a business register, while the second one does.

5   Mira, M. and Liu, G. (2010), "The OECD Human Capital Project: Progress Report", *31st General Conference of The International Association for Research in Income and Wealth*, 22-28 August 2010, St. Gallen, Switzerland, available at http://www.iariw.org/papers/2010/5Mira.pdf

6   Liu, G. (2011), "Measuring the Stock of Human Capital for Comparative Analysis: An Application of the Lifetime Income Approach to Selected Countries", *OECD Statistics Working Papers*, No 2011/6.

7   Araújo, S. (2011), *Trade Microdata: The OECD-Eurostat Trade by Enterprise Characteristics (TEC) Database, Working Party on Globalisation of Industry (WPGI)*, OECD Statistics Directorate, Paris, 20 May 2011, available at http://www.oecd.org/dataoecd/19/14/47946268.pdf
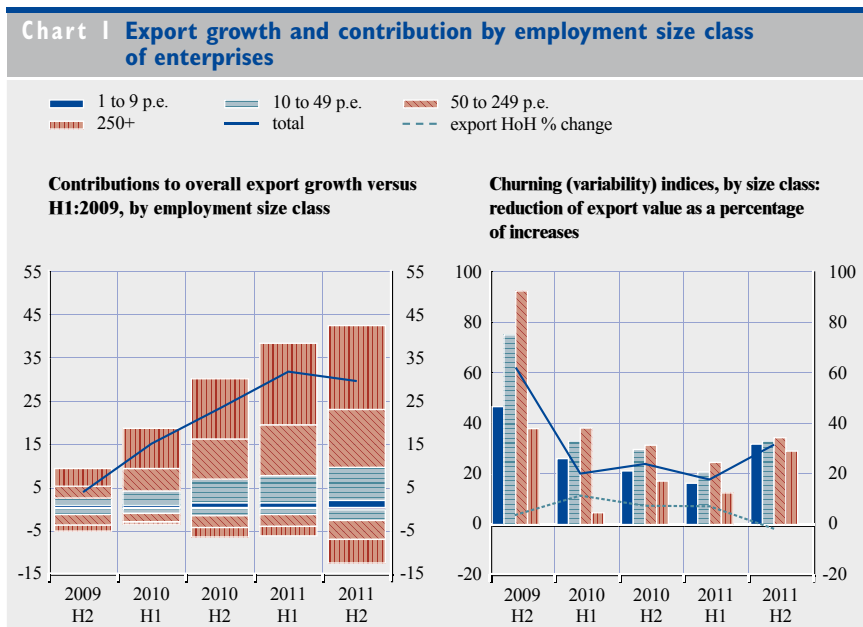
The first examples are related to the analysis of inflation, using data on the consumer price index (CPI) to assess the impact of an exogenous shock, such as the recent increase of 1 percentage point in standard VAT that took place in Italy in September 2011, affecting about half the value of goods and services included in the CPI basket. For this purpose, Istat carried out a statistical analysis of the frequency and intensity of changes concerning about 240,000 price observations per month, disentangling the effects of seasonality and other exogenous factors at the product level. This exercise found that the translation to consumers of the VAT rise from 20% to 21% was only partial, while a macro-based analysis led to the opposite result, i.e. the monthly increase in the CPI was higher than the one attributable to VAT, or was inconclusive. In addition, the pass-through of the VAT rise was diluted over time and not uniform across products. Indeed, the analysis showed that the VAT increase had pushed up, for the products involved, the frequency of the elementary quotes with a positive change compared with the previous month, from 5.2% in October 2010 to 17.7% in October 2011. This went down again to 6.7% in the following month (in November 2010 it was 3.8%), highlighting a reduction of the tensions owing to the VAT increase and its only partial pass-through to prices. In both months, the distribution of price rises was concentrated around the amount corresponding to the VAT shock (i.e. +0.8 percentage point), with increases affecting, in the first place, dearer and subsequently lower-priced products, while the price of the cheapest products (where only rounding effects could take place) in most cases did not increase during the observation period. A similar analysis, addressing price changes in the cereals supply chain in response to raw materials price shocks and volatility, confirmed that the behaviour of downstream agents (producers and retailers of bread and pasta products) was characterised by a relevant degree of inertia owing to the extensive use of discounting policies for packaged items. These examples suggest how analyses based on micro-level observations on prices can be useful for policy purposes, as they can help to understand and model behavioural patterns across sectors, along the supply chain and at different points in the business cycle.

Moreover, the use of micro data to perform non-standard calculations was particularly important to overcome the criticisms levelled at NSIs about the reliability of CPIs after the euro changeover. At that time in several European countries, public opinion strongly criticised the official inflation data, comparing them with the so-called "perceived inflation". As several analyses have demonstrated, perceptions are closely linked to changes in the prices of items most frequently purchased. This is why the Italian statistical office includes in its official monthly press release not only data for the most common breakdown of the CPI, but also data concerning items purchased at different frequencies.

More generally, this experience shows the need to use micro data to describe the variability of economic phenomena, going beyond what averages show. This capacity is vital for NSIs, as they operate in a world in which "special cases" can be presented by media as "general cases", thus influencing public opinion well beyond the reality described by statistics. Of course, this approach to news makes the life of NSIs very difficult, because when there is a discrepancy between perceptions and statistical reality, people may tend to trust the former and not the latter.

The second example is the extension of the data linkage between export and business register data to infra-annual data. The analytical question that led Istat to perform such an extension concerned the capacity of Italian manufacturing enterprises to respond to the international trade recovery after the 2008-09 crisis, when exports fell in a dramatic way. An analysis was performed on the panel of manufacturing enterprises exporting throughout the period 2009-11, and consisting of 43,000 units with 2.2 million persons employed (nearly 50% of total employment in manufacturing). This panel is extremely representative, as it covers about 96% of the value of exports from manufacturing firms.

This analysis shows that in the second half of 2011 about 66% of firms in the panel had increased export levels compared with the first half of 2009 (the lowest level), with larger firms leading with respect to smaller ones (72% and 64% respectively at the two ends of the employment size distribution). The overall increase of 29.7% in export value reflected a contribution of 42.5 percentage points from enterprises with rising exports and a loss of 12.8 points from enterprises with shrinking exports, with a different pattern along time leading to a "net" export increase across size classes (see Chart 1 below). This type of analysis can be – and indeed was – refined, considering patterns by products and markets, together with firms' characteristics, in order to monitor business cycle changes on an extremely timely basis.

Chart 1 Export growth and contribution by employment size class of enterprises

Legend:
- 1 to 9 p.e.
- 250+
- 10 to 49 p.e.
- total
- 50 to 249 p.e.
- export HoH % change

Contributions to overall export growth versus H1:2009, by employment size class

Churning (variability) indices, by size class: reduction of export value as a percentage of increases

Sources: Own calculations, based on Istat SBS and foreign trade statistics.
Note: p.e. stands for per enterprise, HoH stands for half-year on half-year.

4 STRUCTURAL ECONOMIC ANALYSIS

Recent years have witnessed several advances in the quality, availability and use of micro data for structural economic analysis in the ESS, and others are in progress. Some of them stem from the spread of best practices developed by individual NSIs, others (the majority) are the result of joint efforts within the ESS, to which both the EU 7FP[8] (research and development) and the European Commission programme for the modernisation of European enterprise and trade statistics – MEETS (see Chart 2) contributed, the latter also promoting collaborative networks (ESSNET) on this topic.

One large collaborative project involving NSIs and research centres is the BLUE-ETS project which addresses research and the dissemination of improvements in collection, accessibility and re-use of business data across the EU.[9] It also explores and promotes ways to reduce the response burden on enterprises (as a way to increase response rates and quality), enhance the usability of administrative data for statistical purposes, and develop methodological improvements to increase the added value of existing data – such as small-area estimation in sample surveys – and disclosure techniques, including remote access.

Another example in the ESSNET strand is the ESSLimit project, in which 15 European NSIs participate. ESSLimit gathers information from different sources (such as information and communication technologies (ICT), the Community Innovation Survey (CIS), SBS, foreign trade surveys, balance sheets, business registers and employer-employee registers where available),


Chart 2 Proposed framework for the MEETS project
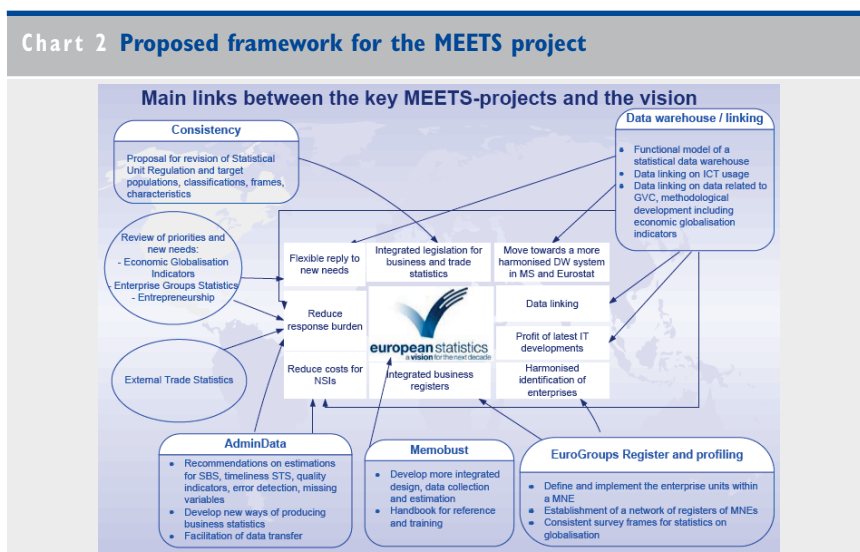
Source: Eurostat.

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8   Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-13).
9   BLUE-Enterprise and Trade Statistics.

with the aim of exploring the relationships between ICT use, innovation patterns and enterprise dynamics. It then produces multi-source indicators for Eurostat on these issues.[10] Aggregated micro data are shared within the consortium for common research, and it is envisaged to set up a repository for micro-aggregated information open to external researchers.

Changes in collection techniques and improvements in archiving, along with a more extensive use of administrative sources, increasingly allow for longitudinal analyses. In several EU countries, labour force surveys enable patterns to be tracked in labour market dynamics at the micro level by comparing the occupational condition of single units over time. In the case of Italy, the labour force survey includes a longitudinal structure based on a rotation system of households within quarterly samples. Half of the households included in a sample are interviewed again after three and twelve months, and a quarter of them after fifteen months. This makes it possible, therefore, to build transition matrices and implicitly estimate the probability of future occupational status.

As an example, 92% of people employed in Italy in the first quarter of 2009 (near the minimum of the business cycle) were still employed one year later, but this result varies from 94.4% for permanent full-time employed workers, to 79.6% for workers with atypical contracts (Chart 3). Little more than one-quarter of the unemployed (27.3%) had managed to find a job and, in half of the cases, with an atypical contract. After one year, 36.5% of the unemployed were still looking for a job, while the remaining 36.2% had slipped into inactivity.

Chart 3 Exit flows by working condition

(Q1 2009 – Q1 2010; percentages)
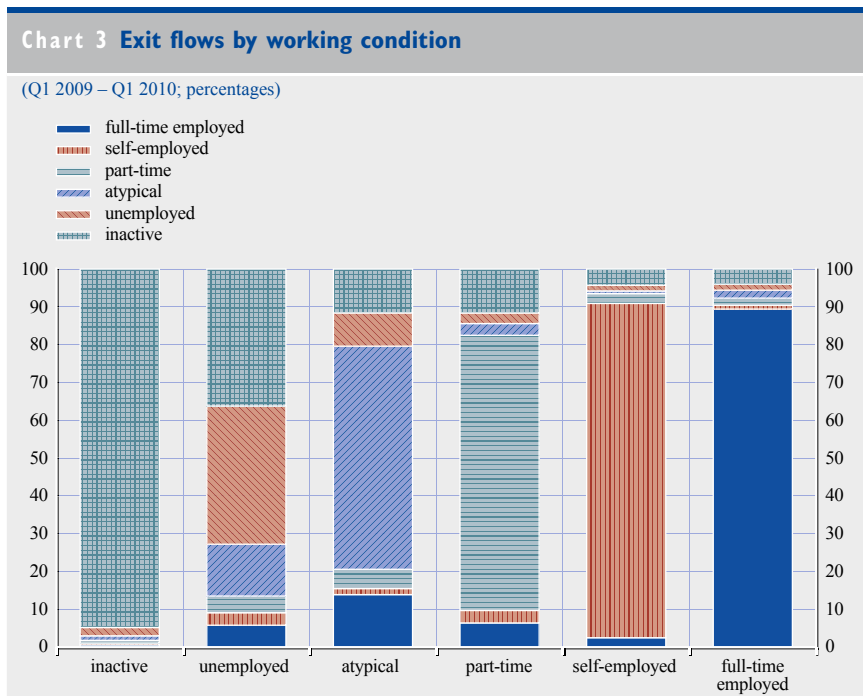
Sources: Istat and Labour Force Survey.

10 See http://www.esslimit.eu

5   STATISTICAL BUSINESS REGISTERS

Business registers form the backbone of business statistics. In the last decade, registers have undergone major improvements in most EU countries, increasing coverage and the reliability of information, in particular for the statistical treatment of administrative events. In many EU countries, underlying micro data can thus be used to map the enterprise system structure and to portray business demographic and entrepreneurship features and dynamics, at any level of detail. As an example, in the case of Italy, the Statistical Archive of Active Enterprises (ASIA) ascertains the impact of the crisis, especially on enterprise birth rates, which shrank from 12.5% in 2006 to 9.6% in 2009, while death rates stayed roughly stable at just below 9%. In 2009, when the crisis was at its peak, net enterprise creation in the economy stayed positive, with a growth of 0.7% in the number of firms with employees. Moreover, gross birth rates in manufacturing and construction shrank by 0.8 and 1.4 percentage points respectively, with a net contraction in the number of active firms. Differences in demographic patterns could also be observed geographically: the 2009 increase in the number of active firms stemmed from central and southern regions, which structurally show higher than average net birth and turnover rates (see Chart 4).
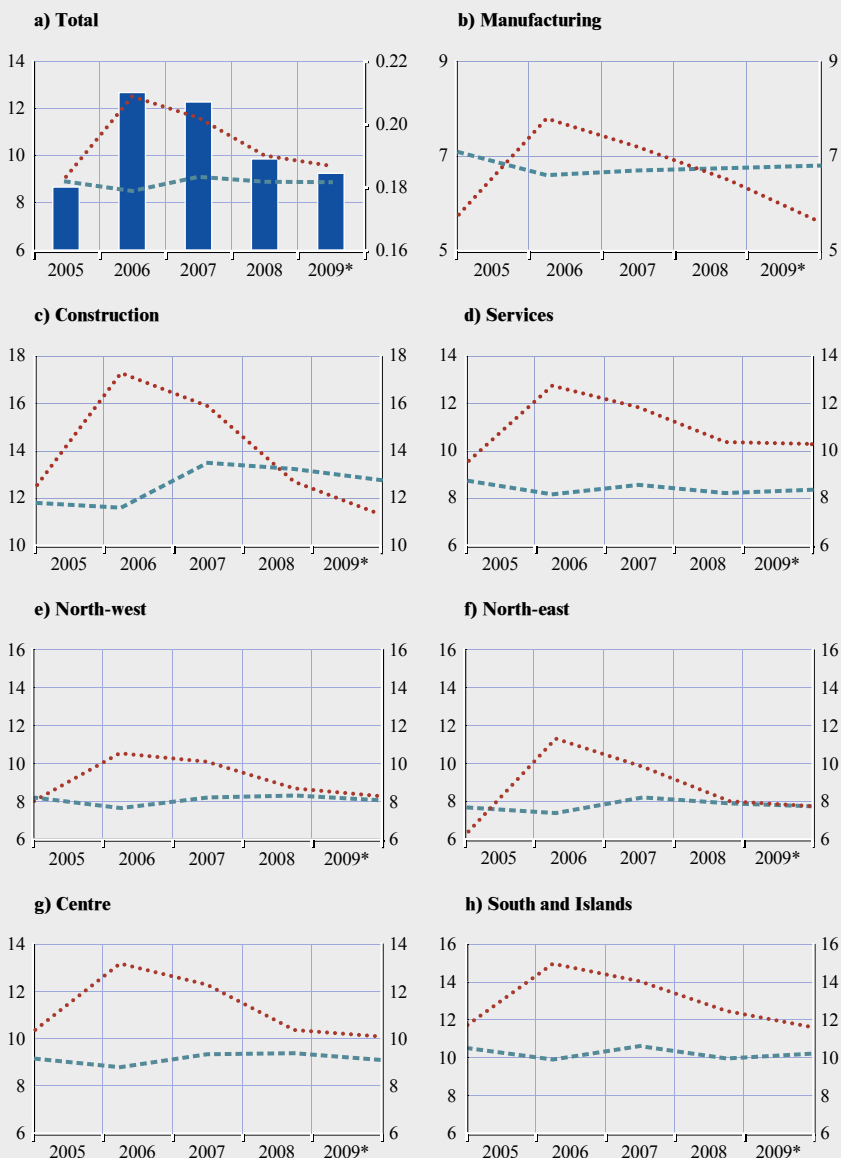
Business register information also allows the analysis of firm demographics with respect to other characteristics. For instance, about half of newborn firms in 2009 were established with a sole proprietorship status; females represented about 28% of owners in this group, with a strong concentration in service activities. Enterprise creation and turnover rates (by sector and/or geographical area) can also be jointly analysed with survival rates (showing a mild inverse correlation when sectors are taken into account), or with size-growth patterns, looking for high growth and "gazelle" enterprises (see Chart 5).

A remarkable improvement in the area of business registers is expected to be achieved by the EuroGroups Register (EGR) project promoted by Eurostat, which is creating a network of national business registers focused on multinational enterprise groups. The EGR contains structural economic information on enterprises which are part of multinational groups with an interest in Europe. It will become the coordination frame for all European statistical authorities, NSIs and NCBs for sampling populations in the production of statistics on globalisation, starting from foreign affiliates' trade statistics (FATS) and statistics on foreign direct investment. It will offer statistics compilers access to integrated and up-to-date register data on enterprise groups with relevant transnational operations in at least one of the European countries.

Chart 4 **Birth and death rates of Italian enterprises with employees by sector and location of HQ**

(percentages; 2005-09; main sectors of activity and NUTS areas)

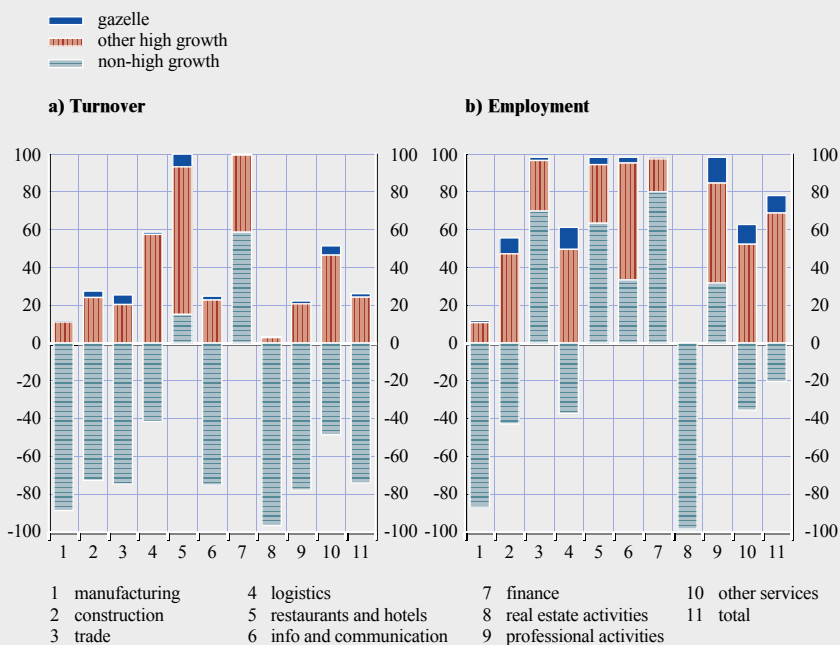- gross turnover (right-hand scale)
- birth rate
- death rate

a) Total

b) Manufacturing

c) Construction

d) Services

e) North-west

f) North-east

g) Centre

h) South and Islands

Sources: Istat and ASIA.

Note: NUTS refers to nomenclature of units for territorial statistics.

Chart 5 Percentage of firms with turnover and employment growth by group

(2006-09; high growth (including gazelles) and other active firms; total and main industries; percentages)

- gazelle
- other high growth
- non-high growth

a) Turnover

b) Employment

1 manufacturing	4 logistics	7 finance	10 other services
2 construction	5 restaurants and hotels	8 real estate activities	11 total
3 trade	6 info and communication	9 professional activities	

Sources: Istat and ASIA.

6   OPPORTUNITIES AND RISKS FOR FUTURE DEVELOPMENTS IN THE CONTEXT OF THE EUROPEAN STATISTICAL SYSTEM

Over the last decade, NSIs have made a special effort to increase access to micro data for research purposes. For example, Istat currently delivers micro data for research purposes in the form of anonymised standard files and more detailed and customised "research files". External researchers can also obtain access to original micro data under inter-institutional research agreements for joint projects with Istat, and can directly access its "Elementary Data Analysis Laboratory", known as ADELE. In this data research centre (now accessible from all Istat regional offices), researchers can work on micro data in a secure environment, taking the output with them after it is checked for confidentiality purposes by Istat personnel.

Moreover, Istat, the Banca d'Italia and the Bruno Kessler Foundation are developing a project to establish a national data archive to collect and make available to researchers micro data produced by public and private institutions for research purposes. Istat and the Banca d'Italia already provide access to micro data for research purposes, but this is not the case for other public institutions (including universities) who receive funds from national or international research programmes. The aim of the initiative is to facilitate access to this huge amount of data through the same technological infrastructure, via the internet or safe centres. According to the proposed division of labour, Istat would be in charge

of data made available by agencies participating in the national statistical system, while the Bruno Kessler Foundation would be in charge of data provided by academic and other research institutions. The Italian Ministry of Education, Universities and Research has also been involved in the project with a view to legislating so that institutions who receive financial support from public programmes must provide their data to the data archive.

The effort made by NSIs to make micro data available to researchers has been very much appreciated by them. A similar effort has been carried out by Eurostat and a European project is now underway to develop remote access facilities to micro datasets stored in individual NSIs.[11] It is important to accelerate this project and develop one of the first Europe-wide statistical infrastructures. It would represent a great achievement for the ESS in avoiding duplication of effort at the national level.

In the opposite direction, the proposal for a General Data Protection Regulation is a potential threat to the future availability of micro data and even their use in statistical production.[12] This regulation is aimed at simplifying and unifying the current legislation. It establishes and, at the same time, reinforces protection for citizens, but also creates some serious concerns for data producers – NSIs especially, but also central banks – which affect policy-makers and the research community. Indeed, the draft proposal might lead to limits on user access to micro data and have an impact on the usability and preservation of micro data themselves. Published statistics could be considered as "personal data" where the data controller retains the underlying individual records, while no attention is paid by regulators to research needs.

To avoid these threats, European NSIs consider that a "general exception" for statistical data should be included in the definition of the material scope of the regulation (Article 2), and that a new restriction (in Article 21) be added for statistics, and statistical, historical and scientific research purposes as areas of public interest, in a similar way as in the Data Protection Directive currently in force.[13]

More generally from an institutional point of view, there are two serious obstacles to better exploiting the potential of existing micro data for statistical and research purposes. The first one relates to the fact that the ESS and the European System of Central Banks (ESCB) are separate. Owing to this

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11 ESSnet on decentralised and remote access to confidential data in the ESS (DARA). See http://www.essnet-portal.eu/essnet-decentralised-and-remote-access-confidential-data-ess-dara

12 Proposal for a Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation). (COM(2012) 11 final).

13 Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data. OJ L 281, 23.11.1995, pp. 31.

separation, and notwithstanding Regulation (EC) 223/2009,[14] the exchange of micro data between NSIs and NCBs can still be complicated, especially for data that are not relevant for the production of European statistics. In some countries, the exchange of micro data is left to agreements established at national level, if the legislation allows for this possibility. In Italy, for example, this is the case for non-anonymous data and this limitation has a clear impact on the efficiency of statistical activities and the quality of results. It is important to address this issue, perhaps in the forthcoming revision of Regulation (EC) 223/2009, and to make legislation in this field more open.

A second serious limitation to improving European statistics is the absence of legislation allowing statistical micro data to circulate freely between NSIs participating in the ESS. This is a nonsense in a globalised world, and one which blocks the possibility of improving statistics in several fields, such as international trade, business registers, structural business statistics, etc. A revision to the existing legislation is urgent and the change would be extremely beneficial for all parties involved and for final users.

More generally, these limitations are mainly attributable to the weakness of the institutional framework in which European NSIs and Eurostat work. Since 1999 I have been arguing that the only way to build a strong ESS is to mirror the functioning of the ESCB. Transforming the current ESS into a "European System of Statistical Offices" (including Eurostat) is the only way to overcome these and many other existing difficulties. This change has been made even more urgent by the strengthening of European governance after the "Greek case". The ECB and the ESCB NCBs should support this approach to improve the quality of statistical outputs and the independence of NSIs from political interference.

7   CONCLUSIONS

In this paper we have mentioned several initiatives undertaken by NSIs and Eurostat concerning the development and use of statistical micro data. They represent just a sample of what is possible, also thanks to the development of ICT tools, and what is being done in Europe and in other statistically developed countries. From this point of view, the existing instruments developed by the ESS in order to stimulate new research projects and promote good practices have to be strengthened and improved.

It is possible to say that micro data represent the "true wealth" of NSIs, especially taking into account that the competition between NSIs and other statistical producers is tougher than ever. Thanks to the development of ICT and statistical methodologies, it is much easier than before for private research institutes and

14 Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics and repealing Regulation (EC, Euratom) No 1101/2008 of the European Parliament and of the Council on the transmission of data subject to statistical confidentiality to the Statistical Office of the European Communities, Council Regulation (EC) No 322/97 on Community Statistics, and Council Decision 89/382/EEC, Euratom establishing a Committee on the Statistical Programmes of the European Communities. OJ L 87, 31.3.2009, pp. 164.

marketing companies to carry out specific statistical surveys, and in areas that have been covered for years by NSIs. But it is quite clear that the competition is much lower (almost close to zero) concerning the use of micro data. NSIs have a special statutory power in this respect. They can, however, strengthen their competitiveness vis-à-vis other statistical producers, exploiting and integrating micro data coming from different sources, developing longitudinal studies and analysing economic agents' behaviour. Moreover, by integrating micro and macro data, NSIs can disaggregate key variables estimated within the framework of NAs, for instance, data by sex, income level and education for the case of individuals, or split the economic structure in unconventional ways and look at the behavioural pattern of enterprises. These reconstituted data would indeed allow the impact of macroeconomic policies on different population groups to be better evaluated, which is especially important when trade-offs between various policy alternatives have to be quantified.

DISCUSSANT'S REMARKS

HUGO FREY JENSEN

on

ANDREA ENRIA, *Micro data for micro- and macro-prudential purposes*

I   INTRODUCTION

Mr Enria's presentation highlights a number of relevant and challenging topics, some of which I will respond to here. Macro-prudential policy is an area in which initiatives are forthcoming not only at the national level, but also the European and global level. Relevant and high quality data are crucial for successful macro-prudential oversight, including risk assessment and ultimately policy actions. Harmonisation of reporting frameworks is important, but it is not the only priority. In many cases, existing data can be enhanced with a view to improving their suitability for macro-prudential oversight although new types and sources of data would also be useful.

The European Systemic Risk Board recommended on 22 December 2011 that Member States designate in the national legislation an authority entrusted with the conduct of macro-prudential policy. The macro-prudential authority should have the power to require and obtain in a timely fashion all national data and information relevant for the exercise of its tasks. This includes information from micro-prudential and securities markets supervisors and information from outside the regulatory perimeter, as well as institution-specific information upon reasoned request and with adequate arrangements to ensure confidentiality.

One of the central issues highlighted by Mr Enria is the lack of harmonisation of reporting frameworks and prudential rules across countries. I agree that the work by financial supervisory authorities and central banks towards more harmonised reporting frameworks should be continued in order to obtain more comparable data. Transparency and comparability are very important for micro-prudential as well as macro-prudential policy. Hence, consistent definitions and methodologies across countries are essential. And certainly, if a single rule book is implemented, data would become more comparable across national jurisdictions. But the implications of a single rule book go beyond data issues. A single rule book also has the advantage that it creates a level playing field. There is, however, a need for flexibility regarding macro-prudential policy; economic cycles are different across countries and economic "backstops" are primarily national. Therefore, we have to get the balance right to prevent the rare, but large, losses in crises and safeguard national room for manoeuvre in future legislation.

The remaining part of my discussion will focus on the use of micro data for macro-prudential purposes. That is, traditional data sources such as supervisory information and central banking statistics as well as other existing and new sources are to be considered. I will also briefly touch upon challenges in

disseminating micro data, give examples of analyses based on micro data which are useful for financial stability considerations, and discuss issues relevant for compiling central banking statistics.

2   MICRO DATA FOR MACRO-PRUDENTIAL PURPOSES

Evidence on the behaviour of individual banks and banking groups is key. The comparability of supervisory data across jurisdictions is an important issue, as pointed out by Mr Enria. Moreover, harmonising the data available for analysis can be achieved by other means than through harmonised legislation aimed at reporting agents. Data collected for the purpose of compiling central banking statistics are, to a relatively large degree, harmonised across jurisdictions, at least within the EU. The mandate of most central banks in the European System of Central Banks with respect to statistics collection enables micro data to be used for purposes other than statistical, such as financial stability analysis. In many countries, the mandate of the central bank to use or collect data for macro-prudential purposes is being considered or is already in the early stages.

Experience shows that detailed data from regular statistical reporting can prove useful for monitoring financial stability. There are two main reasons for this. First, the timeliness and frequency of data used for central banking statistics are an advantage in comparison with other sources. Second, data used for compiling central banking statistics provide relatively detailed information on currency, counterparty country and sector exposures. In addition, the statistical checking process in many cases involves significant dialogue with the reporting institutions. In line with the example used by Mr Enria on qualitative supervisory information, the dialogue during the process of compiling financial statistics – including bank lending surveys – provides valuable insights into the nature of bank behaviour, which are useful for subsequent analysis.

The most important financial institutions operate on a global scale. In order to assess their impact for financial stability at a global level we need to be able to link micro data between countries and regions. International linkages more than ever play an essential role in financial stability. While this is an integrated part of supervisory data, data collected for statistical purposes have historically focused on economic activities within a geographic area and hence have relied upon data in unconsolidated form. In the light of the increased importance of information on banking groups, data used for central banking statistics are now often also collected on a consolidated basis. For example, central banks collect statistical information on the balance sheets of foreign branches and subsidiaries of banks headquartered in their respective countries. These consolidated statistics are used to monitor banks' customer funding gaps. The initiative to enhance the international banking statistics compiled by the Bank for International Settlements with a view to improving their ability to capture aggregate asset-liability mismatches is also an important contribution in this respect.

Supervisory data and data collected for the purposes of central banking statistics are the two main sources of micro data on financial institutions. Both sources

are important for the purpose of enhancing data coverage for macro-prudential analysis. The work to reconcile the reporting requirements for statistical and supervisory purposes is important in this respect. In particular, I am pleased that the European Banking Authority and the European Central Bank have decided to renew the mandate of the Joint Expert Group on Reconciliation of credit institutions' statistical and supervisory reporting requirements (JEGR). Understanding, and ideally also reducing, the differences between reporting for statistical and supervisory purposes will provide more uniform access to data. The JEGR has made a significant contribution to a better understanding of the differences. The next step could be to consider the value added of further integrating the reporting platforms used for the two types of reporting.

3   NEW TYPES OF DATA AND BETTER USE OF EXISTING DATA

Today, banks' exposure from loans and repurchase agreements is relatively well covered. However, interconnectedness and common risk exposures are less well covered, and the statistical coverage of exposures through derivatives and innovative sources of funding is not sufficient. Increasing available information on maturity and liquidity mismatches and leverage should also be a priority. Ideally, such data would be collected at regular intervals to enable systematic macro-prudential analysis and consequently allow policy-makers to take pre-emptive action.

The discussion has so far focused on statistics for the banking sector in a relatively narrow sense. This is because central banks and financial supervisory authorities only have competence over the regulated financial sector. In order to establish early warning systems, a broader focus is needed to complement data on banks and banking groups. Systemic risk may also build up in the non-regulated part of the financial system, or the so-called shadow banking sector. In the light of the importance of interconnectedness, extending the statistical coverage of this related sector should also be a priority in the coming years. Product innovation is a related challenge for adequate statistical coverage of the financial system. It is therefore important that policy-makers ensure flexibility when setting up the legal framework for data collection. This will enable regulators to collect data on new financial products as they are developed, and thus ensure timely statistical coverage. For macro-prudential purposes, data on financial markets, as opposed to institutions, are also relevant. Better information on market views and credit standing could be obtained by extending the coverage of, for example, options and credit default swaps pricing.

Financial stability analysis can greatly benefit from the increased use of micro data. I will discuss two such examples.

The financial situation of households is central to an assessment of financial stability. In Denmark, the liberalisation of the financial system and a well-functioning mortgage credit market has enabled households to incur relatively large amounts of debt, while at the same time accumulating assets such as real estate and pension savings. Hence, at the aggregate level, there is a reasonable

balance between the assets and liabilities owned or incurred by households. However, the vulnerability of households may differ across the spectrum and micro data are useful to gain a better understanding of the distribution of assets and liabilities. In an ongoing study, household-level data on income, assets and debt are used to investigate the distribution of household debt and assets and, consequently, the vulnerability to interest rate changes. The dataset includes data for all households in Denmark. Ultimately, the study will provide an estimate of the share of households that are highly vulnerable to interest rate increases, and hence banks' expected loss under different scenarios. The example demonstrates that micro data can be a powerful tool for macro-prudential analysis and that in-depth analyses based on micro data can serve as an early warning signal of accumulation of risk in the financial system.

The second example is the use of micro data on securities holdings, which are collected for the purposes of securities statistics. During periods of financial turmoil, such data may be used to obtain a quick overview of the exposure to specific markets. I welcome the initiative to establish a common European database of issuers and holders of securities to complement the Centralised Securities Database. Such a database has the potential to become a very powerful tool for assessing exposures to counterparties, and the liquidity and solvency of individual financial institutions as well as the financial system as a whole. While public access to the database is impossible, data should be shared on an ad hoc basis and aggregates could be shared more regularly.

4   TRANSPARENCY, COMPILATION AND DISSEMINATION OF MICRO DATA

Confidentiality issues are likely to arise when working with micro data. In addition, new types of data and additional use of regularly collected data give rise to new challenges for statistics compilation. A number of issues are relevant in this context.

First, the increasing demand for detailed bank-level data has initiated a shift towards a security-by-security and loan-by-loan collection of data. This trend is partly driven by a wish to make statistical compilation more versatile against new data requirements and improve data quality. At the same time, experience shows that the shift in reporting requirements towards more granular data is, in many cases, seen by reporters as easing their reporting burden, as it is closer to their own internal data model. Thus, interestingly, while traditional wisdom tells us that "more data" are "more costly", this is not necessarily true if the reporting format is designed appropriately.

Second, while these more granular data allow for a much wider range of possibilities for aggregation and analysis of data, they also pose new challenges for compilers, who need to verify their correctness. Indeed, the granulation of reports will significantly multiply the amount of data and call for new and more sophisticated checking procedures to be developed. This task is not to be underestimated. If we start collecting data that we are not sufficiently capable

of verifying, the additional details may mislead rather than enlighten us. As a means of coping with the increasing amounts of data, recent trends in checking reported data are in line with a top-down approach, in which observations at the micro level are generally only subject to scrutiny if the reported value contributes to a change in the aggregate figures. With a stronger focus on micro data, such an approach may not be sufficient, as substantial errors at the micro level may prevail if their joint influence on the aggregate figures is low.

Third, as Mr Enria rightly points out, dissemination and transparency are important and challenging issues, which are becoming increasingly relevant as the demand for information from stakeholders increases. For the purposes of this discussion, it is useful to consider separately public dissemination and the exchange of confidential data between official institutions. Data at the reporter level generally cannot be publicly disseminated, although voluntary firm-level disclosures could be useful for systemic risk analysis by market participants and thereby possibly improve financial market functioning. Moreover, statistical aggregates could be disseminated accompanied by the release of related statistics describing the micro-foundations of the aggregate. Examples of this could be distributional statistics, such as percentiles or standard deviations.

Another example is the reporting of analyses based on micro data. For financial stability considerations, knowledge of, say, the number of banks in need of capital according to a stress test scenario will in many cases be more relevant than the actual identity of the distressed banks. Hence, by carefully considering the dissemination strategy, central banks and international organisations could go far in communicating their results and policy conclusions, without revealing confidential information.

Finally, sharing confidential data between public institutions is an important issue. Data – including confidential data – are regularly shared for statistical purposes. In such cases, the receiving institution compiles and disseminates only aggregated values in which the confidential data cannot be traced. However, sharing institution-level data for other purposes is much less common and usually done on an ad hoc basis. Furthermore, such sharing arrangements are often subject to bureaucratic restrictions and in some cases are also hampered by lack of comparability. Central banks, supervisory authorities and international organisations may develop alternative arrangements for information exchange, subject to introducing suitable arrangements to protect sensitive information. To this end, clear policies governing access and data sharing will be needed.

5   CONCLUSIONS

We should make as much use as possible of existing data. The ability of existing data sources to serve different mandates should be enhanced. Experience shows that increased comparability across countries can be achieved by other means than through legislative harmonisation at reporter level. Harmonisation is one priority, but I believe that there are other, equally important priorities. For example, the available supply of data on the shadow banking system, interconnectedness and

financial innovation should be extended. In addition, we can make much greater use of other sources of micro data for financial stability purposes. For example, data on household portfolios, exposure through securities markets and data on markets as opposed to institutions.

While better data is an essential component of the macro-prudential toolkit, new data requests should be justified on cost-benefit grounds. Interestingly, the shift towards more granular reporting may reduce the reporting burden. This suggests that there is not necessarily a trade-off between new data requests and the reporting burden. Even if the reporting burden is increased as a consequence of new data requirements, it may be justified on efficiency grounds when considering the financial system as a whole. As also noted by Mr Enria, it is important in this respect to keep in mind that reporting requirements should be proportional to the size and complexity of the activities of the reporting entities.

DISCUSSANT'S REMARKS

IRENA KRIŽMAN[1]

on

ENRICO GIOVANNINI, *Micro foundations of macro-data: increasing data quality and exploiting the "true wealth" of national statistical institutes*

The paper prepared by Enrico Giovannini discusses some new frontiers and challenges in the use of micro data. The author refers to micro data as the "true wealth" of national statistical institutes. The paper provides several examples of how micro data are used by the Italian National Statistical Institute (Istat) in both regular and non-standard statistics production. In addition, the paper deals with the potential for using micro data within the European Statistical System (ESS).

The experience of Istat shows that the use of micro data in statistics production leads to better quality and coherence, and enables the compilation of new statistics. It also offers new opportunities for analyses, modelling and other research purposes. One of the important features is also the cost of statistics, including burden reduction for data providers, national statistical institutes and other producers of official statistics. The integration of different sources at the micro level, exchange of micro data, their linkage and re-use are all practices recommended by Eurostat and the Organisation for Economic Co-operation and Development (OECD). One of the important potentials of micro data is also to describe the variability of phenomena or "going beyond the averages", as recommended by the Stiglitz-Sen-Fitoussi Report on the measurement of economic performance and social progress.

In recent years, the real value of micro data has been growing, as have the numbers of users both inside and, especially, outside national statistical institutes and other producers of official statistics. At national and European level, the capacity for safe provision of micro data has been put in place.

Besides Istat's practices, the paper presents some recent developments in the ESS, driven on one hand by the increased demand for micro data, and on the other hand by the spread of good practices in individual national statistical institutes and joint efforts within the ESS.

In my discussion, I will concentrate on the exchange of micro data between the ESS and the European System of Central Banks (ESCB).

The benefits from data exchange between the ESCB and the ESS are clear and include improved quality, cost-efficiency, fulfilment of new needs with re-use of already existing data, reduction of burden for all actors involved, etc. Exchange

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of data is possible in several domains, the most typical being different areas of macroeconomic and financial statistics. Additional benefits include cooperation on methodological, technical and organisational issues and the exchange of good practices.

The European Statistics Regulation (Regulation (EC) No 223/2009) provides that "*transmission of confidential data between an ESS authority that collected the data and an ESCB member may take place provided that this transmission is necessary for the efficient development, production and dissemination of European statistics or for increasing the quality of European statistics, within the respective spheres of competence of the ESS and the ESCB, and that this necessity has been justified*". Almost the same mirror provision is included in Council Regulation (EC) No 2533/1998 concerning the collection of statistical information by the European Central Bank (ECB).

The EU legislation thus enables the exchange of confidential data, which can be considered as a sub-type of micro data. According to both regulations, confidential data are defined as data which allow reporting units to be identified, either directly from their name, address or identification code, or indirectly by deduction. There is, however, also a very clear provision that exchanged confidential data can be used only for statistical purposes, i.e. for the development and production of statistical outputs and analyses. The use for administrative, tax, supervisory and other purposes is thus strictly forbidden.

Owing to national legislation and practices, the exchange of confidential micro data between the two systems is very limited. The reasons lie in legislative and organisational barriers, cooperation modes and probably also in a lack of mutual trust between the institutions, at both national and European level. While the former can be addressed through legislation, the latter cannot be made legally binding, but can be achieved only through cooperation, respect, and an understanding of the culture and needs of the other institution.

In Slovenia, we have managed to largely remove the above-mentioned barriers. We have built good practice from the legal point of view, but we have also been successful in establishing mutual trust between the central bank and the statistics office. Banka Slovenije is an important partner of Statistics Slovenia in the:

– production of macroeconomic and financial statistics. With its statistical activities, Banka Slovenije is part of the Slovenian national statistical system. Modalities of cooperation are specified in detail in the memorandum of understanding in the field of macroeconomic and financial statistics, signed by Banka Slovenije, the Ministry of Finance and Statistics Slovenia. Within the statistical system and for statistical purposes, the exchange of identifiable confidential micro data is possible;

– provision of micro data for research purposes. According to established rules and strict protocol, and depending on the requests of users, the data provided by Banka Slovenije are linked with data from other sources and are made available

to researchers through a safe setting and remote access. Micro data available to researchers allow only the indirect identification of reporting units;

– use of micro data for internal research work at Banka Slovenije. By special agreement, Banka Slovenije can obtain anonymised micro data for research purposes (i.e. micro data that allow only the indirect identification of reporting units) from Statistics Slovenia.

In Slovenia, the National Statistics Act allows the exchange of confidential micro data for statistical purposes. In many other EU Member States this is not the case. This has implications not only for the exchange of micro data between the ESCB and the ESS, but also for the exchange of micro data within the ESS. The European Statistics Regulation provides that the exchange of confidential micro data within the ESS *may* take place. In this respect it differs from the provisions of the Regulation concerning the collection of statistical information by the ECB, which provides that the exchange within the ESCB *shall* take place (in both cases the exchange is conditional).

The exchange of confidential micro data within the ESS is thus very limited and the possibilities provided by the European Statistics Regulation are not being exploited. There is, however, one major challenge facing the ESS which may also affect the work of central banks. Namely, there is a need to simplify the Intrastat system, i.e. the compilation of statistics on trade in goods within the EU. The redesigned system should rely more on data from partner countries. For the success of the project, the exchange of confidential micro data between countries will be necessary.

On the other hand, there is a new threat to the use and exchange of micro data. The Commission's proposal for a General Data Protection Regulation may seriously affect the production of official statistics, as Mr Giovannini describes. The paper also reports on the latest developments within the ESS regarding the proposal. In Slovenia, I am pleased to say, all institutions acknowledge the need for a "general exception" for statistical data, and this will be pursued in the course of the legislative process.

I would now like to look at the exchange and use of micro data in a somewhat wider context. The motivating factors for greater use and more extensive exchange, i.e. better quality, cost-effectiveness and burden reduction, complement other EU initiatives. From this perspective, there is a clear link to the paper prepared by Mr Enria, who advocates more harmonisation in reporting requirements for different purposes (supervisory and statistical). His paper reveals an increase in the importance of macro-prudential data, as well as in the scope of the data that need to be collected for this purpose. Data consistency at the micro level is undoubtedly a prerequisite for high-quality aggregates, and, therefore, it is important to encourage further harmonisation across the EU in this respect.

The ESCB harmonised the statistical methodologies of collected data of monetary financial institutions more than ten years ago. In 2007 the ECB initiated the reconciliation of the statistical and supervisory data requirements

in the Joint Expert Group on Reconciliation (JEGR). The ultimate aim is a decrease in the reporting burden. The rationale for such a project is obvious, as the same institutions report under different data requirements from the same data sources and the differences in the data requirements are – despite some different principles – not unbridgeable. In the current circumstances, it is of particular importance to enable a decrease in the burden on reporting entities.

A number of countries – including Slovenia – have already made considerable progress with respect to decreasing the reporting burden in joint data reporting of financial institutions at national level, and the continued pursuit of these goals must be strongly recommended. The increased cooperation between the supervisory bodies and statisticians in the EU is thus to the benefit of both data providers (saving costs) and data users (having integrated data of increased quality and applicability).

In the discussion, I propose to focus on all the above-mentioned challenges to micro data exchange for statistical and research purposes:

– Do we need "common legislation" for the two systems as suggested by Mr Giovannini?

– Or would it be easier if the ESS became more like the ESCB?

– What can the ESS learn from the ESCB with regard to an obligation to exchange confidential micro data? Should such an obligation be addressed in the forthcoming revision of the European Statistics Regulation?

– Do we need more trust and cooperation? What could be the role of the "new" Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) in this context?

– Is hesitation about more micro data exchange between the two systems a consequence of doubt regarding the clear and transparent separation of the statistical function of central banks from their supervisory/monitoring functions?

DISCUSSION SUMMARY

Klaas Knot (De Nederlandsche Bank) in his introductory remarks stated that the financial crisis of recent years, like any new crisis, has provoked calls for more information. In the context of the G20 initiative, which has identified and is addressing a large number of crisis-related data gaps, he recalled the need to use micro data to achieve a realistic perspective of the risks to the financial system, in particular for those few dozen internationally operating institutions which are highly interconnected. There is a need for integration, harmonisation and coordination, as well as data sharing between institutions, for which technical and legal solutions should be sought. He concluded by stressing the urgent need to make a new leap forward so that all regulatory authorities in Europe act as one single system within which information is freely shared.

Andrea Enria (European Banking Authority) recommended an effective use of all the available information for pursuing micro-prudential and macro-prudential objectives. Micro-prudential data can serve both mandates to the extent that they are based on common definitions and harmonised reporting standards, but also where there are common prudential and accounting rules which requires ambitious and careful planning.

Hugo Frey Jensen (Danmarks Nationalbank) agreed on the need to make as much use of existing data as possible, using the data sources available to serve different mandates. However, he commented that while harmonisation is one priority, it is equally important to increase the data supply where needed, as well as the use of other available data sources. In this context, data dissemination and data sharing become important and challenging issues. Mr Jensen also noted that the shift towards more granular reporting may reduce the reporting burden. He also agreed with Mr Enria that reporting requirements should be proportional to the size and complexity of the activities of the reporting entities.

Enrico Giovannini (Istat) discussed some new frontiers in the use of micro data to generate macroeconomic and social statistical information, presenting several examples of how micro data are used by the Italian National Institute for Statistics in both regular and non-standard statistical production. His paper discussed the challenges that the European Statistical System (ESS) is facing in this area, analysing risks and opportunities. In his view, micro data represent the "true wealth" of national statistical institutes (NSIs). NSIs can strengthen their competitiveness vis-à-vis other statistical producers by exploiting and integrating micro data from different sources, developing longitudinal studies and analysing economic agents' behaviour.

Irena Križman (Statistical Office of the Republic of Slovenia) focused on the exchange of micro data between the ESS and the European System of Central Banks (ESCB), for which the benefits are recognised in terms of improved quality, cost efficiency, fulfilling new needs by re-using existing data and reducing the burden for all actors involved. However, the exchange of confidential micro data between the two systems is very limited for legislative

and organisational reasons. Cooperation modes probably also suffer from a lack of mutual trust between institutions, both at the national and European level. Ms Križman stressed that while the former can be legislated, the latter can only be achieved through cooperation, respect and understanding of the culture and needs of the other institution, a process which would be to the benefit of both data providers and data users.

In the discussion, **Ágnes Tardos** (Magyar Nemzeti Bank) asked the EBA's Chair, Mr Enria, about the future of banks' financial reporting for supervisory purposes, given that the EBA has successfully initiated FINREP, a common consolidated reporting framework for banks using international financial reporting standards (IFRS), while local accounting frameworks are still used for solo reporting.

Andrea Enria clarified that the EBA proposal intended to extend FINREP to all institutions. However, given the difficulties faced by those institutions which are not using IFRS in their national jurisdictions, it was decided to focus first on harmonising the consolidated data reporting which covers most of the banking sector, and since national GAAP (Generally Accepted Accounting Practice) requirements can in any case be easily mapped into FINREP requirements.

Klaas Knot reiterated the relevance of data harmonisation and asked about the data confidentiality challenges faced by EBA in sharing data with the different European supervisory authorities and beyond.

Andrea Enria stressed the relevant progress made in setting up harmonised datasets and, as regards data sharing, he clarified that the EBA already provide data to the European Systemic Risk Board (ESRB) at different levels of granularity. Also, he explained that the ESRB Secretariat can already obtain access to individual information on an ad hoc basis, as long as legal and technical measures are followed to ensure that data confidentiality is maintained. Mr Enria also mentioned the possibility of a future EBA data hub for banks' publicly disclosed data, and focused on its advantages for the general public – such as researchers, investors and data analysts – who would otherwise rely on information available only in an unharmonised and scattered way. However, for this to happen, he stressed the importance of further work on data harmonisation in terms of common reporting frameworks and methodologies.

Jean-Marc Israël (European Central Bank) recalled two main sets of reporting requirements, based on aggregated and individual institution information, addressed by the Financial Stability Board to the systemically important financial institutions. He asked for views on possible ways to use both datasets while preserving data confidentiality.

Andrea Enria gave as an example the data on interconnectedness which are based on confidential individual counterparty information, such as banks' bilateral exposures, and which have proved to be extremely useful for measuring systemic risk. Under the G20 aegis, experience has already been gained in preserving confidentiality in such cases. A lot of progress has been made, in particular at European level, on using individual data to analyse systemic

risk without revealing individual confidential information and to maintain the granularity and richness of the dataset.

Viktorija Proskurovska (European Banking Federation) expressed her support for the strategic approach taken to data collection, harmonisation and dissemination which, in her view, will significantly contribute to transforming statistics from being a "servant" to a "strategic partner" in discussions with users.

Pim Claassen (De Nederlandsche Bank), referring to Mr Giovannini's paper, welcomed that the ESCB and the ESS increasingly tend to mirror each other. In this respect, he questioned what more is needed to implement Mr Giovannini's recommendation to transform the current ESS into a European System of Statistical Offices (including Eurostat). He also asked about the future of data sharing between the two systems for statistical and macro-prudential purposes.

Rimantas Vaicenavičius (Lietuvos bankas) thanked Mr Giovannini for his innovative approach to the treatment of confidential information by the NSIs. However, he expressed concern as to the actual agreement and implementation of these ideas by the ESS, given the long discussions of recent years which have not yet led to a satisfactory solution.

Enrico Giovannini stressed that, in his view, statistics should turn from being instrumental data for policy-makers to data at the service of society as a whole. National central banks are making big efforts to promote financial literacy and NSIs should similarly promote statistical literacy, despite the financial costs involved. He also explained that, since 1999, the ESS has indeed made significant efforts to become a stronger European system, in part by mirroring the ESCB. In this respect, he stressed the importance of a future joint statistical body comprising a restricted number of representatives from both the ESS and the ESCB to promote the coordination of efforts and strategic discussions at statistical level, while at the same time leaving the technical discussions to dedicated technical bodies. On the sharing of confidential data, Mr Giovannini acknowledged the concern that using data collected for statistical purposes for other purposes, without respondents' consent, would diminish the public's trust in NSIs. The use of data for statistical purposes as well as policy purposes while ensuring that confidentiality is maintained could become easier in the future by the use of new technologies and a proper legal setting.

4 FINANCIAL MARKET PARTICIPANTS AS USERS OF ECONOMIC STATISTICS

INTRODUCTORY REMARKS

JOZEF MAKÚCH

What do users need? What are statistics providers able to give them?

In an environment such as we have today, it is important to have financial and non-financial statistical data that are coherent, timely and comprehensive. In an ideal world, high-quality data would be published as early as possible and with minimal subsequent revisions. The challenge for providers of statistics is to achieve an optimal balance between the timing of publication and the quality of data, bearing in mind that statistical data are increasingly complex and must be properly communicated and presented to the end users of both financial and non-financial statistics. If the data – and the signals inherent in them – are clearly understood, they can contribute to the fulfilment of policy requirements and to the proper functioning of the economy as a whole.

It is my pleasure to chair a discussion today on our experiences of and opinions on recent trends in the provision and sharing of statistical data, on how financial market participants have used this data, and on the defining of their statistical needs.

Let me begin by introducing the first presenter, **Natacha Valla**, an Executive Director at Goldman Sachs and Chief Economist at its Paris office. Before joining Goldman Sachs, Ms Valla worked as an economist at the ECB between 2001 and 2008, and she has a doctorate in economics from the European University Institute in Italy.

In her presentation, Ms Valla addresses the issue of current needs for statistics in the areas of public finance, monetary policy and structural reforms. The main challenge in the area of public finance statistics is to properly assess the current stance of public finance and to provide impartial and comparable data on public deficits and debts. As regards structural reform data, Ms Valla notes the importance of ensuring careful and correct evaluation of the economic effects of structural reforms.

The next presenters both work for the Royal Bank of Canada (RBC): **Jens Larsen** as Chief European Economist and **James Ashley** as Senior European Economist. Mr Larsen joined RBC Capital Markets in September 2010 and leads RBC's European economics team, providing macroeconomic analysis on Europe. Mr Ashley was previously a senior economist at Barclays Capital.

In their paper, the authors argue that the way statistical data are used by financial market economists has changed substantially since the onset of the

financial and sovereign debt crises. As the economic environment has changed, financial market economists have increasingly demanded improvements in the accessibility, presentation, coverage and comparability of data. They require broader data provision, comparable across countries, sectors and time.

The third presentation is by **Claudia Buch** from the University of Tübingen, Department of Economics and Social Sciences, and **Cathérine Tahmee Koch** from the University of Zürich, Department of Economics. Ms Buch joined the University of Tübingen in January 2004, and since 2011 she has been a member of the Advisory Scientific Committee to the European Systemic Risk Board (ESRB) and a member of the extended board of directors of Verein für Socialpolitik, the leading association of German-speaking economists. She gained a doctorate in economics from the University of Kiel in 1996 and completed a residency at the same institution in 2002.

Ms Koch is currently studying for her doctorate and has attended various advanced courses in economics for doctoral students.

Working on the assumption that we know very little about the actual links between bank internationalisation, bank risk and market power, the authors analyse all modes of entry into foreign markets, not only entry through mergers and acquisitions. The authors found that being active in a large number of countries increases rather than decreases bank risk. Understanding the risk/market power trade-off for internationally active banks is crucial for policy-makers. Another finding of this study is that the greater the volume of a bank's foreign assets, the greater its market power at home.

The concluding presentation is by **Walter Radermacher**, Director General of Eurostat. Before joining Eurostat, Mr Radermacher served from 2006 to 2008 as President of the Federal Statistical Office in Germany and as Federal Returning Officer. He was Vice-President of the Federal Statistical Office from 2003 to 2006.

In his paper, Mr Radermacher highlights the increasing demand for timely and detailed financial statistics, public finance statistics and real economy statistics. Among the frameworks that meet such a need is that of balanced financial and non-financial statistics, which at the European level is represented by the euro area accounts (EAA) as a joint product of Eurostat and the ECB. In addition, in the context of promoting smart, sustainable and inclusive economic growth, it is important to emphasise two processes for which timely and high quality statistics are essential: first, the monitoring of public finances under the excessive deficit procedure (EDP), and, second, the Macroeconomic Imbalance Procedure (MIP), which is based on a scoreboard of indicators relating to external imbalances and competiveness as well as internal imbalances.

I am also honoured to introduce our discussants:

Mark Beatson, Director – Economics at FTI Consulting, will be discussing the papers of Ms Valla and of Ms Buch and Ms Koch. Mr Beatson is a former Director of Analysis within the UK Department for Business, Innovation and Skills.

Adelheid Bürgi-Schmelz, Director of the Statistics Department of the International Monetary Fund (IMF), will be discussing the papers of Mr Larsen and Mr Ashley and Mr Radermacher. From 2002 to 2008 Ms Bürgi-Schmelz was the Director General of the Swiss Federal Statistical Office, managing a staff of 670 and a comprehensive publication programme covering economic, socio-economic and environmental statistics.

PRIVATE SECTOR'S PERSPECTIVE ON THE USE OF ECONOMIC STATISTICS IN THE POST-FINANCIAL CRISIS PERIOD

NATACHA VALLA

This paper addresses the private sector's perspective on the use of economic statistics in the post-financial crisis period.

Virtually everyone uses economic statistics, from the economic research units of institutions and investment banks to strategists, policy-makers, traders and asset managers.

These stakeholders use economic statistics for a variety of purposes. Traditionally – i.e. in the pre-crisis world – these purposes included cyclical analysis, where timeliness and leading properties are key to high-quality analysis. Another common use of economic statistics is to infer future market trends. Here, the nature of studying longer-term trends was changed by the sub-prime and sovereign crises. It has now become a priority to identify and characterise what may well end up being structural shifts. In addition, the prominent role of proactive economic policies in affecting economic outcomes has created an urgent need for enhanced data that can be informative about institutions and policies.

As a result, the data needs of financial markets have changed and become broader since the crisis. In particular, attention has lately converged on three main sets of statistics: public finance statistics, data on "structural reforms" and statistics pertaining to monetary policy in the broad sense.

I   THE CHALLENGES OF PUBLIC FINANCE STATISTICS

Financial markets have realised the importance of understanding the meaning and challenges of revisions of public finance data. In the unfolding of the crisis in the euro area, revisions have taken on a political dimension. In addition, market users are now not only paying attention to government deficit and public debt figures, but are also scrutinising the details underlying these data. As a result, and given the sensitivity of public sector data, it is of utmost importance to ensure the political independence of national statistical offices. This is at least as important as the independence of national central banks. Consequently, the regulation of statistical offices should come to the forefront to guarantee data quality.

Next to the need for reliable data was the perception that the boundaries of the public sector were not defined in a uniform way. Analysts are unsure about what "public sector" actually means – and perhaps rightly so. They may at times have been misled by the lack of precision in the definition of various

Chart 1 High level of uncertainty about potential output and structural deficits

stability programmes
GS counterfactuals

percentage of GDP
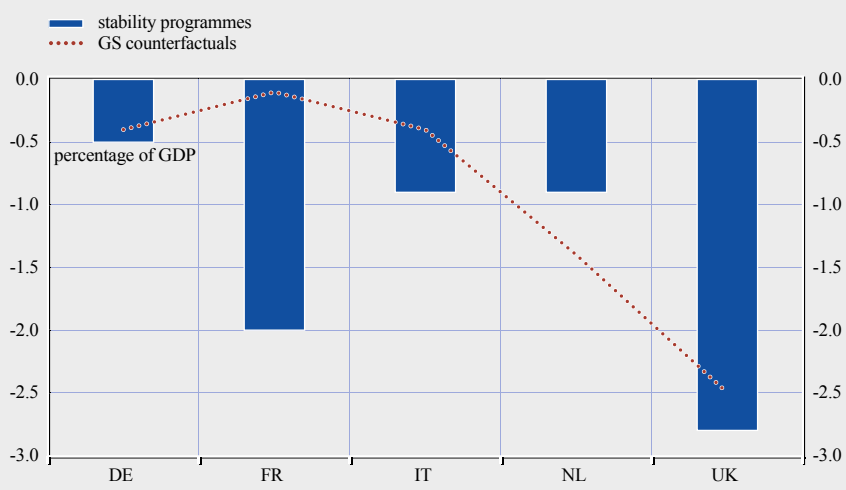
Sources: European Commission's assessment of Stability Programmes and GS Global ECS Research.
Note: The GS counterfactuals are computed using the European Commission's Spring 2008 vintage forecasts for potential GDP and the European Commission's Spring 2010 current forecasts for real GDP.

concepts like "central government" and "general government". The accounting of, for example, social security spending or local government accounts is still peripheral to core central government accounting. Yet, these accounts can make a substantial difference when it comes to the sustainability and dynamics of public sector deficits and debt. From this perspective, it will be extremely important to coordinate communication between Eurostat and national statistical offices and to explain as clearly as possible anticipated revisions to existing systems of accounts such as ESA95 so as to avoid "nasty surprises".

Another important aspect of politically sensitive fiscal variables relates to the model-based figures that are sometimes used to assess the fiscal viability of a country. Chart 1 illustrates, for example, how estimates of structural deficits, a cornerstone of the excessive deficit procedure, may vary, depending on the modelling strategy and assumptions made.

This point is important, given the lack of experience of many markets participants in dissecting public sector accounts. The different methodologies that underlie such data may have played a role in the growing uncertainty about their interpretation; it is sufficient to recall that national accounting deviates in some instances from the Maastricht accounting methodology. Therefore, the need to maintain impartial definitions and to increase the comparability of statistics from different institutions and countries is great.

The analysis of public finance data has gradually moved away from the short-term analysis of fiscal adjustment methods to embrace a longer-term perspective. In particular, the focus of analysts is on monitoring the corrections to
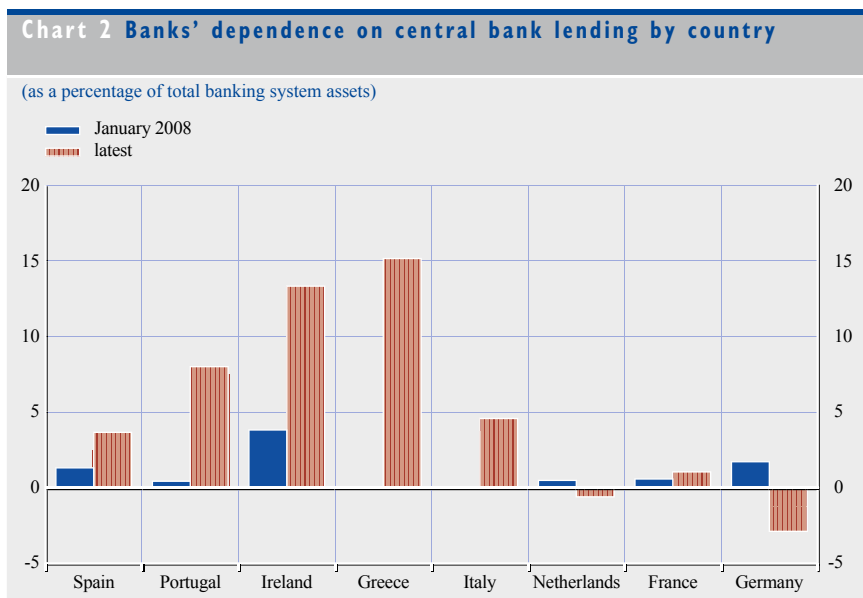
macroeconomic imbalances. The scoreboard indicators published by the European Commission have therefore been welcomed by most markets participants, as they provide a tool for monitoring key macroeconomic developments.

However, the markets are also asking for data to assess progress on structural reforms. Under these circumstances, the frequency of monitoring is an issue. It is difficult to produce high-frequency, monthly statistics on public deficits while structural reforms are in progress. Research units are currently working on "scoreboard-based" leading indicators with a higher frequency than the planned publication by Eurostat in order to monitor progress on reforms at a frequency closer to "real time". Timeliness is thus playing a role in meeting market needs.

CENTRAL BANK BALANCE SHEETS AT CENTRE STAGE

Last, but not least, on the agenda of market participants' research is a set of brand new, very detailed, central bank statistics. Investors demand data ranging from the structure of central bank balance sheets to the nature of collateral provided in refinancing operations and the allocation of risk on the various balance sheets of the Eurosystem (see Charts 2 and 3).

This type of data is generally confidential and subject to the requirements of a code of conduct for central banks. However, it is not surprising that analysts want to know if the Deutsche Bundesbank, for example, will suffer losses on collateral posted by counterparties from outside Germany. In addition, while bank-level information might indeed be subject to delicate sensitivity issues, it is less clear why more general, aggregate, central bank balance sheet information should remain unpublished.

Chart 2 **Banks' dependence on central bank lending by country**

(as a percentage of total banking system assets)

■ January 2008
▥ latest

Source: Net ECB lending.

Chart 3 Intra-Eurosystem cross-country (im)balances

(EUR billions)

Germany ——— Spain ·····
France ····· Ireland - - - -
Italy - - - Greece –·–·
Portugal ——— Netherland –·–·
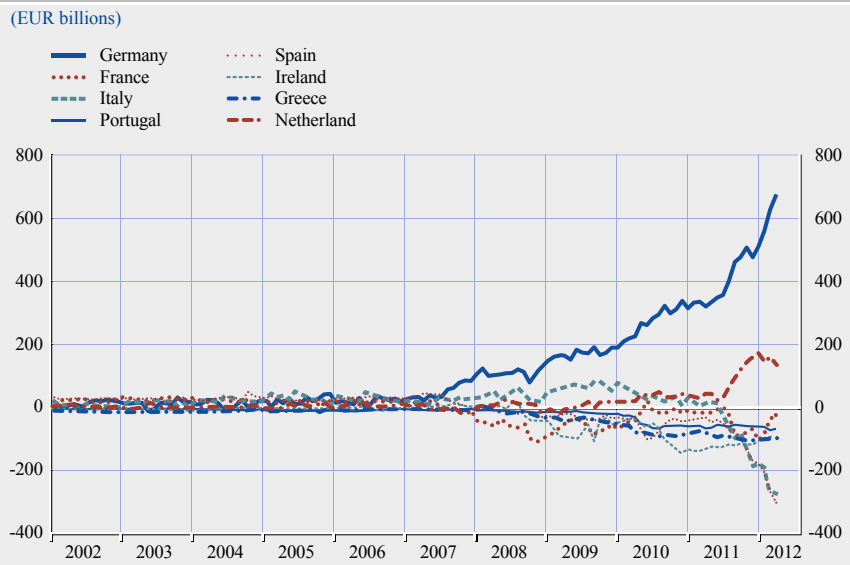
Sources: National central banks and Haver.

Some markets players have the ability to infer this information from market sources. But the quality of these inferences can be quite variable, and at best they can create information asymmetries relative to smaller, less sophisticated market participants. Improving accessibility would help to create a level playing field among markets participants.

Finally, there is a grey area as regards information related to counterparties to the refinancing operations of central banks – not least in the framework of very long-term refinancing operations. For example, it is difficult to gain a clear picture of whether corporates have access to refinancing operations. Another important example is the lack of differentiation between public and private sector entities accessing central bank refinancing, possibly including "bad banks" that are public sector entities. In this case, improving accessibility of data would make it easier to assess the counterparty risks borne by central banks or to identify disguised direct lending to the economies of the euro area.

HOW THINGS HAVE CHANGED – FINANCIAL MARKET ECONOMISTS AS USERS OF ECONOMIC STATISTICS

JAMES ASHLEY[1] AND JENS LARSEN[2]

ABSTRACT

This paper considers, from a financial market economist's perspective, how the use of statistics has evolved over the recent past. The current emphasis on a coherent and persuasive narrative underpinned by a broader range of statistics, as opposed to a narrower focus on signal extraction for key macro variables, means that the demand is for more comprehensive data that are comparable across sectors, economies and time. The implications for data providers are that their priorities should be the production and presentation of more complex data, rather than an ever-increasing number of high-frequency indicators.

"Anyone who cannot speak clearly and simply should say nothing and continue to work until he can do so."
Sir Karl Popper (1994)

"Most questions of public policy relate to uncertainties. Answers depend upon an ability to understand and evaluate those uncertainties. Yet many commentators and members of the public want to believe in certainties. They want to cut through the thickets of caveats and technical difficulties to the 'bottom line'."
Mervyn King (2010)

Col. Jessep: "You want answers?"
Lt. Kaffee: "I want the truth!"
Col. Jessep: "You can't handle the truth!"
A Few Good Men (1992)

I   INTRODUCTION

It is not often that financial market economists are asked to be philosophical.[3] The questions of what service we provide and what value we add are particularly pertinent in an environment where resources are tight. Statistics – facts –

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1   Senior European Economist, RBC Capital Markets.
2   Chief European Economist, RBC Capital Markets.
3   Throughout this paper, we will be taking the view of a financial market macroeconomist, as opposed to the much wider category of financial market analyst or participant. This obviously narrows our perspective – which is distinctly macroeconomic – but we believe that the points we make are applicable more widely.

fortunately play an important role, but as we will argue in this paper, the way financial market economists use data has changed substantially as the nature of our role has evolved.

In this paper, we will discuss the changing role of financial market economists in the years since the onset of the financial and sovereign crises, during which the much-touted "Great Moderation" became a matter of historical study. We will outline how our use of statistics has changed in the light of that, and set out where improvements in the provision of statistics have helped us, and where we think that there is still some distance to go. Our perspective is firmly non-academic, and really reflects our perceptions: we will doubtless have missed some important progress made in the last few years, and may well have missed some major programmes currently in place. Whether that reflects our negligence, a need for better communications, or both, we shall leave to the readers to decide.

2   WHAT FINANCIAL SECTOR ECONOMISTS DID BEFORE THE CRISIS

To fix ideas, we offer a highly stylised, partial and possibly unfair characterisation of the framework applied by financial sector economists before and after the financial crisis. As an aside, we note that much of this characterisation would have applied to the economics community more generally and, to some extent, to the academic world.

In our stylised pre-crisis world, the financial sector economist viewed the economy in terms of three essential relationships and two policy response functions: the economic relationships govern the demand for goods (an IS curve) and the supply of goods (potential output) and provide a link from real to nominal outcomes (a Phillips curve). The monetary and fiscal policy response functions complete that conceptual framework, tying down the policy stance. That is sufficient to generate a set of economic outcomes and, in principle, also explain and predict asset prices.

Assume, for a moment, that the broad structure is "known" – or at least that this view of the structure is widely shared – but that the parameters of the structure and the data are not. In that context, the financial sector economist's job is to produce estimates of both, by providing useful forecasts of current and future data, and subsequently to draw conclusions about the likely policy (re)action. He/she hands those estimates over to his/her clients, who can draw on a number of economists with broadly comparable views in reaching their own judgment.

In this scenario, everyone has roughly the same "canonical model" of how the economy operates, although differences of opinion will arise. This provides scope for the financial sector economist to market his/her "non-consensus views", which are likely to be based on relatively small differences in interpretation of the data or the underlying policy reaction functions, rather than on a fundamentally different interpretation of the economy. As a result, the nature and the extent of uncertainty are limited. Consequently, communication – whether for the policy-maker or the financial market economist – is relatively straightforward, because

the "story telling" that is employed is similar. It would run along lines such as these: "The economy was hit by a (say) positive demand shock that led to less spare capacity. In order to control inflation, interest rates will go up, and fiscal policy is likely to be tightened."

What is the role of statistics for market economists in this environment? Statistics in this artificial construct are mostly concerned with extracting a signal from the key data – i.e. very short-term forecasting or "nowcasting" of GDP and inflation – rather than understanding or explaining the consequences of those data. The focus is on reliable and timely headline measures, with much less emphasis on cross-country, cross-sectional or longer-term perspectives.

3   WHAT THE FINANCIAL MARKET ECONOMIST DOES NOW

The above approach suits a stable environment in which economic outcomes and policy are relatively straightforward to predict. The crisis has made it clear that the world is anything but that, and the work of financial market economists has become commensurately more challenging and exciting. On reflection, it is clear that even in the old world, the old approach was insufficient, even if back then we could afford to be "lazy". The reality check provided by the crisis has certainly led to a reassessment of the economic paradigm, and hence of what we as financial market economists should focus on. Financial market economists have responded by changing their approach in a number of ways. Some examples:

• Economic data are more "imprecise" statistically and conceptually than most were willing to acknowledge. There is significant academic literature dealing with data uncertainty, and the insights from that work are substantially reflected in policy-making. That is increasingly being recognised in financial market economic analysis, both in terms of the economic assessment and in making policy predictions. It is fair to say that the point is underappreciated by market participants more widely.

• The much bigger issue of conceptual or model uncertainty is subject to increasingly sophisticated academic analysis. The impact of this work remains, in our view, relatively limited in terms of policy-making and the academic way of thinking is not really embraced by financial market economists. The intellectual and the communication challenges that this work presents for the financial market economist are substantial, and the typical approach is to stick firmly to one paradigm: a clear, consistent story with a "bottom line" is paramount in communicating with clients. Clients are then having to choose between different economists' paradigms, rather than, more narrowly, their interpretations of the most recent data.

• Reflecting a much more complex economic reality, the policy responses that are relevant for a financial market economist are multidimensional. For example, it is no longer sufficient to make a call on where the ECB will take interest rates next, because the ECB is changing its policies more widely, with a significant impact on the size and shape of the balance sheet. In the fiscal

policy space, the strategy which the UK government is adopting in reducing the deficit is more important than its precise tax and spending measures. In general, the focus is more on the strategy – what approach the policy-maker is taking over the longer term – rather than on the immediate policy decisions.

These factors make the job of a financial market economist much more challenging. An economist's natural inclination is to stress uncertainty, but, as the quotes at the beginning of this paper suggest, the demand is for certainty, or at least clarity. Even if the "truth" is unknowable, "answers" are required. So, what is the best solution?

In our experience, successful market economists have responded by providing a broader narrative. Strong demand for a narrowly-defined take on the immediate outlook for growth or inflation still remains. Contextualisation – i.e. providing comparisons across time, sector and country, and relating these to different strains of thinking – is much more valued now than it was before the crisis. The strength, coherence and plausibility of the narrative, and in particular the factual, statistical underpinning, have assumed greater importance.

4   WHY DOES THIS MATTER FOR THE USE OF STATISTICS?

The most basic function of financial market economists remains to act as a data filter on the "traditional" set of economic statistics, separating the signal from the noise, and determining how the latest information refines any given view of GDP growth, inflation, unemployment or other headline statistics. That in itself is now only one element of the whole: with the changes in the economic environment, the financial market economist has become more demanding, and if data producers want their output to remain relevant to their customers, then the provision of statistics must evolve accordingly.
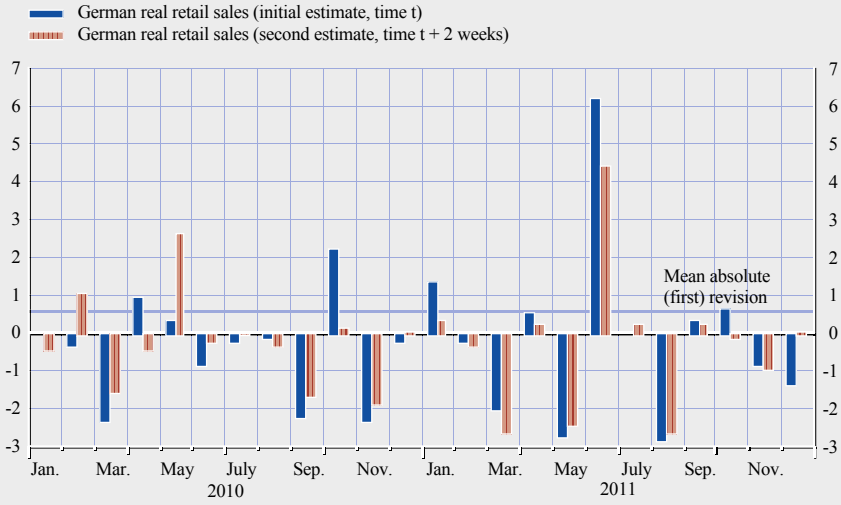
We are, of course, acutely aware that ours is a partial view, that these issues have been the subject of extensive discussion and that very substantial progress is being made – indeed the Fifth ECB Conference on Statistics in 2010 covered the issue extensively (see ECB, 2011). What we are discussing here is what the priorities should be from our perspective. Broadly speaking, one area relates to improvement in the accessibility and presentation of the data, while the second area relates to coverage. In a world of abundant resources, such demands could be accommodated easily enough, but in a world of scarcity, a reallocation of priorities may be necessary.

4.1   LESS OF THE SAME, BUT BETTER

The timeliness, accuracy and coherence of the data we know and love can always be improved. As mentioned, a lot of progress has already been made in the area of data uncertainty and in core statistical concepts. From a financial market economist's perspective, the job can only be made easier if the providers of statistics continue to provide "more of the same" while striving – as ever –

(percentage, month on month)

— German real retail sales (initial estimate, time t)
▦▦▦ German real retail sales (second estimate, time t + 2 weeks)

Mean absolute (first) revision

Jan. Mar. May July Sep. Nov. Jan. Mar. May July Sep. Nov.
2010   2011

Sources: Bloomberg, Haver, RBC Capital Markets.

to raise the overall quality of the statistics being produced. Who would not want more timely GDP estimates that are less prone to revisions?

In the light of the pressure on resources and the changing priorities, there are arguments for reconsidering whether the current balance between timeliness and accuracy of statistics is optimal. We venture that there would be few complaints from financial market economists if, in certain specific cases, data were less timely, but were more accurate as a result. To give but one example, Chart 1 suggests that German retail sales are prone to frequent and significant revisions within a fortnight of the first estimates having been published, so the actual information content in the first release is probably quite low. In such cases, not publishing the statistics at the earliest opportunity may plausibly free up resources – not just for the producers of the data, but also for the distractible consumers, including financial market economists.

4.2   EASIER ACCESS AND BETTER PRESENTATION – LET THE DATA SPEAK

The time freed up by reappraising priorities and reallocating resources might be used sensibly to improve the life of users further by enhancing the presentation and accessibility of the statistics. This is not to suggest that data users ought to be spoon-fed, but it is incumbent upon data providers to make their output readily available and understandable, at the very least to an informed and interested audience.

This, of course, is an area where the combination of advances in technology and a change in philosophy has transformed the landscape. The huge increase

in data availability and the increased capacity to display data dynamically and interactively has led to a revolution in the way information can be conveyed. This is not our field of endeavour, so we cannot give an account of the evolution of thought and practice here, but in the academic/intellectual field, the likes of Edward Tufte and Hans Rosling[4] have provided inspiration for displaying complex and rich datasets in innovative ways. The official sector also provides good examples of this new practice, e.g. with the International Monetary Fund (IMF)/World Bank interactive data mapping tools, and similar initiatives from a number of other agencies.[5] Outside the official sector, public data are also being made available in more accessible, interactive formats.[6] In the field of economics and finance, the press has been making significant advances in displaying complex data – think of the numerous interactive displays of Bank for International Settlements (BIS) data on bank holdings of debt, which have become a key tool for understanding interdependencies between the financial and sovereign sectors. The ECB's interactive and dynamic yield curve tool is another example of making complex, multidimensional data available in a user-friendly format.[7]

We would argue that the statistical authorities are lagging behind somewhat in this field, even if progress is being made. Sure, there is a strong argument for distinguishing between data assimilation/provision and presentation. On the basis of that argument, part of the job of the market economist (or the policy-maker or the journalist for that matter) is to make sense of the statistics, while it is the job of the statistician to provide high-quality data in a timely manner. We are, however, of the view that the increasing complexity of the data means that the statistics providers themselves should not only improve access to the data, but also improve its presentation. That would make our job easier, and it might even improve our analysis.

4.3   BETTER COVERAGE AND COMPARABILITY

Nonetheless, the more mundane topic of the partial (or sometimes complete) absence of relevant and timely statistics remains an issue. This is obviously a huge international challenge, particularly in areas where resources and technical capacity constrain statistics providers. Globally, there are gaps in the existing data, and, as will be discussed at this conference, the crisis has revealed whole new areas where statistical gaps exist. We are well aware of the strides that are being made in this area at the European level and internationally – for example, through the IMF's programme on financial soundness indicators – dating back at the very least to the Asian financial crisis in the late 1990s. There are, however,

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4   See the websites of Edward Tufte and Hans Rosling at http://www.edwardtufte.com/tufte/ and http://www.gapminder.org/ respectively.

5   The IMF Data Mapper can be found here: http://www.imf.org/external/datamapper/index. php.

6   The Public Data Explorer by Google is one such prominent facility, where a wide range of public data are now available. See http://www.google.com/publicdata/directory.

7   The ECB's yield curve tool can be found here: http://www.ecb.int/stats/money/yc/html/ index.en.html.

strong arguments for attaching higher priority to this, and for improving communication.

European statistical provision is comparatively well advanced, but even here there are gaps in what we consider basic macroeconomic statistics that need filling. One example is the lack of comparable and comprehensive data on the income side of the national accounts. Chart 2 shows sectoral balances – the savings/investment (im)balance of the key sectors in the economy – at the level of the euro area as a whole. This is important in telling the story about how the different sectors are responding to crisis conditions: the fiscal expansion is clearly visible, as is the retrenchment by the private sector. These data are important in forming a view on the outlook for the euro area economy and the likely policy response.

The data are even more relevant when looking at individual economies across the euro area. The lack of up-to-date and harmonised information across euro area economies has long been problematic to those seeking to undertake serious economic analysis. But in a rebalancing environment where the deleveraging of the private sector across swathes of the euro area is an important theme, the absence of comparable and comprehensive statistics presents a significant challenge. We are, of course, not party to the discussions that statisticians have about how to make progress in these areas, nor do we know what plans are in train for addressing them. But when we are unable to compare even the most basic of balance sheet information across economies in a timely fashion, our analysis surely suffers.

Chart 2 Sectoral balances – euro area
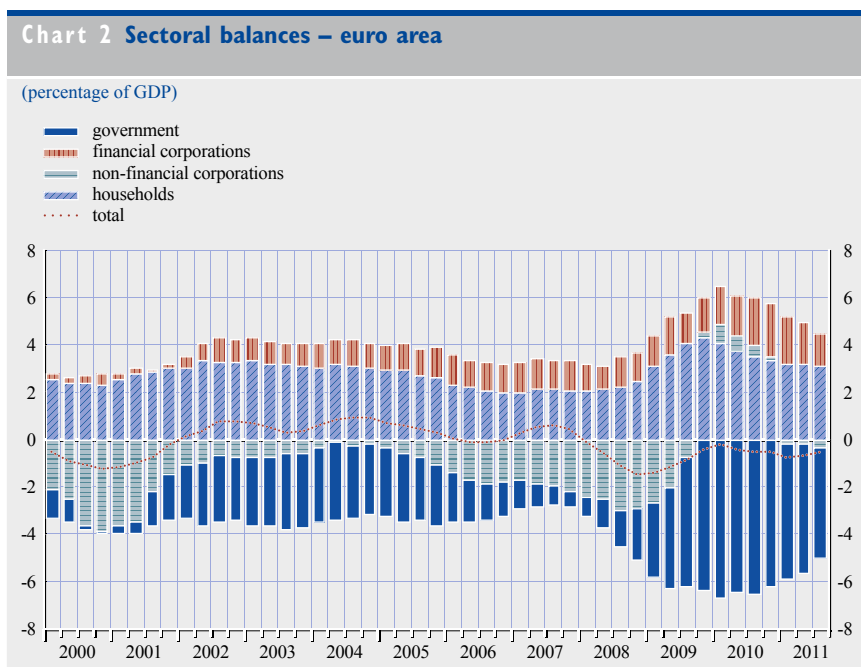
Source: Eurostat.
Note: Contributions of sectors to the net lending (+)/net borrowing (-) of the euro area.

Another such example is the ECB's balance sheet. Admittedly, understanding a central bank balance sheet is a complicated task at the best of times, and, of course, the structure of the European System of Central Banks makes this challenge bigger. It remains a matter of some concern, however, that, at a time when the Eurosystem's balance sheet is expanding significantly, the task of assessing the balance sheets of individual euro area central banks on a comparable basis remains so tricky.

5   CONCLUSION

In summary, the life of a financial market economist has become more challenging and exciting as the analytical requirements have moved away from a narrow interpretation of the data in the context of a canonical economic model towards a more broadly based and thematic analysis of economic developments. With that come changing statistical requirements and interests. We continue to work the indicators hard to extract as much of a signal as possible about the outlook for activity and inflation, but the demand is for more complex story telling that draws on a wider range of information. Obtaining, manipulating, presenting and, of course, understanding more complex data is crucial.

In terms of the provision and presentation of statistics, there has been significant progress, but in our view, there is a strong case for moving the emphasis away from the provision of high-frequency updates of macroeconomic variables, and instead moving towards a broader provision of data, comparable across country, sector and time. Better access and presentation is a higher priority. These views will doubtless not come as a surprise to statistics producers, but we hope that the demand from the "applied" end of the data user spectrum will help move these developments along.

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CAUSES AND EFFECTS IN INTERNATIONAL BANKING – WHAT CAN WE LEARN FROM MICRO DATA?[1]

CLAUDIA BUCH, CATHÉRINE TAHMEE KOCH AND MICHAEL KOETTER

I   MOTIVATION

The global financial crisis revealed the urgent need for an improved understanding of international banking. Besides a better comprehension of why certain banks internationalise their operations and how capital flows develop, the crisis vividly illustrated the general need to understand the interlinkages between microeconomic behaviour and macroeconomic outcomes. We argue that recent advances in empirical research using micro data on cross-border banking have contributed significantly to our understanding of the microeconomic causes and effects of international banking. This literature emphasises the identification of sources of heterogeneity in international banking, but a closer study of the connections between the microeconomic and the macroeconomic aspects of cross-border banking is still warranted.

To illustrate our main arguments made in this paper, the following discussion summarises our previous work using the "External Position Report" provided by the Deutsche Bundesbank. This dataset contains information about the international assets of German banks and their foreign affiliates, month by month and country by country. It contains information on tradable and non-tradable assets and on exposures vis-à-vis different sectors.

The literature on international banking and finance is well developed, but recent events on international financial markets have increased interest in the topic considerably. Consequently, a large number of novel papers have been published on international banking emphasising the importance of using micro data. (See, for example, Popov and Udell (2010))

A first set of papers looks into the adjustment of cross-border banking activity during the crisis. Rose and Wieladek (2011) use information on local lending by foreign banks residing in the United Kingdom to analyse how support measures targeted at these banks affected lending. After nationalisation, foreign banks reduced the share of their loans going to the United Kingdom. Giannetti and Laeven (2012) analyse the geographic structure of syndicated loan issuances and find a "flight home" effect in response to the crisis. De Haas and van Horen (2011) use syndicated loan data and find that foreign banks remain more

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committed to countries hosting an affiliated subsidiary, that are geographically close, and that have built up relationships with local banks. Puri et al. (2011) study the impact of the crisis on lending at home. They find that savings banks that are linked to *Landesbanken* affected by the crisis reject substantially more loan applications than non-affected banks. Cetorelli and Goldberg (2012) analyse the role of banks' internal capital markets. They find that lower internal funds available for foreign banks' affiliates in the United States led to a decline in lending by these affiliates. De Haas and van Lelyveld (2011) show that domestic bank lending was more stable compared with that of multinational banks during the crisis because of the former's access to a more stable funding base. Claessens and van Horen (2012) use a detailed database on multinational banks and support the finding that, during the global crisis, foreign banks reduced credit more than domestic banks.

Using German data, Düwel et al. (2011) analyse short-run adjustment in cross-border lending by German banks. They find that rising risk aversion of a German parent bank has a negative impact on the cross-border lending activities of the corporate banking group, even more so during the financial crisis. Macroeconomic and risk factors in destination countries come into play if loans are distributed via affiliates located abroad.

In section three, we present evidence on the determinants of cross-border banking using German data. Section four focuses on the effects in terms of the market-power-risk nexus, and section five explicitly analyses the adjustment of banks around the crisis period. Section six discusses avenues for future research.

2   THE DATA

2.1   EXTERNAL POSITIONS OF GERMAN BANKS

The work reviewed in this paper is based on the External Position Report of the Deutsche Bundesbank (see Fiorentino et al. (2010) for details). The Deutsche Bundesbank receives mandatory reports on external positions from banks located in Germany and their foreign affiliates, including assets and liabilities vis-à-vis foreign counterparties. These data serve, inter alia, as inputs to the bilateral banking statistics provided by the Bank for International Settlements (BIS). Reporting occurs monthly and thresholds were abandoned in January 2002. The data cover all German banks, their subsidiaries and branches. The data can be used for research purposes only on the premises of the Deutsche Bundesbank.

These data contain information if banks are active abroad (i.e. the extensive margin of banks' foreign operations) and on the volume of foreign activities (i.e. the intensive margin), if branches and subsidiaries located in a given host country j are linked to their domestic parent bank i. Table 1 describes the data used in Buch, Koch and Koetter (2009, 2011b), which cover five pre-crisis years (2002-06) and 2,235 banks operating in 58 (developed and developing) host countries. Hence, the data paint a comprehensive picture of German banks' foreign activities.

We distinguish four mutually exclusive modes of foreign operations: i) purely domestic banks without foreign activities (Mode 0), ii) banks that hold international assets through their domestic headquarters (Mode 1), iii) banks that maintain foreign branches (Mode 2a), and iv) banks that maintain foreign subsidiaries and/or foreign branches (Mode 2b). The ranking of the modes follows the presumed fixed costs involved. Subsidiaries are legally independent, hold their own equity, are subject to host-country control, and frequently run large-scale retail operations. Therefore, they incur the highest costs in terms of capital requirements, regulatory (start-up) burden, and fixed investments (Cerutti et al. (2007)).

Table 1 highlights four main traits of the internationalisation patterns of German banks. First, Columns 1 and 3 show the structure of the full sample, which allows for all possible combinations between banks, countries, and years. The allocation of total observations across modes of internationalisation is highly dispersed and exhibits many zeros (almost 80%) in the bilateral matrix. Approximately 20% of observations pertain to the second category of international assets. Only very few observations, less than 1% of the total, fall into Modes 2a and 2b (affiliates).

Second, the data are inflated because we treat each bank in each country as a separate observation. Determining whether a particular bank is active abroad gives rise to quite a different picture (Columns 3 and 4 of Table 1). On average, only 28 of a total of 2,235 banks are purely domestic, 27 maintain foreign branches, and 37 use subsidiaries and/or branches. Banks that hold international assets in at least one foreign country (2,143) are by far the largest group. Thus, the evidence for banks contrasts that for manufacturing firms, of which only a small subset of firms imports or exports.

Table 1	Modes of internationalisation				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Number of bank-country-year observations	**Percentage**	**Number of banks**	**Percentage**	**Average number of foreign countries**
Mode 0 (no foreign activities)	507,947	79.70	28	1.25	-
Mode 1 (international assets)	128,262	20.13	2,143	95.88	21
Mode 2a (foreign branches)	640	0.10	27	1.21	13
Mode 2b (foreign branches and/or subsidiaries)	459	0.07	37	1.66	9

Sources: Deutsche Bundesbank External Position Report and authors' own calculations.

Notes: Data are based on the full dataset of 2,235 banks, 58 countries and five years (2002-06). Columns 1 and 2 reflect the full, expanded dataset using all bank-country-year combinations; Columns 3 and 4 use the dataset collapsed by banks; Column 5 gives the average number of countries in which banks in each mode are active. Mode 0 indicates that there are no activities of bank i in country j in year t.

Third, even very large banks with international affiliates do not operate in all countries (Table 1, Column 5). Banks hold international assets in 21 countries on average. On average, banks in Mode 2a operate branches in 12 countries and subsidiaries in nine countries in Mode 2b.

Fourth, the volumes of international assets held either through domestic banks (Mode 1) or through foreign branches (Mode 2a) are of roughly similar size (see Chart 1). The share of international assets held in foreign subsidiaries (Mode 2b) is small. Generally, heterogeneity in banks' investments is substantial. In Mode 1 (international assets), for example, the mean investment is €8.6 million whereas the median is only €0.14 million.

In summary, the German banking system is highly internationalised, and many banks hold international assets in at least one foreign country. However, only a few banks maintain foreign affiliates, and investment volumes are dominated by just a few large players.

2.2   ADJUSTMENT DURING THE CRISIS

Table 2 and Charts 1 and 2 show some additional basic descriptive statistics that illustrate the adjustment of banks' foreign activities during the crisis. During the initial crisis period, the withdrawal of international banks from foreign markets was relatively uniform (see Chart 1). In the second half of 2008, cross-border assets of European banks vis-à-vis all countries worldwide contracted by about 18%. The adjustment of German banks' positions was slightly stronger (-21%). By contrast, between the fall of Lehman Brothers (Q2 2008) and September 2010, all foreign assets contracted by -23% (-29% for German banks). Assets in developing countries recovered (-6%) whereas the assets of German banks were still about one-fifth lower than before the crisis (-19%). Hence, German banks were not only affected more by the crisis, their withdrawal from foreign markets also exhibited different cross-country patterns.

Chart 2 presents similar information, but is based on German banks' micro data and separates foreign assets and liabilities. These data show that the decline in foreign assets was mirrored by a decline in foreign liabilities (Chart 2a). At the end of our sample period (April 2010), foreign assets were still about twice as high as at the beginning of the sample period (January 2002).[2] To some extent, this decline reflects valuation effects, but results in Düwel et al. (2011) show similar trends when accounting for valuation changes.

Table 2 shows the structure of the data for the years 2002-10 (April). In relative terms, German banks' total foreign assets have declined from 60% to 40% of their balance sheet total; foreign liabilities have declined from 46% to 27%. This trend of a slow de-globalisation of the German banking system – albeit from a high level – had already started before the crisis.

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2   The decline of foreign liabilities is overstated because, for example, money market paper is not included.

Table 2 Structure of German banks' total foreign assets and liabilities

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total foreign assets/total assets	0.60	0.55	0.54	0.51	0.54	0.52	0.52	0.49	0.40
Non-securitised assets									
By maturity (percentage of total foreign assets)									
Short-term foreign assets	0.42	0.47	0.46	0.47	0.49	0.53	0.52	0.46	0.36
Long-term foreign assets	0.26	0.22	0.22	0.23	0.23	0.19	0.21	0.24	0.23
By sector (percentage of total foreign assets)									
Foreign assets vis-à-vis banks	0.38	0.39	0.37	0.39	0.39	0.38	0.40	0.40	0.32
Foreign assets vis-à-vis the private sector	0.28	0.28	0.29	0.30	0.32	0.32	0.31	0.29	0.24
Foreign assets vis-à-vis foreign governments	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
Foreign securitised assets/total foreign assets	0.24	0.22	0.23	0.25	0.26	0.25	0.24	0.22	0.27
Total foreign liabilities/total liabilities	0.46	0.42	0.42	0.40	0.42	0.41	0.40	0.38	0.27
By maturity (percentage of total foreign liabilities)									
Short-term foreign liabilities	0.85	0.81	0.83	0.84	0.87	0.88	0.87	0.77	0.80
Long-term foreign liabilities	0.14	0.12	0.14	0.14	0.12	0.12	0.12	0.13	0.14
By maturity (percentage of total foreign liabilities)									
Foreign liabilities vis-à-vis banks	0.65	0.61	0.60	0.61	0.62	0.61	0.60	0.57	0.64
Foreign liabilities vis-à-vis the private sector	0.32	0.31	0.35	0.36	0.35	0.37	0.37	0.31	0.29
Foreign liabilities vis-à-vis foreign governments	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02
Total (short term + long term + securitised)	0.92	0.91	0.90	0.95	0.98	0.97	0.97	0.92	0.86
Total (banks + private + government + securitised)	0.92	0.91	0.90	0.95	0.98	0.97	0.97	0.92	0.86

Sources: Deutsche Bundesbank External Position Report and authors' own calculations.

Notes: Includes foreign assets and liabilities of affiliates and cross-border activities of parents. Data for the years 2002-09 are as of May; data for 2010 are for April. Private sector = firms and private households.

Prior to August 2007, short-term liabilities accounted for 87% of banks' funds. In response to the crisis, this share declined to 80%. Liabilities vis-à-vis banks dominate (60%), with a relatively stable structure throughout the crisis. Banks' foreign assets, by contrast, are dominated by longer-term maturities. In 2010 short-term assets (36%) and assets held vis-à-vis banks (32%) account for one-third of the balance sheet total. The share of securitised assets was 27% in April 2010, including foreign sovereign bonds; the share of non-securitised assets vis-à-vis foreign governments is small (less than 2.2% in April 2010).

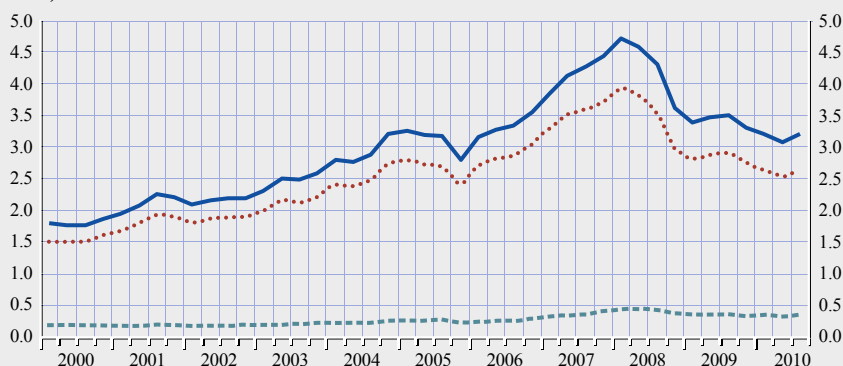Chart 1 Consolidated foreign claims of BIS reporting banks

(USD millions)

—— all countries
······ developed countries
------ developing countries

a) European banks
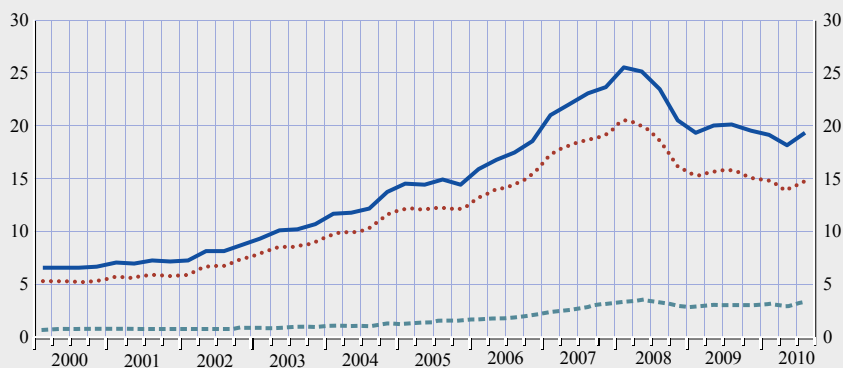
b) German banks

Sources: Bank for International Settlements consolidated banking statistics and authors' own calculations.
Note: Data are based on Table 9b of the Bank for International Settlements consolidated banking statistics and are on an immediate borrower basis.

3   WHY DO BANKS GO ABROAD?[3]

Before a closer consideration of the impact of the crisis on cross-border activity, it is useful to look at the determinants of banks' foreign activities in quiet times. Recent advances in international economics provide fairly good information about the internationalisation patterns of (non-financial) firms. Empirically, larger and more productive firms are more likely to export and engage in foreign direct investment (FDI) than smaller and less productive firms (see Helpman et al. (2004); Bernard et al. (2006, 2007); Tomiura (2007); Yeaple (2009)). These stylised facts reflect differences in firm-level productivity and the costs

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3   This section draws heavily on the results obtained in Buch, Koch and Koetter (2009, 2011b).

(EUR billions)

— assets
······ liabilitites

a) Total foreign assets and liabilities[1]

— all   - - - private
······ bank   — government
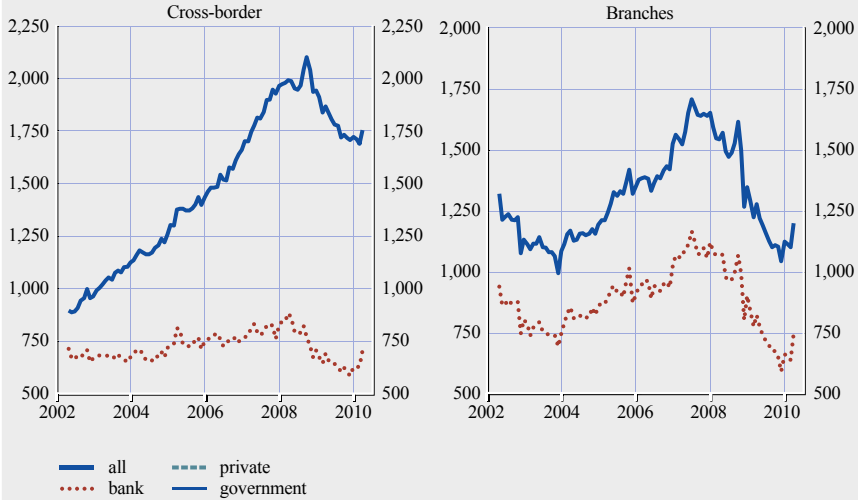
b) Foreign loans by sector[2]
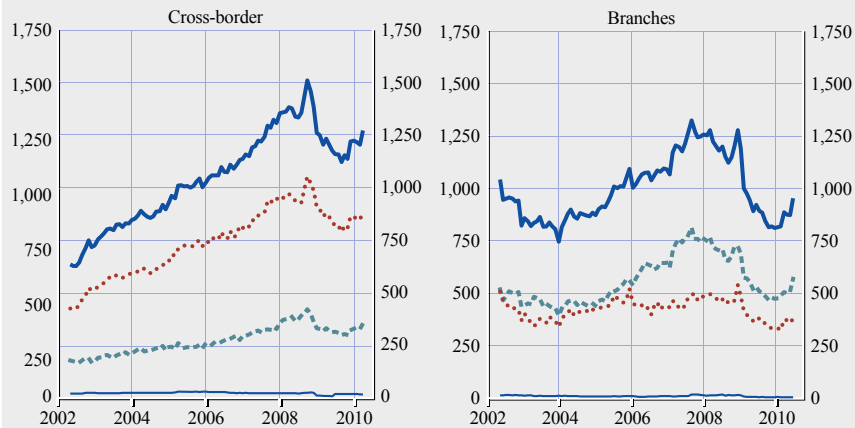
Sources: Deutsche Bundesbank External Position Report and authors' own calculations.
1) German banks with foreign affiliates; 47 selected countries. Assets = loans + securities; liabilities include deposits.
2) German bank holding companies, banks with foreign subsidiaries and/or branches; 47 selected countries.

of market entry (Melitz (2003); Helpman et al. (2008)). Domestic fixed costs are lower than the costs of exporting, which are lower than the costs of FDI. Exporting also entails higher variable costs. Thus, firms only self-select into more complex modes of foreign entry if they exhibit sufficiently high productivity, which results in a "pecking order".

Yet, we know relatively little about the internationalisation of services firms and, in particular, banks. We have therefore investigated whether banks differ (Buch, Koch and Koetter (2009, 2011b)): to what extent are the internationalisation decisions of banks determined by productivity, which factors affect the extensive (foreign investment decision) and intensive (volume of activity) margins, and which factors affect particular modes of activities.

We answer these questions in Buch, Koch and Koetter (2009) with an empirical approach that follows from a stylised model of an international bank. As in international trade literature, choosing the optimal mode of foreign activity involves a trade-off between fixed and variable costs. In addition, banks also consider the portfolio effects of their international activities. The model yields testable implications for bank-level and country-level factors that can determine the intensive and the extensive margin.

Morover, and in contrast to non-financial firms, we find that many (small) banks hold international assets. In line with evidence for non-financial firms, few banks have foreign affiliates. Self-selection of banks according to the different modes of foreign activity is modelled using an ordered probit that extends the conventional Heckman model (1979) with hierarchical selection categories. This ordinal selection into foreign status is usually neglected in most previous studies, and we find that it has a significant impact on the volume of activity.

Bank productivity estimates are generated with an empirical methodology often applied to non-financial firms (Levinsohn and Petrin (2003); Nakane and Weintraub (2005)). Most bank productivity studies rely on a dual approach and estimate the cost or profit functions (Kumbhakar and Lovell (2000)) to analyse the impact of changes in technology or factor inputs. But this approach neglects the bias attributable to the simultaneity between input choices and productivity. Our productivity measures clearly support a pecking order in international banking. Productivity matters, in particular for small savings and cooperative banks.

Overall, these results reveal some similarities and differences between the internationalisation patterns of banks and non-financial firms. Only the largest banks engage in complex modes of internationalisation and set up foreign affiliates. Similar to the non-financial sector, only a few and large firms engage in FDI. Empirical results thus support the pecking-order hypothesis. Selection into foreign status therefore has a significant impact on the volume of activity. For banks (as for non-banks), gravity variables are important too. Larger distances discourage international banking, larger and more developed markets promote international banking, and activity restrictions deter banks.

Yet, this work also highlights two noteworthy differences between international banks and non-financial firms. First, risk factors at the bank level affect foreign activities. More risk-averse banks are less likely to expand abroad, but they engage in larger volumes of activity. Second, small, non-financial firms typically are domestically oriented and do not trade or engage in FDI, but smaller banks

typically hold foreign assets in at least one market. This finding suggests that holding international assets involves smaller fixed costs compared with selling or sourcing abroad. It also indicates that the motive for internationalisation differs, and that portfolio considerations play an important role for banks.

4   WHAT ARE THE EFFECTS OF INTERNATIONAL BANKING?[4]

Knowledge of the factors driving bank internationalisation raises the question of how internationalisation feeds back into key measures of bank performance. In a follow-up project, we looked into the impact on market power and risk (Buch, Koch and Koetter (2010)). Studying this relationship is of interest because recent developments on international financial markets have called the benefits of bank globalisation into question. Large, internationally-active banks have acquired substantial market power, and banks' international activities have not necessarily made banks less risky. Given these perceptions, surprisingly little is known about the actual link between bank internationalisation, bank risk and market power.

We analyse this question by complementing the External Position Report with information on banks' probabilities of distress (Kick and Koetter (2007)), and we estimate the Lerner index as a bank-specific measure of market power following Koetter and Poghosyan (2009). We use these data to analyse whether the internationalisation of banks affects their probability of distress and their domestic market power.

Methodologically, we use a system estimator, which takes the simultaneous determination of risk and market power at the bank level into account. We address the potential endogeneity of foreign assets, in the vein of Frankel and Romer (1999), who use the geographic component of international trade as an instrument for actual trade. We adapt their methodology to a panel context because, for the individual bank, we can use foreign GDP as an exogenous variable.

Understanding the risk/market power trade-off for internationally active banks is of key importance for policy-makers. In the light of the global financial crisis that started in 2007, the benefits of international banking in terms of a more efficient allocation of risks on international markets seem fairly illusive. The crisis unveiled that international integration not only bears diversification benefits but also exposes banks to risks. Some recently proposed policy measures and regulatory initiatives could even limit banks' international activities (Bank for International Settlements (2009), International Monetary Fund (2011)). But devising adequate policy responses requires better insights into the link between both the risk and the international activities of banks.

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4   This section draws heavily on the results obtained in Buch, Koch and Koetter (2010).

4.1 MARKET POWER AND INTERNATIONALISATION

Previous bank internationalisation studies mostly focus on the determinants of the cross-border expansions of banks (Berger et al. (2003), Buch and Lipponer (2007), de Haas and van Lelyveld (2010), and Focarelli and Pozzolo (2005)). Recurring results are that regulatory and cultural barriers limit banks' international expansion, and that more profitable and larger banks are more likely to be able to surmount these hurdles.

Therefore, we expect that the impact of internationalisation on the degree of market power at home is positive. Market power is measured as the Lerner index, i.e. the mark-up between the bank's average revenues and its marginal costs. In the long run, internationalisation should have a positive impact on market power measured this way. In the short run and, in particular during the early expansion period, the cost effects of internationalisation might dominate and market power estimates even decline. But, eventually, we expect that banks maintain foreign operations only if they ultimately perceive a positive impact on their market position.

The empirical results show that banks with higher shares of cross-border assets either held directly by their domestic headquarters or by foreign branches exhibit higher domestic market power. After controlling for other bank-specific traits, market power and size are negatively correlated.

4.2 BANK RISK AND INTERNATIONALISATION

Next, we expect that more diversification of foreign assets reduces bank risk. However, the impact of just more assets is ambiguous. The reason is as follows. If banks behave as portfolio managers, they optimise their expected utility as a positive function of expected profits and a negative function of expected portfolio risk (Rochet (2008)). In an international context, foreign entry should have the potential to reduce banks' (and thus regulators') risk of insolvency (see, for example, Berger (2000)). Because regionally clustered exposures increase the sensitivity to common shocks (Winton (1999)), geographic diversification may reduce risk. Then, the impact of internationalisation on bank risk depends on the correlation between domestic and foreign returns and on the volatility of foreign markets. Risk may decrease if assets are diversified, but it might increase if diversification is limited and/or foreign markets are risky.

We interpret the extensive margin, i.e. the number of countries in which banks are active, as one measure of portfolio diversification and expect it to be negatively related to risk. We expect different results for subsidiaries and branches, as branches are more geared towards retail lending while subsidiaries act as portfolio managers. By contrast, the share of foreign activities in total assets per se (the intensive margin) has no clear-cut impact on bank risk.

But at least two potential costs may counter these above-mentioned reasons and increase risk. First, banks have incentives to shift risk when the regulatory safety net and its associated implicit and explicit guarantees are underpriced (John

et al. (1991, 2000)). Second, cross-border activities may increase risk because it becomes more difficult to monitor diversified but complex portfolios (Winton (1999)). By extending its operations into new overseas markets, a bank is confronted with potentially new and risk-increasing monitoring problems related to the loan customer base or the operating cost structure of a large international portfolio. If monitoring and information costs are high, bank risk might increase.

Many studies investigate the determinants of risks in banking (De Nicolò (2001) and Nier and Baumann (2003)). But only a few address the impact of the internationalisation of banks. Amihud et al. (2002), for instance, examine risk effects of cross-border bank mergers. Analysing changes in market risk and stock price reactions, they find that, on average, cross-border bank mergers do not change the risk of acquiring banks. Méon and Weill (2005) study the impact of cross-border mergers in Europe on banks' exposure to macroeconomic risks. They find that loan portfolios provide a sub-optimal risk/return trade-off, and that there are potential gains in risk diversification from cross-border mergers.

Empirical results presented in Buch, Koch and Koetter (2010) show that banks with a foreign presence in a large number of foreign countries are more likely to reveal above-average probabilities of distress, possibly because of the costs of maintaining a large international banking network. But we also find that banks of different size and from different banking groups benefit differently from internationalisation. Commercial and savings banks tend to improve their risk/return trade-off; cooperative banks tend to worsen their risk/return trade-off. Also, bank size has an impact. Hence, the substantial heterogeneity across banks at the national level is also reflected in a heterogeneous impact of bank globalisation.

The final hypothesis concerns the link between market power and bank risk. In the German data, we find a negative correlation between market power and the probability of experiencing a distress event. This negative relationship between risk and return is in line with the theoretical model by Allen and Gale (2004), or the margin effect stressed by Martinez-Miera and Repullo (2008). According to this explanation, more profitable banks can build up buffers against loan losses.

5   WHAT HAPPENED DURING THE CRISIS?[5]

During the world financial crises, banks have adjusted their international positions and cross-border bank lending has contracted (Bank for International Settlements (2010), International Monetary Fund (2010)). To prevent a further impact on markets, governments have intervened massively into banking systems by means of concerted actions or standby measures. Buch, Koch and Koetter (2011a) thus analyse whether the international activities of German banks' foreign affiliates were a channel of policy transmission across countries by analysing foreign affiliate lending.

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5   This section draws heavily on the results obtained in Buch, Koch and Koetter (2011a).

We distinguish two sets of policy measures. First, 11 German banks received government guarantees or capital injections from the government, some of them as early as between August 2007 and September 2008. German banks were thus among the first to be supported by governmental schemes. The decision by the German government to support a particular parent bank was not influenced by the bank's exposure to a specific foreign country. Hence, the variation in the rescue measures across banks and over time helps to identify supply-side effects.

Second, US-located affiliates of German banks have been eligible for liquidity support under the Term Auction Facility (TAF) of the Federal Reserve System. In contrast to the German measures, the TAF programme was targeted at illiquid but otherwise solvent banks. The programme is seen as one channel through which US monetary policy transmits to other countries through foreign banks' affiliates hosted in the United States (Shin (2011)). We analyse whether foreign affiliates hosted in countries other than the United States but belonging to the same German parent bank change their activities after the US affiliate draws on support measures.

This research project has three main findings.

First, German banks strongly increased their foreign assets in the period 2002-08, but this process was partly reversed after the crisis. The reversal of banks' foreign liabilities has been even stronger than that of assets.

Second, the most important bank-level determinant of banks' cross-border expansions has been the share of wholesale funding. Banks with a strong reliance on wholesale funding have expanded both their foreign affiliates' assets and liabilities.

Third, rescue measures by the German government and access to the Federal Reserve's TAF programme have triggered spillover effects on other affiliates worldwide. Banks covered by German government rescue measures have increased their foreign activities following these policy interventions, but they have not expanded relative to other banks' foreign affiliates. Foreign assets of banks receiving liquidity support under the TAF programme have expanded relative to those of other German banks. This supports previous evidence (see, for example, Shin (2011)) which indicates that borrowing through foreign affiliates in the United States constitutes a channel for the global transmission of US monetary policy.

6   OUTLOOK FOR FUTURE WORK

The financial crisis has revealed the urgent need to better understand the determinants and consequences of cross-border banking, not only at the level of the individual bank but also as a source of systemic risk. It has also shown that using aggregated or bilateral country-by-country data is not sufficient. Rather, micro data are needed that shed light on the cross-border linkages of individual

banks and intrabank transmission channels. Many key policy questions, for example the banks' response to country-specific, macro-prudential policies such as counter-cyclical capital buffers, and the cross-border resolution of banks require such information.

Yet, current research on these issues cannot answer many of the policy-relevant questions for various reasons: bilateral banking data provided by the BIS do not enable bank heterogeneity to be studied; commercially supplied bank-level data lack important information on banks' cross-border activities that is available only to regulators; and existing bank-level datasets in central banks cannot be merged to allow for a joint analysis of different banking systems simultaneously. Hence, heterogeneity in the adjustment of banks from different countries cannot be studied.

Overcoming these obstacles is important for research and for policy. We see five main topics where using common research methodologies and enhancing the availability of micro data could be beneficial.

First, little is known about the role of banks' internal capital markets in the transmission of shocks across countries. Recent research shows that foreign banks react differently to domestic monetary policy shocks compared with purely domestic banks (Cetorelli and Goldberg (2011a)), and that internationally active banks use internal capital markets to manage their liquidity internationally (Cetorelli and Goldberg (2011b)). Evidence from other countries would provide interesting insights.

Second, the effectiveness of macro-prudential policy tools such as pro-cyclical capital buffers, which are implemented in individual countries, depends on the strength of the banks' cross-border response. Hence, a thorough assessment of banks' responses to macro-prudential regulation in terms of microeconomic as well as macroeconomic effects requires bank-level data.

Third, one main obstacle to the resolution of large, internationally active banks has been the fact that large, multinational banks are closely interwoven with their foreign branches and affiliates. Restructuring large multinational banks and developing mechanisms for burden-sharing across countries thus requires information about banks' activities in other countries. National regulators, in turn, typically have limited information about the activities of individual banks in other countries. By combining information on different entities across countries, more precise information about possible linkages can be obtained.

Fourth, shocks can be transmitted through intrabank and interbank channels. Both channels arise through direct contractual linkages between banks or within bank holding companies. However, it has been argued that such direct linkages cannot explain the full extent of shock transmission during the crisis (van Wincoop (2011)). Indirect linkages arising through information externalities, news shocks or risk panics might be important as well. In order to analyse the importance of this transmission channel, datasets from different countries would have to be analysed simultaneously.

Fifth, it would be interesting to explore the effects of internationalisation on bank performance in more detail. Internationalisation can provide banks with access to foreign markets, thus generating economies of scale and scope. It can help banks to diversify their portfolios and thus to achieve a better risk/return trade-off than in domestic markets only. Yet, international activities also expose banks to systemic shocks from abroad. It may also tilt the size distribution of banks towards larger banks, thus aggravating the "too-big-to-fail" problem. The international activities of banks may reflect the advantage of higher productivity compared with domestic banks. Thus far, information on the causes and effects of international banking is rather patchy across countries, and it would be interesting to consistently disentangle the motives and effects of banks' international activities.

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ANNEX DATA

EXTERNAL POSITION REPORT

Data on the international assets of German banks are taken from the Deutsche Bundesbank External Position Report (*Auslandsstatus*). They are confidential and can be used only on the premises of the Bundesbank.

International assets: loans and advances to banks, companies, governments, bonds and notes, foreign shares and other equity, participation abroad, denominated or converted into euro. Irrevocable credit commitments are included but other off-balance-sheet items are not. For a more detailed description of this database, see Fiorentino et al. (2010).

Branches and subsidiaries: foreign affiliates of German parent banks. Branches do not have independent legal status and are wholly owned by the German parent; subsidiaries have independent legal status and are majority owned (50% plus one share) by the German parent. We attribute assets held by affiliates to the destination country, independently of the country in which foreign affiliates are located. Hence, the affiliates' host country and the destination country of their foreign assets and liabilities might differ.

Time: monthly data from May 2002 to March 2010 ($t = 94$)

Countries: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Cayman Islands, Chile, China, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Singapore, Slovakia, Slovenia, Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

Country groups:
- *Euro area*: Belgium, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, Netherlands, Austria, Portugal, Slovenia, Slovakia, Finland.[6]

- *Eastern Europe*: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Russia.

- *Financial centres*: Cayman Islands, Hong Kong, Ireland, Liechtenstein, Luxembourg, Singapore, Switzerland, United Kingdom.

- *High income:* Australia, Austria, Belgium, Canada, Cayman Islands, Denmark, Finland, France, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Liechtenstein, Luxembourg, Malta, Netherlands, New Zealand, Norway, Singapore, Spain, Sweden, Switzerland, United Kingdom.

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6   Estonia joined the euro area in 2011.

- *Low income:* Brazil, Bulgaria, China, India, Mexico, Romania, Russia.

Asset classes: securitised and non-securitised assets and liabilities are distinguished. Within the group of non-securitised assets, different types of borrowers (banks, private sector, governments) are distinguished. The same classification applies to liabilities. Within the group of securitised assets, shares, money market paper (banks as well as non-banks), treasuries and bonds (issued by banks, the private sector or government) are distinguished.

ECONOMIC STATISTICS AT THE SERVICE OF FINANCIAL MARKET PARTICIPANTS

WALTER RADERMACHER

I   INTRODUCTION

For several years, the world and, in particular, Europe has been experiencing a major crisis. This crisis first took the form of a financial crisis and then became one of sovereign debt. It is now a crisis of the real economy with unprecedented unemployment rates in the European Union. The sovereign debt crisis remains worrying. It was the subject of the agreement reached on 31 January 2012 by the European Council on the Treaty on Stability, Coordination and Governance in the euro area. At the same time, more attention is now focused on the real economy and, in particular, on growth and employment. These changes increase financial market participants' need for information that helps them to evaluate risks, analyse trends in the economy and try to optimise their performance.

In order to assess a specific situation, in particular an economic crisis, it is clear that a number of elements must be taken into consideration, most of which are not statistical. We will not address these latter aspects. Instead, we will endeavour to explain that the crisis and the perception of political leaders and public opinion of the changes have not been without consequences for the European statistical system.

Initially, the crisis heightened demand for financial statistics, which were more detailed and more rapidly available. It thereby furthered a tendency already evident at the time of the revision of the European System of Accounts, whose financial component increased considerably. The crisis also triggered a great demand for new statistics intended to enhance the supervisory framework for financial institutions and the management of monetary policy.

Second, the debt crisis in Europe, and notably in Greece, created more demand for statistics on public finances. At European level, this demand led to new regulations being adopted to strengthen the European Commission's supervisory powers; this required the creation of a Eurostat directorate entirely dedicated to such matters.

Third, growth-related issues have once again become a focal point. The budgetary stringency imposed by the debt crisis may undermine growth: since budgetary revenue is linked to economic activity, the danger of a deflationary spiral is present, with negative consequences in terms of increased unemployment and social problems. Steering the economy therefore calls for the monitoring of statistics on economic activity, such as gross domestic product and employment statistics.

2   THE REQUIRED BALANCE AND COHERENCE BETWEEN FINANCIAL AND NON-FINANCIAL STATISTICS

This succession of exogenous shocks to the European statistical system calls for reflection on a global framework to sustainably ensure a satisfactory balance between financial and non-financial statistics. A statistical service is a large-scale organisational structure which requires a certain amount of stability, and frequent adjustments inevitably impact negatively on its performance. This is particularly true at a time when the statistical services of the Member States are seeing their resources cut as a result of budget austerity.

Financial and non-financial statistics have always been closely linked. The finance sector, which by nature is a major statistics user, could not do without non-financial statistics. Conversely, stakeholders in the real economy rely heavily on financial statistics. This is true for both short-term analyses, where financial and non-financial indicators contribute to the analysis of the economic situation, and longer-term analyses. Thus, statistics which relate to economic activity, such as employment statistics, have a direct influence on developments in the financial markets. By contrast, financial statistics can be used to analyse changes in activity: for example, statistics on property loans are an advance indicator for the building sector.

The national accounts certainly offer the best illustration of complementarity between financial and non-financial statistics, because the accounts framework requires global coherency between both types of statistics. In the euro area, for instance, quarterly accounts are the most remarkable example of efficient cooperation between Eurostat and the European Central Bank (ECB), and between non-financial statisticians and financial statisticians.

Over time, a certain balance had been achieved between financial and non-financial statistics, with a gradual shift towards more financial statistics. This balance was heavily undermined by the global crisis. Efforts were focused mainly on developing and strengthening financial statistics, with special emphasis on issues relating to risk measurement and the rapidity of data availability.

The necessary balance between financial and non-financial statistics must be based on a global economic analysis. At global level, the need for savings to equal investment calls for complementarity between the two types of analysis. This relationship can also take the form of a necessary alignment between private savings and the sum of private investment and public deficit. At global level, some countries contribute to world savings mainly through investment: this is the case for Asian countries while European countries and the United States contribute through their public deficits. As the distribution of savings between countries does not match the distribution for investment and deficits, some countries generate financing capacity and others financing needs. Net capital flows are, therefore, directed from countries with the capacity to finance to those in need of financing.

Despite the very great volatility of the capital markets, financial flows are subject to strong trends dependent on influences outside the financial sphere. For example, since the free movement of capital tends to equalise financial conditions in all countries, differing investment levels can be explained above all by non-financial factors, such as the competitiveness of businesses. Likewise, a country's savings depend largely on the behavioural habits of its households and the changes in real income and its concentration. This global analysis thus offers a coherent framework in which financial and non-financial statistics can find their rightful place.

3   ANALYSES OF FINANCIAL MARKET PARTICIPANTS' NEEDS

It is not easy to achieve coherence between financial and non-financial statistics, in particular because in the field of financial statistics, special emphasis is laid on the rapidity of obtaining data with limited revisions in frequency and size. However, this observation must be qualified in the light of users' needs.

To do so, one may classify the most useful indicators for financial market participants into several categories. On the one hand, some statistics which are necessary for financial and monetary analysis are of a microeconomic nature, or relate to prices or rates. For this category of statistics, either rapidity is essential, or data collection is more often made by professional associations, or specific confidentiality problems exist. In these areas, public statistics are not always competitive. They are sometimes replaced by non-official statistics from private bodies.

On the other hand, the public statistical system remains indispensable when it comes to macroeconomic statistics consisting mainly of statistics on flows or stocks, since no private agent can have access to all the resources needed to develop the financial statistics of a country or a region.

In order to meet the needs of financial market participants and analysts, Eurostat – in cooperation with the ECB and the European Commission Directorate General for Economic and Financial Affairs (DG ECFIN) – publishes many macroeconomic indicators in the main areas of analysis. The Principal European Economic Indicators – PEEIs – are presented in the Status Report on Information Requirements in EMU (Economic and Monetary Union) at http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/EFC_REPORT_2010/EN/ EFC_REPORT_2010-EN.PDF

In particular, these macroeconomic data relate to:

• consumer price indicators;

• quarterly national accounts, covering a first GDP flash estimate and then a GDP release with more breakdowns, households and company accounts, and government finance statistics;

- business indicators including, for example, an industrial production index, production in construction, the turnover for index retail trade and repair, and a turnover index for other services;

- labour market indicators, including unemployment and job vacancy rates, and an employment and labour cost index;

- external trade balance indicators, intra- and extra-euro area and intra- and extra-EU;

- housing indicators, comprising a residential property price index, house sales and building permits.

Finance operators also need to know the trends in economic activity, such as GDP, private final consumption and investment in volume. Other important data that Eurostat makes available, in cooperation with the ECB and DG ECFIN, are government deficit and debt, three-month interest rates, long-term government bond yields, the euro/dollar exchange rate and an economic sentiment indicator.

An improvement programme for PEEIs is ongoing, covering data timeliness, harmonisation of revision policies, and further progress in terms of methodology and communication.

The timeliness of financial indicators is related to the statistical sources used to compile them. The data collected on a compulsory basis by public supervisory authorities as part of their responsibility to monitor financial institutions are good quality data and are usually rapidly available. But they are insufficient and are becoming increasingly so. Indeed, in the majority of countries, financial intermediation is performed more and more frequently by non-resident agents. This means that financial statistics can no longer be based solely on the data supplied by resident financial institutions.

Under no circumstances should we underestimate the importance of the material difficulties to which surveys are subject and the constraints they entail for statistical systems. Data collection will still take some time. However, using the most modern technologies will help to accelerate data collection. Data verification is also a difficult exercise, again particularly for financial statistics, since the extreme diversity of the financial instruments and market volatility render ineffective the controls which depend on stable developments.

Users of financial statistics must therefore also be aware that deadlines will never go below a certain minimum threshold. However, progress can still be achieved in accuracy and reliability in terms of cooperation between financial and non-financial statisticians.

4 THE NEED FOR A WIDER PERSPECTIVE

In order to evaluate the economy's sustainability, a broader and longer-term perspective is required. This wider approach is also used by many investors and analysts. The European Union has put in place a long-term development strategy, Europe 2020, in order to promote smart, sustainable and inclusive growth. Under Europe 2020, the trends in innovation, research and development and competiveness, the environment and green growth, education, employment and social cohesion are analysed.

In the context of this strategy, it is important to mention the monitoring of public finances with the Excessive Deficit Procedure for which Eurostat has received extended powers of control. Also, an alert mechanism has been set up to detect and correct macroeconomic imbalances, namely the Macroeconomic Imbalance Procedure based on a scoreboard of indicators relating to external imbalances and competiveness as well as internal imbalances. The consistency of these tools, which are made available to decision-makers and users, is enhanced by the European Semester: an annual cycle of economic and fiscal policy coordination. European-level discussions taking place jointly during the European Semester will develop an integrated analysis on fiscal policy, macroeconomic imbalances, financial sector issues and growth-enhancing structural reforms.

5 NEW TOOLS FOR MODERN STATISTICAL COMMUNICATION

Our efforts as regards the availability and coherence of statistical indicators must be supported by further improvements in terms of accessibility and communication. Part of the necessary adaptation effort has already been taken up by Eurostat in support of national statistical institutes. The most modern communication tools have been mobilised at the service of the most demanding users, including financial market participants. Eurostat makes its statistical data widely available on its website. We have cooperated with Google in order to further facilitate searches for statistics. Furthermore, Eurostat is now present on Twitter and has developed applications for mobile devices.

These developments enable information on key indicators – such as inflation in the euro area, the production index for the construction sector or the minimum wage in different countries – to be found very quickly. The new tools are welcomed by users, as shown by feedback information on the number of website page views, data extractions, and web article and application downloads.

This effort will be pursued because Eurostat considers that enhancing the quality of its services is a permanent challenge. In the specific area of financial statistics, Eurostat intends to go further and explore new ways of improvement in cooperation with the ECB.

6 EXCHANGE OF EXPERIENCE BETWEEN STATISTICIANS AND FINANCIAL MARKET PARTICIPANTS

The exchange of experience between statisticians and financial market participants is a direction that should be explored vigorously. Such an exchange would allow statisticians to better understand the transactions and the statistical needs of financial markets. Statisticians have to play a pedagogic role in explaining their sources and methods, the precautions that should be remembered when using their data, and in expressing their methodological views on data which do not belong to official statistics. It is also their task to communicate on the diversity of their data, some of which may be insufficiently known or used. Eurostat organises several meetings and workshops, which financial market participants are welcome to attend. We consider that conferences such as this one clearly contribute to this much needed mutual enrichment effort.

risks and ripple effects, there is a need to have access to balance sheet information, including off-balance sheet exposures. These data are needed for individual financial and non-financial corporations, including for large complex financial institutions and non-bank financial institutions. The paper may also wish to address the data requirements for these institutions.

7. The paper argues for an approach to data collection that seeks to integrate financial and non-financial statistics, more particularly the integration of monetary and financial statistics with the national accounts. This would facilitate the reconciliation of flow and stock data for all institutional sectors and the rest of the world.

8. This theme of integration is very timely. A similar proposal was made by the Statistics Department of the IMF to the IMF Committee on Balance of Payments Statistics at its recent meeting held in Washington, D.C. from 25 to 27 October 2010. The proposal called for the integration of various datasets and the cross-checking of data that use similar methodologies. These included the international investment position (IIP) data and balance sheet data that could be used to help compile sectoral accounts, thereby generating synergies and avoiding duplication of effort. In addition, it was proposed that the sectoral accounts data could be used, among other things, for financial stability analysis, including the compilation of the financial soundness indicators (FSIs). It was argued that a holistic approach to data collection of this kind would yield important benefits, not least efficiency gains, by avoiding duplication. It would reduce the reporting burden and would facilitate the reconciliation and cross-checking of data to improve overall data quality.

9. This integration approach is relevant not only to help understand the current economic and financial developments, but could also be used as an essential tool for macro-prudential analysis and the broader analysis of financial stability. It may be useful for the paper to mention the forward-looking nature of these datasets.

10. While acknowledging the increasing demand for data, the paper correctly recognises the need to address the costs of data production and the importance of avoiding duplication. The integrated approach to data compilation will help address these concerns.

risks and emerging vulnerabilities in the system, access to more granular data is essential. Financial data disaggregated by country, sector, instrument, maturity, and currency denomination would facilitate the identification of interest rate and exchange rate risks. To the extent that national laws do not adequately address the balance between confidentiality and data access in the global post-crisis environment, authorities may need to consider revising such laws to facilitate the closing of data gaps under the G20 Data Gaps Initiative.

7. The paper rightly points out the need to use modern tools to communicate statistical information and the need to promote dialogue between statisticians and users of statistics. There is no doubt that availability and coherence of statistical indicators must be supported by further improvements in terms of accessibility and communication. Making information readily available through mobile devices facilitates the use of data, and many statistical agencies are moving in this direction. Indeed, the Principal Global Indicators (PGI) website (http://www.principalglobalindicators.org/default.aspx) now allows data access via an iPad or iPhone (see the screen shot). Similarly, given the many sources of data, it is important for statisticians to give a clearer sense of the sources and methodological strengths/weaknesses of the data used.

Screen shot from the PGI website on an iPad
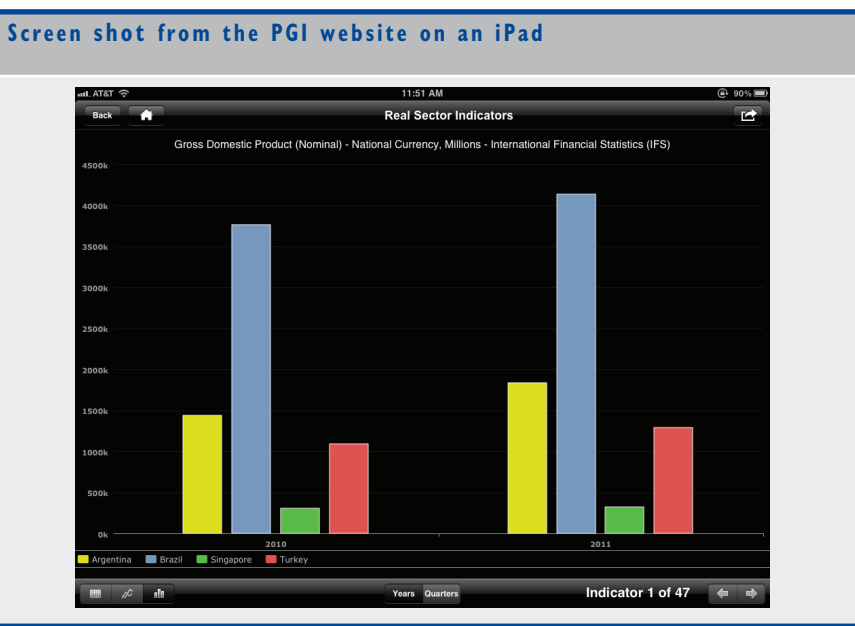
8. The paper also highlights the need for statisticians to have a wider perspective, consistent with the changing economic dynamics and increasing demands from financial market economists, as identified by James Ashley and Jens Larsen. Indeed, monitoring progress out of the crisis is a long-term undertaking which requires the availability of sufficient data (both financial and non-financial) to track key indicator systems and related procedures. Examples include the

PGI; their "godmother", the Principal European Economic Indicators (PEEI); the excessive deficit procedure (EDP) and the Macroeconomic Imbalance Procedure (MIP). All require a long-term perspective when planning for the supply of required data. However, this raises certain questions, including: Are official statistical systems resourced adequately to meet these demands? What are the implications of budgetary cuts for official statistical systems? Is there a case for safeguarding statistical systems from budgetary cuts? I believe that the answer to these questions is straightforward: it is essential strategically to ensure that adequate budgetary resources are maintained for increasingly important statistical work. Moreover, the revised Regulation on European Statistics underlines the importance of statistics to advance the understanding of the world at the national, European and global level.

DISCUSSANT'S REMARKS

ADELHEID BÜRGI-SCHMELZ[1]

on

JENS LARSEN AND JAMES ASHLEY, *How things have changed – financial market economists as users of economic statistics*

This is a very interesting paper which highlights important points from the perspective of financial market economists and how statisticians can meet their increasing demands.

1. Before the crisis, the role of a financial market economist was simple. Before the crisis, financial sector economists were preoccupied with short-term estimates and forecasts of current and future data from which conclusions could be drawn.

2. Since the crisis, the role of a financial market economist has become complex. It has become evident that the broad structure of the economy is changing constantly and a number of economic outcomes and policy directions are now less predictable. The data are more "imprecise" and the policy responses that are relevant for a financial market economist are multi-dimensional. The authors rightly assert that the "strength, coherence, and plausibility of the narrative, and in particular the factual, statistical underpinning, have assumed greater importance".

3. Why does this matter for the use of statistics? The authors argue that, with the changing economic environment, with financial market economists becoming more demanding and with data producers wanting their output to remain relevant to their consumers, the provision of statistics must necessarily evolve. They argue that improvements should be made in (a) the accessibility and presentation of the data and (b) the coverage of the data. They recognise the paucity of resources and welcome the idea of a reallocation of priorities.

4. In short: less, but better. The authors recognise the pressure on resources for statistical work and the changing priorities and question whether the current balance between timeliness and accuracy of statistics is optimal. They argue that "there would be few complaints from financial market economists if, in certain specific cases, data were less timely but were more accurate as a result". Highlighting the high level of revisions to data, they argue that, "in such cases, not publishing the statistics at the earliest opportunity may plausibly free up resources – not just for the producers of the data but also for the distractible consumers, including the financial market economist". This is an interesting proposal. However, while this view would probably be most

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[1] The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management.

welcome in the statistical world, it is not one commonly shared by many data users. Their demand has instead been for high-frequency data, and significant efforts have gone into meeting that demand.

5. Easier access and better presentation are important. The authors rightly advocate easier access to and better presentation of statistics in order to facilitate analysis by financial market economists, policy-makers, journalists, etc. They note advances made in this area and consider that resources freed by reallocating priorities (see above) could be used to add value to statistical output, not only by improving the quality, but also through a better presentation of data.

6. Better coverage and comparability of statistics are also critical. The authors rightly underscore the need for statistics that are relevant, up-to-date and harmonised across economies. In reference to the euro area, which, at a global level, is considered to be statistically advanced, the authors state that "when we are unable to compare even the most basic of balance sheet information across economies in a timely fashion, our analysis surely suffers". They also note the great strides made to close data gaps at the European and international level, including the IMF work on financial soundness indicators. This point cannot be over-emphasised. Indeed, the work of the Inter-Agency Group on Economic and Financial Statistics (IAG) on a G20 GDP growth aggregate has highlighted the need for comprehensive and comparable statistics.

7. It took almost three years until regular monthly publication of the G20 GDP growth aggregates was launched in March of this year (see Chart 1). The efforts of the G20 Data Gaps Initiative coordinated by the IAG to improve sectoral accounts data are in full swing, but this requires a lot of resources and thus will take years to bear fruit. It would be interesting to hear the authors views on the benefits of the initiative.

Chart 1 G20 GDP growth aggregates

(gross domestic product (volume) – G20 (Q1 2006-Q4 2011); percentage change over previous period, seasonally adjusted)
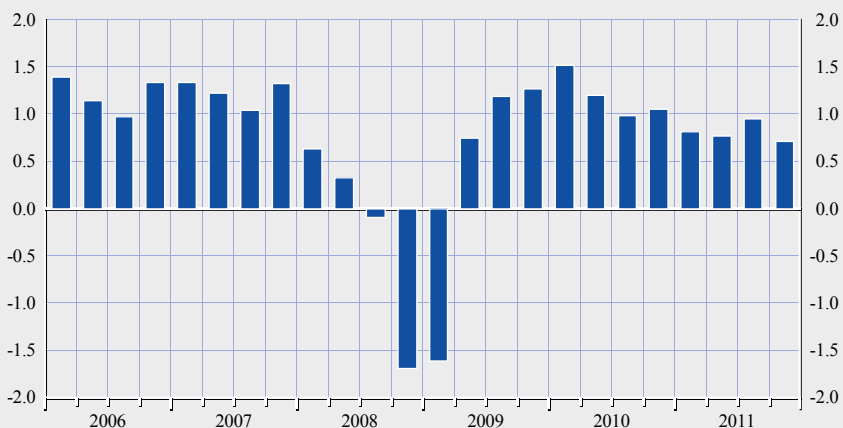
Source: OECD Main Economic Indicators.

DISCUSSANT'S REMARKS

MARK BEATSON

The paper presented by Natacha Valla reminds us why financial markets need data. Financial markets exist to reallocate resources – from savings to investment, from current to future consumption – and to do this they need to be able to price risk, which requires data.

The paper highlights three areas for improvement, or where better data might be needed. There is of course the caveat that it is rarely the case that users believe they have enough data or enough data of sufficient quality or relevance. But, with that point in mind, I will offer some reflections on each of the three issues raised in the paper:

- Events have revealed a need for greater rigour, transparency and consistency in data on the public finances and the components of government expenditure and revenues. The United Kingdom's experience may be relevant here. On taking office in 2010, the current UK government set up an independent Office for Budget Responsibility, thus taking responsibility for forecasts of the economy and the public finances away from the Treasury and giving it to an independent body.[1] This has injected greater transparency into the question of the estimation of historic expenditure and revenue as well as the forecasting of future expenditure and revenue. However, it has not been an entirely comfortable experience because, in some cases, the underlying data came from management systems not designed for the purposes of statistical accuracy or reliability. It has nevertheless ensured that the data – however rough and ready – are subject to greater scrutiny and that the risks and errors in them are probably better understood by a wider circle of users.

- The paper highlights the need for data on the impact of structural reforms. This is problematic. The impact of structural reforms – in terms of changed macroeconomic performance – can take a decade or more to become apparent in macroeconomic statistics or in "structural" parameters, such as the sustainable rate of unemployment or the trend rate of growth, owing to the difficulties in isolating structural from cyclical developments.

- One approach – which should not be discounted – is for the analyst simply to log the policy changes that have been introduced in a qualitative way. A step on from this might be to construct a framework that allows structured comparisons between certain subsets of structural reform policies (such as minimum wage policies or policies removing barriers to setting up a new business) where it might be possible to derive metrics for comparison. For example, the level of a minimum wage could be measured in terms of its distance from the median and its coverage in terms of the proportion of the workforce subject to the legislation. Equally, a measure of enterprise policy that has been used is the number of days it takes to set up a new business from scratch.

1   See http://budgetresponsibility.independent.gov.uk/

- Another approach might be to devise some market specific measures of efficiency that structural reform policies are expected to influence and then to track these over time. For example, liberalisation of the professions has been recommended in a number of structural reform programmes. In the long term, the impact will be seen through lower prices and better standards of service, but this might take time to become visible, owing to supply-side restrictions (e.g. length of time for specialist training to enter the profession). In the meantime, some interim measures might be required for policy monitoring, such as the number of new entrants into the profession or survey-based measures of perceived ease of entry.

- Finally, under this item, there is the question of what is the appropriate division of work between national and European statistical agencies, the national governments responsible for implementation, and organisations such as the European Commission, the Organisation for Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF) that monitor the actions of their members?

- The third issue raised in the paper was data on bank lending. Essentially, users want to know who is lending to whom, for how long and on what terms? There is potentially a lot of information already available through sources such as the Bank for International Settlements (BIS). The challenge here is to decide which information is most pertinent and how to present it in standardised formats that are informative.

The paper presented by Catherine Tahmee Koch and Claudia Buch, co-written with Michael Koetter, is an example of what can be done with data on the financial system. The paper uses detailed data on German banks held by the Deutsche Bundesbank – data that are confidential and can only be analysed on site. They were assembled from external position reports and balance sheets, etc. and cover over 2,000 licensed German banks.

The data are for the period 2003-06, which predates the financial crisis. Since there are also data on direct regulatory interventions, it was possible to estimate the probability of a bank suffering some form of distress event (about one in ten of the smaller banks) or of having non-performing loans (the relevant metric for the larger banks).

The authors' econometric analysis finds that internationalisation reduces market power at home, especially when carried out via subsidiaries, because the costs involved in monitoring a diverse portfolio may be large relevant to the gains from diversification. However, the more detailed results show why it is necessary to have large datasets with enough detail and observations to permit sub-sample analysis:

- The authors note that the results are driven by the cooperative banks in the sample. How they behaved in that particular period might not be typical either of German banks as a whole or even of the same cooperative banks in a different period.

- The more detailed analysis also shows that the results are driven largely by the fourth size quintile.

Finally, the issues addressed are of importance to policy-makers. There is an active debate about whether or not there is a trade-off between competition and stability in the banking system and about the types of regulatory and market arrangements that should be pursued to optimise the balance.

DISCUSSION SUMMARY

In his introduction, **Jozef Makúch** (Governor, Národná banka Slovenska) stressed the importance of coherent, timely and comprehensive financial and non-financial statistics for policy and public use. High-quality data should be published as early as possible and with minimal subsequent revisions. The challenge for statistics providers is to achieve a balance between publication timing and data quality, bearing in mind that statistical data are increasingly complex and must be properly communicated and presented to the final users. If the data and their meaning are clearly understood, they can contribute to fulfilling the policy requirement and to the proper functioning of the economy as a whole.

Natacha Valla (Chief Economist and Executive Director, Goldman Sachs) spoke about the need for market participants to analyse accurate and reliable public finance statistics in order to better understand policy decisions. The political dimension incorporated in data revisions brings to the fore the need for independent statistical offices. Moreover, higher frequency indicators for monitoring the progress of structural reforms in the public sector are seen as critical for the correct analysis of public finance data. Finally, she highlighted the strong market demand for enhanced access to information that is currently confidential, including data on central banks' balance sheets and on the allocation of risks in intra-ESCB monetary policy operations.

In their work, **Jens Larsen** (Chief European Economist, Royal Bank of Canada Capital Markets) and **James Ashley** (Senior Economist, Royal Bank of Canada Capital Markets) described a stylised framework applied by financial sector economists before and after the financial crisis. In his presentation, Mr Larsen underscored the challenges in interpreting a more complex and multi-dimensional world. He advocated a balance and coherence between financial and non-financial statistics. Providers of statistics in national central banks and in the statistical offices are expected to improve data presentation to help users understand the evolution of several economic variables acting together, also for the benefit of the press. Moreover, having the possibility to aggregate and compare data, without transforming and reconstructing basic information, is more urgent than ever.

Cathérine Tahmee Koch (University of Zurich) and **Claudia Buch** (University of Tübingen) presented their study, co-written with **Michael Koetter** (University of Groningen), on the causes and effects of the internationalisation of banks. They explained the benefits of studying micro data: for example, the external positions reports provided by the Deutsche Bundesbank to capture the heterogeneity of the banking sector are a relevant factor in the internationalisation of banks. They presented evidence on the trade-off between banks' risks and their market power, and commented on the behaviour of banks prior to and during the financial crisis.

Walter Radermacher (Director General, Eurostat) gave his view on the economic statistics at the service of market participants, emphasising many

points linked to the changed economic environment in the aftermath of the financial crisis. He attached particular importance to the strategic orientation in developing statistics so as to meet users' demands for more reliable data that fulfil short and medium-term analysis. In view of the paucity of resources, he mentioned that there is a need to set priorities between reliability and timeliness. Eurostat has met the challenges posed by the different nature of data through a series of initiatives. The way modern communication tools can enable statistics to be developed and made accessible, along with the question of "what" statistics to produce, has received particular attention. Strong cooperation between Eurostat and the European Central Bank, and their political independence, are key factors in ensuring the efficiency and effectiveness of statistics.

In the discussion, **Adelheid Bürgi-Schmelz** (Director, Statistics Department, International Monetary Fund) analysed the work of Jens Larsen and James Ashley, noting with interest the authors' proposal to free up resources by not publishing statistics at the earliest opportunity. She observed, however, that users demand more and more high-frequency data. She praised the insightful observations contained in Walter Radermacher's presentation and proposed expanding the topic of data accessibility by presenting the key constraints in using confidential data. She concluded by pointing to the implications of budgetary cuts on official statistical systems, and by advocating the maintenance of budgetary resources in order to meet the demand for increasingly important statistical work.

In the discussion on Natacha Valla's presentation, **Mark Beatson** (FTI Economic Consulting, replacing **Vicky Pryce**) analysed the priority areas presented, such as the need for transparency concerning macroeconomic forecasts of government finance statistics. Furthermore, he highlighted the need to measure progress in structural reforms from their intermediate steps to final implementation. An example of this would be how to measure the number of employees working in activities in sectors that are subject to the liberalisation process. As for the paper presented by Cathérine Tahmee Koch, he expressed the hope that data similar to that used for the analysis of the German banking sector would become available for all other European countries.

Natacha Valla explained that it is critical for non-expert users to understand the distinction between raw data and composite or model-based indicators. Another critical issue is to clarify the responsibility of each institution and the rationale behind the allocation of tasks between national central banks and statistical offices, as compilers of data. For instance, stressing the independence of central banks or the high quality standards applied by national statistical offices increases data credibility.

Jens Larsen questioned the necessity of obtaining several data estimates before the final data are published. He agreed that there is high pressure from the G20 to fill data gaps, which are due to the long time necessary to establish statistical frameworks and gather substantive information. As an indirect user of statistics and participant in financial markets' decisions, he agreed with the limits to accessing confidential data. However, access should be given to those that

contribute to the important and growing body of empirical evidence based on macroeconomic data and to financial research.

Cathérine Tahmee Koch remarked that it is ambitious to merge different banks' datasets. However, it can be envisaged to start with one data system, adding the others step by step and overcoming issues of data confidentiality.

Walter Radermacher compared the relationship between statistical offices and "true data" to the relationship between the Courts and Justice; in both cases it is impossible to measure the "truth" with absolute certainty. He clarified that there is an ongoing discussion on the main products to offer and their quality standards. He also agreed on the point that it is important to establish and clarify "who does what". He underlined that the trade-off between timeliness and reliability is a moving target which depends on culture. In the United States, for example, users can "handle" revisions, while in Europe, revisions are interpreted as mistakes.

Werner Bier (Deputy Director General Statistics, European Central Bank) expressed to Natacha Valla his satisfaction that there is increased interest in government finance statistics. He asked which additional data are being requested by financial markets. He clarified that although aggregate data on expenditure and debt are harmonised and comparable at the higher level, more detailed information cannot be compared because institutional settings are heterogeneous. At the detailed level, the best data source would be national data, sub-divided by regions, or monthly cash data (which are not comparable but widely available), as well as the Principal European Economic Indicators (PEEIs).

Natacha Valla replied that a better explanation of the differences between "central", "general" and "regional" government is indeed needed. She added that broader datasets are desirable, for example, including stock-flow adjustments to government finance statistics to clarify why debt and deficit figures do not match.

Walter Radermacher announced the publication of the spring notification of government debt and deficit data on the Eurostat website, including details of stock-flow adjustments to the data.

FUTURE CHALLENGES FOR CENTRAL BANK STATISTICS

JOSÉ MANUEL GONZÁLEZ-PÁRAMO

On behalf of the Executive Board of the European Central Bank (ECB), let me warmly thank you for your attendance at and valuable contributions to the sixth ECB Statistics Conference. Please allow me to make a few concluding remarks before the end of this successful event. This is the last time that I will be able to attend this conference as a member of the Executive Board of the ECB and I greatly appreciate this opportunity to address such a distinguished audience.

As the media and the markets repeatedly remind us every day, there is much at stake as regards the future of the European project today. Indeed, the credibility of European integration is being challenged for reasons that no responsible policy-maker can afford to disregard. Although the European System of Central Banks (ESCB) has been successful in achieving its main objective, which is to maintain price stability, let us not forget that, under Article 3 of the Statute of the ESCB and of the ECB, the ESCB is also responsible for contributing to the stability of the financial system. This is why I greatly appreciate the focus and title chosen for this conference, which reflect the contribution of central banking statistics to both the maintenance of price stability and the mitigation of systemic risks.

The system and processes for producing statistics that are used directly for monetary policy purposes are well advanced in terms of their accuracy, timeliness and coverage. The compelling question is therefore whether these statistics could also serve the needs of financial stability policies and macro-prudential supervision. As you very well know, the answer to this question is "yes, but with some limitations", or rather "yes, but the data currently available are not sufficient". Rather than being discouraged by this, I would call upon you to accept this shortcoming as a challenge to be taken up in your future work.

But what exactly are the most pressing challenges that we face in this area?

As you have already discussed in detail throughout the conference, monetary statistics tend to provide us with aggregated data. There are, of course, very good reasons why this is the case, but for the purposes of macro-prudential analysis, it would be more useful if the data were also consolidated at the level of individual banking groups. In addition, not only banks, but also insurance companies, pension funds and ideally the entire financial system, including the shadow banking sector, should be covered in order to effectively help policy-makers identify potential sources of systemic risk. Furthermore, data with sufficient granularity are instrumental in macro-prudential analysis in order to take both averages and distributions into account. In turn, the microfoundations of aggregates must be explored. In seeking ways to overcome these shortcomings, I am impressed by the convincing – and in fact converging – arguments, proposals and suggestions that have emerged during the discussions at this conference.

When considering the different ways in which we can try to close the existing data or information gaps, there are essentially three options: i) launch a new data collection effort; ii) make better use of existing data; and, perhaps most importantly, iii) revisit the data collection processes that are currently in place. We are fully aware that, regardless of whether the first or second options are adopted, we will in any case have to review our existing data collection processes.

As regards the collection of new data, it is widely agreed that we cannot merely impose additional reporting requirements on reporting agents – irrespective of the size of the data gaps that we need to fill – before having thoroughly considered all other possible alternative solutions. While an overall increase in the reporting burden may well be justified in individual cases, insofar as it is clearly supported by a cost-benefit analysis, this should only be the last resort after all other options have been exhausted.

For instance, concerning the issue of how to make better use of the existing data, work is under way to help reduce the number of overlapping data collection efforts. A prominent example of this is the work being carried out under the auspices of the ECB and the European Banking Authority (EBA) to reconcile credit institutions' statistical and supervisory reporting requirements. In this context, I would like to recall that the second version of the classification system linking the requirements of the ECB's monetary and financial statistics with the supervisory reporting templates (FINREP, COREP and Large Exposures) developed by the EBA was published last month on the websites of both the ECB and the EBA.

I welcome and encourage all initiatives to review our data collection processes in a comprehensive way. A strategic shift towards granular, multi-purpose data collection and more integrated data production processes can effectively reduce the burden on reporting agents and, at the same time, deliver more information to data users. Indeed, in attempting to collect more micro data (such as through the ongoing Eurosystem project to collect securities holding statistics on a security-by-security basis), we will face the challenge of finding ways to adapt more flexibly to new user demands without imposing additional reporting requirements on data reporting agents. These efforts should be reinforced by establishing harmonised data collection frameworks common to central banks and supervisory authorities. The trade-off between the reporting burden and the amount of information available has to be tackled at its roots, owing to the ever-growing likelihood of additional, unforeseeable requests for data on an ad hoc or regular basis. Multi-purpose data collection offers a viable solution to this problem and, given the present scarcity of resources, there is virtually no alternative avenue to enable central banking statistics to successfully serve both Eurosystem mandates. Any belief to the contrary will, in my opinion, inevitably meet with disappointment.

This type of approach should not be pursued only by statisticians. The importance of having an adequate legal framework for sharing with statisticians confidential data collected for supervisory purposes should not be underestimated. Indeed, the legal framework empowering the ECB to collect data is designed to allow

the exchange of confidential information within the ESCB in order to compile statistics. Statisticians are well aware of the need to protect data confidentiality and have strict procedures in place to safeguard the confidentiality of all types of information used in their statistical compilation processes. Legal obstacles, however, still remain in the case of data collected from reporting agents for other purposes, such as supervisory purposes. Within the existing European supervisory architecture, confidential information is not only collected by the various competent national authorities that may share information with the European Supervisory Authorities but is also collected and exchanged on the basis of a wide range of legal acts, each with their own different characteristics. In practice, this framework does not facilitate the smooth exchange of confidential information. This is why I am very supportive of any change in the legislation which is aimed at facilitating such exchanges but which at the same time ensures strict protection procedures for confidential data. I would emphasise this approach.

Confidentiality issues are of course ever-present in these discussions and, to a certain extent, hinder progress. This could partly be attributed to a European tradition which attaches great importance to keeping supervisory information confidential, and which stands in contrast to traditions on the other side of the Atlantic, such as those reflected in the practices of the US Federal Financial Institutions Examinations Council, which publishes a wider range of supervisory information on banking institutions operating in the US market. We fully respect legitimate reasons for keeping certain information confidential, but would also call for more transparency towards market analysts and financial market participants. In any event, such a call for more transparency does not obviate the importance of having a more sophisticated legal framework and practical arrangements for sharing confidential data among the relevant authorities in order to support their respective tasks. The purpose of such a legal framework and arrangements must be to avoid duplication of data requests, to reduce the reporting burden, and to ensure that policy actions by decision-makers are not rendered ineffective owing to lack of access to information that has already been collected. Hence, I count on the support of the European and national authorities, as well as the industry, to strive for this common goal and overcome confidentiality constraints and obstacles to the exchange of data to support the tasks of decision-makers.

Concerning economic data, we have seen evidence of the need for further work on the development of these statistics, as they are now increasingly coming under scrutiny from policy-makers and financial market participants. The excessive deficit procedure mechanism and the new alert mechanism put in place by the European Commission to detect and correct macroeconomic imbalances on the basis of a scoreboard of indicators are adding pressure on statisticians to deliver high quality data. In this context I would like to stress the importance of establishing good cooperation between central banks and national statistical institutes, both at the EU and the national level.

I would like to conclude my remarks today by assuring you that the ESCB will further develop its statistics so as to better fulfil the mandates given to the ECB and to the European Systemic Risk Board.

The sixth ECB Statistics Conference is coming to an end. The last session will take place after lunch, at which Peter Bull will present his book on ESCB statistics to mark the 20th anniversary of the ESCB Statistics Committee.

Ladies and gentlemen, allow me to finish by thanking the chairs, the speakers, the discussants and the many distinguished participants in this conference. You have provided excellent contributions and reflections on strategic issues for the future development of ESCB statistics. It has been a very good opportunity to enhance our cooperation and to identify challenges to the supply of timely, relevant and reliable statistics for both monetary policy and financial stability purposes. I hope that our fruitful cooperation will continue in the future.

Thank you very much for your attention.

Aurel Schubert and Mario Draghi

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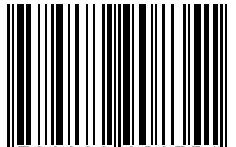Authority, Banque de France

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