

Communicating central banking statistics: Making useful sense of statistics in a dynamic world¹

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Abstract:

Trustworthy statistics have a welfare-enhancing effect in society and constitute a knowledge base that is fundamental to sound decision-making, not only at policy level but in the marketplace, in academia, in the corporate world and among European citizens in general. The world of statistics is continually challenged by its remit to reflect and explain in further detail complex financial and economic phenomena, as well as their relative importance in, and impact on, today's society. This, combined with an exponential growth in the volume of data from private sources, affects the way in which official statistics are represented and communicated.

This paper highlights the challenges faced by statisticians in communicating statistics in today's society. It asserts that the future of statistics communication lies in the ability of statisticians to proactively extract relevant statistics, and with this information explain the dynamics of today's financial and economic environment, in context and in a way that is tailored to the different user groups. The statistician must render the information easily understandable and user-friendly for policy-makers, market actors and frequent user groups – thereby proactively guiding the non-layman through an ever-increasing supply of publicly available statistics and concepts, and making a necessary contribution to sound decision-making in today's dynamic society.

Keywords: statistics, communication, decision-making, segmentation, usability.

“Nothing is more important for monetary policy than good statistics”

Alexandre Lamfalussy, first President of the European Monetary Institute

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Using statistics to support a European “culture of stability”

The provision of statistics has a welfare-enhancing effect in society² and is a key tool in creating a knowledge-based culture, leading to credible and sound decision-making on the part of policy-makers, researchers, advisors, analysts and the general public at large.

The Eurosystem³ and the European System of Central Banks (ESCB)⁴ have a vested interest in communicating statistics and in ensuring that their statistics are well understood, and used, by the general public. It is widely agreed that fostering transparency with regard to monetary policy decisions and their underlying motivations contributes to an efficient and effective transmission of these decisions throughout the economy. By communicating understandable and useful statistics, statisticians support a knowledge-based society and facilitate the acceptance of central banking decisions. The challenge is to communicate and present statistics in such a way that a “culture of stability”

emerges in society⁵, supporting the objectives of central banking. For instance, the general public are more likely to accept central banking decisions if the statistics underpinning those decisions are understandable, easily available and easily applied in their economic context – the user must be able to use the statistics to replicate, document and support the analytics, recommendations and decisions of central banks. In this way the statistics foster clarity and transparency in today’s democracies and society as a whole. Furthermore, recent research suggests that, in many countries, more and better central bank communication has contributed to a notable improvement in predictability of monetary policy decisions^{6,7}, and that central banking transparency contributes to reducing financial market volatility⁸. Statistics – as the underlying motivation behind decision-making – are like a stream of pictures reflecting the dynamics within society; they represent a snapshot of the health of our society and of the interaction, or flows, within and between the financial system and the real economy. These continuous pictures allow market actors and policy-makers to take informed and evidence-based decisions, leading to the most

² Angeletos and Pava (2004) and Morris and Song Shin (2000).

³ The Eurosystem comprises the European Central Bank (ECB) and the national central banks (NCBs) of those countries that have adopted the euro.

⁴ The ESCB comprises the ECB and the NCBs of all (27) EU Member States (Article 107.1 of the Treaty establishing the European Community) whether they have adopted the euro or not. The Eurosystem and the ESCB will co-exist as long as there are EU Member States outside the euro area.

⁵ See Stark (2006).

⁶ See Blinder, Ehrmann, Fratzscher, De Haan and Jansen (2008); and van der Cruijssen, Jansen and de Haan (2010).

⁷ Blattner, Catenaro, Ehrmann, Strauch and Turunen (2008).

⁸ Jansen (2010).

efficient allocation of resources in society – a society that is safeguarded and protected by real purchasing power (of money and income), as guaranteed by good monetary policy decisions. *Ceteris paribus*, the increased availability and accessibility of good quality statistics leads to a better understanding of economic and financial phenomena, and contributes to evidence-based policy-making and the subsequent acceptance of stability-oriented policies. Statistics ensure transparency for sound decision-making and constitute a tool with which to assess the impact of such decisions; this assessment then feeds back into an enhanced political debate, adding value to decision-making in society.

Statisticians should not underestimate the importance of official (monetary, financial and other economic) statistics for policy and decision-making, nor the added value they bring to society. Statistics are the core building block of economic and financial analysis, and the availability of trustworthy and timely statistics is necessary for any effective assessment of current and future monetary and economic decision-making. Equally important is the ability of economic agents and the media to use these sets of statistics for their own assessments and communication purposes: this is a fundamental factor in driving the development of financial and economic discussions, ensuring transparency with regard to the dynamics within societies,

and making policy-makers accountable for policy decisions.

In this regard, the role of statistics communication has its challenges. In a fact and evidence-based democracy it is important to guide and support the users (with our unique statistical knowledge and know-how), encouraging them to use a complete set of appropriate official statistics, available to the public at large. National and European institutions, policy-makers, market participants, forecasters and analysts may be selecting by guesswork, on their own, which and what kind of statistics to use, with the risk of confusion and of a misrepresentation of the health of the economy, which could have an impact on the soundness of decision-making. Policy-makers should spend their scarce resources on policy formulations, not on debating which sets of statistics to choose and from which sources. Statisticians cannot and should not give up to non-laymen their responsibilities – searching for evidence, facts and numbers – nor should they expect non-laymen to understand the wide variety of statistical terminology, the various classifications and collection methods, and the possible impact these may have on the factual representation of today's dynamic and complex economies, not to mention the challenge of comparing international

statistics from several geographical areas⁹. One could say that statisticians have an obligation to demonstrate the purpose of good statistics and how to use them, facilitating this use by weeding out bad statistics from the large and complex pool of freely available information.

The successful communication of statistics is becoming an even more pressing issue, as the perceived remoteness of, and reduced trust in, national and European public institutions¹⁰ is likely to continue. European citizens demand that European institutions justify their existence and that they are transparent and accountable for their actions, providing impartial and reliable statistics, among other things, for this purpose. The Eurosystem therefore needs to step up its efforts and provide tailored and enhanced statistical information that is useful for its own purposes and for its citizens. The perceived remoteness of the European institutions most likely leads to confusion over their responsibilities, and can lead to rejection on the part of the citizens if the latter do not feel that the statistics are useful in

⁹ Try comparing a known and long-available financial concept, such as debt securities, across geographical areas. The unique statistical knowledge and know-how needed to obtain useful and comparable debt securities statistics for the euro area, the United States and Japan could be said to merit PhD status. Not to mention the impacts of seasonal adjustment practices and revisions.

¹⁰ Special Euro barometer No 323, "Europeans' knowledge of economic indicators", European Commission, January 2010; and Euro barometer No 74, European Commission, February 2011.

guiding European and national decision-making processes, as part of the political agenda and public discussions. Central banking communication plays a fundamental role in restoring trust and confidence among market participants¹¹.

The statistical work of the Eurosystem¹² is unique in this respect, as it entails the defining of harmonised international statistical concepts and the provision of meaningful and comparable euro area and national statistics to support the statistical needs of the ECB, the ESCB, the European Systemic Risk Board and economic policy-makers in general within the European Union. The specific statistical function of the Eurosystem and the reliability of its statistics are guaranteed and safeguarded by the principle of "independence", as reflected within the Treaty provisions¹³.

¹¹ European Central Bank (2009).

¹² There are two European statistical systems: one is that of the ESCB (the ECB and the 27 NCBs) and the other is that of ESS (Eurostat and the 27 National Statistical Institutions (NSIs)). The two systems work in parallel and closely together, with no statistical overlap, as reflected within, and updated from time to time in, the related Memorandum of Understanding.

¹³ Article 130 of the EU Treaty (ex. Art 108 TEC) grants the ECB far-reaching independence. The Treaty explicitly stipulates that, when exercising their powers, neither the ECB nor any member of its decision-making bodies may seek or take instructions from Community institutions or bodies, from any government of a Member State or from any other body. The Treaty further states that the Community institutions and bodies and the governments of the Member States must respect this principle and must not seek to influence the members of the decision-making bodies of the ECB.

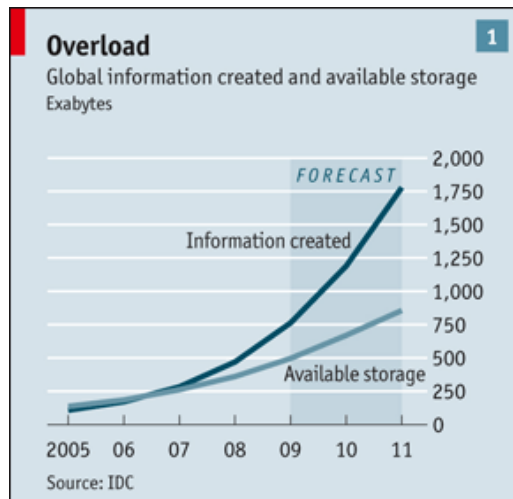
The Eurosystem has a particular comparative advantage in providing economic, monetary and financial market statistics for the euro area, and in this context can help both to foster and strengthen the European Union identity and to make Europe more tangible for its citizens, while preserving local and regional identities. There is increasing interest in the evidence that underpins policy decisions, as decisions are increasingly based on and justified by relevant and reliable quantitative information, and policy results are documented by factual statistics. The vast amount of statistics available to the Eurosystem is an enormous asset in terms of reputation, and could, with minimal effort, be used in a more proactive way with significant impact. Therefore, statisticians have the responsibility and the mandate to proactively contribute to the fulfilment of this important statistics communication task. The European institutions need to accept their role as a “statistical competence centre for Europe”. Owing to the global economic importance of statistics, the role of these institutions includes the responsibility of providing easy access to their statistics ¹⁴.

The challenge of communicating statistics in today’s society

Rapid advances in information availability, information technology and globalisation have led to a significant transformation of the economic landscape, which presents statisticians with new opportunities and challenges. The amount of statistics made available to the public has increased significantly, in terms of the number of time series, the quality, and the number of sources. This is important in today’s information age, and in a communication context, as the available (competing and overlapping) data volume is already tremendous and is expected to continue to increase exponentially in the future.

¹⁴ Liebscher and Schubert (2008).

Graph 1: Expected increase in information available to society ¹⁵
(expressed in exabytes¹⁶).



Source: The Economist (2010).

The increase in data has been dubbed an “industrial revolution of data”¹⁷ by the industry, and the concepts of “data” and “information” are becoming interchangeable, as the two are increasingly difficult to separate.

The increasing data volume poses a significant risk of information overflow, and pinpointing the relevant statistics is, as a result, an ever more complex task for

users, which may lead to decreasing accessibility of statistics and a reduction in their use.

Information theory confirms that information overflow can be detrimental in a social context. Information overload is likely to have a negative effect not only on individuals, but also on society as a whole, which can lead to psychological and social problems¹⁸. The explosive development of the internet and related information and communication technologies has brought into focus the problems of information overload, and the growing speed and complexity of developments in society. People find it ever more difficult to cope with all the new information they receive, and with the constant changes in the organisations and technologies they use. Part of the problem is caused by the fact that technological advances have made the retrieval, production and distribution of information so much easier than in earlier periods. This has reduced the natural selection processes which would otherwise have kept all but the most important information from being published. The

¹⁵ For instance, Walmart, a retail giant, handles more than 1 million customer transactions every hour, feeding databases estimated as holding more than 2.5 petabytes. Facebook, a social-networking website, is home to 40 billion photos. A vast amount of information is shared.

¹⁶ An exabyte is a unit of information (a measure of the required computer storage space) equal to one quintillion, or 1,000,000,000,000,000,000, bytes (1 billion gigabytes or 1 million terabytes). The graph shows that the amount of global information created is currently close to 2000 exabytes, and continues to increase.

¹⁷ Joe Hellerstein, University of California in Berkeley. Source: The Economist (2010).

¹⁸ Information overflow is not a new social topic. For example, in 1997 David Shenk wrote “Data Smog: Surviving the Info Glut” for the Technology Review. It should be noted that other factors contribute to the “fatigue”: for example, the speed of “changes” within society. The psychologist David Lewis has proposed the term “Information Fatigue Syndrome” to describe the symptoms of information overload. Other effects include anxiety, poor decision-making, difficulties in memorising and remembering, and reduced attention span. (Reuters Business Information (1996)).

will soon become the “sexiest” around²¹. Herein lies the challenge for statistics communication: to develop new techniques with which to manage, organise, and become the “storyteller” – adding value and making sense of statistics. This requires an ability on the part of the statistician to understand users’ needs and their associated working processes, as part of reaching out to users and communicating tailored statistics. With statisticians working in this way, new and additional statistics would not add to the data noise in society and the information overload, with its associated unintentional negative effect on society²², ²³. The challenges to the statistician in communicating statistics in today’s information society are presented in Table 1 below.

²¹ The Economist (2010).

²² Morris and Song Shin (2002).

²³ Orphaides, Dale and Österholm (2008).

Table 1: The challenges faced by statisticians in communicating statistics in today’s society, with increasing private and publicly available information.

Source of information overload²⁴	The challenges faced by statisticians in communicating statistics
Too much information available	How to avoid overload of publicly available information with its negative impact in a social context. How to select and present relevant and tailored statistics to users.
Cannot understand the information	How to communicate in a language and form that is easily understood by, and presented to, non-laymen. How to explain statistics.
Do not know if the information exists	How to facilitate the search for information and promote the available statistics. How to follow developments in society as regards making statistics known. For instance, internet users now use independent “search engines” to find information/statistics, as an alternative to “navigating” through websites.
Do not know where to find the information	How to serve the users by providing good quality statistics and assisting them in finding the relevant statistics. Here the challenge is to overcome the release of an enormous volume of statistics from large databases and to guide users towards, and pinpoint, the relevant statistics. How to actively reach out to users with relevant and tailor-made statistics.
Cannot access the information	How to simplify and overcome technical and knowledge barriers to accessing statistics. How to provide statistics via multiple channels and in multiple forms, so as to provide easy access to statistics for different user segments within society.
Do not know if the information is accurate	Here the statisticians have a competitive advantage. They have the ability, with their unique statistical knowledge and know-how, to guide and assist the users in accessing relevant, appropriate and good quality statistics, as part of the process of crowding out bad quality statistics.

²⁴ The Global Development Research Center (www.GDRC.org).

The concept of communicating statistics in today's society

The challenges to statisticians caused by information overload cannot be ignored and must be taken into account as part of the statistics communication framework. Furthermore, considering the diversity of the euro area, a “one size fits all” approach may not be realistic: statistics need to be tailored to different needs and communicated directly to each of the various types of user. This is supported by the fact that central bankers cannot possibly hope to turn every citizen into a trained economist or a financial wizard – nor should this be the aim, if the bank wants to make a measurable impact. The following challenges must be considered within the Eurosystem's statistics communication framework: (i) tailoring statistics to the economic and financial context; (ii) focusing on knowing the users and understanding their needs and working processes; (iii) using media channels and other forms of presenting statistics; and (iv) having the ability to understand trends in society and the use of associated terms and language.

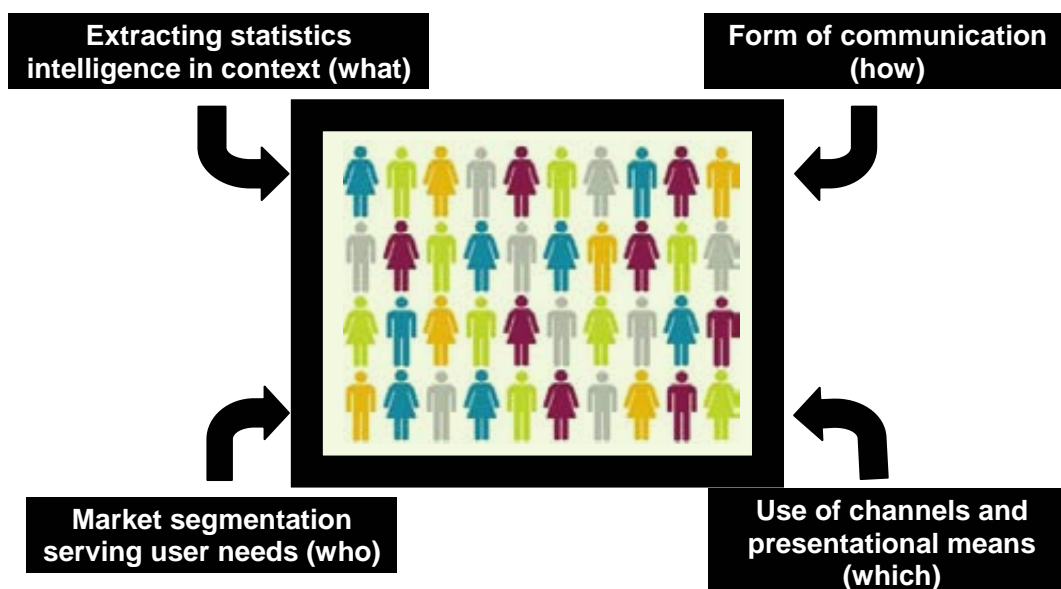
The fundamental concept of communicating statistics is about bringing statistics closer to the citizens of Europe²⁵.

This statistics communication concept is presented in Graph 3 below:

²⁵ Citizen is used as a broad term to cover all types of users, such as central bankers, decision-makers, policy-makers, written and electronic media, news and wire services, financial analysts,

researchers, relevant interest groups and federations at national and international level, academia, and in more general terms the corporate and household sectors (in non-statistical terms “non-banking businesses” and “retailers”).

Graph 3: The concept of communicating statistics



Extracting statistics in context

This process starts with a thorough understanding of the concepts behind the official statistics that are released in an economic and financial context. The process involves defining the scope of the statistics and the value they bring to society; and defining what type of policies, and which functions and tasks, they serve. In this way a statistical intelligence concept is generated, whereby statistical knowledge and know-how are applied in order to explore and understand publicly available statistics, the related concepts, and possible overlaps and limitations. One of the most effective tools of a central bank is the power to gather and explain statistics and policies in a credible manner, owing to the long-held reputation of national central banks for providing independent, factual, and credible explanatory statistics. The

European citizens can lean on, and trust, central banks²⁶. The indirect benefit for the citizens is that they can have confidence in the euro area inflation rates always remaining below, but close to, 2% over the medium term. It is acknowledged that an informed public – a public that understands the role of central banks in the economy – will be far more likely to understand and accept the reasoning behind the difficult decisions that central banks have to make than an uninformed public. The central banking community should therefore focus on the explanatory power of its statistics, and on extracting intelligence and tailoring it to clearly defined, segmented user groups.

²⁶ If you cannot trust a central banker, who can you trust? This is closely linked to the indisputable independence of the ECB and NCBs as stated within the EU Treaty. (See footnote 13).

Market segmentation

The diversity of the euro area is reflected in the richness of its cultures and market structures, and, as a result, using a “one size fits all” concept for communicating euro area statistics to users gives rise to significant challenges, as well as the likelihood of making only a marginal impact. For instance, within the euro area there are 331 million citizens, speaking 15 official languages. In addition, there are over 60 regional and minority languages, spoken regularly by 40 million citizens^{27,28}. Of course, the languages and the diversity of our cultural heritage illustrate just one complexity in reaching out to euro area citizens, relating more to the form of communication (see below) than to the art of knowing the characteristics of the users, their needs, how they use the statistics and for what purpose. The objective in segmenting statistical users is to acquire the ability to serve a certain group of users with a set of tailor-made statistics, which better fit their purpose and which are formed in such a way that they facilitate, and integrate into, the users’ business processes. The need to segment statistics users arises from recognition of the

diversity of user needs: we cannot try to please all with one large pool of statistics or one strategy. This becomes all the more relevant for statistical institutions releasing large quantities of statistics to the public. There is a clear need for the statistical community to define its segmentation strategies, and its criteria for grouping users into homogeneous groups with similar needs²⁹. Euro area statistics released outside the central banking community may be geared more towards professional users, researchers, and monitors of central banking activities, including journalists. This renders the role of journalists even more important, as it is their task to communicate central banking policies and the supporting statistical evidence to the citizens of Europe. As a preliminary step, the target audience can be divided into at least three broad-based market segments,³⁰ namely: (i) financial market users and observers; (ii) the research community and higher education; and (iii) the media.

²⁷ The most widely spoken language is Catalan, with 7 million speakers in Spain, France and the town of Alghero in Sardinia; and the Celtic language is spoken in France, Ireland and the United Kingdom.

²⁸ European Commission Multilingualism, available at http://ec.europa.eu/education/languages/languages-of-europe/doc141_en.htm

²⁹ Do these segments need to be mutually exclusive or can the target groups overlap? What roles do culture, race, gender, language, nationality, profession, age and income play? Should segmentation be different for each geographical region?

³⁰ These three market segments can be broken down into smaller orthogonal segments with different specific needs.

Table 2: Preliminary segmentation of users of central banking statistics.

Financial market users and observers	Research and higher education	The media
<ul style="list-style-type: none"> • Financial analysts • ECB watchers • Banks and financial intermediaries • Other financial agents • Reporting agents • National & international interest groups • Financial and economic policy-makers • International organisations 	<ul style="list-style-type: none"> • Research institutions • Universities • Political advisors • Research departments in national and international institutions • Ministries • Parliaments 	<ul style="list-style-type: none"> • Journalists (general) • Journalists (financial markets) • News wire services • Radio reporters • TV reporters • Internet /web-based news channel authors • Financial magazine reporters • Data vendors • Social media networks

Channels

The individual user groups can be reached via different dissemination channels, and they will react differently to the various forms of communication³¹. The way in which statistics are presented becomes vital in facilitating the users’ understanding of the statistics, and in enhancing their usability: they must be presented according to the needs of the various user segments. There are ample tools available on the market to assist statisticians in this regard, such as web-based movies, interactive tables, new graphical tools (infographics statistics), the ability of users to “slice and dice” statistics, touch-screen gadgets, and mobile technology³². Information sessions

with journalists and other written and electronic media reporters can be set up, as well as workshops with financial analysts and members of the banking community. In addition, TV and radio spots and other facilities can be used, which are standard communication channels used by the corporate sector but not necessarily by statisticians. Knowledge and understanding of user needs and their working methods are needed to facilitate the integration of statistics into their regular business processes. For instance, many newspaper journalists have data teams that scour the public space for evidence and statistics that can support the story of the day, and they present this information in tables and graphs in their respective magazines and newspapers. How can statisticians assist these data teams in using and replicating graphs and tables and telling today’s story? Further research is needed to better understand the effects of using different communication channels and

³¹ TV and newspapers are mainly used by the older section of the population, and both channels have decreasing market shares.

³² This includes the service of receiving new M3 figures by SMS, similar to receiving your airline boarding card on your mobile.

presentational forms, and the impact of each method on different cultures and on the behaviour patterns of users, with a view to achieving repetitive recognition and ensuring that official statistics are frequently used.

Forms of communication

The art of communicating statistics is often underestimated. The main aim is to communicate statistics using language and terminology that are recognisable to, and commonly used by, the user segments. This is no mean feat: the challenge in the euro area is to communicate statistics to 331 million citizens, with a huge variety of cultural and language backgrounds. A conscious communication strategy is required to fully utilise the explanatory power of statistics and to gain the ability to select and convey statistical information with sufficient accuracy, as part of representing official statistics and contributing to the crowding out of imperfect information. Here again the central banking community has a competitive advantage based on the long-held reputation of central banks for providing independent, factual, and credible explanatory statistics. Unless a policy and the statistics underpinning it can be justified and explained, it will not be understood and the institution carrying it out will lack credibility.

Challenges ahead for communicating statistics

The challenge for statisticians lies in knowing, understanding and combining the four complementary concepts of communicating statistics (Graph 3 above) and how these interact, in order to make an impact on today's decision-making process in the midst of an ever-increasing pool of publicly available information.

This challenge becomes more evident in periods of economic uncertainty and in periods characterised by a conscious tightening of financial and budget resources, and calls for (i) closer cooperation and exchange of knowledge and experience within the statistical community on communication matters; (ii) cooperation and the creation of partnerships among public and private corporations at the national and international level; and (iii) the sharing of tools and methods among statisticians.

The European Central Bank is in the preliminary stages of initiating such work, by experimenting, for example, with:

- visualisation tools demonstrating the movements and changes in (i) euro area government deficit and debt levels; (ii) inflation rates; and (iii) euro area yield curves;
- producing videos that explain how and by whom European statistics are provided, and how to access and use the statistics;

- cooperating with universities with a view to understanding user needs and market tools;
- extracting statistics and placing them in other internet domains for easy access (new dissemination domains for reaching young user groups);
- cooperating with data vendors to facilitate the usage of statistics among the banking community;
- social network groups, as a way to reach a new target audience - the ECB now has a YouTube channel;
- electronic publications for the iPad and tablet PCs; and
- statistics for mobile devices (this initiative is currently in the planning stage).

The ECB itself, as part of its educational programme, has also launched two new games – “Economia” and “Inflation Island” – which are available on the ECB website; the bank will also initiate a Europe-wide school competition in a bid to help improve young students’ knowledge of economics and monetary policy.

Conclusion

A central bank has the obligation to be transparent, as part of fulfilling the accountability requirements of a democracy. The provision of statistics makes a positive contribution to public welfare and is a key tool in creating a knowledge-based society, leading to credible and sound decision-making.

In terms of making an impact in today’s society, statistics communication is a challenge in many ways. This challenge relates to the communication and presentation of useful statistics that are easily understood by, and accessible to, decision-makers and other users of statistics, so as to contribute to a “culture of stability” in society. A “culture of stability” will emerge once the general public better understand the underlying motivations of today’s decisions. A better understanding of statistics and the associated decisions leads to a higher acceptance of and trust in the decision-making institutions and in society in general.

In a modern society where the public are continuously overloaded with statistics and information from public and private sources, statisticians have the responsibility – with their unique knowledge and know-how – to guide and support users, and to pinpoint for them a complete set of

meaningful statistics that can be used by decision-makers, market watchers, forecasters, analysts and other market actors/users. Statisticians have to live up to their responsibility to support non-laymen in selecting evidence and facts, and to communicate such statistics – with their associated statistical terminology, classifications and collection methods – in a way that is easy for them to understand, use, and integrate into their working processes. In a way, statisticians have the obligation to demonstrate and facilitate the use of good statistics by helping crowd out bad statistics and noise, which are ever present in the growing pool of statistics available to the public, and to contribute to mitigating the effects of information overload in society (see Table 1).

providing tailored statistics in forms that fulfil user needs, using appropriate communication channels, and language that can reach out to their large pool of diverse users. Each user group is fulfilling a complementary function in using statistics, and each group takes part in the decision-making process in society. The ECB, together with the NCBs, is taking new steps to improve statistics communication and is encouraging cooperation and the sharing of best practices and tools among the statistical community, as well as the creation of partnerships between public and private corporations at the national and international level.

The challenge for statisticians lies in knowing, understanding and combining the four complementary concepts of communicating statistics (see Graph 3) and in applying these in order to make an impact on today's decision-making process, despite an ever-increasing pool of publicly available information. Statisticians have a particular competitive advantage in providing useful statistics and can assist in fostering and strengthening the European Union's identity, and in making Europe more tangible for users and citizens. Statisticians should take an active role in this endeavour, reconsidering their statistics communication concept and

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