

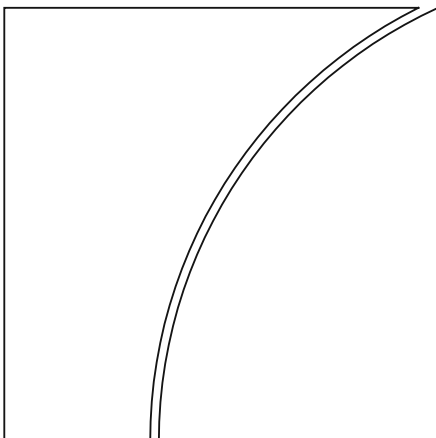
Irving Fisher Committee on Central Bank Statistics

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No 60

Communication on central bank statistics

April 2024



Irving Fisher Committee on
Central Bank Statistics



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The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the Banco de Portugal, the IFC and its members and the other institutions represented at the meeting.

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Proceedings of the Irving Fisher Committee on Central Bank Statistics (IFC)-Banco de Portugal Conference on “Communication on central bank statistics: unlocking the next level”

Lisbon, 19–20 September 2022

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Communication on central bank statistics: unlocking the next level

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Communication on central bank statistics: unlocking the next level

Luís de Carvalho Campos, Lúgia Maria Nunes, Mafalda Sousa Trincão, Bruno Tissot¹

Executive summary

Many central banks have recently taken important steps to **strengthen the communication of their statistics**, aiming at increasing their outreach to a broader audience and enhancing their value to better support information users.

These initiatives have underlined **three main points**. First, statistical communication is a key element for maximising the value of the data produced by central banks. Second, it is also an important ingredient supporting the effectiveness of their policies, with due consideration for the fact that data collected for statistical purposes should be protected from other needs. And third, communication effectiveness depends crucially on the degree of statistical literacy in the public; central banks can play an important role in addressing this point, for instance by making statistical content easy to understand, practising plain language, avoiding over-simplification and motivating the diverse user groups to engage with statistical information (data and metadata) and expand their knowledge.

Despite ongoing efforts, **the communication of statistics remains a constant challenge**, reflecting in particular the difficulties posed by new information sources, the increasing need for granular insights and the competition of alternative, sometimes poor-quality data. Fortunately, central banks appear well positioned, building on well-established credibility, visibility and trusted independence. They are also making substantial progress, especially in establishing a dedicated statistical communication function, identifying and selecting specific audience targets, crafting tailored content, using various (traditional and new) dissemination channels and leveraging technical innovation. A key objective is to foster user engagement with, and understanding of, central bank statistics.

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The views expressed here are those of the authors and do not necessarily reflect those of Banco de Portugal, the BIS, the IFC or any of the institutions represented at the event.

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First, a statistical communication function is typically set up to **address both internal and external users**. Success will often depend on defining clear priorities and objectives and on ensuring good cooperation with subject matter experts as well as with the main communication department of the central bank. Moreover, there is merit in following a structured approach to designing a comprehensive framework comprising all the various building blocks that constitute the “communication ecosystem” – eg the related information sources, audiences, channels and required multidisciplinary skills.

Second, **a one-size-fits-all approach has clear limitations**. To be effective, communication should reach out to and engage with different groups, consider their distinct needs and be tailored to their various levels of sophistication and knowledge. Central bank statisticians are indeed already following different approaches when communicating statistical information, depending on the specific user groups considered (such as the general public, researchers, students, journalists).

Moreover, central banks are also **developing new communication channels** in order to reach out to the broadest possible audience. This calls for making the most of the wealth of data they have available, including granular data, and for using all media opportunities, especially social media.

Lastly, central banks are **leveraging innovation** to enhance their statistical dissemination methods and address the most pressing challenges. For instance, they are developing single “open source” data portals to strengthen their communication, by making data more accessible and enhancing users’ experience. They are also exploring new ways to share very granular information without compromising confidentiality. And they are mobilising techniques based on artificial intelligence (AI) to support a wide range of tasks, from identifying user types to offering customised solutions that are tailored to specific user needs and degrees of literacy. In particular, the recent progress observed in the field of natural language processing (NLP) and large language models (LLMs) is providing important and promising new opportunities to strengthen central banks’ statistical communication.

1. Introduction

The statistical teams of many **central banks have recently taken important steps to strengthen their communication function**. The various actions involved include identifying and targeting specific user groups through tailored content, examining and selecting relevant dissemination channels, adopting the relevant technology and setting up specific teams with diverse skill sets to be responsible for this function.

These initiatives have taken place **in the context of a greater focus on data governance** to ensure the quality of the production of official statistics and also to enhance their use. Communication is an essential element to consider in this context, since a key objective is to ensure that the data produced are fit for purpose to address user needs and that their public value is maximised (IFC (2021)). In particular, and in line with the Fundamental Principles of Official Statistics (UN (2013)), one should strive for clarity and transparency to ensure “*trust of the public in the integrity of official*

statistical systems and confidence in statistics".² To this end, statistical content has to be "compiled and made available on an impartial basis (...) to honour citizens' entitlement to public information".

Three main issues related to statistical communication

The above considerations raise three main issues: (i) statistical communication is a key element for maximising the value of the data produced by central banks; (ii) it is also an important ingredient supporting the effectiveness of their policies; and (iii) its effectiveness depends crucially on internal and public data literacy.

First, regarding data production, communication is a key dimension to consider, not least to promote the value of the statistics compiled by official statisticians (Andrei et al (2014), UNECE (2018)).³ It is also essential for bridging the gap between statistical producers and their clients, as emphasised by Ana Paula Serra (Banco de Portugal). This is particularly relevant for central banks, which in many countries have the responsibility to produce statistics in certain subject areas, such as monetary and financial statistics, balance of payments statistics and financial accounts. Their statistical departments can therefore play a crucial role in disseminating economic and financial information to the public. They have in recent years taken various initiatives to develop a communication strategy, producing specific content tailored to pre-defined audiences and taking advantage of a diversified range of channels.⁴

The second issue is the contribution of statistical communication to policymaking (Bartsch (2011)). Besides being important producers of official statistics, central banks are also policy institutions that have an interest in sharing, in the most clear and understandable way, a comprehensive picture of the analyses supporting their decisions, including the degree of uncertainty associated with the data and the techniques used (Kapetanios et al (2021)). Communication has indeed become a central element of central banks' public mandates (Blinder et al (2008), Draghi (2014), Weidmann (2018)), in a context characterised by the growing importance of evidence-based policies (Buch (2019)) and the powerful role played by numbers in this regard (Dilnot (2012)).

However, and as stressed in the Fundamental Principles, statistics should be presented "according to strictly professional considerations, including scientific principles and professional ethics". This **calls for strong professional independence**, not least to ensure that the data used to support policies are relevant, science-based and free of purposeful political bias (Habermann and Louis (2020)). In fact, one important factor supporting the sheer value of official statistics, relative to any other statistics or data, is that they come from a "trusted information source that is independent from any policy or other interests"; this is a key "difference induced by the Fundamental Principles" (UNECE (2018)). Hence, a major challenge is how to secure

² One telling example is the code of practice for official statistics in the United Kingdom, which explicitly aims to ensure the publication and communication of statistics "in a way that inspires public confidence" (UK Office for Statistics Regulation (2022)).

³ Giovannini (2008) argues that communication is "a key function that can determine the success or the failure of an official data provider".

⁴ In line with international recommendations regarding the communication strategy of statistical organisations (see UNECE (2021)).

the professional independence of the statistical function from policy actions to avoid any loss of trust and perceptions of potential conflicts of interest. While national statistical offices (NSOs) in many countries are independent of government, this issue may be particularly relevant for statisticians in central banks – as well as in administrative statistical services participating in the national statistical system, such as state ministries. It is therefore crucial to differentiate the collection of data for statistical purposes from their use for policy purposes.⁵

From this perspective, it is essential to reassure the public that **data collected for statistical purposes are duly safeguarded** and follow high-quality standards, not least to protect confidentiality (Križman and Tissot (2022)).⁶ Clarifying this point, the European Central Bank (ECB) states, for example, that strict rules are followed to produce statistics that “*are accurate, consistent, timely, and produced in line with international standards without any outside interferences*” (ECB (2016)).⁷ In addition, the ECB has been surveying European citizens for their attitudes and opinions on a number of key communication aspects, such as the level of public trust (ECB (2022)).

The third issue relates to the target of statistical communication, as its effectiveness depends crucially on the level of economic literacy in the public (see Rahman (2018) for an analysis in the central banking context). Communication is not just about publishing numbers; it is also about putting them into perspective, as argued by Pablo García Silva (Irving Fisher Committee on Central Bank Statistics). For instance, analysing economic indicators such as gross domestic product (GDP) calls for an understanding of the way the statistics have been compiled as well as the complex factors that drive them and their real-world implications – underscoring the importance of providing information about the data themselves (metadata). Moreover, a key duty for official statisticians is to facilitate “*a correct interpretation of the data*”, as stated in the Fundamental Principles. Reflecting these points, statisticians have been developing various initiatives to present information in a more straightforward manner and promote transparency, especially by providing context to the numbers published (UNECE (2013)). They have also recognised that publishing raw numbers is not sufficient, and that more needs to be done to help analyse the statistics produced and transform them into knowledge that can appropriately support users’ decisions (Drozdova (2017)). This calls for adopting a user-friendly data ecosystem that ensures the disseminated statistics are well understood by their

⁵ Central banks’ statistical activity is often a by-product of their supervisory functions. While this role is typically clarified in the law of the central bank, an important point is to provide assurance that the official statistics for which the central bank is responsible are subject to provisions equivalent to those contained in the national statistical law or the UN Fundamental Principles (UNSD (2022)).

Nevertheless, central banks can be well placed to provide trusted statistical information, because they are independent and because the production and communication of statistics are important elements of their public accountability (Ittner and Schubert (2011)). In addition, various elements can contribute in practice to secure the professional independence of their statistical function, such as the public announcement of statistical release dates, the adequate adaptation of the statistical output to serve journalistic needs, the focus on communicating data and data analysis without drawing policy conclusions, etc (Seltzer (1994)).

⁶ For example, the IMF Data Quality Assessment Framework states that “decisions about dissemination (...) are informed solely by statistical considerations” (IMF (2012)). Similarly, the *United Nations National Quality Assurance Frameworks Manual for Official Statistics* has been developed with the ultimate goal of ensuring trust and the quality of official statistics across the entire national statistical system (UN (2019)).

⁷ The ECB Statistics Quality Framework contains the key principles and a practical framework for the work of its staff in the area of statistics (ECB (2008)).

consumers. As an illustration, and as argued by Qiu ([Federal Home Loan Bank of Atlanta](#)), the following actions can be useful to facilitate the use of statistics by the general public:

- **Make information easy to understand.** While statistics are based on precise and complex concepts, they have to be made accessible and comprehensible for general users. This calls for communicating in a non-technical manner, explaining and providing context to the disseminated numbers (eg by developing narratives or visualisations) and addressing interpretation errors. Moreover, more is not necessarily always better, and there is value in focusing on communicating clear and useful content and avoiding excessive noise in the statistics (Dale et al (2008)).
- **Practise plain statistical language.** Central banks have to “speak the language of the public” (Iltner and Schubert (2011)). Certainly, defining what is “plain language” is subjective, as it depends on the profile of the users. This means that statisticians should analyse the reactions of specific target groups and constantly check whether they can explain something more simply (but without compromising accuracy).
- **Avoid over-simplification.** One important challenge is that over-simplification can lead to misperceptions if the audience is not aware of or does not realise the assumptions made. Central banks should therefore find the right balance when facilitating the interpretation of the data while preserving the accuracy of the content being disseminated. A feasible solution is to communicate through well-identified, knowledgeable intermediaries like professors and financial journalists. Another is to engage with users in an interactive way, so as to receive feedback on how the communicated statistical content is being perceived and refine it if necessary. And a third aspect is to differentiate among user groups, for instance by identifying the more advanced ones who could benefit from more sophisticated analyses.
- **Motivate people to learn how to use statistics.** While many consumers of data are not interested in understanding the related methodology, it is essential that they are aware of how to correctly use this information. In a way, the situation is akin to drivers willing to know how to drive safely without being drawn into the technical details of their cars.

Addressing the new challenges posed by the information revolution

Despite ongoing efforts, **the dissemination of statistical information remains a constant challenge.** This reflects in particular the difficulties posed by new data sources, people’s declining attention to traditional media and the need to secure (restore?) public confidence in a world increasingly marked by “alternative facts” and “fake news”. For instance, greater public attention to poor quality and potentially misleading data poses the risk of driving good statistics out of policy debates (Cœuré (2017)). In this context, central bank communication has to continuously adapt to the changing information landscape and “cut through” to the wider public (Lagarde (2023)).

To shed light on these aspects, the Irving Fisher Committee on Central Bank Statistics (IFC) of the Bank for International Settlements (BIS) has taken **several initiatives in recent years to review the evolution of central banks’ statistical**

communication and identify actions for improvement. For instance, a recent survey organised among IFC members showed that almost all of them are proactively developing communication initiatives as a complement to their statistical production work (IFC (2023a)). While central banks are not alone in this field, they appear well positioned, not least in terms of credibility, visibility and trusted independence. But they are also perceived to be somewhat outdated when disseminating statistics, especially with respect to the use of advanced visualisation tools to communicate statistical content effectively.

In addition, the **IFC co-organised with the Banco de Portugal its first conference dedicated to the topic of “Communication on central bank statistics: unlocking the next level”** in September 2022. One goal was to share experience on how to start a statistical communication function in terms of targets, channels and content and to create the team in charge of related tasks. Another objective was to reflect on reaching and engaging with different target groups, with a focus on the various channels available. This event was an opportunity to take stock of the new perspectives facing the communication of central bank statistics – especially to enhance their promotion, address users’ evolving needs and develop statistical literacy among the diverse stakeholders involved – as well as the challenges that remain. About 30 institutions from 25 jurisdictions were represented at the event. Their contributions, as referred to in this overview and included in this *IFC Bulletin*, discussed how to set up a statistical communication function serving both internal and external users (Section 2), identify adequate external audience targets (Section 3) and dissemination channels (Section 4), and make the best use of the opportunities provided by technical innovation (Section 5).

2. Unlocking the communication function

The nature of statistical communication

A concrete issue for central banks establishing a statistical communication function is how to start. This will first depend on **the preferred form of dissemination envisaged**, as central banks can typically communicate statistical content in both an active and a passive way, depending in particular on the profile of data users in the specific countries considered. A passive approach will relate to the simple dispatching of regular and dedicated publications on the website (this is often referred to as “one-way” dissemination). In contrast, active communication aims to be “two-way”, by carefully taking into consideration user feedback. It is usually achieved by generating press releases, preparing ad hoc briefings, posting on social media and responding to queries. In practice, these approaches are deemed equally important and complementary by central banks. The setup of a communication function should thus address the specifics related to both aspects.

A second important consideration is the need to adopt a data strategy that addresses **internal as well as external recipients** of the information being disseminated, as highlighted by the example of the [Bank of Israel](#) (Graph 1). Regarding internal communication, a main objective is to maximise the value added of data by facilitating access to them within the Bank. To this end, statistics are disseminated via a dedicated internal portal that provides dashboards, tables, charts, etc to users. Turning to external communication, the goal is to be a primary source of

financial statistical information for the public. This calls for focusing on three critical aspects: accessibility, flexibility and transparency.

A third important point is that the nature of statistical communication pursued by central banks will often **depend on specific circumstances**, for instance in a crisis (Ittner and Schubert (2011)). One telling example was during the Covid-19 pandemic, when many institutions faced “statistical darkness” and realised the importance of strengthening their communication on the state of the economy (de Beer and Tissot (2021)). To monitor the situation more effectively, the Bank of Israel decided to centralise statistics in a unified location, strengthen the dissemination of more timely and frequent indicators and make use of new business intelligence tools (IFC (2019)). Similarly, Banco de Portugal decided to develop a dedicated web page to present the most pertinent statistical data available at the time of the pandemic.

Internal and external communication at the Bank of Israel

Graph 1



Source: H Gotsman (2024): “Unlocking the function: where to start?”, *IFC Bulletin*, no 60, March.

Organisational aspects

The actual organisation of a statistical communication function can take several forms. A number of central banks have decided to create a specific unit in charge of this task, often located in statistical departments. One important benefit is to allow a close involvement of subject matter experts in communication initiatives. However, setting up a dedicated function separated from the main unit in charge of corporate communications can have notable drawbacks (eg resource impact, potential duplication of skills and reduced synergies). It can also lead to the development of communication silos and raise reputational risk if the overall activities of the central bank are perceived as uncoordinated. Reflecting this trade-off, the approach followed by central banks is often hybrid, with the statistical communication function typically shared between the two departments in charge of statistics and corporate communication.

Whatever the organisational set up, how should one proceed in practice to organise statistical communication activities? Based on its experience, the Danmarks Nationalbank has identified **the following “keys” to consider**:

- **Prioritise communication.** A key starting point is to recognise that producing statistics is not sufficient if their value is unknown. This calls for a cultural shift within the institution and a willingness to allocate more resources to the dissemination of statistical information, hire staff with specific competencies and ensure that everyone understands the importance of communication.

- **Set up a visible function in charge of statistical communication.** Each of the divisions producing statistics should not be left alone to manage the dissemination of their data. There is merit in establishing a common unit in charge, for instance, of responding to users' incoming inquiries and organising communication activities.
- **Favour internal mobility.** Facilitating the transition of statistical experts to the statistical communication function is essential to promote synergies and staff development. This requires adequate training, in particular in written and visual communication.
- **Define clear communication objectives.** Statistics departments should carefully analyse user feedback to identify information needs and adapt their communication accordingly. This also calls for flexibly adjusting to an environment often characterised by uncertain and changing customer preferences.
- Develop a matrix organisational structure to **ensure that subject matter experts are working together with the communication function** (Graph 2). The key is that staff in specific statistics areas (eg monetary statistics, external sector statistics) are associated with the various communication initiatives, for instance when working on the presentation of the data in a user-friendly way. Collaboration should also involve other internal stakeholders, such as economists in research and policy departments (especially for producing analytical content) as well as experts in the main communication unit of the central bank (which is also increasingly relying on internal data analytical capacities these days). This collaboration can be facilitated by the design of a well-defined governance framework that clarifies the various processes and responsibilities involved, for instance for the production of press releases.

A matrix organisation structure to support statistical communication

Graph 2



Source: R Mandsberg and L Risbjerg (2024): "Developing the statistical communication function at Danmarks Nationalbank", *IFC Bulletin*, no 60, March.

Denmark’s experience described above resonates with **the situation faced by other central banks**. For instance, the statistics department of the Banco de Portugal, established a communication-focused team a few years ago. The initial intention was to recruit specific external skills (eg web design, marketing), with the view that business experts can excel in deciphering and analysing data but may be less effective in presenting and promoting them. However, this option was limited by budget constraints, and the statistics department decided to creatively harness available resources. A distinct communication unit was established by restructuring staff resources internally, supported by selected experts from each statistical division, forming the “StatsComm Team” (Graph 3). These business contact points benefited from regular training sessions, for instance on writing concise texts and leveraging social media. In parallel, a close partnership was set up with the central bank’s communication department, which has been closely associated in the development of statistical communication plans and the analysis of user feedback and website traffic. Turning to the Central Bank of Iceland, it has decided to build a dedicated function comprising individuals from diverse departments and possessing varied expertise, which is responsible for formulating and executing the communication strategy.

The StatsComm Team at Banco de Portugal

Graph 3



Source: L Nunes (2024): “Together we make it better: how a multidisciplinary team unlocked the statistical communication function at the Banco de Portugal”, *IFC Bulletin*, no 60, March.

Designing a comprehensive framework

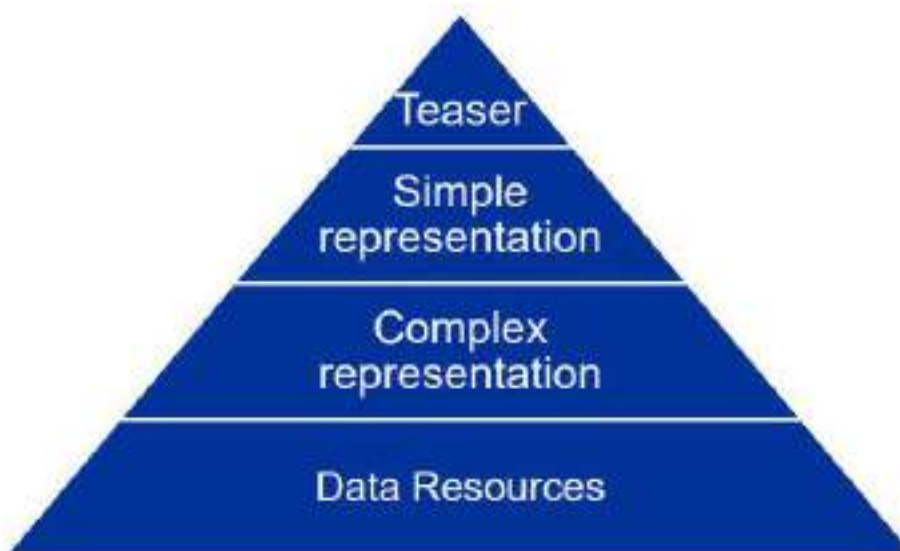
Central banks’ experiences highlight the **importance of following a structured approach when developing a statistical communication function**. A key reason, as observed in the case of the ECB, is that a “communication ecosystem” relies on a number of complex factors, especially regarding the users, channels and skills involved. Addressing these multiple aspects can be facilitated by the design of a comprehensive framework, with four main focus points:⁸

⁸ In addition, it may be useful to rely on a “communications maturity model” approach to help statistical organisations gauge their current communications maturity and to propose areas for improvement (UNECE (2021)).

- **Resources** – the different channels involved and the various skills required for communicating statistical content have to be clearly assessed.
- **Communication channels** – there are different ways to disseminate statistical information. This calls for adopting a clear information hierarchy to set up the level of details that are appropriate given the audience targeted (Graph 4). Communication can be very generic, for instance to address common data requests by providing well-established reference material – eg press releases, statistical publications, data portal and (micro) dashboards, frequently asked questions (FAQs), “hot topics” on the website. It can also be highly tailored, to answer specific questions (eg for supporting internal policy users) or to allow users to explore the information in a self-service way. In any case, good collaboration is essential when developing these channels, in particular with business units to craft relevant “narratives” and with the central department in charge of the broader communication strategy of the institution.

The information hierarchy supporting ECB statistical communication

Graph 4



Source: M Rumpf (2024): “Building an ecosystem for statistical communication”, *IFC Bulletin*, no 60, March.

- **Target audiences** – all the various groups of users of statistical information need to be carefully identified. While a key focus group relates to internal data users, such as research and policy units, central banks are also increasingly considering the large variety of external audiences, comprising the general public, journalists, policy observers and specialised users (eg financial market participants, data vendors), researchers, students, etc (see Section 3).
- **User information needs** – the communication of statistical content should fundamentally be two-way, ie by proactively engaging with users and being responsive to their needs. A comprehensive framework can help monitor the usage of the communication tools and collect user feedback in a structured way (eg to analyse logs on the website, traffic in social media, etc). It can in turn facilitate the design of specific communication responses, for instance by crafting new material, linking statistical content, redirecting requests or adapting language and terminology. One practical example of such a two-way

communication strategy was the initiative by the Bank of Israel to leverage innovative technologies to monitor and prioritise its communication channels and better align with user needs.

3. External communication target groups

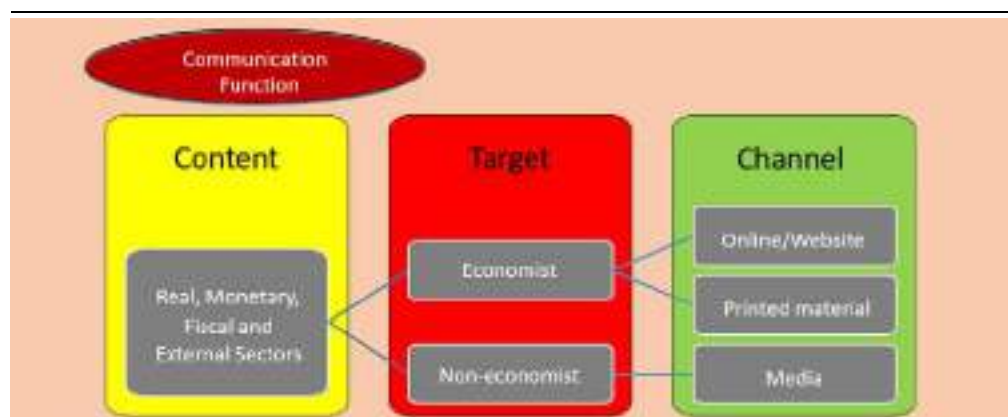
The limitations of a one-size-fits-all approach

In the past, most of the statistical information for external users was uniform: it was typically prepared for experts, as the general public was not considered a top priority; and it was often based on written documentation, with a lack of visual material. Such a one-size-fits-all communication approach, however, has clear limitations. **To be effective, communication should reach out to and engage with a variety of different groups**, consider their distinct needs and be tailored to their various levels of sophistication and knowledge.

Indeed, **central banks' communication channels have clearly evolved in recent years** to better address the diversity of their target audiences. To this end, the Bank of Italy has, for instance, identified four types of user personas representing consumers of statistical information, namely unskilled users, skilled users, students and economists. The State Bank of Pakistan has also taken steps to target audiences in a more precise way, for instance by mobilising census data to take into consideration factors such as education, gender, income, language and economic activity. These efforts have been complemented by specific actions tailored to the diverse audiences. The dissemination of generic printed materials has been progressively complemented by various actions to target media outlets, strengthen the Bank's website, organise business and household surveys, engage more actively with specialised users such as economists, professionals and journalists, and, more recently, embrace social media platforms such as X (formerly Twitter) and Facebook (Graph 5). Lastly, the central bank has focused on developing more user-friendly language and infographics.

Addressing the one-size-fits-all "communication tragedy"

Graph 5



Source: S H Javaid (2024): "One size does not fit all: target matters", *IFC Bulletin*, no 60, March.

The non-specialised audience

Reflecting their policy mandates as well as their role as producers of official statistics as “public good”, **a key audience for central banks is the general population**. Communicating in plain language is particularly important for this audience, not least because of its limited understanding of the technicalities involved in the production of statistical information. Yet, the notion of “plain language” can mean different things across target groups and over time.

To address these issues, **the Bank of Canada has launched an initiative to “help users think with data”**. The starting point was the recognition that people tend to place greater trust in recommendations from friends. This suggests that communication can become more effective if one can stimulate inclusive conversations, akin to friends having a coffee together. Another objective is to put suggestive content into raw numbers, by making creative comparisons to concrete phenomena so as to provide a “sense of scale” – for instance, by visualising what an amount of money represents in terms of banknotes piled-up together. Furthermore, storytelling can help transform numbers into clearer narratives, supporting the understanding of complex technical issues.

These communication initiatives have also been accompanied **by a greater focus on improving the public understanding of economic and financial concepts** (UNECE (2009)). The objective is to allow individuals to make more informed spending and investment decisions, in turn contributing to overall economic well-being. The central bank can make a key contribution to this endeavour, not least because it is responsible for producing an important part of the financial information available to the public. For instance, the Bank of Albania actively supported the setup of the national financial education strategy in that country, where economic literacy is relatively low and can vary significantly across population groups. The aim was to educate individuals about financial concepts, products and services through a combination of targeted teaching and communication initiatives. Similarly, the Central Bank of Malaysia has set up a strategic plan to foster financial inclusion that explicitly seeks to improve economic literacy in the country’s population.

Lastly, an important aspect supporting statistical communication with the general public is to **facilitate the interpretation of the data** by making use of innovative techniques such as dashboards and predefined tables (see Section 5 below). A central concept from this perspective is “data curation”, which relates to the creation, organisation and presentation of a curated view of the data so that they can be easily accessed and used by (unskilled) users looking for information.

Students

Another **important target audience for central banks is students**. Their degree of understanding of statistics is typically higher than the general public but lower than more professional data users. Moreover, students present important challenges due to their diverse fields of interest, their different levels of education and, obviously, their large numbers.

In this context, **the Banco de Portugal has set up an initiative focusing specifically on university students**. It developed a dedicated e-learning course to present the main statistical concepts and access the data available on the central

bank's statistical website, *BPstat*. This called for close collaboration with a wide range of stakeholders, including economics schools, experts in digital learning and of course the various units of the central bank, eg its management and the most interested departments (communication, economics, statistics, international relations). A key achievement was the release of "Statflix", designed as a TV series encompassing different seasons focusing on a statistical topic (eg national accounts, financial statistics). Each learning sequence comprises an initial quiz to gauge students' familiarity with a particular topic, an interactive video, a flipbook, a podcast and a final quiz at the end (Graph 6).

Statflix: the Banco de Portugal initiative targeting university students

Graph 6



Source: M Trincão (2024): "Statflix: a Banco de Portugal original series", *IFC Bulletin*, no 60, March.

(Semi) professional users

There is merit in focusing in a relatively detailed way on the **wide range of users that consume data because of their professional (eg financial market participants) or semi-professional (eg key politicians or well-known academics) activities**. For instance, the ECB has conducted in-depth interviews with specific categories of professions when designing its new data dissemination strategy (Graph 7).

Financial journalists can be of particular importance from this perspective, reflecting their multiple roles (UNECE (2021)). They are in particular (i) influencers (eg press commentators); (ii) scrutinisers (eg observers of central bank decisions; Koop and di Vettimo (2023)); (iii) knowledgeable intermediaries (eg specialists to facilitate the general public understanding of complex issues)⁹; and (iv) trusted stakeholders (eg media with whom the central bank has built or wants to build relationships not least to convey policy messages (Bezoska (2018)).

⁹ For more on the role played by media specialising in financial affairs with respect to the average citizen, the educated public and the central bank, see Blinder et al (2001).

Considering the large variety of professional and semi-professional data users

Graph 7



Source: K B Simon and J A Sánchez Hernández (2024): "ECB Data Portal – making statistics accessible in a fast pace digital world", *IFC Bulletin*, no 60, March.

Reflecting the above, the Central Bank of Pakistan has set up dedicated training facilities for media journalists. Similarly, the BIS has worked on defining a typical data user journey for journalists in order to enhance its statistical dissemination strategy. As noted at the Bank of Italy, a key need of these users is the ability to easily and rapidly download graphs and tables to support the writing of news articles.

Researchers

One group of users receiving increasing attention are **academic researchers, who are typically knowledgeable about the data and how to use them**. This audience is relatively similar to the internal users of the statistics, who are typically the economists in charge of supporting policy and research activities within central banks.

The central banking community has been increasingly focusing **on improving its statistical offering for external researchers**, for instance in the context of the related work conducted under the aegis of INEXDA (the International Network for Exchanging Experience on Statistical Handling of Granular Data). This initiative has comprised various actions to develop a metadata schema describing granular data sets, identify data access procedures and review best practices targeting the specific audience of researchers (IFC (2018)).

One concrete example relates to the **project by the Deutsche Bundesbank to facilitate the access for non-commercial research to micro data sets that can be highly sensitive**. Several approaches can be followed for this purpose, for instance by granting on-site access to researchers, giving access to anonymised "scientific use files", or remotely executing programmes in a controlled way (based on the codes provided by researchers). Furthermore, the Bundesbank provides specific resources to assist researchers in terms of documentation, information technology (IT) packages, etc. It also engages actively with users to better assess their needs in more detail, for instance by identifying who they are in terms of their experience and degree of understanding of the related statistical issues (Graph 8).



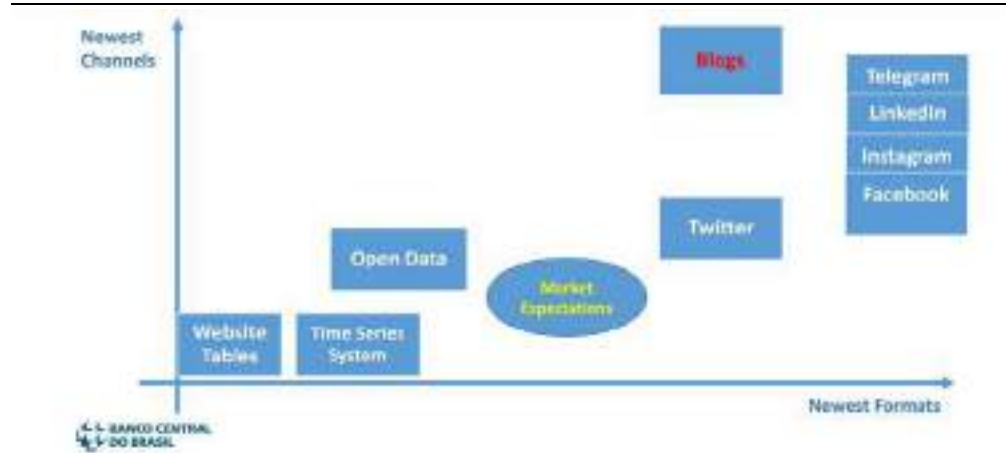
Source: C Hirsch and J Blaschke (2024): "How to tailor information resources to a target audience – lessons learned from a Research Data Centre", *IFC Bulletin*, no 60, March.

4. Developing new communication channels

The objective: reaching out to the broadest possible audience...

The cornerstone of the communication of central banks' statistics departments is the actual dissemination of economic and financial data. As reported in the case of Brazil, all the various actions taken to embrace novel communication tools, refine outreach strategies and develop innovative data products have the purpose of disseminating statistics better (in terms of availability, serviceability and timeliness). A case in point relates to the large range of business intelligence tools (eg dashboards, interactive graphs, infographics) that have become available in recent years to support data communication across various groups and channels (IFC (2019)). Yet the choice of the "right" communication approach should consider a large range of factors such as efficiency and cost-effectiveness, the appropriateness for the targeted users and the possibility to reach a broader group (Graph 9).

Such analysis can be key to **selecting the visualisation tools that can make it easier for the target audience to understand the data** (see Carson (2009) and Ten Bosch and de Jonge (2008)), the use of a certain type of words (eg plain language for the general public versus more technical terms for sophisticated users), and the choice of the actual information content conveyed to the users depending on their degree of statistical literacy. These choices can be helped by a thorough review of the public's demand for information. For instance, De Nederlandsche Bank conducted an extensive survey of its users' preferences, which highlighted the need to provide narrative explanations supporting the disseminated figures and also a more comprehensive overview of the array of the statistical products available.



Source: F Lemos (2024): "New channels, new approaches, new data formats", *IFC Bulletin*, no 60, March.

...by making the most of the wealth of data available...

Central banks have also realised that they sit on a wealth of data that are not fully exploited, despite significant potential interest among internal and external user groups. A case in point relates to the vast amount of micro data available as a by-product of administrative and economic activities, such as granular payment transactions, financial prices observed in specific market segments, individual responses to firm and household surveys, etc (Israel and Tissot (2021)).

One telling example is the initiative of the statistics department of De Nederlandsche Bank to provide more insight on the mortgage market – which has traditionally been a source of great public interest in the Netherlands – by developing several dashboards built around specific themes and making use of various micro-level sources. This initiative faced a number of challenges, especially regarding the resources to be mobilised for setting up the data sets and publishing them; the required technical knowledge, for instance for developing visuals (eg use of the interactive charting software Highcharts); the related external dependency aspects; the different types of information, especially in terms of consistency and comparability; the quality of the newly exploited data sets; and the privacy, confidentiality and legal issues posed by the use of such very granular information.

Another important objective is to **facilitate the dissemination of more granular information by developing new types of indicators** that can help put isolated numbers in a broader context. For instance, the Reserve Bank of India has developed comprehensive fan charts to better convey the degree of uncertainty surrounding specific indicators. The objective is to provide more comprehensive information, allowing users to better understand the precision of published forecasts, the risks involved and the importance of the relationships between certain phenomena.

...and using all media opportunities...

The direct dissemination of information organised by institutions like central banks can be **usefully complemented in a more indirect way through the use of the main means of mass communication**, such as newspapers, TV networks or the internet. An obvious reason is that people are dedicating an increasing amount of their time to consuming media content. This trend has been reinforced by the fact that, over time, traditional mass media have become more personalised “self-media”, arguably providing additional benefits in terms of familiarity, active user engagement and individual control.

What can help central banks effectively navigate this increasingly competitive and changing media landscape? As recognised at the [Banco de Portugal](#), **the selection of a media platform is a fundamental decision** that should be aligned with the overall strategy of the central bank. A number of important factors have to be taken into consideration when making such a choice:

- **Suitability of the selected media for the audience targeted** – this calls for a thorough analysis of the characteristics of the target audience in terms of, for example, demographics, preferences and behaviours.
- **Relatability** – the media should be able to convey messages that are easy to understand (eg accessible and visual) and relatable to people’s everyday lives (Gardt et al (2021)). This can be challenging when dealing with statistical concepts, and it calls for creating innovative content that can better resonate with users. The selected media should therefore adequately support the choices made in terms of communication language, formats and techniques.
- **Analytics-driven and two-way approach** – the media should convey insights based on data, which is the primary objective of statistical communication; in turn, metrics on users’ behaviour and engagement should be available so as to refine communication initiatives.
- **Variety** – it is useful to explore a diverse range of media before deciding to select those that resonate better with the target audiences.

...including social media

It is estimated that about 60% of the world population is using social media, and this number continues to grow over time, especially among young individuals that are increasingly turning to such platforms when looking for specific information (instead of using the internet, for example). This development is raising increasing interest among central banks, as it is in other statistical agencies such as NSOs (Glăvan et al (2016)). Indeed, **the recent survey organised by the IFC shows that central banks’ use of social media has risen remarkably over the past decade and is expected to progress further** in the coming years (IFC (2023a)).

A main objective has been to **establish a formal presence on selected social media platforms**, not least to be able to engage with a more diverse audience. The aim is, first, to make better use of social media opportunities to foster a sense of community and interaction among targeted users. And second, the objective is to get feedback from them to refine the content of statistical communication. This calls for carefully analysing social media usage and developing adequate metrics for monitoring, as emphasised by [Paulo Rossas \(Lisbon Digital School\)](#). A starting point

is to identify the motivations of social media users, ie if they are looking for entertainment, learning possibilities, social interactions or to make purchases, for example. Another important point is to assess their degree of “engagement”, ie how users interact with the content of the social media of interest – whether they “like” it, the comments they make and the actions they take to share specific news with other users.

In practice, **a large variety of indicators can be used for monitoring purposes**. Users’ interactions can be measured by counting the number of “shares”, “comments” and “likes” generated by a given post. In turn, users’ engagement can be assessed by comparing the interactions generated by a given social media post with the overall number of people that have actually seen it. Specific metrics can also be used for analysing website usage, eg in terms of “time on site”, “page views”, etc. Furthermore, the identification of specific user profiles, such as “lifetime engaged users”, “followers” or “retweeters” can be useful to target specific audiences, for instance to identify “influencers” and “opinion leaders”.

5. Leveraging innovation

Central banks are actively reviewing their **statistical dissemination methods**, identifying current limitations and developing ways to address them. The main focus points reported are the reliance on static statistical products with little user interaction, the complexity of current data ingestion procedures, and users’ difficulties in identifying, locating and accessing published content on the website.

IT innovation can be helpful to address these challenges, especially if it can be shared with the wider data community. As highlighted by the recent initiative developed by the Bank of Italy, **the objective is threefold**: (i) make statistical information more accessible to a broader audience, particularly individuals with limited statistical knowledge and also potential users; (ii) improve the ways to access and analyse the data disseminated by the Bank; and (iii) solidify the Bank’s relevance and reputation in the statistical domain by keeping pace with the most advanced national and international peers. The approach relied heavily on innovative IT techniques, with a focus on providing a variety of tools to users of all levels, from the unskilled to the more sophisticated: digital publications, interactive graphs, dashboards and, last but not least, a statistics portal (Graph 10) – that is, an online platform that allows users to access, modify and reuse in an open way the statistics made available by the central bank.

Data portals

Reflecting the Italian example, central banks are increasingly taking action to **develop single data portals to both strengthen their communication and enhance users’ experience**. The aim is to provide the public with a consolidated platform presenting data from different sources and with a dedicated web application, unified statistical tools and channels, as well as a proper organisation of statistical information (data and metadata) to guide data discovery and exploration. The approach is typically holistic, with the portal intended to serve as the primary access point for all types of users so that they can easily search and find the information they need.



Source: L Bartiloro (2024): "Innovating statistical communication in Banca d'Italia", *IFC Bulletin*, no 60, March.

A related initiative developed at the BIS shows that **a useful way to organise a data portal is to focus on three dimensions – how to discover, access and present the statistics** (Graph 11).



Source: E Lambe and T Park (2024): "The BIS Data Portal project - delivering the next generation platform for BIS statistics", *IFC Bulletin*, no 60, March.

One key issue was to set up an effective "search" function within the portal. Another important consideration was to target different types of personas (general public, journalists, researchers, students, statisticians) and reach out to a broad range of diversified social media (from business platforms such as LinkedIn to image-sharing networking services such as Instagram). Another issue is the potential trade-off between two different goals. On one hand, a data portal can allow central banks to make freely available all the wealth of data that they can produce as public goods

that can be accessed, exploited, edited and shared by anyone (“open data”). On the other hand, a data portal allows for providing a selected and educated (“curated”) view of the complex data available so as to facilitate a user’s journey. For instance, the BIS has been working on making available so-called “publication tables” in its new data portal.¹⁰

In practice, how should one proceed when deciding to develop a data portal that properly meets user needs and efficiently supports the overall statistical communication of the institution? The ECB has identified **the following three phases to consider** in a comprehensive way (Graph 12):

- **Discovery phase** – the aim is to thoroughly examine the preferences and requirements of the various user types, ranging from the general public to professional users. One useful approach followed by the Central Bank of Iceland has been to organise interviews with different target groups. Another is to conduct a benchmarking exercise to learn from existing projects, best practices and challenges encountered.
- **Exploratory phase** – this stage should be devoted to selecting the data to be published, designing the portal tools and visual features, testing with users and subsequently refining the project based on their feedback.
- **Implementation phase** – this would typically follow a roadmap outlining the development and deployment timeline in several steps, from the creation of a pilot version to the public launch of a fully ready portal.

Developing a data portal: three phases

Graph 12



Source: K B Simon and J A Sánchez Hernández (2024): “ECB Data Portal – making statistics accessible in a fast pace digital world”, *IFC Bulletin*, no 60, March.

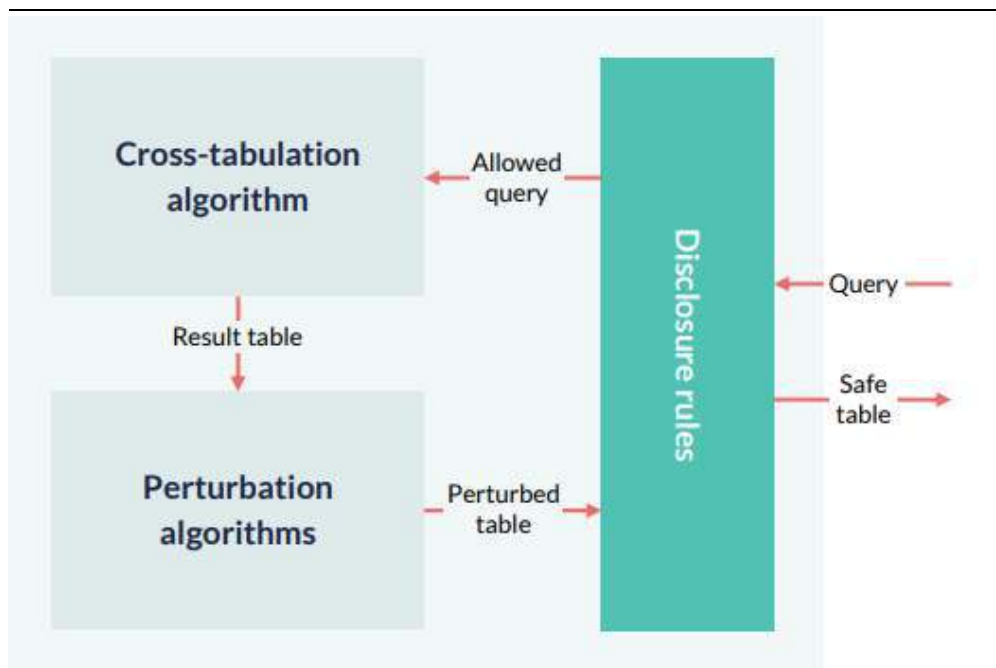
¹⁰ A publication table is defined as “a curated table of data, where the values in the table rows, columns and table body cells can be individually specified”. It “enables a single table to pull data from multiple sources and piece the data together in a way which is not possible when dealing with standard cubes of data” (see E Lambe and T Park (2024): “The BIS Data Portal project - delivering the next generation platform for BIS statistics”, *IFC Bulletin*, no 60, March).

Using new technology

One of the most sophisticated use cases faced by central banks relates to sharing very granular information without compromising confidentiality. Technology can help address this need, as shown in the dissemination service of census results developed by The Sensible Code Company for the NSO in the United Kingdom. The objective was to enhance the communication of granular insights, with the ability for users to create personalised outputs (eg customised tables) according to their specific needs and interests (Graph 13). Cross-tabulation and perturbation algorithms were used to anonymise the information, and the NSO's control through automated disclosure checks ensured that the dissemination of the data adheres to requested privacy and security standards. The tool also incorporates automatic checks, allowing for earlier data releases while reducing the likelihood of errors.

Disclosing micro data insights while protecting confidentiality

Graph 13



Source: M Thompson (2024): "Flexible dissemination software for the 2021 England and Wales Census", *IFC Bulletin*, no 60, March.

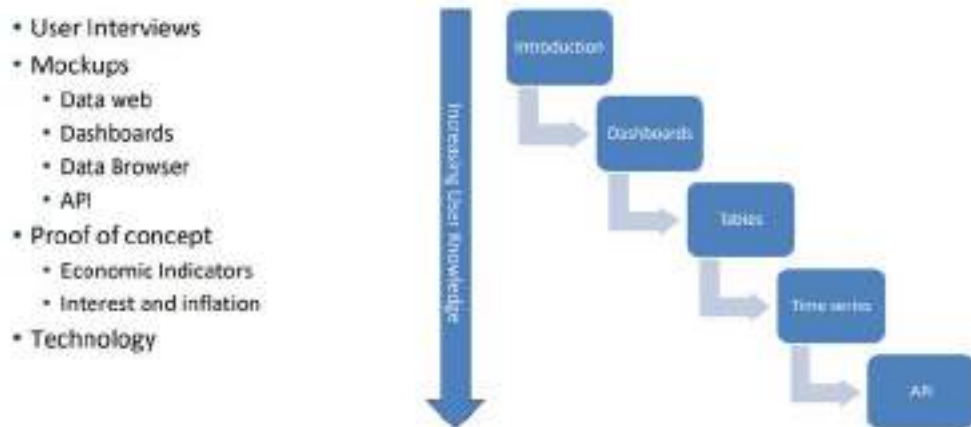
AI techniques can also be mobilised for statistical communication in central banks (Araujo et al (2024)). These techniques may support a wide range of tasks, from identifying user types to offering customised solutions that are tailored to their specific needs and degree of literacy. Thus, one strategy followed for strengthening statistical dissemination has been to collect user feedback and set up prototype mockups based on the type of technique that is best suited for addressing identified target groups.

For instance, the Central Bank of Iceland has been using the Power BI platform to **develop interactive graphs** for key economic indicators as a way to enhance data accessibility and user engagement. The approach followed has been sequential, with

the development of more sophisticated tools depending on the degree of user knowledge (Graph 14). The offering comprises simple dashboards as well as more complex applications supporting the retrieval of time series and selected interfaces, allowing users to interact with the central bank system through a dedicated application programming interface (API).

Strategy for disseminating data by leveraging technology

Graph 14



Source: B P Gíslason (2024): "Accessible digital economic indicators at the Central Bank of Iceland", *IFC Bulletin*, no 60, March.

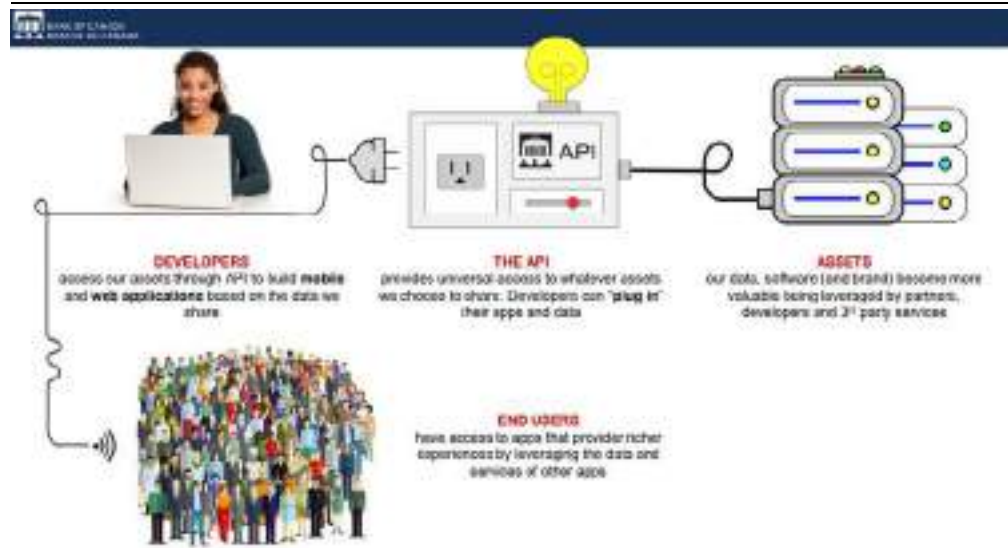
Similarly, the Bank of Canada has **developed a user interface** – its Valet Web Services API – that facilitates users’ access to the Bank’s statistical offering, for instance to automatically retrieve financial data series (Graph 15).

New communication **opportunities also arise from the significant progress observed in the field of NLP** (IFC (2023b)). For instance, the Reserve Bank of Australia has used an NLP model to analyse how various audiences perceive communication quality in terms of the degree of readability and reasoning attributed to the messages published, depending on the types of audience considered (Huang and Simon (2023)). Another approach followed by Bank Indonesia aimed to capture public opinion, as expressed on social networks, on issues related to central bank activities (Jabbar et al (2023)).

Furthermore, a key recent development is the **breakthrough provided by LLMs such as ChatGPT** – the language model developed by OpenAI that is capable of generating text based on context and past conversations (Araujo et al (2023), UNECE (2023)). Some central banks have already started deploying LLMs in various tasks supporting the external communication of their statistics, especially to handle inquiries from the public or financial institutions or to explain complex topics. LLMs might also assist in offering training possibilities for the broader financial community and the public at large, by making complex topics more accessible, enhancing financial literacy and supporting data queries through more intuitive interfaces.

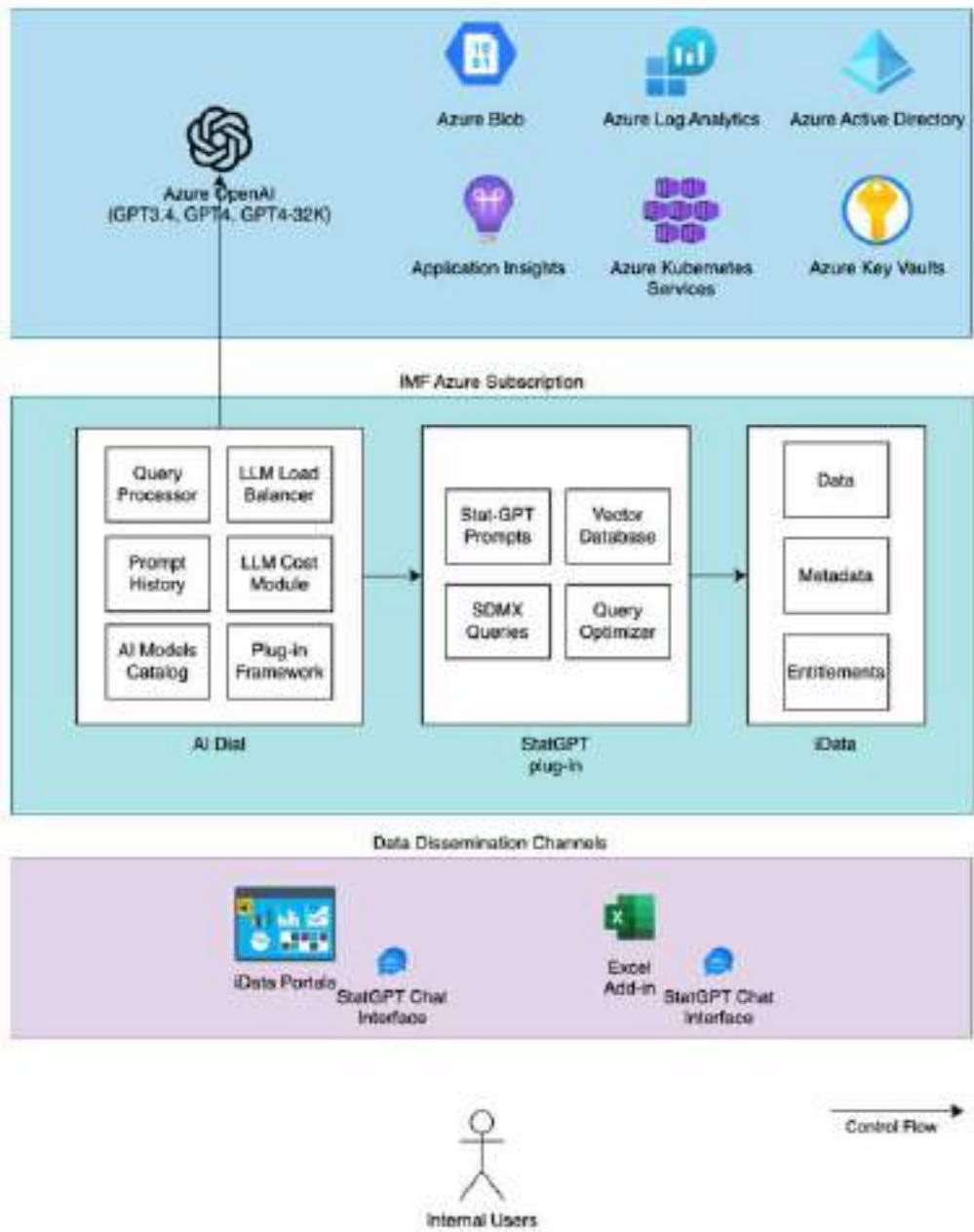
Accessing data through an API-based user interface at the Bank of Canada

Graph 15



Source: A Geraghty (2024): "Helping users think with data: statistical communication at the Bank of Canada", *IFC Bulletin*, no 60, March.

One telling example is the International Monetary Fund (IMF) StatGPT project to modernise its statistics processing and dissemination platforms. The project relies on the use of generative AI to establish better search and browse capabilities, in turn enhancing the user experience and quality of the analysis (Graph 16). Yet, one difficulty, common to AI-based applications in general, is that data insights cannot be communicated as a "black box" and require transparent explanations to the users.



Source: UNECE (2023): *Large language models for official statistics*, HLG-MOS White Paper, December, pp 31–7.

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Introductory speech

Communication on central bank statistics: unlocking the next level

Ana Paula Serra, Member of the Board, Banco de Portugal

Lisbon, 19 September 2022

Good afternoon to everyone. It is my pleasure to welcome you to Lisbon and to have the opportunity to open this conference on a topic that is very dear to me.

I want first to thank you all for joining us in this conference, both those that were able to come to Lisbon, and those that are joining us online. I also want to thank the Irving Fisher Committee for their constant availability and great cooperation with the *Banco de Portugal* in organising this conference. Our relation and commitment to the IFC has been truly rewarding. Lastly, a special thank you to all the speakers who will be sharing with us their experience in this field, and who will certainly contribute to very stimulating discussions in these two days.

If you allow me a short personal note, I would like to share with you that the last time I spoke in person at a statistical event was also in this room in February 2020. At that time, I had the pleasure of participating in a conference on External statistics that was jointly organized by the *Banco de Portugal*, the Irving Fisher Committee and the European Central Bank. I know some of you were also here for that conference. It was likely the last big meeting on central bank statistics before we all moved into an exclusively online world. For this reason, it fills me with great joy to be welcoming you all here, after such a long and challenging period. But since we are constantly learning and adapting, and because we have seen also great advantages in having online meetings, this conference is also taking place online, thus allowing for a greater number of participants, including some that otherwise would not have been able to join this conference. One could say that the pandemic has unlocked the next level for international meetings and conferences.

Now let us return to what brings us here: unlocking the next level on communication of central bank statistics. But before we talk about the next level, I propose we analyse first the level where we currently stand: throughout these years, we have looked at statistical production as essentially a three-phase process: collection and monitoring of the data quality; compilation of statistical aggregates; and publication. And this was it. With the publication of our data, for instance, in our statistical websites, we believed our work was complete. But perhaps, in several cases, after publishing the data, we felt some frustration because our work didn't receive the

attention nor had the impact that we thought it deserved. Something must be missing in this process. Imagine that instead of producing statistics, we produce goods. First, we need the raw materials. Then we process them in our factory and build our products, which we then place on the shelves of our store. You will likely agree with me that a business that stops its process here, will fail to succeed. To facilitate the success of the good, businesses have to define its target customers, let them know that the product is available and even educate the potential clients on the products' usefulness. To achieve this goal, they to communicate with the clients. Communication aims precisely at bridging the gap between producers and the clients.

In our business, statistical communication with our customers has for some time been a missing link in our production process. Without defining our target customers and without a proper communication, the impact and success of our production will fall short. To have a proper communication it is essential that the users of statistics understand their meaning and are able to interpret them, making them an important tool to understand the society and for its own decision making .

I believe our mission will only be truly successful and complete if we succeed in bridging this gap: the gap that exists between us, the producers of statistics, and our customers, those that will use our statistics to help them in their work, their decisions, or sometimes just to satisfy their curiosity. I am talking about knowing who our users are, and provide them with the data they need, in a format they understand.

This is the next level of communication which we aim to unlock during the next two days:

- First, know our users: define who our target audiences are, and what are their characteristics;
- Second, understand their needs: investigate what are the data needs of each target group, and even anticipate their needs, or find ways to show them why they need something they were not aware was important;
- Third, when in Rome, do as the romans do: we must speak the same language as our users, and use the communication channels that they use.

To help us unlock this next level, over these two days we will have the chance to hear experts from different corners of the world talk about their experience and prospects regarding communication on central bank statistics. We will hear how different central banks have been setting up the communication function, their main challenges and the different solutions they have explored.

However, this not a conference to discuss simply the importance of statistical communication, we are all well aware of that. This is a conference for those who believe that helping our users explore and understand our data will empower them, which will in turn grow our influence in society. For this reason, I invite to focus our discussion in

the future. Tomorrow, at the end of this conference, we should have set out our vision for communicating statistics in a valuable and impressive way.

A few months ago, in preparation of this conference, we launched a survey to all IFC members, to understand where we all stand, and what are our priorities in this field. I want to thank everyone that participated, as this was an essential input when organising this conference. We received around 50 answers to this survey, which, for us, was already a very clear indication of the importance of this topic. The results of the survey will be presented before each session, to set the ground for the presentations and discussion to follow.

As I mentioned, over these two days we will have the chance to discuss the present and the future of central banks statistics communication, and to build a collective motivation for moving into the next level and truly evolving the way we communicate.

We will start by discussing how to start a statistical communication function in a central bank, and what are the skills that we need. The second session will be dedicated to our targets: who are they, and how do we reach and engage with each of them. We will then conclude today's works with a discussion panel with participants from different backgrounds that will explore the language that we use, and how simplifying our language can have an important effect in promoting statistical literacy.

Tomorrow, the programme will be dedicated to communication channels, with two sessions aimed at exploring how and what channels are central banks using to communicate with different target groups. To help us understand how we can collect and explore data on our users, we will benefit from a keynote speech on using web analytics services. Finally, we will have the pleasure of listening to Pablo Garcia, the Vice-Governor of the Central Bank of Chile and chair of the IFC, who will give the closing remarks to this conference.

To conclude these introductory remarks, let me reinforce my main message: unlocking the next level in statistical communication is not an easy task, and it will force us into areas we are not familiar with, and that require skills that we have not yet developed. However, we have faced numerous bigger challenges as statisticians that we always overcame successfully. As soon as we understand that communication is truly part of the data value chain, and that our work is not complete without it, I believe that we will do whatever it takes to fulfil our role and our mission.

I thank you again for your presence and your collaboration, and I wish you all a very fruitful conference. Thank you!

Closing remarks by the IFC Chair

Communication on central bank statistics:
unlocking the next level

Pablo Garcia, Deputy Governor, Central Bank of Chile

Lisbon, 20 September 2022

Good afternoon. On behalf of the IFC and the Banco de Portugal, I would like to express my sincere appreciation for your participation and your very valuable contributions to this conference on Communication on Central Bank Statistics.

Over the last two days, we have had the opportunity to share diverse experiences and views about the statistical communication function. I am happy to note that we benefited from a global attendance from the central banking community, despite difficult international times: Europe, Asia, North and Latin America were all represented. This is a welcome development after the difficult years we have faced during the pandemic, and it is nice to be back face to face.

So many thanks to Banco de Portugal for making this happen, especially Ana Paula, Luis, Antonio and the rest of the team both on statistics and support. I am certain that the takeaways from this event will further deepen our understanding and stimulate our future work. Let me provide a few ideas in that direction.

First, statistics are not an end in themselves. Collecting statistics is necessary, but it is an incomplete effort if we do not succeed in communicating them well. We are entering a new era characterised with new types of tools, such as big data analytics and natural language processing, but also we are facing new demands from all our audiences and users.

Second, in order to be useful to users, we need to continue to strive to clearly structure and present data in a manageable format, so as to be clearly communicated via a user-friendly system. Communicating is not just about publishing numbers, it is also about putting them in perspective. We need to let our data talk. Official statisticians must select the information that is relevant, resend it in a way that users can relate it to their own interests and circumstances, using language and tools coherent with those used in other contexts. Technology will help us, through new and varied data visualisation techniques for displaying statistical information and a large choice of publication medium. But we never should forget that content is key.

Third, there are many challenges. Obvious challenges relate to the operational and technical level, for instance in terms of staff resources, IT budget, etc. Yet a key difficulty for central bank statisticians is to make sense of the data. With the increased use of advanced analytical tools and complex data sources, it has become ever more important to ensure that the statistics produced are “interpretable” – so that specific explanatory causes or factors can be identified and communicated for policy use. Cross-communication with other areas of the

data ecosystem within the central bank (research, analysis, and policy) is necessary to make the interpretation consistent with the broad direction of policies and agendas of the central bank.

Fourth, communication has to be tailored to specific targets and depending on circumstances. On the production side, central bank statisticians have to facilitate the integration of data in policy analysis, and this calls for enhancing information-sharing and dissemination to authorities. On the user side, good communication is essential for authorities like central banks that must provide factual evidence when explaining their decisions, which is key for supporting their accountability and independence. In other words, communicating on the basis of “black-box calculations” is not an option if one wants to secure public trust.

Finally the importance of public support. Communicating on statistics calls for being transparent and ensuring that high quality standards are followed. This entails two major consequences if one wants to fully reap the benefits of sound data. One is that information has to be trustworthy and relevant: in particular, international harmonisation, high-quality standards, and user-friendly dissemination platforms are key. And the other consequence is that we should ensure that this information can be effectively used; that is, the data have to be accessible to analysts and policymakers. This calls for proper arrangements for sharing data securely, with due consideration of confidentiality considerations. Certainly, this can be challenging; in particular, preserving individual privacy rights and other ethical principles should be a top priority, but at the same time it is essential to establish proper governance mechanisms that facilitate the use of granular data.

How should we address these issues looking forward when designing our statistical communication strategies? The starting point are certainly the fundamental principles of official statistics, in so far as they can help to secure accountability, transparency, privacy, confidentiality, accuracy and timeliness for the data we produce. This applies of course for our own internal operations: for instance, we must provide transparent information on the sources, methodologies and procedures used so as to facilitate the correct interpretation of our data. But the application of the fundamental principles should have a much broader perspective, by providing literacy training to other groups, sharing our statistical expertise and playing a greater stewardship role together with our counterparts in the national statistical system and cover the multiple data sources that are now proliferating. I am happy to note that significant progress is already taking place on these fronts in the international statistical community in general and in central banks in particular.

I wish to close my remarks by expressing my gratitude to all those who helped us prepare and carry out our conference on Communication on central bank statistics: unlocking the next level. Thank you all.

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Keynote presentation

Social media – it's all about the metrics¹

Paulo Rossas,
Lisbon Digital School

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

LISBON DIGITAL SCHOOL

SOCIAL MEDIA IT'S ALL ABOUT THE METRICS

NOT A SKILL, A MUST HAVE

Lisbon Digital School

Junho 2020 - Presente
Chief Innovation Officer – Teacher - Consultant

Nestlé Cerealac | Nescafé Dolce Gusto | Worten Portugal | Samsung Portugal | Fundação Francisco Manuel dos Santos | Guloso | EEA Grants | Sport Tv Portugal | KIA Portugal | Buondi

Creative | Social Media Consultant

Março 2020 – Maio 2020
I'm not a Specialist. Sorry! – Narrativa.ch

Eleven Sports Portugal | Lisbon Digital School | Sindicato de Jogadores de Futebol |

Wunderman Thompson Lisbon

Julho 2013 – Março 2020
Head of Social Media / Brand Content

Vodafone PT | GALP | Cerveja Sagres | Cerveja Bohemia | Cascade | Radler | Iglo | Associação Mutualista Montepio | Um Bongo | Chocolates Nestlé | Frize | Turismo de Cascais | Primavera | Mar Shopping | Kit Kat | Yoggi

Sport Lisboa e Benfica

Outubro 2011 – Junho 2013
Head of Social Media – Brand Content

PT

Outubro 2011
Digital Creative

Torke Agency

Maio 2011 - Agosto 2011
Digital Creative



<http://www.ihaveaconce.pt>

<http://www.facebook.com/paulorossas>

<http://www.twitter.com/paulorossas>

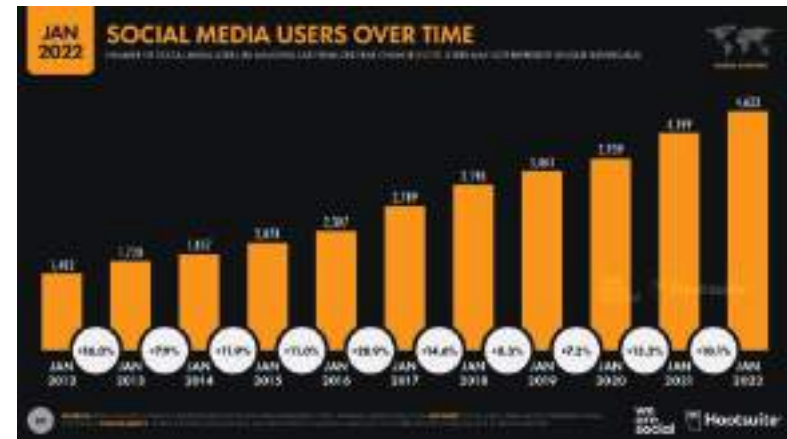
<http://pt.linkedin.com/in/paulorossas>

paulo.rossas@ihaveaconce.pt

paulorossas@gmail.com

Paulo.rossas@lisbondigitalschool.com

SOCIAL MEDIA WHY DOES IT MATTER?



WORLD POPULATION

7,97B

SOCIAL MEDIA
USERS

4,62B

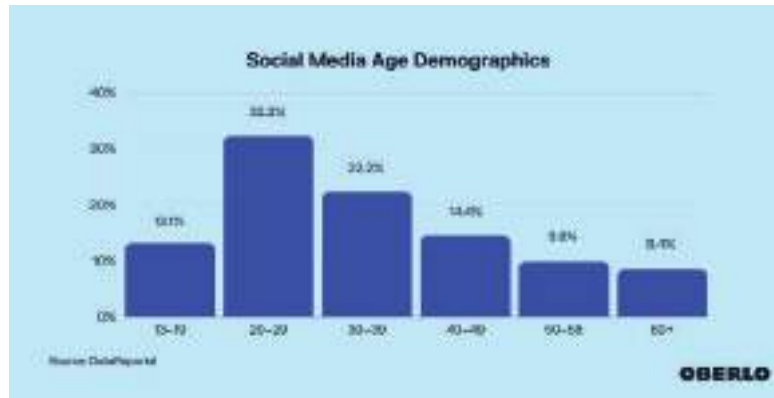
60% OF THE
WORLD POPULATION
IS ON SOCIAL MEDIA

ESPECIALLY THE
NEW GENERATIONS

2H27M A DAY

TO LEARN
TO CONSUME
TO BE ENTERTAINED
TO BUY
TO BE SOMEONE

50% OF
16-24 YEARS OLD
USE SOCIAL MEDIA
FOR BRAND SEARCH



AND IT WON'T STOP

**DIGITAL IS HERE
TO STAY**

**THE PANDEMIC
ACCELERATED
THE PROCESS**

**WE ADVANCED
10 YEARS
IN DIGITAL AND SOCIAL**

**LET'S USE IT
TO OUR ADVANTAGE**

HOW?

**FIRST WE HAVE TO BE ON
SOCIAL MEDIA**

**THEN WE HAVE TO CREATE
A COMMUNITY**

**THEN WE HAVE TO LEARN FROM
OUR COMMUNITY AND FROM ALL
OTHER COMMUNITIES**

HOW?

METRICS | DATA

**SOCIAL NETWORKS
GIVE US EVERYTHING**

**AND WE CAN FIND
THE RIGHT PEOPLE
FOR OUR BUSINESS**

TO FIND AND UNDERSTAND
PEOPLE,
WE HAVE TO UNDERSTAND
METRICS

WE LIVE IN A WORLD OF
DATA, BIG DATA,
INFORMATION

NEVER BEFORE INFORMATION
HAS BEEN
SO VALUABLE

AND NEVER HAS
INFORMATION HELPED US
SO MUCH
TO DECIDE

**TO CREATE
TO IMPLEMENT
TO TEST
TO SUCCEED**

**HOWEVER,
WE HAVE TO UNDERSTAND
HOW PEOPLE USE
SOCIAL MEDIA**

**THE TEMPTATION IS
ALWAYS TO LOOK
AT THE BIG PREMISE**

**HOW MANY
DID WE REACH?**

HOW MANY
SAW?

HOW MANY
INTERACTED?

HOW MANY
VISITED OUR WEBSITE?

WE NEED TO CLOSE THE
GAP BETWEEN REACHING
AND INTERACTING

AND,
UNDERSTAND
THE CAUSE

INTERACTION WITH
A CAUSE IS WHAT ALLOWS
US TO LEARN

LEARN AND MAKE
THE RIGHT DECISION

READY?

WHY PEOPLE
USE SOCIAL MEDIA?

ENTERTAINMENT
LEARN
TALK TO FRIENDS
GET CLOSER
BUY THINGS

LET'S ASK THE
RIGHT QUESTIONS

LET'S START WITH
SOMETHING VERY HUMAN
AND COMMON

**HOW MANY PAGES
DO WE VISIT DIRECTLY?**

**DO WE GO SPECIFICALLY
TO PAGES?**

**ZERO AND NO!
UNLESS WE HAVE
A DIRECT PROBLEM
WITH THE BRAND**

**WE WANT AN ANSWER AND
IT'S USUALLY
NOT FOR SOMETHING
POSITIVE**

WE ONLY VISIT OUR
FAVORITES.
AND THEY ARE
FEW

SPORTS CLUBS
INFLUENCERS
CONTENT WE LOVE
CONTENT WE NEED

INSIGHT
HUMAN INSIGHT

99% OF US
CONSUME CONTENT
IN THE FEED

**WITH INVESTMENT,
WHO CONTROLS THE
FEEDS?**

ALL OF US!

**WE PAY FOR
OUR CONTENT/MESSAGE
TO APPEAR
IN FRONT OF PEOPLE**

**INSIGHT
SOCIAL MEDIA INSIGHT**

HOW DIFFICULT IS IT
FOR ANY SOCIAL NETWORK TO
TAKE ONE OF OUR CONTENT AND
PUT IT
IN A PERSON'S FEED?

ZERO!

SO, THE METRIC
PAID REACH, CONTROLLED
BY US,
IS IMPORTANT?

YES AND NO

“NO”
I PAY TO REACH
I WILL GET WHAT I PAID FOR

“YES”
IF I EVALUATE
WITH ANOTHER
SPECIFIC METRIC

FOR EXAMPLE:
ENGAGEMENT

ENGAGEMENT:
PEOPLE WHO INTERACT

PEOPLE WHO SAW
X 100
(FOR PERCENTAGE)

ENGAGEMENT:
GREAT JOB IF
WE HAVE MORE THAN:
4% ON FACEBOOK
6,5% ON INSTAGRAM
2% ON TWITTER
6% ON LINKEDIN

**DID THE PEOPLE
WHO SAW IT,
INTERACTED?**

**WE HAVE TO GIVE PEOPLE,
SOMETHING TO
INTERACT WITH**

GREAT CONTENT
QUESTIONS
OPINIONS
DEBATE
PRODUCTS

WITH MONEY,
WE CAN REACH 100%
OF OUR TARGET...

BUT...ON SOCIAL MEDIA,
IF NO ONE INTERACTS,
THE MESSAGE
WILL NOT GET THROUGH

AND WE WON'T LEARN
ANYTHING FROM
THE METRICS

AND WE WON'T BE ABLE
TO DECIDE WHAT
TO DO NEXT

ANOTHER VIDEO?
ANOTHER QUESTION?
ANOTHER INFOGRAPHIC?
ANOTHER JOKE?
ANOTHER PRODUCT?

INTERACTIONS ANSWER ALL
THESE QUESTIONS
(METRICS | DATA)

IF WE KNOW THE IMPACT
WE KNOW THE CAUSE

AND THEN WE REPEAT
OR INCREASE THE QUALITY

QUALITY,
OF TOPICS THAT WE KNOW THAT
WORK PERFECTLY TO ALL THE
COMUNITIES

BECAUSE WE
CLOSED THE GAP,
BETWEEN THE PEOPLE
WE REACH AND THE PEOPLE
WHO INTERACT

FACEBOOK

WHAT METRICS ARE REALLY
IMPORTANT WHEN WE PAY
TO REACH PEOPLE?

**SHARES
COMMENTS
LIKES**

**SHARES
COMMENTS
LIKES
IN THIS ORDER**

LIKES
**THE LEAST RELEVANT
WE DO IT JUST BECAUSE**

COMMENTS
**NOT ALL OF US COMMENT.
THE CONTENT HAS TO
BE INTERESTING**

SHARES
THE MOST IMPORTANT.
CERTIFICATE OF RELEVANCE.
WE SHARE ON OUR NETWORK.

LIKES | COMMENTS | SHARES
WE FIND OUT WHAT CONTENT MAKES OUR
FANS
STOP IN THE FEED

LIKES | COMMENTS | SHARES
WE LEARN
WE ADAPT
WE INVEST

LINK CLICKS
IS IT RELEVANT?
MAYBE?!

LINK CLICKS

IT'S A METRIC THAT CAN ONLY
BE EVALUATED WITH
ANOTHER METRICS FROM
THE WEBSITE.

LINK CLICKS

+
TIME ON SITE
BOUNCE RATE
PAGE VIEWS

LINK CLICKS

HAVING THE CLICK, JUST FOR THE CLICK
ITSELF, IT'S NOT RELEVANT

LINK CLICKS

THE CLICK MUST HAVE
A CAUSE AND EFFECT

MORE RELEVANT METRICS

ORGANIC REACH
VIRALITY
**IF THE NUMBERS ARE HIGH
IT IS VERY POSITIVE**

ORGANIC REACH
VIRALITY
**OUR CONTENT,
WITHOUT INVESTMENTS,
REACHED SEVERAL PEOPLE**

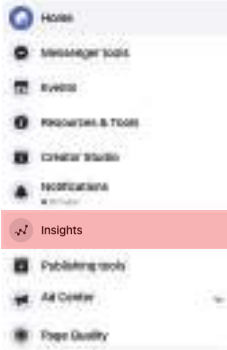
ORGANIC REACH
VIRALITY
**FOR THIS TO HAPPEN,
OUR CONTENT MUST BE RELEVANT.
WE NEED INTERACTIONS.**

IMPRESSIONS
I CAN CONTROL IMPRESSIONS
WITH INVESTMENT SO IT'S A
PERFORMANCE METRIC

ORGANIC REACH
SHARES
COMMENTS
LIKES
IN THIS ORDER

AND...
LIFETIME ENGAGED USERS
VIDEO PLAY
FOLLOWERS
HIDE CLICKS
HIDE ALL CLICKS

**WHERE TO GET
THE METRICS?**
FACEBOOK ANALYTICS
EXPORT DATA
EXCEL



FIRST WE MUST THINK ABOUT
PEOPLE AND HOW THEY USE
SOCIAL MEDIA

AND THEN WE THINK
ABOUT THE METRICS

THERE IS A CAUSE...
GREAT CONTENT

THERE IS A CONSEQUENCE...

INTERACTIONS

INSTAGRAM

WHAT IS THE BEST METRIC TO
EVALUATE OUR CONTENT ON
INSTAGRAM?

PROFILE VISITS

**HOW MANY PAGES
DO WE VISIT DIRECTLY?**

**99% OF US
CONSUME CONTENT
IN OUR FEED**

**IF I STOP,
I WANT TO SEE MORE,
I WILL CLICK TO
VISIT THE PROFILE**

**PROFILE VISITS
ORGANIC REACH
SAVES
COMMENTS
LIKES**

IN THIS ORDER

AND...
REELS VIEWS
LINK CLICKS
% WEREN'T FOLLOWING YOU
ENGAGEMENT

WHERE TO GET
THE METRICS?
CREATOR STUDIO
EXPORT DATA
EXCEL



<https://business.facebook.com/creatorstudio>



TWITTER

WHAT IS THE BEST METRIC TO
EVALUATE OUR CONTENT ON
TWITTER?

IMPRESSIONS
(ORGANIC REACH)

AND...
PROFILE VISITS

IMPRESSIONS
PROFILE VISITS
LINK CLICKS
RETWEETS
LIKES
REPLIES
ENGAGEMENT

WHERE TO GET THE METRICS? ANALYTICS.TWITTER.COM EXPORT DATA EXCEL

<https://analytics.twitter.com/>

SEP 2022 SUMMARY

Tweets
13

Tweet impressions
1,516

Profile visits
1,015

New followers
1



LINKEDIN

IMPRESSIONS (ORGANIC REACH)

AND...
COMMENTS

IMPRESSIONS
COMMENTS
SHARES
FOLLOWERS
ENGAGEMENT

WHERE TO GET
THE METRICS?
LINKEDIN ANALYTICS
EXPORT DATA
EXCEL



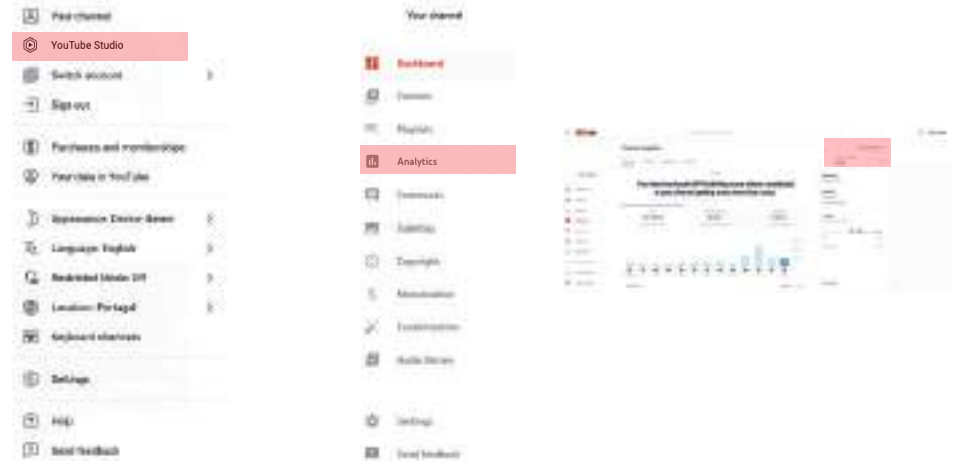
YOUTUBE

WATCH TIME

**AND...
AVERAGE PERCENTAGE
VIEWED**

**WATCH TIME
AVG % VIEWED
VIEWS
IMPRESSIONS
UNIQUE VIEWERS
DEMOGRAPHICS**

WHERE TO GET THE METRICS? YOUTUBE ANALYTICS EXPORT DATA EXCEL



NOW, WE ALL KNOW THE MOST IMPORTANT METRICS

WHERE WE CAN FIND THEM

HOW PEOPLE
CONSUME CONTENT

NOW, WE JUST NEED
TO LOOK AT DATA

AND CREATE

ADAPT

DUPLICATE

EDUCATE

**INVEST IN PAID MEDIA
WITH A PURPOSE**

**RESPOND TO
REAL GOALS**

CREATE BUSINESS

**ALL OF THIS
WITH DATA
THAT REALLY HELPS**

**DATA OF PEOPLE
WHO FOLLOW US**

**DATA OF PEOPLE
WHO INTERACT WITH US**

**THIS IS
THE TRICK**

**PEOPLE INTERACT,
WE REALIZE WHAT CONTENT
MOTIVATED THE
INTERACTION**

**WE INVEST
IN THIS CONTENT**

**SOCIAL MEDIA
GIVES US ALL THIS.
IF WE HAVE
GOOD CONTENT**

**WE JUST NEED TO LOOK AT
THE METRICS**

THE FUTURE?

**PEOPLE
USE REAL PEOPLE
IN YOUR CONTENT**

**GIVE PEOPLE
A STAGE**

USE INFLUENCERS

**USE INFLUENCERS
THE RIGHT ONES**

**SOCIAL NETWORKS
ARE GIVING PEOPLE
A STAGE**

WHY?

**WHO BRINGS
MORE PEOPLE
TO SOCIAL NETWORKS?**

OTHER PEOPLE

**OTHER PEOPLE
NOT BRANDS**

**USE YOUR PEOPLE
AND WIN THE GAME**

AND PAY CLOSE ATTENTION TO METRICS



Questions?



Thank you!

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

Three targets for making statistics easier to understand¹

Mingfei Qiu,
Federal Home Loan Bank of Atlanta

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



Three Targets for Making Statistics Easier to Understand

Mingfei Qiu

Senior Quantitative Risk Management Analyst

September 19, 2022

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Overview – Three Targets

- Motivate people to be willing to listen and learn
- Make statistical language plain and easy to understand
- Practice plain statistical language

Target 1:

Motivate People to be Willing to Listen and Learn



- We show empathy toward our collaborators when they have to deal with the statistical models that they don't have direct experience with
- We state our readiness to help people understand the statistical models and how our efforts could make their work easier
- We seek for people's feedbacks on which sections of our reports are too quantitative to understand

Target 2: Make Statistical Language Plain and Easy to Understand



Example 1 – Explaining Regression Models:

- Formal but less easy to understand language
 - Predictor and Response
 - Independent Variable and Dependent Variable
 - Exogenous Variable and Endogenous Variable
- Plain language
 - X and Y
 - Right of the Equation and Left of the Equation

Example 2 – Explaining Probability:

- Formal but less easy to understand language
 - Assume there are 50 samples selected from the population, and the chance of each sample to pass the test is 18 percent, then the probability that all the samples passing the test is as low as

$$18\%^{50} = 6 \times 10^{-36}\%$$

- Plain language



To achieve this we are co-authoring an academic paper with college freshmen

**LOESS Smoothing for Weight of Evidence Transformation:
An Application on Credit Rating Models**

Mingfei Qiu*, Minghai Qiu**

**Federal Home Loan Bank of Atlanta, Atlanta, GA, USA
(e-mail: mqiu@fhlbatl.com).*

***Xidian University, Xi'an, Shaanxi, China*

We deem this as an experiment to test whether the statistical language is plain enough

Thank You!

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

Bank of Israel – Statistical Communications Function¹

Hadar Gotsman,
Bank of Israel

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



Bank of Israel

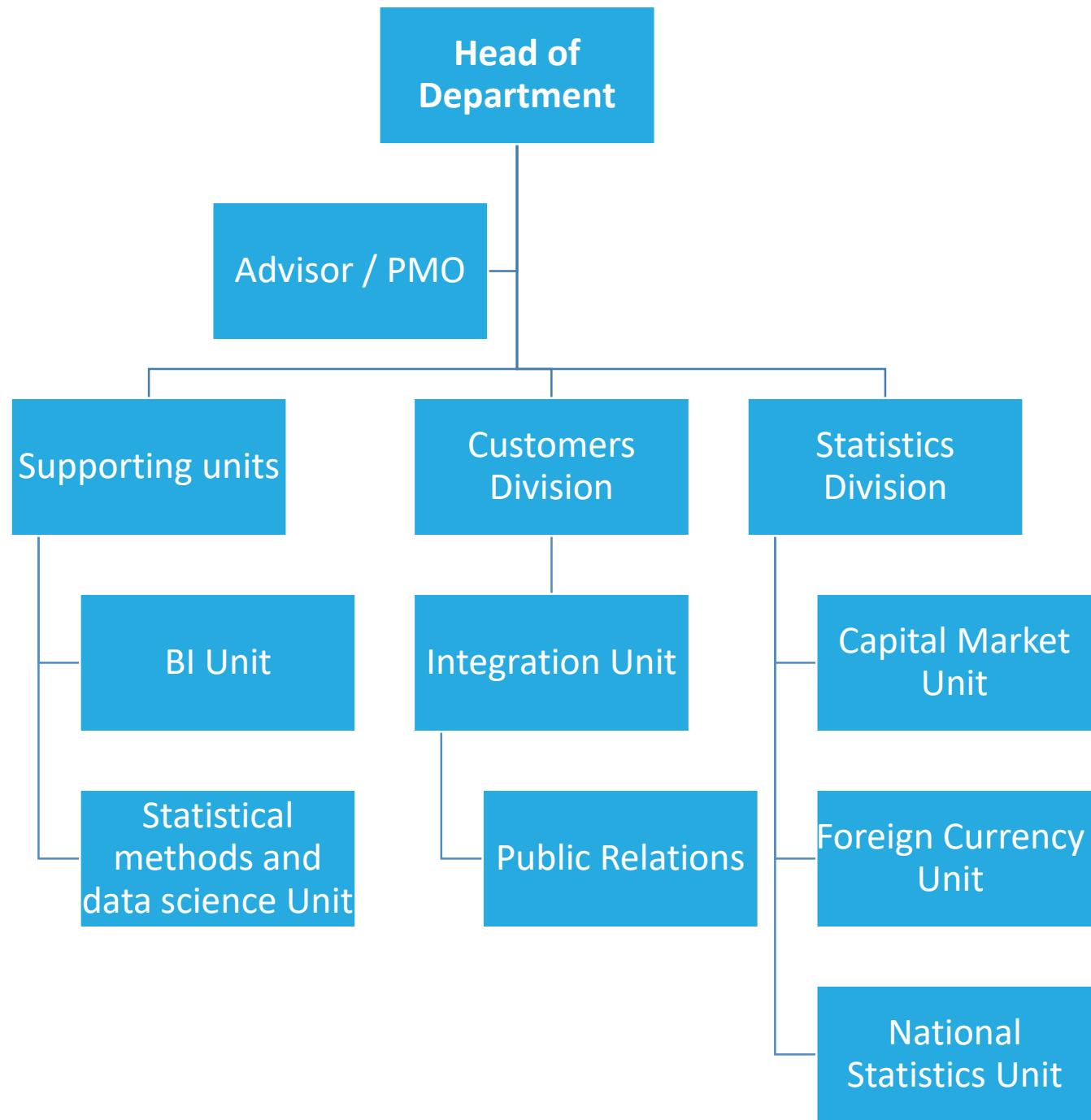
Statistical Communications Function

Hadar Gotsman

Customers Division – Information and
Statistics Department

September 2022

Information and Statistics Department



Within the Bank

Targets

Vision: To maximize the added value of the data for decision makers

Method: To provide access and to distribute statistics that support decision-making within the bank.

Channels

- Internal data portal
- Dashboards
- Tables and charts
- Periodic surveys

Contents

- Financial stability
- Foreign exchange market
- Capital market
- Credit market
- Asset portfolio
- Balance of payments
- Banking
- Real activity



Internal Portal

פורטל מידע וסטטיסטיקה

בית | דיונים מוניטריים | שווקים | לוחות אינדיקטורים | סדרות | צ'ארטבוקים | דשבורדים | ריכוזי לוחות וגרפים | דוחות ופרסומים | מפתח נושאים | ניהול הפורטל

הדף שלי בפורטל

<div style="margin-bottom: 10px;"> <p>קטלוג סאגרים בבנק</p> <p>תחקור מאגר ני"ע</p> <p>תחקור דוחות כספיים</p> <p>שערי חליפין</p> <p>סטטיסטיקה באתר ב"י</p> <p>אתר הלמ"ס</p> <p>מדדי איכות חיים למ"ס</p> <p>OECD Data</p> <p>OECD Better Life IDX</p> <p>IMF</p> <p>BIS</p> <p>Eurostat</p> <p>FRED</p> </div>	<div style="margin-bottom: 10px;"> <p>חדשות ועדכונים</p> <p>20/09/2022</p> <p>חדש במטבע - דשבורד מודרניסטי</p> </div>	<div style="margin-bottom: 10px;"> <p>לוחות אינדיקטורים נבחרים</p> <p>נחונים יומיים</p> <p>אינפלציה ומדיניות מוניטרית</p> <p>חשבונות לאומיים</p> <p>כלכלה עולמית - שווקים פיננסיים</p> </div>	<div style="margin-bottom: 10px;"> <p>נושאים במיקוד</p>  <p>"הדף שלי בפורטל"</p> <p>ספסה האפשרות לצרף דף אישי כדור עוב</p> </div>
	<div style="margin-bottom: 10px;"> <p>סקירות ופרסומים</p> <p>סיכום הדיון המוניטרי החודשי הרחב - עדכון פנימי (22.09.2022)</p> <p>המדד המשולב (2022.09.20)</p> <p>התפתחויות עיקריות בחיק המנהל על ידי המשקיעים המשפיעים (14.09.2022)</p> <p>סדר חוץ - סקירה חודשית של חטיבת המחקר (11.09.2022)</p> </div>	<div style="margin-bottom: 10px;"> <p>ריכוזי לוחות וגרפים נבחרים</p> <p>מצגת מאקרו</p> <p>חננון מוניטרי שבועי - Chartbook</p> <p>אינפלציה ומדיניות מוניטרית</p> <p>שוק מסבב חוץ</p> </div>	<div style="margin-bottom: 10px;"> <p>סדרות בנושאים נבחרים</p> <p>חשבונות לאומיים</p> <p>סקרים</p> <p>נחונים יומיים נבחרים</p> <p>מדדי מחירים</p> </div>

מנהל הפורטל - הדן טסימן | 2535 | דואר אלקטרוני | דואר טלפוני





בנקים
מרכזי
מסחר

נזילות

הלימות ההון

סיכון אשראי

מאזן

רווחיות



Banking System Financial Reports

לוח

התפתחות לאורך זמן

השוואה לתקופה מקבילה

הרכב הרווחיות

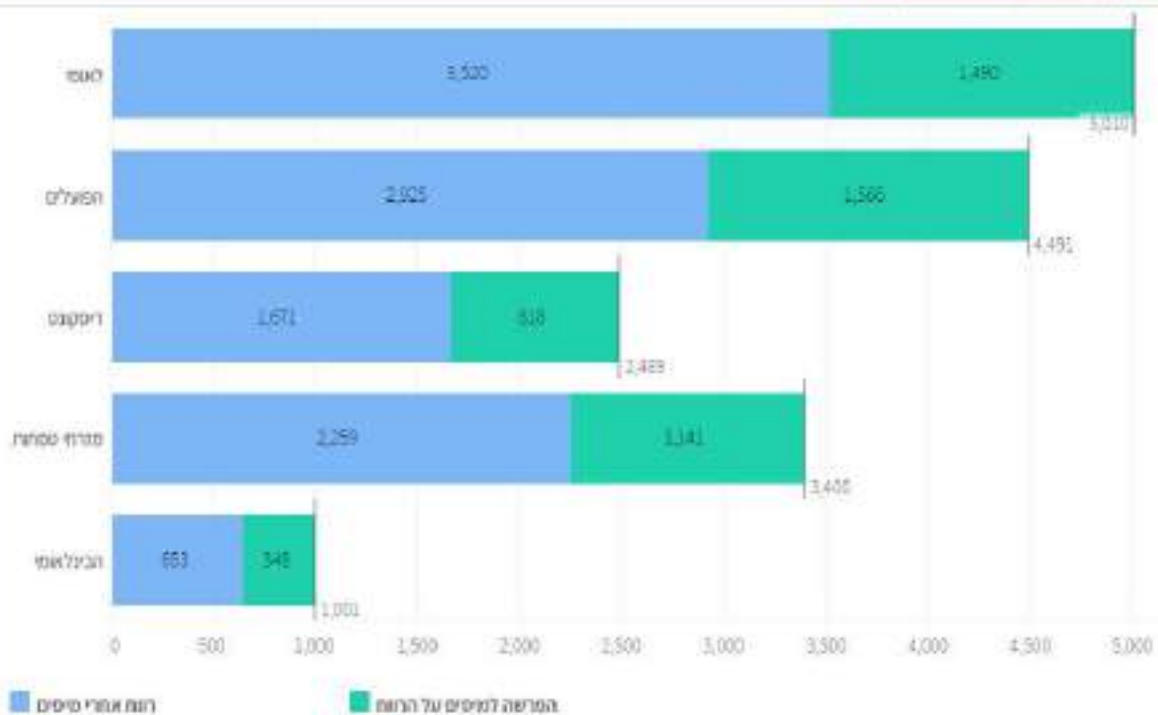
מדדים מרכזיים

בחירת תקופה: Q3:22
רביע מהדוחות: (Q)
בנקים: (Multiple view)

תחקור לפי מגזרי פעילות פיקוחיים

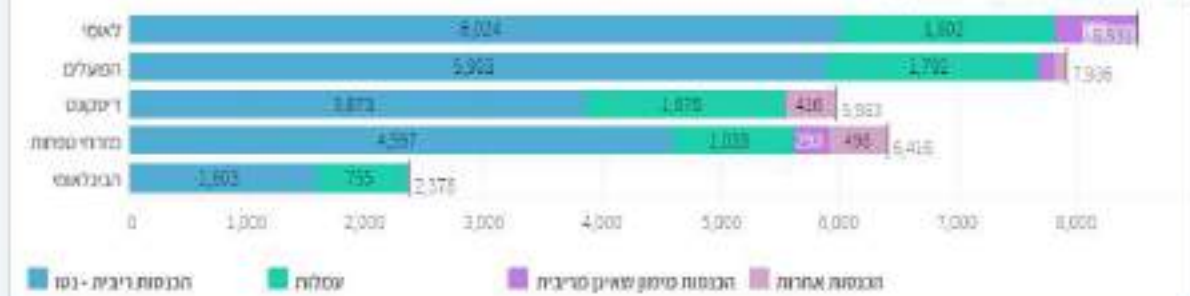
רווח

(מיליונים, מצטבר מתחילת השנה)



הכנסות

(מיליונים, מצטבר מתחילת השנה)



הוצאות

(מיליונים, מצטבר מתחילת השנה)



Outside the Bank

Targets

Vision: To be a primary source of financial statistical information for the public.

Method

- Provide transparent and informative access to statistics for the public
- Create statistics on a national level
- Report information and statistics to international organizations
- Cooperation with the Bank's Communications Division

Channels

- Press releases
- Meetings with various groups of users
- Bank of Israel [website](#)
- Various economic videos
- Reports to International functions
- [Annual](#) publication of the "Statistical Bulletin"

Contents

Everything that can be published from the statistics that the Bank manages

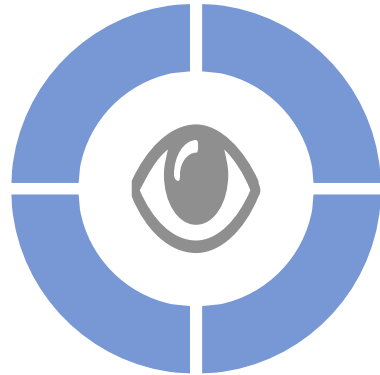




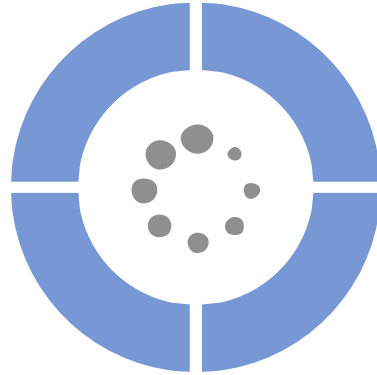
Bank of Israel's NEW website



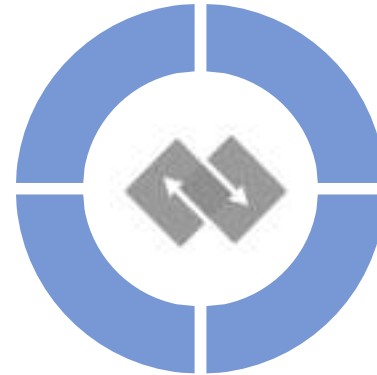
New
organizing
method



Revised
Economic
Topics



BI Tools



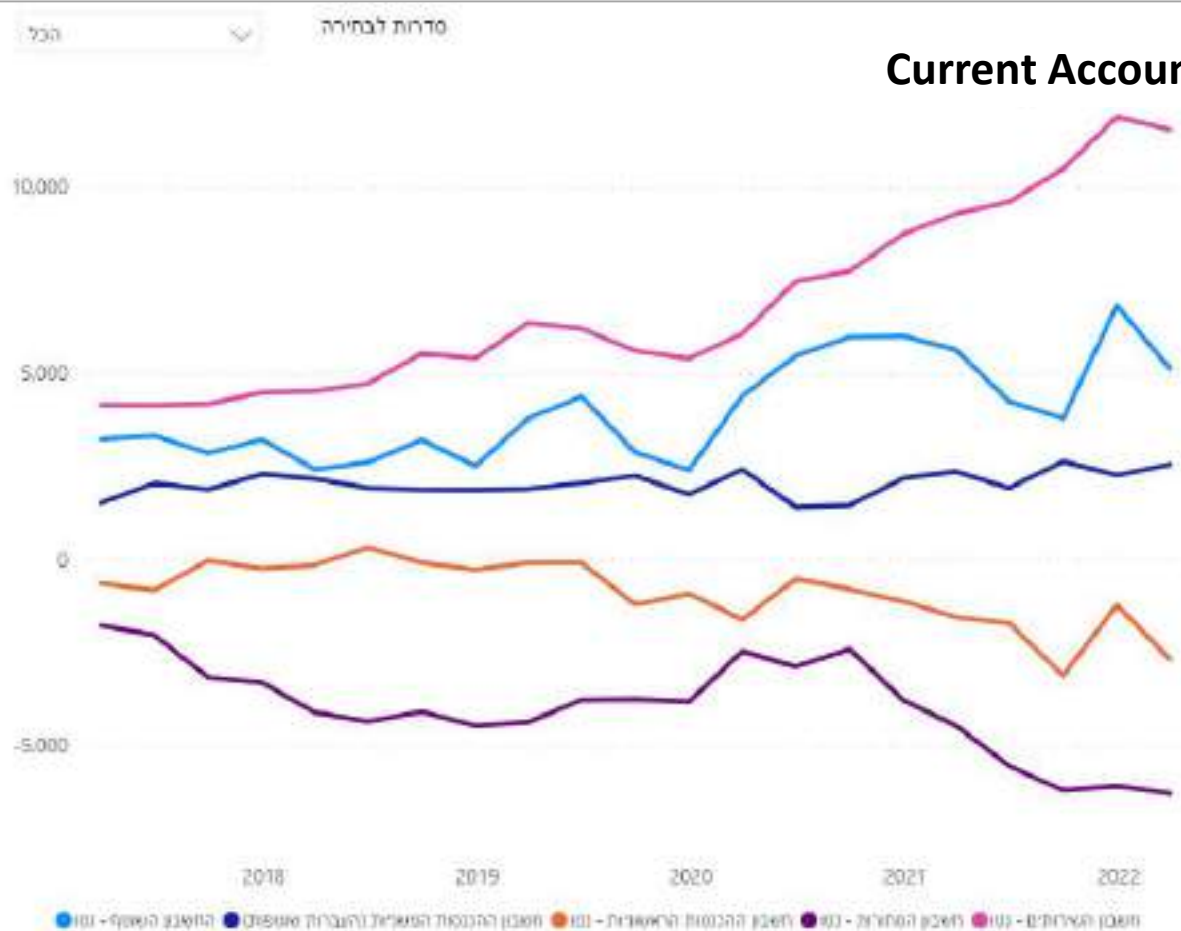
SDMX



Time Series
Interface



Current Account



ערך	נקו ל:	החשבון השוטף - נתונים עיקריים (1)
5,126.70	03/22	1 החשבון השוטף - נטו
		2 החשבון השוטף ללא יתומים, אר"ם ודלק - נטו
		3 יבוא הסחורות והשירותים ללא יתומים, אר"ם ודלק
		4 יבוא הסחורות והשירותים ללא יתומים, אר"ם ודלק
-2,673.70	03/22	6 חשבון ההכנסות הראשוניות - נטו

ערך	נקו ל:	החשבון השוטף - אינדיקטורים
		7 הערך (+) / (-) בחשבון השוטף של ישראל באותו תוצר
		8 משקל יבוא שירותים וסחורות אחרים מסך יבוא השירותים בישראל
		9 שדד ההשתלבות בכלכלה העולמית (שדד המדינות)
40.31%	03/22	10 שדד ההשתלבות בכלכלה העולמית (שדד המדינות) במדינת האירופי
94.75%	03/22	11 שדד תואי הסחר (ללא יתומים אופני, מססים וחומרי אנרגיה)

ערך	נקו ל:	חשבון הסחורות - נתונים עיקריים (2)
3,237.60	03/22	12 חשבון הסחורות ללא יתומים, אר"ם ודלק - נטו
		13 היבוא התעשייתי ללא יתומים
		14 יבוא תעשיית סכנהניב עילית מעורבת עילית
		15 היבוא לאירופי (ללא יתומים)
		16 היבוא לארה"ב (ללא יתומים)
3,938.80	03/22	17 יבוא של חומרי גזם (ללא אנרגיה)
7,130.00	03/22	18 יבוא שירותים - סה"כ

ערך	נקו ל:	חשבון הסחורות - אינדיקטורים
		19 משקל יבוא תעשיית סכנהניב עילית מעורבת עילית בסך היבוא
		20 משקל היבוא לאירופי האירופי מסך היבוא
		21 משקל היבוא לארה"ב מסך היבוא
		22 חשבון הסחורות בישראל באותו תוצר
70.87%	03/22	23 שדד שדד חליפין האפקטיבי העמולי
223.57%	03/22	24 שדד היבוא של ארה"ב למוצרי סכנהניב עילית

בחירת תקופה

31/01/2012 31/12/2022

1Y 5Y 10Y All





Series Name ▾ Reporting entity ▾ Data item ▾ Counterpart sector ▾ Valuation ▾

0 Series Selected

showing 200 series of 204

<input type="checkbox"/>	Bank Yahav-Securities borrowed or purchased under agreements to resale Quarterly,Thousands,New Israeli shekel 2017-Q3 / 2022-Q2	0.0	▾
<input type="checkbox"/>	Bank Yahav-Securities Quarterly,Thousands,New Israeli shekel 1997-Q1 / 2022-Q2	1.8m	▾
<input type="checkbox"/>	Bank Yahav-Cash and deposits with banks Quarterly,Thousands,New Israeli shekel 1997-Q1 / 2022-Q2	21.8m	▾
<input type="checkbox"/>	Bank Yahav-Total liabilities and capital Quarterly,Thousands,New Israeli shekel 1997-Q1 / 2022-Q2	35.6m	▾
<input type="checkbox"/>	First International Bank-Other liabilities - of which: Provision for off balance sheet credit loss allowa... Quarterly,Thousands,New Israeli shekel 2011-Q4 / 2015-Q3	60.0k	▾
<input type="checkbox"/>	First International Bank-Securities - of which: fair value	12.3m	▾

Saved Datasets and Charts

No Saved Queries

No Series Baskets

No Saved Charts

Recent Activity

Recent Datasets ▾

No Series Searches

Dataset Navigation

שוק הבנקים ▾

הסוכנות הכלכלית והסטטיסטית ▾

International Data ▾

International Data ▾

Banking ▾

Financial Reports ▾

Balance sheet

Profitability

Capital and Leverage

Liquidity

Credit Risk

Activity by segments

דוחות - דוחות פיננסיים

Interest rates and Business volumes ▾

תחומי עניין ▾



בנק ישראל



Statistical Bulletin

2021



Annual Conference Invitation

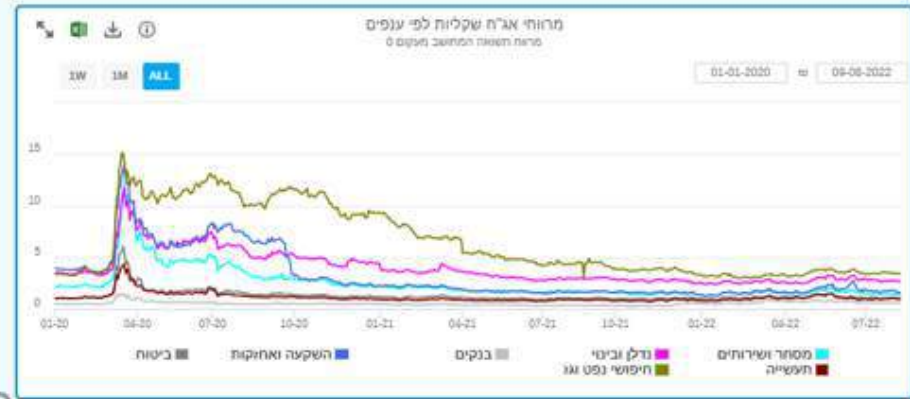
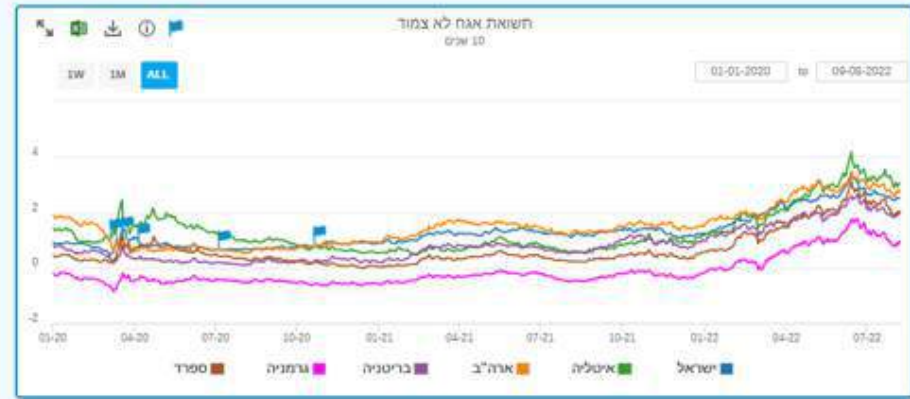
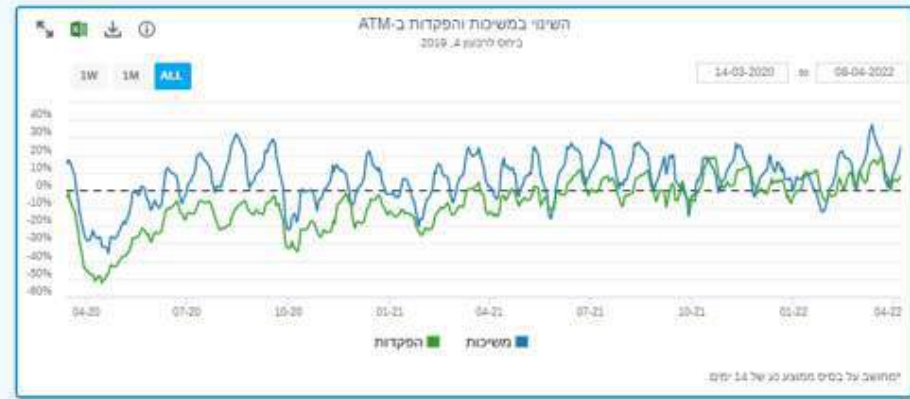
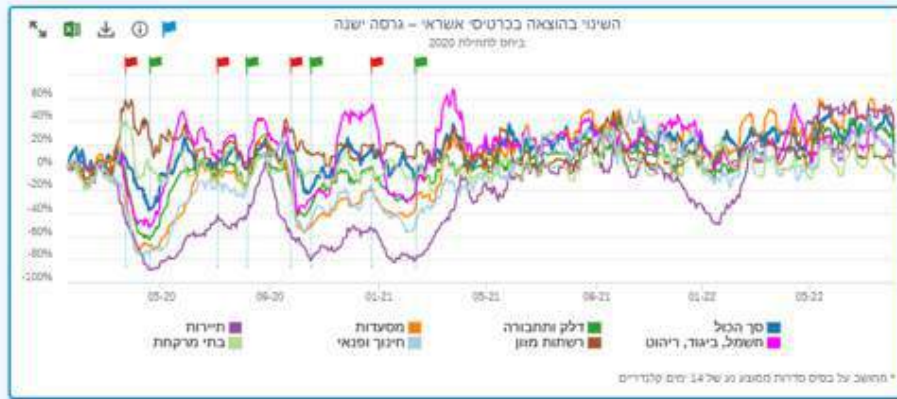
בנק החטיבה למידע ולסטטיסטיקה
מבט על
הסטטיסטיקה
הפיננסית
2021

יום שני 14.03.2022
בנס דיגיטלי בזום

שם	שעה
דברי פתיחה ד"ר איל חזן, מנהל החטיבה למידע ולסטטיסטיקה	9:30-9:40
דברי נגיד בנק ישראל מרס'ל אהרן לרוב, נגיד בנק ישראל	9:40-9:50
מה הנתונים מספרים לנו על שוק האסטרטגיה נעמה גרין, כלכלנית מומחית במוסד אגור	9:50-10:10
אילו שינויים חלו במדדים המרכזיים הפיננסיים שלנו? גילי גמלי, כלכלנית מומחית במוסד אגור	10:10-10:30
מה עומד מאחורי המעילות הניכרת של המשק מוד חזיר? המל"ל עמנואל, כלכלנית מומחית במוסד אגור	10:30-10:50
Caring about Measurement and Measurement that Care ד"ר ורדן ברוך-צוקרמן, ב"מ מומחית למדידה, אוניברסיטת חיפה	10:50-11:20
כיצד מעלה השתכרות העיקרים באופן מובנה הערך? אשר מליכ, כלכלנית מומחית במוסד אגור	11:20-11:40
דברי סיום ד"ר איל חזן, מנהל החטיבה למידע ולסטטיסטיקה	11:40



Rapid Economic Indicators - Internal Dashboard



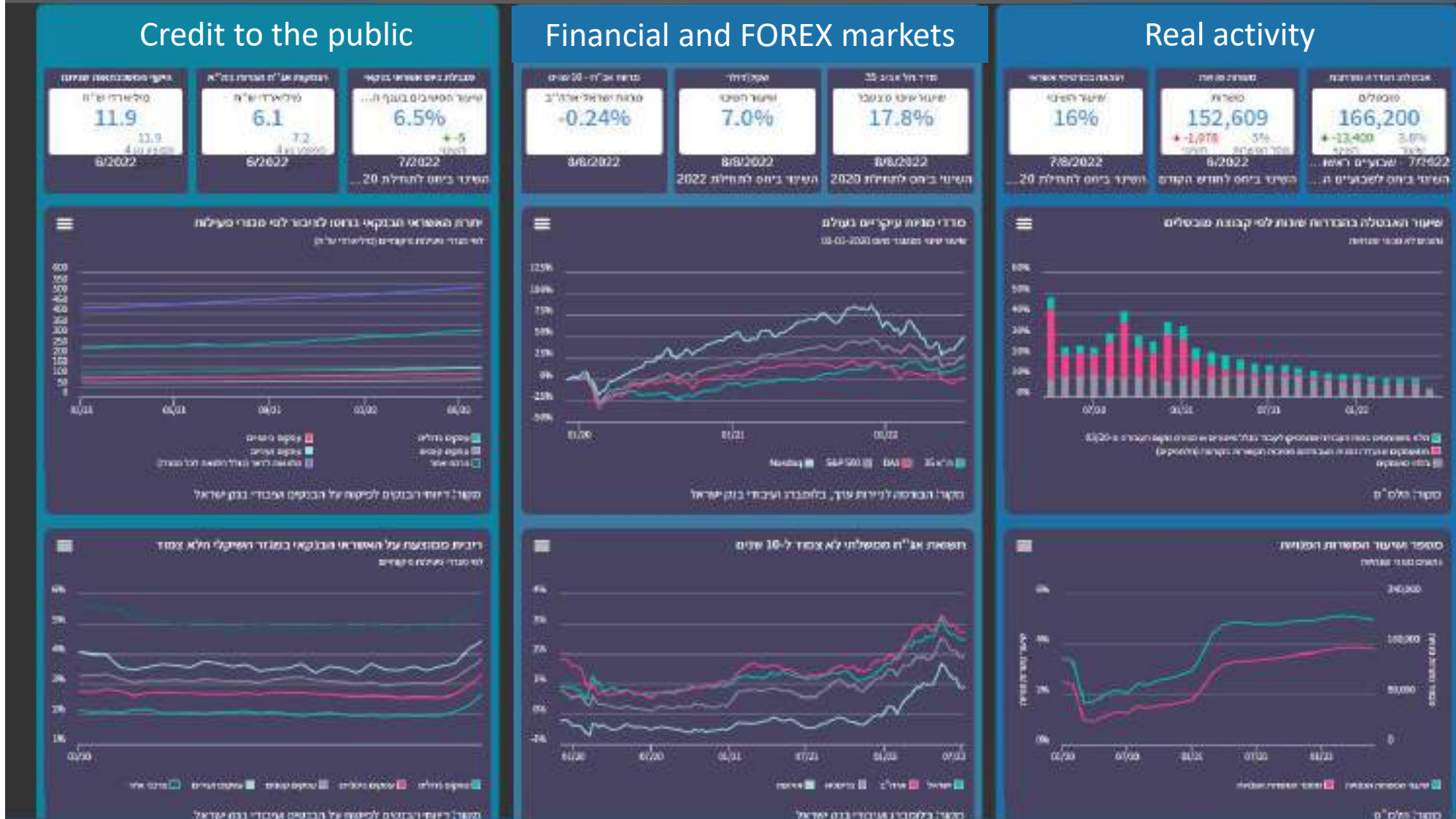
Graphic presentation of policy measures taken, displayed in a timeline



Public access to the data

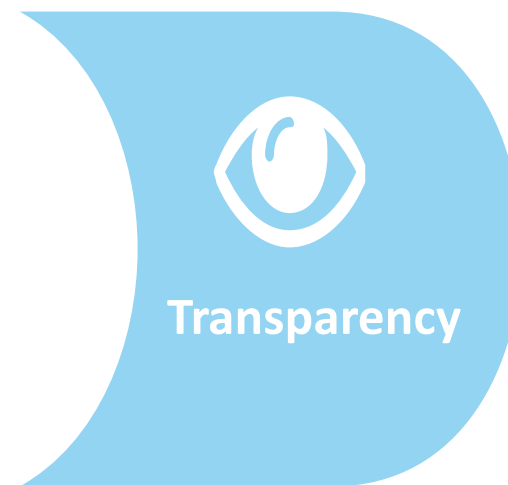


Rapid economic indicators





Forward looking



IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Developing the statistical communication function at Danmarks Nationalbank¹

Rasmus Kofoed Mandsberg and Lars Risbjerg,
Danmarks Nationalbank

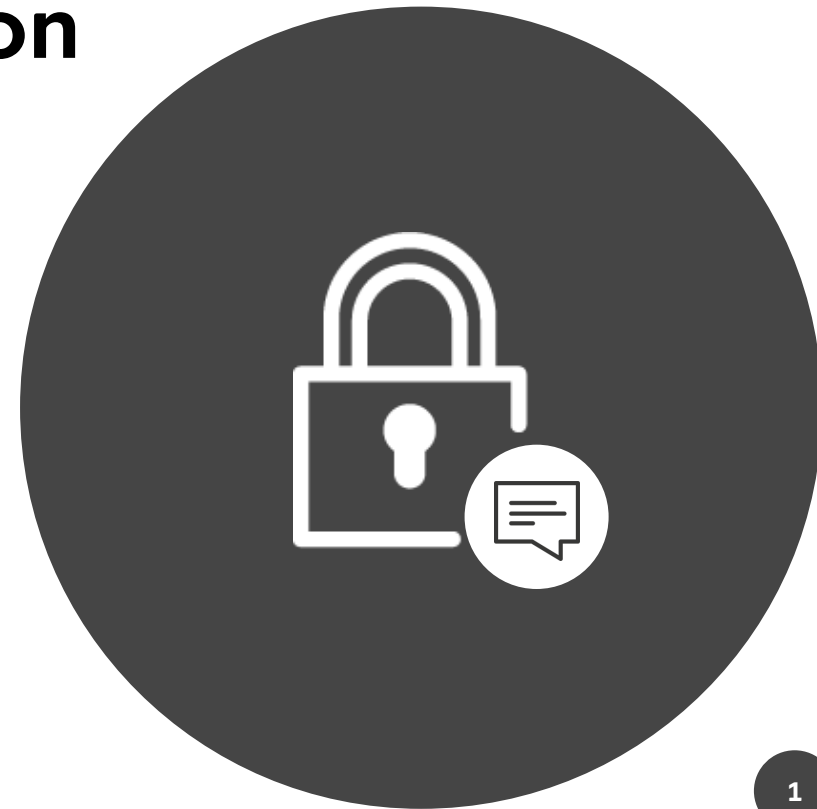
¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

DANMARKS
NATIONALBANK

Unlocking the function: Where to start?

Developing the statistical communication function at Danmarks Nationalbank

BdP/IFC Conference on Statistical Communication, 19 September 2022



Agenda



**Our statistical
communication**



**Keys to unlock our
statistical
communication**



Way forward...



Our statistical communication





ACTIVE
COMMUNICATION



PASSIVE
COMMUNICATION





ACTIVE COMMUNICATION



PRESS
RELEASES

≈50
p.a.



TWEETS

≈80
p.a.

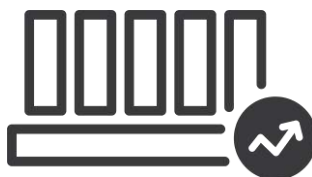


AD HOC
BRIEFINGS

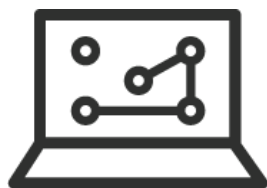


USER
INQUIRIES





DATABANK



WEBPAGE

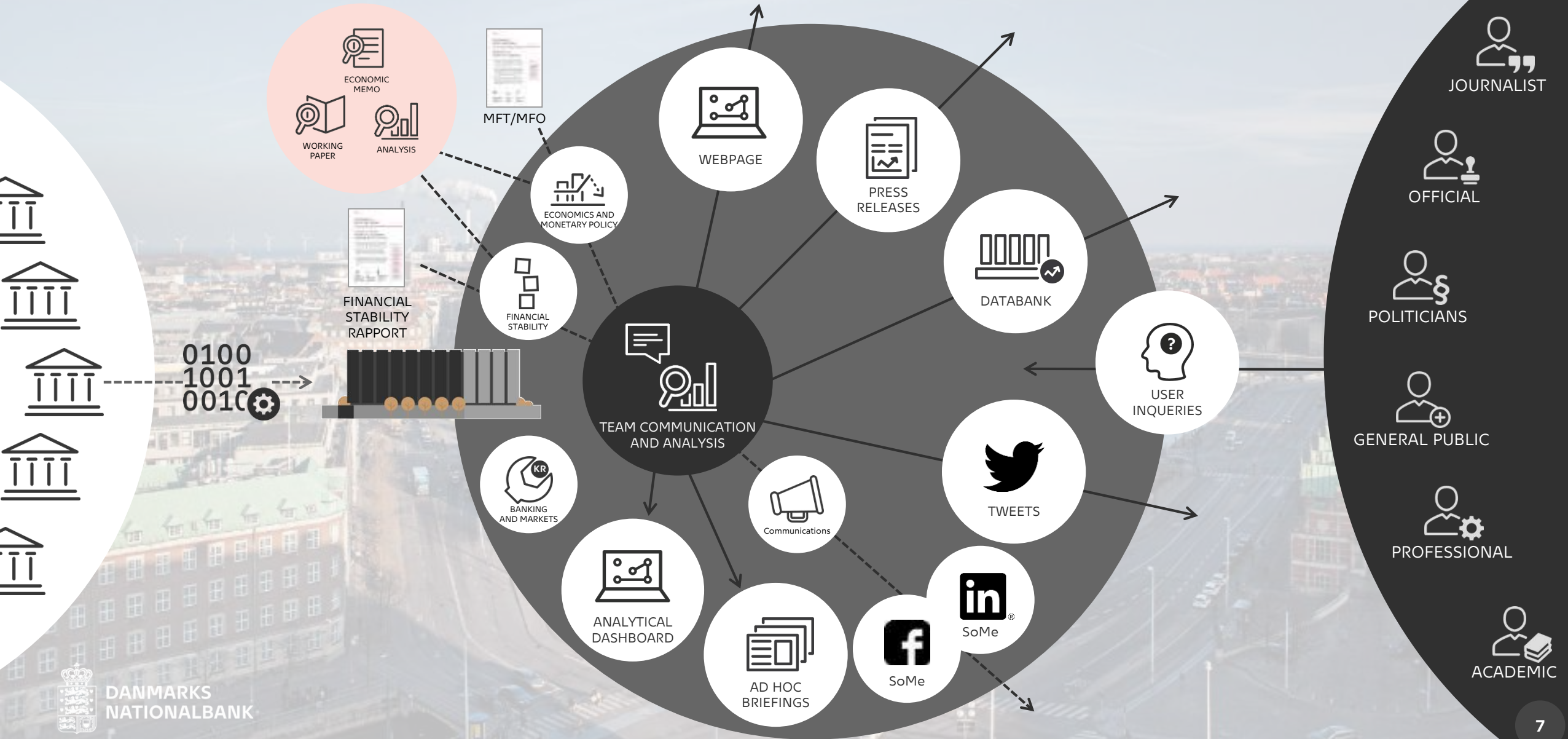


DANMARKS
NATIONALBANK



PASSIVE
COMMUNICATION

Bring the numbers into play



A recent example of numbers into play

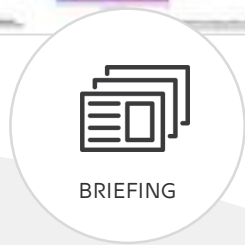
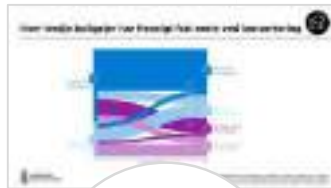
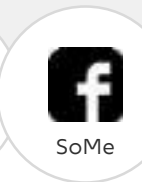
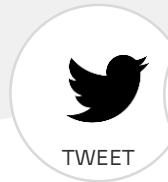


April



DANMARKS
NATIONALBANK

A recent example of numbers into play



April

May

A recent example of numbers into play



PRESS RELEASES



TWEET



SoMe



SoMe

euroinvestor

Så mange boligejere har skrottet deres gamle lån

BØRSEN

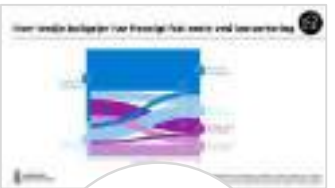
Boligejere får mere appetit på at løbe renterisiko

FINANS

Ny lånetrend bekymrer: Boligejere risikerer en stor renteregning

Berlingske

Business-overblik: Midt i rentestorm strømmer boligejere til usikre lån



BRIEFING

April

May

June - July



A recent example of numbers into play



PRESS RELEASES



TWEET



SoMe



SoMe

euroinvestor

Så mange boligejere har skrottet deres gamle lån

MORGENAVISEN
Jyllands-Posten

Lån med renterisiko overtager scenen

BØRSEN

Boligejere får mere appetit på at løbe renterisiko

FINANS

Nye tal for danskernes boliglån: »Det springer i øjnene«



FINANS

Ny lånetrend bekymrer: Boligejere risikerer en stor renteregning

Berlingske

Business-overblik: Midt i rentestorm strømmer boligejere til usikre lån



BRIEFING

April

May

June - July



PRESS RELEASES



TWEET



SoMe



SoMe

August



A recent example of numbers into play



PRESS RELEASES



TWEET



SoMe



SoMe

euroinvestor

Så mange boligejere har skrottet deres gamle lån

MORGENAVISEN
Jyllands-Posten

Lån med renterisiko overtager scenen



ANALYSIS

BØRSEN

Boligejere får mere appetit på at løbe renterisiko

FINANS

Nye tal for danskernes boliglån: »Det springer i øjnene«



ECONOMIC MEMO



April

May



BRIEFING

FINANS

Ny lånetrend bekymrer: Boligejere risikerer en stor renteregning

Berlingske

Business-overblik: Midt i rentestorm strømmer boligejere til usikre lån

DANMARKS NATIONALBANK

Endnu flere boligejere konverterede i 2. kvartal



WORKING PAPER



June - July



PRESS RELEASES



TWEET



SoMe



SoMe

August

September →
November

Keys to unlock our statistical communication



Keys to unlock our statistical communication

1 FOCUS ON
COMMUNICATION

2 VISIBLE
ORGANISATION

3 COLLABORATION
WITH EXPERTS

4 OBJECTIVES AND
CLEAR TARGETS

5 EFFECTIVE
GOVERNANCES

6 ONGOING
ADJUSTMENTS



Keys to unlock our statistical communication

1 COMMUNICATION
FOCUS

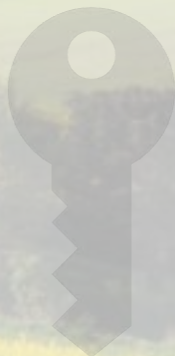
2 VISIBLE
ORGANISATION

3 COLLABORATION
WITH EXPERTS

4 OBJECTIVES AND
CLEAR TARGETS

5 EFFECTIVE
GOVERNANCES

6 ONGOING
ADJUSTMENTS



Ready, set, go!



COMMUNICATION

1 FOCUS ON COMMUNICATION



Keys to unlock our statistical communication

1 COMMUNICATION
FOCUS

2 VISIBLE
ORGANISATION

3 COLLABORATION
WITH EXPERTS

4 OBJECTIVES AND
CLEAR TARGETS

5 EFFECTIVE
GOVERNANCES

6 ONGOING
ADJUSTMENTS



Matching organisation

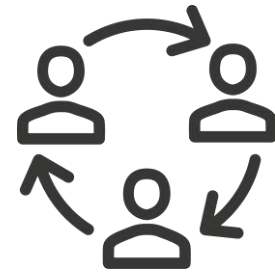
2 VISIBLE ORGANISATION

MONEY, BANKING &
NATIONAL ACCOUNTS STATISTICS

SECURITIES &
EXTERNAL STATISTICS



DATA
& QUALITY



COMMUNICATION
& ANALYSIS



Why matrix organisation?

2 VISIBLE ORGANISATION



Keys to unlock our statistical communication

1

COMMUNICATION
FOCUS

2

VISIBLE
ORGANISATION

3

COLLABORATION
WITH EXPERTS

4

OBJECTIVES AND
CLEAR TARGETS

5

EFFECTIVE
GOVERNANCES

6

ONGOING
ADJUSTMENTS



Collaborate with communication experts

We are just economists!

3 COLLABORATION WITH EXPERTS



Keys to unlock our statistical communication

1 COMMUNICATION
FOCUS

2 ORGANISATION

3 COLLABORATION
WITH EXPERTS

4 OBJECTIVES AND
CLEAR TARGETS

5 EFFECTIVE
GOVERNANCES

6 ONGOING
ADJUSTMENTS



Objectives



BRING
THE NUMBERS
INTO PLAY

Team



Communication



Analysis

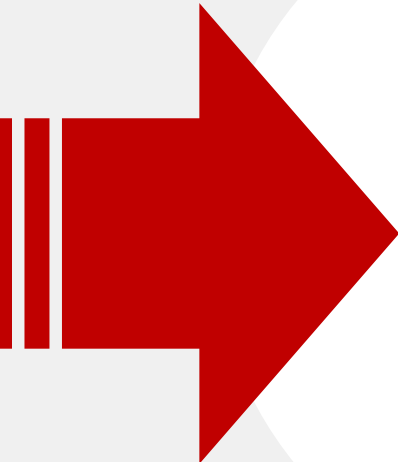


4 OBJECTIVES AND
CLEAR TARGETS

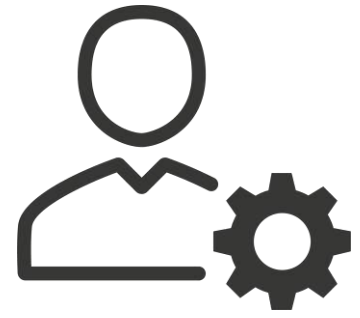
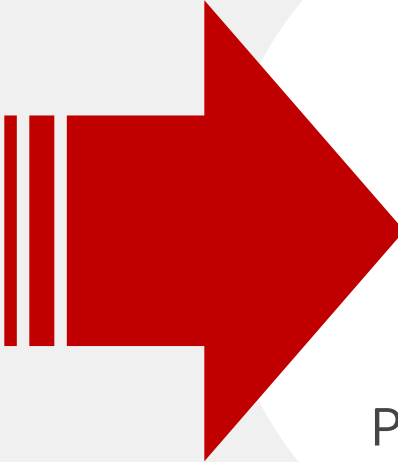


Clear targets

4 OBJECTIVES AND CLEAR TARGETS



MEDIA



PROFESSIONALS



PUBLIC

Keys to unlock our statistical communication

1

COMMUNICATION
FOCUS

2

VISIBLE
ORGANISATION

3

COLLABORATION
WITH EXPERTS

4

OBJECTIVES AND
CLEAR TARGETS

5

EFFECTIVE
GOVERNANCES

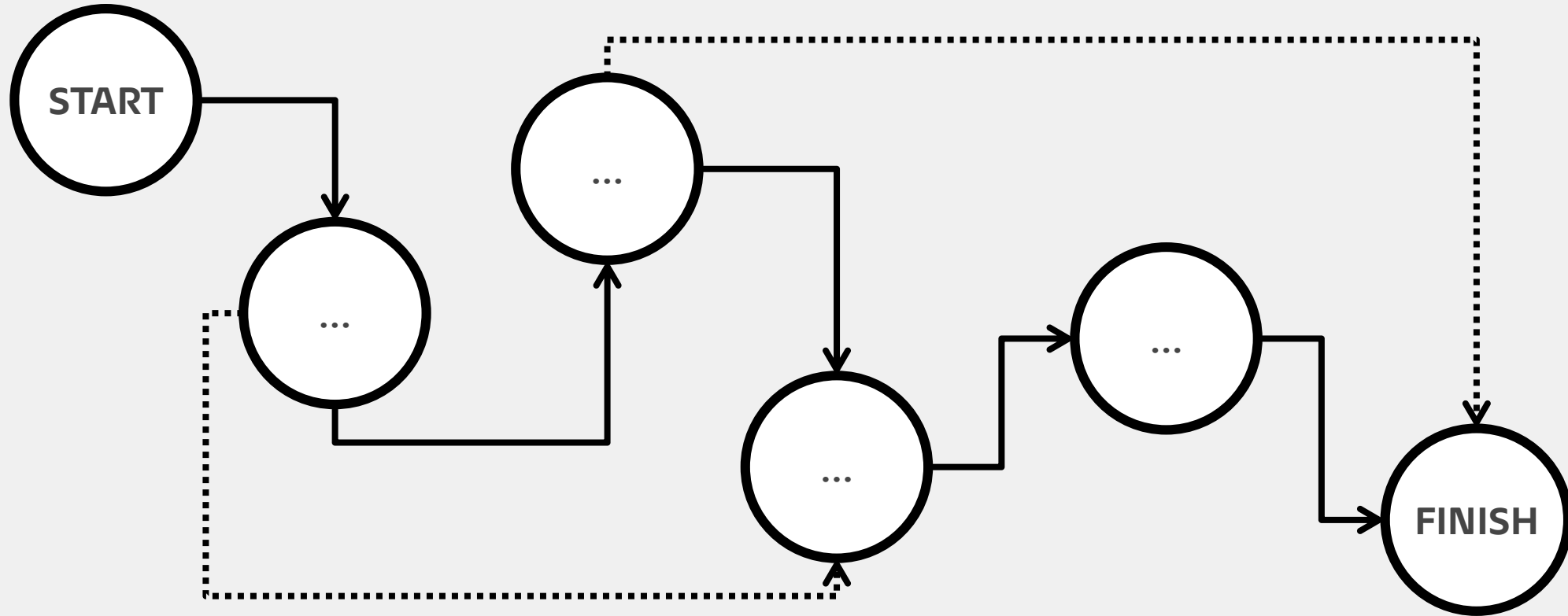
6

ONGOING
ADJUSTMENTS



Effective governances

5 EFFECTIVE GOVERNANCES



Keys to unlock our statistical communication

1

COMMUNICATION
FOCUS

2

VISIBLE
ORGANISATION

3

COLLABORATION
WITH EXPERTS

4

OBJECTIVES AND
CLEAR TARGETS

5

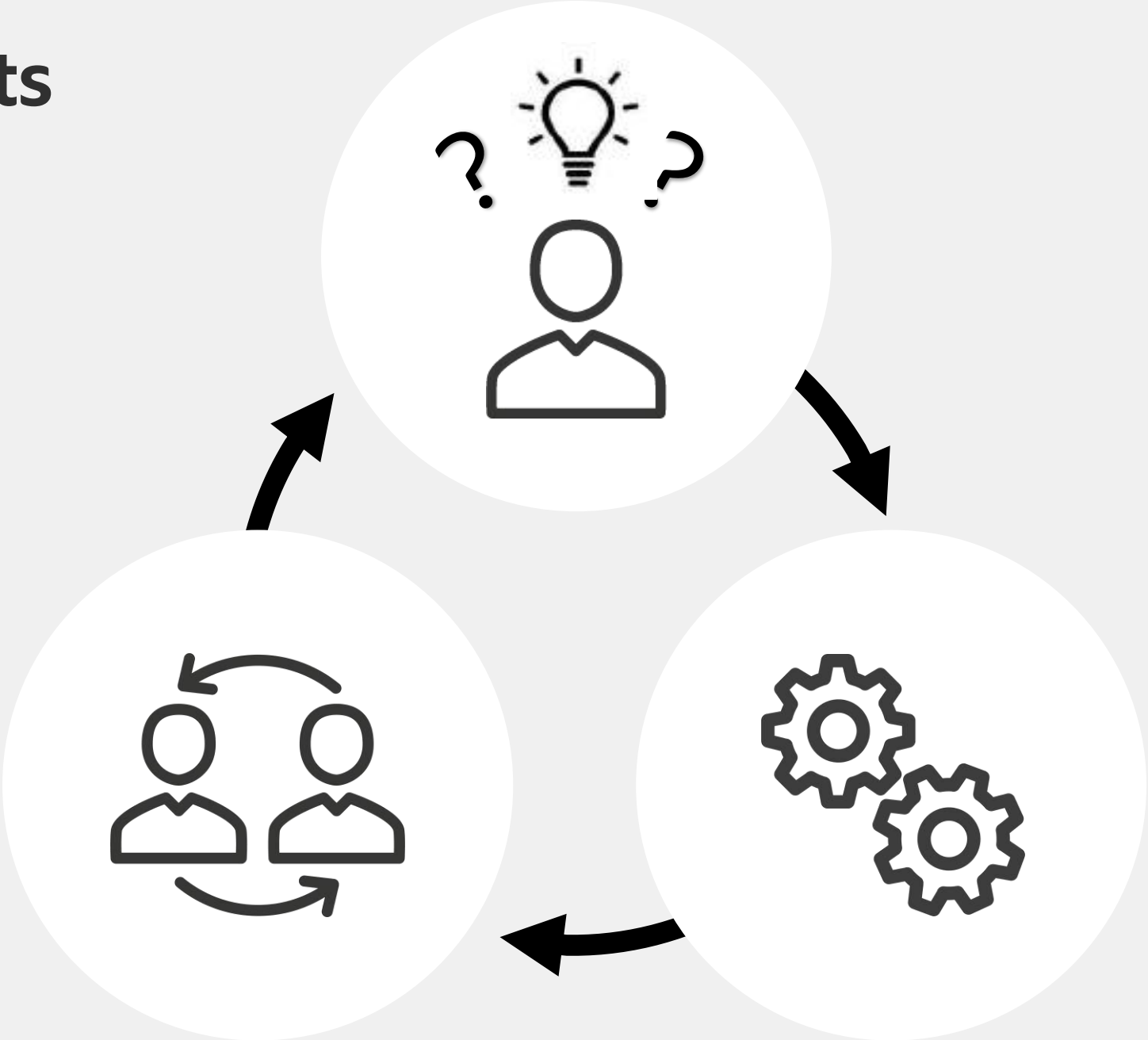
EFFECTIVE
GOVERNANCES

6

ONGOING
ADJUSTMENTS



Ongoing adjustments

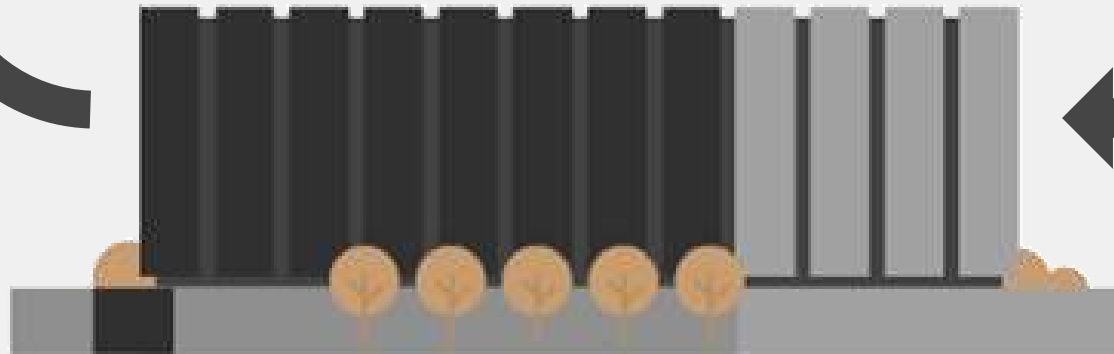
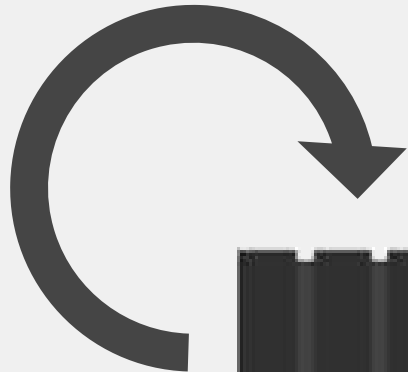


6 ONGOING ADJUSTMENTS



Feedback

INTERNALLY



EXTERNALLY

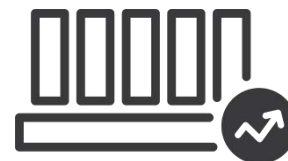


Way forward...



**DANMARKS
NATIONALBANK**

AMBITIOUS ACCESSIBILITY



DATABANK



WEBPAGE



DETAILED
CREDIT REGISTRY



EXPERIMENTAL
ESG DATA



HIGH FREQUENT
CURRENCY AND
MONEY MARKET



HIGH FREQUENT
PAYMENT
STATISTICS

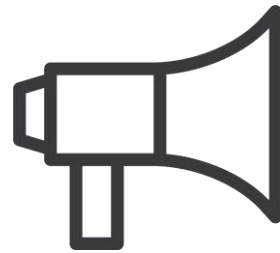


...



DANMARKS
NATIONALBANK

REACTIVE COMMUNICATION



**Thanks for your
attention!**

QUESTIONS





Rasmus K. Mandsberg

Team Leader

*Communication and Analysis
Statistics Departement*

rkm@nationalbanken.dk



Lars Risbjerg

Team Leader

*Communication and Analysis
Statistics Departement*

lri@nationalbanken.dk

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

Together we make it better:
How a multidisciplinary team unlocked the statistical communication function
at the Banco de Portugal¹

Lígia Nunes,
Banco de Portugal

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



TOGETHER WE MAKE IT BETTER

HOW A MULTIDISCIPLINARY
TEAM UNLOCKED THE
STATISTICAL
COMMUNICATION
FUNCTION AT THE BANCO
DE PORTUGAL

19 SEP. 2022 | LISBOA

LÍGIA MARIA NUNES | HEAD OF STATISTICAL
COMMUNICATION AND PLANNING DIVISION



BANCO DE
PORTUGAL
EUROSISTEMA



EXPECTATION



REALITY





**DO I REALLY NEED
TO HIRE SO MANY PEOPLE
TO PROMOTE
CENTRAL BANK STATISTICS ?**



MAYBE NOT....

MAYBE ALL YOU NEED IS TO
COMBINE THE RESOURCES YOU HAVE
WITH A TOUCH OF CREATIVITY....



HOUSTON, WE HAVE A PROBLEM



- During the COVID-19 pandemic, central banks recognized the importance of providing users with the necessary statistical information to alleviate the uncertainty of those times
- We had the strategy and the channel – a *BPstat* webpage where users could access key statistical indicators (such as GDP, inflation, public debt, tourism, and corporation profitability) but also to provide an understanding of their evolution in that specific context
- **PROBLEM:** who would be in charge of creating that content?



WHAT DID WE NEED?

WHICH DATA?



HOW TO READ DATA?

HOW TO PRESENT DATA?



HOW TO PROMOTE DATA?



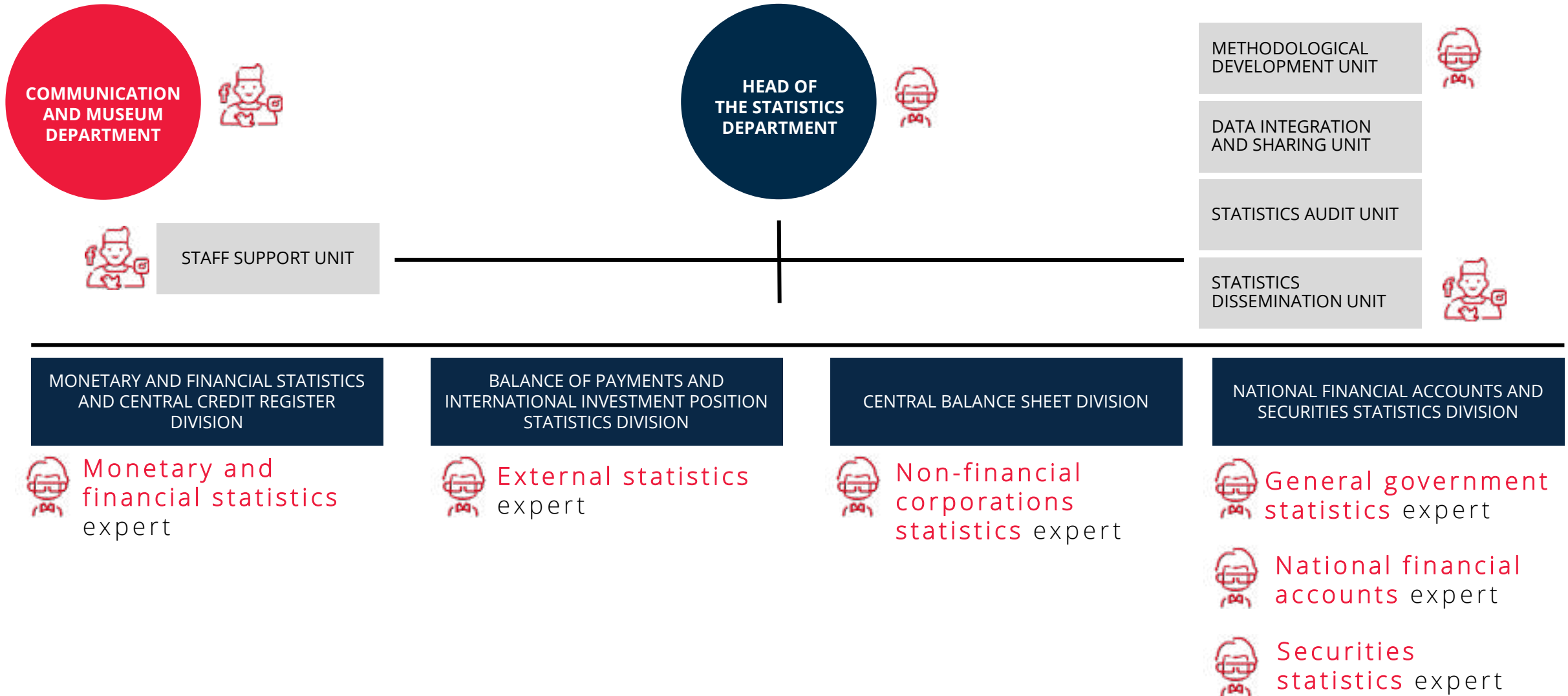
business expert



communication expert



WE PRESENT THE **STATSCOMM TEAM 1.0**



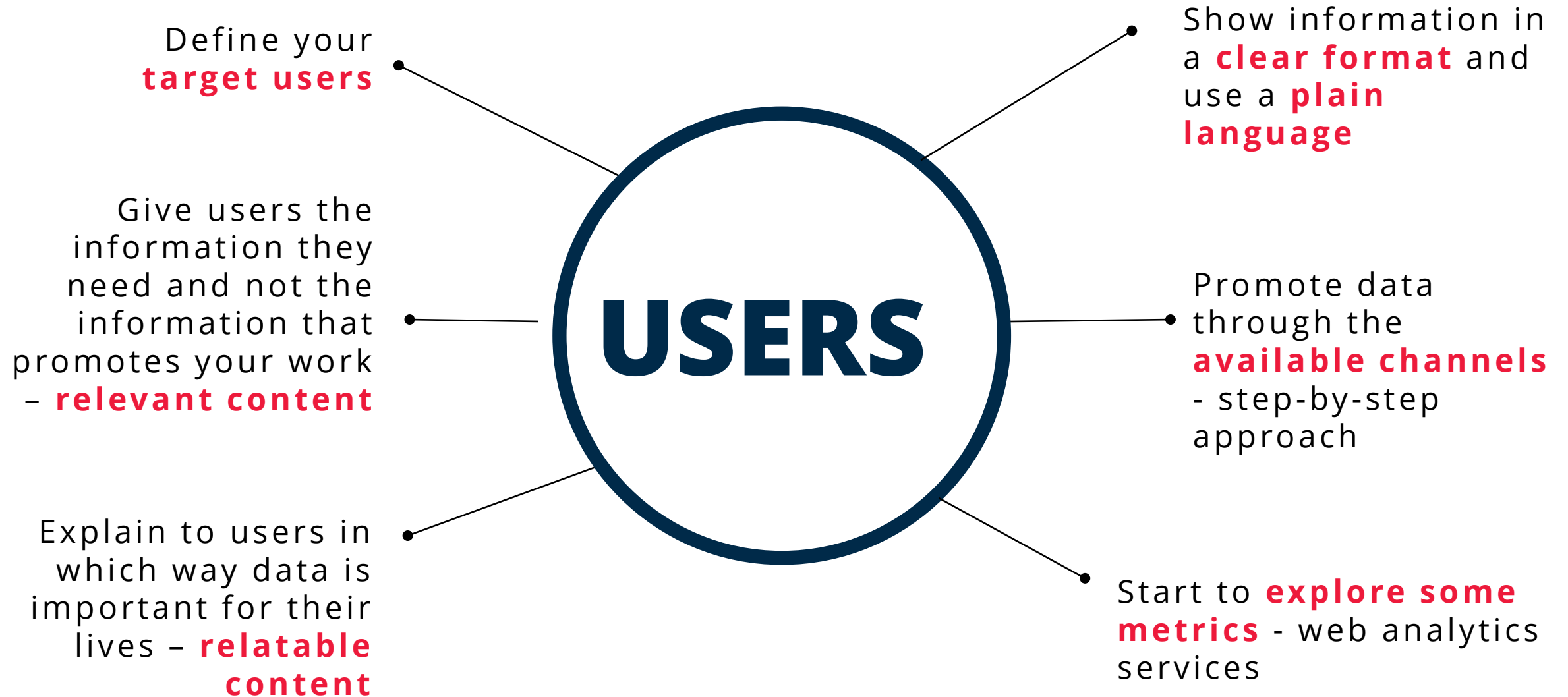


**DO NOT
EXPECT
DIFFERENT
RESULTS
DOING THE
SAME
THINGS.**





DOING DIFFERENT MEANS...



REGULAR INTERNAL TRAINING

- Sharing individual knowledge with the team;
- Sharing lessons learned from training sessions
- Conducting training sessions with the Communication and Museum Department
- Communication on Central Banking statistics – Post-graduate programme

ANNUAL AND QUARTERLY COMMUNICATION PLANS

- Hot topics
- New statistics
- Relatable content (back to school campaigns, the year in figures, summer statistics, etc)

REGULAR ANALYSIS OF RESULTS

- Number of visits to *BPstat*
- Most searched statistics
- Impact of statistics on media
- Questions from users



WE PRESENT THE **STATSCOMM TEAM 2.0**



Good things happen gradually.

What can we do with the resources we have?

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

An ecosystem for statistical communication¹

Matthias Rumpf,
European Central Bank

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



EUROPEAN CENTRAL BANK

EUROSYSTEM

An ecosystem for statistical communication

Communication on central
bank statistics, Lisbon

19/09/2022

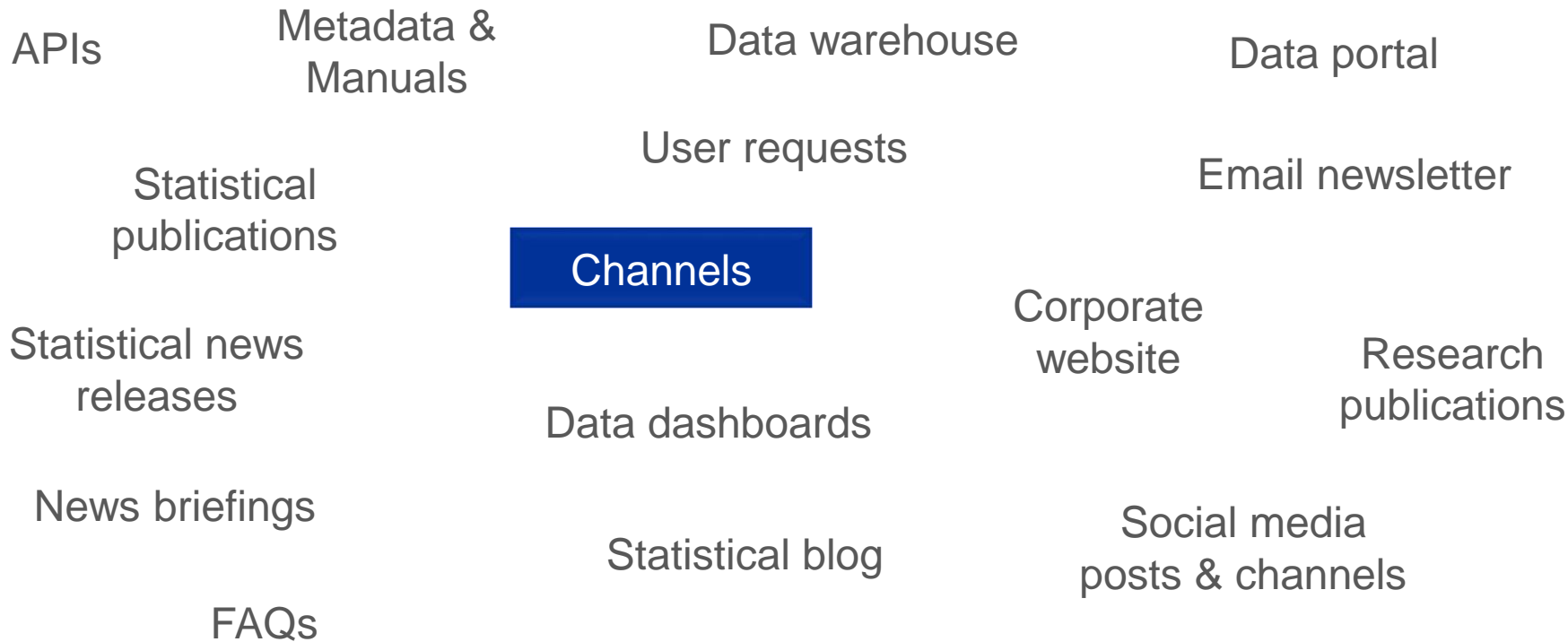
Matthias Rumpf
Directorate General Statistics, ECB



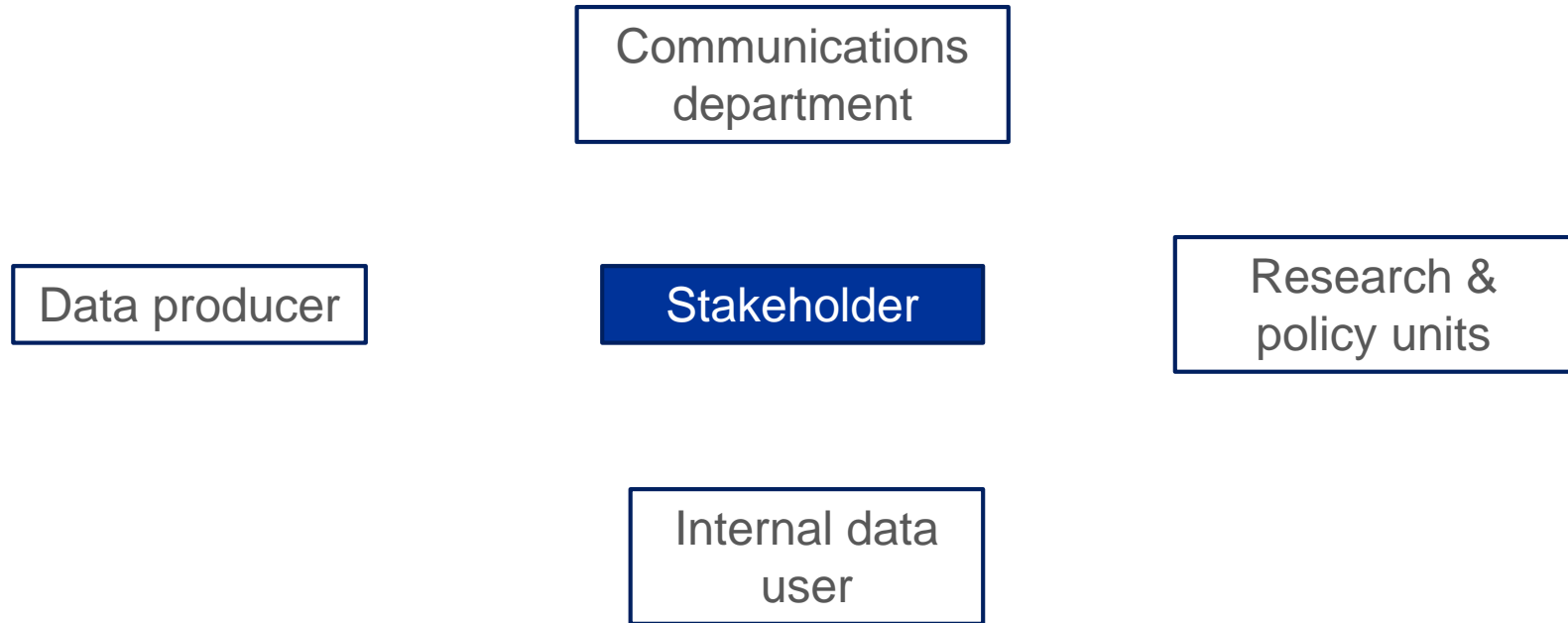
Statistical communication serves multiple audiences....



... through many different channels & tools...

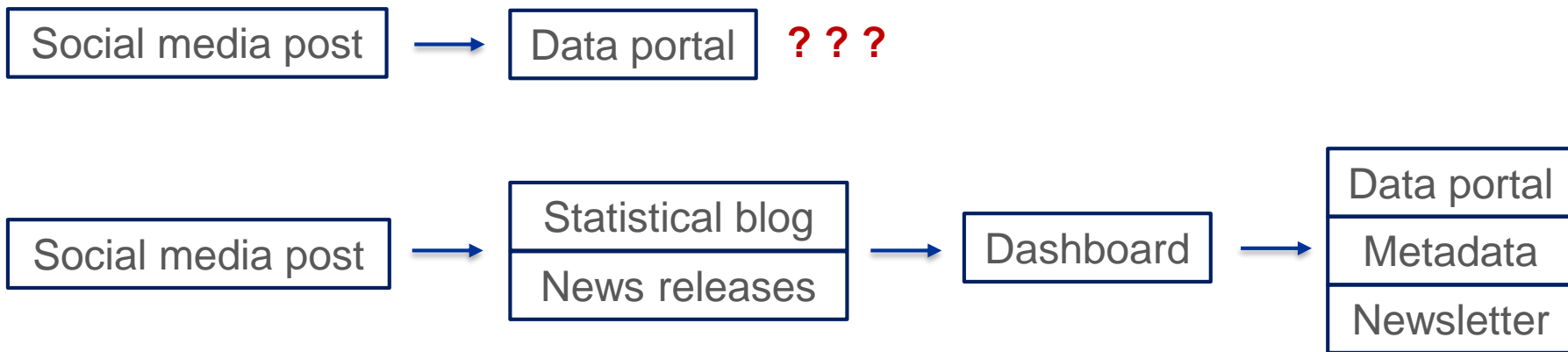


... and with multiple internal stakeholders



How to use your toolbox efficiently?

Create user journeys



How to use your toolbox efficiently?

Learn from user interaction

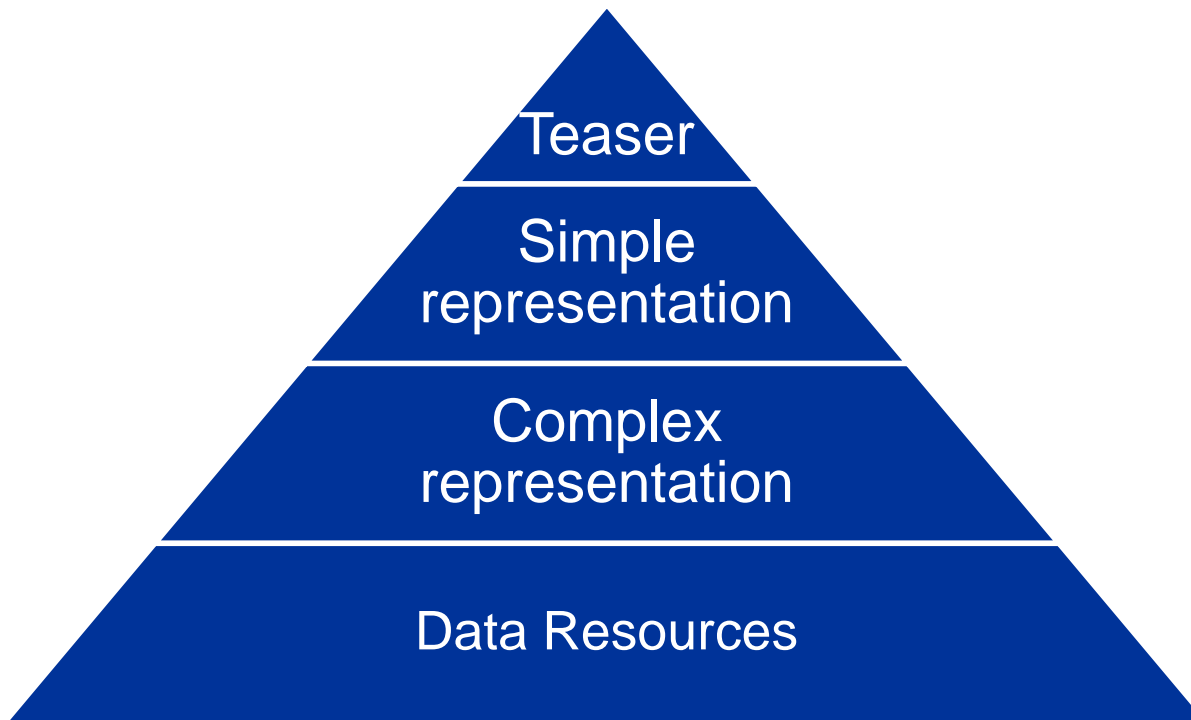


How to use your toolbox efficiently?

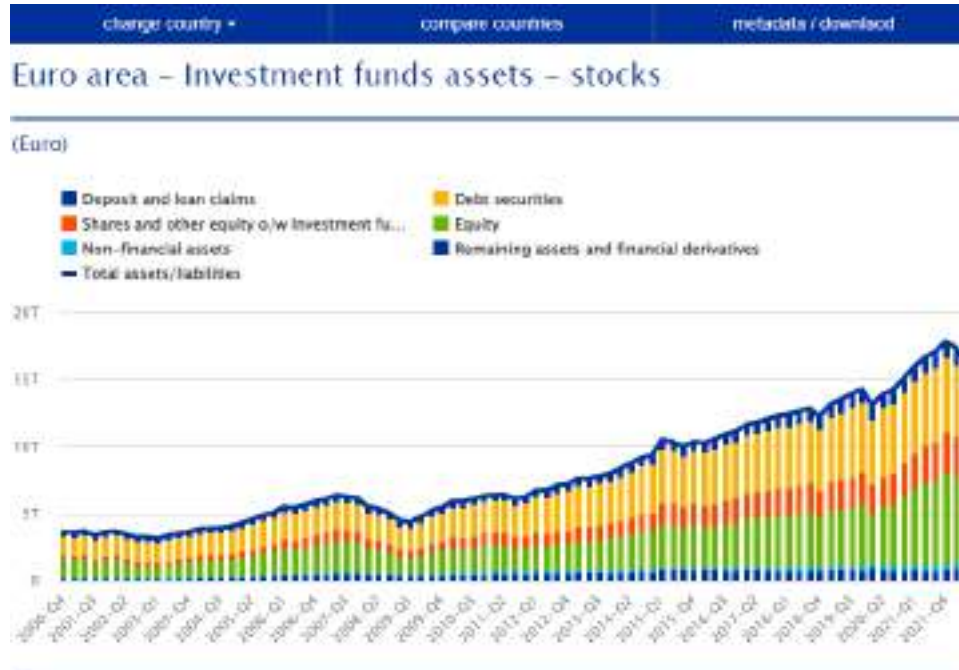
Use communication opportunities



Respect information hierarchy



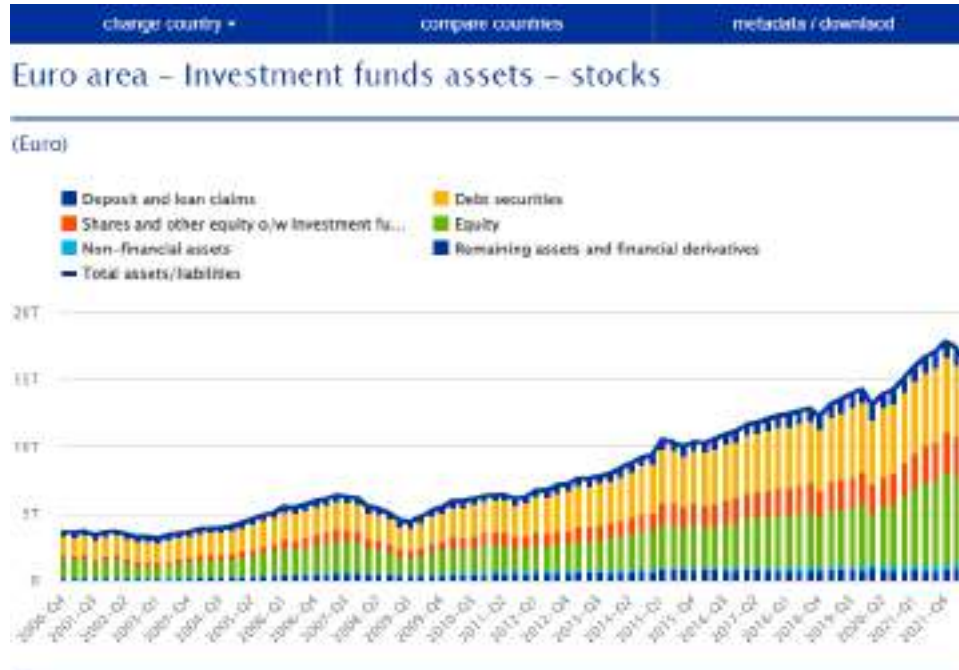
Useful tools – micro dashboards



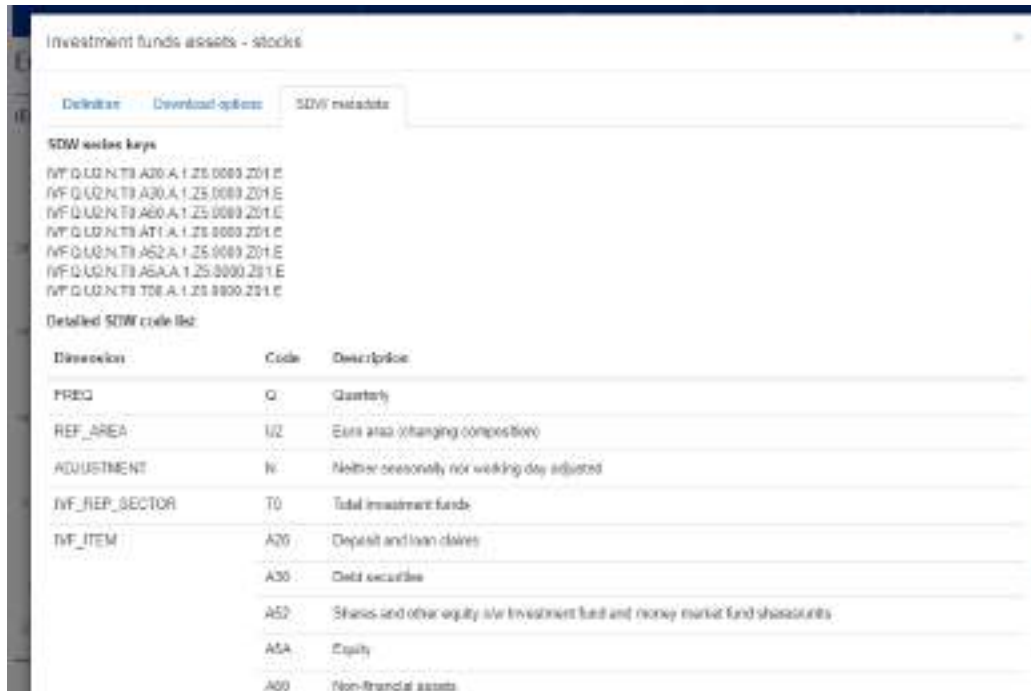
Useful tools – micro dashboards



Useful tools – micro dashboards



Useful tools – micro dashboards



Investment funds assets - stocks

Deletions Download options SDW metadata

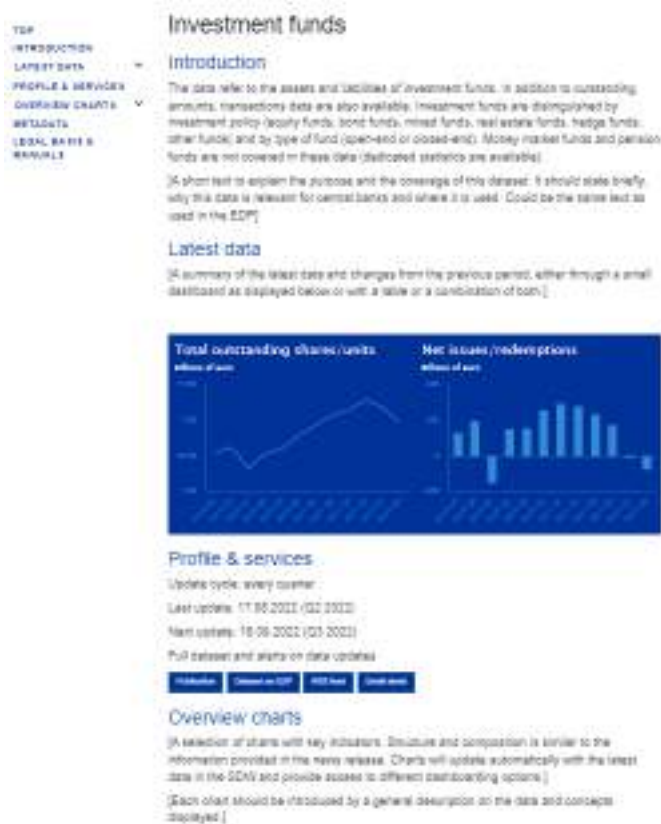
SDW codes keys

IVF.Q.U2.N.T9.A20.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.A30.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.A60.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.A71.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.A52.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.A5A.A.1.Z5.0009.201.E
IVF.Q.U2.N.T9.T08.A.1.Z5.0009.201.E

Detailed SDW code list

Dimension	Code	Description
FREQ	Q	Quarterly
REF_AREA	U2	Euro area (changing composition)
ADJUSTMENT	N	Neither seasonally nor working day adjusted
IVF_REP_SECTOR	T0	Total investment funds
IVF_ITEM	A20	Deposit and loan claims
	A30	Debt securities
	A52	Shares and other equity (w/ investment fund and money market fund shares/units)
	A5A	Equity
	A60	Non-financial assets

Useful tools – dataset hub pages



The screenshot shows the ECB Investment Funds dataset hub page. On the left is a navigation menu with links: TOP, INTRODUCTION, LATEST DATA, PROFILE & SERVICES, OVERVIEW CHARTS, METADATA, LEGAL BASIS & AVAILABILITY. The main content area is titled 'Investment funds' and includes an 'Introduction' section with a text block and a '[A short text to explain the purpose and the coverage of this dataset...]' placeholder. Below this is a 'Latest data' section with a text block and a '[A summary of the latest data and changes from the previous period...]' placeholder. Two charts are displayed: 'Total outstanding shares/units' (a line chart) and 'Net issues/redemptions' (a bar chart). The 'Profile & services' section provides update cycle, last update, next update, and pull dates. At the bottom, there are buttons for 'Introduction', 'Latest data', 'Profile & services', and 'Overview charts'. The 'Overview charts' section includes a text block and a '[Each chart should be introduced by a general description of the data and concepts displayed.]' placeholder.

Investment funds

Introduction

The data refer to the assets and liabilities of investment funds. In addition to outstanding amounts, transactions data are also available. Investment funds are distinguished by investment policy (equity funds, bond funds, mixed funds, real estate funds, hedge funds, other funds) and by type of fund (open-end or closed-end). Money market funds and pension funds are not covered in these data (dedicated statistics are available).

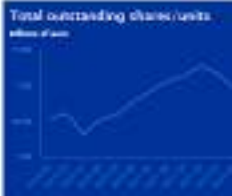
[A short text to explain the purpose and the coverage of this dataset. It should state briefly why this data is relevant for central banks and where it is used. Could be the same text as used in the EDP.]

Latest data

[A summary of the latest data and changes from the previous period, either through a small dashboard as displayed below or with a table or a combination of both.]

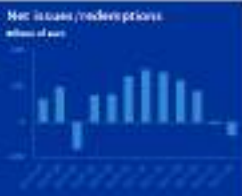
Total outstanding shares/units

Billions of euro



Net issues/redemptions

Billions of euro



Profile & services

Update cycle: every quarter
Last update: 01.06.2022 (Q2 2022)
Next update: 18.06.2022 (Q3 2022)
Full dataset and alerts on data updates

[Introduction](#) [Latest data](#) [Profile & services](#) [Overview charts](#)

Overview charts

[A selection of charts with key indicators. Structure and composition is similar to the information provided in the news releases. Charts will update automatically with the latest data in the SDW and provide access to different dashboarding options.]

[Each chart should be introduced by a general description of the data and concepts displayed.]

A few takeaways

Different communication channels work more effectively when integrated into a communication ecosystem.

Communication channels building on narratives are more engaging; pathways to explorative platforms should follow a layered approach.

Explorative tools are more effective when integration into a narrative context is possible.

Hub page presenting features, content and services around specific datasets can facilitate the creation of a communications ecosystem.

Thank you!

matthias.rumpf@ecb.europa.eu

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

One size does not fit all: target matters¹

Shahid Hussain Javaid,
State Bank of Pakistan

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



One size does not fit all – Target Matters

SHAHID HUSSAIN JAVAID PHD

STATE BANK PAKISTAN

Agenda

- ▶ SBP communication: Overview
- ▶ Where we are
- ▶ Challenges
- ▶ What needs to be done
- ▶ Going forward

Points to Ponder

- ▶ How to reach and engage with assorted population with statistical communication.
- ▶ Helping people using and understanding data to empower them.
- ▶ To unlock the next level(outreach to general public)to improve transparency and accountability for settling inflation expectations and effectiveness of monetary policy.
- ▶ To resolve diversified target audience issues using new channels and improve contents and forms of communication.
- ▶ Using plain language to engage the public at large.
- ▶ Web analytics services for a continuous assessment of communication initiatives.

Where we are

- ▶ State Bank of Pakistan(SBP) established in July 01, 1948.
- ▶ Printing material and manual working since 1949 which includes data on real sector, monetary & financial sector, external sector collected, compiled and disseminated to relevant departments and stakeholders for communication and documentation.
- ▶ Before 2000s, Printing material, limited media use via Radio, TV and Newspapers were main medium of communication.
- ▶ SBP website developed in early 2000s. Use of smart computers, online/computerized data compilation and dissemination.
- ▶ Interaction with stakeholders of society started after 2005, including Business Firms, Households, economists and professionals.

Where we are

- A. SBP on twitter: since 2015; 322.2K followers; 159 following
- B. Open up face book account on 23rd march 2018; 267k followers.
- C. Photos, videos, podcasts, events shared etc.
- D. Audience on Facebook and Twitter include Govt institutions, ministries, political parties, stock market, money and financial institutions, media persons and broadcast channels, news agencies, international organizations, individuals, business persons etc.
- E. Media and journalists trainings facilitation, talks in universities for monetary policy communication and interacting with firms and households through surveys to explore expectations successfully and continuously organized by SBP.

Topics covered

- ▶ Daily exchange rate
- ▶ Monthly remittances
- ▶ Updates on currency
- ▶ Weekly foreign exchange reserves
- ▶ SBP podcasts on developments by SBP initiatives
- ▶ SBP news
- ▶ Advertisement to SBP products like Roshan digital accounts, saving schemes, etc.

Current State of SBP Focus

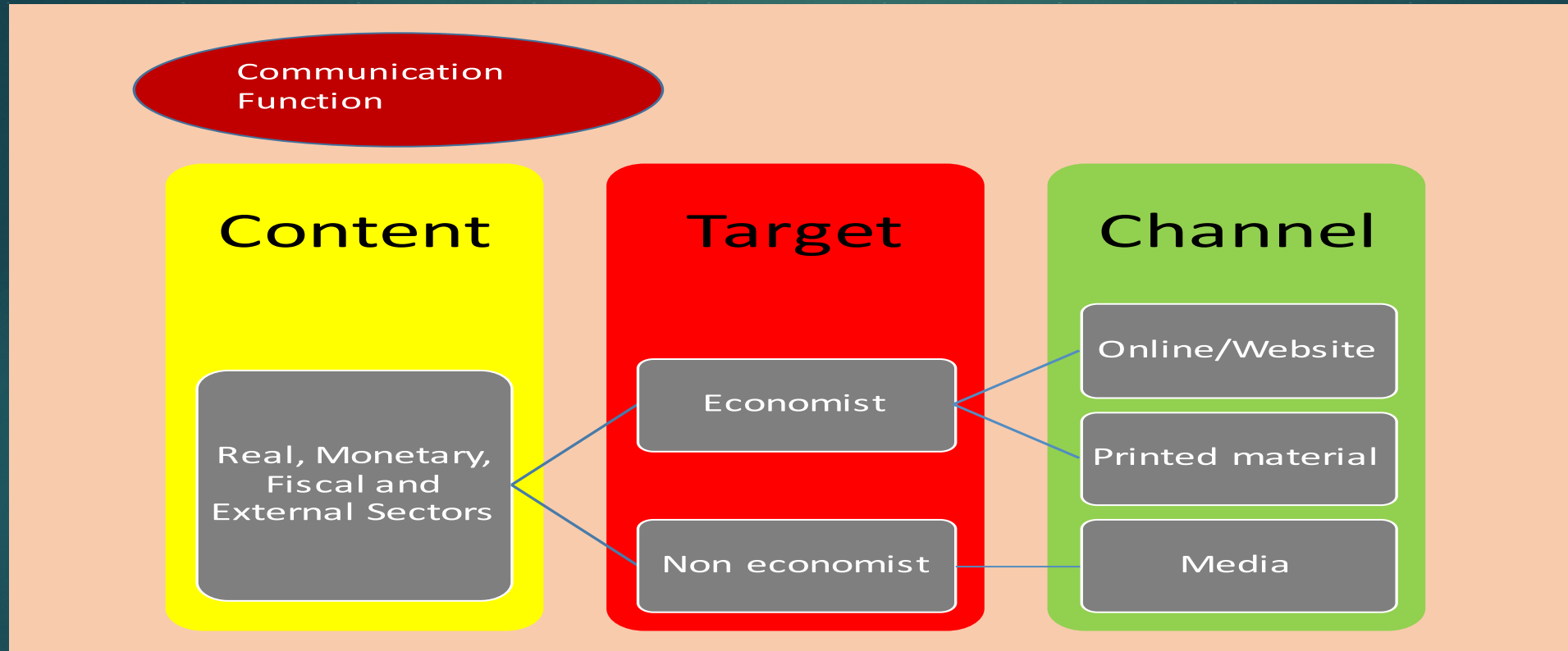
SBP is currently working on issues relating to;

- ▶ Passing on **user friendly statistical terms** and classifications.
- ▶ Exploring need based statistics through interacting with different sections of society. **Households, businesses and professionals, Government** etc.
- ▶ Consistent data designing to support the **analysis for future**.
- ▶ Working on **social media network** to engage public for central bank statistics.
- ▶ **Podcasts, story telling and infographic** as medium of communication

Challenges

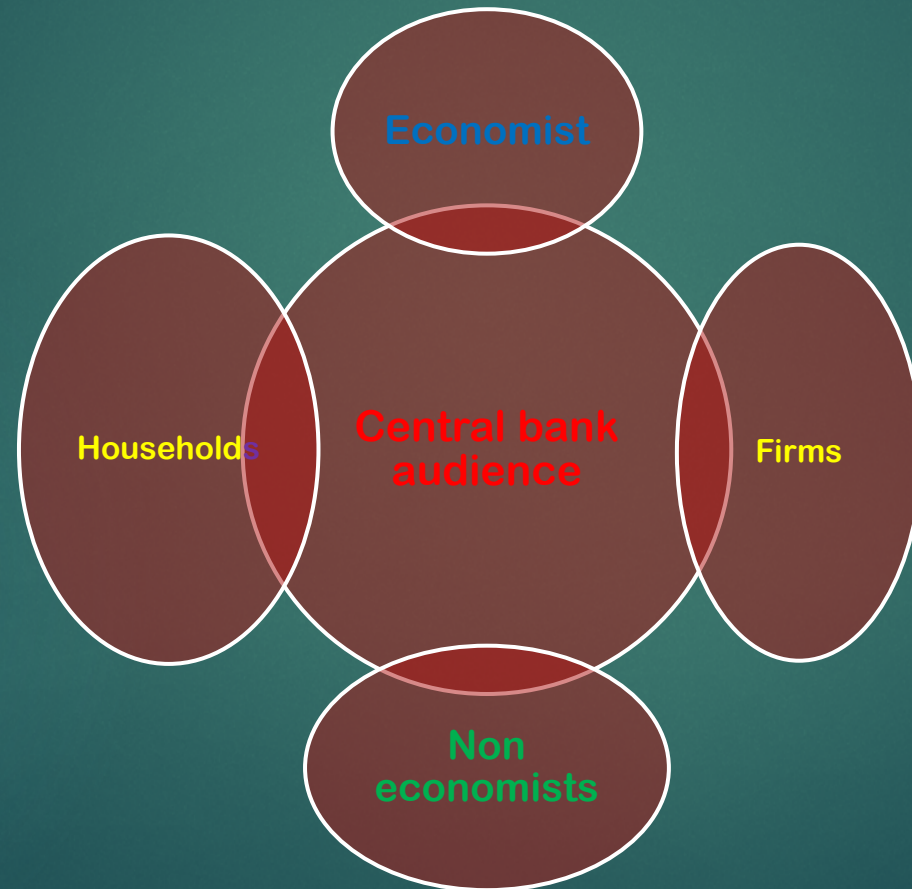
- ▶ Census of Population in Pakistan 2017-18 help determining challenges:
- ▶ The core challenge for central bank in Pakistan is to **identify the target audience**.
- ▶ **58.9 percent is the literacy rate**.
- ▶ Only **45 % is involved in economic activity of age 15-64 years** whereas rest of the audience **55 %** is not involved in economic activity. So about **55%** need more information relating to economy to capture employment and engage in economic activities.
- ▶ The **economically active** include 33 % worked worker, 3% seeking jobs, 12 students , 52 % housekeeping and others.
- ▶ **Mobile phone(social media)** and TV has the biggest outreach among public in Pakistan. The statistics produced by central banks is mostly on internet and computer or laptop which is hardly **13 %** available to general public.
- ▶ Medium of communication in Pakistan is mostly English whereas Punjabi(40%), Pushto (18%), Sindhi (15%) and Urdu(8%) and others(19%) mother languages practiced. The statistical data dissemination is lacking **AV aids based communication**.
- ▶ Digitalization and financial inclusion.

One Size Communication Tragedy:



Most of statistical information is for experts, semi experts and content based written document. Lacking verbal and visual communication, and ignoring general Public

Central Bank Mixed Audience(Domestic & Foreign)



Story of Communication Flow



Economist

Readability, accessibility, Use matters e.g., academicians, Researchers etc.

These are content based audiences.

Interested in verbal, Non verbal, Written, Listening and Visuals.

Online/website, printed and media use



Non Economist

Accessibility matters e.g., media and Journalist, clerks, legislatures, commercial institutions, politicians, Skilled Professionals, Financial analysts etc.

Interested in Verbal, Listening and Visuals

Online/website and media use



General Public

Accessibility matters, Use e.g., professions like elementary occupation, crafts & trade worker, skilled agro & fishery, plant & machinery operator, sales worker, technical associates etc.

Interested in Listening and Visuals

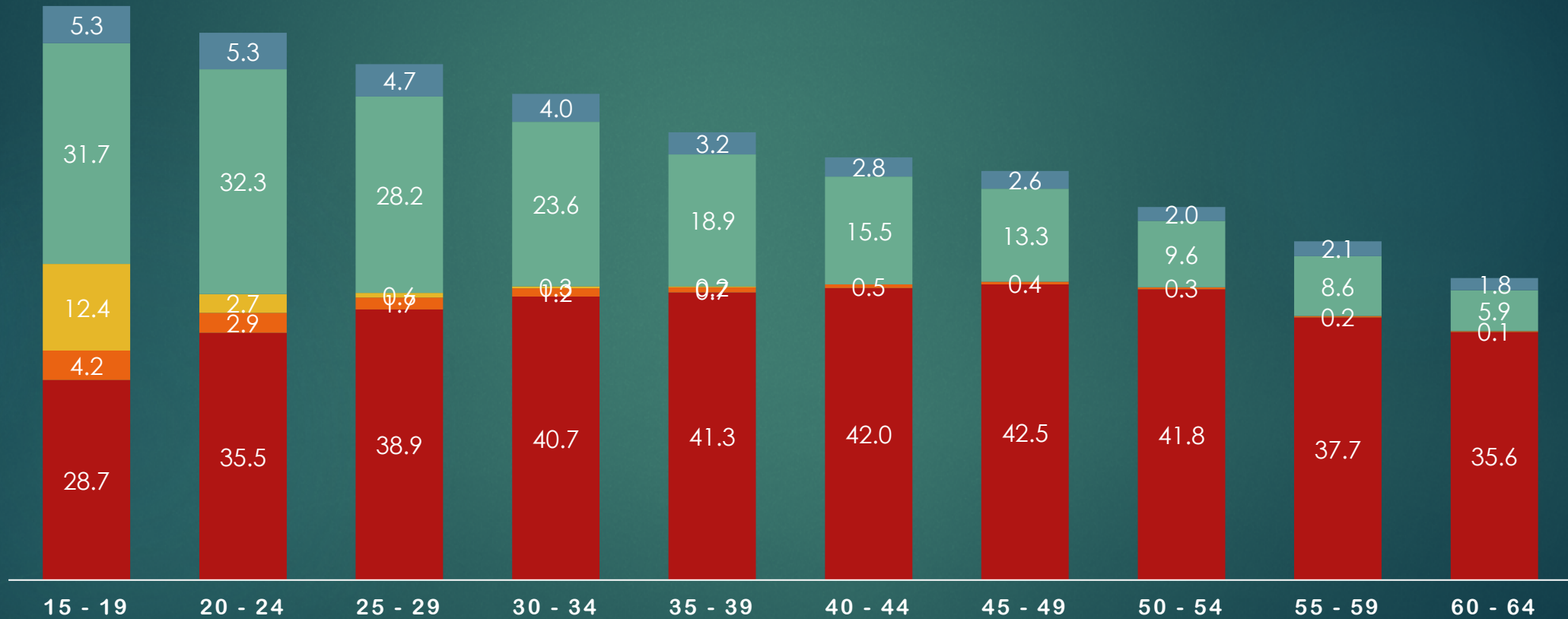
Media(social media only)use

Profiling of Target Audience In Pakistan(need to do)

- ▶ It is important to know the profile of audience. Some features identified as:
- ▶ Education
- ▶ Gender
- ▶ Income
- ▶ Language
- ▶ Economic activity

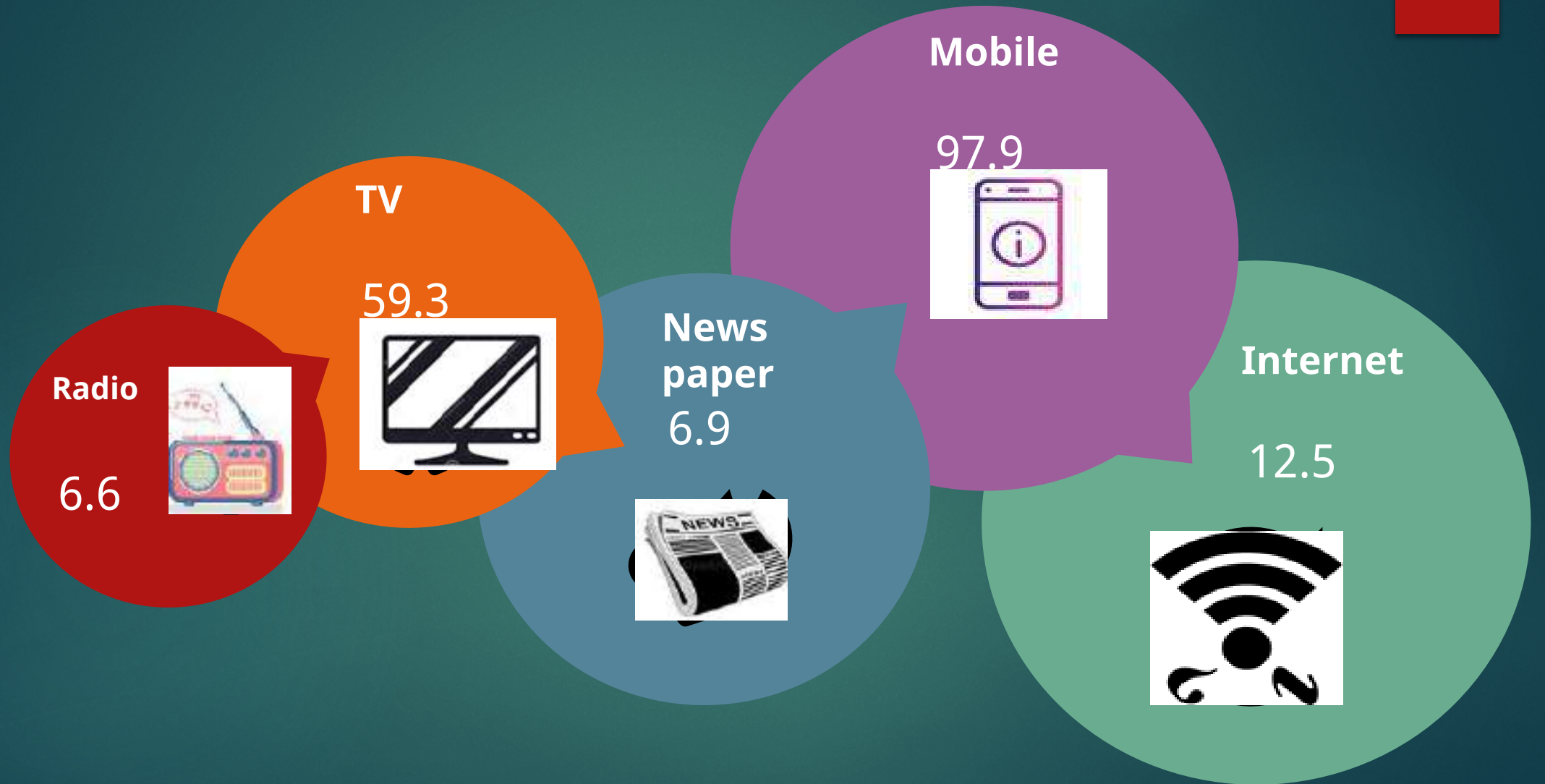
Favorable Population(15-64 yrs.) by usual activity: Census 2017-18

■ Worked
 ■ Seeking work
 ■ Students
 ■ House Keeping
 ■ Others



15-64 yrs. Consists of 33% worked, 52% house keeping& others and 11% students and 3% seeking work.

Households with source of information in Pakistan(%)



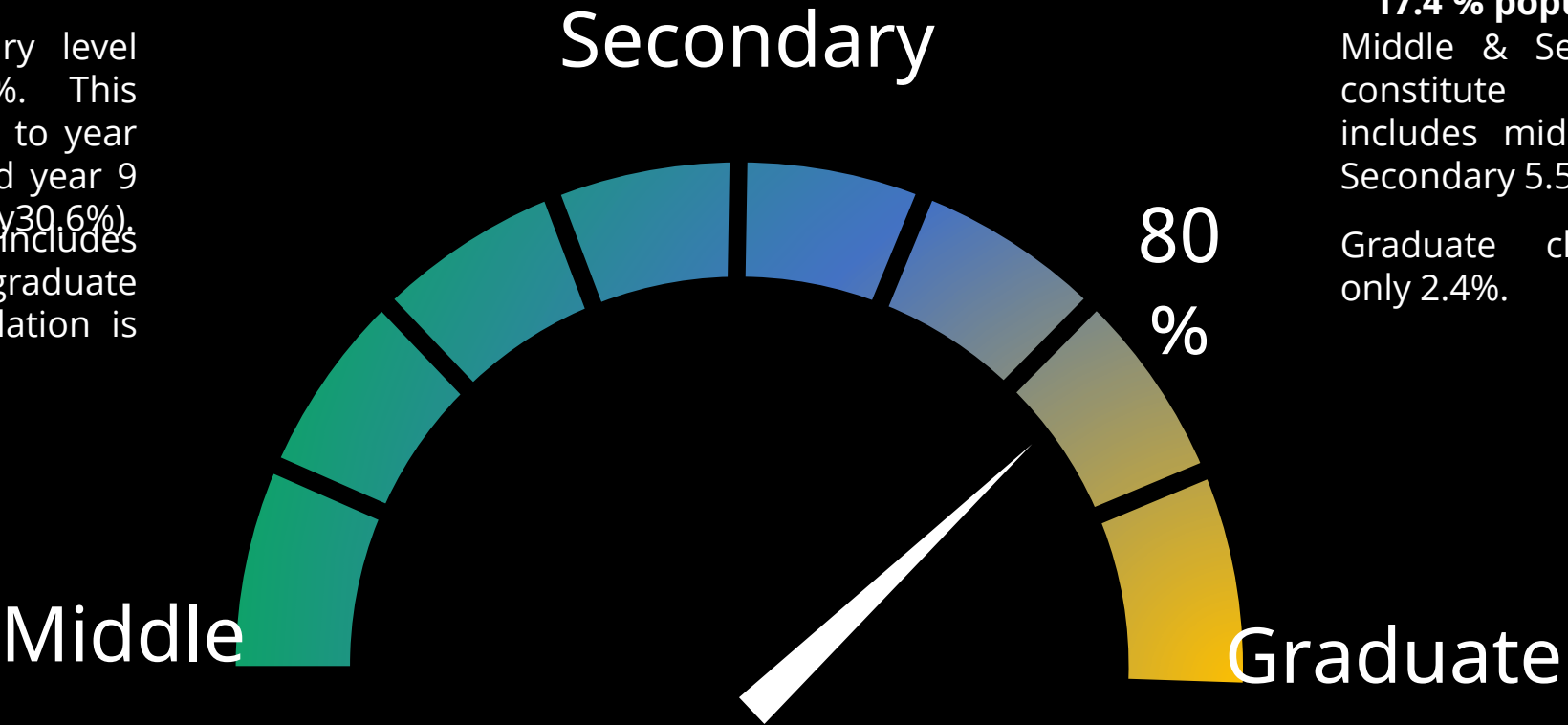
Level of Education attainment in Pakistan

Age (yrs.): 15-44
82.4% population.

Middle & Secondary level constitute 71.9 %. This includes pre school to year 8(middle 41.3%) and year 9 to year 12(secondary30.6%). Graduate class includes graduate & postgraduate and attained population is only 9.9 %.

Age (yrs.): 45-64
17.4 % population.

Middle & Secondary level constitute 15.2%. This includes middle 9.5% and Secondary 5.5%. Graduate class includes only 2.4%.



Population ages 15-64 consists of middle 50.8%, Secondary 36.9% and Graduate 12.3%(census of Population 2017)

PERCENTAGE DISTRIBUTION OF DAILY
INCOME OF EMPLOYED PERSONS: HIES
2018-19



What to Target

On the basis of diversified population statistics it can be inferred that:

1. One size(only content based) fit for all- likely only to have marginal impact.
2. We need to focus/aware on population of ages 15-44, having 71% up to secondary level education.
3. Mobile and TV as core medium of communication, used as cure for statistical dissemination.
4. 52 % population involved in housekeeping and related unproductive jobs, need information & awareness on economy.
5. About 90% population earning between 2-4 dollar daily including elementary occupation, crafts worker, machine & plant operator, services man, shop sales worker clerks etc.

What We Planned

- I. Established data services and innovation department, it will mainly take on the dissemination and communication of statistics using modern methodology including Easy Data.
- II. Big Data, Artificial Intelligence and Machine Learning based data management initiatives and operations.
- III. *Tailored information to target concerned audience.*
- IV. Using plain language/national language through media for understanding statistical data.
- V. Two-way communication Workshops to address access- use and understanding.
- VI. focus on how different *audiences create* the relationship between readability and reasoning.

Going Forward

- a. Process of Identifying Statistical and Communication Gaps and Needs. Survey of experts and audience is expected to be conducted for this purpose.
- b. Strengthening Capabilities and Interactions through User Group/Training Workshops, Seminars and Feedback Sessions.
- c. Deepening Media Engagement through different forms of communication like info graphs, visuals and story telling data dissemination.
- d. Real time data to minimize the gap between collection and dissemination, Geotag for monitoring, price tracker etc. are tools under way to enhance SBP communication.

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Helping users think with data: Statistical communication at the Bank of Canada¹

Andrew Geraghty,
Bank of Canada

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



Helping users think with data

Statistical communication at the BoC

"Communication on central bank statistics: unlocking the next level"

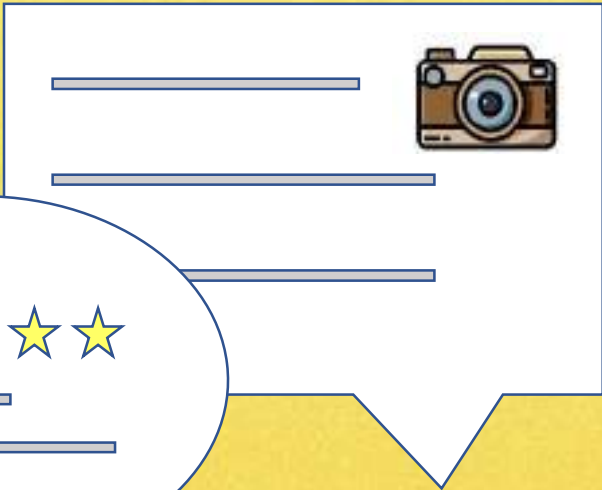
Joint Banco de Portugal and IFC Conference

Andrew Geraghty - Bank of Canada

September 20th 2022

70%

89%



A stock photography central
bank...

A group of four people (two men and two women) are sitting around a dark table in a cafe, laughing and talking. The woman on the left is holding a white mug. The man in the center is also holding a mug. The woman on the right is resting her chin on her hand. The man on the far right is leaning in and talking. The background shows a bar area with shelves of bottles and warm lighting.

The BoC's website
and data offerings
are amazing.



OMG, are they ever!



They make things
so
understandable.



I've got to check them out...

Bloomberg Billionaires Index

View profiles for each of the world's 500 richest people, see the biggest movers, and compare fortunes or track returns.

As of September 7, 2022

The Bloomberg Billionaires Index is a daily ranking of the world's richest people. Details about the calculations are provided in the net worth analysis on each billionaire's profile page. The figures are updated at the close of every trading day in New York.

Rank	Name	Total net worth	\$ Last change	\$ YTD change	Country / Region	Industry
1	Elon Musk	\$251B	-\$6.46B	-\$19.7B	United States	Technology
2	Jeff Bezos	\$153B	-\$3.41B	-\$39.5B	United States	Technology
3	Gautam Adani	\$143B	-\$532M	+\$66.3B	India	Industrial
4	Bernard Arnault	\$132B	+\$2.07B	-\$45.5B	France	Consumer
5	Bill Gates	\$115B	+\$1.57B	-\$23.5B	United States	Technology
6	Larry Page	\$100B	-\$2.22B	-\$20.4B	United States	Technology
7	Warren Buffett	\$97.8B	-\$1.19B	-\$11.1B	United States	Diversified



Neil deGrasse Tyson ✓

@neiltyson · Follow



Not that anybody asked, but [@JeffBezos](#)' 150-Billion dollars, can stack four miles high. And with what's left over, if laid end-to-end, can circle Earth 178 times, and then reach the Moon...and back...twenty times.

And it still leaves a half-million dollars for him to play with.



8:46 PM · Jul 18, 2019



22.4K



Reply



Share

[Read 1K replies](#)



0.11 mm



16537 KM



sense-mak·ing/'sens ,mākiNG/(noun)

the action or process

of *making sense* of or *giving meaning* to something,
especially new developments
and collective experiences

"All the News
That's Fit to Print"

The New York Times

Late Edition

Today, morning clouds giving way to sunshine by the afternoon, high 65. Tonight, cloudy, low 54. Tomorrow, clouds giving way to sunshine, high 70. Weather map is on Page 23.

VOL. CLXIX . . . No. 58,703

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NEW YORK, SUNDAY, MAY 24, 2020

\$6.00

U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

They Were Not Simply
Names on a List.
They Were Us.

Numbers alone cannot possibly measure the impact of the coronavirus in America, whether it is the number of patients treated, jobs interrupted or lives cut short. As the country nears a grim milestone of 100,000 deaths attributed to the virus, *The New York Times* scored obituaries and death notices of the victims. The 1,000 people here reflect just 1 percent of the toll. None were mere numbers.

Patricia Dowd, 57, San Jose, Calif., auditor in Silicon Valley • **Marian Krueger**, 85, Kickland, Wash., great-grandmother with an easy laugh • **Jermaine Ferrer**, 77, Lee County, Fla., wife with little time to enjoy a new marriage • **Cornelius Lawyer**, 84, Bellevue, Wash., slushrunner's son • **Larona Mendoza Dionisia**, 93, Los Angeles, cancer survivor born in the Phil-

ippines • **Michael Sorbia**, 71, New York City, champion of social justice through architecture • **George Valentine**, 95, Washington, D.C., lawyer who mentored others • **James Quigley**, 77, Chicago, rebel of the family • **Sherman Pittman**, 81, Chicago, dedicated his life to his church and his neighborhood • **Susan McPherson Gottsgen**, 74, Palm Beach, Fla., loyal and generous friend to many • **Andrew Kostasoulakis**, 59, New York City, trailblazer for TrilleCo • **Bob Barston**, 84, St. Petersburg, Fla., leader in Florida Pride events • **Neil Siddis**, 64, Olney, Md., nurse planning for retirement • **Thomas E. Anglin**, 85, Cumming, Ga., cross-country wonderful memories for his family • **Robert Mosley Aggs Jr.**, 75, South Bay, Calif., member of Del Amo Flyers • **Michael McConnell**, 84, Beverly, Mass., architect of Boston's monumental City Hall • **Huguette Dersoy**, 94, Somerville, N.J., coached several championship-winning junior high girls basketball teams • **Lynae Sierra**, 88, Roselle, Ill., grandmother who was always full of ideas • **Louvenia Henderson**, 44, Tarrytown, N.Y., proud single mother of three • **Carol Sue Rubin**, 88, West Bloomfield, Mich., loved travel, mahjong and crossword

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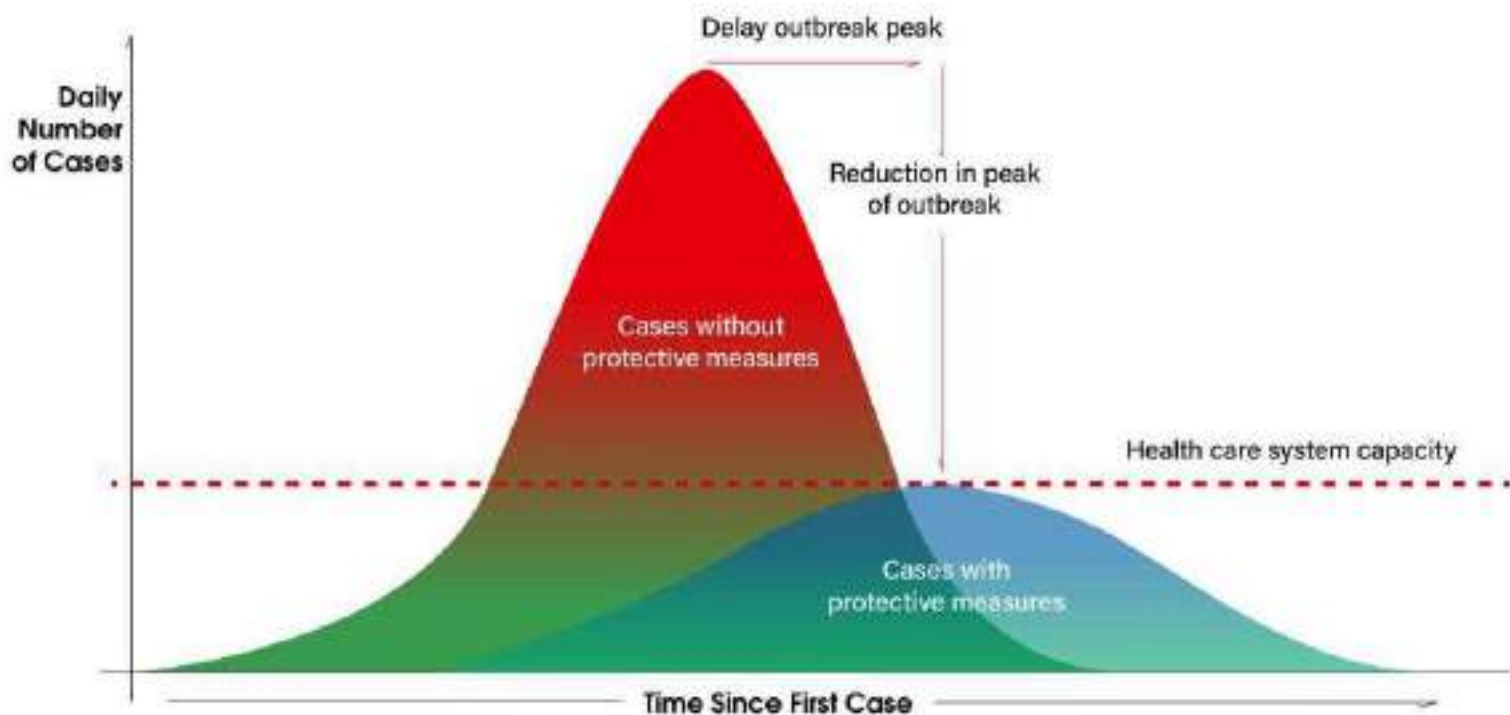
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Transforming numbers into narratives is becoming part of every leader's job.

Flattening The Curve



Source: adapted from the CDC / The Economist

iflscience.com

“

We are Canada's central bank. We work to preserve the value of money by keeping inflation low and stable.

”

Policy interest rate

3.25%

Sep 7, 2022

Total CPI Inflation

7.6%

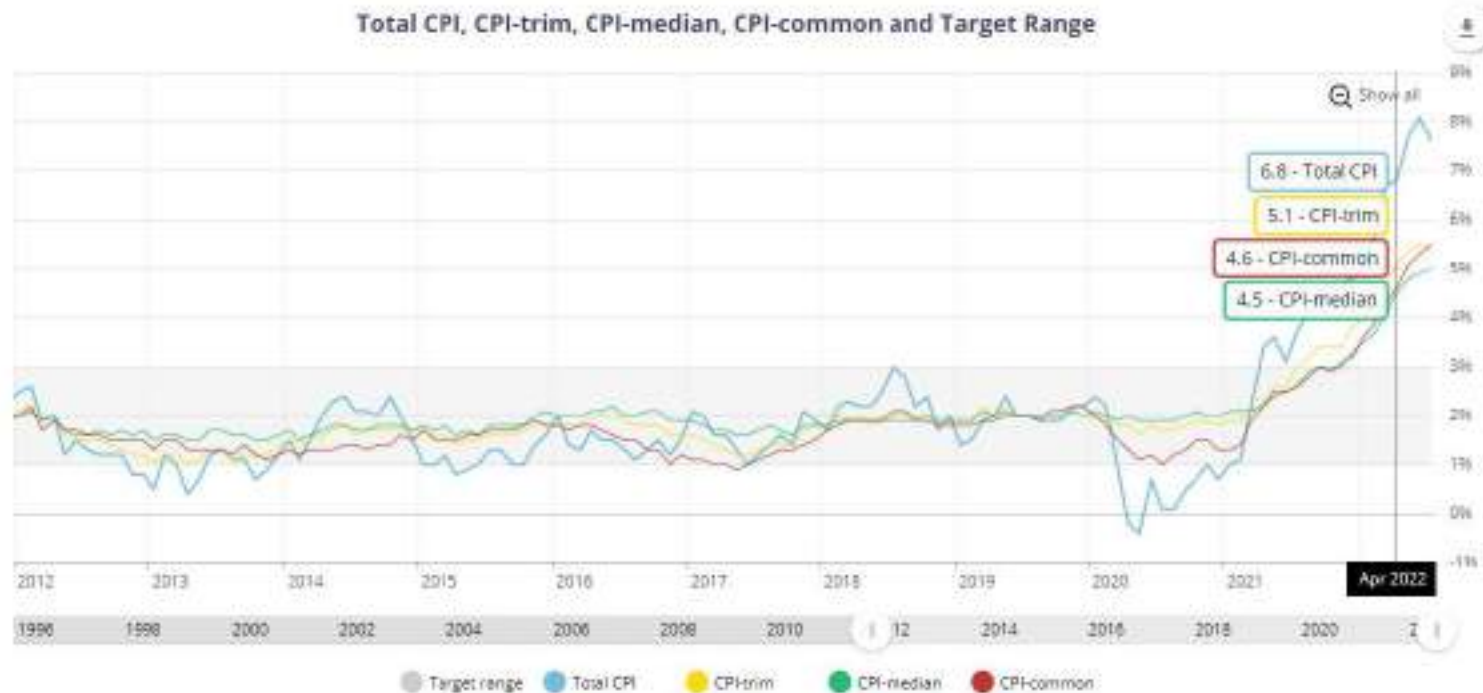
Jul 2022

CPI-trim	5.4%	Jul 2022
----------	-------------	----------

CPI-median	5.0%	Jul 2022
------------	-------------	----------

CPI-common	5.5%	Jul 2022
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Total CPI, CPI-trim, CPI-median, CPI-common and Target Range



We are working at shaping data
into narratives that make clearer
recommendations and inspire
others to act.

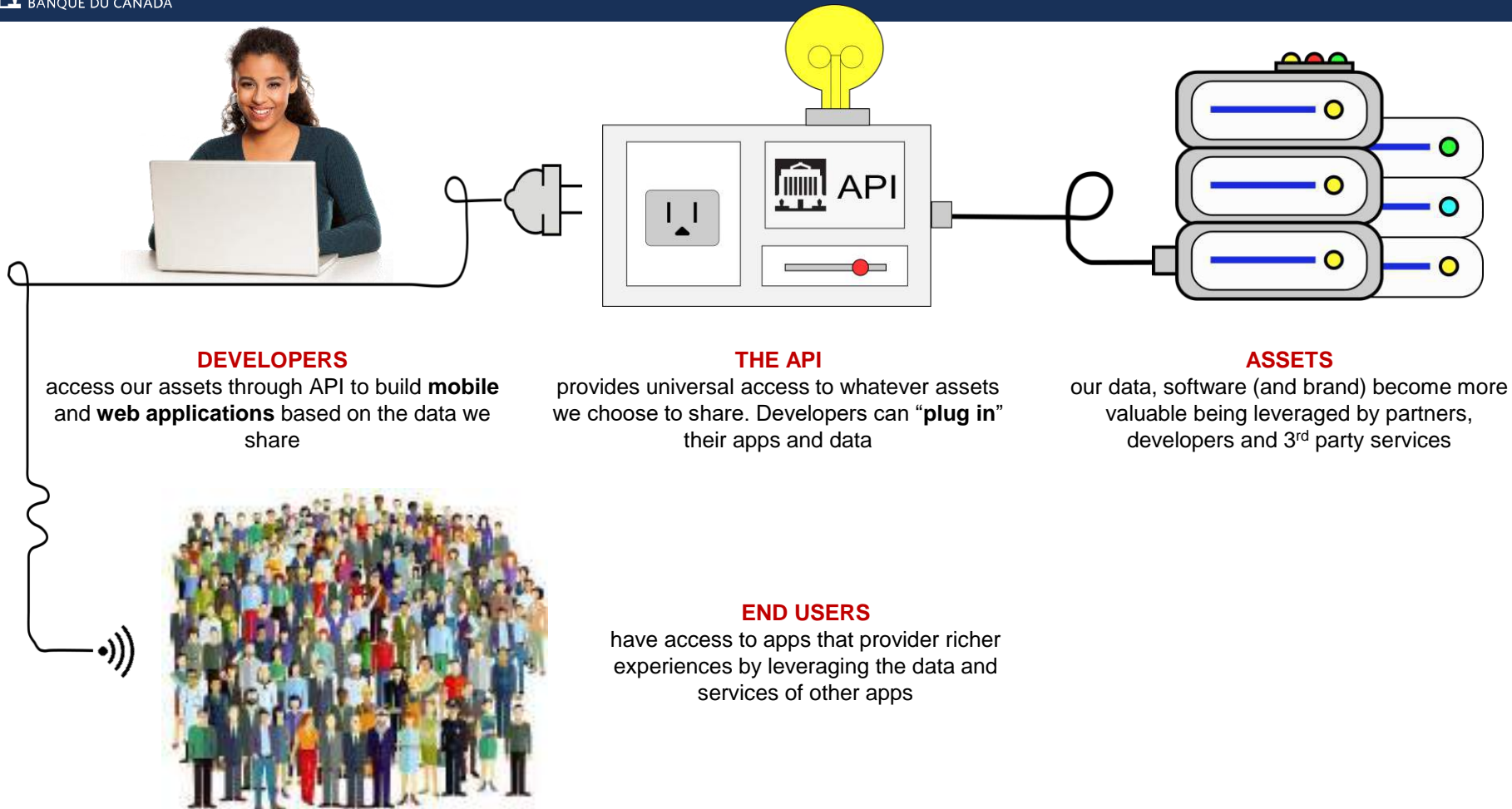
The key attributes of success
don't live in our products or
data offerings.

key attributes
live here



Ensuring that others understand what you are proposing must trump any personal or professional preferences you have regarding data.

Application Programming Interface



- ~ 10,249 series
- ~ 3.7 million data observations
- >140 BoC users (10% Robots)
- > 500,000 public requests per day



DEMO

“We are Canada’s central bank. We work to preserve the value of money by keeping inflation low and stable.”

Policy interest rate 3.25% <small>Sep 7, 2023</small>	Total CPI inflation 7.6% <small>Jul 2023</small>	CPI-trimmed 5.4% <small>Jul 2023</small> CPI-median 5.0% <small>Jul 2023</small> CPI-all-items 5.5% <small>Jul 2023</small>
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Assessing climate change risks to our financial system

Ensuring the stability and efficiency of the financial system is a key part of our work at the Bank of Canada. This includes analyzing structural changes that affect the economy—like climate change. These changes could increase widespread risks to the financial system.

News

Getting inflation back to normal November 8, 2022

Speeches by the Bank of Canada Deputy Governor David G. Beck, Deputy Governor Carolyn Taylor and Deputy Governor Stephen Scalet. Deputy Governor Carolyn Taylor discusses where the economy stands and what the Bank is doing to get inflation back under control.

Bank of Canada Bank of Canada - Follow

EYouAskedUs If we printed cash to finance the federal gov't.

We didn't.

[Keep reading to learn how](#)

Banking and Financial Statistics

On this page you can search the statistical data tables. For historical publications, see the [Historical Banking Financial Statistics and Weekly Financial Statistics](#).



Due to the exceptional circumstances related to the current COVID-19 pandemic, there may be a delay in the posting of certain data submissions to the website. During this period, the Bank of Canada will be committed to posting data submissions as soon as practicable. We will return to our regular release schedule once conditions permit.

Contains



Sections

Statuses

35 result(s)

Bank of Canada assets and liabilities: Month-end (formerly B1)

Monthly statement of assets and liabilities as required by the Bank of Canada Act. The figures for the last two reference periods are preliminary and are subject to revision.

Current Year: [Series and Recent Tables](#)

Bank of Canada assets and liabilities: Weekly (formerly B2)

Weekly Wednesday statement of assets and liabilities as required by the Bank of Canada Act. The figures for the last reference period are preliminary and are subject to revision.

Current Year: [Series and Recent Tables](#)

Historical positions of members of Payments Canada with the Bank of Canada (formerly B3)

Inactive: Starting June 13, 2012, the Bank of Canada no longer updates this table.

Current Year: [Series and Recent Tables](#)

Bank of Canada note liabilities (formerly K1)

Bank of Canada note liabilities include notes issued by chartered banks, the Province of Canada,



[Home](#) > [Bank notes](#)

Bank notes past and present

Read up on our [current](#) and [past](#) bank notes and find even more information on [related websites](#).

Current bank notes



Canada's Vertical \$10 Note

Explore and share the \$10 polymer bank note featuring Viola Desmond.



Frontiers Series

Canada's polymer bank notes celebrate achievements at home, around the world, and in space.





Overview

Introduction

Guiding principles for content

Design

Components

Charts

Accessibility

Introduction

The Bank of Canada Design System is a “just enough documentation” approach to capturing the patterns and standards of our web framework. It’s an iterative, collaborative resource intended to help scale the Bank’s digitalization efforts.

It includes:

- **Design**—patterns for colour, typography, and layout
- **Components**—usage rules for buttons, banners, and other reusable elements
- **Charts**—standards for choosing and implementing charts
- **Accessibility guidelines**

Content

We’ve embedded content guidance directly into the documentation for this design system. We believe that content and design are symbiotic and inseparable, so we’re taking an integrated approach to documenting them just as we do with implementing them.

That said, we’ve also included our [guiding principles for content](#).

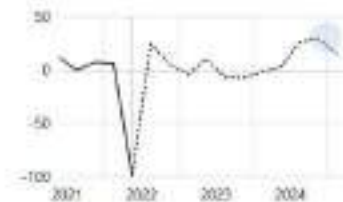


Interactive ToTEM Impulse Responses

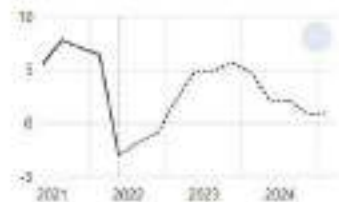
Using June 2022 Case A - TEST DATA

Timeline

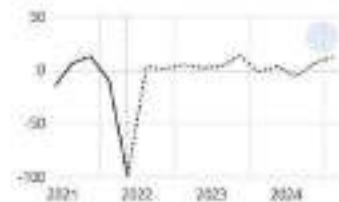
Business investment %



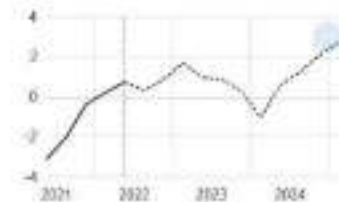
Real effective exchange rate (CADYROW) %



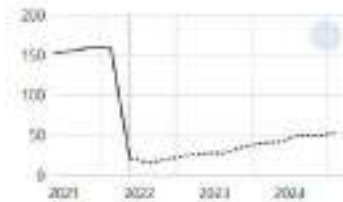
Exports %



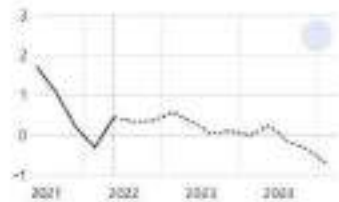
ToTEM output gap %



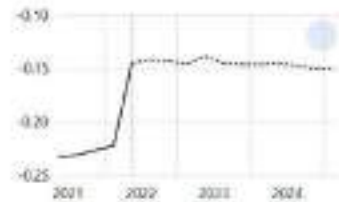
Mortgage debt to disposable income %



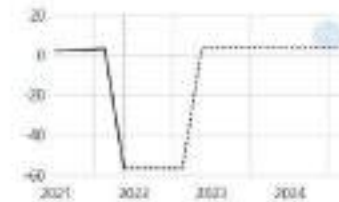
Unemployment gap %



Real consumption price deflator %



Core inflation (year-over-year) pp



— Staff Outlook

Go back

Next

A group of four people (two men and two women) are sitting around a dark table in a cafe, laughing and talking. The woman on the left is holding a white mug. The man in the center is also holding a white mug. The woman on the right is resting her chin on her hand. The man on the far right is leaning in and talking. The background shows a bar with shelves of bottles and warm lighting.

The BoC's website
and data offerings
are amazing.

A group of four young adults are sitting around a dark wooden table in a cafe or bar. They are all laughing and smiling. A woman with curly hair on the left is holding a white coffee cup. A man with curly hair next to her is also smiling. A woman with blonde hair is on the right, and a man with a beard is on the far right, looking towards the others. The background shows a bar with shelves of bottles. A thought bubble is above the woman with curly hair.

I'm amazing!



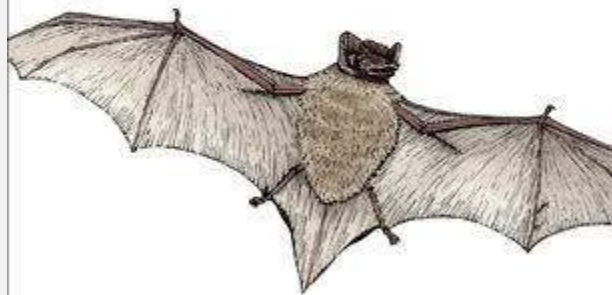
Influencing action

- Move from making *sense* to making *meaning* by developing a sense of scale
- Transform numbers into narratives that *build shared understanding*
- Give people a sense of control, **let them pull the levers** sometimes
- **Create experiences** that leave people feeling *creative, smart, powerful* and *included*

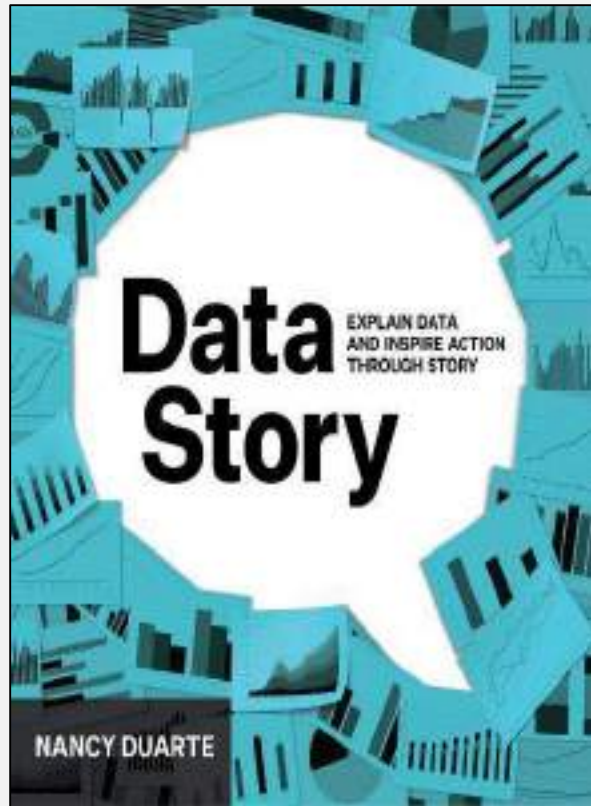
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Communicating with Data

Making Your Case with Data



Carl Allchin



Data Story

EXPLAIN DATA
AND INSPIRE ACTION
THROUGH STORY

NANCY DUARTE

national bestseller

flow

mihaly
csikszentmihalyi

the psychology of
optimal experience

“Important. . . .

Illuminates the

way to happiness.”

—*New York Times*

Book Review

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ILLUSTRATIONS
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data

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

A snapshot on Bank of Albania communication approach and financial literacy ¹

Argita Frashëri and Elona Dushku,
Bank of Albania

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

A snapshot on Bank of Albania communication approach and Financial literacy

Argita Frashëri, Elona Dushku
Bank of Albania

Communication on central bank statistics: unlocking the next level-Joint Irving Fisher Committee and Banco de Portugal Conference

19-20 September, 2022

The views expressed in this presentation are those of the authors and do not necessarily reflect the views or the opinions of the Bank of Albania.

Outline

- Central bank communication revolution
- How and what BoA communicate
- Some evidence of financial literacy in Albania
- Final remarks

I. Central bank communication revolution in thinking and practice

- Central bank communication is considered a core part of monetary policy toolkit due to influence on the expectations of markets participants, firms and consumers. As a result, many central banks have become remarkably more transparent over the past 15 years and have started placing much greater weight on their communications.
- Evolution in central banking, combine with high uncertainty caused by global financial crisis, Covid-19 and Ukraine war have embarked central banks on another journey, largely unexplored. This new road leads to a different audience, namely as non-experts (Gardt et al.(2021)).
- Reaching out to non-experts raises a number of challenges. Blinder (2018) stress that “central banks will keep trying to communicate with the general public, as they should. But for the most part, they will fail.”
- Generally no-experts know less about central banks, might not be in reach, and will not necessarily respond as fast and visibly to central bank messages. Haldane et al. (2020) emphasize that central bank communication with the public need more “explanation, engagement and education” than experts.

II. Bank of Albania Monetary policy framework

- *Monetary policy framework*

- In 1992 establishment of Bank of Albania, new law of 1996 fulfill and the marked a noticeable improvement in legal and institutional framework of central bank as an independent authority.
- The subsequent law of 1997, amended in 2002 and still in force today, further clarified the objective of monetary policy by specifically defining its goal as “... to achieve and maintain price stability.”
- From 1992-2008, Monetary targeting regime (Themeli, 2010)
- Since 2009, Inflation targeting framework
 - Independency
 - Accountability
 - Transparency

- *Monetary policy communication approach*

- Initially and important step was the publication of a mid-term strategy of BoA presenting its vision, monetary policy strategy, objectives and instruments
- In following years, transparency and communication with the public became a core part of monetary toolkit.
 - Periodic publication of the Monetary Policy Document
 - Immediate publication of monetary policy decision followed by live press conference of the governor.
 - Constant improvement of monetary policy reports, inflation analysis, and forecasting process.
 - BoA's assessment about current and future economic developments, their impact in inflation, future stance of monetary policy

II. How and what BoA communicate

Periodical publications

- Annual report
- Monetary policy report (quarterly)
- Monetary policy
- Financial Stability report (semiannual)
- Annual supervision report
- Monthly statistical report
- Central bank highlight, news and events (semiannual)

Research Publication

- Economic review
- Research newsletter
- Research papers
- Conference book series

Surveys

- Business and consumer confidence survey
- Lending standard survey
- Financial situation and borrowing of households and enterprises
- Real estate market and residential price index
- Household wealth survey

Educational publications

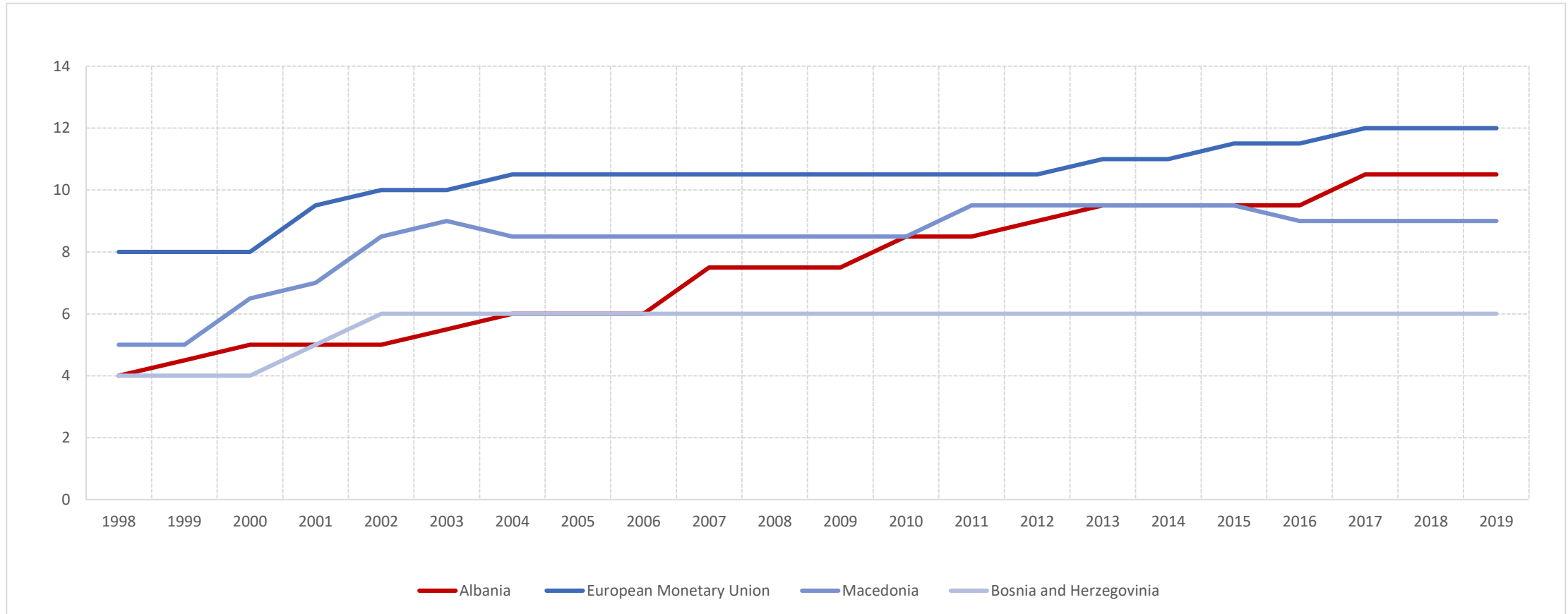
- Central bank
- Education of personal finance
- Others

Specific publications

- Medium-term development strategy of Bank of Albania
- Governor public appearance (annually)

II. Evolution of central bank transparency index

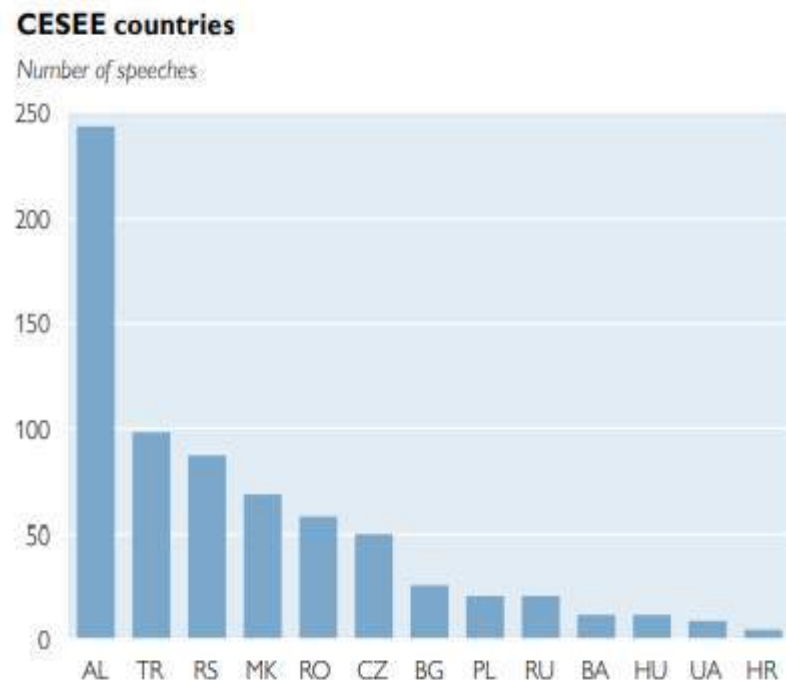
Graph 1: Evolution of BoA transparency index



Source: Dincer, Eichengree & Geraats (2022)

II. What do central bank talk about? A European perspective on central bank communication (Feldkircher et al, (2021)).

Graph 2: Number of speeches from 1997-2019



Source: Feldkircher et al (2021), FEEI, Q2_21

Graph 3: Main topics in central bank speeches

Topic 1-European integration Topic 2- Monetary policy Topic 3-Financial stability Topic 4-Outside box

Topic prevalence in central bank speeches by CESEE country

Country	Topic 1	Topic 2	Topic 3	Topic 4
Albania	0.10	0.13	0.28	0.22
Bosnia and Herzegovina	0.28	0.05	0.30	0.26
Bulgaria	0.26	0.05	0.40	0.25
Croatia	0.31	0.11	0.09	0.35
Czechia	0.21	0.15	0.14	0.43
Hungary	0.23	0.18	0.19	0.23
North Macedonia	0.19	0.10	0.25	0.29
Poland	0.17	0.13	0.09	0.39
Romania	0.31	0.10	0.15	0.30
Russia	0.04	0.13	0.27	0.13
Serbia	0.15	0.08	0.20	0.29
Ukraine	0.04	0.17	0.11	0.33
Turkey	0.10	0.25	0.21	0.12

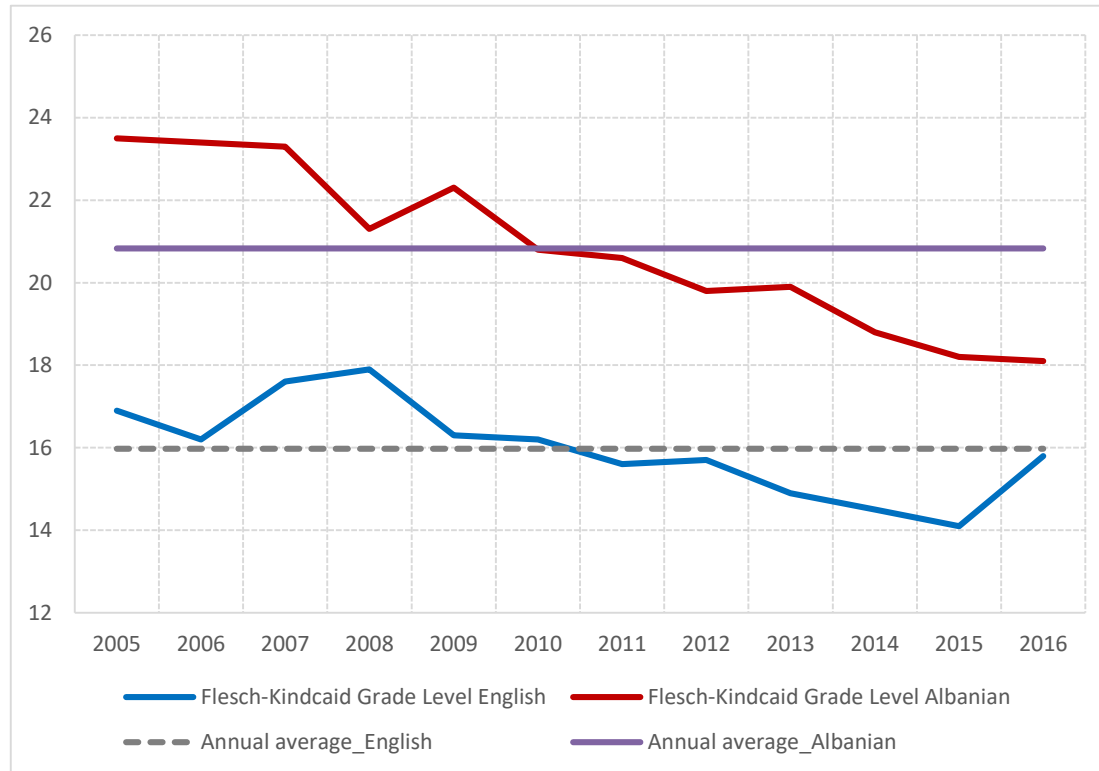
Source: Authors' calculations.

Note: The table shows the probability of topic assignment (θ), averaged over documents per central bank. The highest mean probability per central bank is marked in bold.

Source: Feldkircher et al (2021), FEEI, Q2_21

II. Readability of BoA speeches and inflation expectation gap

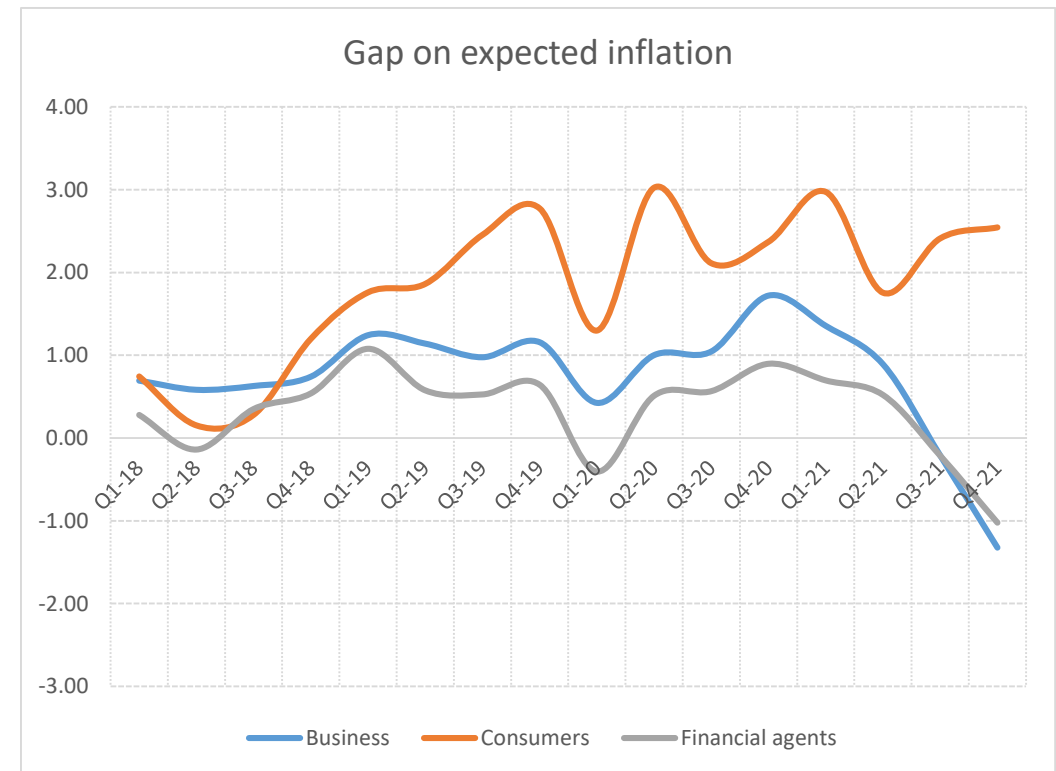
Graph 4: Flesch-Kindcaid Grade Level English and Albanian from 2005-2016



Source: Çeliku (2017),

- Çeliku (2017) estimate a downward level of Flech-Kindcaid Grade level showing that the readability of BoA speeches has improved over time, but we need to do more.
- In addition, BoA communication strategy needs to account heterogeneity of inflation expectations and low level of financial literacy.

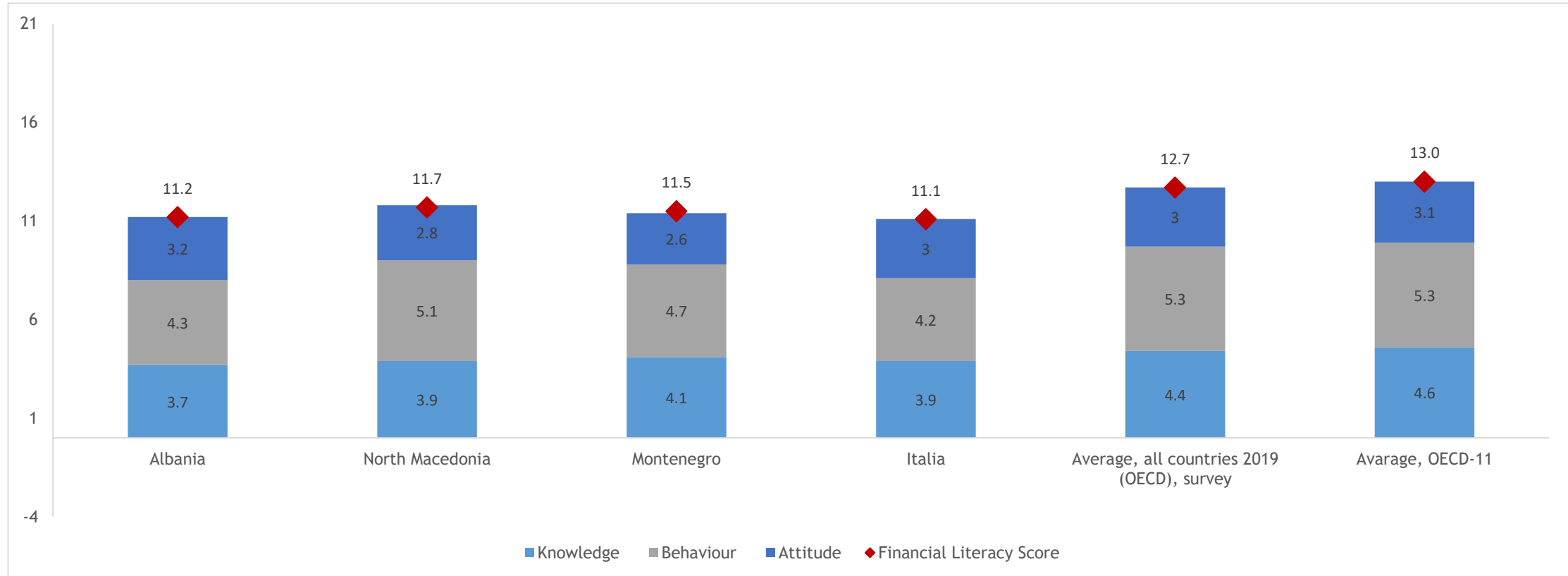
Graph 5: Expected inflation rates over next 12 months



Source: Bank of Albania

III. Financial literacy in Albania: Results of 2019 survey

Graph 6: Financial literacy score, 2019



Source: OECD(2020), Dushku (2022)

- Financial literacy index in Albania is 11.2 out 21 (max), lower than the average of the countries in 2019.
- Individuals in Albania have only 53% financial knowledge, behavior and attitudes, comparing to average level of all countries, which is 61 %.

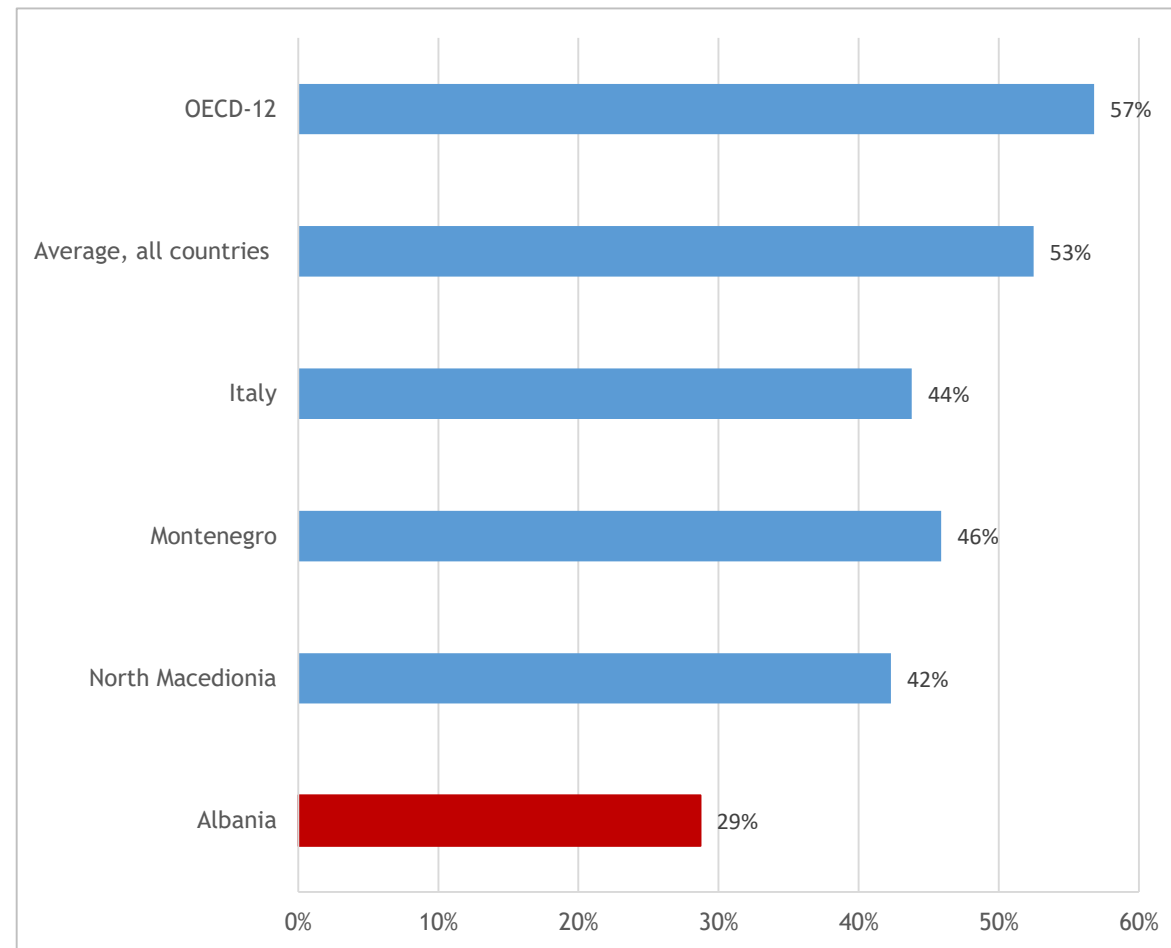
III. Financial literacy in Albania: Results of 2019 survey: Financial knowledge

Table 1: Percentage of adults that give correct answer

Financial knowledge questions	Albania	North Macedonia	Montenegro	Italy	Average of all countries	Average of OECD-OECD/IN 12 FE survey
Time value of money, impact of inflation	25.90%	60.80%	61.40%	50.50%	65.50%	59.90%
Interest paid on a loan	83.70%	72.90%	87.40%	78.20%	87.40%	84.40%
Simple interest calculation	46.40%	44.80%	65.80%	59.40%	57.20%	57.10%
Understanding compound interest	10.50%	12.30%	13.90%	23.10%	28.80%	26.30%
Understanding risk and return	74.30%	68.60%	75.90%	64.70%	79.00%	77.10%
Understanding the definition of inflation	69.30%	78.20%	70.40%	65.10%	80.90%	78.00%
Understanding risk diversification	61.10%	55.10%	35.90%	51.30%	63.30%	58.90%

Source: OECD(2020), Dushku (2022)

Graph 7: Minimum target score on financial knowledge-Percentage of adults scoring 5 or more (out of 7)



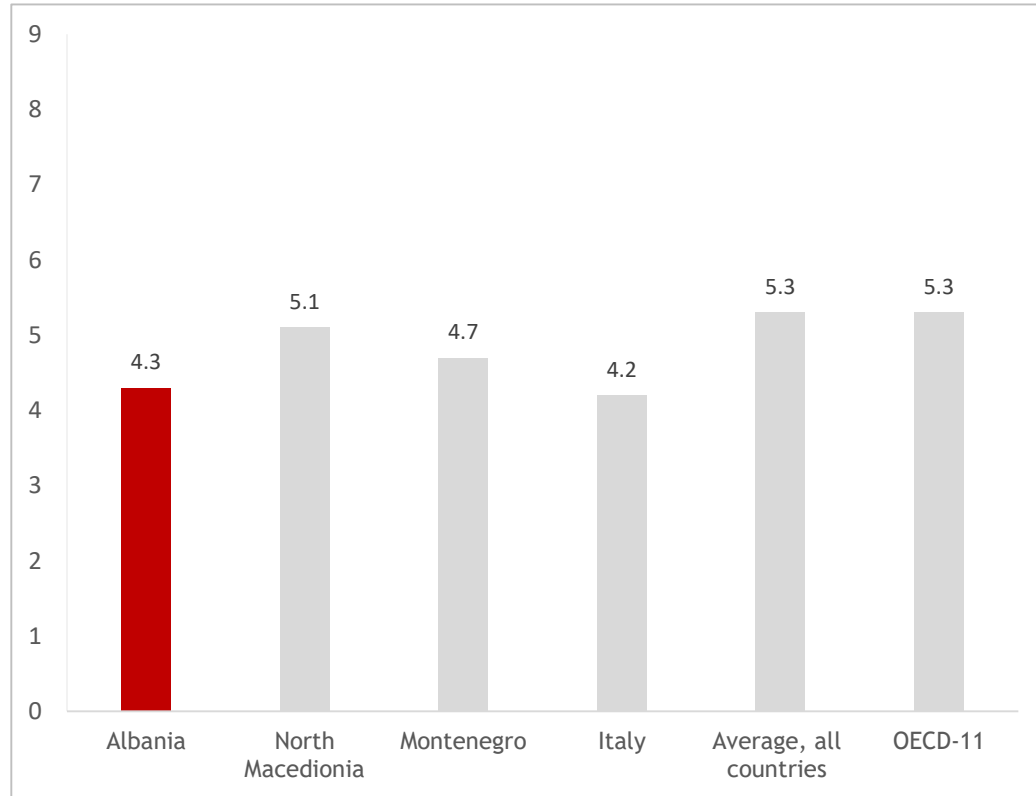
Source: OECD(2020), Dushku (2022)

- Lack of financial knowledge on the questions related to time value of Money, simple and compound interest calculation.
- 29% of individuals in Albania hold the minimum level of financial knowledge, low comparing with the average of OECD-12 and all countries (53-57 %)

III. Financial literacy in Albania: Results of 2019 survey

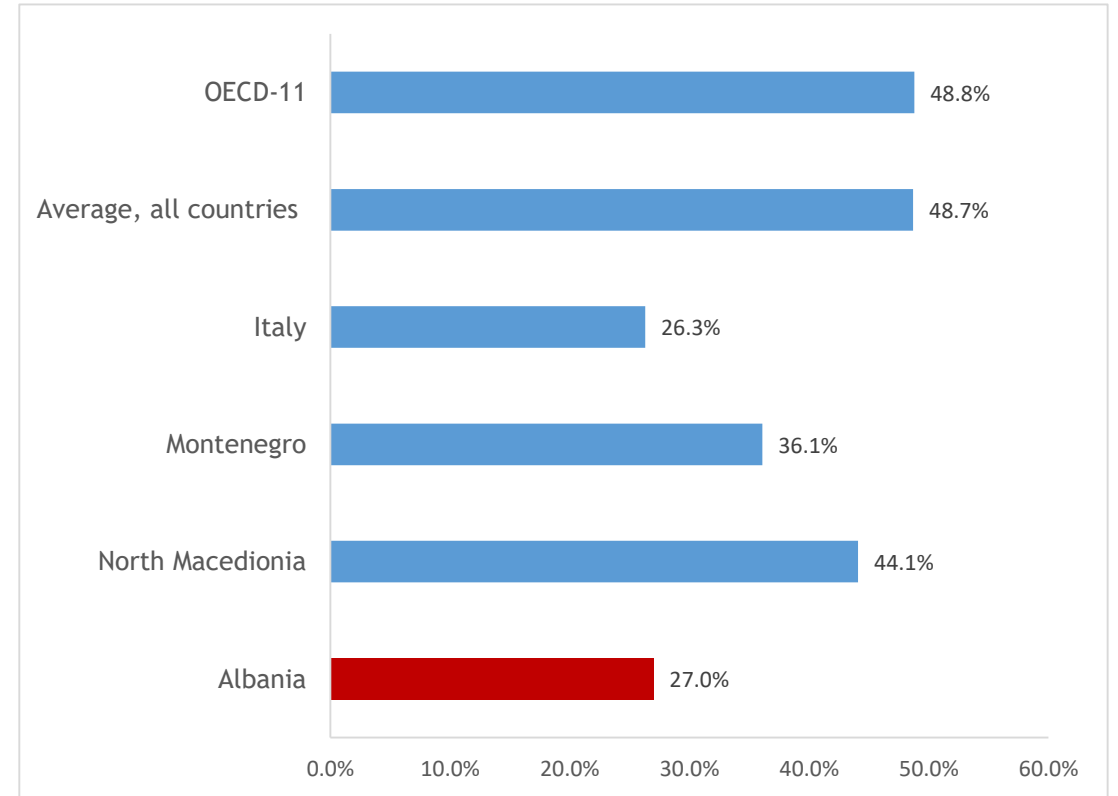
Financial behavior derived as a measure of prudent, long term, savings-oriented behaviors towards money.

Graph 8: Financial behavior score



Source: OECD(2020), Dushku (2022)

Graph 9: Minimum target score on financial behavior: Percentage of responses who achieved 6 or above (out of 9)



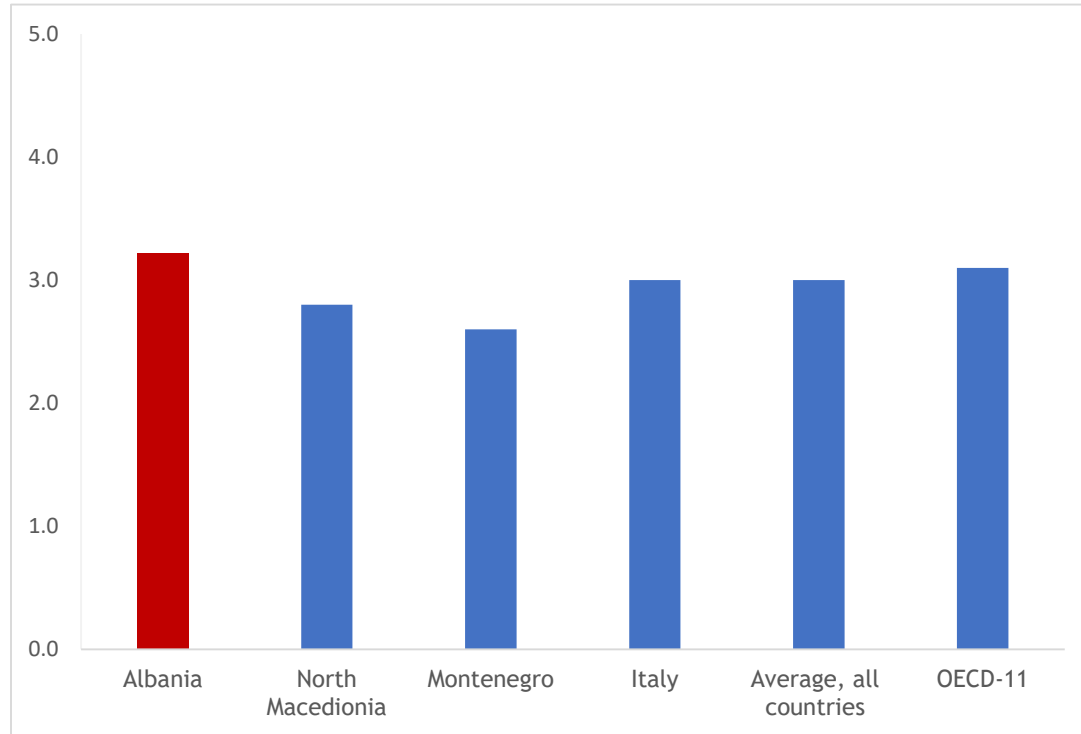
Source: OECD(2020), Dushku (2022)

- Financial behavior score in Albania is 4.3 (out of 9) lower than world or OECD-11 average
- Only 27 % of adults in Albania were able to achieve the minimum target score of 6 or more.

III. Financial literacy in Albania: Results of 2019 survey:

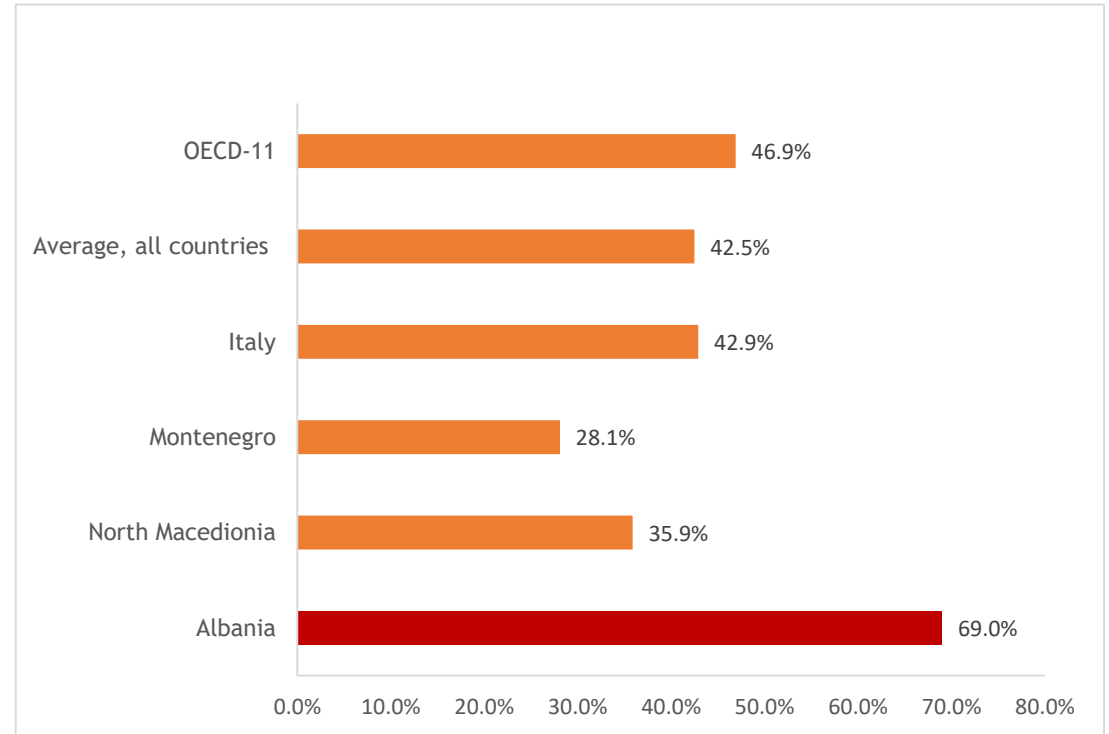
Financial attitude is based on the respondents' attitudes towards money and planning for the future

Graph 10: Financial attitude score



Source: OECD(2020), Dushku (2022)

Graph 11: Percentage of responses who give correct answer on financial attitude



Source: OECD(2020), Dushku (2022)

- Financial attitude score in Albania is 3.2 a little higher than average index of all countries.
- 70 % of adults in Albania were able to achieve the minimum target score of over 3 (out of 5).

III. Financial literacy in Albania: Results of 2019 survey:

Table 2: Percentage of individuals with minimum financial knowledge, behavior and attitude based on socio-demographic characteristics in Albania

		Percentage of individuals with minimum financial knowledge	Percentage of individuals with minimum financial behavior	Percentage of individuals with minimum financial attitude
Total		28.7%	27%	56.2 %
Gender	Women	23.4%	23%	60.1%
	Men	34.2%	31%	52.2%
Age	18-29 years	34.9%	24%	42.6%
	30-59 years	31.9%	32%	61.2%
	60-79 years	17.4%	18%	58.4%
Area	Urban	28.2%	32%	51.5%
	Rural	29.2%	21%	61.1%
Education	Tertiary level	46.5%	48%	49.5%
	Secondary level	31.7%	31%	53.0%
	Basic level	16.6%	11%	63.1%
	No education	0.0%	0%	56.0%
Employment status	Self-employed	38.1%	41%	60.7%
	Employed	38.3%	47%	52.3%
	Student	54.3%	18%	34.9%
	House person, economically inactive	16.9%	17%	65.0%
	Unemployed	20.6%	5%	50.0%
	Incapable for work	16.7%	14%	59.0%
Income level	Low level	21.7%	14%	58.7%
	Medium level	34.1%	35%	55.0%
	High level	41.5%	56%	50.4%

Source: Dushku (2022)

- Most vulnerable groups of individuals in terms of financial literacy are: women, youth, elderly, and individuals with low levels of education, unemployed, housewives, low-income individuals and individuals living in rural areas.

V. Final Remarks

- Communication approach of Bank of Albania has been improved over time but low level of financial literacy in Albania still remain an issue for the effectiveness of monetary policy.
- Furthermore, data show high heterogeneity between groups in terms of financial literacy (youngest, women, students, unemployed, poorest individuals have low level of financial score) and inflation expectations.
- Strengthening financial literacy is crucial for Bank of Albania communication strategy, in helping markets anticipate monetary policy and reducing market uncertainty.
- Bank of Albania with World Bank has started to work for implementing a Albania National Financial Education Strategy, where the aim is to increase financial literacy of Albanians, as result to improve their financial well-being and resilience to unexpected events.

Thank you!

Argita Frasheri

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Elona Dushku

E-mail: edushku@bankofalbania.org

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

How to tailor information resources to a target audience – Lessons learned from a Research Data Centre¹

Jannick Blaschke,
Deutsche Bundesbank

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How to tailor information resources to a target audience – Lessons learned from a Research Data Centre

Jannick Blaschke, Deutsche Bundesbank, Research Data and Service Centre

Session 2 | Unlocking new targets

Joint Irving Fisher Committee and Banco de Portugal conference on
“Communication on central bank statistics: unlocking the next level”
held at 19 and 20 September 2022, Lisbon

The views expressed here do not necessarily reflect the opinion of the
Deutsche Bundesbank, the INEXDA network or the Eurosystem.

Communicating complex information to a heterogeneous target audience

How to get from this situation ...



Complex
information



„Thank you but this info is **not relevant** for my case.”



„**Perfect**, that’s the info I needed!”



„I **don’t trust** the info, my facts say otherwise.”



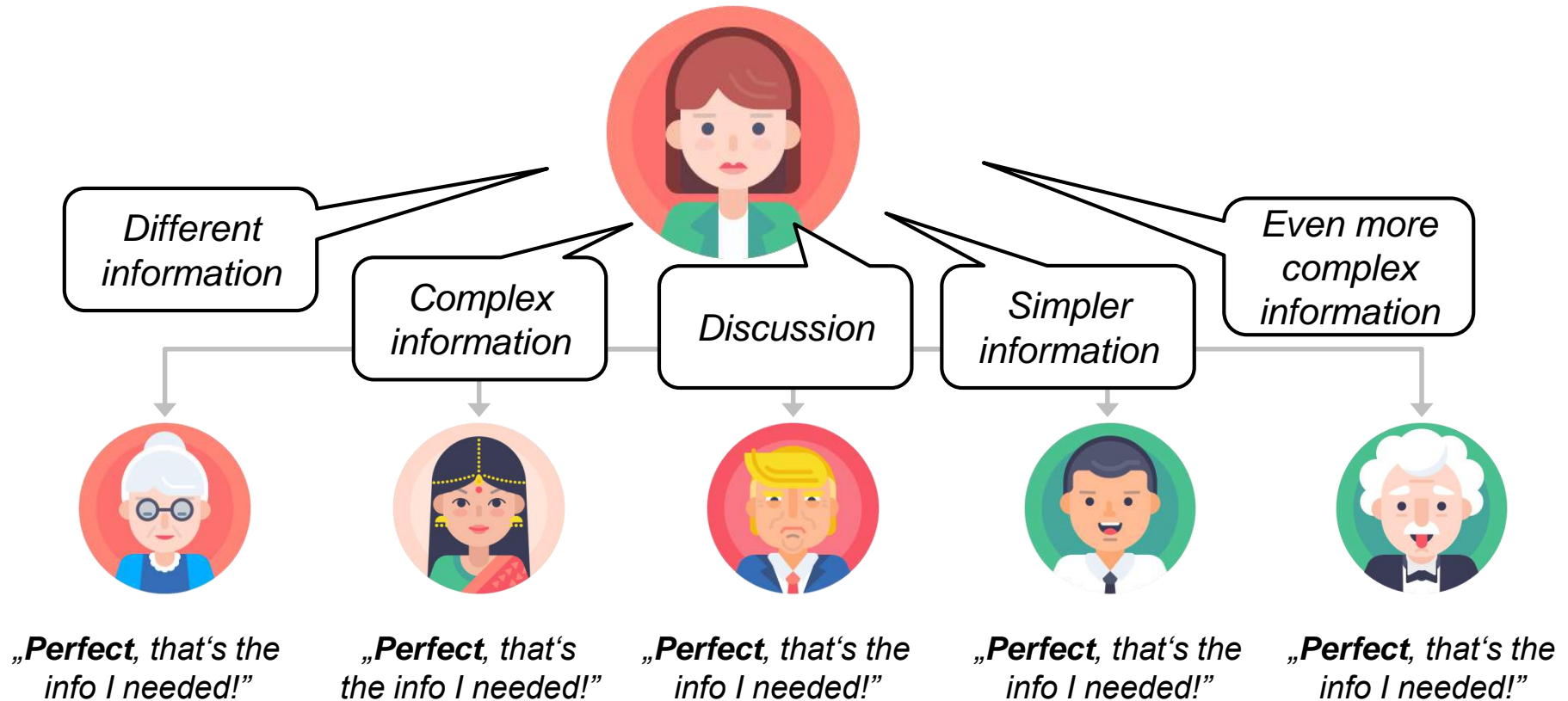
„The info is too **difficult** for me to understand.”



„This is **obvious** to me. Waste of my precious time.”

Communicating complex information to a heterogeneous target audience

... to this situation.



Focus of this presentation: Lessons learned from a Research Data Centre

What's the Research Data and Service Centre? (1|2)



The **Research Data and Service Centre** (RDSC) of the Deutsche Bundesbank offers access for **non-commercial** research to (highly sensitive) **micro data** of the Bundesbank.

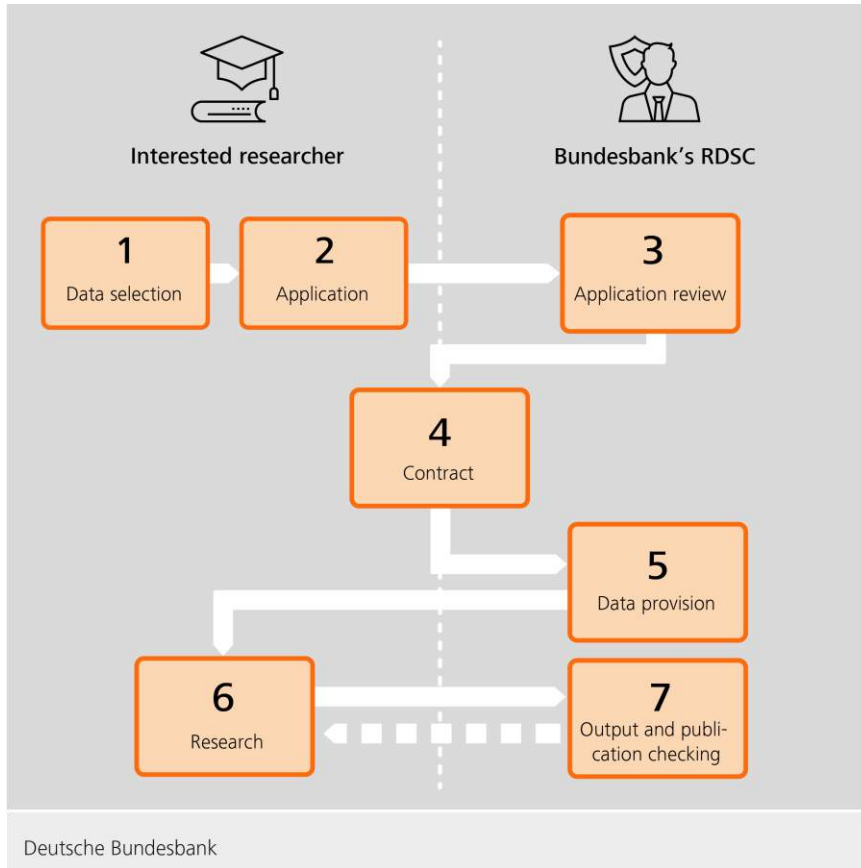
Microdata for banks, companies, securities and households are available:

- Generate (standardized) (linked) micro data
- Offer advisory service on data selection and data access
- Provide data access and data protection
- Document data and methodological aspects of the data
- Work on own research projects
- Organize conferences and workshops



Focus of this presentation: Lessons learned from a Research Data Centre

What's the Research Data and Service Centre? (2|2)



Data access

Depending on the dataset (degree of anonymization and legal foundation) the RDSC grants **access** via **three modes**:

- Secure-on-site Access
- Scientific use files
- Controlled Remote Execution

Currently, the RDSC counts around 300 active research projects



For more information please see the information on our **website**:
<https://www.bundesbank.de/en/bundesbank/research/rdsc/your-research-project-at-the-rdsc>

Motivation of the RDSC

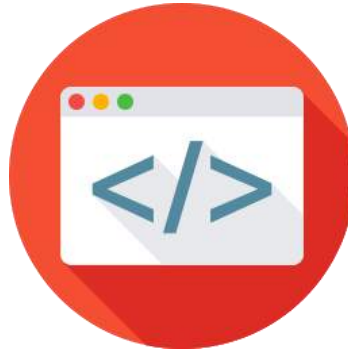
Status Quo (1|2)

To **support researchers** in their projects and especially in output control, the RDSC already provides a **variety of materials**:



Documents

- ✓ Rules for visiting researchers
- ✓ Data reports
- ✓ Technical reports
- ✓ FAQs
- ✓



Software and code

- ✓ SDC* package for R
- ✓ SDC package for STATA
- ✓ Output submitter
- ✓ ...



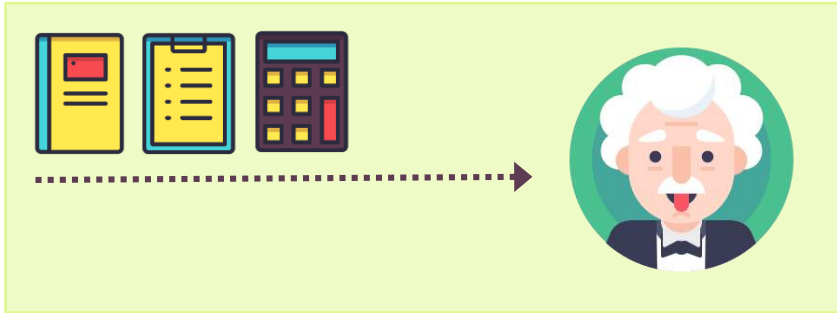
Online resources

- ✓ Website
- ✓ Metadata und persistent dataset identifiers (DOI)
- ✓ ...

Motivation of the RDSC

Status Quo (2|2)

Provision of support materials (e.g. documents, software) can potentially lead to an information overflow. Although all information is potentially relevant.



Scenario 1 - **Little** user support needed

- Small number of datasets
- Easy data structure
- Small dataset size
- Homogeneous legal framework → Similar rules for data access and SDC



Scenario 2 - **Much** user support needed

- Large number of datasets
- Complex data structure (e.g. multiple IDs, missing IDs)
- Large dataset size
- Heterogeneous legal framework → Dataset-specific rules for data access and SDC

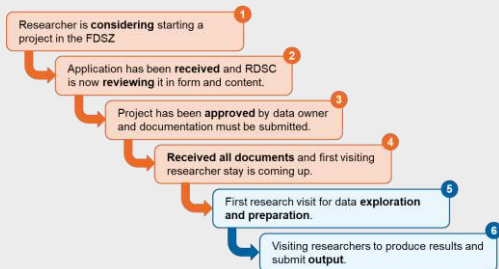
New concept for a streamlined communication at the RDSC

Summary of the RDSC's procedure

Our approach to handle scenario 2:

We defined a multitude of **use cases** and structured them using **three main questions**:

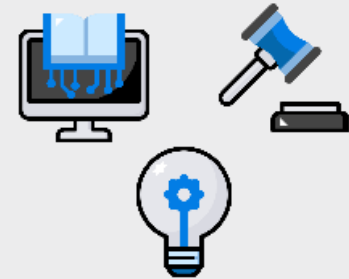
Use Cases



WHEN?



WHO?



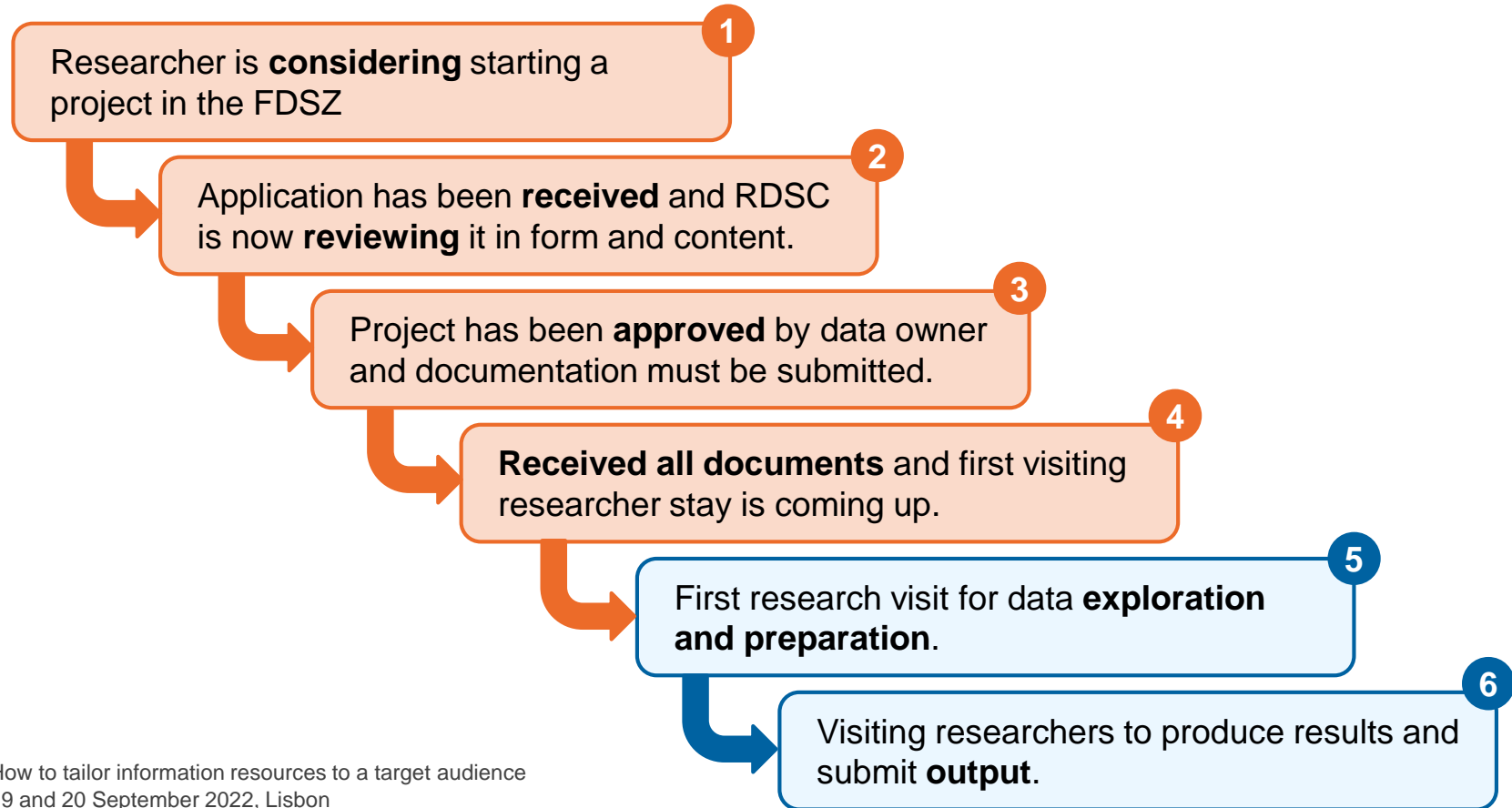
WHAT?

New concept for a streamlined communication at the RDSC

WHEN?: Milestones

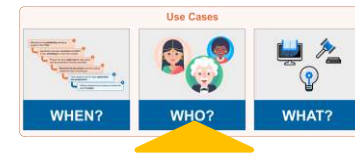


*Structuring the research process into **six milestones**.*



New concept for a streamlined communication at the RDSC

WHO?: Defining the target audience



*The RDSC decided to divide its target audience into **three groups**:*



Group A

Previous experience ...

- X at the RDSC
- X with the requested dataset(s)



Group B

Previous experience ...

- ✓ at the RDSC
- X with the requested dataset(s)



Group C

Previous experience ...

- ✓ at the RDSC
- ✓ with the requested dataset(s)

New concept for a streamlined communication at the RDSC

WHAT?: Classification of our existing materials (1|2)



*The RDSC provides many different materials to researchers. However, the **type of information** is different. Here are some examples:*



iii RDSC Rules

Plain text with list of rules that need to be adhered to.



iii Tips for data handling

Text with explanations and examples.



iii User guide for SDC tools

Step-by-step instructions with code examples.

New concept for a streamlined communication at the RDSC

WHAT?: Classification of our existing materials (2|2)



*Existing and planned materials are assigned to a **material type**.*



Reference*

Information-oriented

- ✓ Visiting researcher rules
- ✓ Contracts
- ✓ Confidentiality agreement briefing
- ✓ Website
- ✓ ...



Explanation

Understanding-oriented

- ✓ Data reports
- ✓ Website
- ✓ Technical reports on selected topics
- ✓ RDSC Wiki with FAQ
- ✓ ...



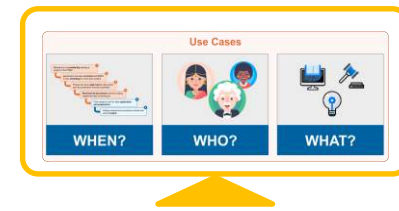
Tutorials

Learning-oriented

- ✓ Instructions for using the SDC packages in Stata and R with examples
- ✓ Example project
- ✓ Tool for automatic checks of certain rules
- ✓ ...

New concept for a streamlined communication at the RDSC

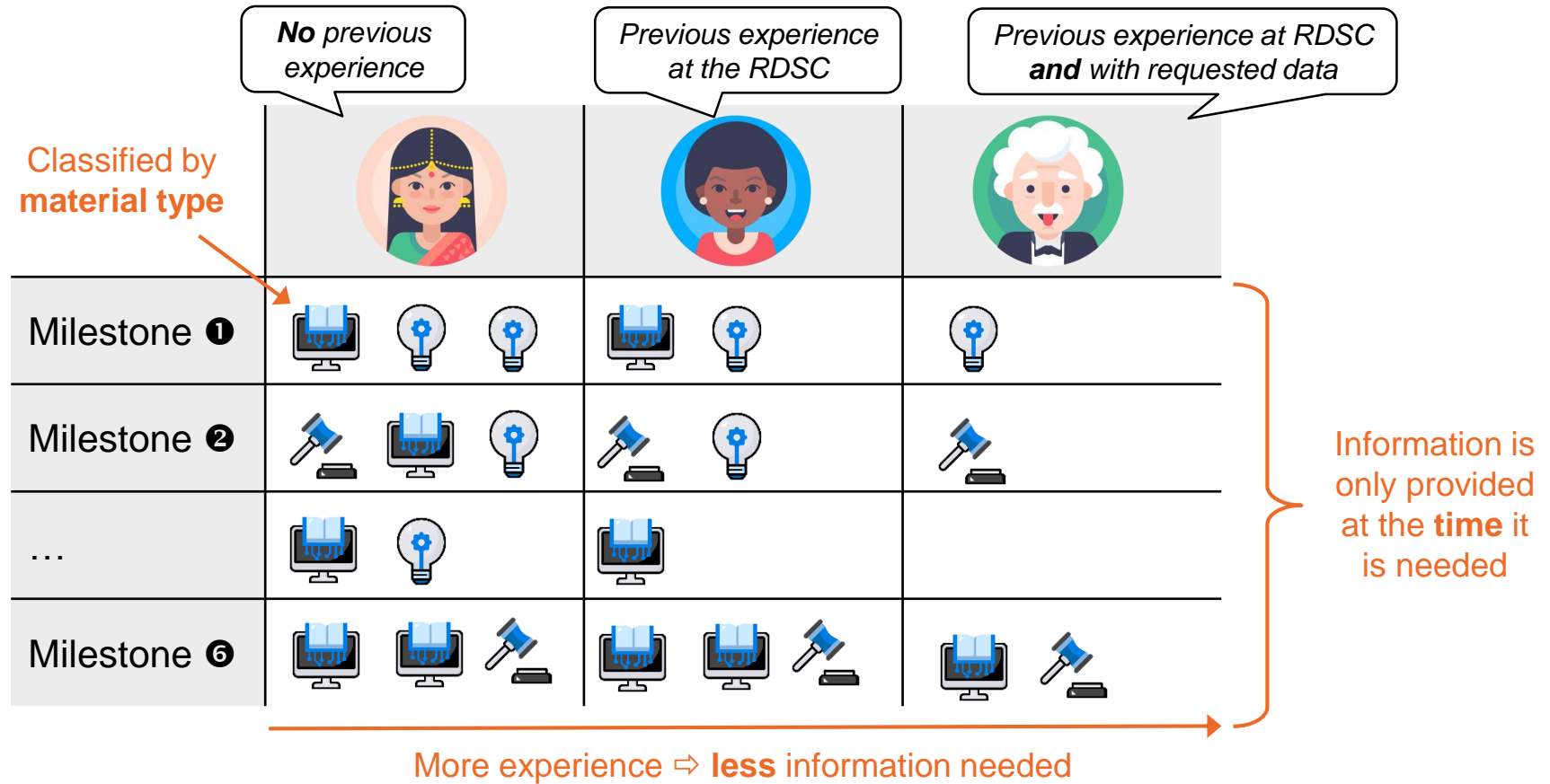
Assignment of milestones - Use cases - Researcher type - Material type



Use case	Milestone	Researcher type	Material type
Researcher would like to get an overview of all data that can be requested in the RDSC.	① Researcher is considering starting a project	All	 Reference
...
RDSC wants to ensure that researchers understood the rules at the secure environment.	⑤ First research visit for data exploration and preparation	Groups A and B: New / unexperienced researchers	 Explanation
...
Researcher would like to use the nobs commands in Stata, following guidance and examples.	⑥ Research visits to produce results and submit output	All	 Tutorial

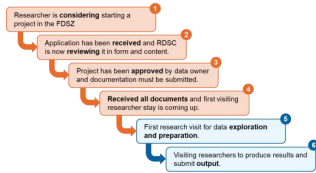
New concept for a streamlined communication at the RDSC

Simplified outcome



New concept for a streamlined communication at the RDSC

Summary of the three steps procedure



WHEN? Identify **milestones** that mark important stages of a research project to learn when resources are needed.



WHO? **Classify** researchers by their skill set into different buckets to learn about the **target audience** of the resources.



WHAT? Identify the appropriate **type of resources** needed (e.g. formal legal reference vs. user guide with many examples). The RDSC uses a simplified version of the Diátaxis framework (<https://diataxis.fr/>).

Thank you!



Jannick Blaschke (jannick.blaschke@bundesbank.de)

Website: www.bundesbank.de/rdsc

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

StatFlix: a Banco de Portugal original series¹

Mafalda Trincão,
Banco de Portugal

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

S SERIES

StatFlix: a Banco de Portugal original series

19 SEP. 2022

MAFALDA TRINCÃO



BANCO DE PORTUGAL
EUROSYSTEM



AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

01

AGENDA





AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

02



REASON

CENTRAL BANKS' ROLE IN THE SOCIETY

“

TO GUARANTEE THAT
THE STATISTICS IT
PRODUCES ARE
USEFUL AND WELL
UNDERSTOOD

”

It's essential to provide quality statistical data, but also to make sure that people can easily find and understand the relevant data

Banco de Portugal has been investing in the way it communicates statistics to different users

The background of the slide is a photograph of several people in a library or bookstore. They are looking at books on a shelf. The image is overlaid with a semi-transparent orange filter. The text is positioned on the left side of the slide.

AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

03

AUDIENCE

ACADEMIC WORLD - PROFESSORS AND STUDENTS


Back-to-school campaigns


MY
BACK-TO-CLASS
ESSENTIALS
#myBPstat

For those weeks with loads of presentations to deliver...

For those more complex concepts...

TOP TIP
Go to [BPstat](#) and find all the information you are looking for on the Portuguese economy.

 **BPstat.**
Statistics to better understand Portugal

 **BANCO DE PORTUGAL**
ESTABELECIDO EM 1836



AUDIENCE

SESSIONS FOR UNIVERSITY STUDENTS



2021



AUDIENCE

UNIVERSITY STUDENTS



WHAT CAN WE PROVIDE TO STUDENTS?

A COURSE WITH AN E-LEARNING PLATFORM

A group of students in a library or classroom, with one student in the foreground reading a book. The image is overlaid with a semi-transparent red filter.

AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

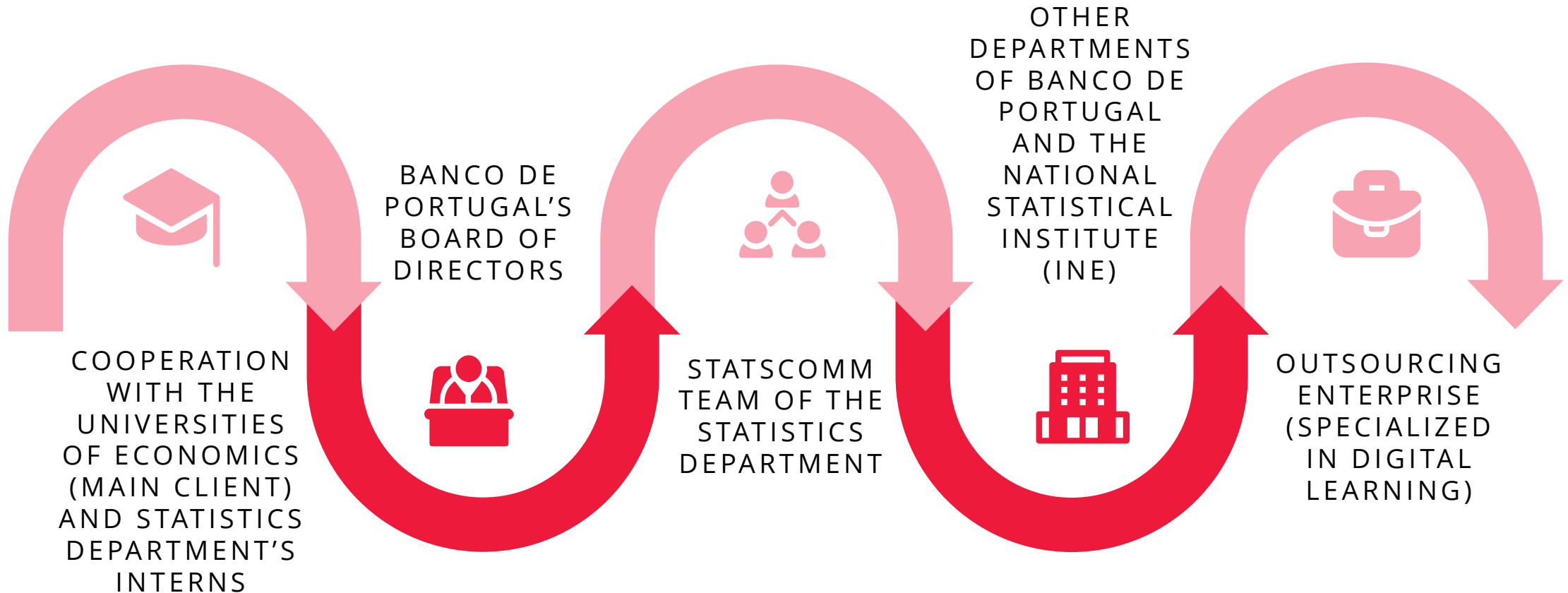
04

RESOURCES



STAKEHOLDERS' COOPERATION

This project was developed and supported by:



RESOURCES

CREATE A NEW PRODUCT



UNLOCK A NEW PRODUCT

an online course on official statistics for all the Portuguese schools on economics (both in Portuguese and in English)



AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

05

PRODUCT

MAIN TOPICS



01

NATIONAL ACCOUNTS

Main economic concepts
GDP



02

FINANCIAL SECTOR

Monetary and financial Statistics
Monetary policy



03

GENERAL GOVERNMENT

Public debt



04

PRIVATE INDIVIDUALS

Savings and financial account



05

CORPORATIONS REST OF THE WORLD

Financial ratios
Performance indicators



06

Balance of payments
International investment position

PRODUCT

1 SERIES | 6 SEASONS



BANCO DE PORTUGAL StatFlix
EUROSISTEMA

USEFUL RESOURCES

S SERIES
StatFlix

A Banco de Portugal's original series

TOP 10 See now

Presentation Synopsis Self-test quiz Summative quiz

SEASON 1 National accounts
SEASON 2 Financial sector
SEASON 3 General government
SEASON 4 Private individuals
SEASON 5 Corporations
SEASON 6 Rest of the world

PRODUCT

1 SERIES | 6 SEASONS | 5 EPISODES



BANCO DE PORTUGAL StatFlix

USEFUL RESOURCES

Season 1

National accounts

The evolution of economic activity in Portugal. What it is, what it captures and how GDP is calculated. Has Portugal presented a capacity or need for financing compared to the rest of the world?

- EPISODE 1**
QUIZ
To arouse your curiosity on the subject. Answer the following 3 questions.
- EPISODE 2**
VIDEO
Watch the video to learn about this season's key concepts.
- EPISODE 3**
FLIPBOOK
In this interactive book you will learn concepts and explore the statistics.
- EPISODE 4**
PODCAST
In this podcast you will listen to experts talking about this season's themes.
- EPISODE 5**
QUIZ
To successfully complete this quiz you have to correctly answer 5 out of 6 questions.

PRODUCT

EPISODE 3 = FLIPBOOK



< VOLTAR

Cada instrumento financeiro pode ser desagregado noutros instrumentos em função, por exemplo, do respetivo prazo (curto e longo prazo).

Explora mais sobre os instrumentos financeiros na área de recursos, em: O que é um instrumento financeiro?

Como vimos no início desta temporada, a capacidade ou necessidade de financiamento do total da economia e dos vários setores institucionais também pode ser calculada através da conta financeira. De facto, a capacidade ou necessidade de financiamento é o elemento de ligação entre a conta não financeira e a conta financeira da economia, ou dos diferentes setores; e é apurada a partir das transações em ativos financeiros e passivos, considerando o montante líquido dos recursos (total de recursos deduzido do total de responsabilidades) que um determinado setor institucional disponibiliza aos restantes setores (se for positivo) ou que recebe dos restantes setores (se for negativo).

QUÊ DIZEM AS ESTATÍSTICAS?

Sistema Financeiro Brasileiro

Evolution of the Financial System (2000-2020)

Legend: Financial Assets, Financial Liabilities, Administrative Expenses, Net Income, Total Economy

24/25 / 36



AGENDA

REASON

AUDIENCE

RESOURCES

PRODUCT

FUTURE

06

FUTURE

NEXT STEPS



SEP.
2022

OCT.

NOV.

DEC.

JAN.
2023

FEB.

MAR.

FINALIZE THE PRODUCT

Final tests to the platform

WEBINAR

A session with professors to explain and promote the product

OFFER THE PRODUCT

Integrate the e-learning in universities' platforms

SESSIONS

Organize sessions on how to explore the *BPstat*

THANK YOU!

MAFALDA TRINCÃO
mstrincao@bportugal.pt



BANCO DE PORTUGAL
EUROSYSTEM

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

New channels, new approaches, new data formats¹

Fernando Lemos,
Central Bank of Brazil

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

New Channels, New Approaches, New Data Formats

**Fernando Lemos
Department of Statistics
Banco Central do Brasil**

Lisbon, September 20, 2022

Introduction

Unlocking new **channels**, adopting new outreach **approaches**, and developing new data **formats** for the statistics dissemination process are important means to enhance certain aspects of **serviceability of statistics**, especially availability and timeliness.

In this regard, new channels and approaches are not ends but rather means of a data dissemination framework.

Efficiency and cost-effectiveness should drive the choices of channels, approaches, and formats of statistics dissemination.

Introduction

The **channels** through which statistics are disseminated can determine the audiences that they reach.

Different **approaches** to data dissemination are instrumental to enhancing the understanding of datasets and thus increase their use and target specific audiences (e.g., students or researchers and academics).

Different **formats** of a same dataset enable disseminating the same information to different audiences, albeit with different levels of detail

New Channels

The **channels** are the means by which the Banco Central do Brasil (BCB) seeks to reach its audience. Channels, in this case, refer to the different media:

- “Old”: BCB webpage, in person press releases, speeches; standardized time series; and
- “New”: Twitter, Facebook, Instagram, Big Data-type databases.

The introduction of new channels is a means by which the BCB seeks to reach the broadest **possible** audience.

New Approaches

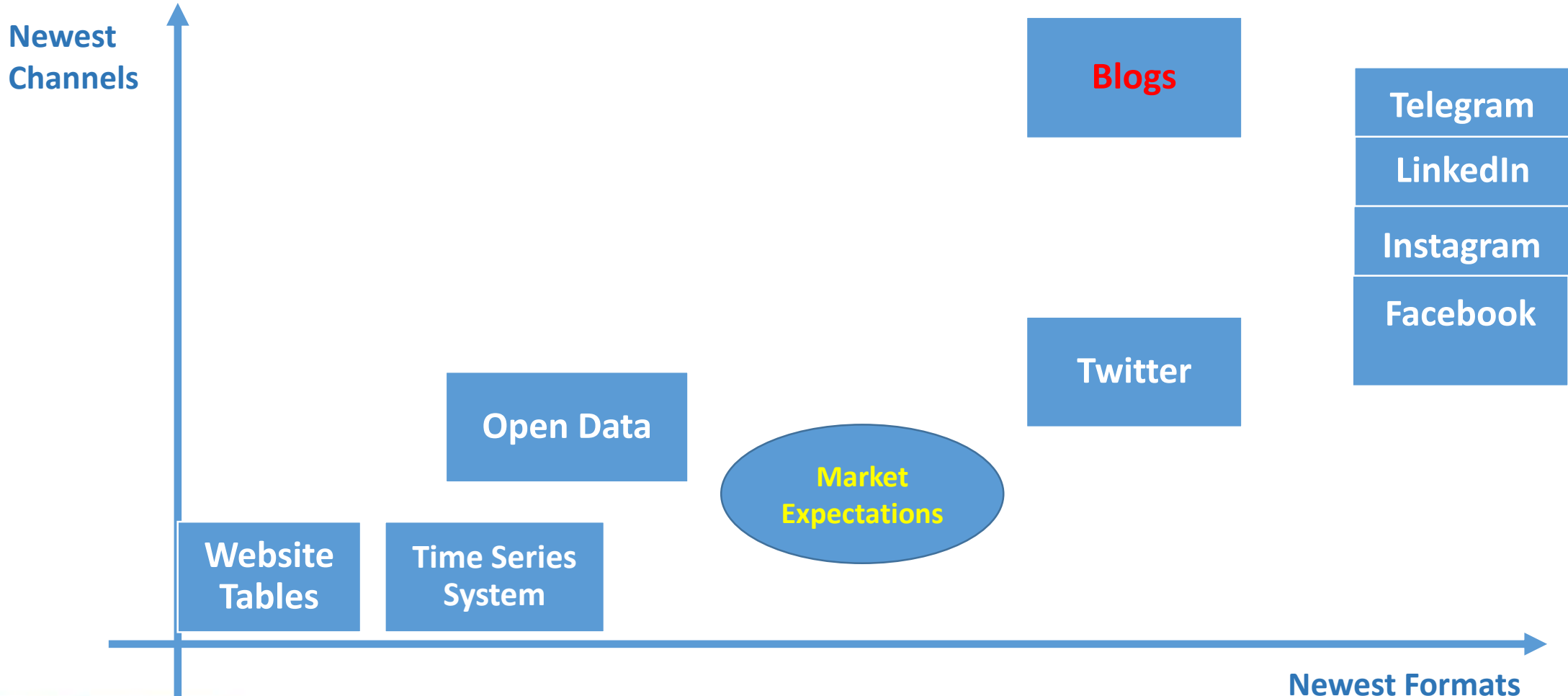
The new **approaches** are essentially the means by which the BCB seeks to engage users in the use of its data. This includes, for example:

- Placing more emphasis on **disseminating concepts and definitions**, informing potential users of the serviceability, for them, of the statistics disseminated by the BCB; and
- **Asking data users' and providers' views** on data needs and data quality.

New Formats

The **formats** are the way in which data are presented. New formats seek to broaden the audience, catering to those who otherwise would not make use of statistics, and to enhance the serviceability of statistics to those who already use it. These formats and their channels are shown in the next slide.

BCB Statistics Channels and Formats



BCB Website and Social Media

All statistics disseminated by the BCB are published on the BCB website: www.bcb.gov.br

The BCB also resorts to several social media channels for the dissemination of data. The social media channels generally convey headline data, providing links to detailed statistics.

There are also statistics compiled by the BCB that are part of IO data dissemination initiatives which are published only in IO websites, such as the CDIS, for example, in the IMF website.

BCB Statistics Channels and Formats: website

The screenshot shows the website of the Banco Central do Brasil. At the top, there is a dark blue navigation bar with the 'gov.br' logo on the left and several menu items: 'CORONAVIRUS (COVID-19)', 'INFORMATION ACCESS', 'PARTICIPATE', 'LEGISLATION', and 'GOVERNMENT AGENCIES'. Below this, a white bar contains the BCB logo and the text 'BANCO CENTRAL DO BRASIL'. To the right of the logo are links for 'ACCESSIBILITY', 'COLOR CONTRAST', and 'PORTUGUÊS'. The main navigation area includes 'About', 'Monetary Policy', 'Financial Stability', 'Statistics', 'Banknotes and Coins', and 'Publications and Research'. The 'Statistics' menu is open, showing a list of options on the left and a detailed list of sub-items on the right. The sub-items include 'Statistical press releases', 'External sector statistics', 'Monetary and credit statistics', 'Fiscal statistics', 'Open market statistics', 'Press releases schedule', 'Methodological notes', and 'Previous editions of press releases'. The 'Statistical press releases' item is highlighted with a yellow bar.



BCB Statistics Channels and Formats: website



[ACCESSIBILITY](#) [COLOR CONTRAST](#) [PORTUGUÊS](#)

[About](#)

[Monetary Policy](#)

[Financial Stability](#)

[Statistics](#)

[Banknotes and Coins](#)

[Publications and Research](#)



[Home](#) > [Statistics](#) > [Statistical press releases](#) > [Monetary and credit statistics](#)

Press Release - 8.29.2022

1. Total credit to the non-financial sector

In June 2022, total credit to the non-financial sector reached BRL 14.1 trillion (153.8% of GDP), up 3.0% in the month. This expansion was mainly due to the 6.8% increase in the external debt, affected by the exchange rate depreciation of 10.8%. In the quarterly comparison, total credit grew 5.4%, mostly due to expansions in National Financial System (SFN) credit portfolio (3.7%) and debt securities issued by government (5.3%).

Total credit to nonfinancial corporations reached BRL 4.8 trillion (52.7% of GDP), up 4.6% in the month, mostly influenced by an 8.6% increase in the external debt. In 2022Q2, the 7.0% expansion in total credit to nonfinancial corporations mostly reflected increases in external debt loans (9.4%), in private securities (10.3%), and in SFN loans and financing portfolio (3.0%).

Total credit to households reached BRL 3.1 trillion (34.2% of GDP) in June, increasing 1.3% in the month and 4.1% in 2022Q2, due to the expansion in SFN loans.



[Text \(pdf\)](#)

[Tables \(xlsx\)](#)

[Previous editions](#)

[Glossary](#)



BCB Statistics Channels and Formats: website

Table 1 – Total credit to the nonfinancial sector

Balance – Total

R\$ billion

Period	Loans				Debt Securities ^{4/}				External Debt				Total	% GDP
	NFS ^{1/}	Other financial corp ^{1/}	Govern. funds ^{2/}	Total	Issued by gov ^{3/}	Issued by NFC ^{3/}	Securitization ^{7/}	Total	Loans	Securit. issued at external market	Securit. issued at domestic market ^{8/}	Total		
2022 Jan	4615.3	126.8	161.0	4903.1	4831.5	625.6	433.7	5890.8	1856.3	310.3	563.2	2731.7	13525.7	154.9
Feb	4658.3	127.6	162.0	4948.0	4971.9	636.9	441.1	6049.9	1791.0	290.1	546.1	2636.2	13634.1	155.2
Mar	4724.1	127.4	162.9	5014.3	4867.6	648.0	442.2	5957.8	1670.2	275.5	503.3	2448.9	13421.1	151.4
Apr *	4764.2	132.9	164.0	5061.1	4887.9	669.6	476.6	6034.1	1735.9	271.9	498.1	2505.9	13601.1	151.8
May *	4818.9	133.6	167.2	5119.6	5004.7	680.6	478.1	6173.4	1677.5	261.4	499.9	2438.8	13731.9	151.2
Jun *	4896.9	140.8	168.9	5206.6	5124.4	714.9	489.8	6329.1	1830.1	275.1	499.0	2604.2	14139.9	153.8
Change (%)														
Monthly	1.6	5.4	1.0	1.7	2.4	3.5	2.4	2.5	9.1	-5.3	-0.2	6.8	3.0	2.6
Quarterly	3.7	10.6	3.7	3.8	5.3	10.3	10.8	6.2	9.6	-0.1	-0.9	6.3	5.4	2.3
Yearly	6.1	11.2	4.9	6.2	6.4	12.4	12.9	7.6	-4.9	-17.8	-11.2	-7.7	3.9	-3.0
12 months	17.6	18.0	8.5	17.3	10.4	30.9	30.4	13.8	4.5	-0.7	2.4	2.4	12.7	-1.0

BCB Statistics Channels and Formats: Open Data Portal



Search data

Ex.: Banco Central

Popular tags: financial-inclusion, credit-indicators, external-sector, economic-activity

Last updated

Exchange rates – daily bulletins

Concept: Daily bulletin time series available since 2/1/2002, for the Euro, and since 28/11/1984, for the other...

Popular

Prices of Bonds accepted for intraday and overn...

The ASPB0004 is a file, updated daily by the Banco Central do Brasil, that contains the prices of Federal Government...



BCB Statistics Channels and Formats: Open Data Portal



Home > Datasets

Organizations
BCB/Depec (55)

Groups
Economy and Finance (55)

Tags
external-sector (55)

Formats
CSV (55)
HTML (55)

55 datasets found Order by Relevance

Tags: external-sector

Current account accumulated in 12 months - monthly

Concept: Current account is divided on the following items: Balance on goods, Services, Primary Income and Secondary Income. The relation current account/GDP, accumulated in 12...

[JSON](#) [CSV](#) [xml](#) [HTML](#)

Current account accumulated in 12 months in relation to GDP - monthly

Concept: Current account is divided on the following items: Balance on goods, Services, Primary Income and Secondary Income. The relation current account/GDP, accumulated in 12...



BCB Statistics Channels and Formats: Linktree

BC no Instagram

BC no Twitter

BC no YouTube

BC no LinkedIn

BC no Telegram

Telegram do Aprender Valor

BC no Facebook

BCB Statistics Channels and Formats: Facebook

Link to website →

Banco Central do Brasil 29 de agosto às 08:32 · 🌐

Destaques do Focus de 26/08/2022: confira as projeções do mercado para a economia brasileira.
<https://www.bcb.gov.br/content/focus/focus/R20220826.pdf>

IPCA (%)		PIB (var. %)	
2022	2023	2022	2023
6,70	5,30	2,10	0,37

CÂMBIO (R\$/US\$)		SELIC (% a.a.)	
2022	2023	2022	2023
5,20	5,20	13,75	11,00

fin de período metas fin de período

▲ Aumento ▼ Diminuição = Estabilidade

BANCO CENTRAL DO BRASIL

👍 279 98 compartilhamentos

👍 Curtir ➦ Compartilhar

🗨 Banco Central do Brasil limitou quem pode comentar nessa publicação.



BCB Statistics Channels and Formats: Instagram



The graphic shows several stacks of Brazilian coins (1, 2, and 5 reais) on a teal background. To the right of the coins, the text reads: "1 trilhão" in large yellow font, followed by "é o saldo dos depósitos de poupança no Brasil em julho de 2022" in white. At the bottom of the graphic, it says "Caderneta de Poupança | 4/8/2022" and the BCB logo.

bancocentraldobrasil • Seguir

bancocentraldobrasil Resgates em poupança superam os depósitos em R\$ 12,66 bilhões em julho. Dados do Relatório de Poupança estão disponíveis no site do BC (bcbr.gov.br).

4 sem · Ver tradução

👍 📌

Curtido por **lucaswengrat** e outras pessoas

AGOSTO 4

Plans for Future Initiatives

New initiatives are being assessed, such as:

- Short videos on Youtube and other platforms providing information on statistical methodology;
- Videos for data dissemination;
- Use of other media channels, such as TikTok; and
- Use of blogs.

Challenges

Enhancing these aspects and ensuring that they lead to the serviceability of data presents some **challenges**, such as:

- Identifying the target audiences;
- Pairing target audiences with the correct **mix of format/channel/statistics**;
- Identifying the most **cost-effective** initiatives;
- Ensuring that the format/channel/type of data are a **means to an end**, not an end in itself (careful with the “novelty frenzy”); and
- Maintaining the **focus of compilers on the quality of statistics**, first and foremost.

Thank you for your attention!

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

More insight into Dutch mortgage debt data¹

Eva Hagendoorn and Tim Hersevoort,
De Nederlandsche Bank

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

From:

E.M.Hagendoorn

 Klik of tik om tekst in te
voeren.

 Klik of tik om tekst in te
voeren.

 Statistiek
Financieel
Sectorrekeningen
Subject:

'More insight into Dutch mortgage data'
Abstract presentation for IFC conference on 'Communication on Central Bank Statistics'

Datum

15 juli 2022

History and context

Due to capacity constraints the publication task of our Statistics Division was deprioritized for several years. Most resources were spent on (seemingly ever increasing) production activities and the development of a new and future-proof ICT-system. As such, the development of our Statistics website, which was renewed in 2015, has been somewhat neglected. For one, most data are presented as flat tables, which can be searched by means of theme filters on the 'data search' page. Furthermore, we publish statistical news bulletins, in which we describe current developments in the data. Finally, we have as of late started to increase the use of visualizations (via HighCharts) in the form of dashboards around some of the commonly used statistics. We will revert back to the dashboards later.

Our Statistics division is made up of about a dozen teams, which are mostly vertically oriented. This means they are organized around the statistical products they produce, such as the Anacredit team or the Balance of Payments team. This set-up was also reflected in our publications, which were very much product-oriented.

Another relevant development in recent years is the formal close cooperation between DNB and Statistics Netherlands. This has allowed for more specialization through a clear division of tasks, which is also reflected in our publications. We focus on the financial system, securities and balance of payments/external statistics, whereas Statistics Netherlands is the specialist when it comes to households, non-financial corporations and sector accounts as a whole. As such, our publications are mostly focused on developments within the financial system and less on developments in other sectors.

Role publication team Statistics

Since 2020, the Statistics division has fortunately succeeded in increasing its resources and reserving some of these to enhance its publishing task. Previously, the management of the various activities surrounding the website and statistical publications was fragmented within the division. A publication team was appointed in 2021, tasked with coordinating the various statistical publications, the further development of the website and to stimulate publications. The team is in close contact with the bank-wide communication department to leverage on existing know-how and optimize the timing of publications.

Kenmerk

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One of the goals of the publication team is to better take into account user wishes with regard to our publications. In 2021, with the help of an external research agency, a user survey was conducted among internal and external users to find out what the image of these users is about the Statistics department and its products and services. This showed, among other things, that users need more overview and context for the various statistical products that DNB draws up as a Statistical Authority. The way in which statistics are currently presented is often dictated by the organizational structure (vertical, product-by-product) and less by the user's demand (i.e. more thematic and integrated). At the same time, the DNB-wide strategy is to communicate more around current themes that play a role in the outside world, such as the housing market, pensions or inflation. By shifting towards a more integrated approach we can focus our limited resources on the themes that are most in demand from the social debate.

Renewal residential mortgage dashboard

We have found that thematic dashboards are an especially effective way to present data about a specific theme to a wide audience. Visualizations are usually easier to digest than flat tables. Furthermore, with the use of dashboards we can combine the data from different statistical products we compile.

One of the themes where there is a need for more integrated overview and more qualitative data concerns the mortgage market. DNB has many statistics on this subject, but these data are still in various tables and are sometimes difficult for users to compare with those of the other important statistical authority in the Netherlands, Statistics Netherlands. A [residential mortgage dashboard](#) has already been published, but this only concerns a limited part of the data that DNB has at its disposal, namely only the level and development of the mortgage debt on banks' balance sheets (including securitisations).

Increasing demand for information about the housing market

The demand for good, reliable and detailed insights into the residential mortgages granted to Dutch households has increased sharply in recent years. This has to do with the important role that the housing market plays for the Dutch economy and for the financial sector. Dutch mortgage debt per capita is among the biggest in the world.

The Dutch housing market has been overheated for some time. Over the past 5 years, house prices have gone up by 8 percent on average. At the end of last year, the average price of owner-occupied was more than 20 percent higher than a year earlier. This is the largest price increase since the start of the measurement by Statistics Netherlands.

Moreover, we have high mortgage debts in the Netherlands compared to other countries. In fact, in no other European country does such a large proportion of the population have a mortgage loan (see Figure 1). Partly due to the price increases of houses, households are taking on more and more risks when taking out a mortgage.



Figure 1

For the stability of the Dutch financial system, the mortgage debt of the Dutch has a major influence, because house prices rise when the economy goes well, giving homeowners more to spend. If the economy is not doing well, falling house prices have an additional depressing effect on the economy.

Increasing data availability

As previously outlined, DNB's Statistical Division compiles statistics relating to Dutch financial institutions. These institutions report detailed information to DNB about the mortgages they issue. Macro figures on mortgages provide information on the size and development of mortgage debt and mortgage rates at Dutch financial institutions. In addition, more and more information is becoming available.

In 2021, DNB started publishing data from other providers in the mortgage market, such as insurers, pension funds, investment institutions. Also, we started to collect information (of which also mortgage debt information) on other financial institutions, that had not been in our population before, as of the start of 2020.

Also in relation to the banking sector, DNB started collecting more information. In addition to bank balance sheets (BSI) statistics and interest rate statistics (MIR), DNB also intends to publish data on mortgages issued by banks on the basis of the so-called RRE dataset. This is a granular dataset, somewhat similar to Anacredit (for corporate loans), in which additional details about the collateral of the loan or the recipient of the loan are available. For example, a distinction can be made according to the age of the recipient of the loan (older or younger than 35 years). This is an indication of whether someone is a starter on the housing market or a transferee. In the long term, geographical information could also be published to provide insight into in which region of the Netherlands the highest mortgage debts are.

Dashboard content

In order to maintain an overview of the relationship between all these different datasets and to connect with the theme that also plays a broader role among visitors to the DNB website, we want to launch an overarching mortgage dashboard. This dashboard shows a number of different headings, starting with the section 'Size of

mortgage market', which provides a total overview of the outstanding mortgages at financial institutions (figure 2).



Figure 2

The other sections of the mortgage dashboard relate entirely to mortgages provided by banks, the most important sector in the mortgage market. The reason behind this is that much more information is collected about mortgages granted by banks than the mortgages provided by other financial institutions, where only the information from the balance sheet data is reported to DNB.

The other sections provide insight into subjects as mortgage rates and 'loan to values'. One section, which is in fact more of a barometer for the mortgage market, is based on the so-called Bank Lending Survey. The figures based on the BLS provide qualitative information about the developments in the mortgage market that banks observe (see Figure 3).



Figure 3

Navigation dashboard

Last year, DNB amended the dashboard overview page of the dashboards. Instead of graphs, icons are now shown, making it easier for users to understand at a glance what the dashboard is about (Figure 4).

**Figure 4**

After clicking on the icon for the residential mortgages, in the case of the new home mortgage dashboard, an intermediate page with a number of sub-sections and an introductory text (figure 5) is added.

**Figure 5**

Challenges

The statistics publications team encountered various challenges in preparing a new mortgage dashboard.

- 1) On the one hand, we have to deal with organizational challenges, in which the various statistical teams that own the relevant statistics in terms of content, are under a lot of pressure on the teams due to an ongoing renewal process. As a result, the priority for even more innovations from these teams was relatively low.
- 2) Knowledge in the field of the further development of the visualizations in the HighCharts program had to be purchased, as this was not present in the publication team. This makes it both costly and sometimes difficult to get enough commitment at the right time.
- 3) In terms of content, there are also challenges to the datasets. The statistics published by DNB concern source statistics that are not always 100% consistent with the integrated statistics in the sector accounts. You also have to make sure that the series of the different sectors are also similar to each other, if you present them in one overview. If, as a result, there are differences in the totals at macro level, for example if you compare them with CBS, you want to be able to explain this properly.

- 4) One of the datasets, the RRE dataset, has never been made available to a wide audience before and because of this and because of the degree of detail of this dataset, legal discussions are still taking place. For this reason, there is currently no clarity as to when this data can be published and included in the dashboard.

Summary

Publications by DNB's Statistics Division have been prioritised away for a while, but in 2021 this has changed due to two things:

- 1) Resources are committed to the publishing task (the publishing team)
- 2) Users are consulted at least once every two years via a user survey

In order to simultaneously meet the user's need for more overview and interpretation and to respond specifically to the current theme of the housing market, a new residential mortgage dashboard will be launched in 2022. This dashboard provides an overview of relevant developments regarding residential mortgages granted by Dutch financial institutions, from DNB's role as a specialist in the field of the financial sector.



More insight into Dutch mortgage debt data

Eva Hagendoorn

DeNederlandscheBank

EUROSYSTEM



Agenda

1. Introduction Dutch delegation
2. Role of publications team at Statistics division
3. Institutional playing field
4. Statistics website DNB and publication activities
5. Thematic dashboards on statistical website
6. The case for a new residential mortgage dashboard
7. Challenges

Introduction Dutch delegation



Eva Hagendoorn

- Product Owner Publications Team at DNB Statistics (April 2021-present)
- Policy Advisor at Balance of Payments team at DNB Statistics (May 2013-April 2021)
- Reporter at Newsagency ANP on Economic and Financial news (Dec 2006-April 2013)
- Master of science in Economics at Utrecht University (2001-2005)
- Degree in journalism at Erasmus University (2006)



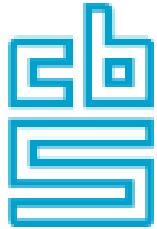
Tim Hersevoort

- Web editor Publications Team at DNB Statistics (April 2022-present)
- Content and PR specialist at Robert Walters (Nov 2020-April 2022)
- Data Storyteller/copywriter/marketeer at Valcon (Sep 2019-Aug 2020)
- Sportsdesk Editor at Gracenote (July 2012-Aug 2019)
- Bachelors degree Journalism at Hogeschool Utrecht (2008-2012)

Publications team

- Started in 2021 as a **new, horizontal team**
- One of the goals is to focus more on **user wishes** (internal and external)
- In 2021 the publications team coordinated a **survey** among different groups of users (internal and external)
- Conclusion: Users want us to tell the **story behind the figures** more often and want to have more overview of the different statistical products/datasets

Institutional playing field



DeNederlandscheBank

EUROSYSTEEM

Close cooperation with Statistics Netherlands in compiling macroeconomic statistics (**univocal figures on the Netherlands' relations with the rest of the world**) and clear division of responsibilities in recent years

DNB

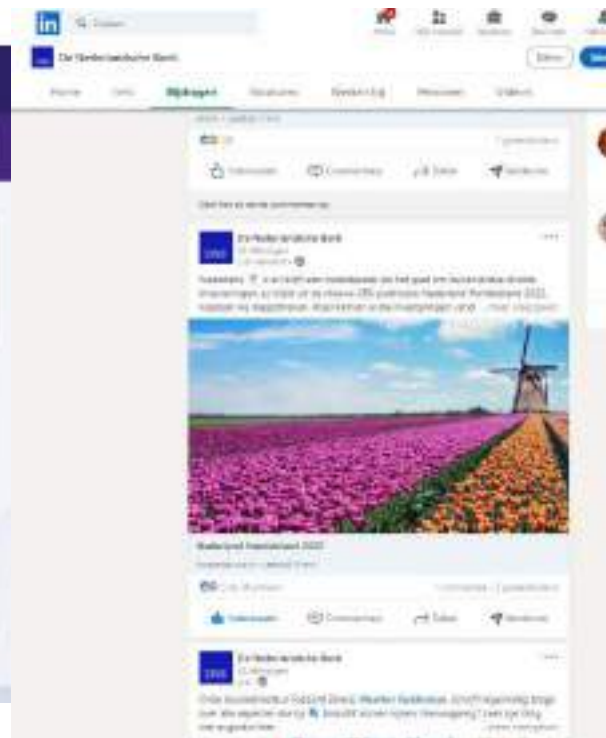
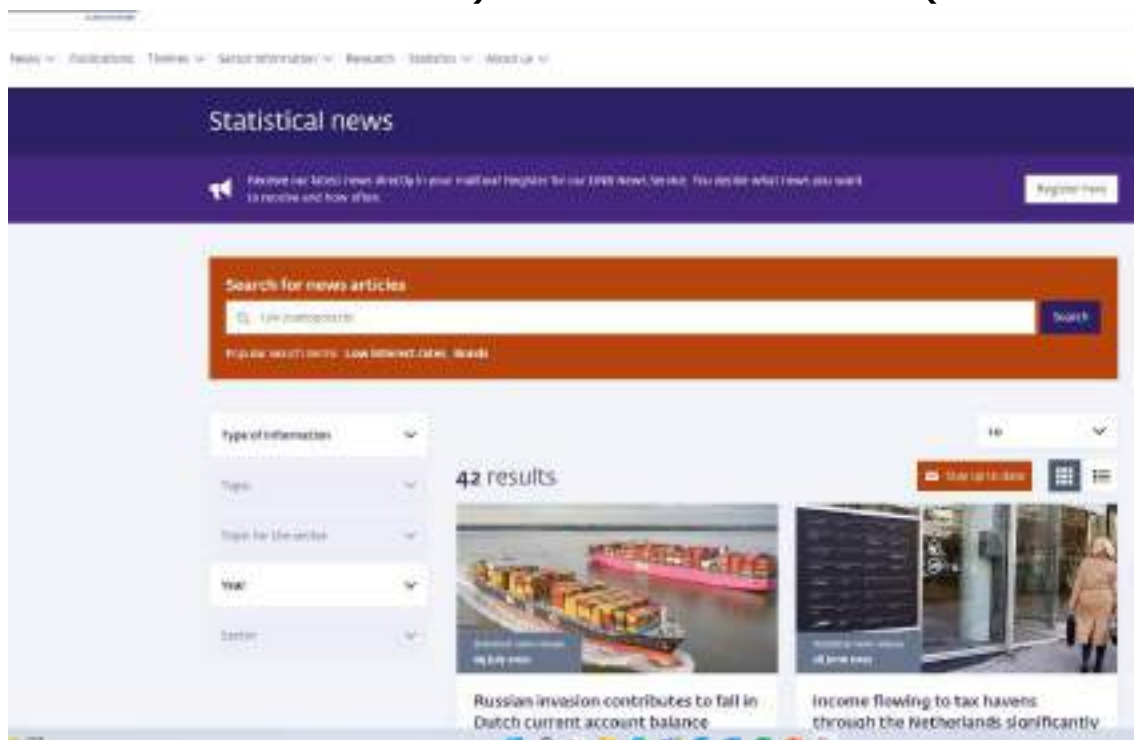
- Compilation of source statistics of financial sectors
- External statistics (e.g. balance of payments and direct investment)
- Securities

CBS

- National accounts
- Source statistics of non-financial sectors (households, government, non-financial companies)

Statistical Publications

- Statistical news articles in cooperation with Communications-department and occasionally with colleagues from research, supervision or financial stability divisions
- Recently (2021) started posting content (mainly promotion Statistical News) on social media (LinkedIn and Twitter)



Statistics website DNB - visualizations

- For visualizations we use a tool called 'High Charts'
- Currently 15 dashboards build around a statistical theme

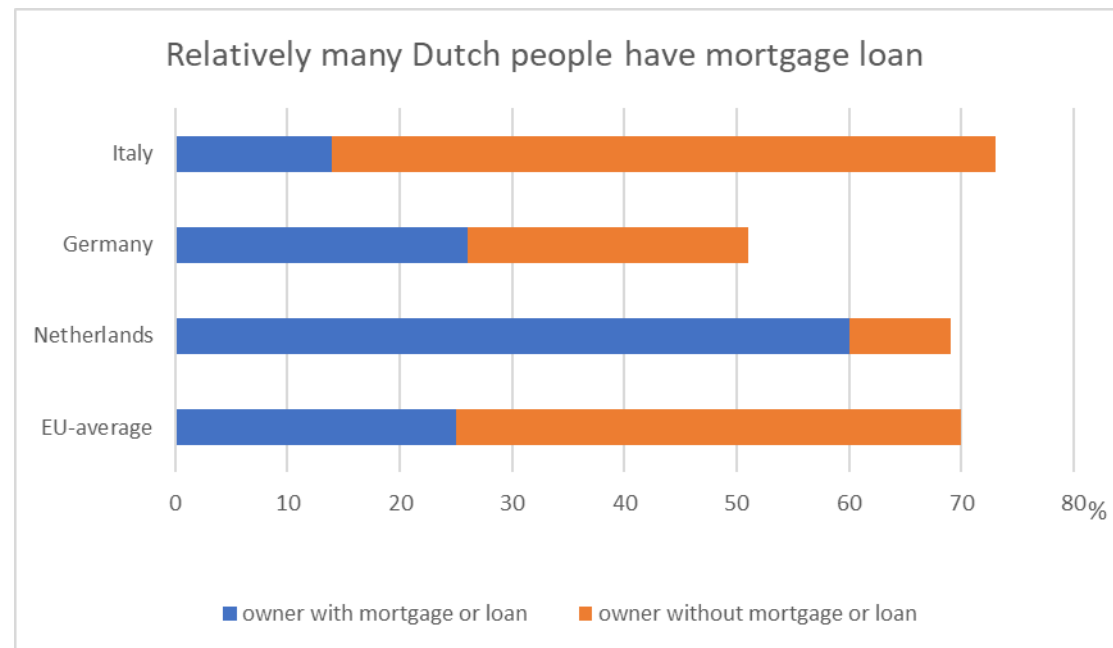


The screenshot shows the 'Dashboards' section of the DNB website. It features a navigation bar with 'DNB', 'STATS', and 'DASHBOARDS'. Below the title 'Dashboards', there is a paragraph explaining that the dashboards are updated in real time as soon as new data becomes available. A grid of four dashboard tiles is visible, each with an icon and a title: 'DNB's balance sheet' (scales icon), 'Investment Funds' (stacked coins icon), 'Balance of Payments' (world map icon), and 'Financial markets' (line chart icon). Each tile includes a brief description of the data presented.



Why are Dutch mortgage data so important?

- Dutch mortgage debt per capita is among the highest in the world (in %GDP).
- ~60% of inhabitants have a mortgage loan, highest in Europe.
- Housing prices have gone up by 8 percent on average over the last 5 years and recently this has increased to 20 percent per year
- Mortgage debt could have substantial effect on financial stability



Business case for new mortgage dashboard

- Current dashboard contains only data on mortgages provided by banks, while other financial sectors are becoming increasingly important (>20% market share)
- We recently began collecting more information from non-banks such as 'other financial companies' (S125 and S126)
- Started publishing mortgage data from pension funds, insurance companies and collective investment institutions in 2021
- Recently started collecting (granular) data about mortgage debt issued by banks (RRE and CRE datasets).



New dashboard

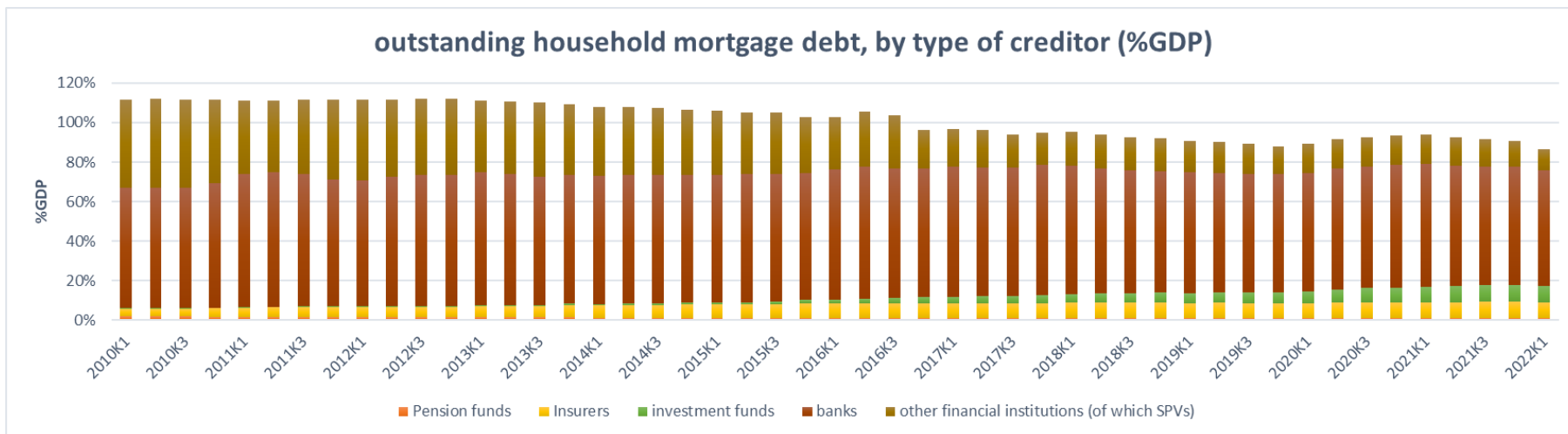
3 topics/subpages to start with:

- Overview of mortgage loans issued by the financial sector (next slide)
- Interest rate developments
- Supply and demand developments (Bank Lending Survey)

More information added when we can publish our Residential Real Estate data, for example information on data by region or by age category



Overview of mortgage loans by financial sector



Challenges

- Horizontally organized team – how to make sure statistical teams put sufficient efforts in the publication and communication aspect
- Knowledge about technical aspect High Charts not in-house – how to not become too dependent on external resources
- Consistency and comparability of datasets (also with Statistics Netherlands) – how to cope with differences between datasets
- Some of the datasets are relatively new and there are still quality issues that have to be checked – how to balance versus the strong external interest in the data
- Extremely granular datasets contain (too) much information – how to cope with privacy issues and the legal basis for publication



Conclusion/Summary

1. As of 2021 more priority to publishing task of DNB Statistics division:
 - Commitment of resources to publication task
 - Users consulted at least every 2 years

2. Release of new mortgage debt dashboard expected in 2022, which provides more insight in this important and for users also very relevant theme in which DNB Statistics can play an important role

Questions?

E.M.Hagendoorn@dnb.nl



IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Construction of bivariate fan chart from joint distribution¹

Purnima Shaw,
Reserve Bank of India

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

Communicating Statistics: Construction of Bivariate Fan Chart from Joint Distribution



RESERVE BANK OF INDIA

Communication on Central Bank Statistics: Unlocking the Next Level

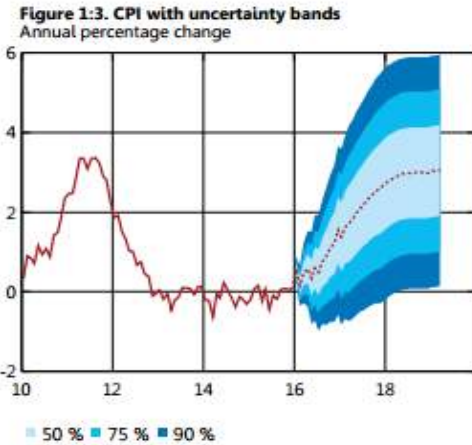
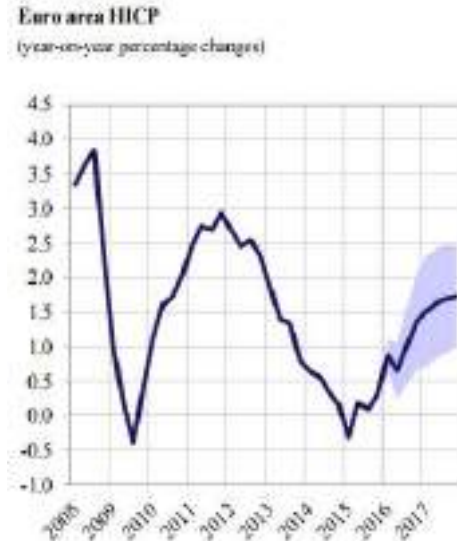
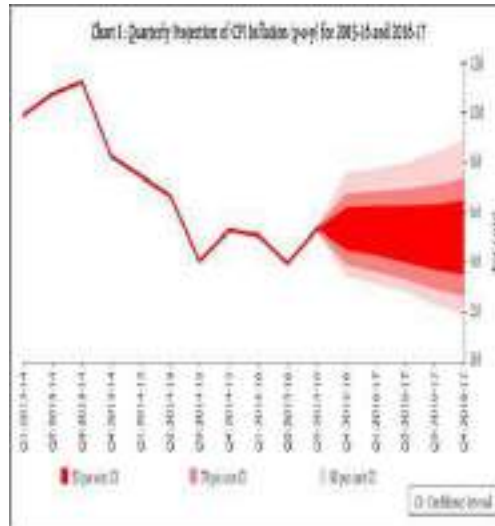
organised jointly by the Irving Fisher Committee on Central Bank Statistics of the Bank for International Settlements and Banco de Portugal

Lisbon, September 19-20, 2022

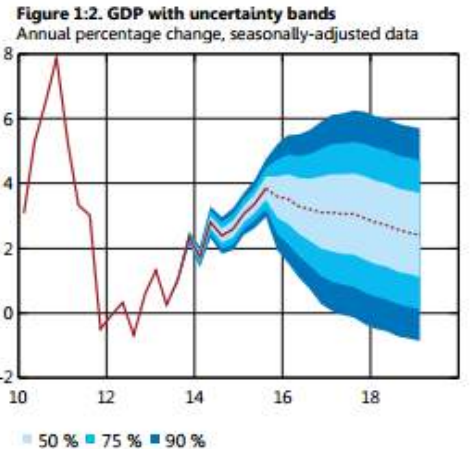
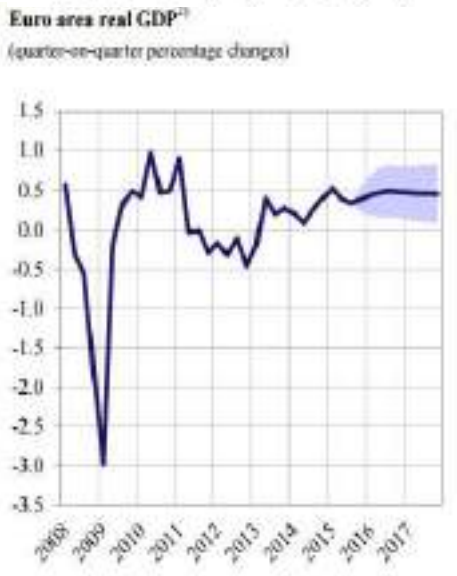
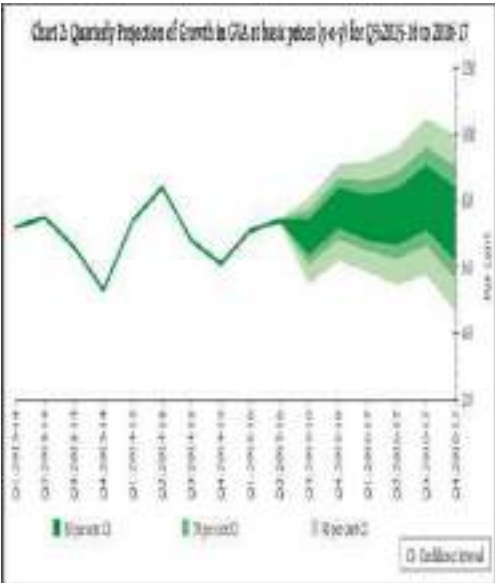
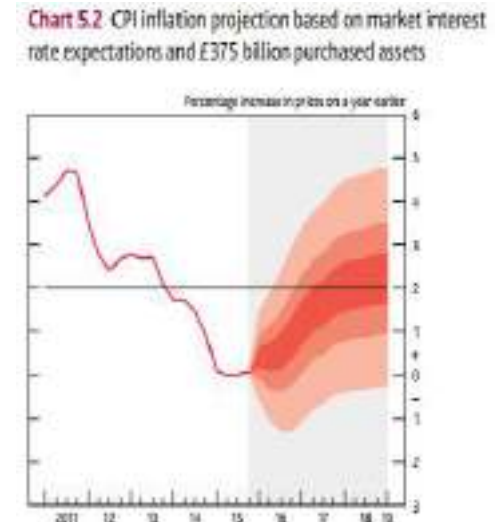
Statistical Communication

- Central Banks communicate forecasts of macroeconomic variables
 - ✓ Risks to forecasts based on which policy stance taken – need to be minimized
 - ✓ Forecast errors – required to be estimated
 - ✓ Risk quantification – Confidence interval around forecasts
- Central Banks publish fan charts to
 - ✓ communicate risks/ uncertainty associated to forecasts of inflation and growth
 - ✓ Fan chart – communication of quantified uncertainty around forecast using confidence intervals

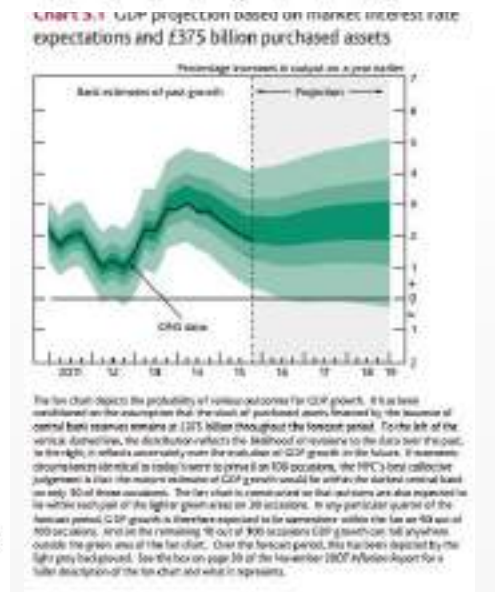
Fan-Charts for Economy's Growth and Inflation: India, Europe, Sweden and UK



Note. The uncertainty bands are based on the Riksbank's historical forecasting errors.
Sources: Statistics Sweden and the Riksbank



Note. The uncertainty bands are based on the Riksbank's historical forecasting errors. There is also uncertainty for the outcomes for GDP, as the figures in the National Accounts are revised several years after the preliminary publication.
Sources: Statistics Sweden and the Riksbank



The fan chart depicts the probability of various outcomes for GDP growth. It is based on the assumption that the stock of purchased assets financed by the issuer of central bank reserves remains at £375 billion throughout the forecast period. To the left of the vertical dashed line, the distribution reflects the likelihood of revisions to the Euro area's growth in light of uncertainty over the real state of GDP growth in the future. It assumes circumstances identical to today's state to arrive at 100 scenarios, the Riksbank's best collective judgment is that the future estimate of GDP growth would be within the darkest central band on only 30 of these scenarios. The fan chart is constructed so that outcomes are also reported to be within the light of the light green area on 30 scenarios. In any particular quarter of the forecast period, GDP growth is therefore expected to lie somewhere within the fan on 100 out of 100 occasions, and on the remaining 70 out of 100 occasions GDP growth will be anywhere outside the green area of the fan chart. Over the forecast period, this fan chart depicts the likelihood of various outcomes for GDP growth. See the box on page 10 of the November 2016 Inflation Report for a fuller description of the fan chart and what it represents.

Fan Chart

Fan chart depicts:

- ✓ a measure of central tendency (central view)
- ✓ a view on degree of uncertainty
- ✓ a view on balance of risk (often non-symmetric)

Distribution in fan chart is asymmetric if risk assessment is either skewed upside or downside

Literatures

- Theory on incorporating asymmetric risks to forecasts using two-piece Normal distribution
 - ✓ by M. Blix and P. Sellin in 1998 – application in Indian context discussed by N. Banerjee and A. Das in 2011
- Methodology for fan chart for government deficit and debt ratios over medium-term
- Bayesian fan charts
- Quantification of skewness in fan charts by assessing probability of future dip using probit model

The Forecasting Distribution

Join halves of two Normal distributions with same mode but different standard deviations

$$f(x) = \begin{cases} C \exp \left[-\frac{1}{2} \left(\frac{x - \mu}{\sigma_1} \right)^2 \right], & \text{if } -\infty < x \leq \mu \\ C \exp \left[-\frac{1}{2} \left(\frac{x - \mu}{\sigma_2} \right)^2 \right], & \text{if } x > \mu \end{cases}$$

$$\text{with } C = \frac{\sqrt{2}}{\sqrt{\pi}(\sigma_1 + \sigma_2)}, \quad -\infty < \mu < \infty, \sigma_1, \sigma_2 > 0$$

$$\text{Balance of Risk } p = P[X \leq \mu] = \frac{\sigma_1}{\sigma_1 + \sigma_2}$$

Confidence Interval for fan chart

Quantile k of the distribution:

$$k = \begin{cases} \mu + \sigma_1 \Phi^{-1} \left(\frac{\alpha}{C\sqrt{2\pi}\sigma_1} \right), & \text{if } \alpha \leq p \\ \mu + \sigma_2 \Phi^{-1} \left(\frac{\alpha + C\sqrt{2\pi}\sigma_2 - 1}{C\sqrt{2\pi}\sigma_2} \right), & \text{if } \alpha > p \end{cases}$$

$$0 \leq \alpha \leq 1$$

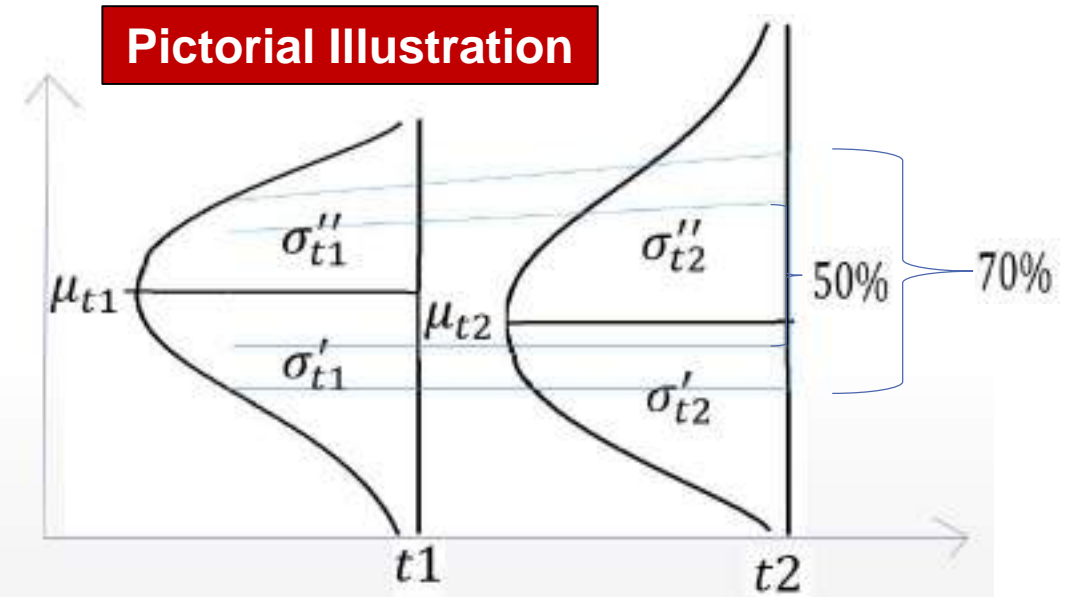
Construction

- μ_{xt} • Forecast for time t
- p • Balance of risk based on judgement/ data-driven
- γ • Skewness parameter $\gamma = \frac{2p-1}{1-2p+2p^2}$

- σ • $\sigma = \sqrt{\frac{1}{T-1} \sum_{t=1}^{T-1} (x_t - \mu_{xt})^2}$, $x_t = \text{actual at time } t$ $\mu_{xt} = \text{forecast for time } t$

- σ_1, σ_2 • $\sigma_1 = \frac{\sigma}{\sqrt{1-\gamma}}$, $\sigma_2 = \frac{\sigma}{\sqrt{1+\gamma}}$

- k • $k = \begin{cases} \mu + \sigma_1 \Phi^{-1} \left(\frac{\alpha}{c\sqrt{2\pi}\sigma_1} \right), & \text{if } \alpha \leq p \\ \mu + \sigma_2 \Phi^{-1} \left(\frac{\alpha + c\sqrt{2\pi}\sigma_2 - 1}{c\sqrt{2\pi}\sigma_2} \right), & \text{if } \alpha > p \end{cases}, \quad 0 \leq \alpha \leq 1$



Way Forward – Bivariate Fan Chart

- Macroeconomic variables of interest are inter-dependent – literature contains limited work on dimensional extension of fan charts
- M. Blix and P. Sellin in 2000 derived bivariate fan chart of inflation and output
 - ✓ opined that bivariate framework allows for arriving at forecast of a variable conditional on information on other
 - ✓ estimating confidence bands from econometric forecasting model itself, is not possible as multiple models are used, specific information related to particular forecast period and important subjective judgments cannot be incorporated
 - ✓ assumed that error distribution of inflation and output forecasts are separately two-piece Normal and linked the standardized form of these variables into a standard Bivariate Normal (BN) distribution through an estimated correlation coefficient; then, derived conditional distribution of one variable given another
- **Alternative:** Initial assumption of joint distribution of two variables

Initial Thoughts

What is a Bivariate Fan Chart? – Joint error distribution around two-dimensional forecast coordinate

Why a Bivariate Fan Chart?

- impact of movement of one variable on future path of other
- known information on forecast error of one variable
 - ✓ may improve forecast of other variable – useful when information on variables are published at different lags

Framework

- $(X, Y) \sim$ Bivariate Normal
- Join halves of 2 different Bivariate Normal distributions
- Each halve has its own set of variance matrix
- Forecasts of X and Y for a period are μ_x and μ_y , respectively – forecast coordinate (μ_x, μ_y)

Bivariate Fan Chart – Methodology

Handling Asymmetry

- Asymmetry in risks associated to forecast coordinates (μ_x, μ_y)
 - ✓ different in each of the four quadrants of (X, Y) plane
- Join sections of two Bivariate Normal distributions

$$BN(\mu_x, \mu_y, \sigma_{1x}, \sigma_{1y}, \rho) \quad \text{and} \quad BN(\mu_x, \mu_y, \sigma_{2x}, \sigma_{2y}, \rho)$$

- ✓ same modal coordinate (μ_x, μ_y) , $-\infty < \mu_x, \mu_y < \infty$
- ✓ same correlation coefficient ρ , $-1 \leq \rho \leq 1$
- ✓ $\sigma_{1x}(> 0)$, $\sigma_{1y}(> 0)$ in first distribution
- ✓ $\sigma_{2x}(> 0)$, $\sigma_{2y}(> 0)$ in second distribution

Bivariate Fan Chart – Methodology.....contd.

The Cut Line Equation – Equation of line to cut distribution into two pieces

- x-axis, y-axis with $x, y \in \mathbb{R}$ and z-axis for probability with $0 \leq z \leq 1$
- Which half of distribution is to be taken?
- Cut line may either be aligned to x-axis, y-axis or at any other angle
- A general cut line $(y - \mu_y) = m(x - \mu_x)$, $x, y \in \mathbb{R}$ may be used
 - ✓ slope of cut line is $m \in \mathbb{R}$
- Join pieces of $BN(\mu_x, \mu_y, \sigma_{1x}, \sigma_{1y}, \rho)$ and $BN(\mu_x, \mu_y, \sigma_{2x}, \sigma_{2y}, \rho)$

Bivariate Fan Chart – Methodology.....contd.

Probability Distribution Function

$$f(x, y) = \begin{cases} C \exp \left[-\frac{1}{2(1-\rho^2)} \left\{ \left(\frac{x-\mu_x}{\sigma_{1x}} \right)^2 - 2\rho \left(\frac{x-\mu_x}{\sigma_{1x}} \right) \left(\frac{y-\mu_y}{\sigma_{1y}} \right) + \left(\frac{y-\mu_y}{\sigma_{1y}} \right)^2 \right\} \right], \\ \quad \text{if } (y - \mu_y) \leq m(x - \mu_x), \quad x, y \in \mathbb{R} \\ \\ C \exp \left[-\frac{1}{2(1-\rho^2)} \left\{ \left(\frac{x-\mu_x}{\sigma_{2x}} \right)^2 - 2\rho \left(\frac{x-\mu_x}{\sigma_{2x}} \right) \left(\frac{y-\mu_y}{\sigma_{2y}} \right) + \left(\frac{y-\mu_y}{\sigma_{2y}} \right)^2 \right\} \right], \\ \quad \text{if } (y - \mu_y) > m(x - \mu_x), \quad x, y \in \mathbb{R} \end{cases}$$

C is a constant such that $\int_{-\infty}^{\infty} \int_{-\infty}^{\infty} f(x, y) dx dy = 1$

Balance of Risks (BOR) – the Highest risk to forecast coordinate in quadrant with the highest BOR

$$\text{BOR in quadrant - 1,} \quad p(1) = P\{X > \mu_x, Y > \mu_y + m(x - \mu_x)\}$$

$$\text{BOR in quadrant - 2,} \quad p(2) = P\{X \leq \mu_x, Y > \mu_y + m(x - \mu_x)\}$$

$$\text{BOR in quadrant - 3,} \quad p(3) = P\{X \leq \mu_x, Y \leq \mu_y + m(x - \mu_x)\}$$

$$\text{BOR in quadrant - 4,} \quad p(4) = P\{X > \mu_x, Y \leq \mu_y + m(x - \mu_x)\}$$

Bivariate Fan Chart – Methodology.....contd.

Alternate Parametrization $f(x, y) = \begin{cases} BN \left(\mu_x, \mu_y, \frac{\sigma_x}{\sqrt{(1-\gamma_x)}}, \frac{\sigma_y}{\sqrt{(1-\gamma_y)}}, \rho \right), & \text{if } (y - \mu_y) \leq m(x - \mu_x) \\ BN \left(\mu_x, \mu_y, \frac{\sigma_x}{\sqrt{(1+\gamma_x)}}, \frac{\sigma_y}{\sqrt{(1+\gamma_y)}}, \rho \right), & \text{if } (y - \mu_y) > m(x - \mu_x) \end{cases} \quad x, y \in \mathbb{R}$

γ_x and γ_y are inverse skewness indicators, σ_x and σ_y are uncertainty parameters.

Solving for parameters

$$\sigma_{1x} = \frac{\sigma_x}{\sqrt{1 - \gamma_x}}, \quad \sigma_{1y} = \frac{\sigma_y}{\sqrt{1 - \gamma_y}}, \quad \sigma_{2x} = \frac{\sigma_x}{\sqrt{1 + \gamma_x}}, \quad \sigma_{2y} = \frac{\sigma_y}{\sqrt{1 + \gamma_y}}$$

$$p_x = \frac{\sigma_{1x}}{\sigma_{1x} + \sigma_{2x}} \Rightarrow \gamma_x = \frac{2p_x - 1}{1 - 2p_x + 2p_x^2}, \quad p_y = \frac{\sigma_{1y}}{\sigma_{1y} + \sigma_{2y}} \Rightarrow \gamma_y = \frac{2p_y - 1}{1 - 2p_y + 2p_y^2}$$

$$\sigma_x \text{ proxied by } \sigma_x^* = \sqrt{\frac{1}{T-1} \sum_{t=1}^{T-1} (x_t - \mu_{xt})^2}$$

$$\sigma_y \text{ proxied by } \sigma_y^* = \sqrt{\frac{1}{T-1} \sum_{t=1}^{T-1} (y_t - \mu_{yt})^2}$$

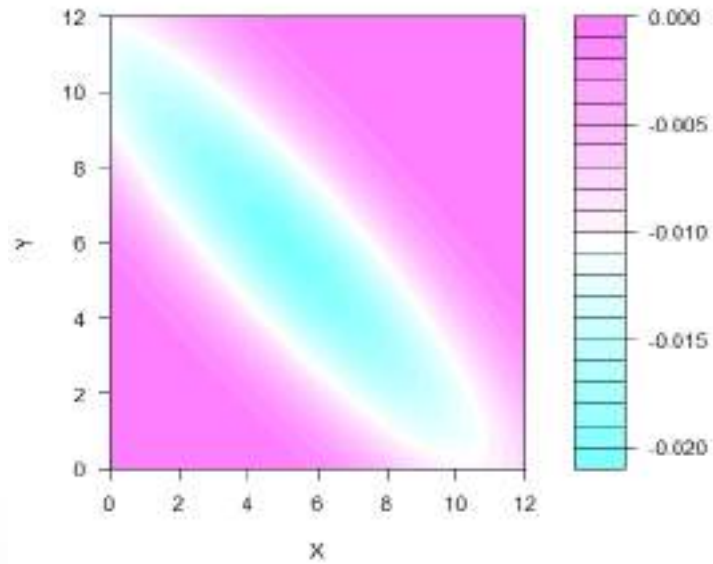
μ_{xt} and μ_{yt}	=	forecasts of X and Y, respectively for t
x_t and y_t	=	realized values of X and Y, respectively at t
T	=	number of periods considered from history

$$\rho \text{ proxied by } \rho^* = \frac{\sum_{t=1}^{T-1} (x_t - \bar{x})(y_t - \bar{y})}{\sqrt{\sum_{t=1}^{T-1} (x_t - \bar{x})^2} \sqrt{\sum_{t=1}^{T-1} (y_t - \bar{y})^2}}$$

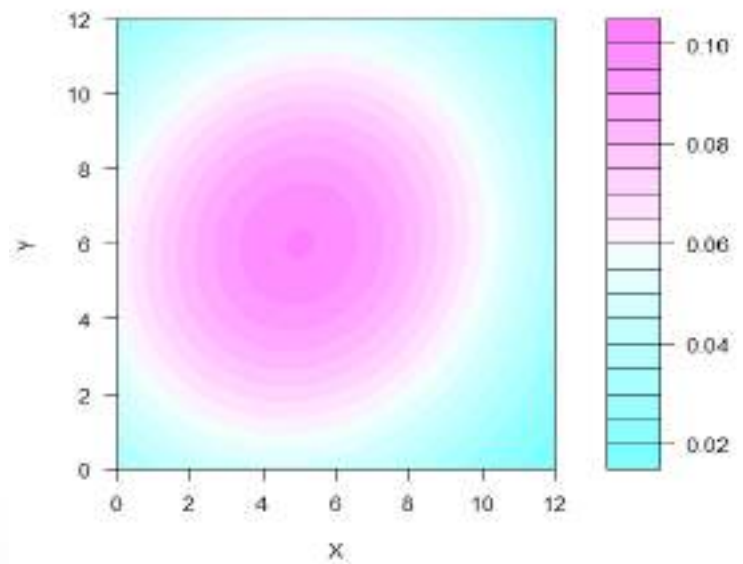
Bivariate Fan Chart – Methodology.....contd.

- **Confidence bands** for bivariate distribution is a set of equi-probability contours
 - ✓ an equi-probability contour joins all coordinates with same probability
- Consider all coordinates (x, y) for which density is same, say δ
 - ✓ solving this equation, equi-probability contour can be derived
- Thus, for constructing bivariate fan chart, values of seven parameters required
 - ✓ baseline forecasts (μ_x, μ_y) , uncertainties σ_x, σ_y , balance of risks p_x, p_y and correlation coefficient ρ
- **Conditional Distribution**
 - ✓ Given known information on X , distribution of Y derived as $f_Y(y|x) = \frac{f(x,y)}{g(x)}$
 - ✓ mean of conditional (revised forecast of Y) expected to be better than original forecast μ_y
- **Quantile from Conditional Distribution** → Conditional fan chart for Y

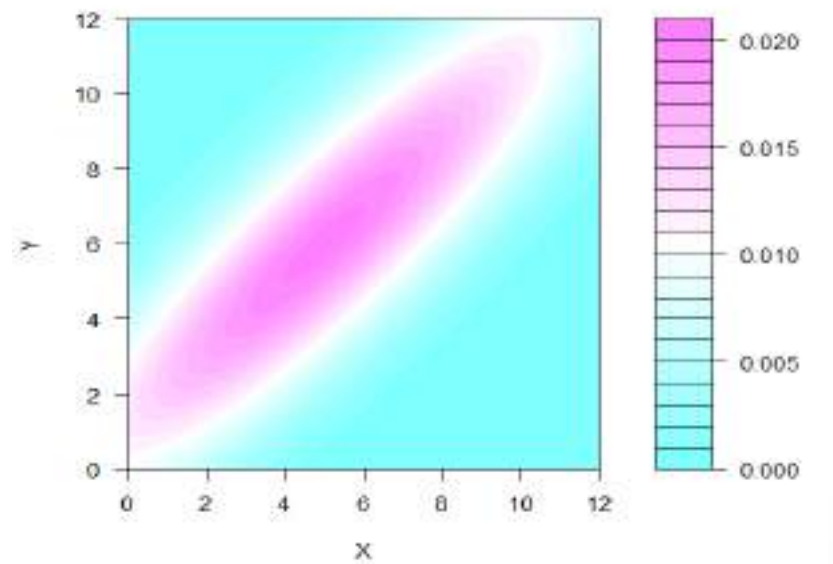
Bivariate Fan Chart – Contours for Demonstration



$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = -0.9$
 Bias in 2nd and 4th quadrants
 Opposite risks to forecasts

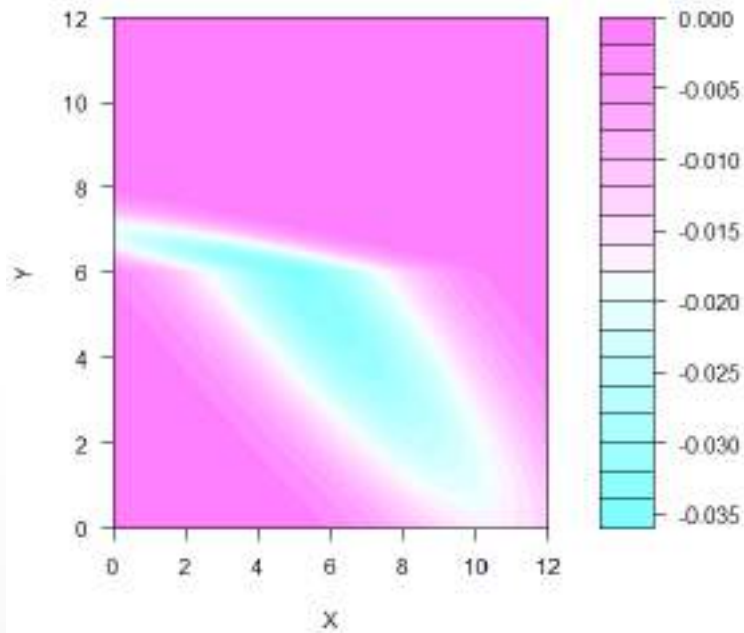


$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = 0.1$
 Risk symmetric in all quadrants



$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = 0.9$
 Bias in 1st and 3rd quadrants
 Unidirectional risks to forecasts

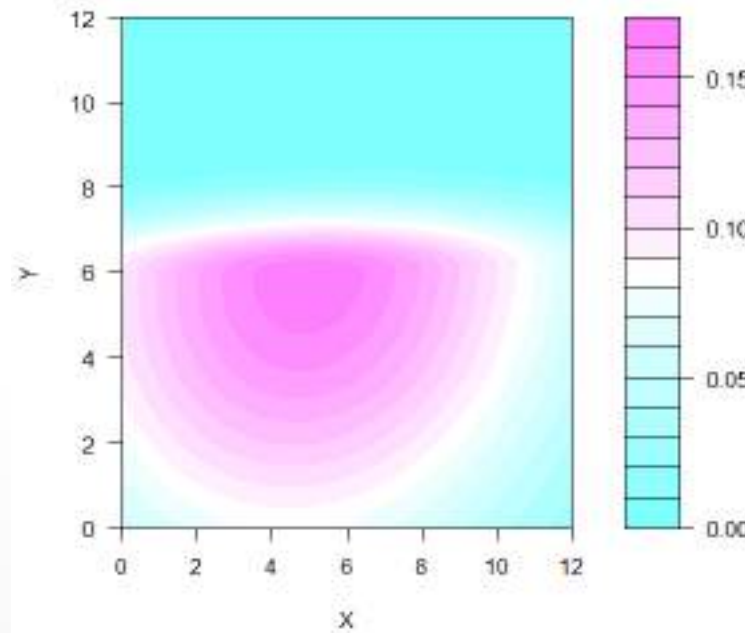
Bivariate Fan Chart – Contours for Demonstration.....contd.



$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} > \sigma_{2y}, \rho = -0.9$$

Bias in 4th quadrant

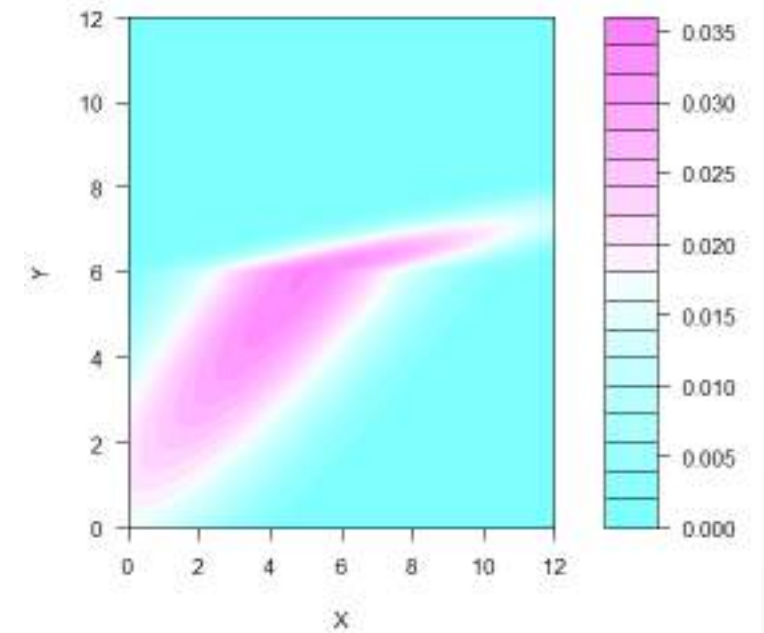
Upside risk to X and downside risk to Y



$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} > \sigma_{2y}, \rho = 0.1$$

Bias in 3rd and 4th quadrants

Balanced risk to X and downside risk to Y

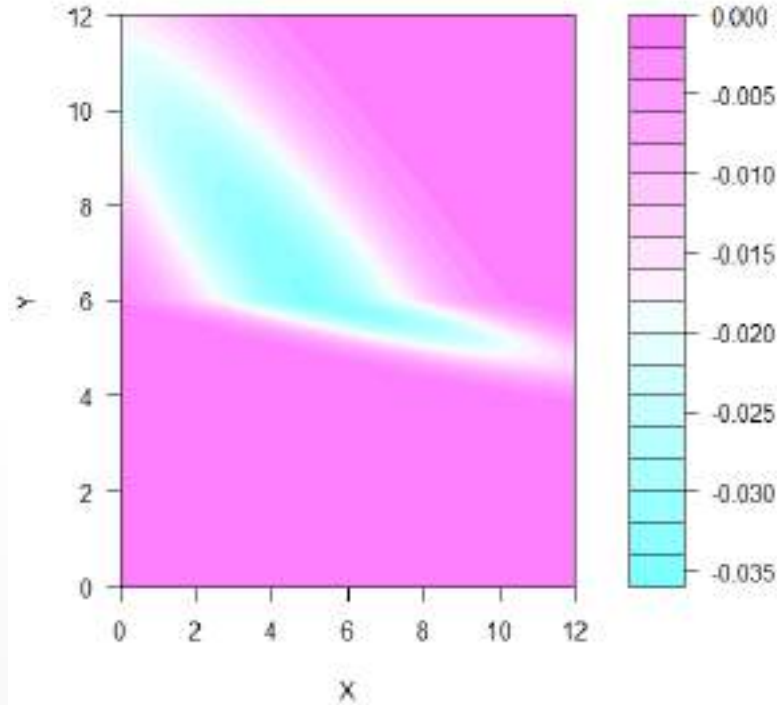


$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} > \sigma_{2y}, \rho = 0.9$$

Bias in 3rd quadrant

Downside risk to both X and Y

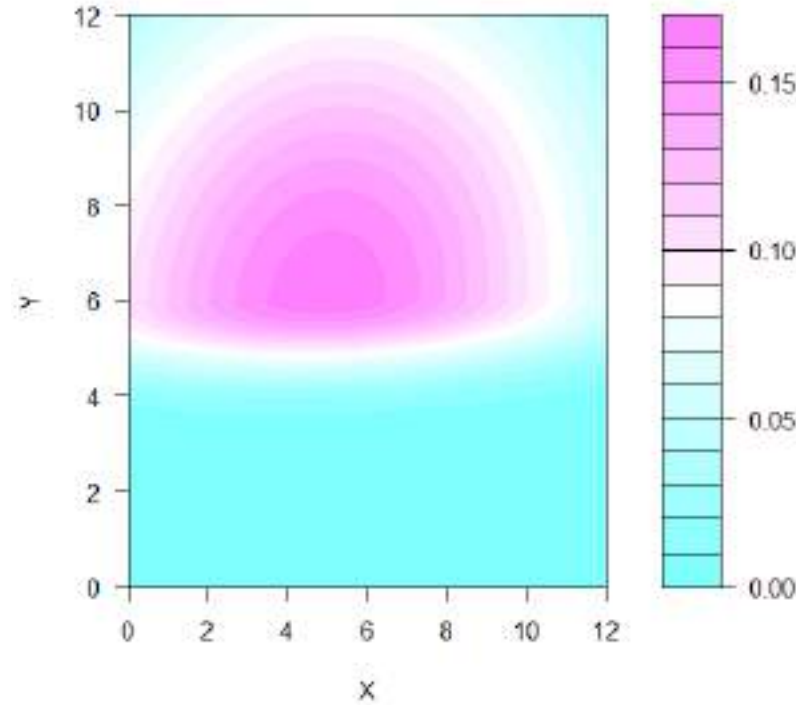
Bivariate Fan Chart – Contours for Demonstration.....contd.



$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} < \sigma_{2y}, \rho = -0.9$$

Bias in 2nd quadrant

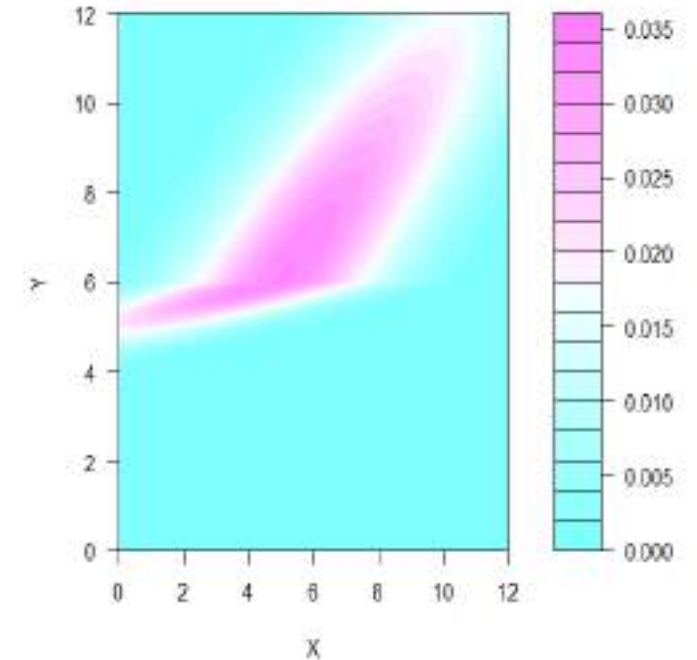
Downside risk to X and upside risk to Y



$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} < \sigma_{2y}, \rho = 0.1$$

Bias in 1st and 2nd quadrants

Balanced risk to X and upside risk to Y

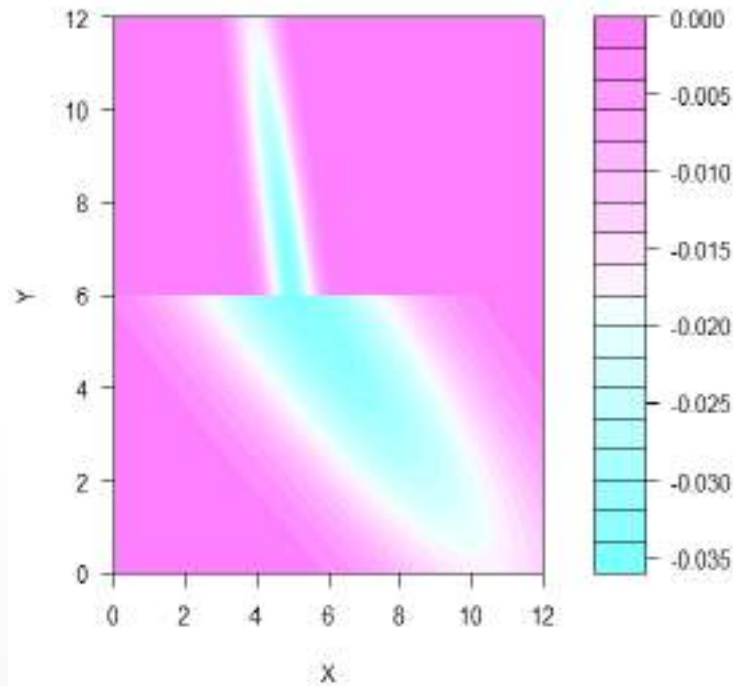


$$\sigma_{1x} = \sigma_{2x}, \sigma_{1y} < \sigma_{2y}, \rho = 0.9$$

Bias in 1st quadrant

Upside risk to both X and Y

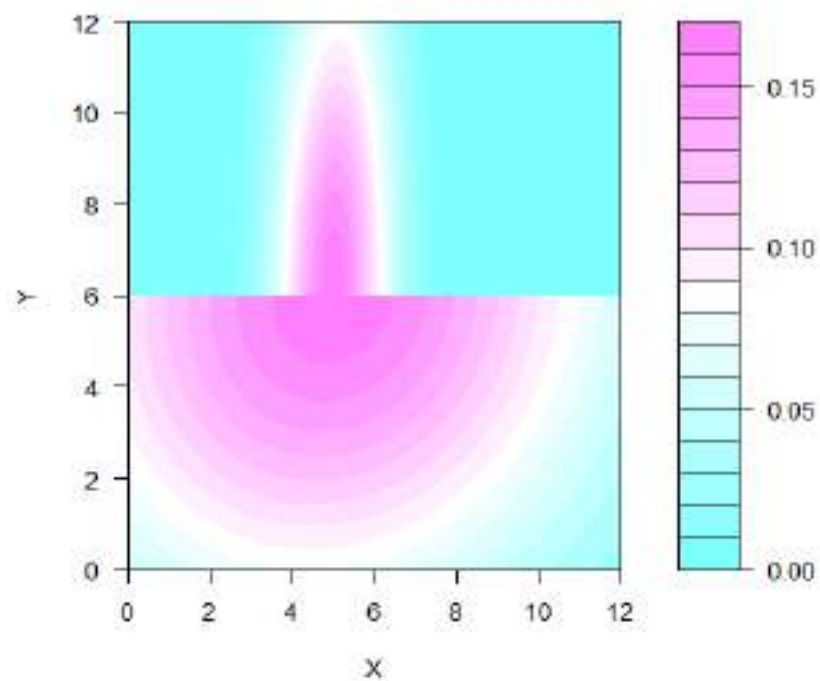
Bivariate Fan Chart – Contours for Demonstration.....contd.



$$\sigma_{1x} > \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = -0.9$$

Bias in 4th quadrant

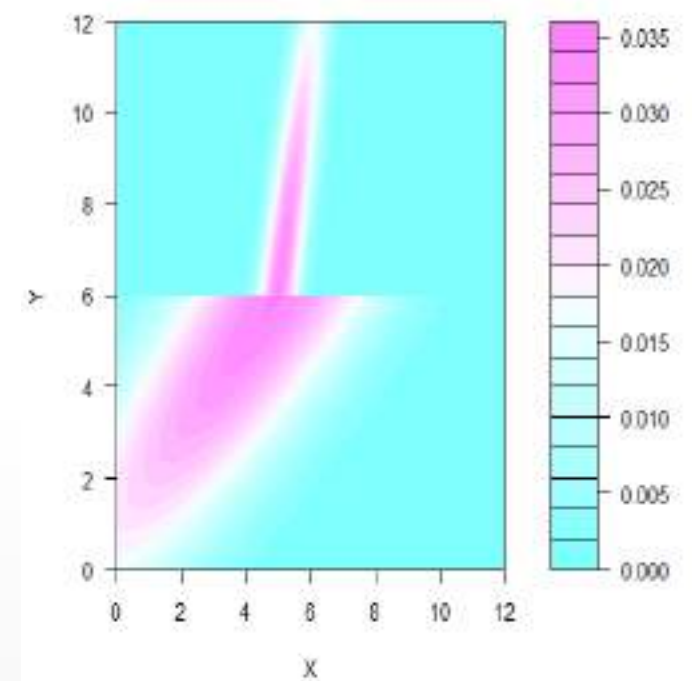
Upside risk to X and downside risk to Y



$$\sigma_{1x} > \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = 0.1$$

Bias in 3rd and 4th quadrants

Balanced risk to X and downside risk to Y



$$\sigma_{1x} > \sigma_{2x}, \sigma_{1y} = \sigma_{2y}, \rho = 0.9$$

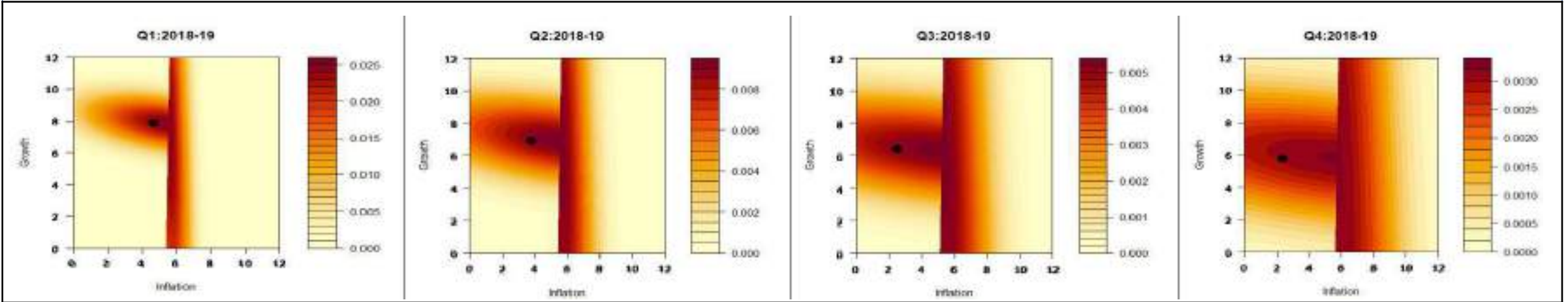
Bias in 3rd quadrant

Downside risk to both X and Y

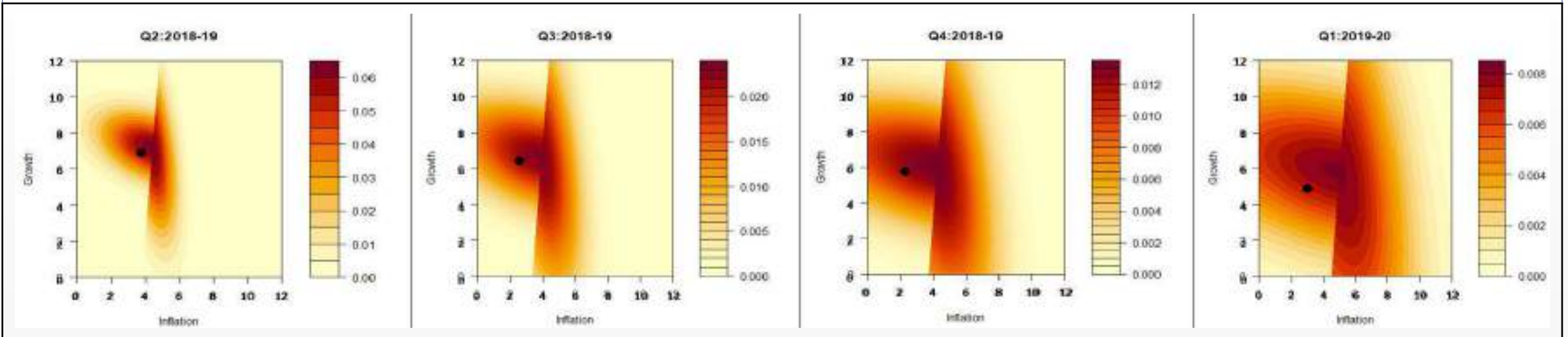
Numerical Illustration

Q1:2018-19 to Q4:2018-19 $p_x = 0.2, p_y = 0.9, \theta = 89^\circ$

● indicates actual inflation and growth coordinate (x, y)



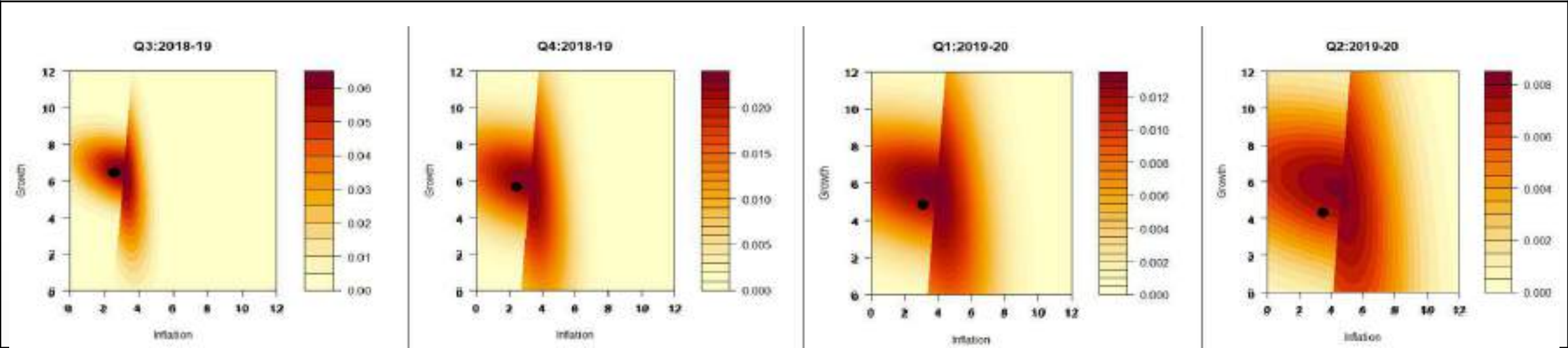
Q2:2018-19 to Q1:2019-20 $p_x = 0.3, p_y = 0.7, \theta = 85^\circ$



Numerical Illustration.....contd.

Q3:2018-19 to Q2:2019-20 $p_x = 0.3, p_y = 0.7, \theta = 85^\circ$

● indicates actual inflation and growth coordinate (x, y)



Numerical Illustration.....contd.

Performance of Conditional Fan Charts										
Quarter	θ	p_x	p_y	Average absolute deviation (basis points) from actual growth		Average absolute deviation (basis points) of actual growth from central path		Average Width (basis points) of confidence band		
				Univariate fan	Conditional fan	Univariate fan	Conditional fan	Band (per cent)	Univariate fan	Conditional fan
Q1:2018-19 to Q4:2018-19	89°	0.2	0.9	14.3	6.1	1341.2	7.9	50	1791.9	278.9
								70	2689.9	428.6
								90	4074.7	680.8
Q2:2018-19 to Q1:2019-20	85°	0.3	0.7	30.5	12.7	205.3	34.8	50	573.9	312.1
								70	869.1	487.6
								90	1359.9	980
Q3:2018-19 to Q2:2019-20	85°	0.3	0.7	53.3	21.5	183.5	45.5	50	566.5	321.5
								70	857.9	506.9
								90	1342.3	1078.8

Conclusion

- In the current scenario of uncertainty, Central Bank's communication plays a crucial role
- Univariate fan chart is a traditional way of communicating uncertainty around forecasts
 - ✓ Central Banks publish fan charts to communicate the risks/ uncertainty associated to forecasts of macroeconomic variables – inflation and growth
- Bivariate fan chart can be an improvement in the manner of communication
 - ✓ can be used for representing error bands – for forecasts of two linearly related variables
 - ✓ it incorporates the asymmetric risks to forecast coordinates
 - ✓ suitable when information of two variables released at different lags
 - ✓ conditional fan chart can be derived for one variable given information on other
 - ✓ additional information on one variable refines the forecast of the other

THANK YOU

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

Unlocking the social media whereabouts in the age of central banks¹

Luís de Carvalho Campos,
Banco de Portugal

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

UNLOCKING THE SOCIAL MEDIA WHEREABOUTS IN THE AGE OF CENTRAL BANKS

20 SEP. 2022



BANCO DE
PORTUGAL
EUROSISTEMA



every minute more than
41 million messages
are exchanged on
WhatsApp
and more than
340 000 stories
on Instagram.

Source: Statista (AUG. 2022)



From mass media

Unknown users.
Passive interaction.
Constant exposure.



To self media

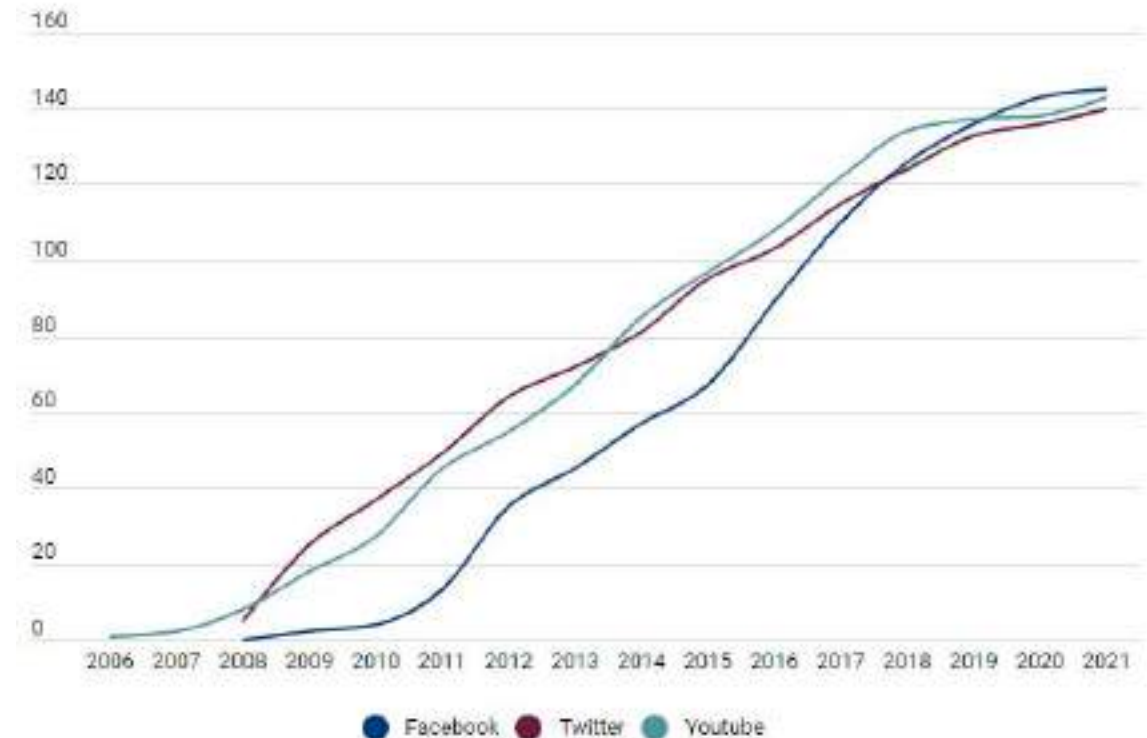
Known users.
Active interaction.
Control on what you see.





the number of central banks using social media has **skyrocketed** over the past **decade**.

GROWING USE OF SOCIAL MEDIA PLATFORMS AMONG CENTRAL BANKS

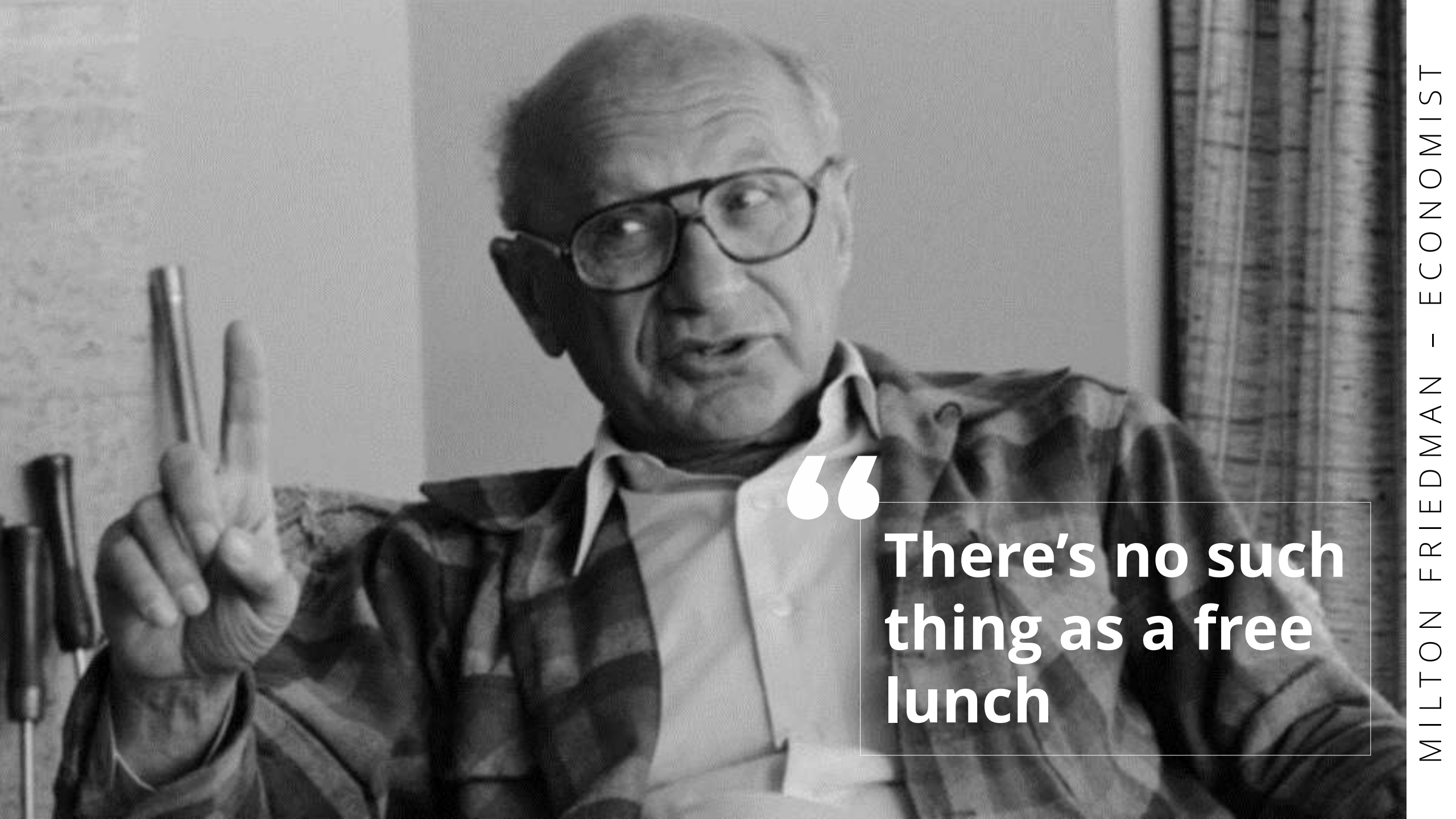




1.

Choose the social media platforms where you will have your voice.

They are free.



“

**There's no such
thing as a free
lunch**



2.

Effective **communication strategy** is to make messages **relatable** to **people's** lives.



A group of people is shown from the chest up, holding up white rectangular signs. The image is overlaid with a semi-transparent blue filter. The text "HOW MIGHT WE GET THE ATTENTION OF OUR AUDIENCES?" is written in white, uppercase, sans-serif font across the center of the image. The people are wearing various shirts, including a patterned one on the left and a dark suit jacket in the center.

HOW MIGHT WE GET THE
ATTENTION
OF OUR AUDIENCES?

GETTING THE ATTENTION OF OUR AUDIENCES?



3.

Good content: we need to speak directly to people

4.

Good distribution: we need to know our targets and use our channels



A black and white portrait of Erik Spiekermann, an elderly man with glasses, wearing a dark patterned shirt and an apron. He is looking directly at the camera with a slight smile. The background is a blurred workshop or studio.

“

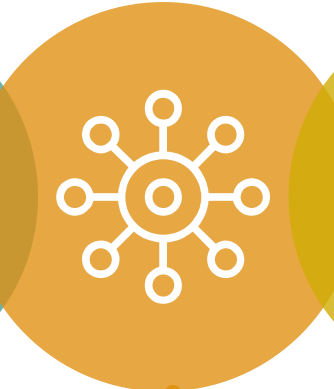
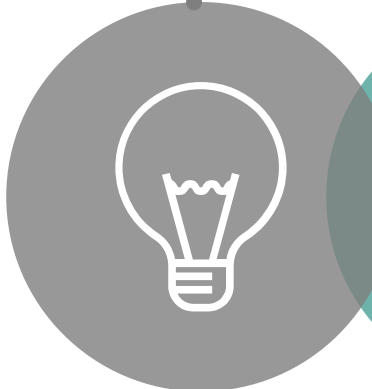
**If we want to
speak to people,
we need to know
their language**



OUR
[CONSTANTLY
EVOLVING] APPROACH
TO SOCIAL MEDIA

MORE ANALYTICAL

Make use of social media analytical tools and use that information for future campaigns



MORE HUMAN

Humanize communication by striking the right tone and seeking for opportunities to engage

MORE EDITORIAL

Make use of relatable content and more contextual approaches

MORE SOCIAL

Intensify communication across social media channels and be sensible to your targets and audiences on each social platform



SOME CONTENT CAMPAIGNS



2021 IN NUMBERS



#1 Carrousel posts



#2 Statistical figures of 2021

#3 Curated content: we've only selected the figures more related to our audiences.



ENGAGING CONTENT



- #1** Started using Instagram polls
- #2** Relatable content like tourism, travels
- #3** Opportunity to link users to other content



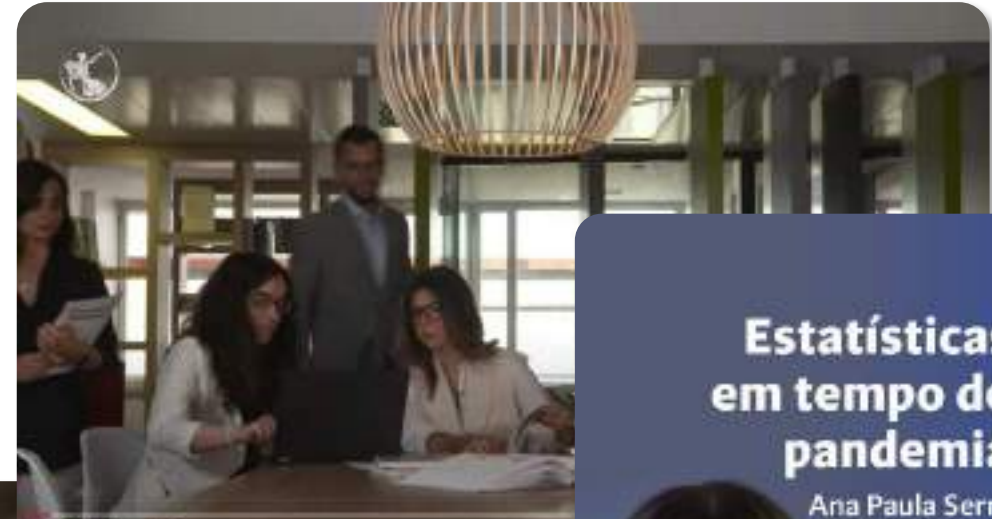


DIFFERENT FORMATS

#1 Article posts (decoders)

#2 Podcasts

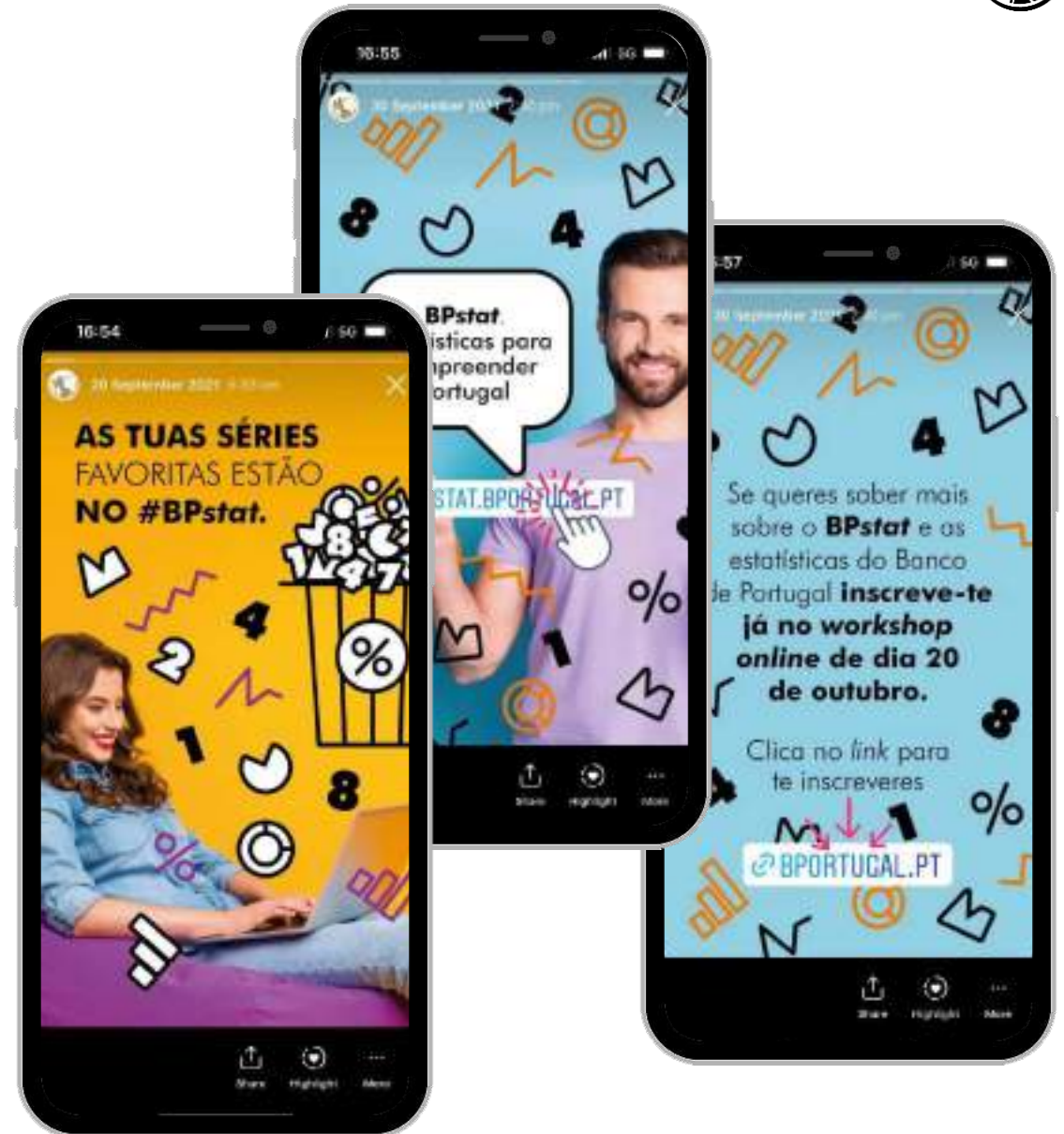
#3 Videos



BACK TO SCHOOL INITIATIVES



- #1 Target: students
- #2 Goal: website visits
- #3 Tone of voice: informal





BUT ALSO SIMPLE INITIATIVES

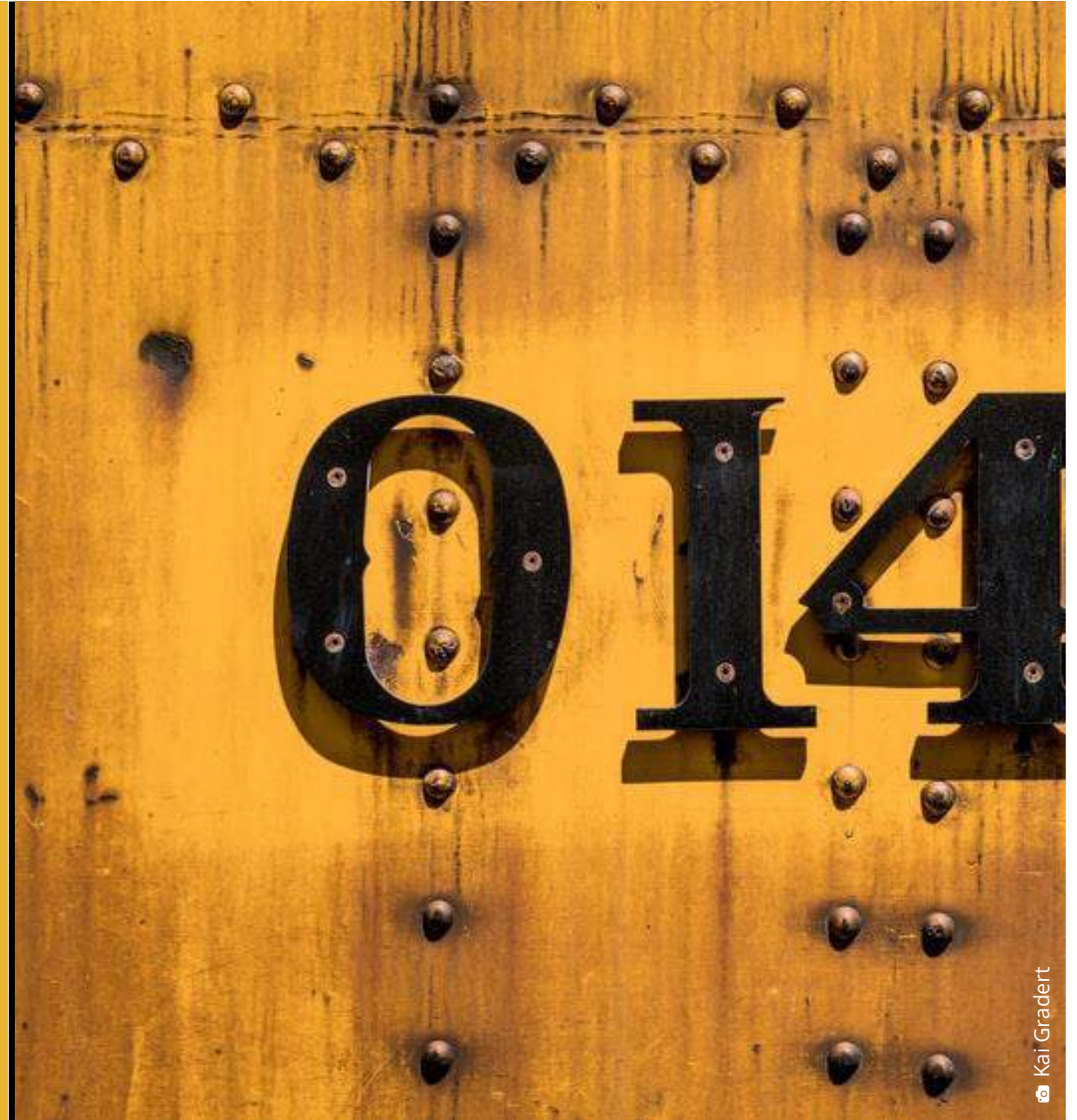
#1 Explainers

#2 Simple design

#3 Plain language



SOME
NUMBERS





SOCIAL MEDIA



IMPRESSIONS

22%



IMPRESSIONS

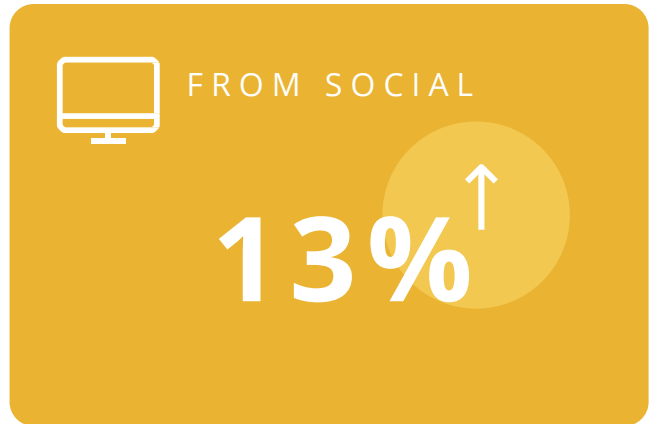
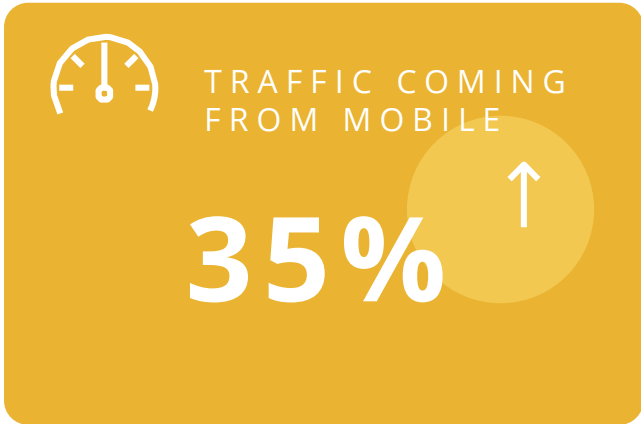
41%



VIEWS

58%





A person with dark, curly hair, wearing a grey hoodie, is seen from behind, looking at four framed pictures on a light-colored wall. The entire scene is overlaid with a semi-transparent blue filter. The word "TAKEAWAYS" is written in white, uppercase letters in the bottom right corner.

TAKEAWAYS



MAIN TAKEAWAYS

#1 Choose your social media channels aligned with your **strategy**

#2 **Relatable** content is king

#3 Use **analytics** to guide you along the way

#4 Video and visual is key.

#5 Engage and dialogue.

#6 Humanize communication by striking the right tone



BUT, MOST IMPORTANTLY

Social media is
like music, you
don't know a
song by heart
until you've
heard the lyrics
over and over





This sentence has five words. Here are five more words. Five-word sentences are fine. But several together become monotonous. Listen to what is happening. The writing is getting boring. The sound of it drones. It's like a stuck record. The ear demands some variety.

Now listen. I vary the sentence length, and I create music. Music. The writing sings. It has a pleasant rhythm, a lilt, a harmony. I use short sentences. And I use sentences of medium length. And sometimes, when I am certain the reader is rested, I will engage him with a sentence of considerable length, a sentence that burns with energy and builds with all the impetus of a crescendo, the roll of the drums, the crash of the cymbals—sounds that say listen to this, it is important.

So write with a combination of short, medium, and long sentences. Create a sound that pleases the reader's ear. Don't just write words. Write music.

GARY PROVOST

IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Innovating statistical communication in Banca d'Italia¹

Laura Bartiloro,
Bank of Italy

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

Joint IFC-BdP Conference

Communication on central bank statistics: unlocking the next level

Innovating statistical communication in Banca d'Italia

Laura BARTILORO

*Research Data Center and Innovation Division
Banca d'Italia | Statistical Analysis Directorate*

20.09.22

Method

1. Analysis of the status quo (Banca d'Italia vs other statistics providers)
2. Definition of user personas
3. Exploring new tools
4. Matching user personas with tools
5. Finding IT solutions starting from current endowment
6. Considering implications for the organisation (structure and work flows)



Status quo

Statistics series

[link](#)

Economic publications

[link](#)

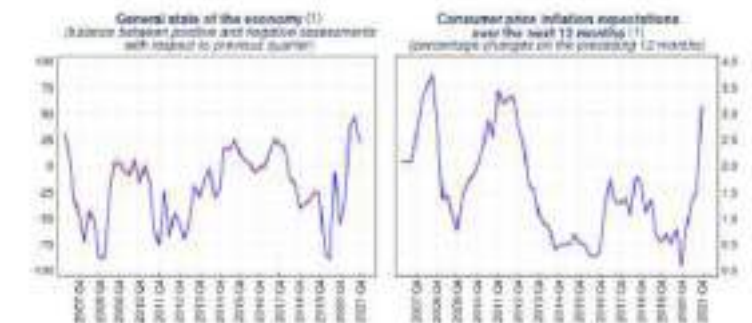
Statistical Data Warehouse
(Base Dati Statistica – BDS)



According to the survey conducted between 23 November and 15 December 2021 among Italian industrial and service firms with 50 or more employees, opinions regarding the general economic situation in the fourth quarter of 2021 and their own operating conditions in the first quarter of the next year are less favourable compared with the previous survey. Demand dynamics are expected to remain robust, but delays in supply chains and the resurgence of the pandemic will likely entail downside risks to the activity of more than one in two firms.

The assessments of investment conditions have become more moderate: the balance between assessments of an improvement and of a worsening remained positive, though it narrowed to less than one third of the levels recorded in the survey conducted between August and September. Investment is expected to expand further in 2022, though at a slower pace than in the previous year. Employment is set to continue to grow in the first quarter of 2022.

Firms revised significantly upwards their selling prices in the last quarter of 2021 and their expectations for consumer price inflation in Italy have risen well above the 2 percent threshold across all time horizons (12-month expectations have reached 3.2 per cent). The recent increases in energy prices and supply chain difficulties will likely lead to a rise in firms' selling prices over the next twelve months.



(1) The shaded areas represent the 95% confidence intervals. Corresponding lines are included from 2015 Q3. For both, all and all of the data are available.

Report text

- Survey on Inflation and Growth Expectations – 2021 Q4 pdf (35 MB)
13 January 2022
- Questionnaire of the 2021 Survey – 4th quarter pdf (102 KB)
13 January 2022
- Tables pdf (317 KB)
13 January 2022

Statistics series

No interactive visualisation

Pre-defined Excel tables are available, limiting microdata analysis

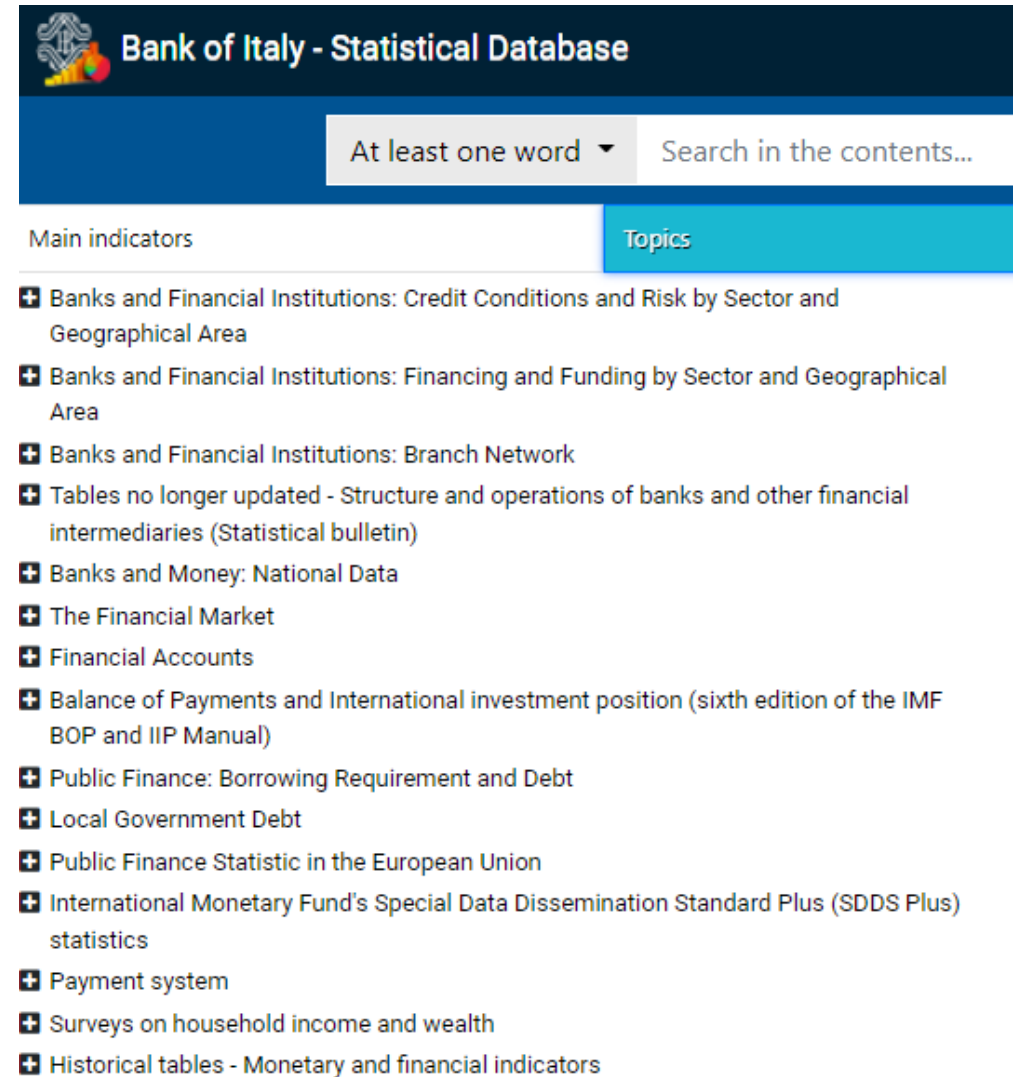
Statistical Data Warehouse (Base dati statistica - BDS)

Follows the Statistics
series structure

Requires some
economic/statistics
skills

BDS is not perfectly fit
for microdata (yet
including some
aggregates from survey
data)

Specialistic language



The screenshot shows the 'Bank of Italy - Statistical Database' interface. At the top right is the Banca d'Italia Eurosystem logo. Below it is a search bar with a dropdown menu set to 'At least one word' and the text 'Search in the contents...'. There are two tabs: 'Main indicators' (selected) and 'Topics'. A list of categories follows, each with a plus icon:

- Banks and Financial Institutions: Credit Conditions and Risk by Sector and Geographical Area
- Banks and Financial Institutions: Financing and Funding by Sector and Geographical Area
- Banks and Financial Institutions: Branch Network
- Tables no longer updated - Structure and operations of banks and other financial intermediaries (Statistical bulletin)
- Banks and Money: National Data
- The Financial Market
- Financial Accounts
- Balance of Payments and International investment position (sixth edition of the IMF BOP and IIP Manual)
- Public Finance: Borrowing Requirement and Debt
- Local Government Debt
- Public Finance Statistic in the European Union
- International Monetary Fund's Special Data Dissemination Standard Plus (SDDS Plus) statistics
- Payment system
- Surveys on household income and wealth
- Historical tables - Monetary and financial indicators

[link](#)

Some single initiatives

Survey of Industrial and Service Firms
Statistics



Since 10 January 2017 the Bank of Italy's statistical data have been published in the 'Statistics' series with a new layout and renewed content. For further details consult the page Statistics series.

Each year the survey gathers information on investments, gross sales, workforce and other economic variables relating to Italian industrial and service firms with 20 or more employees. Further details are available in the Methodological notes.



Indagine sulle imprese industriali e dei servizi - Anno 2021

VEDI ANCHE: SULLE IMPRESE INDUSTRIALI E DEI SERVIZI NEL 2021

Latest reports:

- Survey of Industrial and Service Firms in 2021
Statistics
7 July 2021

[Link](#)
[OECD](#)

Status quo: summing up

- Data are disseminated in different sections of the website (except BDS).
- Graphs are not interactive (except BDS)
- BDS is not on the home page and requires some skills for navigation.
- Too many steps (clicks) are necessary in order to visualise data.
- Information is presented by source, not by economic phenomenon.
- Personalisation and download of data visualisations are not always possible.
- Language is for economists.

Goals

- 1. Widening the audience of statistical information, in particular unskilled public**
NEW TARGET
- 2. Offering current users easier ways to access data and more opportunities for analysing and sharing information**
EASIER AND LARGER USE
- 3. Taking advantage of the technological progress in order to improve effectiveness and efficiency of data dissemination**
- 4. Promote Banca d'Italia's statistical portfolio** NEW CONTENT
- 5. Enhance/keep high Banca d'Italia reputation**
- 6. Keep up with national and international stakeholders**

4 user personas

Mario Rossi Mechanic

Bio

Quit high school, basically skilled with computer and tablet

Needs and goals

Wants to buy a house, and needs information for a mortgage

Martina Neri Student

Bio

She's writing the final dissertation on the economic impact of the energy crisis

Needs and goals

She has to go deeper into some issues studied and prepare the material to include in her final dissertation.

Angela Giallo Small entrepreneur

Bio

She's an accountant, carefully managing her small firm, but she is not IT skilled

Needs and goals

Needs updated information on Italian economy, to correctly steer her activity and take decisions for the family

Paolo Verdi Economic journalist

Bio

Travels a lot for writing his articles

Needs and goals

Would like to easy and fast download tables and graphs, using the tablet

Tools

- ✓ **New Statistics Portal** NEW TARGET + NEW CONTENT
- ✓ **Digital publications (with explainers and no economic interpretation)** NEW TARGET [*link*](#)
- ✓ **Interactive graphs (easy to understand, personalise, download and share)** NEW TARGET + EASIER AND LARGER USE
- ✓ **Dashboards** NEW CONTENT [*link*](#)
- ✓ **Diversified language** EASIER USE + NEW TARGET

3 access levels

- 1. Entry level: Statistics Portal [all user personas]**
COMMON TERMS AND CONCEPTS
 - ✓ Easy accessible e comprehensible for unskilled users [UP 1]
 - ✓ Clearly shows the main indicators [UP 1]
- 2. Thematic pages**
ECONOMIC AND STATISTICAL DEFINITIONS
 - ✓ Digital publications [UP 2]
 - ✓ Main indicators + explainers [UP 3]
 - ✓ Links to more sophisticated tools [UP 4]
- 3. Dashboards [UP 3 and 4]**
SPECIALISED JARGON + METHODOLOGICAL DETAILS
 - ✓ Richer data representation
 - ✓ Updated to current situation

IT solutions

- ✓ The Statistics Portal will be an ancillary mini website.
- ✓ Heavy re-use of BDS (in-house) technology (requires a doubling of application servers).
- ✓ Data Warehouse(s) unaltered.
- ✓ New design and features of BDS home page.
- ✓ Open source software (libraries, e.g. Apache ECharts), integrated with pre-existing software.
- ✓ Automatic and instant update of all data.

Implications for the organisation

Structures and roles stay basically unaltered.

New software for tables, graphs and dashboards will be managed directly by statisticians and/or economists (no centralised unit).

New Editorial Board, with statisticians, economists and communication experts in order to decide new content and graphical representation.

The Research Data Center (RDC) will coordinate the design and content of all new contents on the Statistics Portal.

At first, dedicated working group for the realisation of all new content (home page, thematic pages, digital publications, dashboards).

How will we know (if) we succeeded?

- ❖ More accesses and downloads from the website.
- ❖ Less queries asking for help for understanding and finding data.
- ❖ More harmonised look and feel.
- ❖ More graphs/tables/dashboards published in articles, papers, tweets, etc.



laura.bartiloro@bancaditalia.it

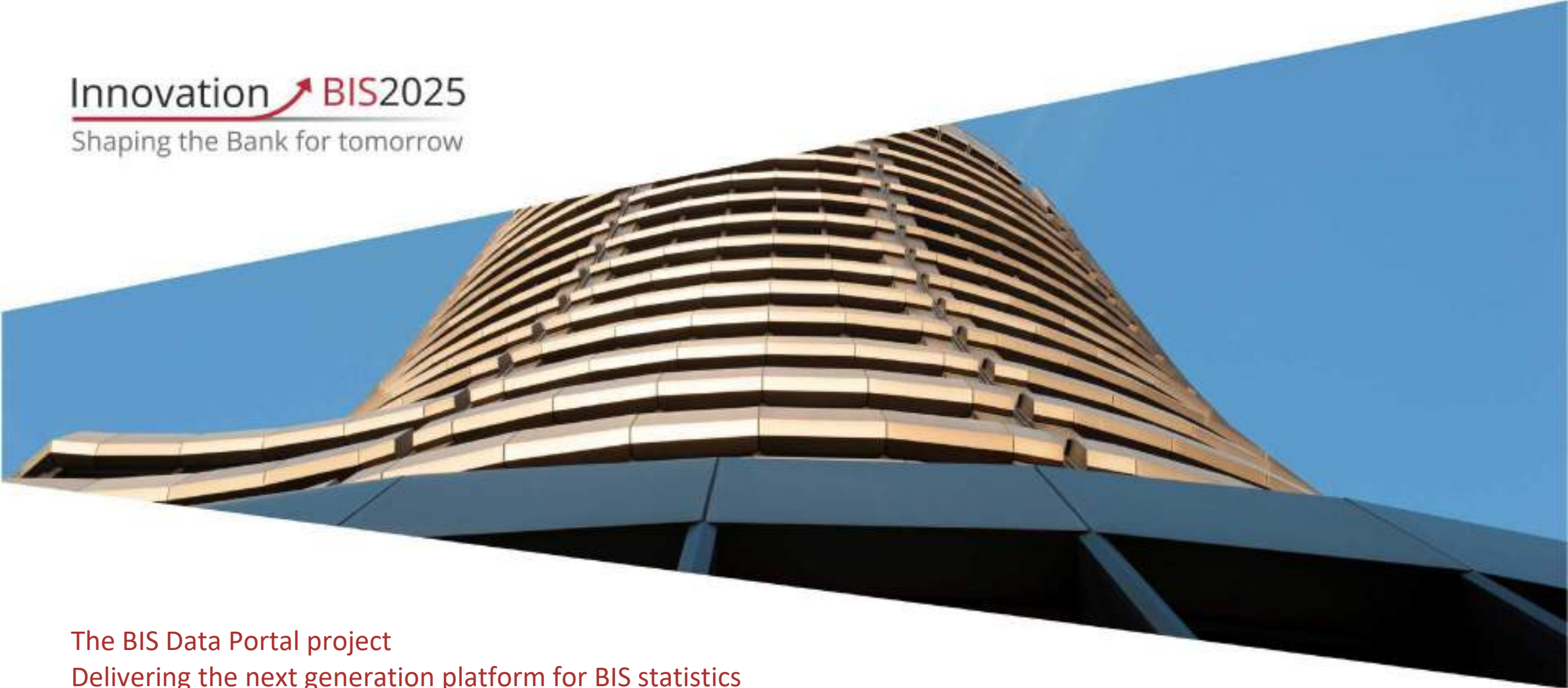
IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

The BIS Data Portal project – Delivering the next generation platform for BIS statistics¹

Edward Lambe and Taejin Park,
Bank for International Settlements

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



The BIS Data Portal project
Delivering the next generation platform for BIS statistics

Edward Lambe & Taejin Park

BdP/IFC Conference on Statistical Communication, 19-20 September 2022

Agenda

- Statistical Dissemination at the BIS
 - Current product offering
 - Achievements / Issues / risks
- Introducing the BIS Data Portal
 - Key business requirements
 - Comparative analysis
- Delivering the BIS Data Portal
 - SDMX – the Swiss Army knife!
 - Addressing business requirements
 - Technology stack
 - Lessons learned
 - Project phases
 - Pilot / go-live

Statistical dissemination at the BIS today

Existing Dissemination Offering – Achievements / Issues / Risks

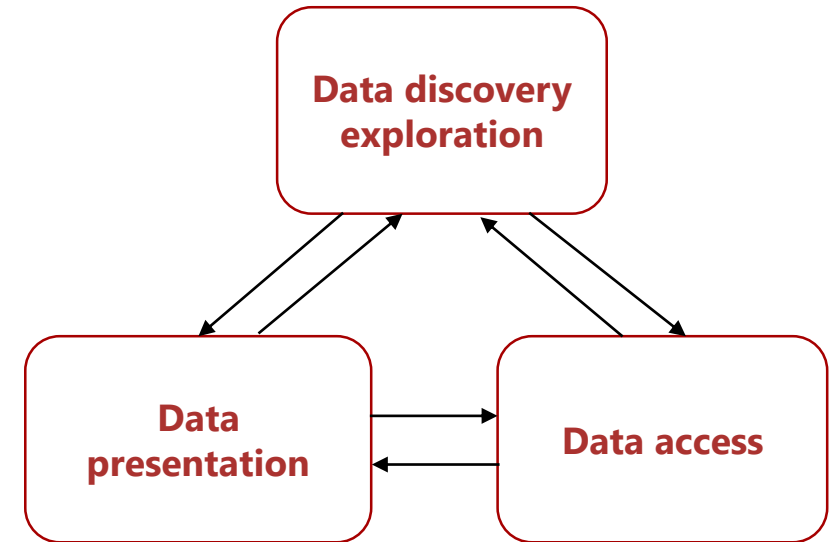
- Heterogeneous IT landscape
 - Allowing us to develop targeted applications for specific audiences / data types
 - *But has led to:*
 - *Inconsistent UX / UI*
 - *Differing technologies used across applications*
 - *Ownership across multiple teams / resource constraints*
- Many products/features added over time
 - Showing our agility to respond quickly to user needs, for example in times of crisis
 - *But has led to:*
 - *Difficulty for users to get 'holistic' view on the BIS offering*
 - *Increasing complexity & decreasing UX*
- Changing user behaviors
 - BIS statistical products continue to have high levels of user satisfaction and brand recognition
 - *But recognize that BIS customers have differing expectations and business needs depending on their expertise*

BIS Data Portal

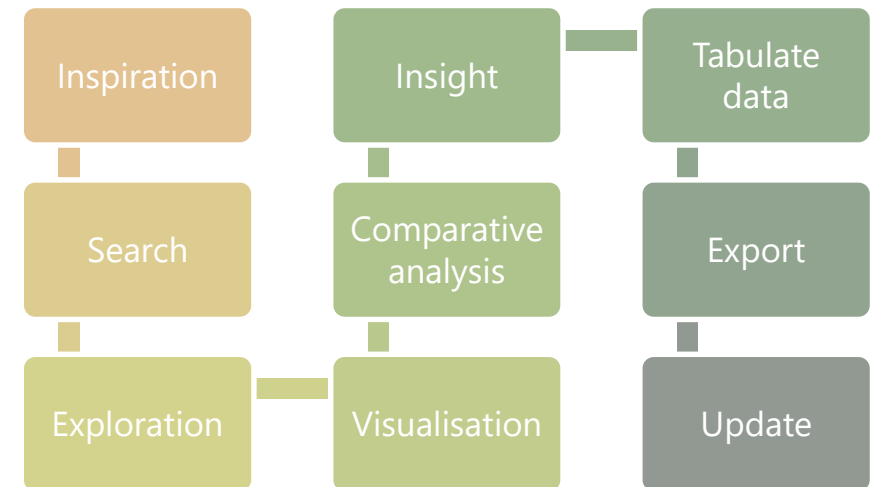
'One-stop shop for BIS data'

Key business requirements

- **Strong linkages** among different components
 - Data discovery/exploration, presentation, access
- Provide **user journeys** for different personas
 - Economists, Statisticians, Journalists, Gen Public
 - Basic & advanced users
- “Actively” answer questions users might have to provide quick **economic insights**, eg,
 - What is topical?
 - What are the keywords to search?
 - What is the key measure?
 - What are related data?



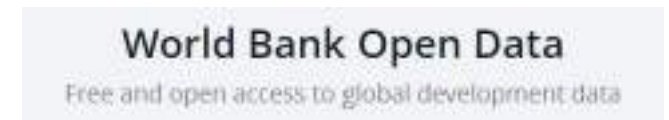
Key elements of data portal



A typical user journey of an economist

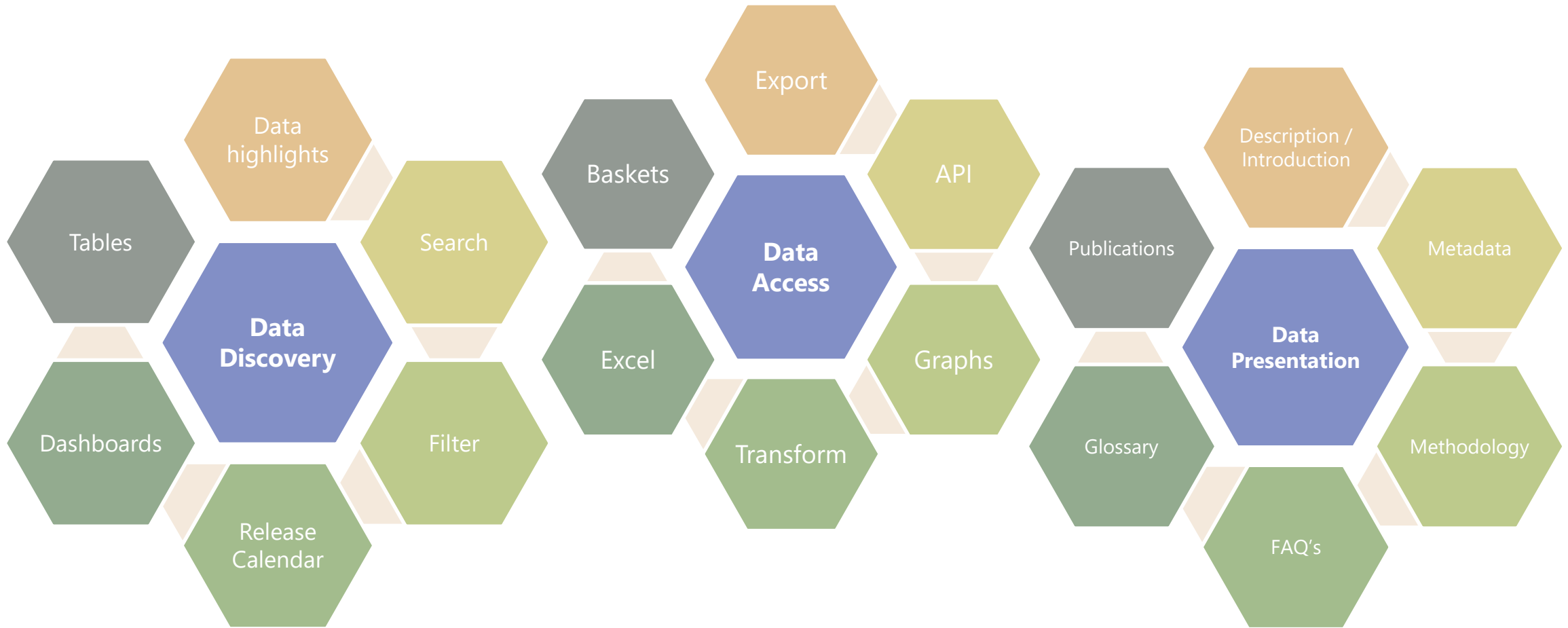
What do others offer in this space?

- The project team have reviewed and consulted with a number of international institutions
 - OECD / SIS-CC .Stat Suite
 - ECB
 - FRED
 - Eurostat
 - IMF
 - World Bank
 - Central Banks
- Plan to hold information / usability testing sessions with the IO's & CB's once we have an 'Alpha' version ready for review



Delivery

How do we break down business requirements into IT tasks?



SDMX – the Swiss Army knife!

- SDMX is the technical backbone of the Data Portal project
 - Allows the modelling and linking of data and metadata for a statistical domain
 - SDMX registry serves as a central store for all Data Portal functions
- The Data Portal employs a wide range of SDMX artifacts
 - Structural Metadata
 - DSD, dataflow, codelist, etc.
 - Category schemes, hierarchical codelist, mappings, etc
 - Metadata Reports
 - Describing the differing statistical domains, data highlights, etc
- Fusion Metadata Registry (FMR)
 - Benefiting from the investments made in the Fusion / FMR product suite
 - [SDMX/FMR: A reference SDMX Registry implementation \(bis.org\)](https://bis.org/SDMX/FMR)



Delivering key business requirements

- Statistical Topic pages
 - Entry point to the statistical domain
 - Provide direct access to metadata, methodology, publications, faq's
 - Information is sourced from SDMX metadata reports
- Dashboards
 - Provide users with an at-a-glance view of the statistical domain
 - Highlight key trends in the data
 - Development of a Tableau Web Data Connector for SDMX REST API's
 - Leverage the bank's investment in Tableau

Delivering key business requirements

- Tabular view on the BIS statistical collections
 - Tables developed by BIS subject matter experts
 - Data Portal introduces a new concept "Publication Table" to the SDMX registry

"A Publication Table is a curated table of data, where the values in the table rows, columns and table body cells can be individually specified...enables a single table to pull data from multiple sources and piece the data together in a way which is not possible when dealing with standard cubes of data."

- AG-Grid provides a flexible data grid implementation
- *(BIS Statistics Bulletin replaced with the Statistics Explorer product in 2019)*

Delivering key business requirements

- Time series search / exploration / view
 - Search is powered by Apache Solr
 - “Popular, blazing-fast, open source enterprise search platform”
 - Why Apache Solr?
 - BIS have invested in Cloudera Data Platform
 - Cloudera Search is driven by Solr
 - Sparklines / time series graphics are built using Plotly
- Technology independent data export
 - Export to common formats, CSV, Excel
 - Bulk data downloads
 - SDMX REST API
 - [BIS Stats API / https://stats.bis.org/api-doc/v1/](https://stats.bis.org/api-doc/v1/)
 - Code examples will be published on GitHub

What technology stack will we deploy?

- Containerized application running on OpenShift Container Platform / Kubernetes (K8s)
 - Automated deployments, horizontal scaling, load balancing, orchestration, etc.
- Data Portal Pods
 - Fusion Enterprise Edition / Edge Nodes
 - Apache Solr
 - Python FastAPI
 - React JS
 - (MEDIT React Framework Library)
 - Redis
- Leveraging existing product API's
 - Bis.org
 - Tableau

What have we learned so far?

- Our goal is to 'reduce complexity & increase clarity' in the user journey
- Agile development practices are key to delivery
 - SCRUM offers opportunities for review & prioritization
 - Clear communication channels
 - Business engagement in the process
 - Focused discussion on requirements
 - Accept we may not know all the answers up-front / need to prototype
- SDMX works for statistical dissemination
- 'Search' is difficult!
 - Search relevancy is a mix of science and art
- Learn from others

How will we deliver the Data Portal?

- (Phase 1) Current focus is on the public BIS Data Portal offering:
 - Data Flows (26) across the following statistical domains:
 - International banking and financial statistics
 - Macroeconomic statistics
 - Payments and market infrastructures statistics
 - Public domain → ~800k time series published
- (Phase 2) DBSONline replacement (Extranet / Internal offering):
 - User identification / authentication
 - Data visibility dependent on user profile

When do we go-live?

- The BIS Data Portal will go-live in Q2 2023
- Prior to launch we will pilot the solution
 - Opportunity for the team to gather user feedback on the different application components
 - We would welcome your input!
 - If you are interested in participating in the pilot please reach out to me directly

Thank you

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

ECB Data Portal¹

Klára Bakk Simon and Juan Alberto Sánchez Hernández,
European Central Bank

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.



EUROPEAN CENTRAL BANK

EUROSYSTEM

ECB Data Portal



Klára Bakk Simon

BdP/IFC Conference on Statistical Communication

Overview

- 1 Background
- 2 Project scope and timeline
- 3 Main features
- 4 Next steps

1

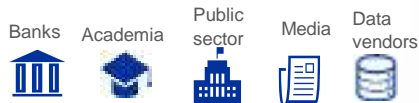
Background

Background: ECB statistics dissemination channels



~ **1.025.000** users per year from all over the World

External users



ESCB users



~ **430.000** users per year from all over the World



~ **3.200** downloads

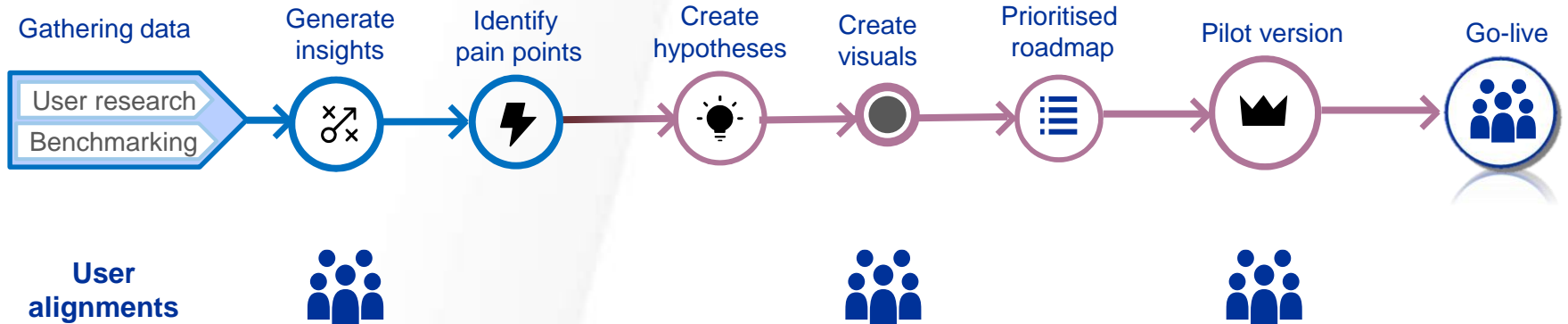
- Launched in **2006**, needs **major improvements** to meet modern user expectations;
- Used mainly by **professional users**

Background: Project approach and deliverables

1 Discover

2 Explore

3 Implement



Background: Conceptual study

User research

Based on in-depth interviews with 44 professional, semi- and non-professionals users pain points were identified and new requirements envisioned



Non-professional
Students, general public



Semi-professional
Journalists, researchers,
professors, managers



Professional
Economists, analysts

Benchmark examples

Analysis of 20 data portals' of peer and non-peer organizations to identify best practices



2

Project scope and timeline

ECB data portal - Project scope

- Develop a new **ECB data portal to the public**, that beyond being an efficient data dissemination channel, **communicates statistics in an accessible and understandable way for all user groups**. It also unifies the existing ECB statistics channels under a single and user-friendly front-end.



ECB Data Portal implementation milestones

- ✓ **Release 1** completed by Dec 2021
- ✓ **End-user testing** completed
- ✓ **Release 2: Technical go-live** – start of shadow production



Release 1 – high priority requirements
Release 2 – medium priority requirements
Release 3 – low priority requirements

3

Main features of the new portal

ECB Data Portal – main features

Homepage

Search - Dashboard - Portal news -
Release calendar - Popular topics



Time series & comparison

Chart & table view – style chart –
transform data – custom charts



Browse data

Browse by categories, concepts, datasets or
geogr. area



Main figures

Euro area & country comparisons –
Dashboards - methodology



Blog

Facts in focus – explainers and insights



ECB Data Portal – main features

My favorites

Personal data lists – publications list –
My dashboards



Simple & advanced filters

Filters by concepts, geo. areas,
datasets etc – SDMX based filters



Interactive reports

PDF reports (short run) - Embedded
SPACE publications (long run)



Download



Embedding charts
in other webpages



Excel Add-In



User activity logging



Content migration



4

Next steps

Next steps

- Finalisation of bug-fixing and regression testing; performance improvements
- Creation and validation of content
- Business go-live - Opening to the public
- Discontinuation of SDW, Euro Area Statistics and ECB Stats App

IFC-Banco de Portugal Conference: “Communication on central bank statistics: unlocking the next level”

19-20 September 2022

Interactive economic indicators¹

Bjarni Þór Gíslason,
Central Bank of Iceland

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

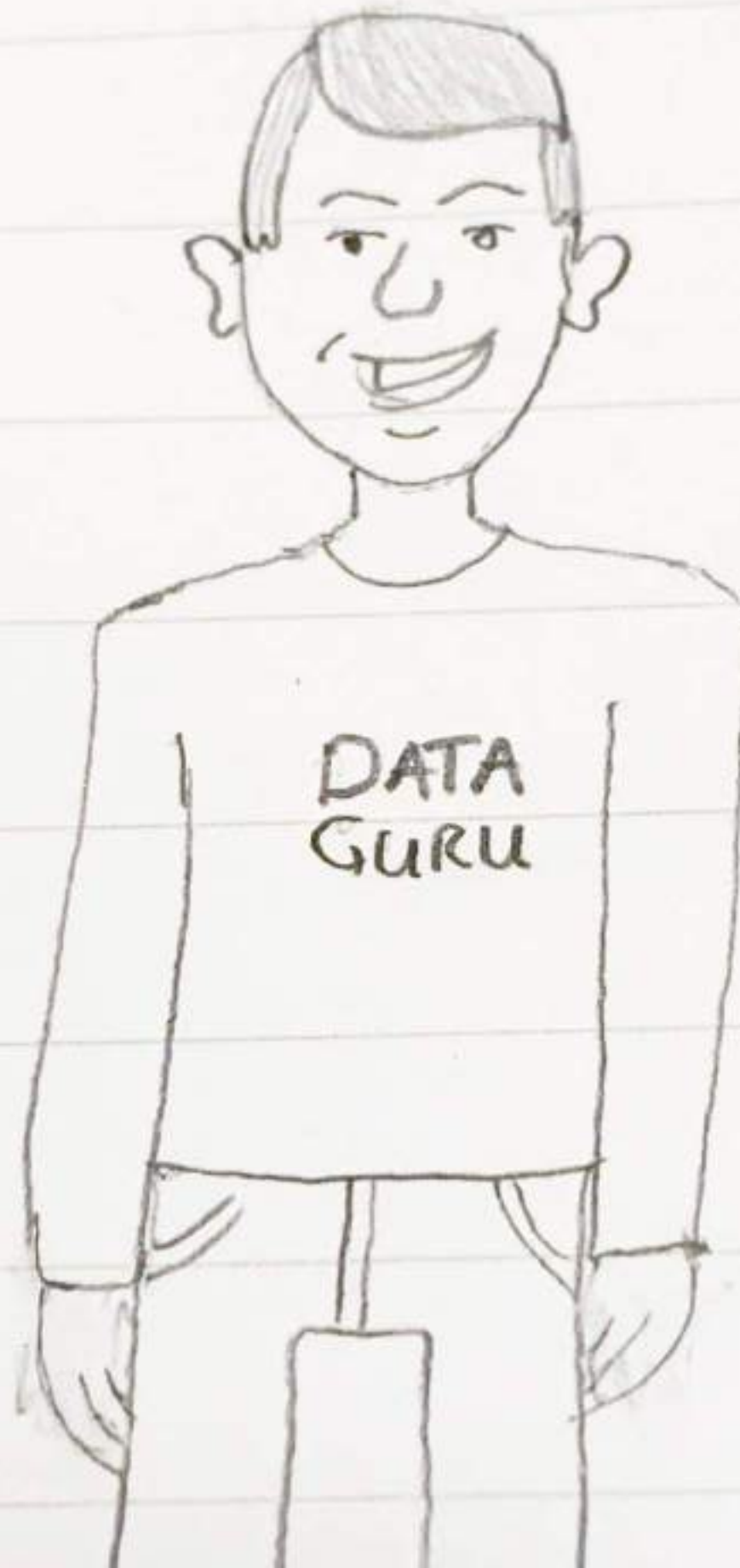
Interactive Economic Indicators

Communication on central bank statistics:
unlocking the next level



About me

- Data guru with experience building analytics solutions for banking and financial supervision
- IT management experience focusing on using data to drive better decisions
- Strong believer in self-organizing teams as a key to creating value in companies and organizations



**Bjarni Thor
Gislason**

bjarnithor@cb.is

**Head of Data
Analytics**

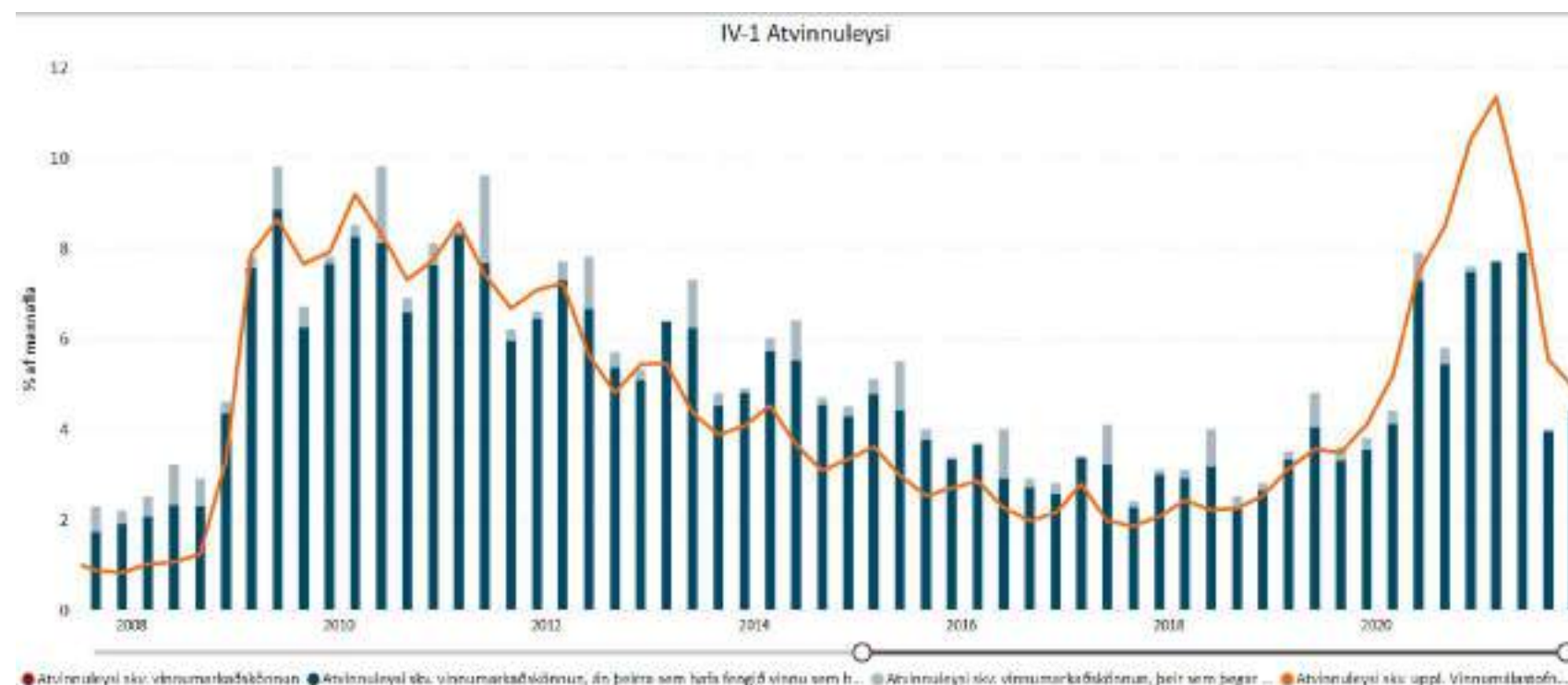
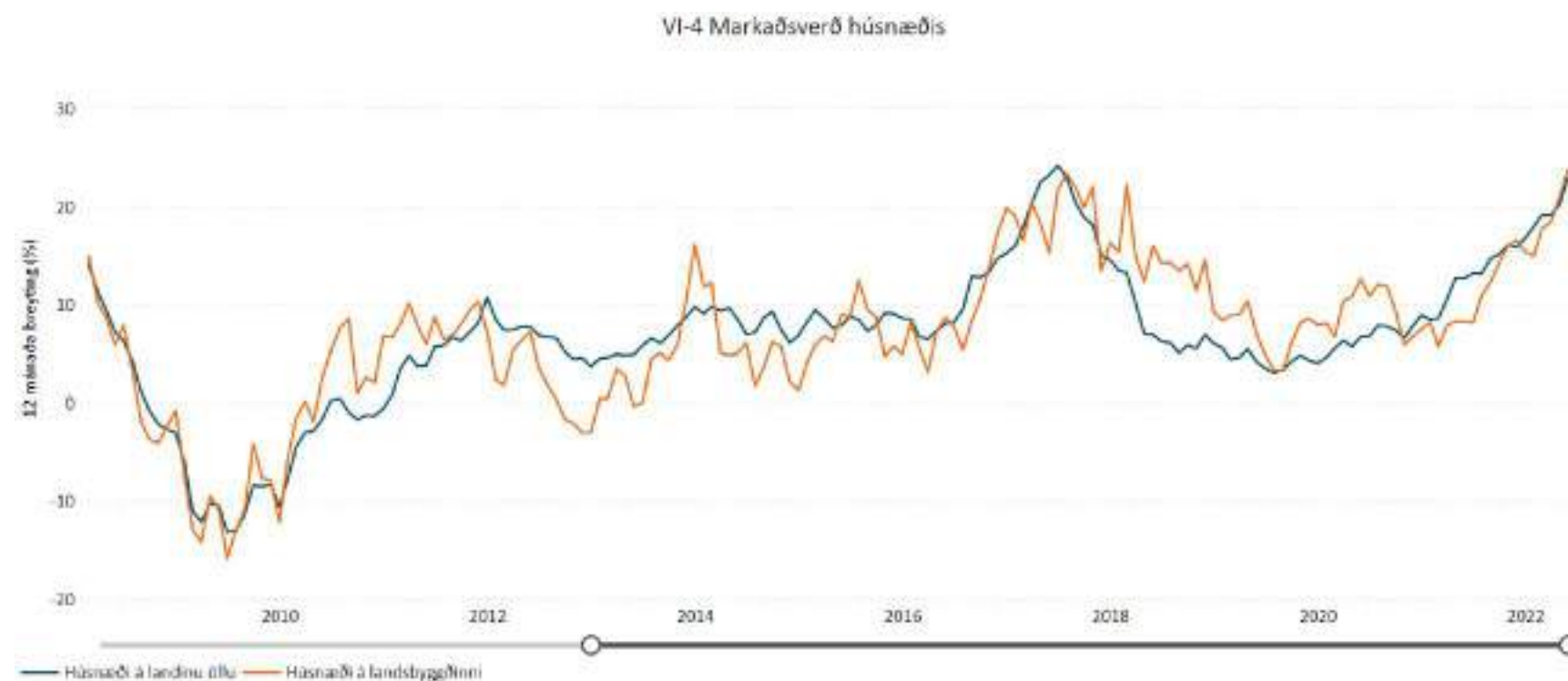
IT and statistics
Central Bank of Iceland

M.Sc. Informatics
University of Edinburgh

B.Sc. Electrical- og
Computer Engineering
University of Iceland

Interactive Financial Indicators

- The Project
- The Team
- Economic indicators
 - What it used to look like
 - Interactive indicators
- Next steps



The Project

1. Strategy for publication of data to web
2. Definition of the data to be published in the central bank's new website
3. Development of visualization of data on the web
4. Prepare a fully ready new data-web, data-pages or dashboards for publication on a new website
5. Advise the new website project team on data to be published to the new website

The Team



Anna Sif



Bjarni Þór



Guðjón Emil



Guðríður Lilla



Helga



Jón



Magnús

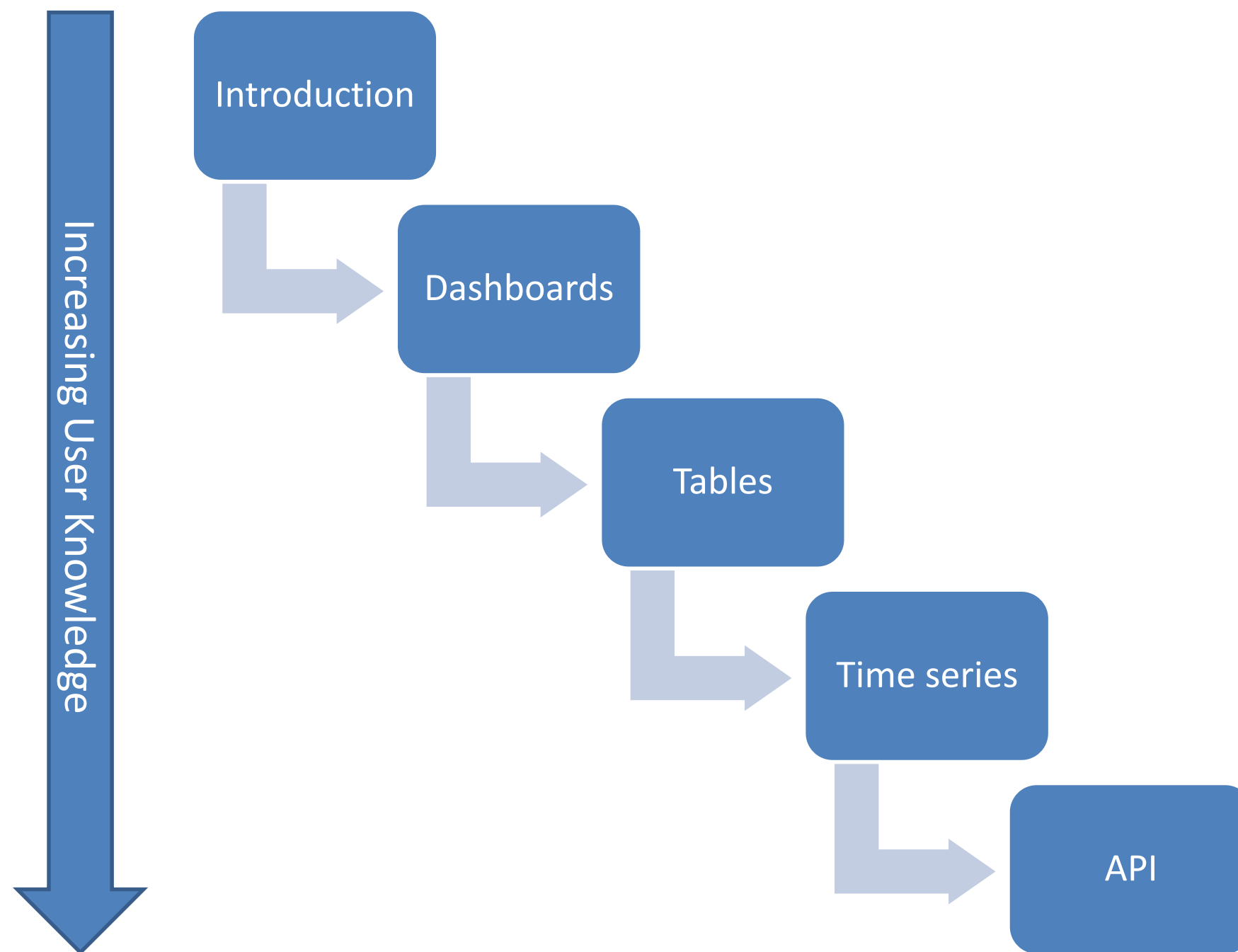


Daníel Hjörvar
(Metadata ehf)

- Cross functional team
- Experience
 - Publication of economic indicators
 - Data analysis
 - Agile project management
 - Business intelligence
 - DevOps

The Strategy

- User Interviews
- Mockups
 - Data web
 - Dashboards
 - Data Browser
 - API
- Proof of concept
 - Economic Indicators
 - Interest and inflation
- Technology



Economic Indicators

- What is an economic indicator?
 - Key indicators showing the trends in the Icelandic economic system
 - 10 categories
 - 230 distinct graphs
 - Information gathered from many different sources
 - Central bank of Iceland, Statistics Iceland, Registry Iceland, Nasdaq Iceland, Sementsverkssmiðjan hf. (Cement company) and more
- In simple terms:
 - Very interesting data showing the developments for inflation, real estate prices, employment, national debts and more

Economic Indicators

- Published in printed form since 2002
- Published on web in Excel format and in PDF



The screenshot shows the Sedlabanki website interface. At the top right, there is a search bar labeled 'Search string' and a navigation menu with links for 'About the Bank', 'Icelandic', 'Monetary Policy', 'Financial Stability', 'Financial Supervision', 'Statistics', and 'Publications'. Below the navigation menu, a breadcrumb trail reads 'Front page > Publications > Publications > Publication'. On the left side, there is a vertical menu with options: 'News', 'Publications' (highlighted), 'Speeches', 'Events', and 'Conferences'. The main content area is titled 'Economic Indicators 30 June 2022' and lists several chapters, each with an Excel icon: 'Economic Indicators 30 June 2022', 'Chapter I Inflation and inflation expectations', 'Chapter II Output and demand', 'Chapter III Foreign trade and external economic conditions', 'Chapter IV Labour market and wages', 'Chapter V Public finances', 'Chapter VI Asset markets', and 'Chapter VII Households and businesses'. To the right of the text, there is a small image of the printed report cover, which is white with a green spine and the title 'ECONOMIC INDICATORS'.

<https://www.sedlabanki.is/utgefid-efni/rit-og-skyrslur/rit/2022/04/01/Hagvisar-Sedlabanka-Islands-1.-april/>

HAGVÍÐAR

- I Verðlagspróun og verðbólguvæntingar
- II Framleiðsla og eftirspurn
- III Utanríkisviðskipti og ytri skilyrði
- IV Vinnumarkaður og tekjur
- V Opinber fjármál
- VI Eignamarkaður
- VII Heimili og fyrirtæki
- VIII Fjármálamarkaðir
- IX Alþjóðleg efnahagsmál og erlendum samanburður
- X Fjármálakerfið



Expectation management

Next steps

- Still working automating the updates of the data.
 - Part is automatically updated
 - Part is consolidated into Excel sheets
- Next version in progress
 - Embed the indicators into the new website
 - Increase automation and decrease manual updates
 - Improvements and fixes if necessary
 - Create an English version ;)
- Unlocking the next level
 - Make data available directly (API/Web service)
 - Create content from the data – data stories



Questions?



IFC-Banco de Portugal Conference: "Communication on central bank statistics: unlocking the next level"

19-20 September 2022

Flexible dissemination software for the 2021 England and Wales Census¹

Mike Thompson,
The Sensible Code Company

¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Banco de Portugal, the BIS, the IFC or the other central banks and institutions represented at the event.

Flexible dissemination software for the 2021 England & Wales Census

20th September 2022



The Sensible
Code Company

The Sensible Code Company

We make software products that modernise the processing and publication of data.



Summary

The development, over the last five years, of a **flexible dissemination service** to support the publication of results from the 2021 England and Wales census, in partnership with the Office for National Statistics.

Contents

- Background
- Technical challenges & solutions
- Opportunities for innovation
- What's next?
- Questions

Background

What is flexible dissemination?

Giving users the capability to create their own custom outputs directly from microdata.



2011

- 1000s of static tables
- Limited customisation of tables
- Manual review of every table released
- 4-5 years to release all outputs

2011

- 1000s of static tables
- Limited customisation of tables
- Manual review of every table released
- 4-5 years to release all outputs

2021

- Hundreds of millions of possible tables
- Build your own table from scratch
- Automated table checks
- 18-24 months to release all outputs

Benefits

- **Publish more data:** flexible dissemination means the range of possible outputs is huge and users can self-serve
- **Publish more quickly:** automation of statistical disclosure control checks means time taken to release everything will be compressed
- **Improve reliability and reproducibility:** More automation reduces opportunities for human error to creep in

Technical challenges & solutions

Challenge #1

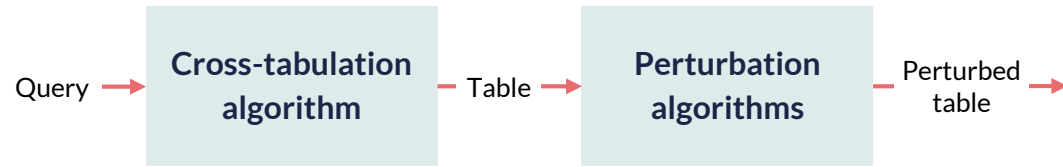
Automating tabulation and perturbation
in real-time

Need

Build cross-tabulations from confidential microdata and apply perturbation algorithms in real-time, in response to a user's query.



Concept



Technical approach

- **Data changes infrequently:** forgo complicated database software and implement our own algorithms and data structures, keeping things simpler and more easily scalable
- **Data is small:** 10GB of CSV can be stored in 1GB of RAM and scanned in place, eliminating slow operations like disk or network access



Perturbation approach

- **Cell-key perturbation** of frequency counts
- Independent **perturbation of zeros** in frequency counts
- Preservation of **structural zeros**

Note: Source data will already have been row-swapped.

For more, see “[The methodological challenges of protecting outputs from a Flexible Dissemination System](#)” by Stephanie Blanchard.



Results

- Query for Age by Sex by Output Area (low level geography)
 - 60 million rows of input data
 - 3 million cells of output data
 - **Takes ~0.5 seconds**
- Outputs validated independently for correctness



Challenge #2

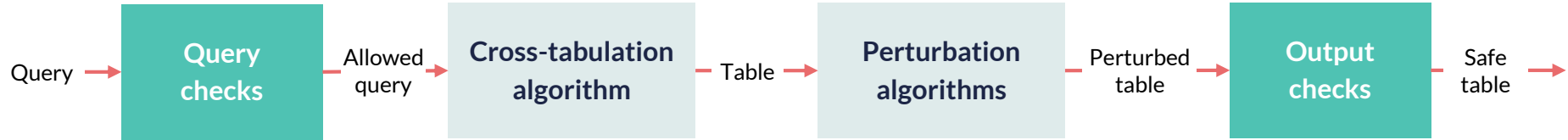
Giving ONS control of automated disclosure checks

Need

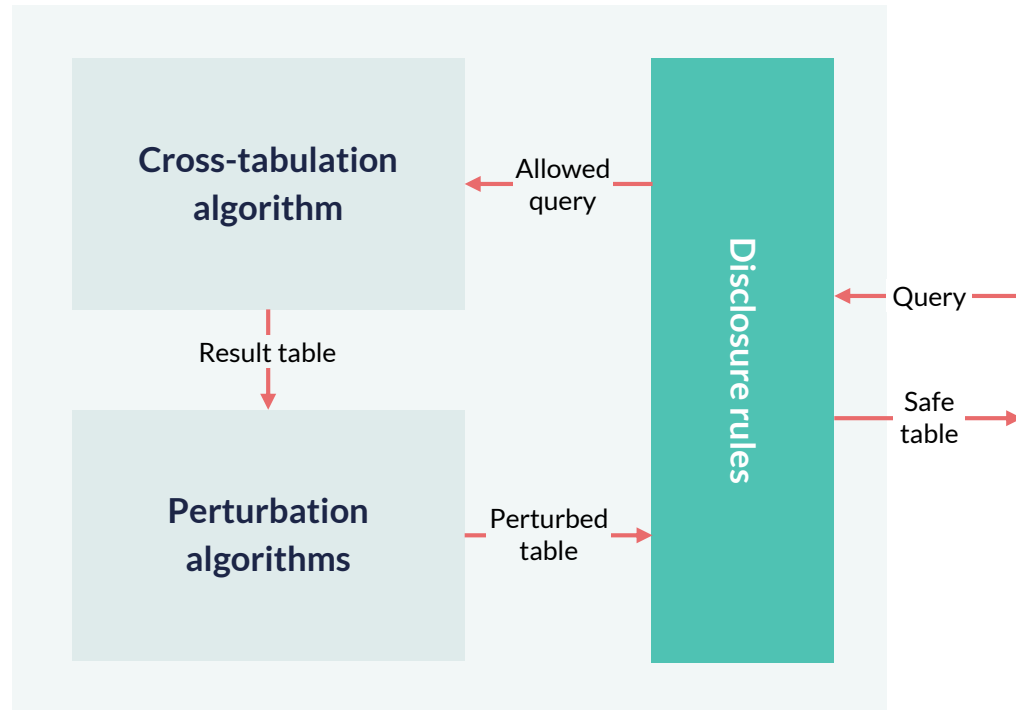
Create the capability to allow disclosure checks to be specified and automated, and for new checks to be created without requiring software changes.



How it works



How it works: single software component



NTTS 2021 conference paper

A Disclosure Rules Language for Deciding Publishability of Frequency Tables

2. RATIONALE

Whilst it is possible to use existing computer languages to specify the disclosure control rules, using such an approach would have the following disadvantages:

- The core software code and data would need protecting from user authored rules code in order to maintain resilience in the face of bugs. This incurs significant communication and performance penalties.
- Using close coupling for performance reasons creates difficulties with version management between user code and core software code (e.g. changes in data representation).
- A general purpose language has more scope for unintended behaviour and side effects, e.g. by unintentionally adding global state.
- Programs in general purpose languages are typically not amenable to parallel execution unless great care is taken and authors are knowledgeable in appropriate techniques.
- General purpose languages are typically large in scope and thus present more of a learning challenge for a program author.
- User authored code in a general purpose language would typically have more diverse ways of specifying a given rule and thus present more of a challenge for a reader.



Illustrative disclosure checks

- **Set maximum variables:** block queries that will lead to overly sparse outputs before they are run
- **Attribute disclosure:** individual or group attribute disclosure in a table can be detected and suppressed
- **Identity disclosure:** tables containing too many values of one can also be blocked



Results

- **It worked!** ONS tested and confirmed results and ability to write their own rules
- **Facilitated use cases beyond initial design:** ONS using rules to gradually open access to more data
- **Rules can be kept secret** from software developers!



Challenge #3

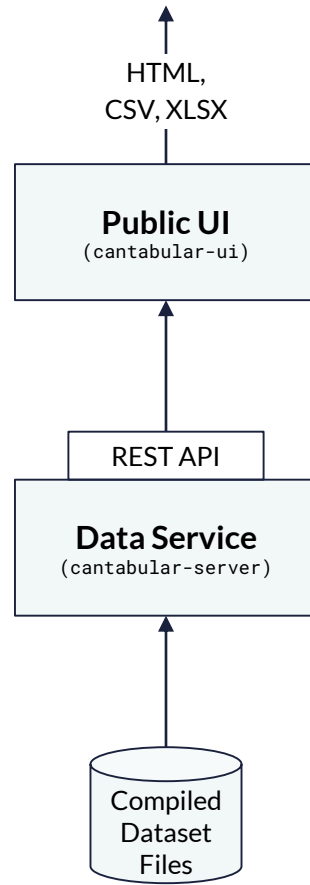
Helping users build their own tables

Need

Explore how to design a user interface that helps users build their own table from a microdata-based dataset.



How it works



Approach

- **Developed alternative prototypes** which ONS tested with their users and used in consultations
- **Implemented separate user interface service** and continued to develop it as a product independent of ONS
- **Now supporting ONS** to develop their own user interface, using similar design patterns, built on top of our software



[← Back](#)

Choose your variables



All

2 matching results found

[Clear search](#)[Economic activity](#)

3 classifications available

[National statistics socio-economic classification](#)

3 classifications available



Your selected variables

Age of individual (8 categories)

[Change](#) [Remove](#)

Ethnic group

[Change](#) [Remove](#)[Save and continue](#)

Your table

Data confidentiality

347 out of 348 areas pass
confidentiality checks.[See missing areas](#)

Cell count: 52,896

Population: Usual Residents: England and
Wales

Geographic level: Local Authority

Geographic area: Whole population

Variables: Age of individual (8 categories),
Ethnic group

Filters: None selected

Demo

Challenge #4

Flexible data needs
flexible metadata

Need

Develop a capability to allow reference metadata to be associated with flexibly created outputs.

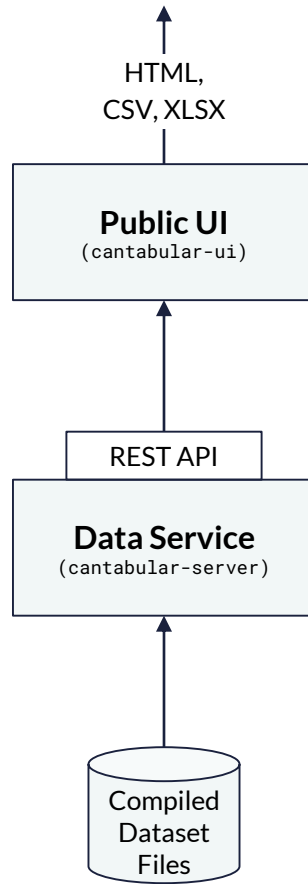


Constraints

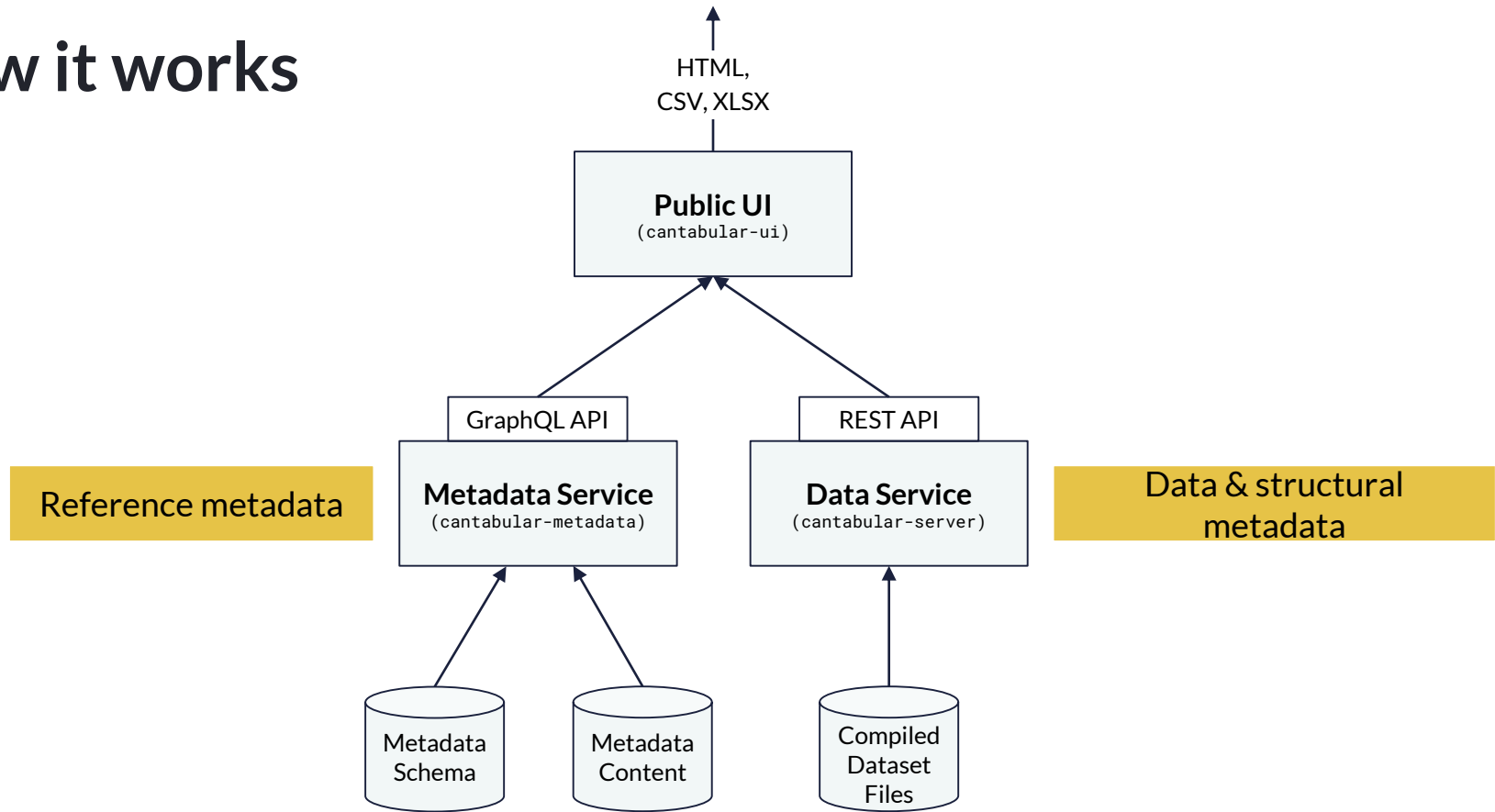
- **Metadata schema still in development:** at the time of its creation, the ONS metadata model was still being designed
- **Vocabulary/standard agnostic:** different organisations adopt different approaches so we needed a flexible solution



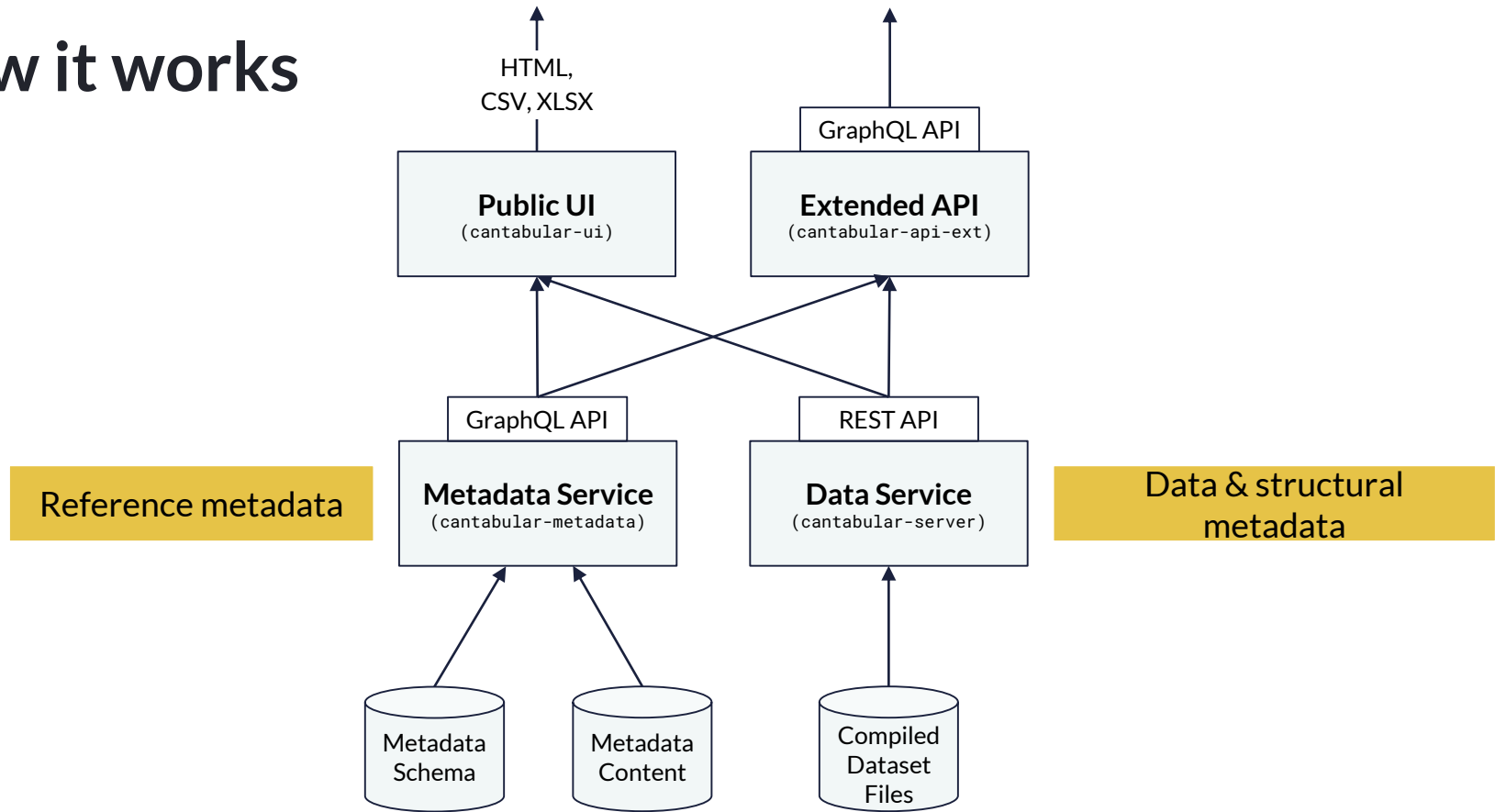
How it works



How it works



How it works



Technical approach

- **User-defined schema:** allow specification of arbitrary custom metadata using a user-defined schema parsed when the software is run
- **Single source of data & metadata:** combine data, structural metadata and reference metadata into one integrated API
- **Support multiple languages:** Census outputs need to be in English and Welsh; use metadata service to translate all metadata

Demo

Opportunities for innovative products

ONS census dissemination

- Being used by ONS to power a range of different census products:
 - Dataset search and discovery
 - Custom table user interface
 - Geographic area profiles
 - Data visualisations
 - Data dictionary

Population Group Profiles

Select one or more identity characteristics to define a population group to compare with the whole population of England and Wales. For example, see [people of 56th ethnicity born in the UK](#) or [people aged 55+ born in Ireland](#).

Select another characteristic ▾

Religion: Muslim English preference: Speaks no English

Select geography: District Electoral Division ▾

Select variable: Religion (naive imputation) ▾

Select category: Roman Catholic ▾



Demographics

Population

<1%

of people in England and Wales

77,672 of 55,038,886 people

Population by area

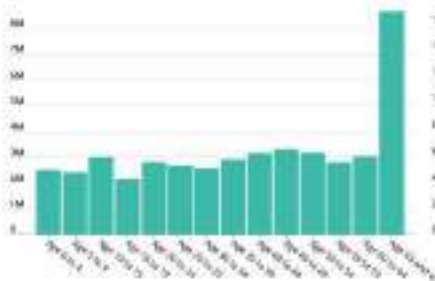


Single One

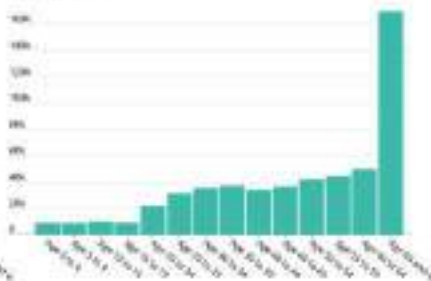
Split by
Ethnic group ▾

Group by
Age of individual (14 categories) ▾

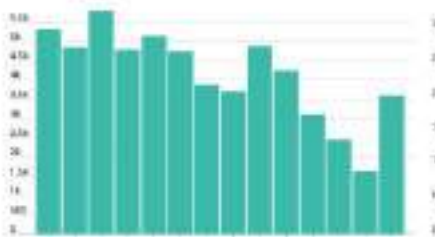
White: English/Welsh/Scottish/Northern Irish/British



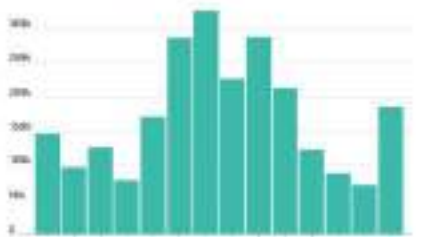
White: Irish



White: Gypsy or Irish Traveller



White: Other White



Demo

What's next?

What's next?

- **Supporting flow data:** allowing cross-tabulation of migration and commuting patterns data, which are often very large tables
- **Supporting magnitude data:** extending disclosure control approaches to magnitude data (with NSI support on methodology)
- **Adding visualisation tools:** allowing some exploratory visualisation and mapping in the user interface

Thanks!

mike@sensiblecode.io

<https://cantabular.com>

<https://ireland-census-preview.cantabular.com>

