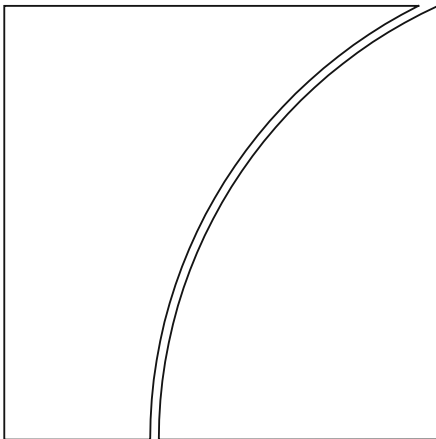**Irving Fisher Committee on Central Bank Statistics**

◆ BIS

2024 IFC Annual Report

January 2025

The views expressed in this Annual Report do not necessarily reflect the views of individual IFC member institutions or the Bank for International Settlements.

This publication is available on the BIS website (www.bis.org).

Contents

2024 Annual Report of the Irving Fisher Committee on Central Bank Statistics

On 14 January 2025 the BIS All Governors' meeting approved the publication of the 2024 Annual Report of the Irving Fisher Committee on Central Bank Statistics (IFC). It provides a brief update on the IFC's governance and a review of its main workstreams, including planned initiatives.

Executive summary

As a global network that discusses and develops statistical issues of interest to central banks, the IFC had 107 members at the end of 2024 and is an affiliated member of the International Statistical Institute (ISI). It is chaired by Alberto Naudon of the Central Bank of Chile.

Over time, the Committee has been playing a larger role as a centre to promote knowledge-sharing and collaboration on statistical methodologies, initiatives and training. This reflects the important contribution of central banks to the production of official statistics.

Ensuring wider cooperation with the global statistical community also remains high on the IFC agenda. The **international cooperation framework under the G20 Data Gaps Initiative (DGI)** serves as a prime example, especially its third phase, which calls for better data to understand climate change, income and wealth, financial innovation and inclusion, and access to private and administrative data and data-sharing. In addition, the Committee is strongly involved in the **activities of the ISI**, in particular the preparation of its 65th biennial World Statistics Congress (WSC) in the Netherlands, several sessions of which will be sponsored by the IFC on behalf of the central bank community. Furthermore, Committee members and the BIS have continued to follow the ongoing **revision of the international statistical manuals**, eg the System of National Accounts (SNA) and Balance of Payments (BoP). They have also contributed to various initiatives to strengthen the global statistical infrastructure, including the Global Legal Entity Identifier (LEI) system, international classifications for activities and products and the Statistical Data and Metadata eXchange (SDMX) standard.

The main areas covered by the IFC in 2024, thanks to the support of its member central banks, the ISI and a number of international organisations, have centred on:

- **Central bank statistics**: The IFC's flagship Biennial Conference, held in Basel in August 2024, proved a key opportunity to review the evolving statistical function in central banking. It showed that central banks have a strategic interest in fostering the production and dissemination of high-quality, reliable and timely statistics as a public good, not least in view of the accuracy and ethical concerns raised by the rapid emergence of new data techniques and sources. Trustworthy data also serve a crucial role in modern, evidence-based policymaking, not least in the core central banking areas of monetary and financial stability.

- **Communication of statistics**: The IFC has furthered its work on statistical communication, which is a key element in maximising the value of the data produced by central banks as well as in fostering data literacy among the public. It is also an important ingredient supporting the effectiveness of public policies.

- **Micro data**: The IFC published a report that emphasised that central banks, as both producers and users of statistical information, are increasingly interested in making the most of the wealth of granular data available, which typically comprise micro-level records as well as disaggregated data, without jeopardising confidentiality. These data can offer a better understanding of economic phenomena, with sufficient flexibility and adaptability to tackle a wide scope of issues. They provide information that may be timelier and more resilient to disruption, support the production of novel economic indicators, better deal with heterogeneity and have proved to usefully complement traditional macroeconomic statistics.

- **Data science**: Along with the Bank of Italy, the IFC has been organising recurrent data science workshops to review developments in the big data ecosystem and the ongoing adoption of data analytics. In addition, the Committee has conducted a membership survey on the use of artificial intelligence (AI) and machine learning (ML), which is becoming a key priority for central banks especially in the areas of cyber security, research/analysis and statistical production. A related and important topic is the need to establish comprehensive data governance frameworks and strategies for how statistical information is gathered, stored, processed and disseminated.

- **Sustainable finance**: The IFC has launched several initiatives on sustainable finance data issues. Together with the Central Bank of the Republic of Türkiye, the Deutsche Bundesbank and the Bank of France, in 2024 it organised a workshop to review central banks' contributions to addressing the issues posed by climate change. The Committee also supported an event on the carbon content of economic activities and published a report recommending its better measurement in order to enable rational, environmentally oriented decision-making and proposing a related plan for follow-up work. Lastly, it will organise a Satellite Seminar dedicated to sustainability data issues with De Nederlandsche Bank in conjunction with the 65th ISI WSC and is supporting international efforts to develop and collect more comparable indicators for green finance.

- **External statistics**: The Committee has been organising with the European Central Bank (ECB) a series of events on external sector data, a key area of interest for central banks. The last edition, hosted by the Bank of Spain in 2024, underscored how external statistics have become paramount to address new developments in international economic relations, particularly amidst growing risks of geopolitical fragmentation and heightened uncertainty. It also showed that external statistics need to be "fit for multiple needs" to stay relevant.

Looking ahead, the IFC will continue to promote knowledge-sharing and international cooperation on statistical methodologies, initiatives and training in 2025. The Committee will also further its work in the various areas outlined above, and **several events** will be organised in this context with the support of the central banks of Brazil, Italy and the Netherlands.

The Committee's governance and organisation

Governance

The IFC is a **global network** of statisticians, economists and policymakers who discuss statistical issues of interest to central banks and develop related methodological work. Its activities are overseen by the BIS All Governors' Meeting. Alberto Naudon, Board Member of the Central Bank of Chile, was nominated as new IFC Chair in February 2024, following the departure of his predecessor Pablo García.[1] The Chair is supported by two Vice-Chairs, Robert Kirchner (Deputy Director General of the Directorate General Data and Statistics at the Deutsche Bundesbank) and Gloria Peña (Statistics and Data Division Director at the Central Bank of Chile).

The Committee's institutional members comprise central banks and international and regional organisations formally involved in central banking issues. The central banks of Botswana, Jamaica, Mongolia and Tanzania joined the IFC as new members in 2024. The Committee had **107 members** at the end of 2024, including all BIS shareholder central banks.

The IFC is an **affiliated member of the ISI**, under a memorandum of understanding with the BIS, and also participates in the activities of the International Association for Official Statistics (IAOS). In addition, a significant number of IFC central banks (about one third) have become ISI corporate members in recent years. The IFC has continued its involvement in ISI undertakings in 2024, especially the preparation of its next biennial WSC in 2025 (see below).

The Committee held its annual meeting on 21 August 2024 to discuss its activities, examine future work and review the composition of its executive body (see Annex 1 for the composition of the IFC Executive as of 1 January 2025).

IFC as a statistical knowledge centre

The IFC is playing an important and increasing role as a centre for knowledge-sharing and international cooperation on data-related issues. The aim is to showcase the experience of central banks in dealing with statistics and facilitate access to methodological material, relevant initiatives and training opportunities.

A first focus point relates to **IFC publications**. The public readership of IFC Bulletins has increased significantly over the past decade (Annex 2, Graph 1.A), and the number of citations has steadily expanded (Annex 2, Graph 1.B). In addition, the IFC has launched new series in the recent past, notably the IFC Reports starting in 2015 and the IFC Guidance Notes starting in 2022.

Second, the Committee has developed its dissemination work by leveraging the experience of its members. To this end, short methodological notes on various topics are available on the **IFC knowledge centre webpage** (see the last one on the development and maintenance of a security by security database). More informally,

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[1]   As per usual practice, Mr Naudon's chairmanship will last until the end of his predecessor's original term at the Central Bank of Chile (12/09/2025).

and at the request of any of its members, the Committee also provides a secured platform for sharing among fellow central banks restricted information on the practical handling of specific issues. Furthermore, the IFC collaborates actively with other central bank groups working on data issues, not least to investigate potential synergies and avoid duplication.

Third, the IFC hosts the **central bank network on historical monetary and financial statistics (HMFS)**. This network brings together statisticians and academic experts to learn from each other and provides a forum for discussing approaches to compiling historical monetary and financial data relevant to policymakers. The HMFS webpage contains detailed information on the network's composition, relevant data sets and country contributions, and general documentation. With the support of the BIS statistical function, significant progress has been already made on the dissemination of long-term statistics related to credit, interest rates and house prices. This work was expanded in 2024 to cover historical series on central bank balance sheets, while the focus in 2025 will be on BoP data.

Fourth, the Committee is actively supporting training facilities for central bank statisticians. A key initiative relates to **financial accounts**, an essential element of the SNA, which central banks in many countries are responsible for compiling. In view of the strong demand from central bank staff for learning opportunities in this area, the Committee has been engaged in the development by the OECD/Sapienza University in Rome of an online course on macroeconomic financial accounts with Coursera, the US-based massive open online course provider.[2] In addition to the first part of the course (a general introduction to financial accounts and balance sheets within the SNA), a second part covering financial markets and institutional sectors was launched in September 2024. The third and final part is currently being developed and will complete the specialisation in macroeconomic financial accounts and its application for economic analysis as a Coursera mini-master.

Moreover, the IFC continues to sponsor, together with a number of central banks, the **postgraduate programme in Statistical Systems with a specialisation in Central Banks' Statistics**, developed by the NOVA Information Management School (NOVA IMS) of Universidade Nova de Lisboa in collaboration with Banco de Portugal. Lastly, the IFC is serving as a platform for its members to access relevant material developed in the context of the **European Master in Official Statistics** (EMOS) network arranged by the European Statistical System Committee.

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[2] This project draws on the OECD's *Understanding financial accounts* manual, to which several IFC members have contributed. The BIS/IFC, the ECB and the Bank of Italy are acting both as funding sponsors of the project and as members of its scientific committee.

IFC involvement in global statistical initiatives

The G20 Data Gaps Initiative

An important aspect of the Committee's work is exploring information gaps and ways to strengthen data collection in the context of the **G20 DGI**,[3] the cooperation framework set up in response to the Great Financial Crisis (GFC) of 2007–09. The main goal has been to enhance data availability, especially as regards timeliness, frequency and international comparability, and to participate in the general improvement of the global statistical infrastructure. Three main factors have been instrumental here: (i) the structured collaboration set up between international organisations and national statistical systems; (ii) the close connection with current official objectives, with annual reporting to policymakers and prioritisation of the related statistical implications in view of national capacities; and (iii) the peer pressure mechanism for spurring the involvement of G20 national authorities as well as other interested jurisdictions.

Following the completion of the first two phases of the DGI, IAG members, with the support of the Financial Stability Board (FSB) and major economies, are now implementing the **third phase of the DGI (DGI-3)**, launched in 2022 and spanning a five-year horizon. Its workplan aims to address the critical data gaps that exist in the face of the climate crisis, increasing economic polarisation and large-scale digital transformation. It comprises 14 recommendations clustered around four statistical areas, namely (i) climate change; (ii) household distributional information; (iii) fintech and financial inclusion; and (iv) access to private and administrative data and data-sharing. Moreover, an annual reporting framework has been established to help assess advancements of the various DGI phases, as documented on the IMF-maintained webpage.

SDMX

A key international initiative for central bank statistics is the **SDMX ISO standard**, which facilitates the seamless exchange, production and dissemination of statistical data and metadata. The standard provides an integrated approach enabling interoperable implementations within and between IT systems. It is sponsored by the members of the IAG and, since 2023, the International Labour Organization (ILO). It is widely used by international organisations, national statistical offices (NSOs) and other data-producing agencies to streamline the transmission of data and strengthen their production and dissemination. The BIS is actively supporting the implementation of the SDMX standard, especially by providing (i) the **SDMX Fusion Metadata Registry** (FMR), which is a free and open source software under the umbrella of the BIS Open Tech initiative that enables the management of statistical metadata; and (ii) the **sdmx.io platform**, which is an ecosystem providing a suite of free open source

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[3]   In liaison with the BIS's involvement in the Inter-Agency Group on Economic and Financial Statistics (IAG), which comprises the BIS, the ECB, Eurostat, the IMF (chair), the OECD, the UN and the World Bank.

resources, learning materials and practical guides designed to support various aspects of official statistics.[4]

In this context, two main IFC initiatives took place last year. First, in October 2024 the Committee supported the organisation of the **12th SDMX Experts Workshop**, which is a biannual event targeted at experienced practitioners to promote good practices, share knowledge, build capacity and advance the function and application of SDMX. Key topics discussed included the impact and opportunities of AI, interoperability with other standards (especially in the context of the DGI-3 work on the sharing/access of micro data) and the evolution of SDMX from its original focus on data exchange to one encompassing data dissemination and data/metadata management. One notable lesson relates to the significant benefits and emerging use cases of SDMX observed beyond the official statistics perimeter, as well as its potential to implement sophisticated data governance and strategies to enhance data quality, discoverability and overall management.

Second, the IFC has conducted a **membership survey to assess the current state of SDMX implementation**, measure its adoption rate and gain insights into the usage and requirements of the related tools. The results showed a notable and significant increase in SDMX adoption across the main statistical domains, despite the lack of sufficient staff and IT resources. Central banks benefit from an already vivid ecosystem of open source tools in use that can support all of the stages of the data lifecycle. Moreover, the SDMX's rich information model, designed specifically for metadata-driven processing, makes it possible to systematise statistical processes, resulting in better governance, agility and efficiency. Lastly, the SDMX standard is increasingly serving as a catalyst to harness AI capabilities, enabling more automated data processing, improved data quality and streamlined data discovery.

Other international initiatives

The central banking community has been actively involved in the **revision of the international statistical manuals** (for the SNA and the BoP), to be finalised in 2025; related progress is documented in "Towards the 2025 SNA" and "Update of the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6)". The Committee has also supported the UN-organised global consultation on the proposed revised structure of the International Standard Industrial Classification of All Economic Activities (ISIC) with a specific focus on fintech, ie technological innovation in financial services, by leveraging IFC members' experience, including in the context of the DGI-3 work on the measurement of fintech credit, digital money and the improvement of financial inclusion and access through digital instruments and services.

Cooperation with the international statistical community remains also high on the IFC agenda. A major opportunity to promote statistical knowledge-sharing among central banks and beyond will be the ISI's **65th biennial WSC,** to be organised in The Hague, Netherlands in 2025. The IFC will sponsor several sessions covering in

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[4]   This is conducted in close collaboration with the Statistical Information System Collaboration Community, which is a reference open source community for official statistics.

particular statistical communication, carbon statistics, seasonal adjustment, data science/innovation and financial digitalisation. The event will provide an opportunity to further deepen the dialogue between central bank statisticians, their counterparts in NSOs and international organisations, and academia.

Moreover, the Committee greatly values the general statistical cooperation mechanisms established among the international organisations regrouped within the inter-agency Committee for the Coordination of Statistical Activities (**CCSA**). It is also supporting a number of regional statistical initiatives, including the Financial Information Forum (FIF) established by the Center for Latin American Monetary Studies (**CEMLA**) to identify and discuss issues related to the improvement of financial information models at central banks, as well as the Steering Committee of the Arab Statistics Initiative (**Arabstat**). The Committee also cooperates with the Centre for International Research on Economic Tendency Surveys (**CIRET**), which promotes the exchange of knowledge on the theoretical and operational aspects of economic cycle research.

Lastly, the Committee is also encouraging work to enhance the global statistical infrastructure, especially by strengthening business registration in countries, improving the availability of (national and global) unique identifiers and facilitating access to administrative data. One notable initiative relates to the **Global LEI system**. The IFC participates as an observer in the LEI Regulatory Oversight Committee (ROC), which involves financial markets regulators and other public authorities to coordinate and oversee the LEI and its wider adoption. Important work is ongoing to enhance its quality, facilitate its annual renewal process and broaden its coverage to improve data collection and risk monitoring, as well as to lower regulatory reporting costs, with a specific initiative comparing the LEI with other types of identifier, including those used for compiling BIS international financial statistics.

Main ongoing workstreams

In the last year, the IFC has been furthering its work in several key areas, leveraging the support of its member central banks, the ISI and various international organisations. Its activities have been centred primarily on the evolution of official statistics, statistical communication, micro data, data science, sustainable finance and external statistics. The related publications are listed in Annex 4.

The evolving statistical function in central banking

Central banks around the world are experiencing a significant evolution in their statistical function, especially as regards its dual objective of producing reference information and supporting policymaking. There are both important opportunities and challenges related to the advent of new data sources and tools as well as ongoing international statistical initiatives (such as the SNA/BoP update and the DGI). The **IFC's Biennial Conference, held at the BIS in August 2024 and themed "Statistics and beyond: new data for decision-making in central banks"**, provided a key opportunity to discuss these issues. It showed that central banks have a strategic interest in fostering the production of high-quality, reliable and timely statistics as a

public good. This is particularly important for the responsible development of AI approaches amidst growing risks of disinformation and heightened ethical concerns. Data are also playing a crucial role in modern, evidence-based policymaking, especially in the core central banking areas of monetary and financial stability. They are essential not only for formulating policies but also for communicating them and tracking their effects, and the transparency and credibility they provide are central to maintaining public trust. There are, however, a number of important caveats for central bank statisticians. One is the increasing difficulty of tracking shifting patterns in the economy in a timely manner with the constant emergence of new financial products, institutions and markets; such a dynamic landscape requires continuous monitoring and real-time analysis. Another is the ability to address new and various policy questions such as those posed by climate change, with the need to acquire and link data from multiple, scattered sources that often lack common standards and structure.

Fortunately, **central banks are becoming better equipped to leverage novel and complex information sources and tools**, especially in dealing with non-structured data (eg textual information) as well as large administrative registers. This can be instrumental to strengthening their supervisory capacities, as highlighted by the IFC Working Paper on "Machine learning for anomaly detection in money services business outlets using data by geolocation". This paper, which won the IFC Young Statistician Award on the occasion of the 2024 IFC Conference, shows how ML techniques can help detect anomalies in the Malaysian financial services industry by combining transaction information with geospatial data. Addressing new information needs can also be facilitated by greater sharing of both data and experience among public and private institutions, not least to better integrate cross-domain sources. Yet it also calls for implementing strong governance strategies, frameworks and practices in order to ensure the quality, integrity, security and effective use of data. One particular focus point is to document the data used with adequate metadata (the "data about the data") as a way of fostering not only users' interpretation but also machine readability as a key feature supporting innovative AI-based applications. Another priority is to be able to mitigate the new risks associated with AI-based techniques, especially as regards privacy, fairness and accuracy. A third point is to clarify data responsibilities both within (with well defined oversight roles by data stewards) and across (with formal partnerships and memoranda of understanding) organisations. Lastly, central banks have a keen interest in promoting data literacy among users and ensuring that statistical information is well understood by the public and in decision-making processes.

Communication of statistics

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**. *IFC Bulletin* no 60, dedicated to communication on central bank statistics, underlined three main points from this perspective. First, statistical communication is a key element in 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 specific purposes should be duly protected. Third, communication effectiveness depends crucially on the degree of

statistical literacy among the public, and central banks can play an important role in addressing this point. However, 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 competition from alternative, sometimes poor-quality data. Fortunately, central banks appear to be well positioned, building on well established credibility, visibility and trusted independence. They are also making substantial progress, especially in identifying and selecting specific audience targets, crafting tailored content, using various (traditional and new) dissemination channels and leveraging technical innovation.

Looking ahead, **a key objective should be to foster user engagement with – and understanding of – central bank statistics**. A first action point is to set up a dedicated statistical communication function 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 communications department of the central bank. Second, 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. A one-size-fits-all approach has clear limitations, and new channels should be developed to reach out to the broadest possible audience. Third, innovation can help to enhance statistical dissemination methods, for instance through the development of single "open source" data portals and the exploration of new ways to share very granular information without compromising confidentiality. In addition, AI techniques can increasingly 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 promising opportunities to strengthen central banks' statistical communication.

Micro data

Central banks, as both producers and users of statistical information, are increasingly interested in **making the most of the wealth of granular data available** (which typically comprise micro-level records as well as disaggregated data) **without jeopardising confidentiality**. As analysed in *IFC Bulletin* no 61, these data can offer a level of precision and comprehension into economic phenomena that aggregation may typically mask or hide. Further, they provide sufficient flexibility and adaptability to tackle a wide scope of issues, allowing for a better understanding of emerging behaviours and more targeted and effective policy prescriptions. Additionally, since many micro data sources are a by-product of the increasingly digitalised world, they contain information that can be timelier and more resilient to disruption, for example during financial crises. Moreover, granular data can support the production of novel economic indicators as well as experimentation with alternative ones. Finally, they have proved a useful complement to traditional macroeconomic statistics, for instance by helping to assess real-time accuracy, deal with heterogeneity among economic agents, and address gaps or missing data. However, central banks are also fully aware of the need to address the important challenges associated with such data sets, with two important points. First, these data inherently lack the thorough production processes and quality assessments of typical macroeconomic statistics.

Second, to provide value granular insights must be situated within a coherent macroeconomic framework and contextualised so they can ultimately inform policy decisions effectively.

Fortunately, central banks' experience shows that **data science and its wide set of innovative techniques can be very effective at tackling these challenges**. First, while working with granular data can be complex and labour-intensive, there are increasing opportunities to harness their insights and perform automated tasks, including anomaly detection, real-time monitoring, pattern recognition and predictive analytics. Second, new methods are available for working with and sharing entity-level information without jeopardising privacy or confidentiality. Third, the ongoing development of universally adopted frameworks and norms (such as the LEI) has been instrumental to foster the governance and standardisation of granular data, greatly facilitating their use for analytical purposes. Fourth, policy models and analyses are increasingly leveraging granular data to develop new insights and allow for better reconciliation with aggregate macroeconomic statistics. Looking forward, making the most of the opportunities provided by granular data calls for developing appropriate mitigation measures to safeguard their security, address their quality problems and ensure the usefulness of the information provided in a transparent way, especially when supporting policy decisions.

The IFC also continued to support a number of **important international initiatives in the area of micro data in 2024**. The first one takes place in the context of the **G20 DGI-3 recommendation** on enhancing micro data-sharing with the aim of working towards an international micro data standard in coordination with SDMX. A second initiative relates to a group of central banks, NSOs and international organisations involved in **INEXDA,** the International Network for Exchanging Experience on Statistical Handling of Granular Data. The IFC has actively supported its work, which comprises the development of a metadata schema to describe granular data sets, the identification of data access procedures and the review of best practices. The BIS is providing eBIS as a platform for internal communication in the network, and a joint session on "Sharing and accessing granular administrative data" will be co-organised at the 2025 ISI WSC.

A third fruitful cooperation in the micro data domain relates to the European Committee of Central Balance Sheet Data Offices (**ECCBSO**). This group aims to improve the analysis of non-financial corporate enterprises data through the exchange of information and joint studies. With the IFC and the Bank of Spain, it organised a workshop in 2024 on "New insights from financial statements". The event brought together researchers, data analysts and statisticians to discuss the value and use of firms' financial statements, how to support the development of climate-related data (especially by leveraging firms' disclosures), the identification of financial risks and the assessment of the impact of regulations on corporate decisions. Central banks' reported experience emphasises the promising opportunities offered by innovative data sources and techniques to make use of financial statement information and develop high-quality, granular and accessible firm-level insights. It also underlines the importance of collaboration among data producers, researchers and policymakers to enhance the reliability and relevance of this information.

Data science

A strategic IFC initiative has been to organise **recurrent workshops on "Data science in central banking"** with a broad audience of practitioners and technicians to review the ongoing adoption of data analytics and business intelligence techniques and developments in the big data ecosystem. The main objective is to showcase projects and share experience that can help to develop in-house knowledge and reduce the reliance on external service providers. The next and fourth workshop will be organised in 2025 with the Bank of Italy to explore the possibilities of generative AI and its potential applications in central banking. Areas of particular interest will include cloud computing and advanced data analytics techniques, the use of open source software, data infrastructures and data privacy and security issues. Looking further ahead, one important topic of interest relates to the development, sharing and application of **IT tools in official statistics**, as the increasing availability of new information sources and technologies offers significant opportunities for statistical agencies to modernise their IT landscape and meet the evolving needs of policymakers and other data users.

In addition, the IFC has conducted a **membership survey on the use of AI and ML**. The results confirm that, while the resources allocated to related projects have remained limited so far, AI is becoming a key priority for central banks (Annex 3, Graph 2.A). It is expected to have the greatest impact in the areas of cyber security and research/analysis (Annex 3, Graph 3). As regards the production of official statistics, the number of use cases actually deployed is still limited (Annex 3, Graph 2.B), but central banks are increasingly adopting AI for various data processing phases (eg data editing, synthetic data generation, disclosure controls and quality checks). However, AI raises a number of challenges, starting with the fact that necessary governance arrangements are still at infancy. Moreover, important operational risks relate to skills shortage and lack of institutional agility. Relatedly, concerns about confidentiality, privacy, cyber security and reputation have led the vast majority of central banks to restrict the use of AI tools. Looking ahead, the survey highlights the importance of addressing pressing IT architectural questions, eg in terms of computation capacity and potential adoption of cloud services. It also underlines the benefits of collaboration within and across central banks to fully harness the benefits of AI and overcome associated challenges. This could be achieved by sharing code, use cases and models, a practice that remains limited to date despite IFC initiatives to help overcome this problem eg by offering relevant events and guidance.

Experience moreover suggests that **data science projects should be undertaken within a comprehensive framework** governing the way statistical information is gathered, stored, processed and disseminated. The BIS/IFC has long been involved in international discussions on data governance issues, for instance on the occasion of the recent reviews of the ISI Declaration on Professional Ethics and the UN global review of the implementation of the Fundamental Principles of Official Statistics. In addition, the IFC represents the central banking community in the task force set up by the UN Economic Commission for Europe (**UNECE**) to review the role of NSOs in the new data ecosystem. It also supports the work of the High-Level Group for the Modernisation of Official Statistics in different key areas, including statistical standards' interoperability and the use of generative AI for official statistics. Lastly, the Committee has worked on strengthening governance in developing economies

and in 2024 supported the symposium on "Strengthening data governance in the African data ecosystem" organised by the African Development Bank.

Sustainable finance

In recent years, the IFC has launched **several initiatives on sustainable finance data issues** in close coordination with other international bodies, including the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), the supervisory initiatives led by the FSB and standard-setting bodies, and the various actions undertaken on climate data issues in the G20 DGI context.

To comprehensively review these various initiatives, the IFC organised a **workshop on "Addressing climate change data needs: the global debate and central banks' contribution"**, hosted by the Central Bank of the Republic of Türkiye with the support of the Deutsche Bundesbank and the Bank of France in 2024. This event highlighted the multifaceted impact of climate change, in terms of both physical (eg increased flooding) and transition risks (eg bank exposures to carbon-intensive sectors). It also underlined that central banks, as users of climate data in carrying out their specific policy mandates, have a clear interest in monitoring and managing the related financial and monetary stability risks. Yet proper impact evaluation calls for further developing global sustainable finance metrics, with data that should be publicly available, reliable, comprehensive and comparable. Making progress requires strong international collaboration, not least to develop harmonised statistical frameworks and practices; enhance information-sharing (including on data, frameworks and methodologies); and develop innovative concepts, techniques and data sources.

Another occasion to take stock of IFC work on sustainability data issues will be the **dedicated IFC Satellite Seminar to be hosted by De Nederlandsche Bank in conjunction with the 65th ISI WSC**. This event will be an opportunity to get an integrated view of central banks' experience in collecting and making use of sustainability data, covering the broad range of environmental, social and governance (ESG) topics. It will highlight the analytical value of such data, the tools and approaches needed to unlock this value, and the challenges posed by sustainability information.

More specifically, one topic of increasing central bank attention relates to **the measurement of the carbon content of economic output**, ie the direct and indirect emissions of carbon dioxide (CO_2) and other greenhouse gases (GHGs) created during the production of goods or services. In 2024, the IFC co-organised a workshop dedicated to this topic with the IMF, Eurostat, the Deutsche Bundesbank, the Central Bank of Chile and the University of Oxford. A key lesson, as highlighted in *IFC Report* no 16, "Empowering carbon accounting: from data to action", is that the measurement of carbon content is essential for enabling rational, environmentally oriented decision-making and would benefit many stakeholders, including companies, consumers, investors, banks and authorities. Currently there is a lack of harmonised, global and comprehensive data at the aggregate (by country/economic sector), company and product levels, although interesting methodological approaches can be developed, as analysed in *IFC Working Paper* no 24.

Making progress on measuring the carbon content of economic activities calls first for a better disclosure of companies' direct emissions, with data that should be duly analysed, verified, audited and shared with relevant authorities or the public at large. The next step is to adequately measure upstream indirect emissions to be able to track carbon emissions across the entire supply chain. The third step is to ensure the proper integration of company- and product-level data in the overall statistical framework for economic activities. These three steps are fundamental preconditions for **developing an adequate and effective global carbon accounting framework that provides accurate, credible and verifiable data across the global economy**. Fortunately, a number of important initiatives are under way to support this endeavour. The development of air emissions accounts and input-output modelling will be useful to track carbon emissions throughout the value chain, as well as their interactions with the broader economy. Second, global standards are being refined to enhance the disclosure of carbon information and develop adequate statistical classifications and taxonomies. Third, the international community has started to address the most pressing data gaps related to the link between carbon emissions and economic activities.

The success of these initiatives will require close collaboration and innovation by all parties involved, including central banks. To foster the sharing of experience and best practices, **the IFC has identified a workplan on carbon accounting, comprising the following main elements**:

- the conduct of a survey to take stock of existing data sources and future plans;

- the mapping of the macro data sets relevant for emission intensities to make them readily accessible;

- the review of existing and potential micro data sources on emission intensities and their interlinkages; and

- the development of solutions for providing international access to disclosed company-level direct emissions, including product-level information.

A last important point of focus for the IFC has been the provision of methodological guidance for the development of more **comparable indicators for green finance** (ie debt and equity financing) in the context of a dedicated DGI-3 recommendation led by the international Working Group on Securities Databases (WGSD).[5] This work will be pursued actively in 2025, with the IFC supporting a dedicated meeting to be co-organised by the WGSD and the Central Bank of Brazil.

External statistics

The Committee has been organising with the ECB a **series of events on external sector data**, a key area of interest for central banks. The aim is to foster regular discussions and experience-sharing to identify the main analytical needs, prioritise data collection and address upcoming challenges. Following the first edition

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[5] After the GFC, the WGSD was tasked with improving information on securities markets. Its core members are the BIS (chair), the ECB and the IMF.

organised in 2020 with Banco de Portugal, the second conference was hosted by the Bank of Spain in 2024. As documented in *IFC Bulletin* no 62, the event underscored how **external statistics have become paramount to address new developments in international economic relations**. They are the lenses through which to observe the main drivers of the global economy, ranging from globalisation, digitalisation and climate change to the new trends in international trade and financial flows shaped by the fault lines of geopolitics. Yet in an uncertain world changing with unprecedented speed, external statistics need to quickly adapt to evolving user needs (especially those of policymakers). This calls for regularly revisiting statistical concepts, experimenting with new indicators and harvesting the vast amounts of data arising from technological advancements. Considerable work has been undertaken over recent decades to fill information gaps and, perhaps more significantly, update methodological frameworks and ensure consistency within and across macroeconomic accounts. However, much more work lies ahead despite strained resources both in NSOs and central banks, which often have shared responsibilities in the compilation process.

A first focal point for external statistics should be to better capture the impacts of globalisation, digitalisation and climate change. In addition, the statistical community aims to improve the consistency, comparability and relevance of external statistics in terms of both methodology and data. More fundamentally, **external statistics need to be "fit for multiple needs" to stay relevant** and respond to the rising demand for multidimensional information. In practice, this means that they have to serve and swiftly adapt to new demands across the wide range of users. A related lesson is the need to foster experimental external statistics to face growing, changing and timelier data needs. It calls for the use of alternative and big data sources for producing experimental and possibly official external statistics. This may aid not only in enhancing and complementing conventional sources but also in overcoming sudden stops in the provision of traditional indicators, such as those experienced during the Covid-19 crisis in 2020–22. Yet, the trade-off is often to balance experimental and more timely indicators with reliable, accurate, high-quality and trustworthy statistics.

In view of these challenges, innovation is not a mere option, it is rather a necessity, even if risks cannot be ignored when adopting novel technologies. Data interoperability, usability and reusability also need to be improved as key ingredients for sound external statistics. Lastly, stronger international statistical cooperation can be instrumental to foster data stewardship and sharing and to better centralise statistical collections. These elements call for **a clear and comprehensive roadmap for enhancing external statistics** in the years ahead, based on a shared vision to leverage innovation, promote international cooperation and maintain trust in official statistics.

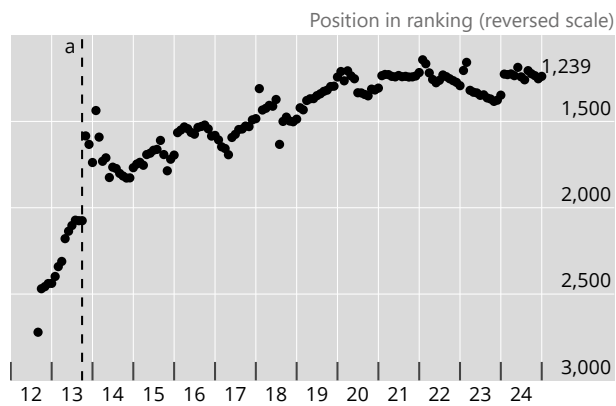## Annex 1: Members of the IFC Executive as of January 2025

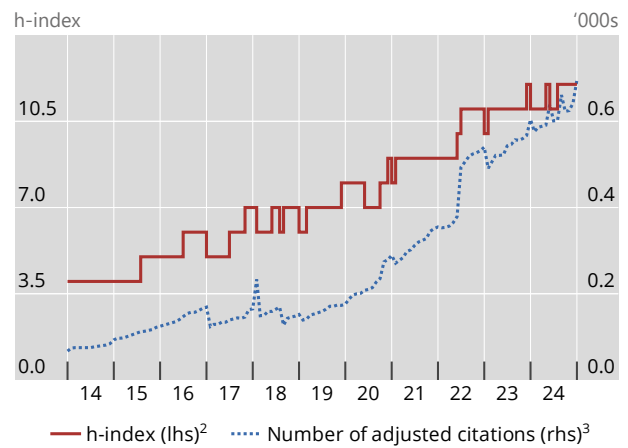| Executive member	Institution	Term
Alberto Naudon (Chair)	Central Bank of Chile	2024–25
Robert Kirchner (Vice-Chair)	Deutsche Bundesbank	2020–25
Gloria Peña (Vice-Chair)	Central Bank of Chile	2019–27
Yakubu Aminu Bello	Central Bank of Nigeria	2021–25
Marco Cagetti	Board of Governors of the Federal Reserve System	2024–27
Michael Machuene Manamela	South African Reserve Bank	2024–26
Claudia Mann	European Central Bank	2024–27
Ichiro Muto	Bank of Japan	2024–27
Fernando Alberto Rocha	Central Bank of Brazil	2018–27
Eyal Rozen	Bank of Israel	2021–26
Luís Teles Dias	Banco de Portugal	2022–27

Annex 2: Readership of IFC publications

IFC Bulletins ranking and citation metrics

Graph 1

A. Ranking among all series by citations[1]

Position in ranking (reversed scale)

B. Citation metrics

h-index '000s

— h-index (lhs)[2] ····· Number of adjusted citations (rhs)[3]

All indicators are based on last 10 years works for IFC Bulletins (ie not including IFC Reports and Guidance Notes).

[a] Change of methodology. Since (before) October 2013, the ranking has been based on last 10 (all) years publications.

[1] Aggregate rankings (summary rankings that aggregate the various criteria). The IDEAS/RePEc rankings database provides various rankings related to research in Economics, including top institutions, journals, working paper series, and authors. Regarding economic publications among top series by citations, the *IFC Bulletins* ranked 1,239th among all series in December 2024, compared to 2,721st in August 2012.   [2] h is the number of works with at least h citations.   [3] Excludes citations from the same series.

Sources: IDEAS/RePEc; BIS calculations.
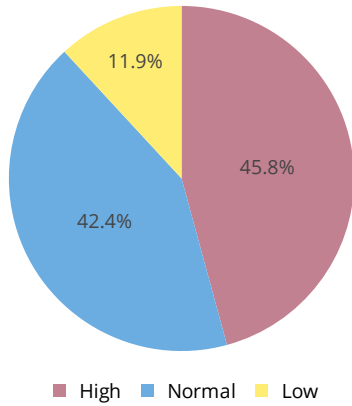
Annex 3: IFC survey on the use of AI/ML by central banks
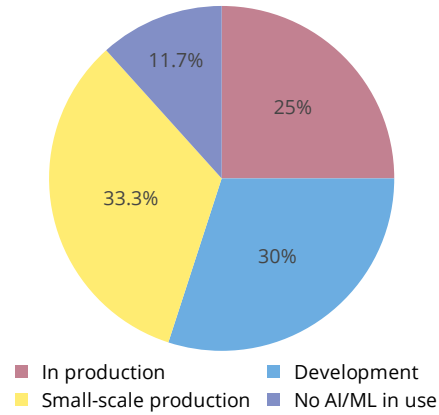
AI is a priority for central banks

As a percentage of surveyed jurisdictions   Graph 2

A. AI/ML importance in strategic planning

B. AI/ML use cases[1]

Legend A:
- High
- Normal
- Low

A values: 45.8%, 42.4%, 11.9%

Legend B:
- In production
- Development
- Small-scale production
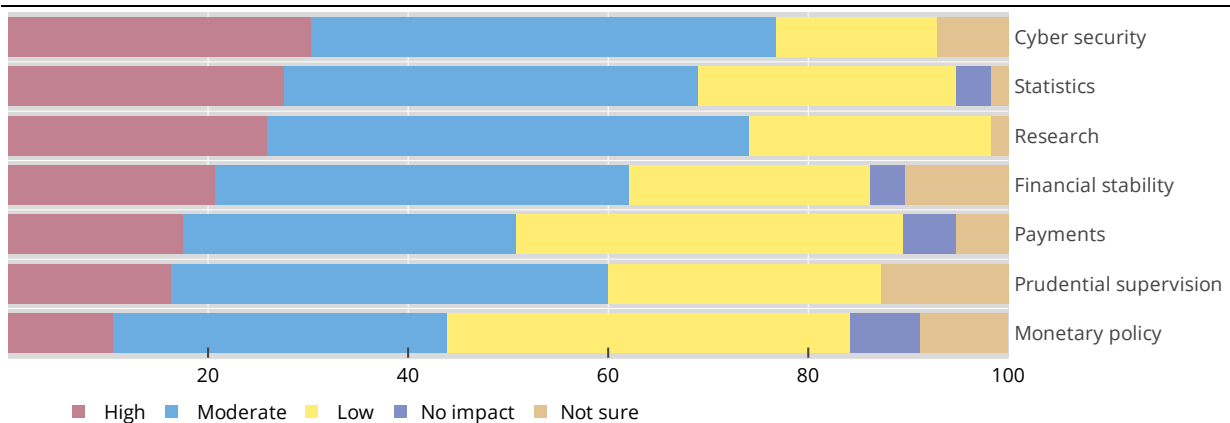- No AI/ML in use

B values: 25%, 30%, 33.3%, 11.7%

[1] Percentage of surveyed jurisdictions indicating the state of AI/ML adoption ("In production": multiple use cases deployed in production; "Small-scale production": limited use cases in production; "Development": few pilot projects; "No AI/ML in use": no projects either in production or development).

Source: IFC 2024 survey.

AI is expected to have a significant impact on cyber security, statistics and research[1]

In per cent   Graph 3

Bars (top to bottom): Cyber security, Statistics, Research, Financial stability, Payments, Prudential supervision, Monetary policy

Legend:
- High
- Moderate
- Low
- No impact
- Not sure

[1] Share of the expected impact from AI/ML (from high to not sure) per each functional domain in the next two years.

Source: IFC 2024 survey.

Annex 4: IFC publications in 2024

January	*IFC 2023 Annual Report*
April	*IFC Bulletin*, no 60, "Communication on central bank statistics"
May	*IFC Guidance Note*, no 5, "Development and maintenance of a security-by-security database"
July	*IFC Bulletin*, no 61, "Granular data: new horizons and challenges"
August	*IFC Bulletin*, no 62, "External statistics in a fragmented and uncertain world"
October	*IFC Report*, no 16, "Empowering carbon accounting: from data to action"
November	*IFC Working Paper*, no 23, "Machine learning for anomaly detection in money services business outlets using data by geolocation"
December	*IFC Working Paper*, no 24, "Harnessing the power of Input-Output analysis for sustainability"