

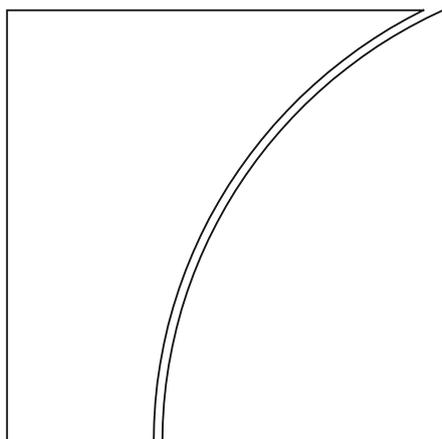
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INEXDA – the Granular Data Network

Prepared by members of the INEXDA network

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INEXDA – the Granular Data Network¹

Prepared by members of the INEXDA network²

The financial crisis of 2007-08 has highlighted the need for using granular data on financial institutions and markets to detect risks and imbalances in the financial sector. Data producers such as central banks and national statistical institutes are witnessing a growing need to improve granular-data access and sharing. When making granular data available, data producers face significant legal and technical challenges related to, among others, safeguarding statistical confidentiality. This paper introduces the INEXDA international network, which provides a platform for data producers to exchange practical experiences on the accessibility of granular data, metadata as well as techniques for statistical analysis and data protection.

Keywords: Microdata, International Network, Data Access

¹ The views expressed here are those of the contributors and do not necessarily reflect those of the Banco de España, Banca d'Italia, Banco de Portugal, Banque de France, Bank of England, Deutsche Bundesbank, or European Central Bank.

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1. The motivation for INEXDA

In 2009, the finance ministers and central bank governors of the G20 endorsed the first phase of the Data Gaps Initiative (DGI-1) to promote actions to close data gaps that had come to light in the wake of the global financial crisis that emerged in 2008. During the process of DGI-1, data users and data compilers increasingly expressed the need for improving data sharing, particularly of granular³ data, in order to foster the understanding of global developments, for example with regard to risks and imbalances. Consequently, the second phase of this initiative (DGI-2) contains a new recommendation (II.20) promoting the exchange of (granular) data as well as metadata.⁴

To help meet data users' and data compilers' demand for (granular) data sharing within the legal framework of the individual jurisdictions and to facilitate the implementation of Recommendation II.20 of DGI-2, a group of central banks established the **I**nternational **N**etwork for **E**xchanging **E**xperience on Statistical Handling of Granular **D**ata (INEXDA). In accordance with the objectives of INEXDA outlined below, participation is open to other central banks, national statistical institutes, and international organisations. Other examples of exchanging experiences in the context of data sharing include the Conference of European Statisticians Task Force on the Exchange of Economic Data, which focuses particularly on the activities of multinational enterprises (MNEs), as well as the work on data sharing by the Bank for International Settlements (BIS) Irving Fisher Committee (IFC).

INEXDA was explicitly mentioned in the report of the Inter-Agency Group on Economic and Financial Statistics: "Update on the Data Gaps Initiative and the Outcome of the Workshop on Data Sharing", March 2017. The paper was welcomed by the G20 Finance Ministers and Central Bank Governors in March 2017 and by the G20 leaders: "We welcome the recommendations of the Inter Agency Group on Economic and Financial Statistics (IAG) for sharing and accessibility of granular data." (p. 5, Communiqué of the G-20 FMCBG Meeting (2017)).

2. A brief history of INEXDA

On 6 January 2017, the Banca d'Italia, Banco de Portugal, Bank of England, Banque de France and Deutsche Bundesbank (see also figure 1) founded INEXDA during a meeting at the Banco de Portugal. In this meeting, the BIS – which participated as a guest – offered to support the work of INEXDA by providing access to the eBIS⁵ platform. All INEXDA information is therefore stored and shared via the eBIS system.

³ In this paper, granular data are defined as less aggregated data than traditional statistics (eg finer breakdowns of aggregates in traditional statistics) or microdata. Microdata are data at the level of individual reporters or at a low level of aggregation that may lead to the identification of individual reporting units.

⁴ More information on DGI-1 and DGI-2 can be found at <http://www.imf.org/external/np/g20/pdf/2015/6thprogressrep.pdf>.

⁵ <https://www.ebis.org/auth/login>.

The second INEXDA meeting took place at the Bank of England on 7 July 2017, where the Banco de España and European Central Bank (ECB) joined INEXDA as first-time guests. During this meeting, particular emphasis was placed on developing a metadata schema for the INEXDA network. In this regard, a presentation by the GESIS Leibniz Institute for the Social Sciences on “The da|ra Data Referencing System and its potential for the INEXDA Project” was considered very useful by INEXDA members (see Bender, Hausstein and Hirsch (2018) for a more detailed description of the INEXDA metadata schema).

At the third INEXDA meeting on 11 January 2018 at the Banque de France, the INEXDA network welcomed the Banco de España and ECB as new INEXDA members, increasing the number of INEXDA members from five to seven. Furthermore, the Banco Central de Chile, Banco de México, Oesterreichische Nationalbank, Central Bank of the Republic of Turkey and – for the first time, a national statistical institute – Office for National Statistics UK attended the meeting as guests. One notable outcome of the meeting was the consideration of establishing working groups on different topics within the framework of INEXDA (see section 4).

The fourth INEXDA meeting was held on 27 August 2018 at the BIS in Basel, where Banco Central de Chile and Central Bank of the Republic of Turkey participated as new members. Alongside the guests in attendance at the third meeting, the Bank of Russia, Federal Statistical Office of Germany, Eurostat, and the Swiss National Bank were attending the meeting as first-time guests.

3. INEXDA's objectives

INEXDA was established with the overall aim of facilitating the international use of granular data for analytical, research and policy purposes within the limits set by the applicable confidentiality regimes.⁶ This overall aim can be further broken down into the following two, more specific objectives.

First, INEXDA will provide a basis for exchanging experiences on the statistical handling of granular data that are accessible to external users. Examples of “statistical handling” include the processes, methods, and tools for data and metadata access, techniques for the statistical analysis of granular data, procedures for data confidentiality and data security, and procedures for output control. Second, INEXDA will provide a framework for investigating possibilities to harmonise access procedures and metadata structures, to develop comparable structures for existing data, and to further foster the efficiency of statistical work with granular data.

The higher level of data disaggregation in the case of granular data is also associated with an increased need for data protection. European and national legal provisions regulate both the user group and the access channels to microdata and oblige data providers and data recipients to maintain data confidentiality at all times. Therefore, the overriding principle of the work of INEXDA is compliant with

⁶ INEXDA's objectives are outlined in the Memorandum of Understanding (MoU), which must be signed by each member and is available on the websites of each member institution.

the respective statutory secrecy and data protection requirements, and thus maintaining the confidentiality of the information submitted by the reporting agent.

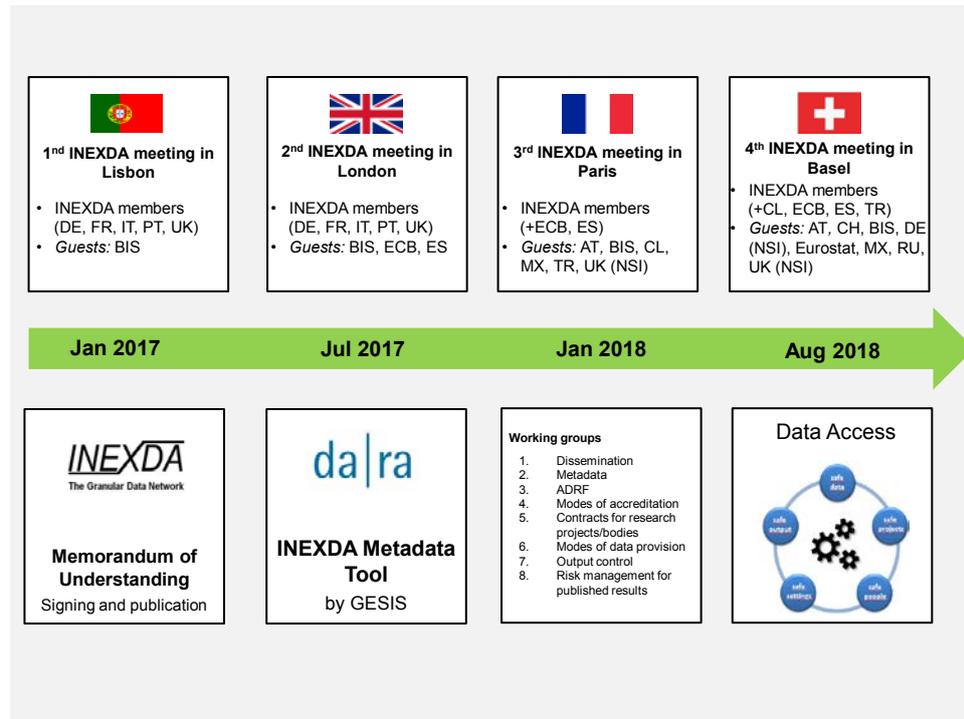


Figure 1: Overview of participants and important outcomes of the first four INEXDA meetings.

4. The current INEXDA work programme

For the current work programme, INEXDA members have decided to find a balance between keeping the momentum and not being overly ambitious. Therefore, INEXDA has identified eight potential topics for the work programme:

1. Dissemination (of granular data)
2. Metadata (see section 4.1 for a brief overview)
3. Tools for supporting the work of INEXDA members (ADRF, see section 4.2 for a brief overview)
4. Modes of accreditation (see section 4.3 for a brief overview of items 4, 5, and 6)
5. Contracts for research projects/bodies
6. Modes of data provision
7. Output control
8. Risk management for published results

INEXDA aims to have an agile structure, so the topics of the working programme should produce tangible results after six months as a minimum. Besides these activities and the contribution of INEXDA to the 9th biennial IFC Conference, INEXDA will also make contributions to the 2018 Conference of European Statistics

Stakeholders (CESS) in Bamberg, and the 62nd ISI World Statistical Congress in Kuala Lumpur in 2019.

4.1 Comprehensive inventory of data in member institutions

From the start, the INEXDA network has collaborated to harmonise metadata structures by conducting extensive stock-taking of available data sets in member institutions. The goals are:

1. to provide an overview of available and potentially comparable granular data sets from participating institutions;
2. to enable data users to discover and use appropriate data sets for their own research and analyses, which the participating institutions agree to share;
3. and to prepare a framework to facilitate a possible harmonisation of data sets in the (near) future.

Because the descriptions of the data should be comparable, an agreement on a metadata schema for the granular data was established between all members. To this end, the INEXDA metadata schema closely follows the *dajra* metadata schema (version 4.0), which was jointly developed by the GESIS – Leibniz Institute for the Social Sciences and the ZBW – Leibniz Information Centre for Economics. The INEXDA metadata schema is designed to provide metadata for microdata at the data set level.

Adapting an existing metadata schema to fit the purpose of INEXDA provides a level of standardisation for microdata produced in different countries, institutions, and with different aims. Furthermore, the interoperability of the INEXDA metadata schema with the *dajra* metadata schema allows for seamless transition between the INEXDA and *dajra* databases, which makes it easier to obtain digital object identifier (DOI) for datasets in the future.

All INEXDA members agreed on a metadata schema, which, first, describes the data sets in a comprehensive way for the purposes mentioned above. Second, the schema is easy to use for potential users and data producers. It should be noted, that the metadata schema revolves around a “standardised data set”, which is a snapshot of data produced in an institution (eg credit register) taken at a certain point in time (e. g. 1999–2017). To this end, INEXDA devised 21 items for its metadata schema (see table 1).

Furthermore, INEXDA has created a platform (see figure 2) for collecting and exchanging the metadata information produced during the inventory. This platform is available to all INEXDA member institutions. The platform is being developed jointly with GESIS.

Because of its sensitive nature, microdata are always subject to protection of confidentiality of individual observations. Metadata about microdata also have to adhere to the same high standards when it comes to protecting confidentiality. INEXDA's metadata system is designed to address these issues.

1	Resource Type
2	Resource Identifier
3	Name of Dataset
4	Creator
5	DOI Proposal
6	URL
7	Language of Resource
8	Publication Date
9	Availability
10	Sampled Universe
11	Sampling
12	Temporal Coverage
13	Time Dimension
14	Collection Mode
15	Unit Descriptions
16	Descriptions
17	Geographical Coverage
18	Keywords
19	Alternative Identifiers
20	Relations
21	Publications

Table 1: The INEXDA metadata scheme

4.2 Evaluating tools to support INEXDA’s harmonisation process

While the highest priority is given to completing the inventory of available data described in 4.1, the investigation of harmonisation possibilities at other levels of the data lifecycle (eg access procedures and registration processes) remains an important task in the current INEXDA work programme. Standardised software applications could be a way forward, as these would not only facilitate communication between the INEXDA partners but also help to maintain common standards.

Help Contact Search all shared datasets Logout (data)

INEXDA The Granular Data Network

Searchresult

Search metadata

your search: All fields: (investment)
 Active filters (clear all) : Keywords: Banks, depository institutions, Publication Date: 2017

results: 2
 Your search returned 2 results in all shared INEXDA datasets.

Dataset

Monthly Balance Sheet Statistics
 Deutsche Bundesbank, Statistics Department (S), Monetary and financial statistics (S 1), Monthly balance sheet statistics (S 10)
 published 2017-10-10, Version 1
 On-site
 view metadata in: English
 Status: in-house

Dataset

Statistics of the banks' profit and loss accounts
 Deutsche Bundesbank, Statistics Department (S), Monetary and financial statistics (S 1), Cross-sectional tasks and secondary statistics (S 14), Secondary statistics (S 14-3)
 published 2017-07-25, Version 1
 On-site
 view metadata in: English
 Status: in-house

Number of (0) datasets: 2

Resource Types

Dataset (2)
 Data provider
 Deutsche Bundesbank (2)
 Creator
 Deutsche Bundesbank, Statistics Department (S), Monetary and financial statistics (S 1), Monthly balance sheet statistics (S 10) (1)
 Deutsche Bundesbank, Statistics Department (S), Monetary and financial statistics (S 1), Cross-sectional tasks and secondary statistics (S 14), Secondary statistics (S 14-3) (1)
 Geographic Coverage
 Germany (2)
 Keywords
 Balance sheet (2)
 Banks, depository institutions
 Availability
 On-site (2)
 Publication Date
 2017 (2)

Figure 2: Hypothetical example of the INEXDA Metadata Platform

The New York University (NYU) has established, under the assignment of the Bureau of the Census, the Administrative Data Research Facility (ADRF), which provides a set of analytical tools, data storage and discovery services, and general computing resources based on cloud solutions for a diverse set of users, including government analysts and researchers. As the ADRF framework is considered to be potentially very useful for the harmonisation process, INEXDA will consider cooperation with NYU.

4.3 Taking stock of the access procedures and registration processes for researchers

One overarching goal of INEXDA is to provide a basis for exchanging experiences on the accessibility of data, procedures for data confidentiality, and security of data. Since access to microdata is in the scope of official statistics, INEXDA will benefit from national and international experiences to shape the outcome of this work stream. In the context of INEXDA, and following up on a survey of the Working Group of Statistical information Management (WGSIM) of the European System of Central Banks (ESCB) on national central banks' (NCBs) approaches to granting external researchers access to confidential data for research purposes, Emily Witt and Jannick Blaschke (ECB) conducted interviews with several central banks (Oesterreichische Nationalbank, Deutsche Bundesbank, Banco de España, Banque

de France, Banca d'Italia, De Nederlandsche Bank, Banco de Portugal, Central Bank of the Republic of Turkey, Bank of England, European Central Bank) and Eurostat. The result is an overview⁷ of selected NCBs' and Eurostat's approaches to providing access to non-published granular data for research purposes that complements other work in this area.⁸

Besides international experiences, national experiences are helpful in identifying the best practices with regard to access to microdata. For example, the Deutsche Bundesbank recently provided an overview of the microdata access procedures used, where three different user groups of microdata have been identified (internal analysts, internal researchers, and external researchers). The paper (Schönberg (2018)) described different access modes for each user group in detail. A unit called Internal Service for Micro Data Analysis handles internal analysts' data access requests following a multilevel approach (modelled after the European System of Central Banks (ESCB) standard approach).

At the end of August 2018, INEXDA will likely start a working group focusing on best practices on how data users could be allowed to access granular data once they have completed the accreditation process and have signed all relevant contracts. The task of this working group is to take stock of existing models of data provision used by INEXDA members. Possible topics may include:

- data access via secure access facility and/or remote access (eg technical design and specifications of limitations);
- anonymisation of methodologies and tools;
- provision of services to external researchers (eg provision of standard or ad hoc data sets, linkage of various data sets, upload of external data sets, access to licensed data sets);
- provision of analytical tools and allowing/facilitating code sharing.

4.4 INEXDA web page

A web page for the network will be launched by the end of 2018. The website is intended to be independent of the signing parties' websites and, to this aim, the following domains were reserved: www.inexda.org; www.inexda.com.

⁷ The participating interviewees agreed to share the results with INEXDA members and guests.

⁸ For example, the "Guidelines for the assessment of research entities, research proposals and access facilities" (Luxembourg, November 2016) from the European Commission, Eurostat, Directorate B: Methodology; Corporate statistical and IT services, Unit B-1: Methodology and corporate architecture, or the results from the FP7 project "Data without Boundaries" (DwB, see <https://www.facebook.com/dwbproject>).

5. INEXDA working arrangements

The members of INEXDA have implemented the following working arrangements.

- All decisions are made on a consensual basis.
- The work within INEXDA will be performed at the operational levels of the member institutions.
- INEXDA members convene at least once per year. Guests may be admitted to meetings. A pre-meeting will be organised prior to each INEXDA meeting for the purpose of inviting INEXDA guests to discuss the progress INEXDA has made so far.
- The chair of INEXDA is elected for a two-year term on a consensual basis. Responsibilities of the chair include co-organising the meetings in close collaboration with the local organiser, coordinating activities, and drafting a report at the end of the chairmanship, which has to be agreed on a consensual basis.
- The eBIS facility operated by the BIS provides the centralised location for exchanging documents and fostering collaborative activities among INEXDA members.

6. The INEXDA application process

The following procedure has been established for admitting new members. It is mandatory for institutions that want to join INEXDA to have a representative attending at least one INEXDA meeting in person before submitting a formal application. The application letter should be signed by the head of the statistical department of the respective institution (or, in the case of national statistical institutes or international organisations, by the head of the responsible department) and sent to the chair of INEXDA. Any application to join INEXDA from a new institution and the signing of the MoU must be agreed by all members. Furthermore, the applicant institution is invited to attend an INEXDA meeting to give a presentation on the current state of its granular data sharing and its motivation for becoming a member of INEXDA.

7. Conclusion

The International Network for Exchanging Experience on Statistical Handling of Granular Data (INEXDA) was founded to facilitate active dialogue on practical experiences – in particular on the accessibility of granular data, metadata, and techniques for statistical analysis and data protection. Until recently, the network was predominantly focused on establishing a metadata schema and conducting a comprehensive inventory of data in member institutions. In the next phase of the work programme, access procedures and registration processes for researchers will come to the forefront of INEXDA's activities.

The overall aim is to facilitate the international use of granular data for analytical, research, and comparative purposes without jeopardising and always subject to the respective applicable confidentiality regimes.

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Appendix: List of INEXDA members and INEXDA guests⁹

INEXDA members are institutions that have signed the MoU.

INEXDA members:

- Banca d'Italia
- Banco Central de Chile
- Banco de España
- Banco de Portugal
- Bank of England
- Banque de France
- Central Bank of the Republic of Turkey
- Deutsche Bundesbank
- European Central Bank

INEXDA guests are institutions that have participated or have confirmed participation in at least one INEXDA meeting but have yet to sign the MoU.

INEXDA guests:

- Banco de México
- Bank for International Settlements¹⁰
- Bank of Russia
- Federal Statistical Office of Germany
- Eurostat
- Oesterreichische Nationalbank
- Office for National Statistics UK
- Swiss National Bank

⁹ as of 12 October 2018

¹⁰ The Bank for International Settlements supports the INEXDA initiative without being a full member.