

Usability of Administrative Data – Initiatives and Common Approach

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Abstract

In the last years, different initiatives were taken within the European context to share good practices in assessing the usability of administrative data and -in general- the integration of administrative data in statistical production. This presentation aims to give an overview of these initiatives from the perspective of a National Statistical Institute, highlighting a number of consequences of moving in the direction of a common approach.

Key Words: administrative data, quality, sharing good practices

1. Introduction

This paper differs from most of the existing literature on the sharing of good practices in that it looks from the bottom up instead of showing a top down picture. It is not a research paper; it reflects the view of one of the dots in a net of people and organisations providing statistical information on the economy to the general public. The situation in a small European country like Belgium is not representative for the rest of the world, but the environment in which we work has changed in ways that may be equally relevant for other actors.

By looking at the efforts made by statisticians in the past with the aim of enhancing collaboration and consequently moving in the direction of a common approach, I point to external developments that acted as major drivers for change. This might help to get a clearer view on the challenges we face today.

Fast access to administrative data at the micro level combined with increased processing and storage capacities, gives us the possibility to combine and transform large electronic data sets in ways that were unthinkable only a few decades ago. Making optimal use of those administrative data requires us to work in other ways than before. This might not only mean developing new methods, but possibly also exploring new organisation methods and cooperation models.

2. Use of Administrative Data in the Past

2.1 Early History

Ancient history shows that governments collected facts and figures about their economy and population mainly to provide a basis for taxation and to assess military capabilities. An overview that goes back as far as the Babylonian Empire is given by Kotz and Nordbotten [10,12] .

A perfect line between what should be considered to be administrative- and statistical sources cannot always be drawn. The distinction that is usually made is the following:

- Administrative data are collected primarily for non-statistical purposes, and adopted for producing statistics.
- Statistical data are collected for the purpose of preparing statistics and are in general not available for any other purpose.

It may be less important to have a watertight definition than to have an understanding of the features that distinguish administrative data from data from statistical sources in the context of statistical use [1]. Those features cited by Brackstone are besides the purpose:

- The agent that supplies the data to the statistical agency and the unit to which the data relate are different.
- Complete coverage of the target population is the aim (though the target population is defined by the agent for his own purposes).
- Control of the methods by which the administrative data are collected and processed resides with the administrative agency.

Originally, depending on policy needs, registers were held and enumerations were made in order to run an administration effectively. Over time the conviction grew that scientific conclusions could be drawn from analysing these existing statistical data (e.g. the relationship between the availability of farmland and fertility [10]). The first formal offices for official statistics were established in the 18th century. They were frequently named Table Offices [9], reflecting the fact that their purpose was to summarize administrative micro data into tables of macro data, not to collect the data themselves.

The 19th century can be described as the golden era of official statistics. Adolphe Quetelet and Francis Galton were among the first to introduce mathematical and statistical methods in social sciences, making the theoretical framework for the analysis of numerical data to become an essential component of statistics. With the growing status of official statistics, a number of countries developed coordinating bodies in order to streamline the statistical output from ministerial departments, others founded National Statistical Institutes, responsible for all official statistics. A series of International Statistical Congresses, the first of which was convened by Adolphe Quetelet in 1853 in Brussels, laid the ground for international cooperation on official statistics.

With the new status of official statistics in the 19th century, the interest in collecting data for statistical purposes grew significantly. The United States was the first to expand their census from a population count to an enumeration of all sorts of facts that were of political or scientific interest. Belgium, Holland, Germany and France were among the first to follow, adding agricultural and industrial statistics.

During the 19th century statistics were based on complete enumerations, either from data gathered for administrative purposes, like for example tax data, or from censuses organised to collect statistical information. Anders Kiaer (1838-1919), founder of Statistics Norway, is cited to be the first to introduce sample surveys in his own country[2]. He brought this subject to the international foreground in a session of the International Statistical Institute (ISI) in 1895. It took several decades before the idea of sampling was generally accepted and the idea that only complete enumerations could provide useful information was abandoned.

Advanced as the newly founded statistical institutes were for their time, the collection of data and the production of statistics was carried out largely independent: within each domain of interest and within each country there was more autonomous development than coordination on matters of definitions, classifications and techniques. The “national” focus is for example illustrated [9] by how (between 1836 and 1841) the material in publications on general statistics in Belgium was classified: the “physical, industrial, political and moral state of Belgium”.

Autonomous developments within statistical domains also implies the production of closely related statistics as separated activities, in many cases even performed by different organisations, resulting in double work and statistical output that is not always coherent. In recent years much effort has been put in moving away from this “stovepipe architecture ” [13] and towards integration. This promises better quality of statistics but can also lead to breaks in traditional series.

2.2 Priority of the National Level

While the need for international comparability of statistics grew significantly over the years, the national context in which they were produced varied significantly, even if we limit ourselves in this paper to European countries.

As stated in the previous paragraph, some countries opted for pooling most statistical activity and expert knowledge in a central department, while others chose to keep the activity within the ministries, setting up coordinating bodies.

A second distinction is the one between countries whose production system is primarily based on sample surveys or on registers. In those countries where the sample survey line dominated, registers were often looked upon with scepticism, mainly for privacy reasons. In countries where the register line was adopted, surveys were regarded as insufficient but sometimes necessary surrogates for registers and total enumerations [13] .

The interaction between national accounting and the development of the statistical system took different forms from one country to another [11]. Some countries had a strong statistical base that was ahead of their national accounting. In other countries, like for instance France, national accounting was a powerful factor in the shaping of the statistical system in many areas, not in the least in the development of business statistics.

Developments in national accounting seem to be a very important driver in standardisation of statistical production in general and of business statistics in particular. The impact of the great Depression of 1929 demonstrated the need for large scale intervention in the economy at the national level. Macroeconomics called for a new concept: the economy of a nation as a whole, with a set of interrelated quantitative

measures of basic concepts. The equations that described these mutual relationships were formulated by John Maynard Keynes. Of course, interrelationships in an economy had been present before in economic theories, but this was the first time that such concepts and their statistical representation became central to macroeconomic policies.

The analogy between running a business in a national economy and implementing macroeconomic policy as a government was very popular. In The Netherlands for example, national accounts were presented [4] 'as the business accounts of the nation' and the government would play the role of 'directors of a big firm'.

Economic integration in Europe after World War II further enhanced the need for comparable statistics and for harmonisation of methods. In 1953 the Statistics Division for the European Coal and Steel Community was established. Over the years its tasks have broadened and when the European Community was founded in 1958 it became a Directorate-General (DG) of the European Commission.

The Nordic countries have been forerunners in the use of administrative data for building a more coherent system for producing official statistics. In the system [12] they proposed in 1960, a conceptual distinction was made between register and archive. A register was a list of external identifiers necessary to locate each object, such as name, address, etc., associated with the unique and permanent identifier of the object. The external identifiers had to be continuously maintained, while the identifier should be time-invariant. Data identified and organized in such a collection could by linking be used for producing a wide range of statistics, which had so far not been possible, and changing the inflexible statistical production programmes to a very flexible on-demand production system.

Although methods for the use of administrative data in statistical production based on this general idea have been refined and became accepted as Register-based statistics, also outside the Nordic countries [14,15], data privacy considerations were far more prominent in other parts of Europe, which often resulted in privacy laws that made it difficult for NSIs to access administrative data at the micro level.

While production systems remained very different from country to country, advances were made in other aspects. For example the integration of industrial statistics between 1985 and 1991 consisted largely of harmonisation of nomenclatures and survey methods. With the creation of a single European market in 1992, it became necessary to enable national statistics to be compared and where possible aggregated to give a picture of the developments of an industry or product in the European context.

Although considerable effort had been made, many countries were still struggling with either getting access to administrative data or with linking identifiers from different administrations to a central register.

In 1999, one of the main conclusions of the EUROSTAT handbook on the use of administrative sources for business statistics purposes [3] was that "Research should be commissioned into methods that could be used to assess - and, as necessary, adjust - the quality of administrative sources used for statistical purposes...."

Since the 1990s, certain European policies became directly based on statistics, the most noteworthy example of this being the convergence criteria for European Monetary Union (EMU) of the Maastricht Treaty. This development contributed hugely to the more general expansion of statistical legislation. However, the essence of the production of

European statistics continued to remain what it had been in the past: the NSIs collect and produce harmonised data that are compiled by Eurostat to construct statistics at EU level.

There was a real need to put in place a “system” that makes use of standardisation as far as possible. Cooperating on how to make efficient use of administrative data would be a key element in this process..

2.3 MEETS and the 2009 Communication on the Production Method of EU Statistics

Considering the growing need for timely and reliable statistics together with limitations in available resources, it became clear that the stovepipe architecture was no longer a viable option and that a new “system” was to be envisaged that should make use of cooperation and standardisation as far as possible.

The year 2009 was pivotal in the move to an integrated production system. Landmarks were a new Regulation on European Statistics, a vision statement, and the Modernisation of European Enterprise and Trade Statistics (MEETS) programme.

The Regulation on European Statistics¹ not only introduced the principle of cost-effectiveness but also changed the governance structure of the ESS in order to strengthen cooperation between Member States. The notion of collaborative networks was taken up for sharing of expertise and results.

The vision statement² states that any development in the area of statistics is determined by two main drivers: on the one hand the need to deal with new and emerging needs for statistics, and on the other the need to reduce the burden on respondents, as well as the costs for producing statistics. In addition, the circumstances in which statistics are produced have changed following developments in information technology.

There is a fundamental dilemma between new demands (mostly multi-dimensional) and limited resources to be solved. The only possible way forward is to develop more efficient data production systems.

It needs to be investigated how information from different sources can be merged and exploited for different purposes, e.g. by eliminating methodological differences, making statistical classifications uniform, etc. Data already existing in the statistical system and in the economy (administrative data) should be made available for re-use. A more efficient use of existing data would also result in reduction of response burden.

New technologies should be welcomed in view of the development of a joint “statistical infrastructure”.

The implementation of the European systems method to statistics described in the vision statement involves three components:

- Community legislation, which will continue to be mainly output-oriented and to set minimum standards for the production of statistics in a particular area.
- Complementing product harmonisation by process harmonisation through the promotion of methodologies based on common tools.

¹ Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics

² COM(2009) 404 final Communication on the production methods of EU statistics: A vision for the next decade report from the European Commission

- The promotion of common values and the sharing of knowledge throughout the ESS. Several forms of ESS-wide collaboration can be mobilised to this end. Amongst them the ESS collaboration networks (ESSnet), which consist of projects carried out by a team of institutions aiming at developing results which can be used by the whole ESS community. ESSnet projects are co-financed by the Commission and participating institutions.

In order to make progress along the strategy put forward in the vision statement for the area of business and trade statistics, the MEETS programme was adopted³ that ran from 2009 to 2013. The four main objectives of the programme were:

- To review priorities and develop target sets of indicators for new areas.
- To achieve a streamlined framework for business-related statistics by integrating concepts and methods within the legal framework, by using the statistical business register as backbone for business statistics along with the development of statistics on enterprise groups.
- To support implementation of a more efficient way of producing enterprise and trade statistics by making better use of administrative data, by supporting actions that facilitate the data transfer from enterprises to NSI, and by making better use of data that already exist in the statistical system (support actions in Member States to create data warehouses, and methodological studies on linking data from different sources)
- To modernise statistics on foreign trade between EU Member States.

These objectives were further broken down in more than 25 projects. Some of these projects were implemented by external contractors or via individual grant agreements concluded with National Statistical Institutes (NSIs), but the main activity took place in what was called the “collaborative networks” in the European Statistical System (ESS), the 'ESSnets', established for a number of activities under the umbrella of the MEETS programme. ESSnets were developed to share expertise and channel knowledge in the ESS and encompass project work performed by some Member States, with the results being made available for the whole ESS. The concept of collaborative networks had been tested as of 2005, when a first pilot exercise was launched on Statistical Disclosure Control. The positive results proved the potential of the approach.

The ESSnets that are most relevant regarding use of administrative data in the production of business statistics are:

An ESSnet on better use of administrative and accounting data for business statistics was launched in 2009 and continued its work until 2013. The main objectives of this ESSnet were to investigate the possibilities of wider use of administrative data for business statistics, to make best practices available to NSIs and to prepare recommendations in this area. The focus of the work is to assess common problems arising from the use of different data sources for producing business statistics.

The ESSnet on the EuroGroups Register (EGR) started in 2008. The EGR was foreseen to become the platform that supports the production of micro based statistics on globalisation in Europe, both on country and European level by offering compilers access to integrated and up-to-date register data on those enterprise groups which have

³ Decision No 1297/2008/EC of the European Parliament and of the Council of 16 December 2008 on a Programme for the Modernisation of European Enterprise and Trade Statistics (MEETS)

statistically relevant transnational operations (financial and non-financial) in at least 1 of the European countries.

Statistical business registers are literally and figuratively the key to integrating administrative data in statistical production, since they are supposed to be the very place where the links between the identifier of the statistical units and the administrative units are kept and maintained.

The ESSnet Data Warehouse: the overall objective was to provide assistance in the development of more integrated databases and data production systems for business statistics in ESS Member States.

2.4 From ESS.VIP to ESS Vision 2020

The MEETS programme was only one among several initiatives aiming to implement the European systems method to statistics described in the vision statement. Initiatives regarding cross-cutting domains of development were also launched, as Vision Implementation Projects (VIP projects).

For the participants in these projects and even more for their non-participating colleagues in the Member States, it was often difficult to have a clear view of what was happening in this large number of projects and of what would be the future consequences and possible interactions. In response Eurostat intensified its communication efforts and provided technical expertise and support to Member States. However, the degree to which NSIs have adopted the ESS Strategy and the Vision remained mixed, with NSI attitudes ranging from enthusiastic to sceptical — if not reluctant⁴.

Building on the lessons learnt from the ESSnet and VIP projects, the ESS.VIP programme was launched in November 2012. It provided a new framework for implementing the Vision. The idea was to create a system geared towards developing practical solutions through a gradual pooling of resources and sharing of information and databases across the ESS. The members of the European Statistical System agreed that any further development of official statistics on our continent was only possible through a much closer internal cooperation between the ESS partners and selected a limited number of projects to become central in the effort to achieve efficiency gains and share costs. Projects in the ESS.VIP programme were divided into three categories or “pillars”:

- Cross-cutting projects: These projects aim at developing key building blocks of the common infrastructure for a more integrated ESS in the future.
- Business projects: These projects focus on individual statistical domains.
- Administrative projects: These projects aim at defining the governance of the system, the actors, their responsibilities, the resources committed, the administrative mechanisms, the implementation strategy and the associated communication

Three ESS VIP projects were singled out because joint work in these statistical areas was more advanced than in others:

- The SIMSTAT project (where 'SIMSTAT' stands for 'Single Market STATistics') -an innovative approach for modernising statistics on international trade in goods- will

⁴ COM(2013) 883 final Report from the Commission to the European Parliament and The Council on the final evaluation of the implementation of the Community Statistical Programme 2008-2012

- deliver a statistical infrastructure capable of exchanging micro-data on intra-EU exports between the Member States.
- The main idea behind the European System of Statistical Business Registers is for ESS partners to open their data registers to one another and create a network, which will play a priority role in the production of business statistics in Europe.
 - The third ESS VIP, the Common Data Validation Policy, will allow a better allocation of tasks between the NSIs and Eurostat and provide common data validation solutions in different statistical production chains of the ESS.

The increased cooperation on a statistical level also means an urgent need for changes in other areas at European level. An appropriate legal framework and new administrative mechanisms would have to be developed, alongside a secure IT network for the exchange of data.

In September 2013, the members of the ESS held a discussion on how to reach a common view and approach to improve the cooperation within the ESS, especially on the modernisation of statistics on a structural and sustainable basis and on the way forward for the ESS.VIP Programme. Diverging opinions concerning the adequate level of European integration in statistics have led the ESS to a decision [5] to review the modernisation process and update the vision laid down in Commission Communication (404) in 2009.

The members of the ESS decided to install a Director General-level 'Task Force on Vision 2.0'. The Task Force should build upon the conclusions of earlier discussions in developing a new vision, and also outline recommendations regarding the governance and functioning of the ESS. A key condition for the work of the Task Force would be to take into account the perspectives of individual ESSC members and to follow a collaborative approach whereby the ESSC members have the opportunity to discuss, and contribute to, intermediate results in informal working sessions.

The European Statistical System (ESS) Vision 2020 [6] was adopted in May 2014 and builds upon the Communication 404 (the 'original' vision) adopted in 2009 to modernise the production of European statistics. The Vision document outlines five priority areas to be undertaken by the ESS in the timeframe 2014 – 2020:

- Engaging users of official statistics to ensure their continuous feedback
- Making quality a driving force for all activities of the ESS
- Seizing opportunities provided by new data sources such as Big Data
- Intensifying cooperation between Member States to make their statistical production more efficient
- Focusing on effective communication and dissemination of European Statistics

To ensure that all actions are clearly beneficial for both the ESS as a whole, and for the individual ESS members at national level, the governance structure was adapted:

- The Vision Implementation Group (VIG) oversees, on behalf of the ESSC, and performs regular strategic monitoring of the ESS Vision 2020 implementation. It advises the ESSC and prepares recommendations for its Vision-related decisions. The VIG comprises senior managers from 8 EU Member States, 1 EFTA country and Eurostat.
- The Vision Implementation Network (VIN) comprises senior managers from all EU and EFTA countries that have no own member in the VIG. It ensures effective

information and involvement of all ESS countries in the implementation of the ESS Vision 2020.

- The Portfolio Management Bureau (PMB), located in Eurostat, coordinates the work of project managers and provides analytical support to the VIG and VIN.

In line with the principles of portfolio management, a comprehensive business case was developed (following a standard template) for all existing and planned projects, as a prerequisite for acceptance and monitoring by the VIG .

Shortly after the launch of the ESS.VIP programme, preparations were made for the start of an ESS.VIP ADMIN project that should support the move to an increased use of administrative data for statistical purposes as a substitution and/or as a complement to information previously collected by surveys, and as of May 2013 a preparatory group with representatives of ten Member States gathered to identify possible strands of work and advise on the priority areas where efforts should concentrate. From the beginning Eurostat underlined that the project should build on previous results, and especially on the work done in the context of the ESSnet AdminData. The timing of the ESS.VIP ADMIN was planned in order to be able to use the results of this project. The aim was to produce broadly applicable results (as opposed to specific domain oriented) which should be first of all useful to the Member States.

With the governance structure of the ESS Vision 2020 in place, a business case [7] was submitted to the ESSC for approval in February 2015. The project is scheduled to run until the end of 2019. Results of the work should also be put at the service of ongoing major projects such as the modernisation of social statistics or the project for establishing a Framework Regulation Integrating Business Statistics (FRIBS).

The work is organised in seven work packages and depending on the subtopics, the most suitable instruments for implementation are chosen:

- Access to and development of administrative data sources: obstacles, best practices,..
- Statistical methods: on the use of estimation models when dealing with administrative sources
- Quality measures for statistics using administrative data:
 - o Take stock of the existing knowledge on quality assessment and reporting;
 - o Provide up-to-date guidelines based on expert consensus on quality assessment in statistical production (input and output);
 - o Develop new indicators for the quality of the output based on multiple sources and a methodology for reporting on the quality of output;
 - o Produce recommendations for updating the ESS Standard and the ESS Handbook for Quality Reports.
- Eurostat as a (in)direct user of administrative data sources: how administrative data sources based on EU legislation can be exploited by Eurostat.
- Frames for social statistics: related to quality and quality reporting.
- Pilot studies and applications
- Centre of excellence on administrative data

Part of the work planned will be internal to Eurostat in combination with task forces and individual grants or contracts, but different topics will be treated by the ESSnet on quality of multisource statistics [8] in which experts from eight member states work together during four years. In the near future a Centre of excellence will be launched to ensure the

centralisation and continuity of knowledge as regards the use of administrative data (setting up of an ADMIN helpdesk, provision for on-site coaching in the Member States)

As the ESS Vision 2020 states, the quality of the products, processes and statistical institutions as a whole is one of the ESS' key assets. Therefore, quality related aspects are present in all ESS.VIPs and coordinated as part of a specific framework. The key quality elements in all the projects were identified and mapped to the existing ESS quality framework. Based on this analysis, strong synergies have emerged between ESS.VIP ADMIN and two other projects that have a common requirement for a quality framework for statistical output based on multiple sources. Those other projects relate to big data and to statistical business registers.

3. Moving in the direction of a common approach

Throughout history, as we have seen, statistical offices had a lot of freedom in the development of their production system, leading to different solutions for comparable problems. Even with all the necessities of an internal market, European statistics continued to remain a national activity in the first place: the NSIs collect and produce data largely independently. Legal requirements for the quality of those data supplied by the NSIs are - in accordance with the principle of subsidiarity - output requirements.

For more than 150 years however, statisticians have tried to define standards for the production of comparable statistics and have tried to share best practices, via International Statistical Congresses and later in more institutionalised ways. Willingness to find common ground has always existed.

Finding the right balance between subsidiarity and coordination has always been a central issue in the development of official statistics. When it became clear that the traditional stovepipe approach was no longer a viable option, the Vision on the production methods of EU statistics was introduced with its emphasis on process instead of output and its opening to a better use of administrative data. (with the business register as backbone)

Moving to a statistical production system that is much more integrated at the European level, with a common infrastructure and sharing of data, is giving up some independence. Should Member States change a system that seems to have satisfied their users in the past? Certainly in a time of budget cuts, it must be clear for everyone that modernisation projects are beneficial to the Member States themselves, and that is not always an easy task. It is however essential to get management buy-in at the national level, which requires a solid business case.

In the short term, alignment to the European Vision has a number of drawbacks:

- Substantial upfront investment is needed while the outcome of the projects is uncertain.
- New production methods require different skills, finding the persons with the right set of skills can be difficult.
- Regular production has to continue so tasks may have to be rearranged to be able to allocate statisticians to new projects.

In the medium term and on a more general level, statisticians dealing with business statistics are confronted with an increasing complexity of the way in which economic activity is structured, partly due to globalisation. While more and more data become available the gap between the real economy and the information we get from administrative data grows.

In comparison to the early days of statistics the economy has become more complex and activities are less bound to one place or one country. Also the boundaries of what is to be considered as one economic actor become less clear. The industrialist who is owner and manager of a factory that produces one type of products at one place might have been relevant for the times of the industrial revolution, but nowadays the relation between ownership, management and production is more complex. Business and trade statistics will only stay relevant if they arrive at capturing these complexities. To do that is only possible by developing systems organised at a comparable geographic scale. In other words there is need for intense and clearly structured cooperation and exchange of information.

Given the short time obstacles, it would be tempting to look in the first place at the savings that can be made, for example by replacing survey questions by variables available from local administrative sources without thoroughly assessing their quality first.

When investing in a common production system that in order to work properly requires the exchange of data between Member States, the full commitment of all partners is necessary.

From the point of view of a participant at the national level I would like to add two observations.

First of all, collaborative networks play an important role in the modernization of European statistics: participation is rewarding for experts as they get the opportunity to discuss their experiences, which leads to a better understanding of common issues. At the same time adoption of the results produced by these networks is in some way also dependent on the degree of involvement.

As participation in collaborative networks depends on the national context, we get statistical offices that are highly involved while others are less represented. The risk exist that this could lead to systematically uneven development while coordination and data exchange require the opposite.

Secondly, we have seen three major drivers for change in the direction of more integrated (and coherent) statistics at international level:

One major driver is European integration in itself, where European policies require high quality statistical data.

The second driver are events that show an urgent need for data that don't exist yet. The Great Depression was such an event, and there are similarities with the global financial crisis.

The third driver is linked with the second one, and has to do with evolutions within National Accounts that help shaping the statistical system. New concepts require new data, which can impact both administrative systems and statistics. Systemic shocks (the

second driver) instigate a reflection on how National Accounts can be improved. We see this happening now with discussions on the issue of defining statistical units in the context of a possible future update of the System of National Accounts.

Disclaimer

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