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# Support to the State Statistical Office for capacity building and improving compliance of statistics

## The development of an integrated system of statistics for macro-economic analysis

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## Outline of the presentation

- The main elements of the EU system of macroeconomic statistics
- The Annual National Accounts (ANA)
- The Quarterly National Accounts (QNA) and their relationship with ANA preliminary estimates
- The role of STS statistics in the QNA estimation process
- The relevance of the quality and coverage of STS indicators, in particular concerning services





## Setting the targets for macro-economic statistics

**The target is a comprehensive system of macroeconomic statistics designed to monitor the national economic trends**

- ❑ The European statistical system has developed over the last two decades a large set of macro-economic statistics that allow the different groups of users (policy makers, business representatives, unions, citizens at large...) to dwell on a very broad information potential providing signals and elements about the evolution of the economy, at macro level.
- ❑ The main components of this system are Annual National Accounts, Quarterly National Accounts, STS indicators; the business register and Structural Business Statistics are the main underlying information sources.





## The first building block of the system : Annual ESA National Accounts

The economic structure of a country is typically measured using data drawn from Annual National Accounts (ANA). Those are based on a well defined accounting framework, formally codified in the SNA manual and in the EU ESA Regulation.

Annual National Accounts provide users with a complete picture of the economic structure, measuring a number of crucial variables (GDP, Value Added, Consumption and Investment, Employment, ...) with a reasonable sector break-down. ANA consider in an integrated way the supply and demand sides, the flows with the rest of the world, the labour and capital input of the economy, the income variables, and so on.

The main features of Annual NA is their internal consistency and completeness, their ability to provide a coherent set of variables, their long standing ability to back (macro)economic analysis





## The compilation of ANA: a step by step process using over time multiple information sources (1)

The compilation of Annual National Accounts is a very complex activity, compounding a well defined methodological framework (currently ESA 2010) with the maximum extent of information sources available for a National Statistical Institute (censuses, surveys, administrative sources, even informal or private collection of information).

What is worth discussing in the present context is not the whole information set utilised in the compilation of ANA – that indeed differs across countries - but rather how this set evolves over time, resulting in a revision process very relevant for users.





## The compilation of ANA: a step by step process using over time multiple information sources (2)

The information content of annual data change significantly over time.

The preliminary estimates (namely year T-1 data estimated at T) have broadly speaking the same information content of quarterly data, i.e. are based on short term indicators (including international trade data), with prevalence of supply side information, supplemented by price and labour input statistics. Typically do not take into account structural business data and business demography that cannot be embodied in STS indicators.

In turn, semi-final and final estimates (typically year T-2 and T-3 data) are based on a very different and much larger set of information, deriving from the integration of structural surveys, administrative data sets, and possibly census data.







## The resulting revision process of ANA

As the degree of completeness of information increases, annual data are revised; the revision cycle of annual data can occur once or twice in a year: for instance in Italy, annual data are released at the beginning of March and at the end of September and at each release the last three years data (T-1, T-2, T-3) are modified.

The first release (T-1) is closely monitored by policy makers and other users, being read as a crucial information about the economic performance of a country. Only few users are able to consider its actual information content that is by definition partial, with substantial gaps concerning above all demand components and business information at detailed industry level.

While it is difficult to make clear to users the inherent shortcomings of the first estimates, the best practice for the NSI is to strengthen their robustness in order to control the size of the subsequent revisions.





## The second building block of the system : Quarterly National Accounts (QNA)

The Quarterly National Accounts have a very important function in macroeconomic monitoring as they provide information about the short-term evolution of the overall economic situation (the headline information being the rate of change of quarterly GDP in real terms). Moreover, QNA present a synthetic picture of the main components of demand (consumption, investment, import and export) providing key elements for understanding the economic situation and its determinants.

The crucial features of QNA estimates are timeliness and accuracy. Indeed to maintain an acceptable trade-off between those two elements – i.e. to keep a limited revision error - a good information basis for the first estimates of QNA is needed.

The level of timeliness of first (preliminary) estimate is set by the ESA Regulation transmission program: the GDP and its demand and supply components must be transmitted at  $T + 60$  days.







## The role of QNA in the preliminary estimates of Annual data (1)

There is an important role of QNA that sometime is not clearly perceived whilst is inherent to the methods that are deployed in the early compilation of Annual National Accounts.

The first annual estimate of GDP and the underlying simplified version of ANA can be based, by and large, on the aggregation of estimates worked out in the compilation of QNA. In this respect it is very important that quarterly aggregates provide a reliable assessment of the infra-annual movements of variables.

Indeed, the first annual estimate is not just the sum of the 4 quarters values but embodies also other information at yearly frequency and, above all, the contribution of the more robust methodology that can be implemented in the annual framework (for instance, a simplified supply/use frame, the balancing of supply and demand, a complete double deflation approach, etc.).





## The role of QNA in the preliminary estimates of Annual data (2)

Users expectations about the yearly results are strictly based on quarterly data and the process must be consistent. Any divergence between QNA and first ANA estimates will bring about large revisions of QNA that are not easily explained and understood.

The coherence between ANA and QNA estimates, and later on the coherence between the preliminary (about T -1) and the final (about T-2 or T-3) crucially depends on the set of indicators utilised in the compilation processes: the short term indicators used in QNA must be able to track the evolution of ANA variables.

For instance, as far as quarterly estimates on the value added of the industrial sector are based on the IPI and also the annual estimates are using IPI as main information set, the coherence between QNA and ANA is ensured. In turn, the final ANA estimates will utilise SBS data and the difference between SBS and IPI data can be an issue.





## The compilation of QNA using STS indicators

The development of the system of the European STS indicators has been led by to main determinants:

1. making available to users a set of statistical instruments able to track and monitor the short term evolution of the main business sectors (industrial activity, construction, retail trade, other service sectors).
2. making available to National Accounts compilers a large set of variables (production, turnover, prices, labour input) to be utilised in the timely and efficient estimation of Quarterly aggregates, mainly (but not exclusively) on the supply side.

In fact, indicators such as the IPI (usually broken down by industry), the index of production of construction sector, the producer prices Indexes, the turnover of other services, the service producer prices, indicators of worked hours, are the basis for estimating the quarterly value added at current and constant prices for a large share of the economy





## The compilation of QNA: industrial and construction sectors (1)

The Industrial Production Index (IPI) on the one hand and the Construction Production Index (CPI) on the other, are very often utilised to estimate the rate of change of value added both in QNA and in the preliminary version of ANA.

In turn, the compilation of value added data in the final (or semi-final) versions of ANA are strictly based on SBS statistics, derived from firm level data (measured by sample surveys or using the integration of survey results and administrative information, like in the Italian case)





## The compilation of QNA: industrial and construction sectors (2)

In principle, IPI (broken down by industry) and CPI (split in two components when possible) are good proxies of the short term evolution of value added in volume of the relevant sector; indeed, a constant value added to production ratio is typically assumed in estimating QNA and preliminary ANA aggregates.

However, the robustness of the relationship between those STS indicators and NA value added must not be taken for granted as it depends very much on the features – i.e. the quality - of the IPI and the CPI. This is why their construction methods must be made as coherent as possible with other information concerning value added (first of all with SBS data); issues like the representativeness of the sample of products or the updating of the weighting system are very important.





## The compilation of QNA: “market” service sector

It is a long standing issue of macroeconomic statistics that information able to track the short-term evolution of service sectors where (or still are...) partial, lagging in timeliness and presenting an insufficient coverage of the relevant sectors, in particular when compared with the information available for industrial activities.

This issue that has plagued the process of compilation of quarterly (and preliminary annual) value added estimates concerning the service sectors has been tackled with the development of the STS Annex D module, and namely with the development of indexes of service turn-over and of service producer prices.

Indeed the sector coverage of turn-over indicators is far from complete, but it is important that business activities (trade, transportation, communication, professional and business services, etc.) characterised by relevant cyclical fluctuations are included in the set.







# The share of services sector in total value added as a measure of the information potential of STS indicators

Components of BC gross value added by NACE section, percentage shares on current prices data

Sector	2000	2014
A - Agriculture, forestry and fishing	12.0	11.7
B, C, D and E Mining and quarrying; Manufacturing; Electricity, gas	18.7	18.3
F – Construction	6.7	8.0
G, H and I Wholesale and retail trade; Transportation and storage; Accommodation and food service activities	16.9	21.0
J, M and N Information and communication; Professional, scientific and technical activities	7.2	7.2
K, L Financial and insurance activities - Real estate activities	19.4	16.4
O, P, Q, R, S, T Other services	19.2	17.4





## How service turn-over indexes can be utilised in QNA estimation

The service turnover indexes defined by the STS Regulation have proved to be a very useful set of indicators for estimating quarterly value added of specific service sectors. Their evolution is by and large in line with the one of service production at current prices.

Indeed the deflation of turnover, needed to get high quality indicators (proxies) of the movements of constant prices value added would require that also service producer prices are available. However, if this not the case the service turnover can be deflated for the purposes of national accounts compilation using the same price indexes currently utilised for deflation in Annual National Accounts.

It must be stressed that the sector break-down of service turnover indexes can be adapted with a sufficient degree of flexibility to the sector break-down of quarterly value added





## Concluding remarks

1. As already stated in the previous presentation STS indicators have been defined also to represent valuable inputs for the compilation of Quarterly National Accounts. This is particularly important for a large share of the service sector
2. The correct design of STS indicators is crucial to attain a sufficient degree of consistency between their evolution and the one implicit in Structural Business Statistics measures for activity variables (like turnover and value added)
3. Robust STS indicators provide a sound basis for the compilation of Quarterly National Accounts and improve the ability of QNA in contributing to the estimation of preliminary versions of ANA



*Thank you for your attention!*

