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The Norwegian Integrated System of Accounts: Towards a Quarterly Compilation of Sector Accounts

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Introduction

The aim of this paper is to give a short description of the Norwegian system of annual and quarterly sector accounts. The primary focus will be the compilation and balancing of the annual sector account. The quarterly sector accounts in Norway are being developed using the same structure and technical platform as the annual sector accounts. Compiling quarterly sector accounts will however raise several questions on compilation methods, data sources and time of recording. Some of these questions will be addressed in this paper.

Annual institutional sector accounts

The Norwegian National Accounts System

A comprehensive revision of the Norwegian national accounts was undertaken during the period 1992-1995. With this, Norway was the first country to adopt the new guidelines SNA93 and ESA95. Integrated economic accounts for all institutional sectors, including the "rest of the world" and detailed Supply and Use Tables (SUT) are complied back to 1978. The detailed SUT in current and previous year's prices, are even compiled back to 1970

The rest of the world accounts

In the Norwegian National Accounts, *The rest of the world* is treated as a fully integrated institutional sector, reflecting the view that the *Balance of Payments* (BOP) statistics is the mirror of *the Rest of the World* in the sector accounts. This integration is mainly achieved due to the fact that in Norway the National Accounts Division is responsible for both the NA figures and BOP figures. The compilation is thus carried out in a comprehensive and coordinated manner. The BOP is integrated in the NA as far as definitions, system arrangement, calculation methods and results, and is updated as regards to adjustments to international guidelines (SNA93, BPM5, ENS95).

An important incentive behind the integration is to utilize all relevant information from the other institutional sectors, and thus to ensure consistency between *the Rest of the World account*, and thereby BOP and the other sectors in the institutional sector accounts. This provides the possibility to make systematic evaluation and plausibility checks on the BOP data within a consistent macro-economic accounting framework.

The integrated data processing system

An important aspect of the Norwegian main revision in the 1990ies was the development of an integrated data processing system with an application named SNA-NT[1]. The availability of SNA-NT ensures that NA can reliably and consistently be calculated from the input data with a minimum of work. This is important for timely updating and when series of IEA/SUT integrated accounts are revised backwards. The SNA-NT software contains a coordinated set of catalogues with lists of codes that classify institutional sectors, industries, types of income and expenditure and capital accounts, financial and non-financial assets accounts, and for the SUT the various suppliers, types of use and products

The basic philosophy behind the design of such a detailed system has been to create a framework that can utilise all kinds of specific information and secure the dataflow between the systems. The system

[1] The SNA-NT is a Client-Server application, where the "Clients" are Windows-PCs and the "Server" is an Oracle relational database. The application was developed, using Microsoft Visual C++, later Visual Studio.

should also be robust to changes in definitions and classifications, and give the users of data a maximum of flexibility.

The Norwegian annual sector accounts specify all the institutional sectors, including a sub-grouping by industry (main industries for the enterprises) for each sector. For all the institutional sectors, the following accounts are prepared: Production accounts, Allocation of primary income accounts, Distribution of income accounts, Use of income accounts and Capital accounts. Technically speaking, the same IT system is used for the current production of, *Integrated economic accounts with institutional sector accounts* (IEA), *Balance of Payments* (BOP) and *Supply and Use Tables* (SUT). All three are compiled in the framework of the SNA-NT software and make the system effective with respect to time and labour effort and secure the dataflow between the systems. By introducing a joint data structure, classifications and coding systems on a detailed level and using the same set of estimation procedures and rules for the calculation of values of corresponding variables in the statistical systems, data for both BOP tables and NA tables are extracted from a joint data base called FI-IN.

The first stage of compiling the SUT is to utilise the data already included in the IEA. Hence, a strong linkage between the SUT-tables and the production and capital formation accounts are maintained. The link secures single and definitive GDP-figures for both preliminary and final annual sector accounts.

The use of pre-systems

One important aspect of SNA-NT interface is the so-called *pre-system*. A pre-system is a detached system, yet integrated in SNA-NT, which carries out compilations by sub-sector. By this, the pre-systems ensure harmonious and consistent data sector-internally. Due to the use of the same classification and coding system, the pre-systems convert data to the fixed structure used in the FI-IN-database and thus secure the same structure for all sectors. The total number of pre-systems is currently five, as one pre-system exists for each of the main institutional sectors[2].

The processing order

The data processing system needs to be run in a fixed order to ensure consistency. All stages are integrated in the SNA-NT framework. Below is a brief presentation of the processing order (also illustrated in figure 1):

1. BOP, OFF and RG (all pre-systems) are run to ensure that data for sequentially *The rest of the world*, financial institutions and general government are consistent and ready to be used in the SUT.
2. The SUT are then compiled in current prices. This leads to, for example, value added figures, consumption in households and consumption of fixed capital in the institutional sector accounts.
3. All the remaining pre-systems are run.
4. Data for all main sectors (by sub-sector) are brought together in a mezzo-database[3]. This database provides the basis for the balancing procedure.
5. The balancing procedure is run and the income and expenditure flows are reconciled.

Balancing procedures

There are various techniques used in the Norwegian balancing procedure. The balancing routines are divided into three steps. First, counter sector information is maintained in the system and used widely to distribute and balance the income and expenditure flows. Counter sector information is best described as the "secondary sector information", for example information about the paying sector in an income record. Some of the counter sector information is due to an automatic process in the pre-systems, but the information is mainly derived directly from the basic data sources. In the final stage

[2] In IEA terms, the Balance of Payments (BOP) is a pre-system.

[3] This is called the FI-IN.

of the balancing procedure there is a manual routine where the IEA team decides what information is most reliable, when different sources of information are reconciled. This is clearly the most time-consuming stage in the process of compiling the annual sector account.

Data sources used in the annual sector accounts

General government
The main sources are fiscal accounts for central and local government. The data are transformed to national accounts figures in the pre-system (OFF). This pre-system for central and local government supplies input data to both SUT and IEA and thereby ensures consistency between the two.

Financial enterprises
The main data source is accounting and balance sheet data for the financial enterprises collected by Bank of Norway and Statistics Norway. The pre-system for financial enterprises (RG) supplies input data to both SUT and IEA and thereby ensures consistency between the two.

Non-financial enterprises
The main data source is accounting statistics, tax questionnaire on accounting, for non-financial joint-stock companies. The data are transformed to national account figures by the pre-system for non-financial enterprises (RH).

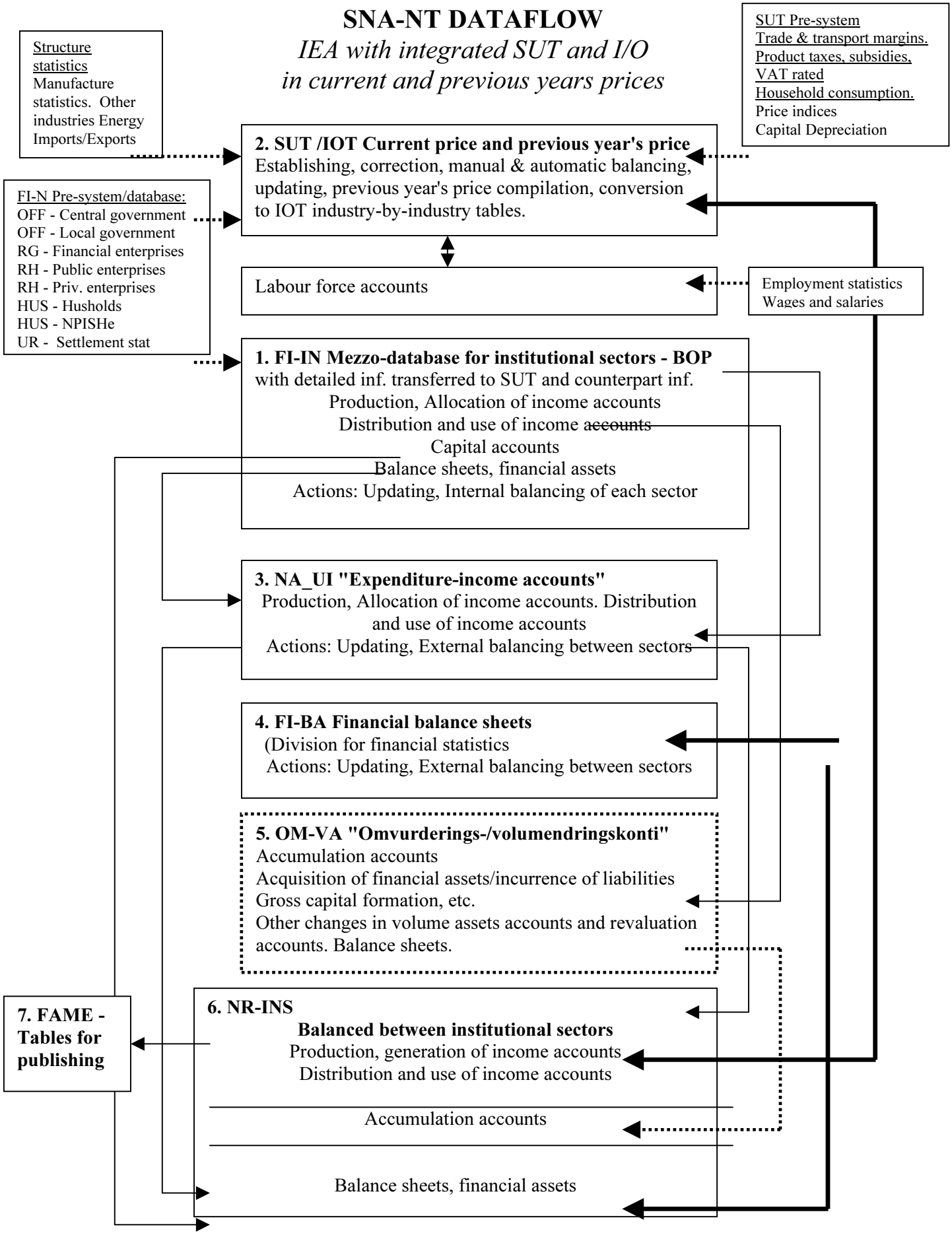
Households
The main data source is the Income and Wealth survey (Statistics Norway). This information is used to compile, for example dividends and interests received by households. The second main data source is counter sector information about transfers from general government, for example information about social benefits received and taxes paid.

Non-profit institutions serving households
The main data sources are information on transfers from general government and information about voluntary contributions by households and enterprises (counter sector information).

The rest of the world
The main sources for the compilation of Balance of payment (BOP) are foreign exchange statistics from Bank of Norway and service statistics from Statistics Norway. The Norwegian BOP is an integrated part of both SUT and IEA and thereby ensures consistency between the two.

SNA-NT DATAFLOW

IEA with integrated SUT and I/O
in current and previous years prices



Quarterly institutional sector accounts

Introduction
The QSA (Quarterly Sector Accounts) in Norway will be developed using the same technical platform and structure as the annual sector accounts. Some simplifications may be necessary due to the data situation and the short compilation period. The short compilation period requires efficient and for the most part automated data-flow from statistical sources.

The compilation of QSA in Statistics Norway is carried out using existing data sources. There is currently no plan to initiate questionnaires on quarterly figures for Households or Non-Financial Corporations. This is in line with Statistics Norway's policy to not increase response burden if it is possible to avoid it.

Description of the sector structure
Following the demands laid out in the draft regulation on QSA, Statistics Norway will publish a sector account containing five main sectors.

Sector structure in QSA:

S 11 - Non-Financial Corporations

S 12 - Financial Corporations

S 13 - General Government
Sub sector S 1311 - Central Government
Sub sector S 1313 - Local Government

S 14_15 - Households and NPISH

S 2 - Rest of the World

The sequence of Institutional Transactions Accounts

Production Account/External Account of goods and services and the Generation of Income Account

The Quarterly National Accounts (QNA) in Norway is a model of our Supply and Use tables. This system is designed to compile an estimate of GDP using the production approach. Although the unit in the QNA is LKAU (Local kind of activity unit), the breakdown of industries in the system will give a good starting point for compiling all transactions leading to the balancing item (Net) Operating surplus/Mixed income by institutional sectors.

S 11 - Estimating the transactions for this sector might be one of the most challenging parts of the compilation. Since QNA is based on LKAU's it gives no information on the distinction between S 11 and S 14_15. Additional statistical sources are being tested but so far it looks like Statistics Norway might have to use a distribution key given from the latest annual sector account to distribute transactions between sector S 11 and S 14_15. The key is estimated from annual figures for Unincorporated Enterprises belonging to S14 and employed on a detailed industry level given in QNA.

S 12 - The QNA identifies the transactions in this sector directly. No adjustments are planned.

S 13 - The QNA identifies the transactions in this sector directly. No adjustments are planned.

S 14_15 - The same challenges as for S 11 apply to this sector. The QNA system also gives information of Compensation of Employees.

S 2 - The QNA identifies the transactions in this sector directly. No adjustments are planned.

Allocation of Primary Income Account

Direct information on (some) transactions in this account is available during the compilation period for sector S 12 and S 13. For S 13 "the Action Plan for Short Term Public Finance Statistics" has been adopted by Norway and will give at least some information on aggregate transactions. Breaking down more disaggregated transactions will be possible using a Top-Down method of compilation. The Action Plan requires data delivery at T+90 days. This might cause some difficulties, but Statistics Norway's Division for Public Finance is working in close collaboration with compilers of QSA and most likely the timeliness of Government Statistics will be improved.

The main challenge for S 11 and S 14_15 concerning the transactions in this account, arises in compiling flows of Property Income. There is little direct information on interest flows, dividends, withdrawals and rent of land on a quarterly basis.

Information on stocks of interest bearing deposits and loans is available on a quarterly basis from Bank statistics. Information on interest rates also exists, and this gives the opportunity to estimate the interest flows indirectly.

Statistics Norway is currently working on an interest flow matrix. The interest flow matrix is being designed using quarterly stocks of deposits and loans by sector and combining them with interest rates. The same method is being applied in the estimation of Property Income Attributes to Policy Insurance holders.

Regarding dividends (distributed income of corporations), the situation is more difficult. Little or no information on dividends payable and receivable is available during the compilation period. Thus both amount and time of recording will be difficult to estimate. It is however known that most corporations on the Stock Market Exchange decide upon dividend payable during the second quarter.

The probable solution to the problem regarding lack of property income data is to use correlated variables to estimate the amounts in the account.

For S 2, direct information on Property Income receivable and payable will be available at the time of compilation.

Secondary Distribution of Income Account

This account focuses on redistribution of income amongst sectors. Consequently information on Taxes and Transfers (such as Social Benefits) will be the most important transactions to estimate. Therefore the main data source will be figures on taxes provided from General Government. Counter sector information from Government accounts might be used to estimate taxes payable for other sectors, but the distinction between "whom pays what" is in many cases difficult and might only be obtained using distribution keys from annual accounts.

For S 12 and S 2, direct information on transactions in this account is available during the compilation process. This information will also serve as counterpart information for other sectors.

The balancing item, Disposable income, is highly important. The results from the compilation up to this stage will be carefully considered when the first estimation result is obtained.

Use of Income Account
The Norwegian QNA will provide the figures on Final Consumption Expenditure for both sectors S 13 and S 14_15. No adjustments are planned.

The adjustment for the change in net equity of Households on pension funds might be obtained from counter sector information from S 11.

The balancing item (net) Savings is the most important balancing item when it comes to evaluating the Household sector. Many users will focus only on the savings rate obtained. It is therefore important that the result is plausible and that fluctuations from quarter to quarter are explainable. Regarding the Household sector, it is likely that the savings rate is much lower (and maybe also negative) in Q4 than in Q1 due to Christmas shopping. It is also likely that the savings rate is low during holiday season in Q3. These fluctuations arise from high fluctuations in consumption. Some fluctuations might also incur on the income side of the account. It is for instance important to explain how dividend receivable affects the disposable income estimate during the year.

Capital Account
Information on fixed capital formation is obtained from the QNA. QSA is facing the same problem regarding the distinction between S 11 and S 14_15 as in the production account. The same key distribution method will be used in the distribution of fixed capital formation.

Some information on capital transfers can be obtained from S 13 and S 2. Counterpart sector information and estimation will be used to compile figures for capital transfers for S 11 and S 14_15.

The resulting balancing item, Net Lending is also important. For the Household sector, the results will be evaluated given the Financial Account Balance Sheets that are produced by the Norwegian Central Bank. It is likely that the two estimates on Net Lending will differ quite significantly. Statistics Norway and The Norwegian Central Bank have started a cooperation to ensure that methods and input regarding the compilation on some transactions is the same or gives the same results.

Time of recording
Estimating transactions in QSA might seem more straightforward than estimating a model for the Supply and Use Table. It is also mathematically more straightforward. There are, however, quite large problems regarding lack of data and, in general the form of data when it is obtained.

The QSA is based on a rule of accrual accounting of all transactions. This can create some adjustment problems in the compilation procedure. One example of a problem that occurs can be seen by analysing the accounting data obtained from Government Accounts. Since Government accounts in many cases are based on a cash principle, using them directly and with no adjustments will produce some strange results on a quarterly basis. For instance taxes for corporations is only payable every second month, and for unincorporated enterprises in the Household sector only once a year. The owners of unincorporated enterprises choose whether they pay taxes on a regular basis or only once a year. This makes some sort of smoothing technique absolutely necessary in order to give a plausible estimate of Disposable Income on accrual basis.