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Towards implementation strategy for the 2008 System of National Accounts**Challenges of implementing National Accounts framework
on all flows and stock linked with assets****Note by the Central Bureau of Statistics, Croatia****Summary*

The main purpose of the national accounts framework is to offer sound set of indicators which will provide reliable picture of the economy. Timely and trustful indicators ensure a good base for the right decisions. National accounts are at the end of statistical chain but ironically many times are compared with the engine that fearlessly runs towards new things. Implementation of the system of national accounts is deterrent with the quality of the entire statistical office and the statistical office is shaped with the quality of the national accounts. The paper is mainly about the challenges that appeared with the implementation of the national accounts rules on assets. Assets (balance sheet) are at the end of the system and they are just like national account in the statistics; GDP without the wealth gives incomplete information about the state of the economy.

* This paper does not necessarily reflect the views of the Central Bureau of Statistics.

I. Introduction

1. The biggest change in the measurement of Croatian economy happened when the old material balances system was replaced by the UN System of national accounts (SNA 93) and the European System of National Accounts (ESA 95). Essential part of these improvements was also implementation of the new classification system.
2. Main approach to gross domestic product (GDP) is output approach. Expenditure GDP is calculated independently and income is derived from output estimates. National accounts data are not reconciled in a reliable supply and use framework, but the GDP calculation has been improved by the inclusion of the non-exhaustive part of economy, the new estimation of imputed dwelling rents and the new estimation and allocation of Financial Intermediation Services Indirectly Measured (FISIM).
3. Estimates exist for other main aggregates (distribution, redistribution and use of income) and employment but they are even less harmonised with the ESA 95 and SNA 93 than the transaction accounts. More intensive use of the statistical business register (SBR) in the CBS and the bigger awareness of the importance of the statistics on business demography in the CBS will improve data on national accounts aggregates by industry.
4. Estimates on fixed assets are done for all type of asset but official ones are only on dwellings (consumption of fixed capital (CFC) is included in GDP through imputed rent calculation). Currently CBS is trying to produce official estimates for assets owned by non-market producers and they should be included in the next revision of GDP. Values on assets owned by market producers are far from perfect and therefore can not be used as official data.
5. Based on Commission Regulation No. 1722/2005 and Eurostat recommendation SBC already included consumption of fixed assets based on capital stock estimates for dwellings in the last big revision. Since in the non-market economy the size of capital consumption affects directly the value added of non-market activities and to total GDP, we plan to include consumption of fixed assets for non-market producers in our next revision (planned for next year). The market consumption of fixed capital should be included into GDP as the last phase of implementing capital stock values.
6. Since flows in the national accounts are compiled on an ownership basis capital stock figures also have to be classified by the owner and not the user of the asset. For the Classification of Institutional Sectors all input data that are available to national accountants at the reporting unit level are divided by sectors with simple bottom up method (by joining databases of sector with the input source data).
7. Measurement methods are perpetual inventory method (PIM) for assets with the shorter service life and benchmark estimates combined with PIM for longer lived assets. Benchmarks differ depending on the type of asset; we used two methods price-quantity method and bookkeeping balance sheets revalued with statistical price indices. Price-quantity method is used for asset with better quality data sources like censuses or administrative data sources of good quality. Revaluation based on accounting statements of reporting units (balance sheet from FINA administrative database; Financial Agency) is used for assets for which CBS does not have better source for the moment.
8. Our preliminary method uses data from financial balance sheets but with upward adjustments to reflect national accounts valuations. Benchmark gross capital stock cannot be calculated by pure addition of historical values from company accounts. Most firms do not revalue their assets because in recent years Croatia has had a low inflation rate; the

average rate for 2004 was 2.1 per cent (Annual chain consumer price index) and there is no legal obligation to revalue data in balance sheets.

II. Methodological revisions in the Central Bureau of Statistics in the Republic of Croatia

9. On 28 January 2009 the CBS published a major revision of the national accounts; revised data series for the period from 1995 to 2005 in current and constant previous year prices. The effect of this major statistical revision at the GDP level in nominal terms was the average increase of 15.8% throughout the whole period. The largest impact to corrections of GDP had a part that refers to the estimation of the non-observed economy. It makes about 2/3 of the overall GDP corrections throughout the whole period from 1995 to 2005. The remaining 1/3 of the overall corrections belong to the two GDP elements that were calculated according to the new ESA 95 methodology, imputed dwelling rents and FISIM.

10. Financial intermediate services indirectly measured are calculated and allocated among user sectors and industries according to the rules described in Commission Regulation 1889/2002 and Council Regulation 448/98. Methodology on one part of the non-observed economy and on the imputed dwelling rents are posted in the United Nations official website; at the Joint UNECE/Eurostat/OECD Meeting on National Accounts (Geneva, 21-23 April 2008).

11. CBS next revision on national accounts is planned to be released this year with the following methodological and data improvements:

- Inclusion of consumption of fixed capital of non-market producers.
- Inclusion of the results of the Economic Accounts for Agriculture into the national accounts to replace the very simple calculations currently used.
- Value the output of insurance in line with ESA95.
- Valuation as required by ESA95 of the output of market producers which satisfy the 50% rule of ESA95.
- Inclusion of the production of software for own account.
- Verify the size of the cross-border flows of compensation of employees using the number of employees and ensure correct valuation including taxes and social contributions.
- Review all taxes and subsidies on production. Compare VAT assessed with time-adjusted VAT payments.

12. To improve some methods applied in the expenditure approach it is planned to do the Eurostat's Tabular Approach; especially to household final consumption expenditure (HFCE) and to gross fixed capital formation (GFCF).

13. Considering GFCF following area for improvement have been identified; CBS's dedicated capital expenditure survey undertaken in the national accounts will remain the main source for GFCF for legal entities, but some changes will be introduced. The plan is to introduce conceptual adjustments by improving the coverage (grossing up to the entire universe of legal and unincorporated units). It is of vital importance to improve as much as possible the quality of industrial and size classifications of the units on the current FINA "registers" (quarterly and annually databases) or to start using good quality data from the statistical business register (SBR). Due to transmission table requirements, changes are needed to the investment survey (asset breakdown). In addition, the validation of survey

values against other data sources will be undertaken, and what distinguishes GFCF from intermediate consumption and HFCE has to be defined in the supply use (SUT) framework.

14. One of the most demanding improvements to GFCF is linked to classifications. It is essential to improve the current practise of coding industry and to start with the profiling of enterprises and associated producing units. For GFCF (as for all other components of GDP), business entities are grouped within activities as institutional units and not as pure kind of activity units, while for regional GFCF they are grouped at the kind-of-activity unit level, by location and activity of operating units.

III. Challenges of implementing National Accounts framework on assets

15. In the attempt to be as much as possible closer to SNA and ESA standards lot of challenges have to be resolved. National accountants “only” have to know economy really well to be able to design the statistical system that will measure all about the economy that has to be known.

16. National accounts is a complex system, it has many dimensions. Diverse classifications have to be applied on different stocks and on all the flows in the economy. Often the best solutions are the simple ones, but the compound architecture complicates the need to have homogenous parts of a huge demanding structure.

17. Classification of the institutional units on related sectors grounds on the differentiation between market and non-market production/producers where the decision on which unit bears the risks and/or enjoys benefits is the crucial and definitely not easy. To explain some events in the economy that happened after the peaks of financial crises it is not enough to have data only on government sector. The need for data by additional groups like public sector existed before the financial crises but it was not so much required by the institutions that are responsible for economic policies.

18. Assets involved in a public-private partnership can not be treated like concessions. Different kinds of risks have to be tested to decide should the asset be considered as non-government or government asset. It is possible that the main assets used by a public nonfinancial corporations; market producer is legally owned by the government for which corresponding transactions between the two sectors exists.

19. Household sector on a first glimpse could be seen as a sector which is homogeneous. Beside the fact that the households are the main consumers in the system they also supply the inputs for production and they yield different incomes on all inputs (compensation of employees, gross operating surplus, dividends and other incomes). Although not employed they are involved in the production of owner occupied services. They include incorporated units and for satellite account voluntary and unpaid household work has to be added too, yet this kind of work is outside production boundary.

20. And finally according to the Stiglitz-Sen-Fitoussi report it is important to emphasise the household perspective. Income and consumption together with wealth data give better information than GDP. It has been said many times that GDP is not intend to measure a well-being but it could at least measure total economic activity.

21. When we started production of the data on capital stock we experienced how challenging is to produce data by activity, product breakdown and other classifications. In the CBS net capital stock of the current year is calculated by adding to the net capital stock of the privies year expressed in the end year prices of the current year, adding values of gross fixed capital in end year prices and subtracting consumption of fixed capital in end year prices.

22. We are using geometrical depreciation and it is not clear to us what do to with other changes in volumes; do they have to be included into formula for net capital. Holding gains/losses result from the price changes and it must be recorded for the entire difference between the opening and closing which could be change in the price between beginning and end of the year or averaging all price movements during the year (significant difference is for the dwellings).
23. To be able to make calculations everything has to be in the end year prices. Second prerequisite for making calculations could be that units used for balance sheet should be at the same level of aggregation as the level used for flow data and other changes of assets. For example the stock data from the balance sheet of one institutional unit has activity cod of institutional unit but the flow data has different cods of activity; of local kind of activity units (establishments).
24. A basic accounting identity links the opening balance sheet and the closing balance sheet for a given asset in a way that balance sheets are aggregated at the level of institutional unit and positive and negative changes (flows) are mainly at the level of local kind of activity units.
25. Flows that show creation and usage of assets are in different activity codes than the code of the balance sheet. This does not happen when the perpetual inventory method is used because the stock value is the accumulation of the past investment in constant prices but when the net value comes from other sources (for assets with the longer service live) it is possible that activities are different because entities are grouped within activity at different more aggregate level.
26. For the future when capital services should be produced and when the productivity analyses is done, it is essential to have the inputs that created the output in the same classification group, otherwise any conclusion on efficiency is odd.
27. Similar challenge appeared with activity classifications for gross fixed capital formation and regional gross fixed capital formation. It is substantial that the breakdown by activity is the same for regional and national values and this is again possible only when the units for which data are collected are same; they are grouped within activities at the same level.
28. Institutional unit has establishment in different regions and probably different activities. By summing data of investments by establishments would produce different activity breakdown than the one given by grouping institutional units. Regional data for institutional units would mean using local units and not local kind of activity units.
29. To assume that the economical owner of an asset is an establishment is not feasible. Usually gross operating surplus is used by the institutional unit and rarely by the establishment. Just like the risks are mainly covered by the unit. Probably everyday maintaining of an asset is done by the local unit and the major improvements which are part of investment are probably done by the institutional unit.
30. Occupation migrations and movements of assets between regions are causing difficulties to do balancing. Incomes earned in one region could be used (for consumption or production) in the same country but not necessarily in the same region.
31. Other thing with the balancing is when the supply-methods are used to estimate the gross fixed capital formation by the product and by the activity of the owner, the information on net capital transfers have to be included too (one component of GFCF). Some activities could have substantial amount on capital formation that is not covered with the output produced by this activity (for example investment in the public non-financial corporations or in the agriculture activity are mainly covered with the capital transfers from the budget).

32. Non-financial produced assets are tricky because national accountants have to know are they used under financial or operating leasing (when the charge for using asset is not consumption of fixed capital but intermediate consumption), are they produced by the user, bought or received without the payment and is the asset only used by a unit and belongs to the headquarters of the institutional unit. The last dilemma is important for the consolidation that makes already complicated estimates on investment more demanding.

33. This "authorisation" that headquarters do by giving right to its local kind of unit to use the fixed assets owned by them for the production of the output of the establishment could be seen as some peculiar transaction inside the institutional unit. As the output of the institutional unit include deliveries of goods and services to other establishments, also usage of all inputs between establishments could be important. Valuation of the transactions between establishments is sometimes used for the reallocation of the profit and the costs between the units and in time.

34. Existence of many owners/user of the same asset is a challenge even for the product classification. For example Croatian railways share the optical cables beneath the track with the telecommunications enterprises. The question is; are the cables an integral part of the track or a separate asset. In Croatia the capacity of optical cables which is not used by Croatian railways is being rented and because of this it could be seen that they are separate asset. On the other hand if they are an integral part of the track, investment in them should be showed as investment in 'other structures'.

35. Contrary to the case when one asset has many different users is the situation when institutional unit has no assets and no employees. In Croatia this is the case with some non-profit institution serving household like unions. They are treated as separate institutional units because they have a complete set of accounts. But members are employed by the unit where they work and not by the union. There is as many units (with the same identification number) as there is local units of the same union and they are all without the employees.

36. It would be mischief to have different rules depending on the type of fixed assets. If somebody uses the building for the production it can not be used at the same time by somebody else, it can only be sold to other, which would mean the loss of benefits for the seller (capital services). It is not so for some intangible assets, they can be used by more than one owner/user at the same time. Intangibles do not have to be sold, they can be copied and original retained; the old and the new owner have benefits by using the "same" asset. Copies and the original could be used in many activities at the same time, and again if productivity is calculated it is essential to have in proportion all inputs and outputs produced in the exact activity.

37. One of the most difficult things is to find the best place in the system for the non-produced assets and to make proper distinction from the produced assets. Non-financial produced assets in the system of national accounts have stock values which are the result of the previous accumulations of investments. Elements which are outside production boundaries influence them like holding gains and losses and other changes in the volume. And finally they are used in the production process through the consumption of fixed capital; capital services.

38. Non-produced non-financial assets also have stock value. They entirely result of actions that are outside the production boundaries. In the system the net acquisitions (one part of the capital account) only records the movements between units/activities of leases or other transferable contracts (excluding the associated costs of ownership transfer because they are a component of gross fixed capital formation).

39. There is no direct information on the value of the used non-produced in the production process; the net operating surplus includes elements that belong to the non-produced assets. That part of the net operating surplus gained by the activities involved in

the processing of natural assets is in the most of the cases recorded as intermediate consumption in the system by the units that use processed natural assets. The thing missing is the value of the natural assets used up in the process of production.

40. Acquisition of gross fixed capital formation could be compared to the net acquisitions of natural assets because they record which sectors/activities bought or disposed off assets and in that way increased or decreased their stock values. As the consumption of fixed capital shows how much the stock value of the produced assets has been used up it is also logical that natural stock value also has this kind of flow which will show the contribution of that kind of input to the production.

41. It is ironical that if you cull protected flower you will pay the fine but if you are building something on the ground where it is possible that has protected flowers and you have all documentations for the project you will not be fined.

42. If you consider the fact that in the system land and other non-produced assets are treated as unaffected assets with the production process it is somehow difficult to understand how the system would show economical effect of the production of renewable and non-renewable energy. For example in the mining and quarrying activity output includes non-produced assets which are part of operating surplus and we could assume that there is a stock of values changing because of the newly produced output. The similar thing also happens with the land because the industrial processing (usage of the pesticides etc.) impoverishes the land.

43. Pollution of the environment is mainly result/output of the economy. Activities undertaken to reduce pollution do not create immediate profits but they do reduce the costs in many activities. When we decrease emissions or the quantities of dangers waste etc. we are doing something positive for the Earth but also we are increasing "indirect" profits which would be decreased if these activities never happened because more would be paid for the health (and more sick leaves) and education of the new workers.

44. When we included costs on gross fixed capital formation on motorways we also included costs of building noise reduction barriers. This type of assets is not used by the consumers of the motorways they are there for the neutralization of negative affects produced by this type of asset and the benefits are for the people located close to the noise or any other type of equipment that has negative accompanying effects.

45. Some of the negative effects like waste represent lately profitable business; some people would even say the garbage is money!

46. It is difficult to make accurate borderlines between different assets depending on the role they play in the system. Roads are mainly used by household sector but are treated as fixed assets. Art object can earn incredible amount of money during years and huge amount could be spent on the restoration (and maintaining) and will not be treated as assets. Dogs "employed" by government can have a high cost of education because they have to be prepared for a wide spectrum of activities they perform like helping police (finding drugs, mines etc.), helping the blind, finding people after natural disasters and even in health by working with children with disabilities or even diagnosing certain illnesses.

47. So far Croatian Bureau of Statistics (CBS) had opportunity to benefit from many EU projects like CARDS, MB PHARE 2005, MBP 2006, MB IPA 2007 etc. We hope we will have this privilege in the future and this is especially important for implementing the new SNA 2008.

48. Currently MB IPA 2008 is going on in the CBS and one of the topics is the implementation of the Tabular Approach to GFCF. Our plan is to by scanning the possible sources for the SNA93 and ESA95 we would also investigate the sources needed for the SNA 2008.

49. One of the topics in the revision that should be done this year is inclusion of the production of software for own account. We already took the data from different sources on the categories of IPPs from the OECD Handbook on Deriving Capital Measures of Intellectual Property Products that should be included under SNA 2008.

50. Last year we started to explore the possibility of using the annual report on research and development (R&D; survey is carried out on the basis of the Frascati manual). Since this is also demanding area CBS would like to be able to receive help by bridging this source with the SNA 2008 framework.

51. Eurostat new Transmission Program has a set of tables on R&D so we can not take too much time for implementing the statistics for this kind of asset.

52. Finally capital services are something that will have to wait after the backcasting methods on GFCF are introduced. This would allow improve the capital stocks considerable and we should be able to make attempts to calculate genuine contribution of the capital to the production.
