

Macroeconomics I. – Supplementary Materials

National Accounting, GDP and Related Concepts

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Content

1. Introduction to National Accounting
2. System of National Accounts in General
3. Characteristics of National Accounts
4. Institutional Coverage
5. Data Reporting
6. Gross Domestic Product in the SNA Framework

Introduction to National Accounting

Part I

National Accounting

- Emergence of macroeconomic analysis
(between the 1920s and 1930s)
 - --> a substantial **need for macroeconomic data** describing economy as a whole
- **Systems of national accounts (SNAs)** were designed to gather and organise such data
 - The systems were gradually developed and are still being improved
- **The National Accounts (NAs)** became an important part of **statistical evidence**
 - The rise in globalization and global interconnectedness of countries led to substantial harmonisation efforts between various systems of national accounts

National Accounts

- **National accounts are the implementation of complete and consistent accounting techniques for measuring the economic activity of a nation**
 - It is a statistical (descriptive) model of a national economy
 - It captures the main economic flows in relation to production, consumption, accumulation and the outside world
 - It is based on internationally accepted definitions of macroeconomic aggregates

National Accounts

- **The general frameworks are similar to business accounting but the data sources are entirely different**
 - The company accountant has at his disposal a ledger (main accounting book) showing to the last cent all the transactions carried out by the firm during the period
- **The national accountant obviously has nothing similar for all agents, especially for households**
 - For this reason, it is not unreasonable to speak of “**national accounts statistics**”
 - It implies acceptance of the notions of **approximation, estimation and revision**

National Accounts

- **National accounts also differ in many ways from statistical data obtained from other sources:**
 - Specific sectoral statistics (statistics of agriculture, industry, construction, transport, etc.)
 - Cross-sectional statistics (statistics of finances, prices, labor , investment, foreign trade)
- **Partial statistics are built for other purposes, and are not necessarily consistent and complete (!)**
- **National Accounting is an extremely ambitious effort**

National Accounts

- For example: GDP for technical reasons is often expressed in millions of units of the national currency
 - Users should be aware that they are very, very far from being accurate at the level of millions
 - Changes of GDP are better known than absolute levels (+ errors are kept for some time)

- **National accounts' quality is highly dependent on the quality of the statistical system that exists in a given country**
 - And in all countries, at varying degrees, this system does not cover all units, leaving a significant number of adjustments to be made
 - **National accounts data are therefore approximations**
 - **National accounts also cannot go into the greatest detail**

System of National Accounts in General

Part II

System of National Accounts

- **It is a macroeconomic statistical descriptive model (of national accounting)**
 - Statistical nature (estimations) – not typical accounting nature
 - Accounts are external representations of the model
 - Accounts = Equations

- **Main objectives:**
 - A. Describe the links and movements within the system / economy**
 - I.e. relationships between sectors and industries
 - B. Describe the relations within the national economy and relations with foreign countries**

System of National Accounts

– Main objectives: (continued)

- C. Show the results/performance of the national economy through basic macroeconomic aggregates (GDP, imports, exports, etc.)**
- D. It is a tool for verifying the meaningfulness of economic forecasts**

System of National Accounts

- **The system aims to offer clear, comprehensive, and consistent representation of activities** (economic transactions) **of main economic subjects** (mainly households, firms, government)
 - It shows the total **production**
 - How the incomes **generated/created** in the production processes (modified by taxes and transfers) are **re/distributed** among households, enterprises, government and non-residents
 - How they are **allocated** into consumption, savings and investment
 - The basis is the production of goods and services that can be **used/consumed** or **accumulated**
- **The whole system is designed especially for economic analysis, forecasting and economic policy**

Characteristics of National Accounts

Part III

National Accounts and Their Use

- **Main economic aggregates**
 - GDP and other related measures
 - Incomes and their generation
 - Redistribution of incomes
 - Costs
- **Fiscal policy** – government debt and its service, taxes, subsidies, ...
- **Monetary policy**
 - Financial stability (financial statistics)
 - External economic indicators
- **Regional statistics**
- **Sectoral (institutional) statistics**

NAs: Key Characteristics

- **Considerable degree of aggregation**
- **Complexity** (capturing a national economy as a whole)
 - **Various (institutional) sectors**
 - **Various processes** (production, distribution, exchange, consumption, accumulation)
- **Linkages between indicators and accounts**
 - Coherent, logical, and consistent system
(they check the overall consistency of statistical information)
- **International comparability**
 - Not perfect but it has significantly improved over the time
- **Continuity with some other statistical systems**
 - Such as balance of payments, public finance and monetary development statistics (it all has greatly improved recently)

NAs: Data Sources

- **There is not a single (sole) data source**
- **The usual sources:**
 - Administrative data from government, population censuses, business surveys and household surveys.
 - Moreover, sources vary from country to country and may cover a large set of economic, social, financial and environmental items, which need not always be strictly related to national accounts.
- **Finally, some items are calculated/estimated**
 - **From identities, as residual values etc.**

NAs: Classifications, Nomenclatures

- **Extensive list of classifications and nomenclatures**
 - Many of them are important
 - They serve as an important reference point
- **Eurostat – RAMON (Reference And Management Of Nomenclatures)**
 - https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM&StrGroupCode=CLASSIFIC&StrLanguageCode=EN
- **Czech Statistical Office (in Czech language only)**
 - <https://www.czso.cz/csu/czso/classifications>

NAs: Key Analytical Techniques

- **The analytical capabilities are extensive and usually include:**
 - **Description: examining the development of the national economy over time** (economic growth, inflation, foreign trade, etc.) and also its subsectors (value added and employment by sector and industry, commodity structure of foreign trade, final consumption by product group, sectoral pension structure)
 - **Examination of economic structure in a given point in time**
 - **Inference:** basic or more sophisticated (macroeconomic models)
 - Inferred variables when data are not available (simple calculus x more sophisticated methods – e.g. unobserved components)
 - **Equilibrium, stability analyses, policy analyses, forecasting**
 - **International comparisons**

NAs: The Bottom Line

- Understanding the basic indicators of national accounts is needed not only for macroeconomic analysts, but also for students of economic schools and citizens who monitor economic developments at home and around the world
- **It is not necessary to know all the details for a standard macroeconomic analysis**
 - The topic of national accounts would be able to fill more than one entire course
- **But it is absolutely necessary to know the fundamentals**
- We will go through all the important aspects in two/three lectures and three seminars

Institutional Coverage

Part IV

Institutional Divisions (ESA 2010)

- **Institutional units** are economic entities that are capable of owning goods and assets, of incurring liabilities and of engaging in economic activities and transactions with other units in their own right.
- For the purposes of the ESA 2010 system, the institutional units are grouped together into **five mutually exclusive domestic institutional sectors + rest of the world sector**

The broadest view:

1. **Total national economy (S.1)**
2. **Non-residents – rest of the world (S.2)**

Total National Economy (S. 1)

Non-financial corporations (S.11)

- Production of products and non-financial services for profit

Financial corporations (S.12)

- Provision of financial services

General government (S.13)

- Serve political functions, provide public goods and services on a non-market basis (free or at prices that do not fully cover costs); it redistributes national income
- They are financed by mandatory payments from other sectors / units

Households (S.14)

- Individuals or groups of people who are the source of labour and the recipients of work pensions

Non-profit institutions serving households (NPISH) (S.15)

- These include institutions that are legal units and provide some services to households on a non-market basis
- They are funded by voluntary contributions from households, general government and own equity

Institutional Divisions (ESA 2010)

Total national economy (S.1) – Non-financial corporations (S.11)

Public non-financial corporations (S.11001)

National private non-financial corporations (S.11002)

Non-financial corporations under foreign control (S.11003)

Institutional Divisions (ESA 2010)

Total national economy (S.1) – Financial corporations (S.12)

Central bank (S.121)

Other monetary financial institutions (OMFI) (S. 122+123)

Deposit-taking corporations except the central bank (S.122)

Money market funds (MMFs) (S.123)

Non-MMF investment funds (S.124)

Other financial intermediaries, except insurance corp. and pension funds (S.125)

Financial auxiliaries (S.126)

Captive financial institutions and money lenders (S.127)

Insurance corporations (IC) (S.128)

Pension funds (PF) (S.129)

Institutional Divisions (ESA 2010)

Total national economy (S.1) – General government (S.13)

Central government (excluding social security funds) (S.1311)

State government (excluding social security funds) (S.1312)

Local government (excluding social security funds) (S.1313)

Social security funds (S.1314)

Institutional Divisions (ESA 2010)

Total national economy (S.1) – Households (S.14)

Employers and own-account workers (S.141+S.142)

Employees (S.143)

Recipients of property and transfer income (S.144)

Recipients of property income (S.1441)

Recipients of pensions (S.1442)

Recipients of other transfers (S.1443)

– Non-profit institutions serving households (S.15)

(No division)

Institutional Divisions (ESA 2010)

Non-residents – Rest of the world (S.2)

Member States and institutions and bodies of the European Union (S.21)

- Member States of the European Union (S.211)
- Institutions and bodies of the European Union (S.212)

Non-member countries and international organisations nonresident in the European Union (S.22)

- Transaction of residential units with non-residential units are recorded in the external world account (as external transactions)
- For non-residents, it is not recognized what activities they are performing and from which sources they are funded
- What matters is that they are involved in transactions or they are having other economic ties to residents

Data Reporting

Part V

Quarterly Data and Annualisation

- **The importance of quarterly data**
 - Most actual data regarding decision-making
 - Quarterly accounts are much used by forecasters
 - They cannot be used for comprehensive structural analyses !
- **The quarterly data in many countries are not that detailed as annual data ---> slight differences + the existence of revisions + adjustments**
- **The “annualisation” in some countries**
 - Canada, Japan, Mexico, United States
 - Annualised growth rate: raising it to the power of 4

Seasonal and Calendar Adjustment

- **Some changes from one quarter to the next that are due simply to seasonal effects:**
 - For example, the output of transport services rises systematically and steeply before Christmas and the summer holidays
- **In some countries, in practice the sums of the four quarters from the quarterly accounts are not equal to the corresponding annual figures,**
 - = working-day/calendar adjustment of monthly/quarterly/annual data**
 - as if each period contained the same number of working days
 - e.g. changes in GDP are not affected by differences in the numbers of working days in each quarter

Annual Data of SNAs

- **Some accounts in some countries are still strictly annual**
 - However, efforts for higher frequency are being made
- Usually very detailed data
- **The importance of revisions**
 - **Reasons for revisions:** cannot have the accuracy immediately, and at the same time need the information even though it is not 100 percent correct – forecasts, analyses
 - **First -> provisional -> semi-final -> final accounts**
 - Final accounts can take up even 2 years to compile

Gross Domestic Product in the SNA Framework

Part VI

Gross Domestic Product

- **Key indicator in the national accounts system, which assesses the country's economic performance**
(not welfare – only proxy for welfare)
 - Or economic progress of a country over time
 - Internationally comparable indicator
 - Other important macroeconomic indicators (their amount and development) are assessed in relation to GDP (government deficit and debt in% of GDP, share of investments or savings in GDP etc.)

Gross Domestic Product

- **GDP is an indicator of added value** created by all domestic firms, government institutions, households and non-profit organizations
 - Unlike the overall output indicator, GDP does not include the intermediate consumption (IC), which is the value of products and services consumed in the production process
 - IC includes duplicate counting of the value of many products and services

Gross Domestic Product

– GDP can be calculated in several ways:

1. Production approach

- GDP is calculated as the difference between the total value of production (gross output) in the national economy and the value of intermediate consumption

2. Expenditure approach

- Based on the use of production
 - Private consumption, public consumption, gross capital formation and the difference between export and import

3. Income approach

- Based on the primary distribution of income

GDP Replacements

- Other similar indicators to GDP which may (even better) proxy welfare:
 - **Actual Individual Consumption (AIC)**
 - **Household gross (ideally adjusted) disposable income**
- **Some of the well-being can not be measured using monetary values, and we need to use physical indicators to express them (e.g. environmental issues)**
- **Due to broader economic and social developments, the system of national accounts was extended by so-called **satellite accounts****



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