Behind GDP

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Preface

This short guide is intended as a basic reference to understand the basics of National Accounts Main Aggregates (NAMA) and Supply and Use Tables (SUT) and the close interrelationships between the two from a practical point of view. We will omit some technical details and will provide just a practical overview. Both set of accounts describe the production, expenditure and income flows of an economy in a consistent way but using a different approach. We will not deal here with other parts of the National Accounts (sector accounts, financial accounts) although some reference to concepts like sectors and institutional units will need to be made. On the other hand, we will talk about classifications, codes and other practical aspects of the ESA 2010 transmission programme that are necessary for understanding the context and the practical use of the tables.

It is mainly intended with people with some familiarity with National Accounts that want to have a general understanding of the main variables and concepts used in both areas and how they relate to each other.

1 Introduction

Most books about National Accounts start with the famous three approaches to GDP:

Output: Production (*P1*) *minus* Intermediate consumption (*P2*) *plus* Taxes less subsidies on products (*D21X31*).

$$B1GQ = P1 - P2 + D21X31 = B1G + D21X31 \tag{1.1}$$

Expenditure: Final consumption (*P3*), usually differentiated between private and government consumption, *plus* Investment (*P5*) *plus* Exports (*P6*) minus Imports (*P7*).

$$B1GQ = P3 + P5 + P6 - P7 \tag{1.2}$$

Income: Compensation of employees (*D1*) *plus* Gross operating surplus and mixed income (*B2A3G*) *plus* Taxes less subsidies (*D2X3*).

$$B1GQ = D1 + B2A3G + D2X3 \tag{1.3}$$

I will deviate from that approach, which I find slightly confusing, and will start by two different equations.

Equation 1.4 simply states that the total supply of goods and services in an economy are either produced domestically (*P1*) or imported (*P7*).

$$TS = P1 + P7 \tag{1.4}$$

Equation 1.5 shows what we do with the total supply of goods and services. They can be used as intermediate consumption (*P2*) in the production process of other goods and services, consumed (*P3*), used as investment (*P5*) or exported (*P6*).

$$TU = P2 + P3 + P5 + P6 \tag{1.5}$$

Obviously, the total supply has to be equal to the total uses ($TS = TU$) and rearranging then we arrive to something close to a combination of Equation 1.1 and Equation 1.2.

$$P1 - P2 = P3 + P5 + P6 - P7 \tag{1.6}$$

This equation is valid for data measured at *basic prices*. Basic prices exclude Taxes less subsidies on products and trade margins and transport costs. But GDP is measured at *market prices*. All transactions except *P1* are measured at market prices in the equation [1] but *P1* is measured at basic prices, which is the money received by the producer. When I buy a baguette for which I pay 1 euro, we would record a *P3* of 1 euro. The boulangerie would record a production of approximately 0.9 euros. It will not record the VAT as revenue because 0.1 euros will be paid to government as taxes. However, it will record all non-deductible taxes on products[2] as costs (*P2*). That's why we need to add *D21X31* to *P1* , to get an equation consistent with GDP at market prices, in which buyers and sellers prices are on the same valuation.

It is important to note, because many people are confused about this, that *P7* can be used for *P3*, *P5* or *P2*. So please do not make the assumption that a decrease of imports increases GDP. Only in the case that imports are substituted by domestic production, a decrease of imports would increase GDP. In all other cases, it would lead to a decrease in intermediate consumption (which should imply a decrease in production), final consumption or investment and be neutral for GDP.

$$P1 + D21X31 - P2 = B1G + D21X31 = P3 + P5 + P6 + P7 \tag{1.7}$$

We have seen now the origin of Equation 1.1 and Equation 1.2. Now we will look at Equation 1.3. We can start by expanding the value added in Equation 1.1:

$$B1GQ = B1G + D21X31 = (D1 + B2A3G + D29X39) + D21X31 = D1 + B2A3G + D2X3 \tag{1.8}$$

Value added is distributed between labour (*D.1*), capital (*B2A3G*) and taxes less subsidies on production (*D29X39*). We could break down the variables more precisely, especially *B2A3G* to distinguish the cost of capital *P51C* from an (imperfect[3]) proxy of profits (*B2A3N*) but also *D1* into wages and salaries (*D11*) and Social contributions (*D12*).

We could use these equations to look at a production approach that combines the output and income approaches:

$$P1 = P2 + D1 + B2A3N + P51C + D29X39$$

Now time to practice these equations with Table 1.1

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[1] But they can be converted with some effort to basic prices.

[2] In this simplified example I assumed 0.5 euros value added per baguette and a 20% VAT rate. The other 0.1 euros of VAT have been charged to the suppliers of inputs to the boulangerie.

[3] Net operating surplus and mixed income (*B2A3N*) includes the labour remuneration of self-employed and the imputed rents of owner-occupied dwellings.

Table 1.1: Spain 2022, National Accounts aggregates

label	sto	value
Output	P1	2 617 983
Intermediate consumption	P2	1 392 351
Value added, gross	B1G	1 225 632
Gross domestic product at market prices	B1GQ	1 346 377
Taxes less subsidies on products	D21X31	120 745
Compensation of employees	D1	643 047
Wages and salaries	D11	497 275
Social contributions	D12	145 772
Operating surplus and mixed income, gross	B2A3G	571 410
Consumption of fixed capital	P51C	226 116
Operating surplus and mixed income, net	B2A3N	345 294
Other taxes less other subsidies on production	D29X39	11 175
Taxess less subsidies	D2X3	131 920
Final consumption expenditure	P3	1 040 844
Gross capital formation	P5	289 220
Exports of goods and services	P6	550 319
Imports of goods and services	P7	534 006