

# **Behind GDP**

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2023-10-12

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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 ( $D21X31$ ).

$$B1GQ = P1 - P2 + D21X31 = B1G + D21X31 \quad (1.1)$$

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

$$B1GQ = P3 + P5 + P6 - P7 \quad (1.2)$$

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

$$B1GQ = D1 + B2A3G + D2X3 \quad (1.3)$$

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

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

$$TS = P1 + P7 \quad (1.4)$$

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 ( $P6$ ).

$$TU = P2 + P3 + P5 + P6 \quad (1.5)$$

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.

$$P1 - P2 = P3 + P5 + P6 - P7 \quad (1.6)$$

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<sup>1</sup> 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<sup>2</sup> 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.

$$P1 + D21X31 - P2 = B1G + D21X31 = P3 + P5 + P6 + P7 \quad (1.7)$$

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:

$$B1GQ = B1G + D21X31 = (D1 + B2A3G + D29X39) + D21X31 = D1 + B2A3G + D2X3 \quad (1.8)$$

Value added is distributed between labour ( $D1$ ), 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<sup>3</sup>) 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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<sup>1</sup>But they can be converted with some effort to basic prices.

<sup>2</sup>In this simplified example I assumed 0.5 euros value added per baguette and a 20% VAT rate.

<sup>3</sup>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                   | B2A3B  | 226 116   |
| Operating surplus and mixed income, net        | P51C   | 345 294   |
| Other taxes less other subsidies on production | D29X39 | 11 175    |
| Taxes 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   |