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# Using a Social Accounting Matrix for Analysing Institutions' Income: A Case from Portugal

Susana Santos

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## Abstract

A social acccounting matrix (SAM) is a tool that has specific features for conducting studies in several different areas, as well as for supporting the policy decision process. Following an application for Portugal, a SAM-based approach is adopted for studying (measuring and modelling) the impact of the introduction of a social policy measure of the increase in households' income on the socio-economic activity of a country, and the associated institutions' income. Numerical and algebraic versions of a SAM enable the identification of the networks of the linkages of the monetary or nominal flows measured by the national accounts and the corresponding structural features, as well as the associated multiplier effects, which are used to measure the impact on the socio-economic activity. This measurement is at a macroeconomic level, using macroeconomic aggregates and balances.

**Keywords:** social accounting matrix, national accounts, SAM-based approach, social policy, multiplier effects

## 1. Introduction

The increasing importance of markets has involved an increasing volume of transactions and a consequent and progressive (re)organisation of the activity of society, which has focused its attention and needs on this process. This activity is known as being economic.

Associated to each market transaction are two or more flows with opposite directions, which are often denominated 'inflows' and 'outflows', which balance when the transaction is concluded. The nature of these flows can be the same or not; however, the balance means that when the transaction is concluded, both inflows and outflows have the same value. We can

thus think about the existence of a transaction of economic value, whose measurement is 'a premise for understanding economic activity' ([1], p. 12).

The abovementioned (re)organisation of the activity of society also involves transfers, which are also flows, but with different characteristics from those associated with market transactions. Taxes, remittances, property income, social security system, and so on, are all the examples of these flows, which are nonreturn flows in a strict sense, but which balance at a macroeconomic level. When this facet is also considered, from the author's point of view, the term "socioeconomic" is more appropriate to designate this activity.

Interest in the measurement of these flows has been increasing, especially among researchers of the activity of society and by those involved in the policy decision process. Several types of statistics have focused on and registered different types of transactions; however, the national accounts have progressively made an effort to fully cover them. To this end, and also to allow comparability among countries, since 1953 an international system has been implemented to define rules and nomenclatures that can be adopted by countries or groups of countries and, in principle, better data. This system is now in its fourth version of 2008 in the case of the base system, which is known as the System of National Accounts (SNA) [2], and of 2010, in the case of the European system, which is known as European System of National and Regional Accounts (ESA) in the European Community [3].

Monetary or nominal flows and the so-called income are associated with at least one of the abovementioned directions of market transactions. Therefore, those who have income can intervene in the market, and the level to which this is possible is associated with well-being, power, and prestige, which justifies the importance of income and the attraction for it.

In this chapter, a social accounting matrix (SAM), adapted for the SNA, is used for studying the income of institutions, or institutional sectors–defined by that system as being groups of those "engaged in the full range of transactions… on the basis of their principal functions, behaviour, and objectives" ([2], Paragraphs 2.16 and 2.17). An application for Portugal in 2015 will illustrate the various sections. The purpose is to study (measuring and modelling) the impact of the introduction of a social policy measure on the increase in households' income, on the socioeconomic activity of a country, and also on the associated institutions' income[1].

Section 2 presents the SAM framework, showing how society's activity is organised, using a top-down method, and also the underlying network of flows which can work together.

Covering the households' institutional sector of "all physical persons in the economy", and attributing to the (general) government institutional sector the political responsibility of, among others, "to redistribute income" ([2], Paragraph 2.17), Sections 3 and 4 focus on these two sectors. Thus, Section 3 identifies the structural features of the origin and use of the so called institutions' aggregate income. In turn, Section 4 simulates multiplier effects of a social policy measure of the increase in households' income, whereby the percentage changes regarding the original situation are compared with those that result from an identical increase, but with a different origin (compensation of labour).

A summary and some remarks conclude the chapter in Section 5.

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[1]Social issues using SAMs were previously addressed by the Author, for instance, in [12–14].

## 2. The SAM framework

The SAM represents the monetary or nominal flows occurring in a particular geographical space, during a given time period. As mentioned earlier, the version presented here is consistent with the rules and nomenclatures of the latest version of the SNA [2]. This is a version of the author, which was a result of research supported mainly by Stone [namely, 4–6], Pyatt [namely, [7–9], and Pyatt and Round [namely, 10].

### 2.1. The macro SAM

A SAM is a square matrix, with equal row and column sums. By convention, inflows are entries in rows, and outflows are entries in columns. Its adaptation to the SNA also allows one to state that the former describe resources, incomes, receipts or changes in liabilities, and net worth; whereas the latter describe uses, expenditures, or changes in assets.

**Table 1** represents a so-called "macro SAM", representing the highest aggregated level allowed by the national accounts, following a top-down method. From that level, the accounts (rows-columns) can be broken down into categories without losing the initial consistency. Numbers between brackets correspond to the application to Portugal in 2015, and it can be used to illustrate how the activity of a country in a specific year is portrayed with this SAM macro.

Therefore, with production and institutions' accounts representing the (domestic) economy and the underlying transactions, the so-called "circular flow of income" can be identified and specified. On the other hand, by means of the rest of the world account, the transactions between the (domestic) economy and that of abroad can be identified. Let us first take a snapshot of the activity of Portugal in 2015, as described later.

At the level of production accounts, the factors of production account show the aggregate or primary income generated in 2015, which is also designated as compensation of the factors of production, namely of labour and capital, which was in the sum of 162,306 million Euros. Reading in rows, this amount was respectively composed of 155,958 and 6347 million Euros, received from domestic activities[2] and from the rest of the world[3]. Reading in columns, this amount was composed of 149,923 and 12,382 million Euros, paid to domestic institutions[4] and to the rest of the world, respectively.

In turn, continuing at the level of the production accounts, the activities account shows, respectively, the production value and the total costs associated with the process of production, which totalled 318,313 million Euros. In rows, this amount represents the output of goods and services. In columns, it comprises 155,958 million Euros of compensation of factors of production, 161,475 million Euros of intermediate consumption, 1867 million Euros of net

[2]Received by residents and non-residents working in the Portuguese economic territory. This amount is the gross added value, and it does not include taxes and subsidies on production and imports.
[3]Received by residents in the Portuguese economic territory working in the rest of the world.
[4]Paid to residents in the Portuguese economic territory working in the Portuguese economic territory and in the rest of the world. This amount is the gross national income, and it does not include taxes and subsidies on production and imports.

| Inflows (incomes, ..) | | **Outflows (expenditures, …)** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Production | | | Institutions | | | Rest of the World (RW) | Total |
| | | **Factors of production** | **Activities (Industries)** | **Products** | **Current account** | **Capital account** | **Financial account** | | |
| Production | Factors of production | 0 | Gross added value (155,958) | 0 | 0 | 0 | 0 | Compensation of factors from the RW (6347) | Aggregate factors income (162,306) |
| | Activities (Industries) | 0 | 0 | Production (318,313) | 0 | 0 | 0 | 0 | Production value (318,313) |
| | Products | 0 | Intermediate consumption (161,475) | Trade and transport margins (0) | Final consumption (150,311) | Gross capital formation (28,452) | 0 | Exports (72,648) | Aggregate demand (412,884) |
| Institutions | Current account | Gross national income (149,923) | Net taxes on production (1867) | Net taxes on products (23,078) | Current transfers (90,027) | 0 | 0 | Current transfers from the RW (6716) | Aggregate income (271,610) |
| | Capital account | 0 | 0 | 0 | Gross saving (26,858) | Capital transfers (2131) | 0 | Capital transfers from the RW (2436) | Investment funds (31,425) |
| | Financial account | 0 | 0 | 0 | 0 | Net lending (567) | Financial transactions (878) | Financial transactions from the RW (6577) | Total financial transactions (8022) |
| Rest of the World (RW) | | Compensation of factors to the RW (12,382) | Net taxes on production (−986) | Imports + net taxes on products (71,601 + 108) | Current transfers to the RW (4415) | Capital transfers to the RW (276) | Financial transactions to the RW (7144) | | Transactions value to the RW (94,724) |
| TOTAL | | Aggregate factors income (162,306) | Total costs (318,313) | Aggregate supply (412,884) | Aggregate income (271,610) | Aggregate investment (31,425) | Total financial transactions (8022) | Transactions value from the RW (94,724) | |

Sources: Statistics Portugal (*INE*); Portuguese Central Bank (*Banco de Portugal*).

**Table 1.** A macro SAM of Portugal in 2015 (in millions of Euros).

taxes on production received by the Portuguese Government, and – 986 million Euros of net taxes on production received by European Union institutions[5].

Finally, still at the level of the production accounts, the products account shows the main components of the aggregate demand and supply of the goods and services in the Portuguese economy in 2015, which amounted to 412,884 million Euros. Reading in rows, the aggregate demand was composed of 161,475 million Euros of intermediate consumption, 150,311 million Euros of final consumption, 28,452 million Euros of gross capital formation, and 72,648 million Euros of exports. Reading in columns, the aggregate supply was composed of 318,313 million Euros of the output of goods and services, 23,078 million Euros of net taxes on products received by the Portuguese Government, – 108 million Euros of net taxes on products received by the institutions of the European Union (see footnote 5), and 71,601 million Euros of imports—the last two being added in the same cell. The trade and transport margins also feature as a component in the products account, which amounts to zero at this level of disaggregation.

At the level of the domestic institutions accounts, in the current account, the aggregate income of the Portuguese institutions in 2015 is shown, which amounted to 271,610 million Euros. The origin of this income is shown in rows, with the following composition: 149,923 million Euros of compensation of the factors of production received by domestic institutions; 1867 and 23,078 million Euros of net taxes on production and net taxes on products, respectively— both received by the Portuguese government, and 90,027 and 6716 million Euros of current transfers within domestic institutions and from the rest of the world, respectively. In turn, the destination or use of that same income is shown in columns, with the following composition: 150,311 million Euros of final consumption; 90,027 and 4415 million Euros of current transfers within domestic institutions and to the rest of the world, respectively, and 26,858 million Euros of gross savings.

The capital account, apart from showing the net lending (or borrowing) of institutions, also shows information regarding acquisitions less disposals of non-financial assets (or the various types of investment in non-financial assets) and capital transfers, which amounted to 31,425 million Euros. Reading in rows, this amount represents investment funds, and it was composed of 26,858 million Euros of gross savings, and 2131 and 2436 million Euros of capital transfers within domestic institutions and from the rest of the world, respectively. Reading in columns, this amount represents aggregate investment and was composed of 28,452 million Euros of gross capital formation, 2131 and 276 million Euros of capital transfers within domestic institutions and to the rest of the world, respectively, and 567 million Euros of net lending.

The financial account represents the net flows associated with the acquisition of financial assets and the incurrence of liabilities, underlying which is the abovementioned net lending. These flows amounted to 8022 million Euros. Reading in rows, this amount is composed of 567 million Euros of net lending, 878 million Euros of net financial transactions within domestic institutions, and 6577 million Euros of net financial transactions from the rest of

[5]Due to the conventions underlying the SAM structure, this negative (net) amount represents a receipt and not an expenditure, that is to say, the amount received as subsidies was greater than the amount expended on taxes.

the world. Reading in columns, besides the net financial transactions between domestic institutions (878 million Euros), this amount also includes 7144 million Euros of net financial transactions to the rest of the world.

The rest of the world account shows all the transactions between resident and non-resident actors in the accounts described earlier (production and domestic institutions), or between the Portuguese economy and the rest of the world in 2015, which amounted to 94,724 million Euros. Thus, the row represents the flows to the rest of the world, with the following composition: 12,382 million Euros of compensation of factors of production, − 986 million Euros of net taxes on production (taxes received minus subsidies paid by European Union institutions), 71,493 million Euros of imports (71,691 million Euros), to which is added net taxes on products (− 108 million Euros, of taxes received, minus subsidies paid by European Union institutions), 4415 million Euros of current transfers, 276 million Euros of capital transfers, and 7144 million Euros of financial transactions. In turn, the columns show the decomposition of the flows from the rest of the world as follows: 6347 million Euros of compensation of factors of production; 72,648 million Euros of exports; 6716 million Euros of current transfers; 2436 million Euros of capital transfers, and 6577 million Euros of net financial transactions.

Therefore, as can be checked in the structure of an integrated economic accounts table of the national accounts, practically all the flows measured by the latter are covered by the SAM—the grand totals in the above-presented macro SAM; other levels of disaggregation in SAMs constructed for specific studies, always respecting those grand totals.

## 2.2. The macroeconomic aggregates and balances

As practically all the flows observed and measured by the national accounts are included in the above-presented SAM, it is possible to calculate and/or extract from it the main macroeconomic aggregates that are usually considered.

The following description is based on **Table 1**.

Gross domestic product (GDP) can be calculated using the three known approaches: the production approach - in which intermediate consumption (161,475) is subtracted from production, or from the output of goods and services (318,313), adding the net taxes on products (23,078–108); the expenditure approach—in which final consumption (150,311), gross capital formation (28,452), and net exports (72,648–71,601) are added; and the income approach - in which net taxes on production and imports (23,078–108 + 1867–986) are added to the gross added value (155,958). The Portuguese GDP in 2015 was 179,809 million Euros.

GDP is the income generated in the domestic economy by residents and non-residents, added to the total net taxes on production and imports, to be valued at market prices.

Gross domestic product can be converted into gross national product or income (GNI) by adding the compensation of factors of production (labour and capital) received from the rest of the world (6347) and by deducting the compensation of factors of production (labour and capital) and net taxes on production and imports sent to the rest of the world (12,382–986 - 108). GNI

can also be calculated directly from the SAM by adding the compensation of factors received by domestic institutions to the net taxes on production and on products received by domestic institutions (149,923 + 1867 + 23,078). The corresponding amount for Portugal in 2015 was 174,868 million Euros.

GNI is the income generated in the domestic economy and in the rest of the world by residents, added to the part received by the general government of net taxes on production and imports, to be valued at market prices.

Disposable income (DI) can be calculated by adding the net current transfers received by domestic institutions (6716–4415) to GNI. In our application for Portugal, this was 177,168 million Euros.

Gross saving and net lending or net borrowing are usually presented with the above macroeconomic aggregates, which are items that are provided directly by the SAM and, in the case of Portugal in 2015, were 26,858 and 567 million Euros, respectively, with the last being net lending.

Representing the capital and financial accounts the investment in nonfinancial and financial assets, respectively, which is the so-called accumulated income of institutions, the study that follows is going to be on the current or aggregate income of institutions. Thus, let us focus our attention on the current account of institutional sectors, highlighted with thicker borders in **Table 1**.

## 3. The origin and the use of institutions' aggregate income

From the reading of the macro SAM presented in Subsection 2.1, it is possible to see that the study of the institutions' income, in general, and of the effects of a social policy measure of the increase in households' income, in particular, involves the current or aggregate institutions' income, which supposes the disaggregation of the institutions' current account. On the other hand, as illustrated in **Table 1**, because the main source of that income is GNI, that is to say, the compensation of factors of production received by residents, or the income generated by them in the (domestic) economy and abroad, the factors of production account should also have some disaggregation.

According to the SNA nomenclatures and the available information provided by the national accounts, the disaggregation of the factors of production account are going to be made in 'labour' and 'others' (factors of production), with the former (labour) including the compensation of employees, and the later (others) including the compensation of employers and own-account (or self-employed) workers, and also the compensation of capital, namely property income. In turn, although five institutional sectors can be identified in the institutions' current account, considering that the abovementioned purpose of this study, this disaggregation is going to be in: 'households'—"all physical person in the economy"; '(general) government'—with the political responsibility of redistributing income, and 'others'—the non-financial and financial corporations and non-profit institutions serving households.

Following the previous application, **Tables 2** and **3** represent the result of this disaggregation regarding, respectively, the origin (rows) and use (columns) of the aggregate income can be found in the totals of these tables – the amounts between brackets in the cells of the row and the column with the thicker border in **Table 1** (the institutions' current account).

Even when continuing at a high level of aggregation, much information regarding institutions' aggregate income can be taken from the following two tables. Our focus will be directed mainly on the households. Government, as an intervenient in the households' income through (re)distribution policies, also deserves special attention. Households hold 60.8% of the total aggregate income, the Government holds 24.6%, and the other institutions (non-financial and financial corporations and non-profit institutions serving households) hold the remaining 14.6%.

As shown in **Table 2**, households' income source is mainly compensation of factors of production (73.8%), in which labour represents the main part (47.7%). The other source of households' income is current transfers from domestic institutions (23.3%) and from the rest of the world (2.9%). Within these transfers, the largest share comes from the Government (19.1%).

| | Current account of institutions | | | | | | | |
| | Households | | Government | | Others | | Total | |
| Inflows (incomes,..) | Millions of Euros | % | Millions of Euros | % | Millions of Euros | % | Millions of Euros | % |
|---|---|---|---|---|---|---|---|---|
| Compensation of factors of production (gross national income) | | | | | | | | |
| Labour | 78,724 | 47.7 | 0 | 0.0 | 0 | 0.0 | 78,724 | 29.0 |
| Others (factors..) | 42,984 | 26.0 | −1330 | −2.0 | 29,545 | 74.4 | 71,199 | 26.2 |
| (sub)Total | 121,708 | 73.8 | −1330 | −2.0 | 29,545 | 74.4 | 149,923 | 55.2 |
| Net taxes on production and imports | | | | | | | | |
| from industries and products | 0 | 0.0 | 24,945 | 37.3 | 0 | 0.0 | 24,945 | 9.2 |
| Current transfers from domestic institutions | | | | | | | | |
| Households | 2098 | 1.3 | 35,736 | 53.4 | 5078 | 12.8 | 42,912 | 15.8 |
| Government | 31,507 | 19.1 | 22 | 0.0 | 2169 | 5.5 | 33,698 | 12.4 |
| Others (institutions) | 4842 | 2.9 | 6225 | 9.3 | 2350 | 5.9 | 13,417 | 4.9 |
| (sub)total | 38,446 | 23.3 | 41,983 | 62.8 | 9597 | 24.2 | 90,027 | 33.1 |
| Current transfers from… | | | | | | | | |
| Rest of the world | 4860 | 2.9 | 1,273 | 1.9 | 582 | 1.5 | 6716 | 2.5 |
| Total (received) | 165,014 | 100.0 | 66,871 | 100.0 | 39,724 | 100.0 | 27, 610 | 100.0 |
| Source: Statistics Portugal (*INE*). | | | | | | | | |

**Table 2.** The origin of aggregate income of institutions in Portugal in 2015.

| Outflows (expenditures) | Current account of institutions | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Households | | Government | | Others | | Total | |
| | Millions of Euros | % | Millions of Euros | % | Millions of Euros | % | Millions of Euros | % |
| Final consumption | | | | | | | | |
| .. of products | 114,058 | 69.1 | 32,584 | 48.7 | 3669 | 9.2 | 150,311 | 55.3 |
| Current transfers to domestic institutions | | | | | | | | |
| Households | 2098 | 1.3 | 31,507 | 47.1 | 4842 | 12.2 | 38,446 | 14.2 |
| Government | 35,736 | 21.7 | 22 | 0.0 | 6225 | 15.7 | 41,983 | 15.5 |
| Others (institutions) | 5078 | 3.1 | 2169 | 3.2 | 2350 | 5.9 | 9597 | 3.5 |
| (sub)total | 42,912 | 26.0 | 33,698 | 50.4 | 13,417 | 33.8 | 90,027 | 33.1 |
| Current transfers to the .. | | | | | | | | |
| Rest of the world | 1219 | 0.7 | 2241 | 3.4 | 956 | 2.4 | 4415 | 1.6 |
| Gross savings | | | | | | | | |
| Households | 6826 | 4.1 | 0 | 0.0 | 0 | 0.0 | 6826 | 2.5 |
| Government | 0 | 0.0 | −1652 | −2.5 | 0 | 0.0 | −1652 | −0.6 |
| Others (institutions) | 0 | 0.0 | 0 | 0.0 | 21,683 | 54.6 | 21,683 | 8.0 |
| (sub)total | 6826 | 4.1 | −1652 | −2.5 | 21,683 | 54.6 | 26,858 | 9.9 |
| Total (expended) | 165,014 | 100.0 | 66,871 | 100.0 | 39,724 | 100.0 | 271,610 | 100.0 |

Source: Statistics Portugal (*INE*).

**Table 3.** The use of aggregate income of institutions in Portugal in 2015.

In turn, the main source of the Government's income is current transfers from domestic institutions (62.8%) in general and from households (53.4%) in particular. Taxes on production and imports, net of subsidies also have a significant share of 37.3%, which helps to compensate the negative share of compensation of factors of production due to the high amount of interests to pay.

Thus, households are the only institutional sector that receives compensation of labour, which represents 29% of the total aggregate income. In the latter case, current transfers from households represent 15.8%, and from the Government, 12.4%. These three items represent more than half of the aggregate income of Portugal in 2015, meaning that changes in them will certainly have non-negligible effects.

From **Table 3**, it can be seen that final consumption is the main (69.1%) destination of households' income, followed by current transfers to the Government (21.7%), in which taxes on

income are included. In turn, the Government uses almost equal shares of its aggregate income in final consumption (48.7%) and current transfers to households (47.1%), in which social benefits are included. Both for households and for Government, all the other items identified as destinations of income have a residual or non-existent meaning.

## 4. Studying the effects of the increase of households' income with two different origins

In the Introduction, it was defined that the purpose is to study the impact of the introduction of a social policy measure of the increase on households' income, on the socio-economic activity of a country, and on the associated institutions' income. Social policy measures are usually implemented by the Government through current transfers to households, namely, through the social security system. In our application, as was seen in the previous section, the current transfers from the Government to households represent 19.1% of the total.

However, because it is important not to neglect the indisputable role of the generated (or gross national) income received as compensation of factors of production, representing 73.8%, our study also includes a simulation with the increase in the compensation of labour, that is, the compensation of employees, which is the main component of generated income, representing 47.7% of that total (see **Table 2**).

Therefore, to study the effects of the increase of households' income, two scenarios are constructed according to the origin of the increase. Both scenarios involve increases of 5% of households' aggregate income: one with its origin in the current transfers, from the Government to households, and other in the compensation of labour, received by the households.

Our SAM-based approach also involves an algebraic version of the SAM presented in Subsection 2.1, with the disaggregation described in Section 3. This version or model allows the calculation of accounting multipliers, whose methodology is described in ([11], Section 5.1). According to that methodology, in both of the abovementioned scenarios, the rest of the world and the capital and financial accounts were set as exogenous. The current account of the Government was also set as exogenous in the scenario that involves the increase of current transfers, and the (factors of production) labour in the scenario that involves the increase in the compensation of labour. From SAMs organised into endogenous and exogenous accounts, the accounting multipliers calculated represent quantitative approximations of the effects of unitary changes (positive or negative) on the income of endogenous accounts, *ceteris paribus*. These approximations were then applied to increases of 5% of households' aggregate income (8251 million Euros) and new SAMs, and the corresponding macroeconomic aggregates and balances were then calculated.

**Table 4** summarises the impact of these scenarios using percentage changes of the macroeconomic aggregates and balances and data regarding aggregate income and final consumption. These changes were calculated from the earlier described calculations, and these are provided in Section 2.

|  |  | Origin of the increase of households' income | |
|  |  | Current transfers, from Government | Compensation of labour |
| --- | --- | --- | --- |
| Gross domestic product (GDP) |  | 3.58 | 4.14 |
| Gross national income | Total (GNI) | 3.47 | 6.87 |
|  | Households | 3.48 | 8.14 |
|  | Government | — | 4.16 |
|  | Other institutions | 3.32 | 3.84 |
| Disposable income | Total (DI) | 3.35 | 6.64 |
|  | Households | 7.77 | 7.33 |
|  | Government | — | 5.79 |
|  | Other institutions | 3.68 | 4.37 |
| Gross saving | Total (S) | 4.95 | 5.03 |
|  | Households | 7.77 | 7.33 |
|  | Government | — | 5.79 |
|  | Other institutions | 3.68 | 4.37 |
| Aggregate income | Total (AI) | 8.30 | 6.52 |
|  | Households | 7.77 | 7.33 |
|  | Government | — | 5.79 |
|  | Other institutions | 3.68 | 4.37 |
| Final consumption | Total (FC) | 5.99 | 6.92 |
|  | Households | 7.77 | 7.33 |
|  | Government | — | 5.79 |
|  | Other institutions | 3.68 | 4.37 |

Source: Own calculations.

**Table 4.** Percentage changes resulting from the impact of the 5% increase of households' aggregate income.

Therefore, the impact of an increase of households' aggregate income depends not only on its amount, but also on its origin. **Table 4** shows the different impacts that the same increase of 5% in households' aggregate income has according to two different origins.

Thus, at the level of totals, the increase with origin in the compensation of labour has a greater impact, except in the case of aggregate income.

At the level of institutional sectors, it is not possible to make any comparison for the Government because in the first scenario its account is set as exogenous, which prevents the identification of changes in some of the corresponding components. In turn, for households, the scenario with the increase with origin in the compensation of labour is only favourable for generated

income, that is to say, GDP and GNI, whereas for other institutions, this scenario is generally more favourable.

Higher levels of disaggregation, namely of the households, would be needed to find out more about these effects; however, from this very simple approach, although with many limitations, two main ideas should be emphasised regarding the impact of possible changes (increases and decreases) in the institutions' income—resulting from social policy measures or not. First, the origin of these changes is not indifferent, either for the target they are intended to achieve, or for the rest of the economy. Second, changes in income directed to specify groups should not neglect the corresponding multiplier effects for which the structure of the use of that income should be considered.

## 5. Summary and concluding remarks

A study of the effects of a social policy measure of the increase in households' income is made by adopting a SAM-based approach applied to Portugal. The national accounting rules and the nomenclatures, defined by the adaptation to European Union of the latest version of the System of National Accounts [2, 3], underlies the SAM structure, whereby numerical and algebraic versions are defined and worked out, with the purpose of supporting this study.

This chapter presents and applies a methodology that has been researched by the author with the aim of defining a method that allows a better knowledge of the different aspects of the activity of a country, as well as carrying out experiments on its functioning. For this, the data of the flows associated with market transactions and transfers, measured by the national accounts, are organised in a matrix form, in such a way that origin, use, and distribution of income can be worked together. Thus, focusing the attention on the parts to be studied, the structural features can be evidenced and multiplier effects of changes on the involved flows can be accounted for. This is carried out in this chapter.

In order to show the comprehensiveness and consistency of the tool used, our study begins with the presentation of the highest aggregated level of a matrix form of the national accounts—a macro SAM. Covering the different types of flows in seven accounts, or rows and columns, from that matrix, it is possible to identify practically all the transactions and transfers, that is, the nominal or monetary flows, measured by the national accounts, within the (domestic) economy, and between the same and the rest of the world, which occurred in a particular geographical space, during a given time period. As illustrated for Portugal in 2015, a first snapshot of the activity of a country can be taken from this macro SAM, which is complemented by the main macroeconomic aggregates, calculated outside that matrix, but with the data of its cells.

From the description of the seven accounts (rows-columns) of the macro SAM, it is possible to identify the current account of institutions as being the part to be focused on for the study

of the institutions' income. In turn, for the study of the effects of a social policy measure of the increase in households' income, it is also possible to conclude that, on the one hand, households and the Government in this (current) account could also be identified, and, on the other hand, the labour in the factors of production account can be identified. From this disaggregation, the origin and use of the aggregate income of institutions, namely, of households, the Government, and other institutions, is studied.

Regarding the origin of income, the compensation of labour is the source of about half of the households' income, with the current transfers from the Government representing a little less than a quarter of the same. In turn, current transfers from households are the source of more than a half of the Government's income, with net taxes on production and imports of more of a quarter of the same.

With regard to the use or destination of aggregate income, households use much more than a half of the same in final consumption and just under a quarter in current transfers to the Government, in which the taxes on income are included. Final consumption and current transfers to the households, in which social benefits are included, are the destination of almost all the aggregate Government income, each of which by almost a half.

From this knowledge of the structure of origin and destination of the aggregate income, it was possible to achieve the purpose of studying the impact of the introduction of a social policy measure of the increase on households' income, on the socio-economic activity of a country, and on the associated institutions' income. Therefore, on the one hand, having identified the two main sources of the aggregate income of households, the need for two scenarios was also identified. On the other hand, the identified structures of the origin and use of income, together with the network of linkages that underlie the SAM framework, allowed for a better understanding of the effects portrayed in each of the scenarios.

From the results of these scenarios, it was possible to conclude that the effects of increases in the households' income depend on its origin and the corresponding multiplier effects, which are in turn influenced by the structure of the use of this income. These effects may be more favourable for a specific group or sector, but less so for the whole economy, as shown in our application.

Accordingly, changes (increases and decreases) in the institutions' income, especially in households' income—resulting from social policy measures, or not, directed to specific groups, should not neglect the corresponding structures of origin and use, as well as the macroeconomic impact of the same. To this end, the SAM-based approach introduced in this chapter is a possibility.

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