MEASURING AND MODELLING THE ACTIVITY OF COUNTRIES AND REGIONS WITH SOCIAL ACCOUNTING MATRICES*

MEDIÇÃO E MODELIZAÇÃO DA ATIVIDADE DE PAÍSES E REGIÕES COM MATRIZES DE CONTABILIDADE SOCIAL

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ABSTRACT/RESUMO

The Social Accounting Matrix (SAM) is presented as a tool for measuring and modelling the activity of countries and regions. A SAM-based approach to the study of such activity enables it to be described both empirically and theoretically through numerical and algebraic versions of that same matrix. This approach is presented using the words of those responsible for its foundation: Richard Stone and Graham Pyatt.

Applications of the SAM to Portugal and the Azores serve to underline the importance of ensuring consistency with the national and regional accounts when measuring and modelling the activity of countries and regions with SAMs. These applications are based, on the one hand, on SAMs for the Azores and Portugal, which have the same structure and identical characteristics and were constructed to serve as a database for a computable general equilibrium (CGE) model and, on the other hand, on a SAM for Portugal, the author's area of research, which was constructed using the above-mentioned SAM-based approach.

It is also underlined that such a task can be performed better if all of the part that is measured by the national and regional accounts is included in the study. These same accounts should be considered as the basic sources of information.

The comparison of such applications underlines the importance of working with the institutional sectors together with the sectors of activity, as well as with the part relating to the secondary distribution of income together with the

A Matriz de Contabilidade Social *(SAM)* é apresentada como uma ferramenta para medir e modelizar a atividade de países e regiões. A abordagem baseada na *SAM* para o estudo de tal atividade possibilita a sua descrição tanto empírica como teórica através de versões numéricas e algébricas dessa mesma matriz. Esta abordagem é apresentada usando a terminologia dos seus mentores – Richard Stone e Graham Pyatt.

Com base em aplicações a Portugal e aos Açores, é enfatizada a importância da consistência com as contas nacionais e regionais na tarefa de medição e modelização da atividade de países e regiões com *SAM*. Tais aplicações baseiam-se, por um lado, em *SAM* para os Açores e para Portugal, com a mesma estrutura e características idênticas, construídas para servir de base a um modelo de equilíbrio geral calculável *(CGE)* e, por outro, numa *SAM* para Portugal, objeto de investigação da autora, construída a partir da abordagem baseada na *SAM* acima referida.

É também defendida a posição de que tal tarefa poderá ser melhor sucedida se abarcar toda a parte medida pelas contas nacionais e regionais, as quais deverão ser consideradas fontes de informação de base.

A comparação de tais aplicações permite sublinhar a importância do trabalho com setores institucionais, a par dos setores de atividade, bem como a parte relativa à distribuição secundária do rendimento, a par da distribuição primária do rendimento. Nesse contexto, são identificados os riscos da não-consideração de interações importantes

primary distribution of income. Also identified within this context are the risks of failing to consider important interactions in the activity of countries and regions, as well as the biases to be found in the analysis of the results.

Keywords: Databases for Models; National Accounts; Regional Accounts; Social Accounting Matrix

JEL Codes: C82, E01, R13

na atividade dos países e regiões, bem como de enviesamentos na análise de resultados.

Palavras-chave: Bases de Dados para Modelos; Contas Nacionais; Contas Regionais; Matriz de Contabilidade Social

JEL Codes: C82, E01, R13

1. INTRODUCTION

This article is part of the work relating to two research projects that was carried out between January 2009 and July 2011 at two separate research units: the project entitled "CGE (Computable General Equilibrium) Model for the analysis of economic, social and environmental policies", which was conducted at the Research Centre for Applied Economics in the Atlantic (CEEAplA) of the Universities of the Azores and Madeira, and the project entitled "Measuring and modelling the activity of society" at the Research Unit on Complexity and Economics (UECE) of ISEG (*Instituto Superior de Economia e Gestão*), at the Technical University of Lisbon.

The main purpose of this work was to update for 2005 a Social Accounting Matrix (SAM) which had been constructed for 2001, in order to serve as a database for a CGE model for the Azores and, at the same time, to construct a similar one to support an application of the same model to Portugal in 2005.

A synthesis will be provided of this study and some concluding remarks will be made, based on some of the work previously carried out: the working paper "The Underlying Database of an Instrument for Economic and Social Policy Analysis for the Azores. Application and Extension to 2005" (Santos, 2011), which documents and justifies all the work that has been undertaken so far. Also contributing to that research work are the papers prepared for the presentations made to the International Conference on Economic Modelling, promoted by EcoMod (Global Economic Modeling Network), held in Ponta Delgada – Azores (Portugal), from 29/6 to 1/7/2011, and to the 12th Workshop APDR (*Associação Portuguesa para o Desenvolvimento Regional*), held in Leiria – Portugal, on 15/2/2012.

The purpose of this article will be, on the one hand, to identify the main ideas underlying the SAM-based approach and the corresponding conceptual framework and, on the other hand, to underline the importance of ensuring consistency with the national and regional accounts when measuring and modelling the activity of countries and regions with SAMs. The latter will be supported by applications to the Azores and Portugal in 2005, using the results of the above-mentioned work and of another author's work. At the same time, it will be stressed that such a task can be

performed better if all of the part that is measured by the national and regional accounts is included in the study.

Thus, Section 2 presents the SAM-based approach, mainly through the words of the authors responsible for its foundation: Richard Stone and Graham Pyatt.

Section 3 begins with the identification of the duality whose recognition is considered to be of fundamental importance for quantitative analysis. As explained in Subsection 3.1, according to that duality, SAMs can be seen as a framework both for models of how the economy works and for providing data that monitor its workings. The idea of completeness, the importance of ensuring consistency with the national and regional accounts, and their adoption as a basic source of information, are aspects that will also be introduced in that subsection. Applications to the Azores and Portugal in 2005 are presented in Subsection 3.2, together with a description of the underlying basic forms. On the one hand, the above-mentioned SAM will be presented (constructed in order to serve as a database for a CGE model), which will be referred to as the CGE model database. On the other hand, a SAM will be presented that has been researched by the author. The differences between the CGE model database and the SAM for Portugal will also be identified. Due to their size, the tables that complement and support this part of the article will be included in the Appendix.

As part of the work of recognising the above-mentioned duality, in Section 4, the concluding remarks will emphasise the idea that when the national and regional accounts (representing the whole measured part of the activity of countries and regions) are adopted as the basic source of information, SAMs are able to offer a more representative framework for models of how the economy works and for providing the data that monitor its workings. On the other hand, an incomplete adoption (at least at an aggregated level) of the information provided by the national and regional accounts will mean that important interactions, representative of the activity of countries or regions, will not be considered.

2. THE SAM-BASED APPROACH

Richard Stone and Graham Pyatt played a key role in implementing the SAM-based approach. Both worked on the conceptual details of that approach: the former worked

more on the numerical versions of the SAM, within the framework of a system of national accounts, while the latter worked more in algebraic terms, mainly within the scope of input-output analysis. Their work proved decisive for understanding the importance of the SAM as a measurement tool.

In the foreword to the book that can now be regarded as a pioneering work in terms of the SAM-based approach, "Social Accounting for Development Planning with special reference to Sri Lanka", Richard Stone stated that the framework of the system of national accounts can be re-arranged and "the entries in a set of accounts can be presented in a matrix in which, by convention (…), incomings are shown in the rows and outgoings are shown in the columns; and in which, reflecting the fact that accounts balance, each row sum is equal to the corresponding column sum." That matrix (with an equal number of rows and columns) is the SAM, in the construction of which "it may be possible to adopt a hierarchical approach, first adjusting the entries in a summary set of national accounts and then adjusting subsets of estimates to these controlling totals." (Pyatt and Roe, 1977: xix, xxiii).

In turn, in the abstract to his article, "A SAM approach to Modeling", Graham Pyatt says: "Given that there is an accounting system corresponding to every economic model, it is useful to make the accounts explicit in the form of a SAM. Such a matrix can be used as the framework for a consistent dataset and for the representation of theory in what is called its transaction form." In that transaction form (or TV (transaction value) form), the SAM can be seen… "as a framework for theory" and its cells…"can be filled instead with algebraic expressions, which describe in conceptual terms how the corresponding transaction values might be determined". Thus, the SAM is used as "the basic framework for model presentation." (Pyatt, 1988: 327; 337).

Looking at the question from the perspectives outlined above, it can be said that a SAM can have two versions: a numerical version, which describes the activity of a country or a region, for instance, empirically; and an algebraic version, which describes that same activity theoretically. In the former version, each cell has a specific numerical value, with the sums of the rows being equal to the sums of the columns. In the latter version, each cell is filled with algebraic expressions that, together with those of all the other cells, form a SAM-based model, the calibration of which involves a replication of the numerical version.

In the words of Graham Pyatt, "the essence of (…) the SAM approach to modelling is to use the same SAM framework for both the empirical and the theoretical description of an economy." (Pyatt, 1988: 337).

Therefore, supported by the above-quoted ideas, the national accounts and their underlying system will be adopted, consequently determining the SAM design and guaranteeing the (possible) credibility of the available data.

In 1953, with the first and most fundamental contribution written by Richard Stone, the United Nations implemented the System of National Accounts (SNA), which continued to be published in successive versions until 2008 (ISWGA, 2008). This system establishes the rules for measuring the activity of countries or groups of countries, which, in turn, have been adopted and adapted to specific realities by the corresponding statistical offices.

The construction of algebraic versions – which may or may not adopt the theoretical framework underlying the SNA – can be seen, among others, in Pyatt (2001; 1988), Pyatt and Roe, (1977), Pyatt and Round (1985), Santos (2010; 2009).

This article will examine the construction of numerical versions of SAMs that either do or do not adopt the national and regional accounts as basic sources of information, underlying which is the SNA.

3. CONSTRUCTING SAMS AS DATABASES FOR MODELS

3.1. THE NATIONAL AND REGIONAL ACCOUNTS AS BASIC SOURCES OF INFORMATION

"A SAM is a framework both for models of how the economy works as well as for data which monitor its workings. Recognition of this duality is of basic importance for quantitative analysis. It implies, inter alia, that the accounting identities which are captured by a SAM are not to be regarded simply as consistency requirements which must be imposed on a model, but rather they should be seen as a logical consequence of the paradigms which economists have adopted for analyzing society." (Pyatt, 1991: 316). On the other hand, "the relationship between SAMs and models has several aspects […] for each model there is a corresponding SAM. The converse does not hold, however. For any given SAM, there is a variety of possible models. The choice of the SAM restricts the choice of the models, but it does not determine it uniquely" (Pyatt, 1988: 345).

Nowadays, in the case of both developed and developing market economies, the models that are conceived for studying regions and countries generally enjoy the support of consistent and credible databases. The adoption, adaptation and consequent improvement of the SNA have been of crucial importance in guaranteeing these conditions. This is the case with the European System of Accounts (ESA), which is the adaptation of the SNA to the European Union (see Eurostat, 1996), of which Portugal is a member. Therefore, the measured part of the economic activity of a country and its regions is periodically quantified, and the information collected is then published, providing further data for those databases. At the regional level, there are the regional accounts, which are consonant with the national accounts, although they do not yet have the same level of detail.

When the purpose is to measure and/or model the activity of a country or a region, it is important that the work is performed in as complete and consistent a manner as possible, and the adoption of the national and regional accounts as the basic sources of information is seen as

the best way of guaranteeing this result. Consistent and balanced aggregated SAMs can thus be constructed and, from them, by adopting a top-down method and using the same and/or other sources of information, it is possible to break down the accounts, represented in their rows and columns, without losing their consistency and still maintaining a certain level of completeness.

In those SAMs, constructed at either the regional or the national level, in addition to the part representing the relationship between the economy and the exterior, the relationships within the economy can also be represented. Two parts should be identified in the relationships within the economy: one representing the production process and trade (of the corresponding output, as well as of the imports); the other representing the distribution, redistribution and use of income. This income is the one that is domestically generated by the production process, to which is added the income that comes from the exterior. The activity sectors or industries which use the factors of production to produce goods and services or products are the direct participants in the production process and trade. In turn, the institutional sectors or institutions intervene in the distribution, redistribution and use of income through their current, capital and financial accounts.

According to the SNA and ESA, supply and use tables support the first part (production and trade of goods and services), whereas the institutional accounts support the second part (distribution, redistribution and use of income). Both support, at least in part, the quantification of the relationships within the domestic economy and between the domestic economy and the exterior, which in turn is summarised through the integrated economic accounts, in the case of countries. These are an important source of information, not only for working at a highly aggregated level, but also for confirming the consistency of the whole system.

Therefore, regardless of the purpose of each model (and the corresponding database) and the particular emphasis that one may wish to give to one part of the economy or another, it is important that those relationships and their corresponding participants are represented, at least at an aggregated level, in order to avoid the exclusion of important interactions and to prevent any bias occurring in the corresponding analysis that may be made.

For specific aspects or situations, involving certain disaggregations, other sources of information are needed. This is the case with those regions of the country for which supply and use tables and institutional accounts do not usually exist. In such cases, input-output matrices may be a valuable alternative source, as well as all the information that can be obtained from the local/regional governments and financial and non-financial corporations (enterprises).

The following applications to the Azores and Portugal in 2005 will serve to illustrate what has been described above. Thus, square matrices will be worked upon, in which the sum of the rows is equal to the corresponding sum of the columns. In keeping with what is conventionally accepted, and after some adjustments have been made

to adapt this to the system of national accounts, resources, incomes, receipts and changes in liabilities and net worth will be represented in the entries made in the rows, while uses, outlays, expenditures or changes in assets will be represented in the entries made in the columns.

3.2. APPLICATIONS TO THE AZORES AND PORTUGAL IN 2005

3.2.1. The basic CGE model databases for the Azores and Portugal in 2005

The basic structure of the CGE model databases for the Azores and Portugal in 2005, presented in Table 1, is the same as that used for the Azores in 2001, which was constructed in order to calibrate a CGE model developed under the scope of a project whose main objective was "to develop a multi-sectoral, multi-regional dynamic modelling platform of the Azores economy integrated within the European and global context" (Bayar et al., 2006: 3). Developments of that model and its applications were published – see, for instance, CEEPplA Working Papers 2-6/ 2009 or Bayar et al. (2010a-d).

When the above-mentioned work with the basic CGE model databases for the Azores and Portugal in 2005 was begun, the only information that was made available for the author was a preliminary version entitled "Construction of the Social Accounting Matrix for the Azores", whose author is not named, and which is dated August 2007. That version was later to form part of Ferreira et al. (2010), released after the conclusion of that work. It was that information and some available Excel files, identified as the basis for the work undertaken for 2001, which also formed the basis for all the work undertaken for 2005.

Almost all of the description in Table 1 is adapted to fit the corresponding model. This structure was adopted in its entirety for the Azores and almost totally for Portugal. In the latter case, some adaptations had to be introduced at the disaggregated level. Tables 2 and 3 are the corresponding numerical versions. In these numerical versions, the totals may not completely add up, due to the rounding off of some figures.

From these tables, it can be seen that the rows/columns are organised in the form of commodities, activities, trade and transport margins, factors (of production), institutional sectors, other accounts, capital, changes in inventories, and rest of the world accounts. Except for the capital account and the changes in inventories account, all the other accounts were subdivided into yet further accounts, with the other accounts being exclusively related with taxes and subsidies and the institutional sectors accounts being related only with households and the government (in keeping with the structure of 2001, firms have a row and a column in Tables 1-3, but these are not filled).

The final matrices are not included in this article due to their extremely large size: 160 rows by 160 columns. All the sources of information and the methodological details

underlying the work that was undertaken are presented in Santos (2011: 26-37).

3.2.2. A basic SAM for Portugal in 2005

The SAM that will now be presented results from the work that the author has already undertaken under the scope of the SAM-based approach, presented in Section 2. That work has been developed within a conceptual framework based on the works of Graham Pyatt and his associates (Pyatt, 1988 and 1991; Pyatt and Roe, 1977; Pyatt and Round, 1985) and has benefited from the efforts made to reconcile that framework with what has been defined by (successive versions of) the SNA (Pyatt, 1985 and 1991a; Round, 2003; Santos, 2009).

Unlike the CGE model databases presented above, this SAM was not constructed in order to calibrate a specific model. Its form derives from a particular research work in progress, which has the aim of finding a consistent and complete structure to depict the activity of a country or a region, from which it will be possible to construct several models. The author is also currently researching a model adapted to this SAM (see Santos: 2012, 2010 and 2009).

Some other characteristics that are not normally considered in the CGE model databases will now be considered here: each transaction is recorded only once in a cell of its own; the rows/columns are organised in the form of production (and trade), institutions and rest of the world accounts, which can be subdivided into yet further accounts; all the transactions taking place between the actors in the economic system and measured by the system of national accounts are included in the SAM, which can therefore be considered to provide a complete account of the circular flow in the economy (see, Santos, 2009: 3-8).

Santos (2010) works with a SAM with these characteristics for the year of this study – 2005. Table 4 is a fully aggregated version of the SAM presented in that study and the description of the cells of that same SAM can be seen in Table 5.

We therefore have a SAM that is entirely consistent with the national accounts and completely covers the activity of Portugal in 2005 measured by those accounts.

This SAM was also worked upon at some level of disaggregation. Thus, in the case of the domestic economy, "Production and Trade" was divided into six groups of products and activities and two factors of production. In turn, "Institutions" were divided into current, capital and financial accounts, with the last of these being a totally aggregate figure[1], while the others were divided into households, enterprises (or non-financial corporations), financial corporations, general government and non-profit institutions serving households (NPISH). Besides these accounts, we also have an aggregate account for the "rest of the

world" (Santos, 2010: 2-3). From this SAM, and for the purpose of comparing it with the basic CGE model databases, presented in Subsection 3.2.1, the basic SAM was constructed with the cells described in Table 6 and quantified in Table 7. In the case of Table 6, the description is adapted to the model which, as has already been mentioned, the author is currently researching.

3.2.3. Differences between the basic CGE model database and the basic SAM

Bearing in mind the two ideas already mentioned, namely that, on the one hand, SAMs can be seen as a framework both for constructing models of how the economy works and for providing data that can be used to monitor its working, and that, on the other hand, SAMs for measuring and modelling the activity of countries and regions should be consistent and exhaustive regarding the national and regional accounts, the differences between the basic CGE model databases and the basic SAM were identified.

Comparing the cell contents of the above-described basic forms (CGE model databases and SAM), Tables 8 and 9 identify those differences by specifying the direct and the indirect relationships, respectively. Thus, from those tables, it can be seen that the part relating to production and trade, namely the supply and demand for products, was worked upon with both the CGE model databases and the SAM, although there were clearly some differences between them. The same can be said about the primary distribution of income, which allowed for the use of both the CGE model databases and the SAM to identify the functional and institutional distribution of income. However, the secondary distribution of income is not treated so effectively by the CGE model databases. In fact, although, in the CGE model databases, taxes are worked upon in great detail, current and capital transfers are incomplete and financial transactions are not considered. On the other hand, although households are disaggregated by income brackets, financial and non-financial corporations are not considered explicitly, although they are implicit in the production sectors. This means that an important part of the activity which should normally be included in a model claiming to represent the activity of a region and/or a country is not considered by the CGE model databases and, consequently, by the corresponding models. Since the model and the corresponding database for 2001 was only used for the region of the Azores, the lack of available information certainly contributed towards that situation.

4. CONCLUDING REMARKS

Using the words of Graham Pyatt, who played a key role in the implementation of the SAM-based approach: "A SAM is a framework both for models of how the economy works as well as for data which monitor its workings" (Pyatt, 1991: 316).

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[1] Due to a lack of available information about the "from whom to whom" transactions, from which the submatrices of the transactions between institutional sectors can be constructed.

Thus, if we take into account the different paradigms and their corresponding underlying accounting identities, the full adoption of the information provided by the national and regional accounts is recommended for analysing that work. To the extent that these accounts make it possible to work with institutions and sectors of activity, with transactions that are associated with production, and with the distribution, redistribution and use of income, in terms of economic activity as a whole, they can be considered the best data that are available and provide the basic source of information from which consistency can be achieved within a SAM framework. This will mean that, when describing both the empirical and the theoretical aspects of the activity of countries and regions, important interactions can be considered.

On the other hand, if we adopt sources of information other than the national and regional accounts, the disaggregation of specific accounts does not lead to a loss in the consistency of the whole system and will make it possible to work with specific aspects of the activity of countries and regions, whether for measuring or for modelling purposes.

In our applications and in the corresponding comparisons that we made at the country level (Portugal), it was possible to see that, as far as the part measured by the national accounts is concerned, the CGE model database only provided an incomplete coverage of the institutional sectors and the secondary distribution of income. This means that, although the supply and demand for products and the primary distribution of income were covered by the CGE model database, the description of the whole economy was incomplete, so that the results and their corresponding analysis may be biased.

This same conclusion can be made at the regional level. Even though it is known that the regional accounts are not so complete as the national accounts, an extra effort is recommended in order to harmonise them with (and even extend them to) the national accounts, as was done in the case of the application to the Azores.

A study carried out at the regional level may provide a useful method for helping the national accounts departments, at their respective statistics offices, to improve and complete the results of their work.

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APPENDICES

KEY TO TABLE 1 (IN ALPHABETICAL ORDER):

CG	final consumption of the government
C	final consumption of the households
DEPR	depreciation
E	exports
FEI	foreign exchange inflows
FEO	foreign exchange outflows
GCF	gross capital formation
I	investments (gross fixed capital formation and acquisitions less disposals of valuables)
IO	intermediate consumption
K	capital use of the sector
KSH	income from capital received by the households
L	labour use of the sector
LSH	income from labour received by the households
M	imports
SC	total changes in inventories
SH	households' savings
SG	government savings
S_{RoW}	foreign savings
SV	changes in inventories by commodity
TRC	taxes on commodities
TRCG	taxes on products received by the government
TRCS	subsidies on products
TRCSG	subsidies on products paid by the government
TRE	excise taxes
TREG	excise taxes received by the government
TRGH	transfers from the government to the households
TRH	taxes on the households' income
TRHG	taxes on the households' income received by the government
TRK	taxes on capital
TRKG	taxes on capital received by the government
TRL	taxes on wages
TRLG	taxes on labour received by the government (in the case of Portugal)
TRL_{RoW}	taxes on labour received by the Mainland (in the case of the Azores)
TRM	taxes on imports
TRMG	taxes on imports by the government
TRoC	other taxes on products
TRoCG	other taxes on products received by the government
TRP	taxes on production
TRPG	taxes on production received by the government
TRPS	subsidies on production
TRPSG	subsidies on production paid by the government
TRPoS	other subsidies (in the case of the Azores)
TRPoSG	other subsidies paid by the government (in the case of the Azores)
$TR_{RoW}H$	transfers from the rest of the world to the households
$TR_{RoW}G$	transfers from the rest of the world to the government
TTM	trade and transport margins
TTMP	trade and transport margins (part of production)
XD	domestic production or gross output delivered to the domestic market and exported

APPENDICES

TABLE 1. BASIC CGE MODEL DATABASE/SAM FOR THE AZORES AND PORTUGAL – DESCRIPTION

	(p)	(a)	(ttm)	(fk)	(fl)	(f)	(b)	(g)	(vat)	(id)	(id)	(tp)
Commodities (p)		IO	TTMP				C	CG				
Activities (a)	XD											
Trade and Trans. Margins (ttm)	TTM											
Factors (f) — Capital (k)		K										
Factors (f) — Labour (l)		L										
Institutional Sectors — Firms (f)												
Institutional Sectors — Households (h)				KSH	LSH			TRGH				
Institutional Sectors — Government (g)									TRCG[1]	TRMG[1]	TREG[1]	TRoCG[1]
Other Accounts — VAT (vat)	TRC[1]											
Other Accounts — Import Duties (id)	TRM[1]											
Other Accounts — Excise Taxes (et)	TRE[1]											
Other Accounts — Other Taxes on Products (tp)	TRoC[1]											
Other Accounts — Subsidies on Products (sp)	TRCS[1]											
Other Accounts — Subsidies on Production (sprod)		TRPS[1]										
Other Accounts — Taxes on Production (tprod)		TRP[1]										
Other Accounts — Taxes on Labour (tl)		TRL[1]										
Other Accounts — Taxes on Capital (tk)		TRK[1]										
Other Accounts — Taxes on Household Income (th)							TRH[1]					
Other Accounts — Subsidies (other) (os)		TRPoS[1]										
Capital (i)		DEPR					SH	SG				
Changes in Inventories (ci)												
Rest of the World (RW)	M											
Total	Total Supply	Total Outlays	TTMP	Capital Outlays (households)	Labour Outlays		Households Outlays	Government Outlays	TRCG	TRMG	TREG	TRoCG

TABLE 1. BASIC CGE MODEL DATABASE/SAM FOR THE AZORES AND PORTUGAL – DESCRIPTION (CONTINUED)

	(sp)	(sprod)	(tprod)	(tl)	(tk)	(tb)	(os)	(i)	(ci)	(RW)	Total
Commodities (p)								I	SV	E	Total Demand
Activities (a)											Gross Output
Trade and Trans. Margins (ttm)											TTM
Factors (f) Capital (k)											Capital Income
Labour (l)											Labour Income
Institutional Sectors Firms (f)											
Households (b)										$TR_{RoW}H$	Households Income
Government (g)	$TRCSG$ [1]	$TRPSG$ [1]	$TRPG$ [1]	$TRLG$ [1,2]	$TRKG$ [1]	$TRHG$ [1]	$TRPoSG$ [1]			$TR_{RoW}G$	Government Income
Other Accounts VAT (vat)											TRC
Import Duties (id)											TRM
Excise Taxes (et)											TRE
Other Taxes on Products (tp)											TRoC
Subsidies on Products (sp)											TRCS
Subsidies on Production (sprod)											TRPS
Taxes on Production (tprod)											TRP
Taxes on Labour (tl)											TRL
Taxes on Capital (tk)											TRK
Taxes on Household Income (tb)											TRH
Subsidies (other) (os)											TRPoS
Capital (i)								SC		S_{RoW}	Savings
Changes in Inventories (ci)											Changes in Inventories
Rest of the World (RW)				TRL_{RoW} [1,2]						FEI	FEO
Total	TRC	TRPS	TRP	TRL	TRK	TRH	TRPoS	Investment (GCF)	Changes in Invent.	FEI	

Source: Ferreira et al. (2010).

[1] Transactions that are considered twice in the matrix.

[2] TRL is received by the government in the SAM for Portugal and by the Mainland (part of the "rest of the world") in the SAM for the Azores.

TABLE 2. BASIC CGE MODEL DATABASE/SAM FOR THE AZORES IN 2005 (IN 10^6 EUROS)

	Commodities	Activities	Trade and Transport Margins	Factors		Institutional Sectors			Other Accounts			
				Capital	Labour	Firms	Households	Government	VAT	Import Duties	Excise Taxes	Other Taxes on Products
Commodities	0	2354	464	0	0	0	1737	728	0	0	0	0
Activities	4951	0	0	0	0	0	0	0	0	0	0	0
Trade and Transp. Margins	464	0	0	0	0	0	0	0	0	0	0	0
Factors — Capital	0	727	0	0	0	0	0	0	0	0	0	0
Factors — Labour	0	1133	0	0	0	0	0	0	0	0	0	0
Institutional Sectors — Firms	0	0	0	0	0	0	0	0	0	0	0	0
Institutional Sectors — Households	0	0	0	727	1133	0	0	142	0	0	0	0
Institutional Sectors — Government	0	0	0	0	0	0	0	0	152	1	52	19
Other Accounts — VAT	152	0	0	0	0	0	0	0	0	0	0	0
Import Duties	1	0	0	0	0	0	0	0	0	0	0	0
Excise Taxes	52	0	0	0	0	0	0	0	0	0	0	0
Other Taxes on Products	19	0	0	0	0	0	0	0	0	0	0	0
Subsidies on Products	-8	0	0	0	0	0	0	0	0	0	0	0
Subsidies on Production	0	- 26	0	0	0	0	0	0	0	0	0	0
Taxes on Production	0	14	0	0	0	0	0	0	0	0	0	0
Taxes on Labour	0	90	0	0	0	0	0	0	0	0	0	0
Taxes on Capital	0	42	0	0	0	0	0	0	0	0	0	0
Taxes on Hous. Income	0	0	0	0	0	0	117	0	0	0	0	0
Subsidies (other)	0	- 38	0	0	0	0	0	0	0	0	0	0
Capital	0	655	0	0	0	0	180	- 150	0	0	0	0
Changes in Inventories	0	0	0	0	0	0	0	0	0	0	0	0
Rest of the World	1572	0	0	0	0	0	0	0	0	0	0	0
Total	7 203	4 951	464	727	1133	0	2034	720	152	1	52	19

TABLE 2. BASIC CGE MODEL DATABASE/SAM FOR THE AZORES IN 2005 (IN 10⁶ EUROS) (CONTINUED)

	Other Accounts							Capital	Changes in Inventories	Rest of the World	Total
	Subsidies on Products	Subsidies on Production	Taxes on Production	Taxes on Labour	Taxes on Capital	Taxes on Household Income	Subsidies (other)				
Commodities	0	0	0	0	0	0	0	1290	20	611	7 203
Activities	0	0	0	0	0	0	0	0	0	0	4 951
Trade and Transp. Margins	0	0	0	0	0	0	0	0	0	0	464
Factors — Capital	0	0	0	0	0	0	0	0	0	0	727
Factors — Labour	0	0	0	0	0	0	0	0	0	0	1 133
Institutional Sectors — Firms	0	0	0	0	0	0	0	0	0	0	0
Households	0	0	0	0	0	0	0	0	0	31	2 034
Government	- 8	- 26	14	0	42	117	- 38	0	0	396	720
Other Accounts — VAT	0	0	0	0	0	0	0	0	0	0	152
Import Duties	0	0	0	0	0	0	0	0	0	0	1
Excise Taxes	0	0	0	0	0	0	0	0	0	0	52
Other Taxes on Products	0	0	0	0	0	0	0	0	0	0	19
Subsidies on Products	0	0	0	0	0	0	0	0	0	0	- 8
Subsidies on Production	0	0	0	0	0	0	0	0	0	0	- 26
Taxes on Production	0	0	0	0	0	0	0	0	0	0	14
Taxes on Labour	0	0	0	0	0	0	0	0	0	0	90
Taxes on Capital	0	0	0	0	0	0	0	0	0	0	42
Taxes on Hous. Income	0	0	0	0	0	0	0	0	0	0	117
Subsidies (other)	0	0	0	0	0	0	0	0	0	0	- 38
Capital	0	0	0	0	0	0	0	0	0	625	1 310
Changes in Inventories	0	0	0	0	0	0	0	20	0	0	20
Rest of the World	0	0	0	90	0	0	0	0	0	0	1 663
Total	- 8	- 26	14	90	42	117	- 38	1310	20	1663	

Sources: Statistics Portugal (*INE*); Statistics Azores (*SREA*); Regional Government of Azores.

TABLE 3. BASIC CGE MODEL DATABASE/SAM FOR PORTUGAL IN 2005 (IN 10⁶ EUROS)

	Commodities	Activities	Trade and Transport Margins	Factors: Capital	Factors: Labour	Inst. Sectors: Firms	Inst. Sectors: Households	Inst. Sectors: Government	Other Accounts: VAT	Other Accounts: Import Duties	Other Accounts: Excise Taxes	Other Accounts: Other Taxes on Products	Total
Commodities	0	148 312	25 139	0	0	0	93 695	34 986	0	0	0	0	378 348
Activities	276 675	0	0	22 589	58 619	0	0	0	0	0	0	0	276 675
Trade and Transp. Margins	25 139	0	0	0	0	0	0	0	0	0	0	0	25 139
Factors — Capital	0	22 589	0	0	0	0	0	0	0	0	0	0	22 589
Factors — Labour	0	58 619	0	0	0	0	0	0	0	0	0	0	58 619
Firms	0	0	0	0	0	0	0	0	0	0	0	0	0
Households	0	0	0	22 589	58 619	0	0	23 046	0	0	0	0	104 255
Government	0	0	0	0	0	0	0	0	13 006	464	6022	2189	51 173
VAT	13 006	0	0	0	0	0	0	0	0	0	0	0	13 006
Import Duties	464	0	0	0	0	0	0	0	0	0	0	0	464
Excise Taxes	6022	0	0	0	0	0	0	0	0	0	0	0	6022
Other Taxes on Products	2189	0	0	0	0	0	0	0	0	0	0	0	2 189
Subsidies on Products	- 921	0	0	0	0	0	0	0	0	0	0	0	
Subsidies on Production	0	- 2328	0	0	0	0	0	0	0	0	0	0	
Taxes on Production	0	1 066	0	0	0	0	0	0	0	0	0	0	
Taxes on Labour	0	16 578	0	0	0	0	0	0	0	0	0	0	
Taxes on Capital	0	4288	0	0	0	0	0	0	0	0	0	0	
Taxes on Hous. Income	0	0	0	0	0	0	8255	0	0	0	0	0	
Subsidies (other)	0	0	0	0	0	0	0	0	0	0	0	0	
Capital	0	27 551	0	0	0	0	2306	- 6860	0	0	0	0	
Changes in Inventories	0	0	0	0	0	0	0	0	0	0	0	0	
Rest of the World	55 774	0	0	0	0	0	0	0	0	0	0	0	
Total	378 348	276 675	25 139	22 589	58 619	0	104 255	51 173	13 006	464	6022	2 189	

TABLE 3. BASIC CGE MODEL DATABASE/SAM FOR PORTUGAL IN 2005 (IN 10^6 EUROS) (CONTINUED)

	Other Accounts							Capital	Changes in Inventories	Rest of the World	Total
	Subsidies on Products	Subsidies on Production	Taxes on Production	Taxes on Labour	Taxes on Capital	Taxes on Household Income	Subsidies (other)	Capital	Changes in Inventories	Rest of the World	Total
Commodities	0	0	0	0	0	0	0	33 268	381	42 567	378 348
Activities	0	0	0	0	0	0	0	0	0	0	276 675
Trade and Transp. Margins	0	0	0	0	0	0	0	0	0	0	58 619
Factors — Capital	0	0	0	0	0	0	0	0	0	0	22 589
Factors — Labour	0	0	0	0	0	0	0	0	0	0	25 139
Institutional Sectors — Firms	0	0	0	0	0	0	0	0	0	0	0
Households	0	0	0	0	0	0	0	0	0	0	104 255
Government	- 921	- 2328	1066	16 578	4288	8255	0	0	0	2554	51 173
Other Accounts — VAT	0	0	0	0	0	0	0	0	0	0	13 006
Import Duties	0	0	0	0	0	0	0	0	0	0	464
Excise Taxes	0	0	0	0	0	0	0	0	0	0	6022
Other Taxes on Products	0	0	0	0	0	0	0	0	0	0	2189
Subsidies on Products	0	0	0	0	0	0	0	0	0	0	- 921
Subsidies on Production	0	0	0	0	0	0	0	0	0	0	- 2328
Taxes on Production	0	0	0	0	0	0	0	0	0	0	1066
Taxes on Labour	0	0	0	0	0	0	0	0	0	0	16 578
Taxes on Capital	0	0	0	0	0	0	0	0	0	0	4288
Taxes on Hous. Income	0	0	0	0	0	0	0	0	0	0	8255
Subsidies (other)	0	0	0	0	0	0	0	0	0	0	0
Capital	0	0	0	0	0	0	0	0	0	10 653	33 649
Changes in Inventories	0	0	0	0	0	0	0	381	0	0	381
Rest of the World	0	0	0	0	0	0	0	0	0	0	55 774
Total	- 921	- 2328	1066	16 578	4288	8255	0	33 649	381	55 774	X

Source: Statistics Portugal (*INE*).

TABLE 4. PORTUGUESE MACRO SAM FOR 2005 (IN 10⁶ EUROS)

Incomes (receipts) \ Outlays (expenditures)	Production and Trade		factors of production (f)	(domestic) Institutions accounts			rest of the world (rw)	TOTAL
	products (p)	activities (a)		current (dic)	capital (dik)	financial (dif)		
Production and Trade — Products (p)	Trade and Transport Margins (0)	Intermediate Consumption (148 312)	0	Final Consumption (126 644)	Gross Capital Formation (33 649)	0	Exports (42 567)	Aggregate Demand (351 173)
Activities (a)	Production (276 675)	0	0	0	0	0	0	Production Value (276 675)
factors of production (f)	0	Gross Added Value, at factor cost (129 626)	0	0	0	0	Compensation of Factors from the RW (7822)	Aggregate Factors Income (137 447)
(domestic) Institutions accounts — current (dic)	Net taxes on products (20 899)	Net taxes on production (-854)	Gross National Income, at factor cost (126 179)	Current Transfers (78 861)	0	0	Current Transfers from the RW (4603)	Aggregate Income (229 688)
capital (dik)	0	0	0	Gross Saving (19 025)	Capital Transfers (8174)	Net borrowing (12 335)	Capital Transfers from the RW (2404)	Investment Funds (41 937)
financial (dif)	0	0	0	0	0	Financial Transactions to the RW (37 825)	Financial Transactions from the RW (31 113)	Total financial transactions (68 938)
Rest of the world (rw)	Imports + net taxes on products (53 737 - 139)	Net taxes on production (-409)	Compensation of Factors to the RW (11 269)	Current Transfers to the RW (5158)	Capital Transfers to the RW (114)	Financial Transactions to the RW (18 779)		Transactions Value to the RW (88 509)
TOTAL	Aggregate Supply (351 173)	Total Costs (276 675)	Aggregate Factors Income (137 447)	Aggregate Income (1229 688)	Aggregate Investment (41 937)	Total financial transactions (68 938)	Transact. Value from the RW (88 509)	

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

TABLE 5. NATIONAL ACCOUNTS TRANSACTIONS IN THE CELLS OF THE MACRO SAM

SAM			National Accounts transactions[2]	
row	column	Description (valuation[3])	(SNA) code	Description (valuation[2])
p	p	trade and transport margins	---	trade and transport margins
a	p	production (basic prices)	P1	output (basic prices)
dic	p	net taxes on products (paid to domestic institutions – general government)	D21--D31	taxes on products *minus* subsidies on products
rw	p	net taxes on products (paid to the RW)		
		imports (cif prices)	P7	imports of goods and services (cif prices)
p	rw	exports (fob prices)	P6	exports of goods and services (fob prices)
p	a	intermediate consumption (purchasers' prices)	P2	intermediate consumption (purchasers' prices)
p	dic	final consumption (purchasers' prices)	P3	final consumption expenditure (purchasers' prices)
p	dik	gross capital formation (purchasers' prices)	P5	gross capital formation (purchasers' prices)
f	a	gross added value (factor cost)	D1 D4 B2g B3g	compensation of employees net property income gross operating surplus gross mixed income
dic	a	net taxes on production (paid to domestic institutions - general government)	D29--D39	other taxes on production *minus* other subsidies on production
rw	a	net taxes on production (paid to the RW)		
dic	f	gross national income	B5g	gross national income
rw	f	compensation of factors to the RW	D1 D4	primary income paid to/received from the rest of the world compensation of employees net property income
f	rw	compensation of factors from the RW		
dic	dic	current transfers within domestic institutions	D5 D6 D7 D8	current taxes on income, wealth, etc. social contributions and benefits other current transfers adjustment for the change in the net equity of households in pension funds reserves
rw	dic	current transfers to the RW		
dic	rw	current transfers from the RW		
dik	dic	gross saving	B8g	gross saving
dik	dik	capital transfers	D9	capital transfers
dik	rw	capital transfers from the RW		
rw	dik	capital transfers to the RW		

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[2] Transactions at the first level of disaggregation, in accordance with the European System of National and Regional Accounts in the European Community of 1995 – ESA 95 (Eurostat, 1996) – which is itself based on the 1993 version of the International United Nations System of National Accounts – SNA 93 – prepared by the Inter-Secretariat Working Group on National Accounts and published by the United Nations Statistical Office (ISWGNA, 1993). Group on National Accounts and published by the United Nations Statistical Office (ISWGNA, 1993).

[3] In the transactions represented by the cells whose row and/or column denotes production accounts, the following types of valuation are identified: fator cost; basic, cif and fob prices; purchasers' or market prices.

Fator cost represents the compensation of the factors, or the primary incomes, arising from the labour and capital used in the production process of the domestic economy, excluding taxes on production and imports (taxes on products and other production taxes) and subsidies (subsidies on products and other subsidies on production).

At the second level of disaggregation, one can distinguish between the production of the domestic economy and imports. In the first case, this is measured by the fator cost from the previous level, plus (other) taxes on production) net of subsidies on production, as well as by intermediate consumption. This represents the basic price level of the (domestic) production that will be transacted in the domestic market and the fob (free on board) price level of the production that will be exported. Imports, valued at cif (cost-insurance-freight included) prices, are added, at this level, to the above-mentioned unexported part of domestic production that will be transacted in the domestic market.

Purchasers' or market prices relate to products, either domestically produced or imported, that are transacted in the domestic market. Here, the basic/cif prices will be increased by adding to them the trade and transport margins and the taxes net of subsidies on products.

TABLE 5. NATIONAL ACCOUNTS TRANSACTIONS IN THE CELLS OF THE MACRO SAM (CONTINUED)

	SAM			National Accounts transactions	
row	column	Description (valuation)	(SNA) code		Description (valuation)
dik	dif	- net borrowing[4]	B9		net borrowing
dif	dif	financial transactions	F1		monetary gold and special drawing rights (SDRs)
dic	*a*	financial transactions to the RW	F2		currency and deposits
			F3		securities other than shares
			F4		loans
rw	a	financial transactions from the RW	F5		shares and other equity
			F6		insurance technical reserves
			F7		other accounts receivable/payable
dic	f	aggregate demand	row sum of the p account's cells (see above)		
rw	f	aggregate supply	column sum of the p account's cells (see above)		
a	total	production value	P1		output (basic prices)
total	a	total costs	column sum of the *a* account's cells (see above)		
f	total	aggregate factors income	row sum of the f account's cells (see above)		
total	f		column sum of the f account's cells (see above)		
dic	total	aggregate income	row sum of the dic account's cells (see above)		
total	dic		column sum of the dic account's cells (see above)		
dik	total	investment funds	row sum of the dik account's cells (see above)		
total	dik	aggregate investment	column sum of the dik account's cells (see above)		
dif	total	total financial transactions	row sum of the dif account's cells (see above)		
total	dif		column sum of the dif account's cells (see above)		
rw	total	transactions value to the rest of the world	row sum of the rw account's cells (see above)		
total	rw	transactions value from the rest of the world	column sum of the rw account's cells (see above)		

Source: Santos (2010: 6-7).

KEY TO TABLE 6 (IN ALPHABETICAL ORDER):

AD   value of aggregate demand
AFIP   aggregate factors income (paid)
AFIR   aggregate factors income (received)
AI   aggregate income (received)
AINV   aggregate investment
AIP   aggregate income (paid)
AS   aggregate supply
CFR   compensation of the factors of production
     received from the rest of the world
CFS   compensation of the factors of production
     sent to the rest of the world
CT   current transfers
EX   value of exports
FC   value of final consumption
FT   financial transactions
GAV   gross added value
GCF   value of gross capital formation

GNI   gross national income
IM   value of imports
INVF   investment funds
KT   capital transfers
NLB   net lending / borrowing
NTA   net taxes on production
NTP   net taxes on products
S   gross saving
TFTP   total financial transactions (paid)
TFTR   total financial transactions (received)
TM   trade and transport margins
TVRWP   value of transactions to the rest of the world
TVRWR   value of transactions from the rest of the world
VCT   value of total costs
VIC   value of intermediate consumption
VP   value of production
VPT   total production value

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[4] In the National Accounts, the net lending (+) or borrowing (-) of the total economy is the sum of the net lending or borrowing of the institutional sectors. It represents the net resources that the total economy makes available to the rest of the world (if positive) or receives from the rest of the world (if negative). The net lending (+) or borrowing (-) of the total economy is equal, but with an opposite mathematical sign, to the net borrowing (-) or lending (+) of the rest of the world (Eurostat, 1996: paragraph 8.98).

In the SAM's capital account, net lending or borrowing is considered to be a component of the investment funds required/not required to cover the aggregate investment. In other words, it is the financing requirement/capacity of the economy that will be covered/absorbed by financial transactions (from/to the rest of the world, since the national funds are not enough/in excess). Therefore, if there is net borrowing, we have a financing requirement that is covered by financial transactions, i.e. a resource of the capital account (row) and a use of the financial account (column). If there is net lending, we have financing capacity that is absorbed by financial transactions, i.e. a resource of the financial account (row) and a use of the capital account (column).

TABLE 6. BASIC SAM FOR PORTUGAL – DESCRIPTION

	(p)	(a)	(fle)	(foa)	(dich)	(dicnfc&fc)	(dicg&np)	(dikh)	(diknfc&fc)	(dikg&np)	(dif)	(rw)	total
Production and Trade — products (p)	TM	VIC			FC_h		$FC_{g\&np}$		GCF			EX	AD
Production and Trade — activities (a)	VP												VPT
Factors — labour (fle) (employees)		$GAV_{fle,a}$										$CFR_{fle,rw}$	$AFIR_{fle}$
Factors — own assets (foa)		$GAV_{foa,a}$										$CFR_{foa,rw}$	$AFIR_{foa}$
(domestic) Institutions accounts — current (dic) — households (h)			$GNI_{h,fle}$	$GNI_{h,foa}$		$CT_{dic,dic}$						$CT_{dic,rw}$	AI
current (dic) — non&financial corporations (nfc&fc)				$GNI_{nfc\&fc,foa}$									
current (dic) — government &npish (g&np)	NTP	NTA		$GNI_{g\&np,foa}$									
capital (dik) — households (h)					S_h				$KT_{dic,dic}$		NLB	$KT_{dic,rw}$	INVF
capital (dik) — non&financial corporations (nfc&fc)						$S_{nfc\&fc}$							
capital (dik) — government &npish (g&np)							$S_{g\&np}$						
financial (dif)											$FT_{dif,dif}$	$FT_{dif,rw}$	TFTR
rest of the world (rw)	IM + NTP	NTA	$CFS_{rw,fle}$	$CFS_{rw,foa}$		$CT_{rw,dic}$			$KT_{rw,dic}$		$FT_{rw,dif}$		TVRWP
Total	AS	VCT	$AFIP_{fle}$	$AFIP_{foa}$		AIP			AINV		TFTP	TVRWR	

Source: Santos (2010)

TABLE 7. BASIC SAM FOR PORTUGAL IN 2005 (IN 10^6 EUROS)

		(p)	(a)	(fle)	(foa)	(dich)	(dicnfc&fc)	(dicg&np)	(dikh)	(diknfc&fc)	(dikg&np)	(dif)	(rw)	total
Production and Trade	products (p)	0	148 312			93 695		34 986		33 648			42 576	353 210
	activities (a)	276 675												276 675
Factors	labour (fle) (employees)		75 358										189	75 547
	own assets (foa)		54 267										7633	61 900
(domestic) Institutions accounts	current (dic) households (h)	20 899		75 198	31 058		78 861						4603	229 688
	current (dic) non&financial corporations (nfc&fc)		- 854		19 646									
	current (dic) government &npish (g&np)				277									
	capital (dik) households (h)					9544				8174		12 335	2404	41 937
	capital (dik) non&financial corporations (nfc&fc)						13 956							
	capital (dik) government &npish (g&np)							- 4475						
	financial (dif)	55 774										37 825	31 113	68 938
rest of the world (rw)		- 139	- 409	350	10 919		5158			114		18 779		88 509
Total		353 209	276 675	75 547	61 900		229 688			41 937		68 938	88 509	

Source: Statistics Portugal (*INE*).

TABLE 8. CELLS OF THE BASIC CGE MODEL DATABASE DIRECTLY RELATED WITH THE CELLS OF THE BASIC SAM – PORTUGAL IN 2005 (IN 10⁶ EUROS)

(A) CGE Database/SAM			(B) SAM			National Accounts Transactions			(A)-(B)	
Cell (row, column)	Value (10⁶ Euros)	Description	Cell (row, column)	Value (10⁶ Euros)	Description	(SNA) code	Description (valuation)	Value (10⁶ Euros)	Value (10⁶ Euros)	Description
(p, ttm)	25 139	TTMP: Trade and Transport Margins (part of Production)	(p,p)	0	TM: Trade and Transport Margins	---	trade and transport margins	25 139	25 139	TM = TTMP - TTM
(ttm,p)	25 139	TTM: Trade and Transport Margins						25 139		
(a,p)	276 675	XD: Domestic production	(a,p)	276 675	VP: Value of Production	P1	output (basic prices)	0	0	--
(p,a)	148 312	IO: Intermediate consumption	(p,a)	148 312	VIC: Value of Inter mediate Consumption	P2	intermediate consumption (purchasers' prices)	0	0	--
(p,b)	93 695	C: Final Consumption of the households	$(p,dich)$	93 695	FC_{h}: Value of Final Consumption of the households	P3	final consumption expenditure (purchasers' prices)	0	0	--
(p,g)	34 986	CG: Final Consumption of the Government	$(p, dicg\&np)$	34 986	$FC_{g\&np}$: Value of Final Consumption of the government&npish			0	0	--
(p,i)	33 268	I: Investments (gross fixed capital formation and acquisitions less disposals of valuables)	(p,dik)	33 648	GCF: Value of Gross Capital Formation	P5	gross capital formation (purchasers' prices)	0	0	GCF = I+SV; GCF = I+SC
(p,ci)	381	SV: Changes in inventories by commodity								
(ci,i)	381	SC: Total changes in inventories								
(p,rw)	42 576	E: Exports	(p,rw)	42 576	*EX*: value of Exports	P6	exports of goods and services (fob prices)	0	0	--
(rw,p)	55 774	M: Imports	(rw,p) (part)	55 774	*IM*: value of Imports	P7	imports of goods and services (cif prices)	0	0	--
(i,b)	2 306	SH: Households Savings	$(dikh,dich)$	9544	S_{h}: gross Saving of the households	B8g	gross saving	-7 238	-7 238	(A) does not con-sider the part of the current and capital transfers, which are, respectively, a component of the disposable income of domestic institu-tions and of investment funds. However, this gap is filled by DEPR.
(i,a)	27 551	DEPR	$(diknfc\&fc, dicnfc\&fc)$	13 956	$S_{nfc\&fc}$: gross Saving of non&financial corporations			-13 594	-13 594	
(i,g)	-6860	SG: Government Savings	$(dikg\&np, dicg\&np)$	-4475	$S_{g\&np}$: gross Saving of the government&npish			-2 385	-2 385	
(i,rw)	10 653	S_{RoW}: Foreign Savings	(dik,dif)	12 335	NLB: net lending / borrowing	\B9	net lending (+) / borrowing (-)	-1 682	-1 682	this gap is filled by DEPR.

TABLE 8. CELLS OF THE BASIC CGE MODEL DATABASE DIRECTLY RELATED WITH THE CELLS OF THE BASIC SAM – PORTUGAL IN 2005 (IN 10⁶ EUROS) (CONTINUED)

(A) CGE Database/SAM			(B) SAM			National Accounts Transactions			(A)-(B)
Cell (row, column)	Description	Value (10⁶ Euros)	Cell (row, column)	Value (10⁶ Euros)	Description	(SNA) code	Description (valuation)	Value (10⁶ Euros)	Description
(vat, p)	TRC: Taxes on products	13 006	(dicg&np,p)	20 899	NTP: net taxes on products (paid to the Portuguese government and to the European Union Institutions, or the rest of the world)	D21-D31	taxes on products *minus* subsidies on products	0	NTP = = TRC+TRM+ TRE +TRoC + TRCS = TRCG+TRMG +TREG+ TRoCG + TRCSG (A) does not distinguish between who really receives the taxes and who pays the subsidies on products.
(g, vat)	TRCG: Taxes on products received by the government								
(id, p)	TRM: Taxes on imports	464							
(g, id)	TRMG: Taxes on imports received by the government								
(et, p)	TRE: Excise taxes	6022							
(g, et)	TREG: Excise taxes received by the government								
(tp, p)	TRoC: Other taxes on products	2189							
(g, tp)	TRoCG: Other taxes on products received by the government								
(sp, p)	TRCS: Subsidies on products								
(g, sp)	TRCSG: Subsidies on products paid by the government	- 921	(rw,p) (part)	- 139					
$(sprod, a)$	TRPS: Subsidies on production	- 2 328	(dicg&np, a)	- 854	NTA: net taxes on production (paid to the Portuguese government and to the European Union Institutions, or the rest of the world)	D29-D39	other taxes on production *minus* other subsidies on production	0	NTA = = TRPS + TRP = TRPSG+TRPG (A) does not distinguish between who really receives the taxes and who pays the subsidies on production.
$(g, sprod)$	TRPSG: Subsidies on production paid by the government								
$(tprod, a)$	TRP: Taxes on production	1 066	(rw,a)	- 409					
$(g, tprod)$	TRPG: Taxes on production received by the government								

Sources: Tables 1, 3, 6 and 7.

TABLE 9. CELLS OF THE BASIC CGE MODEL DATABASE INDIRECTLY RELATED WITH THE CELLS OF THE BASIC SAM – PORTUGAL IN 2005 (IN 10⁶ EUROS)

(A) CGE Database/SAM					(B) SAM						(A)–(B)
Cell (row, column)	Value (10⁶ Euros)	Description	National Accounts Transactions (SNA) code	Description (valuation)	Cell (row, column)	Value (10⁶ Euros)	Description	National Accounts Transactions (SNA) code	Description (valuation)	Value (10⁶ Euros)	Description
(tl, a)	16 578	TRL: Taxes on wages	D12 (D61)	employers' social contributions (social contributions)	(fle, a)	75 358	$GAV_{fle,a}$: gross added value (factor cost), part of compensation of employees paid by the activities	D1 (=D11 +D12)	compensation of employees	0	$GNI_{h,fle} = TRL + L = TRLG + LSH$
(g, tl)		TRLG: Taxes on labour received by the government		contributions)	$(dich, fle)$	75 198	$GNI_{h,fle}$: gross national income, part of compensation of employees received by households				
(l, a)	58 619	L: Labour use of the sector	D11	wages and salaries	(rw, fle)	350	$CFS_{rw,fle}$: compensation of employees paid to the rest of the world			−161	$CFR_{fle,RW} - CFS_{rw,fle}$ $GAV_{fle,a} + (CFR_{fle,RW} - CFS_{rw,fle}) = TRL + L = TRLG + LSH$
(b, fl)		LSH: Income from labour received by the households			(fle, rw)	189	$CFR_{fle,RW}$: compensation of employees received from the rest of the world				
(k, a)	22 589	K: Capital use of the setor	B3g	gross mixed income	(foa, a)	54 267	$GAV_{foa,a}$: gross added value (factor cost), part compensation of own account workers and capital paid by the activities	B3g B2g D4	gross mixed income gross operating surplus net property income	−31 678	B3g+D4(net)
(b, fk)		KSH: Income from capital received by the households			$(dich, foa)$	31 058	GNI: gross national income, received by households and other institutions			−19 646	
--	--		--		$(dicnfc\&fc, foa)$	19 646				−19 646	(A) does not consider this item
--	--		--		$(dicg\&np, foa)$	277				−277	
--	--		--		(foa, rw)	7633	$CFR_{foa,RW}$: compensation capital paid to the rest of the world	D4	property income	−7633	
--	--		--		(rw, foa)	10 919	$CFS_{rw,foa}$: compensation capital received from the rest of the world			−10 919	

TABLE 9. CELLS OF THE BASIC CGE MODEL DATABASE INDIRECTLY RELATED WITH THE CELLS OF THE BASIC SAM – PORTUGAL IN 2005 (IN 10⁶ EUROS) (CONTINUED)

(A) CGE Database/SAM					(B) SAM					(A)-(B)	
Cell (row, column)	Value (10⁶ Euros)	Description	(SNA) code	Description (valuation)	Cell (row, column)	Value (10⁶ Euros)	Description	(SNA) code	Description (valuation)	Value (10⁶ Euros)	Description
(tb, b)	8255	TRH: Taxes on the households' income	D5	current taxes on income, wealth, etc.	(dic, dic)	78 861	CT: current transfers	D5	current taxes on income, wealth, etc.		a) current transfers involving institutions other than households and government are not considered in (A)
(g, tb)		TRHG: Taxes on the households' income received by the government						D6 = D61 + D62 + D63	social contributions and benefits = social contributions + social benefits other than social transfers in kind		b) in the current transfers with the rest of the world, (A) only considers a part of the transfers recorded from the rest of the world to the government
(tk, a)	4288	TRK: Taxes on capital						D7	other current transfers		c) a part of the current transfers between government and households is not considered in (A)
(g, tk)		TRKG: Taxes on capital received by the government									
(b, g)	23 046	TRGH: Transfers from the government to the households	D62	social benefits other than social transfers in kind	(rw, dic)	5158		D8	adjustment for the change in the net equity of households in pension funds reserves		
			D7	other current transfers	(dic, rw)	4603					
(g, rw)	2554	TR$_{RoW}$G: Transfers from the rest of the world to the government	D92	investment grants	(dik, dik)	8174	KT: capital transfers	D9 = D91 + D92 + D99	capital transfers = capital taxes + investment grants + other capital transfers		a) capital transfers involving institutions other than households and government are not considered in (A)
			D99	other capital transfers	(rw, dik)	114					b) in the capital transfers with the rest of the world, (A) only considers a part of the transfers recorded from the rest of the world to the government
					(dik, rw)	2404					
					(dif, dif)	37 825	FT: financial transactions	F1-7	financial transactions		(A) does not consider financial transactions.
					(dif, rw)	31 113					
					(rw, dif)	18 779					

Sources: Tables 1, 3, 6 and 7.