

Social Accounting Matrices for Portugal in 1998-99. Modelling the effects of changes in government receipts and expenditure.

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ABSTRACT

Aggregated Social Accounting Matrices (SAMs) will be built for the Portuguese economy in 1998 and 1999, based on the country's national accounts statistics.

The SAMs will be shown as a working instrument for quantifying the flows in the economic circuit and for simulating the effects resulting from changes in such flows.

The economic flows associated with the government subsectors will be emphasised, whilst accounting multipliers will be calculated to facilitate the study of the effects resulting from changes in the government's expenditure and receipts, which will also be subjected to a test on their veracity.

KEYWORDS: *Social Accounting Matrix; Economic Planning; Economic Policy; Macroeconomic Modelling.*

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CONTENTS

1. Introduction	1
2. The Portuguese SAMs structure	2
3. SAM modelling	
3.1. Methodology	11
3.2. Evaluation with changes in government subsector receipts.....	15
3.3. Evaluation with changes in government subsector expenditure	23
3.4. Results at the level of government subsector balances	32
4. Summary and conclusions	37
References	40
Annex – Description of the SAM cell contents	44

1. Introduction

The Social Accounting Matrix, usually known as SAM, is the working instrument used in this paper to study the effects of changes in the receipts and expenditure of the different Portuguese government subsectors on the economy as a whole, as well as on the government's budget balance in 1998.

Compiled from the Portuguese System of National Accounts (SNA), the SAMs constructed for the Portuguese economy in 1998 and 1999 can be seen as the matrix representation of government receipts and expenditure, showing the entire circular flow of income. This particular method of accounting for economic activity dates back to a number of different sources, starting with F. Quesnay's "tableau économique" (18th century). Sir Richard Stone pioneered the development of the SAM framework with his 1954 article "Input-Output and the Social Accounts," working on it for over roughly four decades. The general shape of an SAM framework was first described by Pyatt and Thorbecke (1976). Afterwards Pyatt and Roe (1977) published a book giving a detailed description of the example of Sri Lanka. Since then, SAMs have been applied in a wide variety of (developed and developing) countries and regions, and with a wide variety of different goals. SAMs have been used to study income distribution and redistribution (e.g. Pyatt & Roe, 1977 and Keuning, 1996), growth strategies in developing economies (e.g. Pyatt & Round, 1985a and Robinson, 1986), decomposition of activity multipliers that shed light on the circuits comprising the circular flow of income (e.g. Stone, 1981 and Pyatt & Round, 1985), as well as a combination of social, technological/environmental and economic issues (e.g. Resosudarmo & Thorbecke, 1996, Khan, 1997, Duchin¹, 1998 and Alarcón & others, 2000).

In Portugal studies have been undertaken using SAMs for 1974 (Norton & others, 1986), 1977 (Dionizio, 1983), from 1986 to 1997 (Santos, 1999, 2001 and 2003) and now for 1998 and 1999, this time with a methodological novelty (SAM modelling with transposed SAMs), a test on the veracity of the results and an

¹ Her very elucidating paper entitled "Global Environmental Degradation in the 21st Century: A Challenge for Input-Output Economics", presented at the *14th International Conference on Input-Output Techniques* (Montreal - Canada, October 2002), stresses the importance of the SAM framework.

analysis of government flows, which we have never seen treated before in an SAM framework.

As will be seen in section 2, square matrices will be used, in which each transaction is recorded only once in a cell of its own – it is conventionally agreed that the entries made in rows represent incomes or receipts, whilst the entries made in columns represent outlays or expenditures. These figures will include both production and institutional accounts, which are subdivided into yet other accounts, defined in accordance with the goal of the study, as specified in the first paragraph. Thus, the constructed SAMs consist of a set of interrelated subsystems that, on the one hand, give an analytical picture of the Portuguese economy in 1998 and 1999 and, on the other hand, as will be seen in section 3, serve as an instrument for assessing the effects of changes on government expenditure and receipts (injections and leakages in the system), which might be the result of policy measures. Section 4 ends the paper with a summary, largely of section 3, and some concluding remarks.

2. The Portuguese SAMs structure

The SAMs used here were constructed with the aim of studying the effects of changes in the Portuguese government's expenditure and receipts. Other influences affecting their construction were the available data and previous experience in the construction of SAMs (Santos, 1999, 2001 and 2003), basically inspired by the works of Graham Pyatt and his associates (Pyatt, 1988 and 1991; Pyatt & Roe, 1977; Pyatt & Round, 1985).

Our concern was to adopt a mutually exclusive and, to some extent, exhaustive classification, so that in the disaggregation of the Portuguese SAM accounts we have: production, divided into factors of production, activities and products; and institutions, divided into current and capital accounts². Besides the rest of the world account, an "errors and omissions" account was also considered, which assumes values that are perfectly justified by the national accounting system. We therefore respected, on the one hand, the functional criterion (describing the production processes and pointing out the existing technical-

economic relationships between the various productive units) and, on the other hand, the institutional criterion (describing distribution, accumulation and financing activities and showing the relationships involved in economic behaviour). The criterion used for ordering the accounts was the one that underlies the “generic Portuguese SAM”, presented in Table 1.

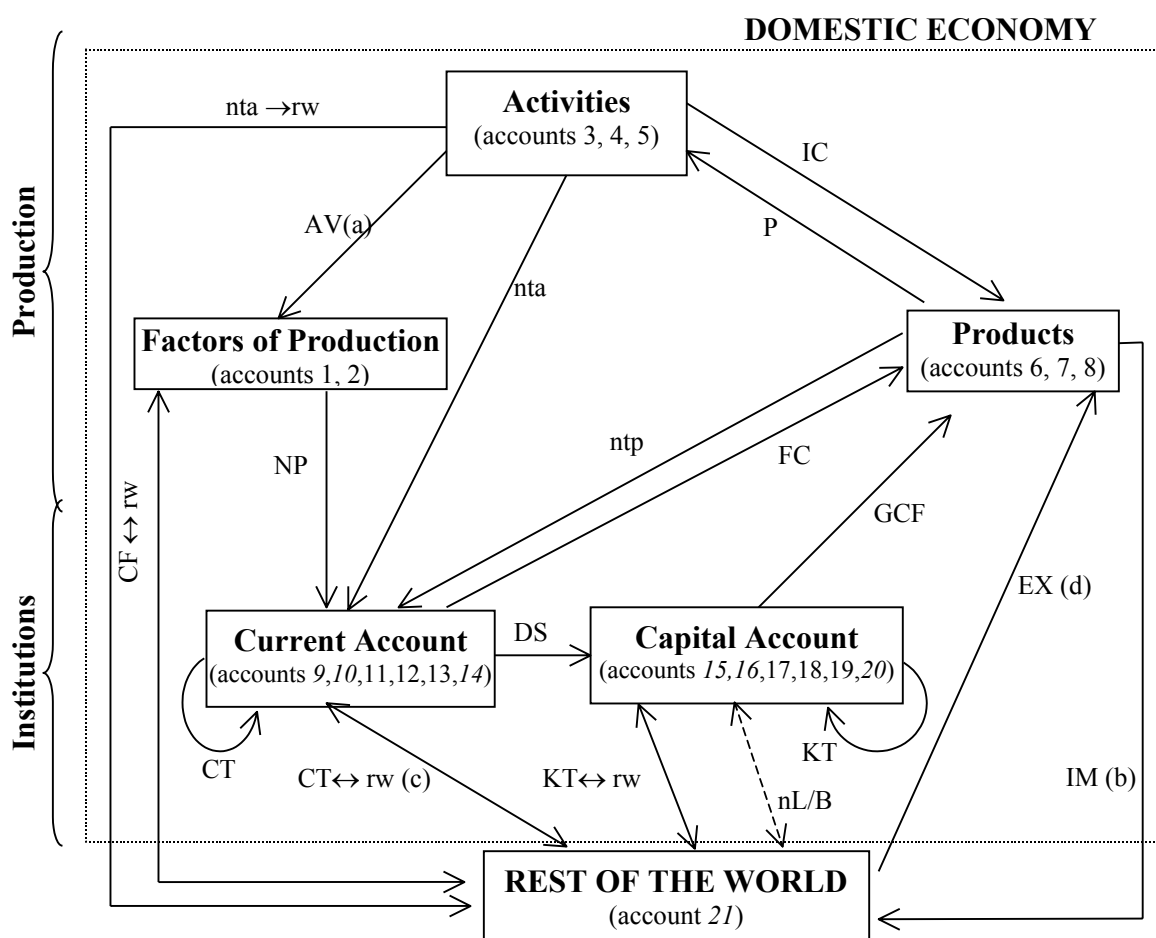
² In previous works, a financial account was also included. In this case, however, it was not possible to produce such an account due to a lack of available information.

Table 1. Generic Portuguese SAM

Outlays (expenditures)		Production			Institutions		Rest of the World (RW)	Errors and Omissions	TOTAL	
		Factors	Activities	Products	Current A.	Capital A.				
Incomes (receipts)		1, 2	3, 4, 5	6, 7, 8	9, ... 14	15, ... 20	21	22		
Production	Factors	1, 2	0	Added Value [AV]	0	0	0	Compensation of Factors from the RW [CF←rw]	0	Aggregate Factor income [CF]
	Activities	3, 4, 5	0	0	Production [P]	0	0	0	0	Production Value [P]
	Products	6,7,8	0	Intermediate Consumption [IC]	0	Final Consumption [FC]	Gross Capital Formation [GCF]	Exports [EX]	0	Aggregate Demand [D]
Institutions	Current Account	9, ... 14	National Product [NP]	Other net taxes on production [nta]	Net taxes on products [ntp]	Current Transfers [CT]	0	Current Transfers from the RW [CT←rw]	0	Aggregate Income [Inc]
	Capital Account	15, ... 20	0	0	0	Domestic Saving [DS]	Capital Transfers [KT]	Capital Transfers from the RW [KT←rw]	Net lending/ borrowing [nL/B]	Investment Funds [IF]
Rest of the World		21	Compensation of Factors to the RW [CF→rw]	Other net taxes on production [nta→rw]	Imports [IM]	Current Transfers to the RW [CT→rw]	Capital Transfers to the RW [KT→rw]		0	Transactions Value to the RW [TV→rw]
Errors and Omissions		22	0	0	Commercial Margins [cm]	0	0	Net lending / borrowing [nL/B]		Net lending/ borrowing [nL/B]
TOTAL			Aggregate Factor income [CF]	Total Costs [TC]	Aggregate Supply [S]	Aggregate Income [Inc]	Aggregate Investment [I]	Transactions Value from the RW [TV←rw]	Net lending / borrowing [nL/B]	

Being a numerical representation of the cycle of production – income – expenditure, the SAM “incorporates all major transactions within a socio-economic system” (Thorbecke, 2001), as can be seen in Outline 1, where, following the flows of money, the connections that can be established between the various Portuguese SAM accounts are represented.

Outline 1: Flows of money between the generic Portuguese SAM accounts



Notes:

- (a) Gross Added Value at factor cost.
- (b) Includes net taxes on products that are receipts from European Union institutions.
- (c) Current transfers to the rest of the world include direct purchases abroad by residents.
- (d) Includes direct purchases in the domestic market by non-residents.

See Table 1 for the meaning of the flows.

This outline “makes it clear that, within the macro-economy, there is a circular flow process and that what happens at one point on the circuit will have

implications for experience at other junctures. This observation translates into the notion that, at some point, there is a need for being equally concerned with all the different aspects of technology and behaviour that together describe the circular flow and the connections (or lack thereof) that characterise an economy” (Pyatt, 1991a).

The SAM therefore offers a more or less disaggregated view of value flows, detailing the direct linkages between accounts, but also pointing out the scope of the underlying indirect interactions. For instance, inflows from exogenous accounts that stimulate the level of activity of a production sector, will also induce additional factor income that, once distributed among households, will be used to finance new final demand for producer goods and services (Roland-Holst & Sancho, 1995).

As is shown by the numbers of the accounts, further disaggregation was undertaken of the framework described above, always in keeping with the National Accounts Nomenclature. So, in the constructed matrices, Tables 2 and 3 (see the description of their cell contents in the annex), the factors of production were disaggregated into labour and capital and the activities and products accounts into primary, secondary and tertiary groups³. On the other hand, the current and capital accounts of institutions were divided into households, enterprises (non-financial corporations), central and local government and social security funds (which constitute the general government), and other institutions (financial corporations and non-profit institutions serving households).

Because particular attention was being given to the general government flows, advantage was taken of a crucial feature of the SAM, i.e. the wide range of possibilities that it offers for expanding or condensing it in accordance with specific circumstances and needs (ISWG, 1993, paragraph 20.6), without, however, losing sight of the consistency of the whole system.

³ The primary group includes agriculture, forestry and fishing (activities/products 01 to 05 of the National Accounts System). The secondary group includes industry, which in turn includes energy and construction (activities/products 10 to 45 of the National Accounts System). The tertiary group includes the rest of the economy (activities/products 50 to 95 of the National Accounts System).

Table 2. Portuguese Social Accounting Matrix for 1998 (in million of euros)

Outlays (Expenditures)			PRODUCTION										INSTITUTIONS				
			Factors of Production			Activities				Products				Current Account			
			Labour	Capital	Sum	Primary	Secondary	Tertiary	Sum	Primary	Secondary	Tertiary	Sum	Households	Enterprises	Gov(Central)	
Incomes(Receipts)			1	2		3	4	5		6	7	8		9	10	11	
PRODUCTION	Factors of Production	Labour	1	0	0	0	652	14.895	32.718	48.266	0	0	0	0	0	0	0
		Capital	2	0	0	0	3.093	12.371	24.086	39.551	0	0	0	0	0	0	0
		Sum		0	0	0	3.745	27.266	56.805	87.816	0	0	0	0	0	0	0
	Activities	Primary	3	0	0	0	0	0	0	0	6.048	318	23	6.389	0	0	0
		Secondary	4	0	0	0	0	0	0	0	0	84.628	700	85.328	0	0	0
		Tertiary	5	0	0	0	0	0	0	0	5	222	100.617	100.844	0	0	0
		Sum		0	0	0	0	0	0	0	6.053	85.168	101.340	192.561	0	0	0
	Products	Primary	6	0	0	0	599	4.754	500	5.853	0	0	0	0	2.884	0	0
		Secondary	7	0	0	0	1.860	46.203	15.766	63.829	0	0	0	0	34.331	0	712
		Tertiary	8	0	0	0	353	7.233	28.135	35.721	0	0	0	0	35.229	0	4.430
		Sum		0	0	0	2.812	58.190	44.401	105.403	0	0	0	0	72.444	0	5.142
	INSTITUTIONS	Current Account	Households	9	37.965	22.157	60.121	0	0	0	0	0	0	0	0	482	1.578
Enterprises			10	1.578	13.737	15.315	0	0	0	0	0	0	0	0	0	123	1
Gov(Central)			11	701	-1.571	-870	-157	-120	-338	-616	-223	8.954	3.409	12.140	5.840	2.854	5.855
Gov(Local)			12	47	888	935	106	81	228	415	-18	728	277	987	234	241	922
Gov(SSF)			13	6.858	100	6.958	-103	-79	-221	-403	-9	350	133	475	3.661	24	1.901
Others			14	1.186	2.806	3.992	0	0	0	0	0	0	0	0	1.630	483	568
Sum			48.335	38.116	86.451	-154	-118	-332	-604	-250	10.032	3.820	13.602	11.847	5.303	20.815	
Capital Account		Households	15	0	0	0	0	0	0	0	0	0	0	0	6.667	0	0
		Enterprises	16	0	0	0	0	0	0	0	0	0	0	0	0	10.572	0
		Gov(Central)	17	0	0	0	0	0	0	0	0	0	0	0	0	0	-2
		Gov(Local)	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Gov(SSF)	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Others	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sum		0	0	0	0	0	0	0	0	0	0	0	6.667	10.572	-2		
REST OF THE WORLD			21	84	5.424	5.508	-14	-11	-30	-54	2.142	33.598	2.759	38.499	2.150	54	611
Errors and Omissions			22	0	0	0	0	0	0	1.391	17.568	-18.959	0	0	0	0	
TOTAL				48.419	43.540	91.959	6.389	85.328	100.844	192.561	9.336	146.366	88.960	244.662	93.108	15.930	26.566

Source: Portuguese National Accounts

Table 2. Portuguese Social Accounting Matrix for 1998 (in million of euros) (continued)

Outlays (Expenditures)			INSTITUTIONS										REST OF THE WORLD	Errors and Omissions	TOTAL		
			Current Account				Capital Account										
Incomes(Receipts)			Gov(Local)	Gov(SSF)	Others	Sum	Households	Entreprises	Gov(Central)	Gov(Local)	Gov(SSF)	Others	Sum	21	22		
			12	13	14		15	16	17	18	19	20					
PRODUCTION	Factors of Production	Labour	1	0	0	0	0	0	0	0	0	0	0	153	0	48.419	
		Capital	2	0	0	0	0	0	0	0	0	0	0	3.989	0	43.540	
		Sum		0	0	0	0	0	0	0	0	0	0	4.143	0	91.959	
	Activities	Primary	3	0	0	0	0	0	0	0	0	0	0	0	0	6.389	
		Secondary	4	0	0	0	0	0	0	0	0	0	0	0	0	85.328	
		Tertiary	5	0	0	0	0	0	0	0	0	0	0	0	0	100.844	
		Sum		0	0	0	0	0	0	0	0	0	0	0	0	192.561	
	Products	Primary	6	0	0	0	2.884	187	151	0	0	0	0	338	261	0	9.336
		Secondary	7	141	19	0	35.202	6.291	12.538	1.871	2.055	49	1.394	24.198	23.136	0	146.366
		Tertiary	8	2.125	277	0	42.062	1.002	2.216	4	4	0	212	3.438	7.739	0	88.960
		Sum		2.266	297	0	80.149	7.480	14.905	1.875	2.060	49	1.606	27.975	31.136	0	244.662
	INSTITUTIONS	Current Account	Households	9	898	11.048	3.958	29.532	0	0	0	0	0	0	0	3.455	0
Entreprises			10	5	0	465	594	0	0	0	0	0	0	0	20	0	15.930
Gov(Central)			11	8	672	498	15.727	0	0	0	0	0	0	0	185	0	26.566
Gov(Local)			12	460	11	46	1.913	0	0	0	0	0	0	0	19	0	4.270
Gov(SSF)			13	0	0	0	5.587	0	0	0	0	0	0	0	716	0	13.332
Others			14	167	474	115	3.437	0	0	0	0	0	0	0	77	0	7.506
Sum				1.536	12.205	5.083	56.789	0	0	0	0	0	0	0	4.473	0	160.711
Capital Account		Households	15	0	0	0	6.667	0	0	217	21	0	220	459	196	-675	6.648
		Entreprises	16	0	0	0	10.572	0	0	1.171	115	6	0	1.292	1.152	2.911	15.928
		Gov(Central)	17	0	0	0	-2	84	30	1.175	12	599	4	1.904	897	3.729	6.529
		Gov(Local)	18	467	0	0	467	8	27	1.677	170	0	4	1.886	514	-404	2.463
		Gov(SSF)	19	0	784	0	784	0	0	27	0	0	0	27	20	-125	706
		Others	20	0	0	2.315	2.315	0	0	287	81	52	220	640	3	-928	2.029
		Sum		467	784	2.315	20.804	92	57	4.553	399	657	449	6.208	2.782	4.508	34.303
REST OF THE WORLD			21	0	46	108	2.969	-924	966	100	4	0	-26	120	X	0	47.042
Errors and Omissions			22	0	0	0	0	0	0	0	0	0	0	4.508	X	0	4.508
TOTAL				4.270	13.332	7.506	160.711	6.648	15.928	6.529	2.463	706	2.029	34.303	47.042	4.508	X

Source: Portuguese National Accounts

Table 3. Portuguese Social Accounting Matrix for 1999 (in million of euros)

Outlays (Expenditures)		PRODUCTION											INSTITUTIONS				
		Factors of Production			Activities				Products				Current Account				
		Labour	Capital	Sum	Primary	Secondary	Tertiary	Sum	Primary	Secondary	Tertiary	Sum	Households	Enterprises	Gov(Central)		
Incomes(Receipts)		1	2	Sum	3	4	5	Sum	6	7	8	Sum	9	10	11		
PRODUCTION	Factors of Production	Labour	1	0	0	0	650	15.691	35.751	52.092	0	0	0	0	0	0	0
		Capital	2	0	0	0	3.142	12.740	25.734	41.615	0	0	0	0	0	0	0
		Sum		0	0	0	3.792	28.431	61.484	93.707	0	0	0	0	0	0	0
	Activities	Primary	3	0	0	0	0	0	0	0	6.196	362	26	6.584	0	0	0
		Secondary	4	0	0	0	0	0	0	0	0	87.369	763	88.133	0	0	0
		Tertiary	5	0	0	0	0	0	0	0	8	281	108.609	108.898	0	0	0
		Sum		0	0	0	0	0	0	0	6.204	88.012	109.398	203.614	0	0	0
	Products	Primary	6	0	0	0	751	4.549	502	5.802	0	0	0	0	2.942	0	0
		Secondary	7	0	0	0	1.846	47.615	16.703	66.165	0	0	0	0	36.680	0	786
		Tertiary	8	0	0	0	400	7.739	30.696	38.835	0	0	0	0	38.732	0	4.846
		Sum		0	0	0	2.997	59.903	47.901	110.801	0	0	0	0	78.353	0	5.631
	INSTITUTIONS	Current Account	Households	9	41.242	22.389	63.631	0	0	0	0	0	0	0	0	520	1.550
Enterprises			10	1.550	15.229	16.779	0	0	0	0	0	0	0	0	0	134	2
Gov(Central)			11	739	-1.655	-916	-174	-171	-413	-758	-229	9.596	3.968	13.334	6.240	3.458	6.619
Gov(Local)			12	51	988	1.039	106	103	251	459	-21	863	357	1.199	283	310	1.133
Gov(SSF)			13	7.385	109	7.494	-122	-120	-291	-533	-8	354	146	492	3.991	22	2.180
Others			14	1.154	2.971	4.125	0	0	0	0	0	0	0	0	1.650	507	599
Sum				52.120	40.032	92.152	-191	-187	-454	-832	-258	10.813	4.471	15.025	12.685	5.981	23.336
Capital Account		Households	15	0	0	0	0	0	0	0	0	0	0	0	5.915	0	0
		Enterprises	16	0	0	0	0	0	0	0	0	0	0	0	0	11.399	0
		Gov(Central)	17	0	0	0	0	0	0	0	0	0	0	0	0	0	-106
		Gov(Local)	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Gov(SSF)	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Others	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum			0	0	0	0	0	0	0	0	0	0	0	5.915	11.399	-106	
REST OF THE WORLD		21	119	5.559	5.678	-14	-14	-34	-63	1.936	36.829	2.936	41.700	2.261	62	727	
Errors and Omissions		22	0	0	0	0	0	0	0	1.482	18.179	-19.662	0	0	0	0	
TOTAL			52.239	45.590	97.829	6.584	88.133	108.898	203.614	9.364	153.833	97.143	260.340	99.214	17.443	29.588	

Source: Portuguese National Accounts

Table 3. Portuguese Social Accounting Matrix for 1999 (in million of euros)(continued)

Outlays (Expenditures)			INSTITUTIONS										REST OF THE WORLD	Errors and Omissions	TOTAL		
			Current Account				Capital Account										
Incomes(Receipts)			Gov(Local)	Gov(SSF)	Others	Sum	Households	Entreprises	Gov(Central)	Gov(Local)	Gov(SSF)	Others	Sum	21	22		
			12	13	14		15	16	17	18	19	20					
PRODUCTION	Factors of Production	Labour	1	0	0	0	0	0	0	0	0	0	0	147	0	52.239	
		Capital	2	0	0	0	0	0	0	0	0	0	0	3.975	0	45.590	
		Sum		0	0	0	0	0	0	0	0	0	0	4.122	0	97.829	
	Activities	Primary	3	0	0	0	0	0	0	0	0	0	0	0	0	6.584	
		Secondary	4	0	0	0	0	0	0	0	0	0	0	0	0	88.133	
		Tertiary	5	0	0	0	0	0	0	0	0	0	0	0	0	108.898	
		Sum		0	0	0	0	0	0	0	0	0	0	0	0	203.614	
	Products	Primary	6	0	0	0	2.942	219	133	0	0	0	0	352	269	0	9.364
		Secondary	7	158	22	0	37.646	6.725	13.601	2.085	2.297	63	1.453	26.224	23.798	0	153.833
		Tertiary	8	2.386	312	0	46.276	1.241	2.564	17	18	1	168	4.009	8.023	0	97.143
		Sum		2.545	335	0	86.864	8.185	16.298	2.102	2.315	64	1.621	30.585	32.089	0	260.340
	INSTITUTIONS	Current Account	Households	9	1.017	11.993	4.053	31.936	0	0	0	0	0	0	3.647	0	99.214
			Entreprises	10	1	0	517	653	0	0	0	0	0	0	11	0	17.443
			Gov(Central)	11	8	698	603	17.627	0	0	0	0	0	0	302	0	29.588
Gov(Local)			12	397	12	57	2.192	0	0	0	0	0	0	24	0	4.914	
Gov(SSF)			13	0	0	0	6.193	0	0	0	0	0	0	762	0	14.407	
Others			14	209	541	115	3.622	0	0	0	0	0	0	81	0	7.828	
Sum				1.632	13.244	5.345	62.222	0	0	0	0	0	0	4.827	0	173.394	
Capital Account		Households	15	0	0	0	5.915	0	0	236	23	0	313	572	266	552	7.305
		Entreprises	16	0	0	0	11.399	0	0	1.150	133	0	0	1.282	1.019	3.719	17.420
		Gov(Central)	17	0	0	0	-106	95	31	1.300	12	610	3	2.051	1.160	3.519	6.623
		Gov(Local)	18	737	0	0	737	8	24	1.553	199	0	4	1.787	523	-283	2.765
		Gov(SSF)	19	0	773	0	773	0	36	30	0	0	0	66	36	-137	739
		Others	20	0	0	2.425	2.425	0	0	195	87	62	313	657	4	-800	2.285
		Sum		737	773	2.425	21.143	103	91	4.463	454	671	633	6.416	3.009	6.570	37.138
REST OF THE WORLD		21	0	55	59	3.165	-982	1.031	58	-5	4	31	137	X	0	50.617	
Errors and Omissions		22	0	0	0	0	0	0	0	0	0	0	6.570	X	0	6.570	
TOTAL				4.914	14.407	7.828	173.394	7.305	17.420	6.623	2.765	739	2.285	37.138	50.617	6.570	X

Source: Portuguese National Accounts

3. SAM Modelling

3.1. Methodology

An analysis will be made firstly of the demand-driven economy , to evaluate changes in government receipts, and then of the supply-driven economy , to evaluate changes in government expenditures. That is to say, the analysis will begin firstly in the traditional way, with receipts in rows and expenditures in columns, and then the SAM will be transposed, with expenditures in rows and receipts in columns (*transposition shown by words in brackets in the following exposition*).

As described below, the base methodology of the multipliers will be used, in keeping with the work of G. Pyatt & A. Roe (1977) and G. Pyatt & J. Round (1985), which represents the basis of what has so far been done in this area.

Table 4. SAM in endogenous and exogenous accounts

		EXPENDITURES (<i>RECEIPTS</i>)				
		Endogenous	Σ	Exogenous	Σ	TOTAL
RECEIPTS (<i>EXPENDITURES</i>)	Endogenous	N	n	X	x	y_n
	Exogenous	L	l	R	r	y_x
	TOTAL	y_n'		y_x'		

Where:

N = matrix of transactions between endogenous accounts

n = vector of the row sum of N

X = matrix of the transactions between exogenous and endogenous accounts
[injections from first into second/(*leakages from second into first*)]

x = vector of the row sum of X

L = matrix of the transactions between endogenous and exogenous accounts
[leakages from first into second/(*injections from second into first*)]

l = vector of the row sum of L

R = matrix of the transactions between exogenous accounts

r = vector of the row sum of R

y_n = vector (column) of the receipts (*expenditures*) of the endogenous accounts

y_n' = " (row) of the expenditures (*receipts*) " " " "

\hat{y}_n = matrix (diagonal) of the receipts (*expenditures*) " " " "

(\hat{y}_n^{-1} : inverse)

y_x = vector (column) of the receipts (*expenditures*) of the exogenous accounts

y_x' = " (row) of the expenditures (*receipts*) " " " "

From Table 4, it can be written that

$$y_n = n + x \quad (1)$$

$$y_x = l + r \quad (2)$$

It can also be seen that, in aggregate terms, total injections from the exogenous into the endogenous accounts (*leakages from endogenous into exogenous accounts*), i.e. the column sum of "x", are equal to total leakages from the endogenous into the exogenous accounts (*injections from exogenous into endogenous accounts*), i.e. considering i' to be the unitary vector (row), the column sum of "l" is: $x * i' = l * i'$. (3)

In other words, the amount that the endogenous accounts receive (*spend*) is equal to the amount that they spend (*receive*) – using the words of Pyatt (1988): "a SAM is a simple and efficient way of representing the fundamental law of economics: for every income there is a corresponding outlay or expenditure".

The accounting multipliers⁴, which will allow for further analysis, can now be deduced.

In the previous structure, if the entries in the N matrix were divided by the corresponding total expenditures (*receipts*), a corresponding matrix (squared) can be defined of the average expenditure (*receipt*) propensities of the endogenous accounts within the endogenous accounts or of the use of resources within those accounts. Calling this matrix A_n , it can be written that

⁴ In this type of approach, fixed price multipliers can also be used. They will not be mentioned. According to previous studies, their results are even further removed from reality.

$$A_n = N * \hat{y}_n^{-1} \quad (4)$$

$$N = A_n * \hat{y}_n \quad (5)$$

$$\text{Considering equation (1), } y_n = A_n * y_n + x \quad (6)$$

$$\text{Therefore, } y_n = (I - A_n)^{-1} * x = M_a * x. \quad (7)$$

We thus have the equation that gives the total receipts (*expenditures*) of the endogenous accounts (y_n), by multiplying the injections (*leakages*) “ x ” by the matrix of the accounting multipliers: $M_a = (I - A_n)^{-1}$. (8)

On the other hand, if the entries in the L matrix are divided by the corresponding total expenditures (*receipts*), a corresponding matrix (usually non squared) can be defined of the average expenditure (*receipt*) propensities of the endogenous accounts in (*from*) the exogenous accounts or of the use of resources from the endogenous (*exogenous*) accounts into the exogenous (*endogenous*) accounts. Calling this matrix A_l , it can be written that

$$A_l = L * \hat{y}_n^{-1} \quad (9)$$

$$L = A_l * \hat{y}_n \quad (10)$$

$$\text{Considering equation (2), } y_x = A_l * y_n + r \quad (11)$$

$$\text{Thus, } l = A_l * y_n = A_l * (I - A_n)^{-1} * x = A_l * M_a * x. \quad (12)$$

So, with the accounting multipliers, the impact of changes in receipts (*expenses*) is analysed at the moment, assuming that the structure of expenditures (*receipts*) in the economy does not change. This type of methodology allows for a static analysis to be made, assuming that there is excess capacity, prices remain constant and the production technology and resource endowment are given.

If we consider the A_n matrix and two other ones with the same size (B_n - with the diagonal of A_n , whilst all the other elements are null - and C_n - with a null diagonal, but with all the other elements of A_n), it can be written that

$$A_n = B_n + C_n. \quad (13)$$

Thus, from equation (6):

$$y_n = B_n * y_n + C_n * y_n + x = [I - (I - B_n)^{-1} * C_n]^{-1} * (I - B_n)^{-1} * x \quad (14)$$

⁵ $y_n = A_n * y_n + x = B_n * y_n + C_n * y_n + x \Leftrightarrow y_n - B_n * y_n = C_n * y_n + x \Leftrightarrow y_n = (I - B_n)^{-1} * C_n * y_n + (I - B_n)^{-1} * x$
 $\Leftrightarrow y_n - (I - B_n)^{-1} * C_n * y_n = (I - B_n)^{-1} * x \Leftrightarrow y_n * [I - (I - B_n)^{-1} * C_n] = (I - B_n)^{-1} * x \Leftrightarrow y_n = [I - (I - B_n)^{-1} * C_n]^{-1} * (I - B_n)^{-1} * x.$

$$\text{Therefore: } M_a = [I - (I - B_n)^{-1} * C_n]^{-1} * (I - B_n)^{-1} = M_3 * M_2 * M_1. \quad (15)$$

The accounting multiplier matrix is thus decomposed into multiplicative components, each of which relates to a particular kind of connection in the system as a whole (Stone, 1985)⁶.

- The intragroup or direct effects matrix, which represents the effects of the initial exogenous injection (*endogenous leakage*) within the groups of accounts in (*from*) which it had originally entered (*left*), that is,

$$M_1 = (I - B_n)^{-1}. \quad (16)$$

- The intergroup or indirect effects matrix, which represents the effects of the exogenous injection (*endogenous leakage*) within the groups of accounts, after its repercussions have completed a tour through all the groups and returned to the one which it had originally entered (*left*), that is, if we consider “t” to be the number of groups of accounts,

$$M_2 = \{I - [(I - B_n)^{-1} * C_n]^t\}^{-1}. \quad (17)$$

- The extragroup or cross effects matrix, which represents the effects of the exogenous injection (*endogenous leakage*), when it has completed a tour outside its original group without returning to it, in other words when it moves around the whole system and ends up in one of the other groups, that is, if we consider “t” to be the number of groups of accounts,

$$M_3 = \{I + [(I - B_n)^{-1} * C_n] + [(I - B_n)^{-1} * C_n]^2 + \dots + [(I - B_n)^{-1} * C_n]^{t-1}\} \quad (18)$$

The decomposition of the accounting multipliers matrix can also be undertaken in an additive manner, as follows:

$$M_a = I + (M_1 - I) + (M_2 - I) * M_1 + (M_3 - I) * M_2 * M_1. \quad (19)$$

Where I represents the initial injection (*leakage*) and the remaining components the additional effects associated, respectively, with the three components described above (M_1 , M_2 and M_3).

The main aim of the present paper is to study the effects of changes in government receipts (injections) and expenditures (leakages), which led the “current” and the “capital” accounts of “central and local government and social security funds”, as well as the “errors and omissions” accounts, to be considered

⁶ For a detailed deduction and explanation of these components, see, for instance, Stone, 1985; Thorbecke, 1985; Pyatt & Round, 1985; Santos, 1999.

as endogenous, beyond the “production” accounts. As a result of this, the other accounts of the institutions and the rest of the world were considered as exogenous (in Outline 1 the numbers of the exogenous accounts are shown in *italics*).

3.2. Evaluation with changes in government subsector receipts

Following the methodology described above, the Portuguese SAM was grouped by endogenous and exogenous accounts, as shown in Table 5.

Table 5. Generic Portuguese SAM grouped by endogenous and exogenous accounts

Outlays (expenditures) j			ENDOGENOUS						EXOGENOUS			TOTAL	
			Production			Institutions		Errors and Omiss.	Institutions		Rest of the World		
			Factors	Activ.	Products	Current A.	Capital A.		Current A.	Capital A.			
Incomes (receipts) i			1 e 2	3,4,5	6,7,8	11,12,13	17,18,19	22	9,10,14	15,16,20	21		
ENDOGENOUS	Production	Factors	1 e 2	0	AV	0	0	0	0	0	0	CF←rw	CF
		Activities	3,4,5	0	0	P	0	0	0	0	0	0	P
		Products	6,7,8	0	IC	0	FC	GCF	0	FC	GCF	EX	D
	Institutions	Current Account	11,12,13	NP	nta	ntp	CT	0	0	CT	0	CT←rw	Inc
		Capital Account	17,18,19	0	0	0	DS	KT	nL/B	0	KT	KT←rw	IF
	Errors and Omissions	22	0	0	cm	0	0	0	0	0	0	nL/B	nL/B
EXOGENOUS	Institutions	Current Account	9,10,14	NP	0	0	CT	0	0	CT	0	CT←rw	Inc
		Capital Account	15,16,20	0	0	0	0	KT	nL/B	DS	KT	KT←rw	I
	Rest of the World	21	CF→rw	nta→rw	IM	CT→rw	KT→rw	0	CT→rw	KT→rw	TV←rw	TV←rw	
TOTAL			CF	TC	S	Inc	I	nL/B	Inc	I	TV←rw	TV←rw	

Note: See Table 1 for the meaning of the sub-matrices

Accounting multipliers were then calculated from the Portuguese SAM for 1998, the changes that really occurred from 1998 to 1999 were considered, i.e. the “x” vector of the Portuguese SAM for 1999, and the new vector of receipts of the

endogenous accounts (y_n) were calculated. From this, and with the aid of the matrices of average expenditure propensities (A_n and A_i) for 1998, the endogenous part of the SAM was re-calculated for 1999, where the aggregate values have the percentage differences in relation to the real SAM values that are shown in Table 6⁷.

Table 6. Aggregate percentage differences between the values of the Portuguese SAM for 1999 and the SAM values estimated from the accounting multipliers for 1998 and the “x” vector for 1999.

Outlays (expenditures) j			ENDOGENOUS					EXOGENOUS			TOTAL		
			Production			Institutions		Errors and Omiss.	Institutions			Rest of the World	
			Factors	Activ.	Products	Current A.	Capital A.		Current A.	Capital A.			
Incomes (receipts) i			1 e 2	3,4,5	6,7,8	11,12,13	17,18,19	22	9,10,14	15,16,20	21		
ENDOGENOUS	Production	Factors	0	+1.59% (AV)	0	0	0	0	0	0	CF→rw	+1.52% (CF)	
		Activities	0	0	+2.31% (P)	0	0	0	0	0	0	0	+2.31% (P)
		Products	0	+2.73% (IC)	0	-0.11% (FC)	+11.44% (GCF)	0	FC	GCF	EX		+1.36% (D)
	Institutions	Current Account	+0.09% (NP)	-21.69% (nta)	-43.42% (ntp)	-1.96% (CT)	0	0	TC	0	CT→rw		-0.80% (Inc)
		Capital Account	0	0	0	-2.63% (DS)	+26.65% (KT)	+41.37% (nL/B)	0	KT	KT→rw		+22.0% (IF)
	Errors and Omissions	22	0	0	0% (cm)	0	0	0	0	0	NL/B		-6.06% (nL/B)
EXOGENOUS	Institutions	Current Account	+1.47% (NP)	0	0	-21.44% (CT)	0	0					
		Capital Account	0	0	0	0	+34.63% (KT)	-48.42% (nL/B)					
	Rest of the World	21	+4.28% (CF→rw)	-6.87% (nta→rw)	-0.99% (IM)	-7.37% (CT→rw)	+137.8% (KT→rw)	0					
TOTAL			+1.52% (CF)	+2.31% (TC)	+1.36% (S)	-0.80% (Inc)	+22.04% (I)	-6.06% (nL/B)					

▨ = X matrix

Source: Portuguese SAM for 1999 (real and estimated from accounting multipliers for 1998)

From this table, it can be seen that, with some exceptions, the differences between the estimated and the real values are not significant. This had been seen

⁷ An identical calculation was made using fixed price multipliers, for which the marginal expenditure propensities were calculated from Portuguese SAMs in 1997 and 1998. However, the results are not mentioned because they were even further removed from reality.

in former evaluations and, with the study of changes in the receipts of the government (the only endogenous institution in the defined model), allowed for a clearer conclusion as to the veracity of the results.

Therefore the calculated accounting multipliers will be used to analyse the effects of exogenous changes in the receipts of the government accounts (current and capital), assuming that the expenditure structure does not change.

In keeping with what was seen before, the items that can be changed in the current receipts of the three government subsectors (the items in rows 11, 12 and 13 of the X matrix, presented in Table 5 – see the cell contents shown in the annex) are:

- current taxes on income, wealth, etc., employees' social contributions and social contributions by self-employed and non-employed persons paid by households, enterprises and other institutions;
- non-life insurance claims paid by other institutions (financial corporations);
- miscellaneous current transfers from households, enterprises, other institutions and the rest of the world;
- current international cooperation from the rest of the world.

According to the average expenditure propensities, the changes to be noted in the way a unit of current receipts is spent by government subsectors are shown in the following table.

Table 7. How government subsectors spend a unit of their current receipts

	Central Government (account 11)	Local Government (account 12)	Social Security Funds (SSF) (account 13)
Final consumption	0.194	0.531	0.022
Current transfers	0.783	0.360	0.915
- to Central Gov.	0.217	0.073	0.034
- to Local Gov.	0.046	0.016	0.007
- to SSF	0.063	0.021	0.010
- to households, enterprises and other institutions	0.457	0.250	0.864
Current transfers to the rest of the world	0.023	0.000	0.003
Saving	0.000	0.109	0.059

Source: A_n and A_l matrices (calculated from the Portuguese SAM for 1998)

Thus, except in the case of local government, most of the government's current receipts go to current transfers, a significant part of which goes to households, enterprises and other institutions (exogenous). On the other hand, local government spends more than half of its current receipts on final consumption.

As can be seen in Table 8, the multipliers and their components, show the repercussions of these changes on the economy.

From an analysis of this table, it can be concluded that aggregate government income is the item in which the effect of a unitary change in exogenous current receipts is most felt, thus reflecting the importance of current transfers, shown by the average expenditure propensities (Table 7), and the fact that the exogenous injections are items included amongst current transfers. The additional intragroup effects only exist in aggregate government income and are very important, especially for central government. In general, the additional extragroup effects are the most important effects in the other items, which means that a significant proportion of the repercussions of the changes in exogenous government current receipts do not return to the group of accounts in which they were originally felt. On the other hand, the effects on production value and aggregate demand of a unitary change in the exogenous current receipts of local

government reveal the importance of final consumption in this subsector's expenditure structure.

There is no doubt that social security funds are the least important of the three government subsectors, in terms of the impact on the economy of a change in this subsector's exogenous current receipts.

The values of government investment funds, which are negative in the case of central and local government, are believed to be related to the share of savings in total expenditure as well as its values (in 1998, 2 million euros for central government and 467 million euros for local government, in a total of 20,804 million euros – see Table 2). One should also take into account the relatively low level of veracity of these values, as expressed by the relatively high (+ 22%) value shown in the last column of Table 6.

Finally, the last row of Table 8 shows that a unitary change in the exogenous current receipts of the three government subsectors results in a change with an opposite mathematical sign in the net borrowing of the Portuguese economy. This means, for instance, that any increases in this item will result in decreases in the economy's financing requirements, with this tendency mainly being due to additional extragroup effects.

Table 8. Effects of unitary changes in the exogenous current receipts of government subsectors on the Portuguese economy in 1998

Level where the effect is felt	Central Government				Local Government				Social Security Funds			
	M _a	Additional effects			M _a	Additional effects			M _a	Additional effects		
		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup
Aggregate factor income	0.273	0	- 0.004	0.276	0.597	0	0.003	0.595	0.052	0	0.004	0.048
Production value/total costs	0.518	0	0.064	0.455	1.150	0	0.132	1.018	0.110	0	0.010	0.101
Aggregate demand/supply	0.523	0	- 0.012	0.535	1.188	0	-0.010	1.199	0.134	0	0.005	0.129
Aggregate government income	1.488	0.431	0.012	0.045	1.274	0.145	0.024	0.105	1.082	0.068	0.002	0.013
- Central Government	1.313	0.287	0.004	0.022	0.156	0.096	0.009	0.051	0.053	0.045	0.001	0.007
- Local Government	0.068	0.061	0.001	0.006	1.036	0.020	0.003	0.013	0.011	0.010	0	0.002
- Social Security Funds	0.107	0.083	0.006	0.018	0.081	0.028	0.013	0.040	1.018	0.013	0.001	0.004
Government investment funds	- 0.051	0	-0.003	-0.048	-0.015	0	-0.003	-0.012	0.137	0	0.001	0.136
- Central Government	- 0.057	0	-0.002	-0.055	-0.123	0	-0.003	-0.120	0.059	0	0.001	0.059
- Local Government	- 0.002	0	0	-0.001	0.100	0	0	0.100	0.018	0	0	0.018
- Social Security Funds	0.008	0	0	0.008	0.008	0	0	0.008	0.060	0	0	0.060
Net borrowing of the economy	- 0.065	0	- 0.002	- 0.062	- 0.131	0	- 0.005	- 0.126	- 0.003	0	0	- 0.003

Source: Portuguese accounting multiplier matrix (M_a) for 1998 and its components (additional intragroup effects (M₁-I), additional intergroup effects ((M₂-I)*M₁) and additional extragroup effects ((M₃-I)*M₂*M₁)).

On the other hand, changes can also be made in the following government capital receipts (the items in rows 17, 18 and 19 of the X matrix, presented in Table 5 – see the cell contents in the annex):

- capital taxes paid by households, enterprises and other institutions;
- other capital transfers from households, enterprises, other institutions and the rest of the world;
- investment grants received from the rest of the world.

According to the average expenditure propensities, Table 9 shows the changes in the way a unit of capital receipts is spent by government subsectors.

Table 9. How government subsectors spend a unit of their capital receipts

	Central Government (account 17)	Local Government (account 18)	Social Security Funds (SSF) (account 19)
Gross capital form.	0.287	0.836	0.069
Capital transfers	0.697	0.162	0.931
- to Central Gov.	0.180	0.005	0.848
- to Local Gov.	0.257	0.069	0.000
- to SSF	0.004	0.000	0.000
- to households, enterprises and other institutions	0.256	0.088	0.083
Capital transfers to the rest of the world	0.015	0.002	0.000

Source: A_n and A_l matrices (calculated from the Portuguese SAM for 1998)

Therefore, except in the case of local government, most of a unit of capital receipts goes to capital transfers, a significant part of which is transferred to government subsectors. In its turn, local government spends most of its capital receipts on gross capital formation.

The calculated accounting multipliers and their components, from which Table 10 was constructed, show the effects on the Portuguese economy of unitary changes in the exogenous capital receipts of government subsectors.

Table 10. Effects of unitary changes in the exogenous capital receipts of government subsectors on the Portuguese economy in 1998

Level where the effect is felt	Central Government				Local Government				Social Security Funds			
	M _a	Additional effects			M _a	Additional effects			M _a	Additional effects		
		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup
Aggregate factor income	0.278	0	0.008	0.270	0.395	0	0.012	0.383	0.266	0	0.008	0.258
Production value/total costs	0.753	0	0.091	0.662	1.068	0	0.129	0.938	0.720	0	0.087	0.633
Aggregate demand/supply	1.184	0	0.025	1.195	1.679	0	0.036	1.644	1.133	0	0.024	1.109
Aggregate government income	0.124	0	0.016	0.109	0.176	0	0.022	0.154	0.119	0	0.015	0.104
- Central Government	0.082	0	0.007	0.075	0.117	0	0.010	0.106	0.079	0	0.007	0.072
- Local Government	0.014	0	0.002	0.012	0.019	0	0.003	0.017	0.013	0	0.002	0.011
- Social Security Funds	0.028	0	0.007	0.022	0.040	0	0.010	0.031	0.027	0	0.007	0.021
Government investment funds	1.697	0.570	0.005	0.122	1.262	0.082	0.007	0.173	2.452	1.331	0.005	0.116
- Central Government	1.333	0.227	0.004	0.103	0.158	0.006	0.001	0.145	1.142	1.040	0.004	0.098
- Local Government	0.359	0.338	0.001	0.020	1.105	0.076	0.001	0.028	0.307	0.287	0.001	0.019
- Social Security Funds	0.004	0.005	0	-0.001	-0.001	0	0	-0.001	1.003	0.004	0	-0.001
Net borrowing of the economy	0.106	0	0.004	0.102	0.151	0	0.006	0.145	0.102	0	0.004	0.098

Source: Portuguese accounting multiplier matrix (M_a) for 1998 and its components (additional intragroup effects (M_{1-I}), additional intergroup effects ((M_{2-I})*M₁) and additional extragroup effects ((M_{3-I})*M₂*M₁)).

As far as the veracity of the data that are being treated here is concerned (see last column of Table 6), it can be seen that government investment funds are now the most affected, except in the case of local government, whose unitary changes in exogenous capital receipts most affect aggregate demand, certainly due to the high average expenditure propensity associated with gross capital formation. Additional intragroup effects are also of great importance here, especially for central government, in the effects on government investment funds, an item that represents the group of accounts where the change is originally felt. In the case of other items, additional extragroup effects are, once again, sufficient to show that a significant part of the repercussions of changes in government capital receipts do not return to the group of accounts where they were originally felt.

There are no significant differences between the three government subsectors in terms of the impact on the economy of a change in their capital receipts, although mention should be made of the greater importance of the effects of changes in the capital receipts of social security funds on the central government's investment funds. There are also significant effects to be noted on the aggregate demand of the central government and social security funds.

The values of the effect on the net borrowing of the economy are very similar and have the same mathematical sign as the initial change. This means, for instance, that increases in the exogenous capital receipts of government subsectors will result in increases in net borrowing or in the economy's financing requirements. As was seen in the case of current receipts, this tendency is due mainly to additional extragroup effects.

3.3. Evaluation with changes in government subsector expenditure

As was said before, this evaluation was performed with the transposed Portuguese SAMs.

Table 11. Transposed generic Portuguese SAM grouped by endogenous and exogenous accounts

Incomes (receipts) j		ENDOGENOUS						EXOGENOUS			TOTAL	
		Production			Institutions		Errors and Omiss.	Institutions		Rest of the World		
		Factors	Activ.	Products	Current A.	Capital A.		Current A.	Capital A.			
		1 e 2	3,4,5	6,7,8	11,12,13	17,18,19	22	9,10,14	15,16,20	21		
Outlays (expenditures) i												
ENDOGENOUS	Production	Factors	0	0	0	NP	0	0	NP	0	CF→rw	CF
		Activities	AV	0	IC	nta	0	0	0	0	nta→rw	TC
		Products	0	P	0	ntp	0	cm	0	0	IM	S
	Institutions	Current Account	0	0	FC	CT	DS	0	CT	0	CT→rw	Inc
		Capital Account	0	0	GCF	0	KT	0	0	KT	KT→rw	I
	Errors and Omissions	22	0	0	0	0	nL/B	0	0	nL/B	0	nL/B
EXOGENOUS	Institutions	Current Account	0	0	FC	CT	0	0	CT	DS	CT→rw	Inc
		Capital Account	0	0	GCF	0	KT	0	0	KT	KT→rw	I
	Rest of the World	21	CF←rw	0	EX	CT←rw	KT←rw	nL/B	CT←rw	KT←rw		TV←rw
TOTAL			CF	P	D	Inc	IF	nL/B	Inc	IF	TV→rw	

Note: See Table 1 for the meaning of the sub-matrices

Accounting multipliers were calculated from the transposed Portuguese SAM for 1998, following the methodology described in Section 3.1. Then the changes that really occurred from 1998 to 1999 were considered, i.e. the “x” vector of the transposed Portuguese SAM for 1999 and the new vector of expenditures of the endogenous accounts (y_n) were calculated. From this, and with the aid of the matrices of the average receipt propensities (A_n and A_i) for 1998, the endogenous part of the SAM was re-calculated for 1999, the aggregate values of which have the percentage differences in relation to the real SAM values that are shown in Table 12⁸.

⁸ An identical approach was adopted with the transposed SAMs, using fixed price multipliers, for which the marginal receipt propensities were calculated from the transposed Portuguese SAMs for 1997 and 1998. However, as in the non-transposed SAMs, the results are not mentioned because they were even further removed from reality.

Table 12. Aggregate percentage differences between the values of the transposed Portuguese SAM for 1999 and the SAM values estimated from the accounting multipliers for 1998 and the “x” vector for 1999.

Incomes (receipts) j Outlays (expenditures) i			ENDOGENOUS						EXOGENOUS			TOTAL
			Production			Institutions		Errors and Omiss.	Institutions		Rest of the World	
			Factors	Activ.	Products	Current A.	Capital A.		Current A.	Capital A.		
			1 e 2	3,4,5	6,7,8	11,12,13	17,18,19	22	9,10,14	15,16,20	21	
ENDOGENOUS	Production	Factors	0	0	0	-0.48% (NP)	0	0	NP	0	CF → rw	-0.04% (CF)
		Activities	-0.27% (AV)	0	+2.45% (IC)	-20.1% (nta)	0	0	0	0	nta → rw	+1.3% (TC)
		Products	0	+1.3% (P)	0	-3.4% (ntp)	0	0%	0	0	IM	+0.82% (S)
	Institutions	Current Account	0	0	-12.4% (FC)	-40.5% (CT)	-1.8% (DS)	0	CT	0	CT → rw	-3.4% (Inc)
		Capital Account	0	0	+2.1% (GCF)	0	+9.3% (KT)	0	0	KT	KT → rw	+4.3% (I)
	Errors and Omissions	22	0	0	0	0	+15.4% (nL/B)	0	0	0	nL/B	+15.4% (nL/B)
EXOGENOUS	Institutions	Current Account	0	0	-3.13% (FC)	-4.1% (CT)	0	0				
		Capital Account	0	0	+2.8% (GCF)	0	-19.1% (KT)	0				
	Rest of the World	21	+5.16% (CF ← rw)	0	+6.5% (EX)	-8.6% (CT ← rw)	-8.8% (KT ← rw)	+15.4% (nL/B)				
TOTAL			-0.04% (CF)	+1.3% (P)	+0.82% (D)	-3.4% (Inc)	+4.3% (IF)	+15.4% (nL/B)				

▨ = X matrix

Source: Portuguese SAM for 1999 (real and estimated from accounting multipliers for 1998)

Compared with Table 6, these differences are, generally speaking, less important than those calculated in Section 3.2, with the demand-driven economy. Once again, it can be seen that, with some exceptions, the differences between the estimated and the real values are not significant. There is now a greater veracity to the study of changes in the expenditure of the only endogenous institution in the defined model (general government).

The calculated accounting multipliers will therefore be used to analyse the effects of exogenous changes in the expenditure of the government accounts (current and capital), assuming that there is no change in the structure of receipts.

The items that can be changed in the current expenditure of the three government subsectors (the items in rows 11, 12 and 13 of the X matrix, presented in Table 11) are:

- social benefits other than social transfers in kind to households and the rest of the world;
- social transfers in kind to households;
- net non-life insurance premiums paid to other institutions and the rest of the world;
- current international cooperation to the rest of the world;
- miscellaneous current transfers to households, enterprises, other institutions and the rest of the world;

According to the average receipt propensities, the following table shows how a unit of those items is received by government subsectors.

Table 13. How government subsectors receive a financing unit of their current expenditure

	Central Government (account 11)	Local Government (account 12)	Social Security Funds (SSF) (account 13)
NP	- 0.033	0.219	0.522
Nta	- 0.023	0.097	- 0.030
Ntp	0.457	0.231	0.036
Current transfers	0.592	0.448	0.419
- from Central Gov.	0.217	0.288	0.126
- from Local Gov.	0.012	0.016	0.007
- from SSF	0.017	0.023	0.010
- from households, enterprises and other institutions	0.346	0.122	0.276
Current transfers from the rest of the world	0.007	0.005	0.054

Source: A_n and A_l matrices (calculated from the transposed Portuguese SAM for 1998)

It can therefore be concluded that the receipts that finance the government's current expenditure are current transfers (which include direct taxes) and net taxes on products for central and local government, as well as the national product for social security funds. Thus, changes in the government's current expenditure involve changes in those items in the proportions shown in Table 13, whilst their repercussions on the economy are illustrated by the values of the accounting multipliers and their components, shown in Table 14.

From an analysis of that table, it can be seen that aggregate government income is the item that is most affected by changes in the government's current expenditure, a situation which has to do with the fact that the exogenous leakages are items belonging to current transfers and with their relative importance, as shown by the average receipt propensities (Table 13). As was seen when the changes in exogenous current receipts were analysed, additional intragroup effects only exist in aggregate government income. These can be also be seen to be important, especially for central government.

On the other hand, aggregate supply/demand and total costs/production values are highly affected, mainly by additional extragroup effects, probably reflecting the indirect repercussions of changes in the items of the government's current expenditure, as described above.

The repercussions on government investment and on the net borrowing of the economy are not relevant and have the same mathematical sign as the initial change, with additional extragroup effects being either the only effects or else responsible for most of the total effects.

Table 14. Effects of unitary changes in the exogenous current expenditure of government subsectors on the Portuguese economy in 1998

Level where the effect is felt	Central Government				Local Government				Social Security Funds			
	M _a	Additional effects			M _a	Additional effects			M _a	Additional effects		
		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup
Aggregate factor income	-0.024	0	0	-0.024	0.231	0	0	0.231	0.530	0	0	0.529
Total costs /production value	0.367	0	0.050	0.317	0.858	0	0.083	0.775	0.952	0	0.120	0.832
Aggregate supply /demand	0.974	0	-0.005	0.979	1.293	0	0.024	1.269	1.092	0	-0.007	1.099
Aggregate government income	1.364	0.325	0.006	0.034	1.495	0.431	0.011	0.054	1.258	0.188	0.017	0.052
- Central Government	1.313	0.287	0.004	0.022	0.424	0.380	0.008	0.036	0.214	0.166	0.012	0.036
- Local Government	0.025	0.015	0.001	0.008	1.036	0.020	0.003	0.013	0.026	0.009	0.004	0.013
- Social Security Funds	0.027	0.023	0	0.004	0.035	0.030	0.001	0.005	1.018	0.013	0.001	0.004
Government investment	0.033	0	0.003	0.030	0.034	0	0.004	0.030	0.023	0	0.006	0.017
- Central Government	0.020	0	0.002	0.018	0.021	0	0.003	0.018	0.014	0	0.003	0.011
- Local Government	0.011	0	0.001	0.010	0.011	0	0.001	0.010	0.007	0	0.002	0.006
- Social Security Funds	0.002	0	0	0.002	0.002	0	0	0.002	0.001	0	0	0.001
Net borrowing of the economy	0.009	0	0	0.009	0.010	0	0.001	0.009	0.006	0	0	0.006

Source: Portuguese Accounting Multiplier Matrix (M_a) for 1998 and its components (additional intragroup effects (M_{1-I}), additional intergroup effects ((M_{2-I})*M₁) and additional extragroup effects ((M_{3-I})*M₂*M₁)).

Finally, changes can also be made to the following capital expenditures of the three government subsectors (the items in rows 17, 18 and 19 of the X matrix, presented in Table 11):

- investment grants paid to households, enterprises, other institutions and the rest of the world;
- other capital transfers to households, enterprises, other institutions and the rest of the world;
- acquisitions minus disposals of non-produced non-financial assets paid to the rest of the world.

In this case, Table 15 shows the average receipt propensities, in accordance with which a unit of these items is received by the government subsectors.

Table 15. How the government subsectors receive a financing unit of their capital expenditure

	Central Government (account 17)	Local Government (account 18)	Social Security Funds (SSF) (account 19)
Domestic saving	0.000	0.190	1.111
Capital transfers	0.292	0.766	0.038
- from Central Gov.	0.180	0.681	0.038
- from Local Gov.	0.002	0.069	0
- from SSF	0.092	0	0
- from households, enterprises and other institutions	0.018	0.016	0
Capital transfers from the rest of the world	0.137	0.209	0.028
nL/B	0.571	-0.164	-0.177

Source: A_n and A_l matrices (calculated from the transposed Portuguese SAM for 1998)

The ways in which each government subsector finances a unit of its capital expenditure are very different. The values for central government show that its financing requirements are met mainly through net borrowing; capital transfers from Portuguese institutions and from the rest of the world cover the rest. In turn, local government finances its capital expenditure mainly through capital transfers

from Portuguese institutions and from the rest of the world, also using domestic saving and still enjoying financing capability (net lending). Finally, domestic saving is the main item that finances the capital expenditure of social security funds, with their financing capability (net lending) being the highest of the three government subsectors.

The calculated accounting multipliers and their components, shown in Table 16, quantify the impact on the economy of changes in the government's capital expenditure and in its corresponding receipts.

In a similar way to what was seen for the average receipt propensities, the effects of changes in capital expenditure are very different in each of the government subsectors. Thus, the effects of changes in central and local government capital expenditure are felt mainly at the level of government investment funds, with additional intragroup effects (in addition to the effect of the initial change) being the most important component of the total effects, and with local government having the higher values. The effect noted at the level of aggregate government income, which has an opposite mathematical sign in the case of central government, certainly reflects the structure of its receipts, as referred to above. The value of the effects felt at other levels (aggregate factor income, total costs/production value and aggregate supply/demand) and the importance of additional extragroup effects show the repercussions of the effects felt at the level of government investment.

Once again revealing the structure of the subsector's receipts, the changes in the capital expenditure of social security funds have repercussions on the economy mainly at the level of aggregate government income, with the values recorded by aggregate supply/demand also being quite considerable, followed by total costs/production value and aggregate factor income. At all these levels, the additional extragroup effects are the most important. Contrary to the other two subsectors, the effect at the level of government investment is explained almost entirely by the effect of the initial change and then by the additional intragroup effects.

Table 16. Effects of unitary changes in the exogenous capital expenditure of government subsectors on the Portuguese economy in 1998

Level where the effect is felt	Central Government				Local Government				Social Security Funds			
	M _a	Additional effects			M _a	Additional effects			M _a	Additional effects		
		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup		intragroup	intergroup	extragroup
Aggregate factor income	0.053	0	-0.003	0.056	0.089	0	-0.001	0.091	0.594	0	0.003	0.591
Total costs /production value	0.319	0	0.014	0.305	0.356	0	0.011	0.345	1.017	0	-0.010	1.027
Aggregate supply /demand	0.199	0	0.041	0.158	0.393	0	0.067	0.325	1.204	0	0.311	0.893
Government aggregate income	-0.192	0	-0.010	-0.182	0.255	0	-0.004	0.259	1.481	0	0.002	1.479
- Central Government	-0.232	0	-0.009	-0.223	-0.017	0	-0.004	-0.012	0.296	0	0.001	0.295
- Local Government	-0.080	0	-0.002	-0.079	0.174	0	-0.001	0.175	0.048	0	0.001	0.047
- Social Security Funds	0.121	0	0.002	0.120	0.097	0	0.001	0.096	1.137	0	0	1.136
Government investment funds	1.516	0.341	0.007	0.168	2.145	1.055	0.004	0.087	1.038	0.051	-0.001	-0.011
- Central Government	1.333	0.227	0.004	0.103	0.952	0.897	0.002	0.053	0.038	0.046	-0.001	-0.007
- Local Government	0.059	0.002	0.002	0.055	1.105	0.076	0.001	0.028	-0.004	0	0	-0.004
- Social Security Funds	0.124	0.112	0	0.011	0.088	0.082	0	0.005	1.003	0.004	0	-0.001
Net borrowing of the economy	0.730	0	0.009	0.721	0.347	0	0.005	0.342	-0.155	0	0.001	-0.156

Source: Portuguese Accounting Multiplier Matrix (M_a) for 1998 and its components (additional intragroup effects (M_{1-I}), additional intergroup effects ((M_{2-I})*M₁) and additional extragroup effects ((M_{3-I})*M₂*M₁)).

Even considering the veracity of the results (summarised in the last column of Table 12), the impact of the changes in government capital expenditure on the net borrowing of the economy should be highlighted, as should the high value recorded by central government, followed by that of local government. Once again, the effect of a change in the exogenous capital expenditure of social security funds is the only one that has an opposite mathematical sign. All these three subsectors reflect mainly additional extragroup effects.

3.4. Results at the level of government subsector balances

Let us now take a look at the relationship between government expenditure and receipts and their corresponding balances and, using the values of the accounting multipliers, identify the items of government expenditure and receipts whose changes have most impact on the balance of each government subsector.

The following table shows the situation in 1998.

Table 17. Composition of the budget balances of government subsectors in 1998
(SAM values in millions of euros)

		Central Government	Local Government	Social Security Funds	Total	
Expenditures	Current	Final consumption	5 142	2 266	297	7 705
		Current transfers within the economy	20 815	1 536	12 205	34 556
		Current transfers to the rest of the world	611	0	46	658
		Total (= aggregate income - saving)	26 568	3 803	12 548	42 919
	Capital	Gross capital formation	1 875	2 060	49	3 984
		Capital transfers within the economy	4 553	399	657	5 609
		Capital transfers to the rest of the world	100	4	0	104
		Total (= investment)	6 529	2 463	706	9 698
	Total		33 097	6 266	13 254	52 616
	Receipts	Current	Compensation of factors	- 870	935	6 958
Net indirect taxes			11 525	1 402	72	12 998
Current transfers within the economy			15 727	1 913	5 587	23 227
Current transfers from the rest of the world			185	19	716	921
Total (= aggregate income)			26 566	4 270	13 332	44 168
Capital		Capital transfers within the economy	1 904	1 886	27	3 817
		Capital transfers from the rest of the world	897	514	20	1 431
		Total (= investment funds - saving - net lending/borrowing)	2 801	2 400	47	5 248
Total		29 367	6 669	13 379	49 415	
Balance		Current (= saving)		- 2	467	784
	Capital		- 3 728	- 63	- 659	- 4 450
	Total (= -net lending/borrowing)		- 3 729	404	125	- 3 201
(- Balance) / GDP approx(*) (%)	Current	0,00	- 0,46	- 0,78	- 1,24	
	Capital	3,70	0,06	0,65	4,41	
	Total	3,70	- 0,40	- 0,12	3,17	
- Total balance / net borrowing of the economy (**) (%)		82,73	- 8,96	- 2,77	70,99	

Source: Portuguese SAM for 1998 (Table 2)

(*) Added value + other net taxes on production + net taxes on products (does not include net taxes on products that are receipts from European Union institutions, included in imports) = 100,815 million euros

(**) 4,508 million euros

Therefore, all three government subsectors have a negative capital balance, with that of central government being much higher than the others. On the other hand, only central government has a negative current and total balance, the latter (- 3,729 million euros) representing most of the total budget balance of the general government (- 3,201 million euros), which represents approximately 3.17% of Portuguese GDP and 71% of the net borrowing of the Portuguese economy.

Assuming that, insofar as possible, the government's receipts should cover its expenditure, which means that the government's budget balance should tend towards zero or to be as small as possible, the effects on the budget balance of unitary changes in government expenditure and receipts will be analysed later, through the values of the accounting multipliers, whilst the items making the greatest contribution towards this situation will also be identified.

As was seen above, with the accounting multipliers, it was possible to see the effects on the whole system of changes in certain receipts and expenditures, defined in keeping with the constructed model. It was also seen that it was possible to identify the effects of changes in the receipts and expenditure of government subsectors on aggregate government income and investment/investment funds as well as on the net borrowing of the economy, amongst other items.

Table 17 shows that the current government balance is its (SAM) savings and that the total government balance is its (SAM) net lending/borrowing with the opposite mathematical sign. Therefore, the effects on the government's budget balance of unitary changes in its exogenous receipts and expenditure can be identified using the following methodology (underlying Tables 18, 19 and 20):

- matching the changes in the total balance to the proportion of the accounting multipliers (see Tables 8, 10, 14 and 16) reflected in the share of each subsector's total balance in the net borrowing of the economy (last row of Table 17), reversing its mathematical sign;
- calculating the current balance by multiplying the average expenditure propensity (see Table 7) associated with savings by the accounting multiplier connected with aggregate government income (see Tables 8, 10, 14 and 16). Since it was assumed that the structure of expenditures/receipts would not

change, in the endogenous accounts, where the government accounts are included, the proportion of savings to aggregate income is always the same;

- deducting the current balance from the total balance in order to calculate the capital balance.

As can be seen in Table 18, the central government's current balance remains practically unaffected by changes in its exogenous receipts or expenditure, a fact which is related to the share of savings in its aggregate income.

On the other hand, current expenditure does not have a significant impact on either the total or the capital balance but, like capital receipts and expenditure, it has an opposite mathematical sign, which means that if, for instance, there is an increase in one of these items, the respective balances will be even more negative. Therefore, the financing requirements of central government will be increased if there is an increase in current expenditure or in capital receipts or expenditure. The greatest impact will be the one related to capital expenditure, which is composed of:

- investment grants to households, non-financial corporations, non-profit institutions serving households and the rest of the world;
- (other) capital transfers to non-financial corporations and the rest of the world;
- acquisitions minus disposals of non-produced non-financial assets to the rest of the world.

Bringing the central government's balance closer to zero means mainly reducing its expenditure on those items.

Table 18. Effects of unitary changes in central government receipts and expenditure on the respective budget balance

		Receipts		Expenditure	
		Current	Capital	Current	Capital
Balance	Current	0.000	0.000	0.000	0.000
	Capital	0.054	-0.088	-0.007	-0.604
	Total	0.053	-0.088	-0.008	-0.604

Source: A_n matrix and M_a matrices for 1998

On the other hand, as can be seen in Table 19, local government sees the greatest impact of changes in its current and capital balances at the level of current receipts and expenditure, although in total they almost cancel each other out. Total current receipts is the only item whose mathematical sign is negative. It is curious to note the positive values associated with the current balance, which mean that, for instance, increases in current receipts and expenditure contribute to an increase in that balance, in other words to local government savings, and, at the same time, the negative values associated with the capital balance, meaning that, for instance, increases in current receipts and expenditure also contribute to an increase in that balance because it is negative, with the final result being close to zero.

In turn, changes in capital receipts and expenditure result in changes with the same mathematical sign in local government balances (except in the capital balance), which means that, for instance, increases in these items result in increases in the financing capability of local government.

As in the case of central government, although to a lesser extent, capital expenditure has a greater impact on the total balance of local government, with the items involved in such expenditure being as follows:

- investment grants to households, non-financial corporations, and non-profit institutions serving households;
- (other) capital transfers to households, non-financial corporations, and non-profit institutions serving households;
- acquisitions minus disposals of non-produced non-financial assets to the rest of the world.

Therefore, increasing these items will lead to an increase in the total balance of local government, i.e. to an increase in its financing capability.

Table 19. Effects of unitary changes in local government receipts and expenditure on the respective budget balance

		Receipts		Expenditure	
		Current	Capital	Current	Capital
Balance	Current	0.113	0.002	0.196	0.033
	Capital	-0.125	0.011	-0.196	-0.002
	Total	-0.012	0.014	0.001	0.031

Source: A_n matrix and M_a matrices for 1998

Finally, as can be seen in Table 20, the situation with regard to social security funds is, generally speaking, identical to that of local government. Social security funds see the greatest impact of changes in their current and capital balances at the level of current receipts and expenditure, although in total they almost cancel each other out. The same thing happens at the level of capital expenditure, whose impact on the total balance is greater, despite its low value.

Table 20. Effects of unitary changes in social security funds receipts and expenditure on the respective budget balance

		Receipts		Expenditure	
		Current	Capital	Current	Capital
Balance	Current	0.060	0.002	1.130	1.262
	Capital	-0.060	0.001	-1.130	-1.267
	Total	0.000	0.003	0.000	- 0.004

Source: A_n matrix and M_a matrices for 1998

4. Summary and conclusions

The SAM approach has shown itself to be a practical working instrument of considerable value as an accounting framework that includes all non-financial transactions within the economy and thereby provides a quantitative basis for analysis.

With a reasonable level of veracity, as measured in Tables 6 and 12, it was possible to see how three Portuguese government subsectors spent their receipts and financed their expenditure, in 1998. Thus, most of the:

- current receipts were spent on current transfers, mainly to households and other institutions, in the case of central government and social security funds, or on final consumption, in the case of local government;
- current expenditure was financed by (other) net taxes on products, current transfers, mainly within government and from other institutions, and the national product, in the case of social security funds;

- capital receipts were spent on capital transfers between government subsectors, in the case of central government and social security funds, and on gross capital formation, in the case of local government;
- capital expenditure was financed by net borrowing, in the case of central government, capital transfers, in the case of local government, and savings, in the case of social security funds.

Therefore, experiments with government receipts and expenditure involved the corresponding expenditure and receipts, the structure of which (given by the average propensities) is assumed to be unchangeable. From Tables 6 and 12, it can be concluded that the experiments at the level of government expenditure produced results that were closer to reality than the tests undertaken at the level of receipts.

Accounting multipliers and their components made it possible to quantify the impact of changes on government receipts and expenditure, not only on the economy as a whole, but also, on the balances of government subsectors.

On the one hand, it was possible to see the repercussions of these changes, in aggregate terms, at the level of both production and institutions. The following main conclusions could be drawn:

- aggregate government income was the item most affected by changes in its current receipts and expenditure, with the extent of the impact consisting mainly of additional intragroup effects, besides the initial change, whose mathematical sign was the same.
- aggregate demand/supply and production value/total costs were also significantly influenced by changes in the government's current receipts and expenditure, with the extent of the impact consisting only or mainly of additional extragroup effects that had the same mathematical sign as the initial change.
- government investment funds were almost always the item most affected by changes in the government's capital receipts and expenditure, with the extent of the impact consisting mainly of additional intragroup effects, besides the initial change, whose mathematical sign was the same.

- changes in the government's capital receipts and expenditure also had significant impacts at the production level, but in very different ways from subsector to subsector, although the extent of the impact almost always consisted only or mainly of additional extragroup effects that had the same mathematical sign as the initial change.
- changes in the central government's capital expenditure had their greatest impact on the net borrowing of the Portuguese economy in 1998, which mainly consisted of extragroup effects having the same mathematical sign as the initial change, meaning that increases in central government capital expenditure greatly contributed to an increase in the financing requirements of the Portuguese economy.
- injections/leakages of funds into/from government accounts generate important additional intragroup or direct effects on the group of accounts in which they are first felt, as well as important extragroup effects on other groups of accounts, meaning that most of the repercussions going out from that group of accounts do not return to it, so that the intergroup effects are consequently extremely reduced.

On the other hand, it can be concluded that capital expenditure (investment grants, capital transfers and acquisitions less disposals of non-produced non-financial assets to other institutions) has the greatest impact on the total government balance – i.e. being responsible for most of the net borrowing of the Portuguese economy. Reducing this is fundamental to achieving equilibrium in this balance, although such action will result in a decrease in government investment and investment funds.

Therefore, the SAM-based study that was carried out has made it possible to describe the structural features of the Portuguese economy in 1998 and 1999 with an emphasis on general government. Through its modelling with the use of accounting multipliers, it was possible to set limits for the quantitative impact (i.e. the limits within which the impact could be noted) of various types of interventions, both on the economy as a whole and on the government's budget balance, which may be used to achieve equilibrium between receipts and expenditure.

Despite its limiting assumptions, such as linear relationships and fixed coefficients, the SAM can be understood as a useful working instrument for improving our basic knowledge of all socio-economic mechanisms, as well as for constructing short-term scenarios involving changes in certain flows that it represents. Besides the test on the veracity of the results, undertaken in this study (see Tables 6 and 12), many others, involving other years, could be undertaken to confirm the usefulness of SAM. Other studies could also be undertaken changing the position of the dividing line between endogenous and exogenous accounts (to use the words of Stone, 1981).

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ANNEX

Description of the SAM cell contents

Row	Col.	Contents
1	3	Compensation of employees paid by primary sector activities
1	4	Compensation of employees paid by secondary sector activities
1	5	Compensation of employees paid by tertiary sector activities
1	21	Compensation of employees paid by the rest of the world (from non-resident employers)
2	3	Gross operating surplus of primary sector activities
2	4	Gross operating surplus of secondary sector activities
2	5	Gross operating surplus of tertiary sector activities
2	21	Property income paid by the rest of the world
3	6	Output of primary sector products through the activities of the same sector
3	7	Output of secondary sector products through the activities of the primary sector
3	8	Output of tertiary sector products through the activities of the primary sector
4	7	Output of secondary sector products through the activities of the same sector
4	8	Output of tertiary sector products through the activities of the secondary sector
5	6	Output of primary sector products through the activities of the tertiary sector
5	7	Output of secondary sector products through the activities of the tertiary sector
5	8	Output of tertiary sector products through the activities of the same sector
6	3	Intermediate consumption of primary sector products through the activities of the same sector
6	4	Intermediate consumption of primary sector products through secondary sector activities
6	5	Intermediate consumption of primary sector products through tertiary sector activities
6	9	Household actual final consumption of primary sector products
6	15	Gross Capital Formation on primary sector products by the enterprises classified in the households institutional sector
6	16	Gross Capital Formation on primary sector products by non-financial corporations
6	21	Exports of primary sector products
7	3	Intermediate consumption of secondary sector products through primary sector activities
7	4	Intermediate consumption of secondary sector products through the activities of the same sector
7	5	Intermediate consumption of secondary sector products through tertiary sector activities
7	9	Households actual final consumption of secondary sector products

Row	Col.	Contents
7	11	Central government actual final consumption of secondary sector products
7	12	Local government actual final consumption of secondary sector products
7	13	Social security funds actual final consumption of secondary sector products
7	15	Gross Capital Formation on secondary sector products by the enterprises classified in the households institutional sector
7	16	Gross Capital Formation on secondary sector products by the non-financial corporations
7	17	Gross Capital Formation on secondary sector products by the central government
7	18	Gross Capital Formation on secondary sector products by the local government
7	19	Gross Capital Formation on secondary sector products by the social security funds
7	20	Gross Capital Formation on secondary sector products by the financial corporations and non-profit institutions serving households
7	21	Exports of secondary sector products
8	3	Intermediate consumption of tertiary sector products by primary sector activities
8	4	Intermediate consumption of tertiary sector products by secondary sector activities
8	5	Intermediate consumption of tertiary sector products by the activities of the same sector
8	9	Households actual final consumption of tertiary sector products
8	11	Central government actual final consumption of tertiary sector products
8	12	Local government actual final consumption of tertiary sector products
8	13	Social security funds actual final consumption of tertiary sector products
8	15	Gross Capital Formation on tertiary sector products by the enterprises classified in households institutional sector
8	16	Gross Capital Formation on tertiary sector products by non-financial corporations
8	17	Gross Capital Formation on tertiary sector products by central government
8	18	Gross Capital Formation on tertiary sector products by local government
8	19	Gross Capital Formation on tertiary sector products by social security funds
8	20	Gross Capital Formation on tertiary sector products by financial corporations and non-profit institutions serving households
8	21	Exports of tertiary sector products (includes direct purchases in domestic market by non-residents and the c.i.f./f.o.b. adjustment)
9	1	Wages and salaries plus imputed social contributions received by households
9	2	Gross mixed income plus net property income received by households
9	9	Social benefits other than social transfers in kind and miscellaneous current transfers within households
9	10	Social benefits other than social transfers in kind and miscellaneous current transfers from non-financial corporations to households
9	11	Social benefits other than social transfers in kind, social transfers in kind and miscellaneous current transfers from central government to households

Row	Col.	Contents
9	12	Social benefits other than social transfers in kind, social transfers in kind and miscellaneous current transfers from local government to households
9	13	Social benefits other than social transfers in kind and social transfers in kind paid from social security funds to households
9	14	Social benefits other than social transfers in kind received by households from financial corporations and non-profit institutions serving households; social transfers in kind from non-profit institutions serving households to households; non-life insurance claims from financial corporations to households; adjustment for the change in the net equity of households in pension funds
9	21	Social benefits other than social transfers in kind, non-life insurance claims and miscellaneous current transfers received by households from the rest of the world
10	1	Imputed social contributions received by non-financial corporations
10	2	Gross operating surplus plus net property income received by non-financial corporations
10	10	Miscellaneous current transfers within non-financial corporations
10	11	Miscellaneous current transfers from central government to non-financial corporations
10	12	Miscellaneous current transfers from local government to non-financial corporations
10	14	Non-life insurance claims and miscellaneous current transfers from financial corporations to non-financial corporations
10	21	Non-life insurance claims received by non-financial corporations from the rest of the world
11	1	Imputed social contributions received by central government
11	2	Gross operating surplus plus net property income received by central government
11	3	Other taxes on production paid by primary sector activities minus other subsidies on production received by the same activities from central government
11	4	Other taxes on production paid by secondary sector activities minus other subsidies on production received by the same activities from central government
11	5	Other taxes on production paid by tertiary sector activities minus other subsidies on production received by the same activities from central government
11	6	Taxes on primary sector received by the central government minus subsidies on those products from central government
11	7	Taxes on secondary sector received by central government minus subsidies on those products from the central government
11	8	Taxes on tertiary sector received by central government minus subsidies on those products from central government
11	9	Current taxes on income, wealth, etc., employees' social contributions, social contributions by self-employed and non-employed persons and miscellaneous current transfers received by central government from households
11	10	Current taxes on income, wealth, etc., and miscellaneous current transfers

Row	Col.	Contents
		received by central government from non-financial corporations
11	11	Current transfers and miscellaneous current transfers within central government
11	12	Current transfers and miscellaneous current transfers from local government to central government
11	13	Current transfers and miscellaneous current transfers from social security funds to central government
11	14	Current taxes on income, wealth, etc. paid by financial corporations and non-profit institutions serving households to central government; non-life insurance claims paid by financial corporations to central government; miscellaneous current transfers from financial corporations and non-profit institutions serving households to central government
11	21	Current international cooperation and miscellaneous current transfers received by central government from the rest of the world
12	1	Imputed social contributions received by local government
12	2	Gross operating surplus plus net property income received by local government
12	3	Other taxes on production paid by primary sector activities minus other subsidies on production received by the same activities from local government
12	4	Other taxes on production paid by secondary sector activities minus other subsidies on production received by the same activities from local government
12	5	Other taxes on production paid by tertiary sector activities minus other subsidies on production received by the same activities from local government
12	6	Taxes on primary sector received by the local government minus subsidies on those products from the local government
12	7	Taxes on secondary sector received by local government minus subsidies on those products from local government
12	8	Taxes on tertiary sector received by the local government minus subsidies on those products from the local government
12	9	Current taxes on income, wealth, etc., employees' social contributions, social contributions by self-employed and non-employed persons and miscellaneous current transfers received by the local government from households
12	10	Current taxes on income, wealth, etc., and miscellaneous current transfers received by local government from non-financial corporations
12	11	Current transfers from central government to local government
12	12	Current transfers within local government
12	13	Current transfers from social security funds to local government
12	14	Current taxes on income, wealth, etc. paid by financial corporations and non-profit institutions serving households to local government; non-life insurance claims paid by financial corporations to local government; miscellaneous current transfers from financial corporations and non-profit institutions serving households to local government
12	21	Current international cooperation and miscellaneous current transfers received by local government from the rest of the world

Row	Col.	Contents
13	1	Imputed social contributions plus employers' actual social contributions received by social security funds
13	2	Gross operating surplus plus net property income received by social security funds
13	3	Other taxes on production paid by primary sector activities minus other subsidies on production received by the same activities from social security funds
13	4	Other taxes on production paid by secondary sector activities minus other subsidies on production received by the same activities from social security funds
13	5	Other taxes on production paid by tertiary sector activities minus other subsidies on production received by the same activities from social security funds
13	6	Taxes on primary sector products received by social security funds
13	7	Taxes on secondary sector products received by social security funds
13	8	Taxes on tertiary sector products received by social security funds
13	9	Employees' social contributions, social contributions by self-employed and non-employed persons and miscellaneous current transfers received by social security funds from households
13	10	Miscellaneous current transfers from non-financial corporations to social security funds
13	11	Current transfers from central government to social security funds
13	21	Current international cooperation received by social security funds from the rest of the world
14	1	Imputed social contributions received by financial corporations and non-profit institutions serving households
14	2	Gross operating surplus plus net property income received by financial corporations and non-profit institutions serving households
14	9	Employees' social contributions, social contributions by self-employed and non-employed persons and net non-life insurance premiums received by financial corporations from households; miscellaneous current transfers from households to non-profit institutions serving households
14	10	Net non-life insurance premiums received by financial corporations from non-financial corporations; miscellaneous current transfers from non-financial corporations to financial corporations and non-profit institutions serving households
14	11	Net non-life insurance premiums received by financial corporations from central government; miscellaneous current transfers from central government to non-profit institutions serving households
14	12	Net non-life insurance premiums received by financial corporations from local government; miscellaneous current transfers from local government to non-profit institutions serving households
14	13	Miscellaneous current transfers from social security funds to non-profit institutions serving households
14	14	Net non-life insurance premiums paid by financial corporations and non-profit institutions serving households to financial corporations; non-life insurance claims paid by financial corporations to themselves and to non-profit institutions serving households; miscellaneous current transfers from

Row	Col.	Contents
		financial corporations to non-profit institutions serving households and within the latter
14	21	Net non-life insurance premiums and non-life insurance claims received by financial corporations from the rest of the world
15	9	Gross savings of households
15	17	Investment grants from central government to households
15	18	Investment grants and other capital transfers from local government to households
15	20	Other capital transfers from financial corporations to households
15	21	Investment grants and other capital transfers from the rest of the world to households
15	22	Net lending of households
16	10	Gross savings of non-financial corporations
16	17	Investment grants and other capital transfers from central government to non-financial corporations
16	18	Investment grants and other capital transfers from local government to non-financial corporations
16	19	Other capital transfers from social security funds to non-financial corporations
16	21	Investment grants and other capital transfers from the rest of the world to non-financial corporations
16	22	Net borrowing of non-financial corporations
17	11	Gross savings of central government
17	15	Capital taxes and other capital transfers received by central government from households
17	16	Other capital transfers from non-financial corporations to central government
17	17	Investment grants within central government
17	18	Investment grants from local government to central government
17	19	Investment grants and other capital transfers from social security funds to central government
17	20	Other capital transfers from financial corporations and non-profit institutions serving households to central government
17	21	Investment grants and other capital transfers from the rest of the world to central government
17	22	Net borrowing of central government
18	12	Gross savings of local government
18	15	Capital taxes and other capital transfers received by local government from households
18	16	Other capital transfers from non-financial corporations to local government
18	17	Investment grants and other capital transfers from central government to local government
18	18	Investment grants within local government
18	20	Other capital transfers from financial corporations and non-profit institutions serving households to local government
18	21	Investment grants and other capital transfers from the rest of the world to local government
18	22	Net lending of local government

Row	Col.	Contents
19	13	Gross savings of social security funds
19	16	Other capital transfers from non-financial corporations to social security funds
19	17	Investment grants from central government to social security funds
19	21	Investment grants and other capital transfers from the rest of the world to social security funds
19	22	Net lending of social security funds
20	14	Gross savings of financial corporations and non-profit institutions serving households
20	17	Investment grants from central government to non-profit institutions serving households
20	18	Investment grants and other capital transfers from local government to non-profit institutions serving households
20	19	Investment grants from social security funds to non-profit institutions serving households
20	20	Other capital transfers within financial corporations
20	21	Investment grants from the rest of the world to non-profit institutions serving households
20	22	Net lending of financial corporations and non-profit institutions serving households
21	1	Compensation of employees received by the rest of the world (paid to non-resident employees)
21	2	Property income received by the rest of the world
21	3	Minus other subsidies on production received by primary sector activities from the institutions and other countries of the European Union
21	4	Minus other subsidies on production received by secondary sector activities from the institutions and other countries of the European Union
21	5	Minus other subsidies on production received by tertiary sector activities from the institutions and the other countries of the European Union
21	6	Imports of primary sector products plus the part of taxes on those products received by the institutions of the European Union minus the part of the subsidies for those products received from the same institutions
21	7	Imports of secondary sector products plus the part of taxes on those products received by the institutions of the European Union minus the part of the subsidies for those products received from the same institutions
21	8	Imports of tertiary sector products plus the part of taxes on those products received by the institutions of the European Union minus the part of the subsidies for those products received from the same institutions
21	9	Net non-life insurance premiums and miscellaneous current transfers received by the rest of the world from households; direct purchases abroad by residents
21	10	Net non-life insurance premiums received by the rest of the world from non-financial corporations
21	11	Net non-life insurance premiums, current international cooperation and miscellaneous current transfers received by the rest of the world from central government
21	13	Social benefits other than social transfers in kind received by the rest of the world from social security funds

Row	Col.	Contents
21	14	Net non-life insurance premiums received by the other countries of the rest of the world from financial corporations and non-profit institutions serving households; non-life insurance claims received by the rest of the world from financial corporations
21	15	Acquisitions minus disposals of non-produced non-financial assets and other capital transfers from households to the rest of the world
21	16	Acquisitions minus disposals of non-produced non-financial assets and other capital transfers from non-financial corporations to the rest of the world
21	17	Acquisitions minus disposals of non-produced non-financial assets, investment grants and other capital transfers from central government to the rest of the world
21	18	Acquisitions minus disposals of non-produced non-financial assets from local government to the rest of the world
21	19	Acquisitions minus disposals of non-produced non-financial assets from social security funds to the rest of the world
21	20	Acquisitions minus disposals of non-produced non-financial assets from financial corporations to the rest of the world
22	6	Trade margins of primary sector products
22	7	Trade margins of secondary sector products
22	8	Trade margins of tertiary sector products
22	21	Net lending of the rest of the world /Net borrowing of the Portuguese economy