Serie documentos de trabajo

A CONSOLIDATED SOCIAL ACCOUNTING MATRIX FOR INPUT-OUTPUT ANALYSIS

Horacio E. Sobarzo

DOCUMENTO DE TRABAJO

Núm. IV - 1990

A CONSOLIDATED SOCIAL ACCOUNTING MATRIX FOR INPUT-OUTPUT ANALYSIS

Horacio E. Sobarzo

This paper presents a consolidated social accounting matrix (SAM) for input-output (I-O) analysis for Mexico for the year 1980. The SAM constructred has two important characteristics. First, it incorporates explicitly the public/private dichotomy of the Mexican Economy. And, second, commodity transactions are valued at market prices.

Note: The paper presented is a chapter of a Phd thesis where the SAM constructed was used to model issues related with the price system. The modeling of the price sistem and the results obtained are available on request.

4.1 Introduction

Over the past decade or so there has been an increasing concern in the economic literature over the effects that the public sector has in economies. We have seen in the last chapter that, on the theoretical side, a good deal of literature has flourished in an attempt to determine the consequences of growing public intervention in economies. Of no less importance is the concern among economists about the possible effects that programmes of structural adjustment exert on the overall economic performance of developing countries. Such programmes usually envisage an important reduction of the degree of public sector intervention in these economies.

As a consequence of such a theoretical development there has also been an effort to assess empirically both the micro and macroeconomic effects of public intervention not only in developing economies but also in industrialised countries. Yet, when it comes to assess the impact that public enterprises have in the economy, one usually finds that data on public enterprises is not exactly abundant and the information available is usually scattered and unorganised (see Floyd [1984]).

The purpose of this chapter is to organise and put together some statistical data related to the public sector in the Mexican economy. A social accounting matrix (SAM) approach has been chosen because it facilitates both the interpretation of the data framework and the modelling. In particular, in developing our data framework we intend to show explicitly the input-output (I-O) relations as well as the public/private dichotomy of the Mexican economy.

Our ultimate purpose in building a consolidated SAM for I-O analysis is to evaluate the

effects on the price system generated by public policy intervention and commercial policy. Therefore, it should be clear that, to a great extent, the characteristics of our accounting framework have been very much determined by such a purpose. This chapter, however, intends only to look at the consolidated SAM as a data framework, leaving the issues related to modelling of the price system to be discussed in the next chapter.

The exposition is organised as follows. In Section 4.2 a schematic framework of a consolidated SAM is presented in an attempt to discuss briefly the main concepts involved as well as some general characteristics. Section 4.3 deals with an aggregated version of the consolidated SAM for the Mexican economy, without distinguishing between public and private sectors. The intention of this first approach is to focus both on the general methodology followed in putting the data together as well as on the main sources of information. In Section 4.4 the accounting framework is expanded in order to incorporate the public/private dichotomy of the Mexican production structure. Since the general procedure is basically the same as the one used in the previous section, greater emphasis will be put on numbers in the Mexican context. Finally, Section 4.5 deals with a further expanded version in an attempt to organise the data framework for modelling purposes. In the last part of this section some comments will also be made in relation to our accounting framework as compared with other data framework used for the purposes of analysing the Mexican price structure.

4.2 A Schematic Framework

Our starting point will be a schematic presentation of our accounting framework. Since our focus of attention is ultimately on the production side of the economy, we concentrate our attention on a consolidated version of the SAM for I-O analysis. Therefore, the accounting framework disaggregates extensively the production accounts, while the institutional dimension of the economy is aggregated in a single consolidated account.

Table 4.1 sets out such a framework. As in any SAM, rows and columns are identically labelled. Columns show expenditures of the accounts while rows should be read as receipts. Thus, any one cell shows the account making the expenditure in the column whereas the account receiving the corresponding payment arising form the sale appears in the label of the row.

This arrangement of rows and columns illustrates the fact that for any outlay in the economy there must exist a corresponding income. It follows that Table 4.1 has to be square and balanced, that is, the total of any column must be equal to the total of the corresponding row. In other words, expenditures of accounts in the columns must match the incomes of the corresponding rows. It should be also stressed that, although Table 4.1 is a representation of a very aggregated version of the economy, its system of classification is, nevertheless, exhaustive. That is to say, every transaction that takes place in the economy in, say, one year, is recorded.

Let us make a start by looking at the main components of Table 4.1 and how they are interrelated. Six accounts are identified: production activities, commodities, indirect taxes, factors of production, rest of the world and other accounts consolidated.

The first column, production activities, describes the cost structure of activities. It is made up of three components -purchases of raw materials, activity taxes and value added. The intersection of column one with row two constitutes the details of intermediate purchases of commodities by production activities. It is known as the "technology" or "absorption" matrix and its dimension depends, obviously, on the number of commodities and activities identified in any particular system. The second component of the cost structure of activities is given by a row vector containing positive numbers for any activity tax whereas a subsidy to the activity should be recorded as a negative number. Finally, the third element in column one records payments to factors of production contributing to the production process -capital, labour and natural resources. By adding these three components in column one we obtain the total expenditures incurred by activities in the production process, that is, total cost of producers.

Table 4.1
Schematic Framework

		EXPENDITURES						
		PRODUCTION ACTIVITIES	COMMODITIES	INDIRECT TAXES	FACTORS OF PRODUCTION	REST OF THE WORLD	OTHER ACCOUNTS CONSOLIDATED	TOTAL
RECEIPTS		1	2	3	4	5	6	
PRODUCTION ACTIVITIES	1	0	SALES OF GOODS V	0	0	0	0	VALUE OF OUTPUT AT PRODUCER PRICES
COMMODITIES	2	PURCHASES OF RAW MATERIALS V	0	0	0	EXPORTS	DOMESTIC FINAL DEMAND	TOTAL DEMAND AT MARKET PRICES
INDIRECT TAXES	3	ACTIVITY TAXES	COMMODITY TAXES	0	0	0	0	INDIRECT TAXES
FACTORS OF PRODUCTION	4	VALUE ADDED	0	0	0	0	0	PAYMENT TO FACTORS OF PRODUCTION
REST OF THE WORLD	5	0	IMPORTS	0	0	0	0	IMPORTS
OTHER ACCOUNTS CONSOLIDATED	6	0	0	ACTIVITY AND COMMODITY TAXES	RECEIPTS OF FACTORS OF PRODUCTION	DEFICITS/SURPLUS WITH THE REST OF THE WORLD	0	DOMESTIC INCOME PLUS IMPORTS
TOTAL		TOTAL COST OF PRODUCERS	TOTAL SUPPLY AT MARKET PRICES	INDIRECT TAXES	RECEIPTS OF FACTORS OF PRODUCTION	EXPORT PLUS DEFICITS/SURPLUS	FINAL DOMESTIC EXPENDITURES	

The receipts of production activities are recorded in row one column two. This cell is in fact a matrix, known as "make matrix", and should be of the same dimension as the technology matrix since its elements describe the sales of goods from activities to commodity markets. It should be noted that this matrix records the sales of goods at producer or ex-factory prices, that is, the cost to the producer at the factory gate. In other words, the total of row one is a column vector containing value of gross output of production activities at producer prices which means that neither the cost of moving commodities from the factory gate to the place of consumption is included nor are the commodity taxes levied in the sale of these goods. We shall come back to this point later in more detail.

The total supply of commodities is captured in column two and consists of three elements: domestic output (make matrix), commodity taxes and imports from the rest of the world. This can be seen by reading downwards in column two. The make matrix, as we saw above, records along its rows the domestic supply of commodities at producer prices. Total supply, however, is not only made up of domestic production. Some commodities need to be imported either because they are not produced at home or simply because their counterparts abroad are cheaper and/or of better quality. This is recorded in row five, column two. We have now recorded total supply from both domestic and foreign origin. If we want to arrive at the concept of total supply of commodities at market prices, as opposed to producer prices, however, it is still necessary to add commodity taxes, which in Table 4.1 are recorded in row three, column two. We can later see in detail that to actually arrive at this concept of market prices a special treatment will have to be given to trade and transport margins. By the same token, it will be required to distinguish between domestic commodity taxes and import duties. Meanwhile, let us turn our attention to the demand side of our accounting framework.

The demand side, which must match total supply, is displayed along row two. It consists of three elements -intermediate demands (row two column one), domestic final demand (row two column six) and exports (row two column five). Intermediate demands are shown in the technology matrix which, as we mentioned earlier, describes the purchases of raw materials by

production activities. The second component of total demand is, of course, final demand and demand from abroad, namely exports. Domestic final demand is represented by a column vector, in row two column six.

Traditionally, domestic final demand is split, for analytical purposes, into three main components; private consumption, government consumption, and capital formation. However, we shall not do so, at least for the time being, since we will focus our attention on the supply side of the economy, that is why domestic final demand is represented by a single vector. The last component of final demand is given by exports of commodities to the rest of the world, also represented by a column vector (row two column five).

The remaining parts of our framework are composed of residuals and the description of the direction in which transfers arising in the production process go. Thus, row three records indirect taxes both in activities and commodities. Its counterpart in column three shows the payment of those taxes to the account labelled "other accounts consolidated", where the government is included. The payment to factors of production, in row four, column one, goes to the same account (row six, column four), presumably to households and companies. Finally, the difference between exports and imports constitute a deficit (surplus) with the rest of the world. It is shown in row six, column five.

Having outlined the main components of Table 4.1, the next step is to develop an analogous, though more disaggregated, accounting framework. Before that, however, an important remark ought to be made regarding its actual construction. Specifically, the point to make has to do with the fact that in Table 4.1 and indeed in our actual accounting framework, commodity transactions will be recorded at market prices unlike the SAM in the System of National Accounts (SNA) as recommended by the United Nations Statistical Office (UNSO [1968]), where commodity balances are recorded at basic prices, that is, without including indirect taxes and trade and transport margins. The rationale underlying UNSO recommendations is that indirect taxes and margins (trade and transport) differ according to the purchaser and hence, for purposes

of I-O analysis, if taxes and margins are not removed, the price of a commodity will not be independent of the purchaser.

However, as has been suggested by Chander et al [1980]) and Pyatt and Round [1985], on the one hand the use of basic prices poses the problem of estimating the appropriate amounts of margins to be removed. In practice they are frequently unknown. On the other hand, market prices are the relevant ones when the purpose is the modelling of economic behaviour, since those are the prices economic agents actually face when making decisions. Moreover, UNSO suggests the use of approximate and not basic prices because even though taxes are discounted from values at producer prices, the indirect effects spread in all the commodities in the production process are not actually removed (see Greenfield and Fell [1979]).

Therefore, in our accounting framework values will be recorded at market prices. It has to be mentioned, however, that the adoption of market prices as a basis for valuation has problems on its own, not only because more work at the data level is necessary, but also because we shall be assuming that there are no differences in the amounts of margins (and indirect taxes) paid by different buyers of a commodity. That is, we shall ignore the fact that, in certain circumstances, margins vary from buyer to buyer.

Nonetheless, we believe that the use of market prices is more accurate for the purpose of modelling economic behaviour and indeed, once market prices have been estimated, it is always possible to move backwards to obtain producer or basic prices (approximate). Furthermore, since market prices are more relevant in a flex-price model, the use of market prices gurantees a more accurate framework for future extensions to the present thesis. The precise way in which market prices have been estimated can be deferred to a latter stage of the discussion, once we have explained how our data framework was constructed. This is the purpose of the next section.

4.3 The Consolidated SAM.

In this section we intend to present and describe the consolidated SAM, constructed for the Mexican economy for the year 1980. Particular emphasis will be given to the methodology followed in putting the data together as well as to the main sources of information consulted. For expository purposes we will initially present a SAM where no distinction between public and private activities is made. The idea is to use this first SAM for explaining the general procedure followed in its construction. In the next two sections the accounting framework will be expanded in order to incorporate the public private dichotomy of the Mexican economy. The reader should be warned that in the following two sections very little attention will be given to the actual numbers in the Mexican context. In a final version, however, some comments will be made on the characteristics of the Mexican economy, as envisaged by our accounting framework.

Two additional points should be made in advance. First, all numbers referred to are in million of pesos of 1980, unless otherwise stated. Secondly, in order to have a reference point it will be convenient to refer to each component of the Mexican SAM as part of the schematic framework developed above in Table 4.1. We will refer them as T_{ij} where i and j indicate row and column respectively.

4.3.1 The Classification of Activities and Commodities

The social accounting approach to any particular issue requires to develop an appropriate set of classifications or taxonomies as a basis for analysis. In the present case, in which we attempt to examine the role and performance of PEs a crucial point was to capture the public/private dichotomy of the Mexican economy. Accordingly, in determining the level of disaggregation of commodities the key issue was the form of organisation under which commodities are produced i.e. public or private. Likewise, since emphasis will be given to specific public sector pricing policies, it was also necessary to distinguish between commodities whose pricing setting mechanisms are different in nature, as is the case, for instance, of those commodities produced by sectors that

traditionally have pursued a policy of regulated prices.

As we will also be concerned with commercial policy, an important criterion in defining our level of commodity disaggregation was whether commodities are traded or non traded. It will be seen, when developing our analysis in a subsequent chapter, that such a distinction will enable us to examine the role played by the private sector since commercial policy is directed towards industrial activities, which are mainly operated by private agents.

These are all issues of strategic importance for this enquiry and, in in one way or another, all of them had to be considered when determining our actual levels of disaggregation.

The following twelve commodities were identified[1]

-Agriculture
-Mining
-Petroleum and petrochemicals
-Food processing
-Textiles
-Chemicals
-Capital goods
-Other manufactures
-Construction
-Electricity
-Trade and transport
-Other services

The main characteristics of this initial classification in terms of the presence of the public vs. the private participation can be described as follows. Agriculture is predominantly operated by the private sector, although there is a small public participation on fishing and forestry. In mining there is a substantial participation of the public sector. Petroleum and petrochemicals is mainly produced by the public sector. It also constitutes the main export of the economy. Manufactures, other than petroleum and petrochemicals, were aggregated in five categories -food

[1] The details of the grouping of commodities in each of the aggregates here identified are shown in Appendix A.

processing, textiles, chemicals, capital goods and other manufactures. With the exception of capital goods, in all the commodities produced by the manufacturing industry the public presence is not very important. In the commodity capital goods, however, there is a substantial participation of the public sector.[2] Construction is entirely privately produced while electricity is produced by a public monopoly. Finally, the area of services consists of trade and transport and other services, where the public presence is important.

Insofar as the classification of activities is concerned thirteen were initially identified

-Agriculture
-Mining
-Petroleum and petrochemicals
-Food processing
-Textiles
-Chemicals
-Capital goods
-Other manufactures
-Construction
-Electricity
-Transport and communications
-Other services
-Trade

As can be seen, in all cases, with the exception of transport and communications, and trade, there is one to one correspondence between activities and commodities. That is, in this first approach, activities were classified according to the principal product criteria. We will see later, however, that, in addition to this criterion, a crucial and necessary distinction we shall adopt is to separate activities according to the form of organisation i.e. public or private. Meanwhile, for purposes of explaining our initial aggregated SAM we shall ignore the criterion of ownership in favour of the conventional principal product criteria.

It should be mentioned that "communications" as a commodity is grouped in "other services" whereas as an activity it was placed in "transport and communications". The purpose of

[2] Mainly in the production of steel and the automobile industry.

that change was to allocate the output of communications to the commodity other services so that the remaining gross output of the activity (only transport) may be distributed along the make matrix in order to arrive at the concept of market prices, as we will later explain in detail.

4.3.2 The Consolidated SAM - A Basic Framework

Table 4.2 shows our basic accounting framework. It is a representation of the production structure of the Mexican economy in million of pesos of 1980, and has exactly the same structure as that of our schematic framework in Table 4.1. For expository purposes we will first explain in some detail each one of the main components of Table 4.2, emphasising both the way in which it was obtained and the sources of information used. In a second part we will look at Table 4.2 in a broader way in order to have a view of the whole picture.

4.3.2.1 The Cost Structure of Activities

The first component of the cost of activities are the purchases of raw materials by the production activities, T_{21} in Table 4.1 and known, as already noted, as the technology or absorption matrix. In Table 4.2 the technology matrix is located in rows 14 to 25 and columns 1 to 13. It shows the intermediate purchases by each activity, at market prices, inclusive of imports as well as trade and transport margins. It was obtained from a reduction to our sectoral-commodity level of disaggregation of the published I-O table for 1980.[3] Two main steps were followed.

First we aggregated the domestic version of the I-O table to our level of disaggregation, so that columns showed purchases of raw materials at our sectoral level. The same procedure was followed with the published I-O table of imports. We then added our two I-O tables so as to obtain the purchases of raw materials, both domestic and imported.

[3] Secretaria de Programacion y Presupuesto [1986].

In a second step trade and transport margins were distributed among commodities in order to get the purchases of raw materials at market prices. Let us explain this point in more detail. Following UNSO recommendations, the published I-O table for Mexico shows trade and transport margins as separate commodities so that among the 72 sectors in the I-O originally defined there are two rows (and columns) called trade and transport. The purchases of trade and transport by each activity are usually estimated as a certain margin[4] and then discounted from the purchases of commodities and allocated to the rows for trade and transport.[5] Therefore, we simply distributed backwards those margins to each commodity so that purchases of raw materials are now inclusive of trade and transport necessary to move them from factory to factory. The procedure used in making such a redistribution will be explained later in detail.

The last point to note regarding our absorption matrix is that, as can be seen in Table 4.2, there are no intermediate purchases of the commodity construction. The reason is that in the published I-O table for Mexico all the output of this commodity was allocated to final demand in the form of capital formation.

The next component of the cost structure of activities is given by activity taxes, represented by the row vector T_{31} in table 4.1 and located in row 26 columns 1 to 13 in Table 4.2. The fact that numbers are negative means, of course, that rather than being taxed, activities receive subsidies. The total amount of subsidies is 79,581, a figure obtained from national accounts (Secretaria de Programacion y Presupuesto [1983], vol I), and allocated to each sector according to the proportions given by Mateo de et al [1984]. This procedure of allocation was necessary since the published I-O table shows only taxes net of subsidies. In other words, our published I-O table shows explicitly only the amount of commodity taxes, net of subsidies. What we did then was to separate commodity taxes from production subsidies, following national account figures, (ibidem), and then allocated production subsidies to the different production activities. It should

[4] Calculated from a commercial survey.

[5] Primary data in the National Accounts is inclusive of margins since producers declare costs inclusive of trade and transport.

INITIAL SAM

TABLE 4·2

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ACTIVITIES	AGRICULTURE	1														505538						
	MINING	2															94038					
	PETROLEUM& PETROCHEMICALS	3																177980				
	FOOD PROCESSING	4																	570849			
	TEXTILES	5																		131728		
	CHEMICALS	6																			200121	
	CAPITAL GOODS	7																				560448
	OTHER MANUFACTURES	8																				
	CONSTRUCTION	9																				
	ELECTRICITY	10																				
	TRANSPORT& COMM.	11														26835	1640	3586	51227	11595	20060	66778
	OTHER SERVICES	12																				
	TRADE	13														108987	3530	17696	179477	15847	62853	287644
COMMODITIES	AGRICULTURE	14	53198	4	0	272553	14223	2165	0	29483		9		1980								
	MINING	15	485	23765	1357	175	5	3678	32924	15557	18103	3	4	401								
	PETROLEUM& PETROCHEMICALS	16	5665	550	58291	2258	257	31426	1964	6259	9196	24084	31628	3867	2566							
	FOOD PROCESSING	17	33415	1	6	90154	97	7963	8	25194		3		4113								
	TEXTILES	18	2871	78	16	4625	25824	884	1156	36955	978	21	351	2721	2632							
	CHEMICALS	19	20445	1245	2932	4899	22180	42701	7671	48770	9201	700	480	26938	5314							
	CAPITAL GOODS	20	7245	3123	4328	5959	1327	3761	241215	31432	147328	2002	32113	30332	10593							
	OTHER MANUFACTURES	21	10434	1218	787	8397	2588	14999	23619	153003	100617	1040	18675	41168	36305							
	CONSTRUCTION	22																				
	ELECTRICITY	23	2798	2465	3858	3375	1564	6011	8697	14092	2686	4383	1438	9016	11053							
	TRADE AND TRANSPORT	24																				
	OTHER SERVICES	25	5919	3145	6466	8852	4295	4984	23061	37373	33014	2403	34539	153541	128360							
	DOMESTIC INDIRECT TAXES	26	-8205	0	0	-11706	0	-5268	-119	-119		-20166	-13433	-3280	-17285	14455	4014	175218	14464	4424	9807	25191
	IMPORT DUTIES	27														673	151	1130	3544	563	3566	22305
	FACTORS OF PRODUCTION LABOR	28	94109	20599	20361	44152	20319	30618	93561	125396	185108	24029	99952	514416	203458							
	FACTORS OF PRODUCTION CAPITAL	29	277159	37845	79578	137156	39049	56199	126691	227386	100838	19877	193432	631349	637481							
	REST OF THE WORLD	30														46629	9031	23558	29914	3837	38744	251744
	OTHER ACCOUNTS CONSOLID.	31																				
	TOTAL	32	505538	94038	177980	570849	131728	200121	560448	750781	607069	58388	399179	1416562	1020477	703117	112404	399168	849475	167994	335151	1214110

INITIAL SAM

TABLE 4·2

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
				505538																		505538	1
					94038																	94038	2
						177980																177980	3
							570849															570849	4
								131728														131728	5
									200121													200121	6
										560448												560448	7
											750781											750781	8
												607069										607069	9
													58388									58388	10
				26835	1640	3586	51227	11595	20060	66778	69548			116083	31827							399179	11
															1416562							1416562	12
				108987	3530	17696	179477	15847	62853	287644	344443											1020477	13
9		1980																		15645	313857	703117	14
3	4	401																		21083	-5136	112404	15
24084	31628	3867	2566																	177433	43724	399168	16
3		4113																		24918	663603	849475	17
21	351	2721	2632																	9626	79256	167994	18
700	480	26938	5314																	7931	133744	335151	19
2002	32113	30332	10593																	22943	670409	1214110	20
1040	18675	41168	36305																	28127	873480	1314457	21
																					608287	608287	22
4383	1438	9016	11053																	2044	5692	79172	23
																				9267	144678	153945	24
2403	34539	153541	128360																	35131	1025109	1506192	25
-20166	-13433	-3280	-17285	14455	4014	175218	14464	4424	9807	25191	69066	1218	20535	8662	30894							298367	26
				673	151	1130	3544	563	3566	22305	12369											44301	27
24029	99952	514416	203458																			1476078	28
19877	193432	631349	637481																			2564040	29
				46629	9031	23558	29914	3837	38744	251744	68250		249	29200	26909							528065	30
																298367	44301	1476078	2564040	173917		4556703	31
58388	399179	1416562	1020477	703117	112404	399168	849475	167994	335151	1214110	1314457	608287	79172	153945	1506192	298367	44301	1476078	2564040	528065	4556703	23404184	

be stressed that the total amount of subsidies appearing in Table 4.2 are those reported in the national accounts and hence they refer only to direct transfers, mainly to public enterprises, but do not include implicit subsidies to the private sector. We will come back to this point in the next section, where our framework is expanded to take into consideration the public/private dichotomy.

The last component of the cost structure of activities corresponds to value added or payment to factors of production in the production process, namely, capital and labour. Those numbers were obtained directly from the published I-O table and thus it was only necessary to aggregate them according to our own level of classification. This component is shown in rows 28 and 29, and columns 1 to 13, which corresponds to cell T_{41} in Table 4.1.

4.3.2.2 The Supply of Commodities

The supply of commodities is recorded in columns 14 to 25 and consists of three elements namely, domestic supply, imports and commodity taxes. Domestic supply is described in the "make matrix", rows 1 to 13 in Table 4.2 and cell T_{12} in table 4.1. The make matrix, as we have already pointed out, records gross output of production activities at producer or ex-factory prices. With the exception of activities trade and transport and communications, the make matrix is diagonal, since we are assuming that each activity produces only one (the principal) commodity.[6]

This, however, is not a necessary restriction. Indeed, a commodity may well be allowed to be produced by different activities or an activity may also be allowed to produce several commodities. The latter is precisely the case in Table 4.2 where the activities trade and transport are assumed to produce a homogeneous commodity and placed in certain proportions into the different commodity markets. In other words, instead of grouping the output of the activities trade

[6] Following the tradition in the SNA as recommended by UNSO traditionally activities are classified according to the principal product criteria. That, nevertheless, may not be always the best criteria. Pyatt [1985] stresses the necessity of breaking away from this criteria, specially in developing countries where many problems are typically manifested as a dualism.

and transport into single commodities, "trade" and "transport", we distributed their outputs along the commodity columns. As suggested earlier, the purpose of giving this treatment to trade and transport margins is to arrive at market prices. That is, in the make matrix gross output is recorded at producer prices, which, therefore are not market prices because they do not include the cost of moving commodities from the factory gate to the place of consumption. In addition, it is also necessary to add commodity taxes. We will come back to the question of taxes in a latter stage of the exposition. Let us concentrate for the moment on how those margins were distributed along the commodity columns in our make matrix.

Three stages were followed in this process. First, we made an initial distribution of total gross output of trade and transport at producer prices among three aggregate commodities -agriculture, mining and manufactures. This first distribution was very straightforward since national accounts (Secretaria de Programacion y Presupuesto [1983]) provide the required proportions in which margins are distributed among the three aggregates. It should be stressed that for our purposes we subtracted before the gross output of communications (31,827) which was then allocated to the commodity "other services" and (116,083) as purchases of transport by households[7] which leaves us with 1,271,746 to distribute.

Once this amount was distributed between the three aggregate commodities the second stage consisted simply of separating trade and transport as activities. Although in principle it would have been convenient to treat both as an aggregate activity, we split them up because transport is an activity where there is a substantial public participation and, at the same time, is an input heavily demanded by the remaining activities. It is then important, for our purposes, to have public transport as an individual activity whose pricing policy would presumably exert far reaching effects on the whole production structure. Finally, the third step was more complicated because we needed a criterion for distributing margins within the commodities of the manufactur-

[7] The proportion of purchases of transport by households as a proportion of total gross output of transport was obtained from a special publication of national accounts (see Secretaria de Programacion y Presupuesto. Estructura Economica Regional [1985], p. 369).

ing industry. Fortunately it was possible to get such a criterion from the 1976 commercial census for Mexico (see Secretaria de Programacion y Presupuesto [1980a], VII Censo Comercial, 1976). We therefore looked at the difference between sales and costs both at wholesale and retail level for all the activities in the manufacturing industry, calculated a margin for each activity, and then grouped them according to our own level of classification. This gave us a picture of how trade margins were distributed among the different commodities produced by the manufacturing industry in 1976. Finally, we applied the same structure as in 1976 to our base year of 1980.

Unfortunately, for the case of transport, we were not able to get the same detailed information. In this case we distributed the output of transport according to the proportions of each commodity within manufacturing industry. At this stage it is important to note that in both cases trade and transport margins refer to both domestic supply and imports.

Up to this point we have referred to the make matrix as describing the domestic supply of commodities, margins included. To arrive at total supply, however, it is still necessary to add imports which, in Table 4.2 are recorded in the row labelled "rest of the world" (row 30), and corresponds to the cell T_{52} in Table 4.1. Imports are recorded in *cif* values and were obtained directly from the published imports I-O table. A minor adjustment was necessary to the import figures because of a small number of imports (11,465), comprising transactions at the border, which are not classified by sector of destination. Those imports were distributed among total imports according to the proportions given by the import structure in the I-O table. The final amount of imports, as can be seen in the total of 'rest of the world' row, is 528,065.

It is important to notice that, in this first approach, imports do not include the trade and transport margins necessary to move them from the border to the place of consumption, to be consistent with the treatment of domestic production. This point, however, will be dealt with later when we expand our accounting framework.

The last component of the supply of commodities is given by commodity taxes recorded in

rows 26 and 27 and columns 14 to 25 (T_{32} in Table 4.1). Two levels are distinguished, taxes on domestic production (including taxes on exports) in row 26, and import duties, recorded in row 27. Although the published I-O tables shows taxes on each commodity, they are not disaggregated into domestic taxes and import duties. It was therefore necessary to estimate import duties indirectly. In order to do so, we used previous estimations made by Seade [1986]. He estimated a tariff vector at a 71 commodity level disaggregation by calculating tariff collections and value of imports for more than eight thousand different commodities, as contained in the tariff catalogue published by the Ministry of Commerce,[8] and then these were allocated to the 71 commodity level of disaggregation of the I-O table. We then took such calculations and applied the same structure to the total of import duties as given in national accounts.

As far as domestic taxes are concerned, they were obtained by subtraction, once import duties were obtained. Again, in the case of domestic taxes, taxes levied on trade and transport were distributed among taxes of the remaining commodities assuming, therefore, a vertical demand curve. Such an assumption is rather arbitrary since we do not have enough data to provide empirical support. We should then be careful when reading domestic taxes in row 26 because they include taxes on the corresponding commodities plus a fraction of taxes levied on trade and transport, which are effectively passed on to final consumers. This last allocation of taxes was made according to the proportions in which trade and transport margins themselves were distributed and naturally, a share of those taxes was retained as paid by households purchasing transport, 8,862 in column 24.

4.3.2.3 The Demand for Commodities

The demand for commodities is shown in cells T_{21}, T_{25} and T_{26} in Table 4.1 whereas in Table 4.2 it is located in rows 14 to 25. Three main components of total demand are identified; intermediate demands, exports and domestic final demand. We have already made reference to intermediate

[8] Catalogo de la Tarifa del Impuesto General de Importaciones.

TABLE 4·3

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
ACTIVITIES	PUBLIC AGRICULTURE	1																			
	PUBLIC MINING	2																			
	PUBLIC PETROL. & PETROCH.	3																			
	PUBLIC FOOD PROCESSING	4																			
	PUBLIC TEXTILES	5																			
	PUBLIC CHEMICALS	6																			
	PUBLIC CAPITAL GOODS	7																			
	PUBLIC OTHER MANUFACTURES	8																			
	PUBLIC ELECTRICITY	9																			
	PUBLIC TRANSPORT & COMM.	10																			
	PUBLIC OTHER SERVICES	11																			
	PUBLIC TRADE	12																			
	PRIVATE AGRICULTURE	13																			
	PRIVATE MINING	14																			
	PRIVATE PETROL. & PETROCH.	15																			
	PRIVATE FOOD PROCESSING	16																			
	PRIVATE TEXTILES	17																			
	PRIVATE CHEMICALS	18																			
	PRIVATE CAPITAL GOODS	19																			
	PRIVATE OTHER MANUFACTURES	20																			
	PRIVATE CONSTRUCTION	21																			
	PRIVATE TRANSPORT & COMM.	22																			
	PRIVATE OTHER SERVICES	23																			
	PRIVATE TRADE	24																			
COMMODITIES	AGRICULTURE	25	1540			26700	561	258		567	9		718		51658	4		245853	13662	1907		289
	MINING	26	14	2819	1344	30		430	7207	299	3	1	138		471	20946	13	145	5	3248	25717	152
	PETROLEUM & PETROCHEMICALS	27	165	65	57704	232	14	3638	448	132	24084	10064	1395	219	5500	485	587	2026	243	27788	1516	61
	FOOD PROCESSING	28	967		5	8842	7	932	3	493	3		1483		32448	1	1	81312	90	7031	5	247
	TEXTILES	29	83	9	15	464	986	98	252	742	21	115	968	213	2788	69	1	4161	24838	786	904	362
	CHEMICALS	30	592	148	2897	484	870	4969	1687	967	700	155	9704	441	19853	1097	35	4415	21310	37732	5984	478
	CAPITAL GOODS	31	210	370	4280	603	55	439	52641	643	2002	10224	10942	881	7035	2753	48	5356	1272	3322	188574	307
	OTHER MANUFACTURES	32	302	144	773	834	106	1744	5163	3038	1040	5946	14836	3020	10132	1074	14	7563	2482	13255	18456	1499
	CONSTRUCTION	33																				
	ELECTRICITY	34	81	293	3816	335	62	699	1915	278	4383	463	3248	926	2717	2172	42	3040	1502	5312	6782	138
	TRADE AND TRANSPORT	35																				
	OTHER SERVICES	36	171	374	6414	855	172	583	5057	731	2403	10977	55329	10617	5748	2771	52	7997	4123	4401	18004	366
	DOMESTIC INDIRECT TAXES	37	-5402			-11706		-5268	-119	-119	-20166	-13433	-3280	-17285	-2803							
	IMPORT DUTIES	38																				
	FACTORS OF PRODUCTION — LABOR	39	3568	2705	20027	7294	747	2246	19573	2049	24029	36590	382445	3961	90541	17894	334	36858	19572	28372	73988	1233
	FACTORS OF PRODUCTION — CAPITAL	40	178	3088	77875	4369	447	1346	11723	1227	19877	17261	11388	10528	276981	34757	1703	132787	38602	54853	114968	2261
	REST OF THE WORLD	41																				
	OTHER ACCOUNTS CONSOLID.	42																				
	TOTAL	43	2469	10015	175150	39336	4027	12114	105550	11047	58388	78363	489314	13521	503069	84023	2830	531513	127701	188007	454898	7397

SAM

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	TOTAL	
					2469																		2469	1
						10015																	10015	2
							175150																175150	3
								39336															39336	4
									4027														4027	5
										12114													12114	6
											105550												105550	7
												11047											11047	8
														58388									58388	9
					2503	207	487	4261	939	1906	7418	6027			22788	31827							78363	10
																489314							489314	11
								9727				3794											13521	12
					503069																		503069	13
						84023																	84023	14
							2830																2830	15
								531513															531513	16
									127701														127701	17
										188007													188007	18
											454898												454898	19
												739734											739734	20
													607069										607069	21
					24332	1433	3099	46966	10656	18154	59360	63521			93295								320816	22
																927248							927248	23
					108987	3530	17696	169750	15847	62853	287644	340649											1006956	24
28916			1262																		15645	313857	703117	25
15258	18103	3	263																		21083	-5136	112404	26
6127	9196	21564	2472	2347																	177433	43724	399168	27
24701			2630																		24918	663603	849475	28
36213	978	236	1753	2419																	9626	79256	167994	29
47803	9201	325	17234	4873																	7931	133744	335151	30
30789	147328	21889	19390	9712																	22943	670409	1214110	31
149965	100617	12729	26332	33285																	28127	873480	1314457	32
																						608287	608287	33
13814	2686	975	5768	10127																	2044	5692	79172	34
																					9267	144678	153945	35
36642	33014	23562	98212	117743																	35131	1025109	1506192	36
					14455	4014	175218	14464	4424	9807	25191	69066	1218	20535	8662	30894							298367	37
					673	151	1130	3544	563	3566	22305	12369											44301	38
123347	185108	63362	131971	199497																			1476078	39
226159	100838	176171	619961	626953																			2564040	40
					46629	9031	23558	29914	3837	38744	251744	68250		249	29200	26909							528065	41
																	298367	44301	1476078	2564040	173917		4556703	42
739734	607069	320816	927248	1006956	703117	112404	399168	849475	167994	335151	1214110	1314457	608287	79172	153945	1506192	298367	44301	1476078	2564040	528065	4556703	23404184	

demands when talking about the technology matrix. It only remains to add final demand so as to arrive at total demand. Column 31 in Table 4.2 records final domestic demand which, although not disaggregated at this stage, is made up of private consumption, government consumption and capital formation. Column 32, on the other hand, shows exports of commodities. It is important to underline that the three components of total demand referred to above are recorded at market prices, that is, inclusive of indirect taxes and trade and transport margins.

4.3.2.4 Other Accounts

The last account to be referred to in Table 4.2 is labelled "other accounts consolidated". In a more disaggregated version of our framework this account would give the details of transfers among institutions. At our level, however, it only comprises aggregates. Thus, columns 26 and 27 record payments of taxes to government; columns 28 and 29 contain the transfers of income among institutions (households, companies and government); and finally, the number 173,917 in column "the rest of the world" intersecting with "other accounts consolidated" shows the deficit in the transactions with the rest of the world.

4.3.3 The Whole Picture

It is perhaps useful to look at Table 4.2 in a broader, way since we have concentrated very much on the details. Let us then, for expository purposes, pick up one sector-commodity and read it through. Take chemicals, for instance. The activity producing chemicals is shown in column 6 which describes its cost structure. It pays 118,572 million of pesos in the form of purchases of raw materials to the different commodity markets, imports included. These intermediate purchases are recorded at market prices. Reading downwards in column 6 it can be seen that activity chemicals receives a subsidy of 5,268 million of pesos, recorded as a negative number. Presumably those subsidies are directed to the public production of fertilisers, which constitute the main component of public participation in this activity. The next and last component of the cost of producing chemicals in column 6 is given by payments to factors of production, 30,618 to labour

and 56,199 to capital. Adding all these elements we arrive at the total cost of production of the activity chemicals of 200,121 million of pesos.

Looking now at row 6, column 19, it can be seen that total cost of production is also recorded as the gross output of the activity. Since the commodity chemicals is only produced by one production activity -chemicals-, then 200,121 constitutes also the domestic supply of chemicals, recorded in Table 4.2 at producer prices. To get total supply it is necessary to add imports of chemicals, recorded in column 19 row 30, amounting to 38,744. Hence total supply of chemicals is 238,865. We still need to add indirect taxes as well as trade and transport margins in order to arrive at total supply of chemicals at market prices. In column 19 those margins are recorded in the intersection with rows 11 and 13 while indirect taxes appear in rows 26 and 27. Therefore, total supply of chemicals at market prices is 335,151 million of pesos.

Finally, the demand for chemicals is displayed along row 19 and consists of 193,476 as intermediate demands (adding row 6 along columns 1 to 13), 133,744 corresponding to domestic final demand, while 7,931 is exported. Again, those figures are at market prices.

4.4 The Expanded Consolidated SAM with Public/Private Distinction.

When discussing the classification of activities and commodities in a previous section it was said that, for purposes of exposition, the first approach for classifying activities would be the conventional principal product criteria. It was also said, however, that if we want to fully capture the public/private dichotomy of the Mexican economy a further criteria for the classification of activities, based on type of organisation or ownership was needed, namely public and private. Therefore, in this section we shall present an expanded version of our accounting framework where production activities are further split into their public and private components. Before starting, however, it should be mentioned that apart from the introduction of the distinction between public and private activities the new accounting framework presented in this section was constructed following essentially the same methodology as with Table 4.2, and hence, in the

exposition, more emphasis will be given to the numbers themselves.

The new consolidated SAM is presented in Table 4.3. As mentioned above, its structure is basically the same as Table 4.2. The only difference is that now, instead of having thirteen production activities we have twenty four, twelve public and twelve private. Accordingly, the cost structure of activities is now made of twenty four columns, one for each activity, while in the make matrix, two blocks for public and private supply are distinguished, with the already noted exceptions of construction which is operated only by private agents, and electricity which is a public monopoly. Following the same order as in the earlier section our starting point will be the cost structure of activities.

4.4.1 The Cost Structure of Activities

The cost of production activities is shown in columns 1 to 24. The first twelve columns refer to public production activities while columns 13 to 24 record the cost structure of private activities. Before going in detail into each of the components of the cost structure, however, let us explain how this division of activities was made.

The main source of information was provided by a special publication of national accounts for the public sector (see Secretaria de Programacion y Presupuesto [1985], Cuentas Nacionales del Sector Publico, 1975-1985), with aggregated data on production statistics for the public sector in Mexico. Specifically, this source provided figures for ten aggregate sectors, namely, agriculture, mining, petroleum and petrochemicals, manufacturing industry, construction, electricity, trade restaurants and hotels, transport and communications, financial services, and other services. Thus, it was necessary to make some regrouping in order to have the same classification as ours. In particular, the manufacturing industry had to be disaggregated into five categories - food processing, textiles, chemicals, capital goods and other manufactures.[9] In order to do so a second

[9] Although petrochemicals belongs to manufactures it is treated as a separate aggregate called "petroleum and petrochemicals" and includes oil extraction, refining and petrochemicals.

major source of information was provided by Delgado et al [1986], which provides more detailed information on public sector intervention in the manufacturing industry. It is unfortunate that the industrial census for 1980 has not been published, since this would have made the details of the industrial structure of public sector activities much richer. The general procedure consisted in calculating data for public sector activities, and then the figures for the private sector were obtained by difference against our basic data framework in Table 4.2.

The first component of the cost structure of activities, as before, is the technology matrix giving the details of intermediate purchases made by our twenty four production activities. Thus, columns 1 to 12 describe the purchases of raw materials made by public production activities whereas the remaining columns (13 to 24) refer to private production activities. For all activities, except those in the manufacturing industry, we simply took total intermediate purchases as published by national accounts of the Public Sector [op.cit.] and then applied the same commodity structure of intermediate purchases as given in the published I-O table. For the case of manufacturing industry the procedure was essentially the same, except that it was first necessary to disaggregate them according to our classification by using the information provided by Delgado et al [1986]. Once we estimated the cost structure of public sector activities, the difference with the total of the respective sector was allocated as intermediate purchases made by private activities.

It is important to note that we only had knowledge of the total amount of intermediate purchases by public production activities but not their structure, which is why the same input structure as in the I-O table was applied. Therefore, in doing that, we are implicitly assuming that public and private sectors have a similar structure of intermediate purchases whenever they participate in the same activity. It is important to underline that, for the purpose of modelling the efficiency of public vs private sectors, this point will represent a limitation in terms of our results since we are assuming, a priori, that both sectors are equally efficient (or inefficient) in the use of material inputs. This problem, which arises from the aggregation in the I-O table, could have been partially overcome by data from the industrial census for 1980 which, as already said, has not been published.

TABLE 4.6

COMMODITIES

ACTIVITIES

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
PUBLIC AGRICULTURE	NET OUTP.	1		7746																															
	GROSS OUT.	2																																	
PUBLIC MINING	NET OUTP.	3				5793																													
	GROSS OUT.	4																																	
PUBLIC PETROLEUM AND PETROCHEMICALS	NET OUTP	5						97902																											
	GROSS OUT.	6																																	
PUBLIC FOOD PROCESSING	NET OUTP.	7								11663																									
	GROSS OUT.	8																																	
PUBLIC TEXTILES	NET OUTP.	9										1194																							
	GROSS OUT.	10																																	
PUBLIC CHEMICALS	NET OUTP.	11												3292																					
	GROSS OUT.	12																																	
PUBLIC CAPITAL GOODS	NET OUTP.	13														31296																			
	GROSS OUT.	14																																	
PUBLIC OTHER MANUFACTURES	NET OUTP.	15																3276																	
	GROSS OUT.	16																																	
PUBLIC ELETRICITY	NET OUTP.	17																		43906															
	GROSS OUT.	18																																	
PUBLIC (DOMESTIC) TRANSPORT AND COM.	NET OUTP.	19																				49134													
	GROSS OUT.	20																																	
PUBLIC (IMPORTS) TRANSPORT AND COM.	NET OUTP.	21																						4717											
	GROSS OUT.	22																																	
PUBLIC OTHER SERVICES	NET OUTP.	23																								39383									
	GROSS OUT.	24																																	
PUBLIC TRADE	NET OUTP.	25																										14489							
	GROSS OUT.	26																																	
PRIVATE AGRICULTURE	NET OUTP.	27																												367522					
	GROSS OUT.	28																																	
PRIVATE MINING	NET OUTP.	29																														53651			
	GROSS OUT.	30																																	
PRIVATE PETROLEUM AND PETROCHEMICALS	NET OUTP.	31																															2037		
	GROSS OUT.	32																																	
PRIVATE FOOD PROCESSING	NET OUTP.	33																																	16
	GROSS OUT.	34																																	
PRIVATE TEXTILES	NET OUTP.	35																																	
	GROSS OUT.	36																																	
PRIVATE CHEMICALS	NET OUTP.	37																																	
	GROSS OUT.	38																																	
PRIVATE CAPITAL GOODS	NET OUTP.	39																																	
	GROSS OUT.	40																																	
PRIVATE OTHER MANUFACTURES	NET OUTP.	41																																	
	GROSS OUT.	42																																	
PRIVATE CONSTRUCTION	NET OUTP.	43																																	
	GROSS OUT.	44																																	
PRIVATE (DOMESTIC) TRANSPORT AND COM.	NET OUTP.	45																																	
	GROSS OUT.	46																																	
PRIVATE (IMPORTS) TRANSPORT AND COM.	NET OUTP.	47																																	
	GROSS OUT.	48																																	
PRIVATE OTHER SERVICES	NET OUTP.	49																																	
	GROSS OUT.	50																																	
PRIVATE TRADE	NET OUTP.	51																																	
	GROSS OUT.	52																																	
AGRICULTURE	DOMESTIC	53																																	
	EXPORTS	54																																	
	IMPORTS	55																																	
	COMPOSITE	56		1540						26700		561		258				567		9						718				51658		4			24
MINING	DOMESTIC	57																																	
	EXPORTS	58																																	
	IMPORTS	59																																	
	COMPOSITE	60		14		2819		1944		30				430		7207		299		3		1				138				471		20946		13	
PETROLEUM AND PETROCHEMICALS	DOMESTIC	61																																	
	EXPORTS	62																																	
	IMPORTS	63																																	
	COMPOSITE	64		165		65		57706		232		14		3638		448		132		24084		9182		882		1795		219		5500		485		587	
FOOD PROCESSING	DOMESTIC	65																																	
	EXPORTS	66																																	
	IMPORTS	67																																	
	COMPOSITE	68		967				5		8042		7		932		3		493		3						1487				32448		1		1	8
TEXTILES	DOMESTIC	69																																	
	EXPORTS	70																																	
	IMPORTS	71																																	
	COMPOSITE	72		85		9		15		464		986		98		252		762		21		105		10		968		215		2788		69		1	
CHEMICALS	DOMESTIC	73																																	
	EXPORTS	74																																	
	IMPORTS	75																																	
	COMPOSITE	76		592		148		2897		484		870		4969		1697		967		700		141		14		9704		441		19053		1097		35	
CAPITAL GOODS	DOMESTIC	77																																	
	EXPORTS	78																																	
	IMPORTS	79																																	
	COMPOSITE	80		210		370		4280		603		55		459		52641		643		2002		9328		896		10942		881		7033		2753		48	
OTHER MANUFACTURES	DOMESTIC	81																																	
	EXPORTS	82																																	
	IMPORTS	83																																	
	COMPOSITE	84		302		144		779		894		106		1744		5169		3038		1040		5425		521		14036		3020		10132		1074		14	
CONSTRUCTION	DOMESTIC	85																																	
	EXPORTS	86																																	
	IMPORTS	87																																	
	COMPOSITE	88																																	
ELECTRICITY	DOMESTIC	89																																	
	EXPORTS	90																																	
	IMPORTS	91																																	
	COMPOSITE	92		81		293		3816		335		63		699		1915		278		4383		422		41		3248		926		2717		2172		42	
TRADE AND TRANSPORT	DOMESTIC	93																																	
	EXPORTS	94																																	
	IMPORTS	95																																	
	COMPOSITE	96																																	
OTHER SERVICES	DOMESTIC	97																																	
	EXPORTS	98																																	
	IMPORTS	99																																	
	COMPOSITE	100		171		374		6414		855		172		587		5057		731		2403		10015		962		55329		10617		5748		2771		52	
INDIRECT TAXES		101		-5402						-11706				-5268		-119		-119		-20166		-12254		-1179		-3280		-17285		-2807					
FACTORS OF PRODUCTION	LABOR	102	3568		2705		20027		7294		747		2246		19573		2049		24029		33305		3205		382445		3961		90541		17894		334		36058
	CAPITAL	103	178		3088		77875		4369		447		1946		11723		1227		19877		15749		1512		11398		10528		276981		34727		1705		132797
OTHER ACCOUNTS CONSOLIDATED		104																																	
REST OF THE WORLD		105																																	
TOTAL		106	3746	2469	5793	10015	97902	175150	11663	39538	194	4027	5942	12114	31296	105550	3276	11047	43906	50388	49134	71499	4717	6864	393833	489314	14489	13521	367522	503069	53651	84023	2037	28301	169645	53

31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	7
																						2404	65																				
																										7793	2222																
																														134853	40297										
																																		34411	4925						
																																						2446	1581			
																																									1000
																						1777	48			59	17			111	33			3347	479			536	347			110
																								678				131				343				435				56		
																																		9727								
																						489889	13180																				
																										65378	18645																
	2037																																								
																														2423	407										
			169645																																						
																																		513490	18023						
					58174																																				
																																						120417	7284			
							83225																																		
																																									18280
									188956																																
											349506																														
													285946																												
															218551																										
																						20990	565			697	199			1309	388			43693	1491			10015	414			154
																	20982																								
																								2777				537				1402				1782				227		
																			751932																						
																					826450																				
																						98867	10120			2747	783			13651	4045			152221	17529			9075	6772			572
																									626595																
																									50757																
			245853		13662		1907				28916								1262																								
																													80688													
																													9850													
																																	191257								
																																	26433								
	587		2026		243		27788		1516		6127		9196		19675		1889		2472		2347																				
																																					771353				
																																					35675				
	1		81312		90		7031		5		24701								2630																						
																																								146913	
																																								4683	
	1		4161		24838		786		904		36213		978		215		21		1753		2419																				
	35		4415		21310		37732		5984		47803		9201		297		28		17234		4873																				
	48		5356		1272		3322		188574		30789		147328		19972		1917		19390		9712																				
	14		7563		2482		13255		18456		149865		100617		11614		1115		26332		33285																				
	42		3040		1502		5312		6782		13814		2686		890		85		5768		10127																				
	52		7997		4123		4401		18004		36642		33014		21498		2064		98212		117743																				
																						12668	1787	673		4014		151		38910	136308	1130		14464		3544		4424		563		9
334		36858		19572		28372		73988		123347		185108		57812		5550		131971		199497																					
1703		132787		38602		54853		114968		226159		100838		160739		15432		619961		626953																					
																								46629				9031				23558				29914				3837		
2037	2830	169645	531513	58174	127701	83225	188007	188956	454898	349506	739734	285946	607069	218551	292714	20982	28102	751932	927248	826450	1006956	626595	25765	50757	677352	80688	21866	9850	90538	191257	181478	26433	217690	771353	42447	35675	807028	146913	16398	4683	151596	276

Row	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106
1																																									3746
2																																									2469
3																																									3793
4																																									10015
5																																									97902
6																																									175150
7																																									11663
8	4925																																								39336
9																																									1194
10				2446	1581																																				4027
11																																									3592
12								10009	2105																																12114
13																																									31296
14												103929	1621																												105550
15																																									3276
16																9094	1953																								11047
17																																									43906
18																								56344	2044																58388
19																																									49134
20	479			536	947			1109	233			3697	58			4143	890											22788				31827									71499
21																																									4717
22		435				56				564				3663				994																							6864
23																																									393833
24																																489314									489314
25																																									14489
26																3794																									17521
27																																									367522
28																																									503069
29																																									52651
30																																									84023
31																																									2037
32																																									2830
33	8023																																								169645
34																																									531513
35																																									58174
36				120417	7284																																				127701
37																																									83225
38								182808	5199																																188007
39																																									188956
40												435390	19508																												454898
41																																									349506
42																715785	23949																								739734
43																																									285946
44																				607069																					607069
45																																									218551
46	1491			10015	414			15450	394			42606	1756			58117	1335											84028	9267												292714
47																																									30982
48		1782				227				2310				14998				4069																							28102
49																																									751932
50																																892117	35131								927248
51																																									826450
52	7529			9075	6772			57273	5580			271512	16132			320866	19783																								1006956
53																																									626595
54																																								25765	25765
55																																									50757
56																																							303737		677352
57																																									80688
58																																								21866	21866
59																																									9850
60																																							-5919		90538
61																																									191257
62																																								181478	181478
63																																									26433
64																																							39679		217690
65			771353																																						771353
66																																								42447	42447
67			35675																																						35675
68																																							646074		807028
69							146913																																		146913
70																																								16398	16398
71							4683																																		4683
72																																							72484		151596
73											276456																														276456
74																																								13511	13511
75											45184																														45184
76																																							128164		321640
77															882325																										882325
78																																								39075	39075
79															292710																										292710
80																																							654277		1175035
81																			1180865																						1180865
82																																								47910	47910
83																			85682																						85682
84																																							853697		1266547
85																							608287																		608287
86																																								0	0
87																							0																		0
88																																							608287		608287
89																											76879														76879
90																																								2044	2044
91																											249														249
92																																							5692		77128
93																															115478										115478
94																																								9267	9267
95																															29200										29200
96																																							144678		144678
97																																			1444152						1444152
98																																								35131	35131
99																																			26909						26909
100																																							1025109		1471061
101		3544		4424		563		9807		3566		25191		22305		69066		12369		1218				20535		0		8662		0		30894		0							342668
102																																									1476078
103																																									2564040
104																																				342668	1476078	2564040		93173	4475959
105		29914				3837				38744				251744				68250								249				29200				26909							528065
106	47	35675	807028	146913	16398	4683	151596	276456	13511	45184	321640	882325	39075	292710	1175035	1180865	47910	85682	1266547	608287	0	0	608287	76879	2044	249	77128	115478	9267	29200	144678	1444152	35131	26909	1471061	342668	1476078	2564040	4475959	528065	34372138

66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	
																																								3746	1
																																								2469	2
																																								3795	3
																																								10015	4
																																								97902	5
																																								175150	6
																																								11663	7
4925																																								39336	8
																																								1194	9
			2446	1581																																				4027	10
																																								3592	11
							10009	2105																																12114	12
																																								31296	13
											103929	1621																												105550	14
																																								3276	15
															9094	1953																								11047	16
																																								43906	17
																							56344	2044																58388	18
																																								49134	19
479			536	347			1109	233			3697	58			4143	890											22788				31827									71499	20
																																								4717	21
	435				56				564				3663				994																							6864	22
																																								393833	23
																															489314									489314	24
																																								14489	25
															3794																									13521	26
																																								367522	27
																																								503069	28
																																								52651	29
																																								84023	30
																																								2037	31
																																								2830	32
																																								169645	33
18023																																								331513	34
																																								58174	35
			120417	7284																																				127701	36
																																								83225	37
							182808	5199																																188007	38
																																								188956	39
											435390	19508																												454898	40
																																								349506	41
															715785	23949																								739734	42
																																								285946	43
																			607069																					607069	44
																																								218551	45
1491			10015	414			15450	394			42606	1756			58117	1335											84028	9267												292714	46
																																								30982	47
	1782				227				2310				14998				4069																							28102	48
																																								751932	49
																															892117	35131								927248	50
																																								826450	51
7529			9075	6772			57273	5580			271512	16132			320866	19783																								1006956	52
																																								626595	53
																																							25765	25765	54
																																								50757	55
																																						303737		677352	56
																																								80608	57
																																							21866	21866	58
																																								9850	59
																																						-5919		90538	60
																																								191257	61
																																							181478	181478	62
																																								26433	63
																																						39679		217690	64
		771353																																						771353	65
																																							42447	42447	66
		35675																																						35675	67
																																						646074		807028	68
						146913																																		146913	69
																																							16398	16398	70
						4683																																		4683	71
																																						72484		151596	72
										276456																														276456	73
																																							13511	13511	74
										45184																														45184	75
																																						128164		321640	76
														882325																										882325	77
																																							39075	39075	78
														292710																										292710	79
																																						654277		1175035	80
																		1180865																						1180865	81
																																							47910	47910	82
																		85682																						85682	83
																																						853697		1266547	84
																						608287																		608287	85
																																							0	0	86
																						0																		0	87
																																						608287		608287	88
																										76879														76879	89
																																							2044	2044	90
																										249														249	91
																																						5692		77128	92
																														115478										115478	93
																																							9267	9267	94
																														29200										29200	95
																																						144678		144678	96
																																		1444152						1444152	97
																																							35131	35131	98
																																		26909						26909	99
																																						1025109		1471061	100
	3544		4424		563		9807		3566		25191		22305		69066		12369		1218				20535		0		8662		0		30894		0							342668	101
																																								1476078	102
																																								2564040	103
																																			342668	1476078	2564040		93173	4475959	104
	29914				3837				38744				251744				68250								249				29200				26909							328065	105
447	35675	807028	146913	16398	4683	151596	276456	13511	45184	321640	882325	39075	292710	1175035	1180865	47910	85682	1266547	608287	0	0	608287	76879	2044	249	77128	115478	9267	29200	144678	1444152	35131	26909	1471061	342668	1476078	2564040	4475959	328065	34372138	106

The second component of the cost structure of activities is of interest because it shows how subsidies to the public sector are distributed (row 37, columns 1 to 24). The distribution of subsidies reveals, to some extent, the traditional policy of the Mexican government of subsidising economic activity by keeping the prices of several of its products down. It can be seen that the main receivers of subsidies are: electricity, trade (in the commercialisation of staple products), transport and communications, food processing, agriculture and chemicals (fertilisers). The private sector, on the other hand, receives subsidies only in the activity agriculture.

It should be said that the fact that the public sector is the main receiver of subsidies is explained because in the Mexican national accounts the only subsidies that are recorded as such are direct transfers, basically directed to public enterprises. Indeed there are other mechanisms of implicit subsidies, such as cheap credit, that are directed to the private sector. However, they do not appear explicitly in our accounting framework.

The last component in the cost of activities is given by the payments to factors of production or value added (rows 39 and 40). Perhaps the most striking point when looking at these figures, is the great difference in the ratio of operating surplus/wages between public and private sectors. Table 4.4 summarises this point.

Table 4.4*
Value Added. Ratio operating surplus/wages

Activity	Public	Private	Total
Agriculture	0.04	3.06	2.94
Mining	1.14	1.94	1.83
Petroleum & ptrochem.	3.88	5.10	3.90
Food processing	0.60	3.60	3.10
Textiles	0.60	1.97	1.92
Chemicals	0.60	1.93	1.83
Capital goods	0.60	1.55	1.35
Other manufc.	0.60	1.83	1.81
Electricity	0.82	-	0.82
Construction	-	0.54	0.54
Transp. & communic.	0.47	2.78	1.93
Other services	0.03	4.70	1.22
Trade	2.65	3.14	3.13

* (Source: Table 4.3)

It can be appreciated that, with the exception of mining, petroleum and petrochemicals, and trade, the public sector ratios are lower than unity, whereas in all cases, except construction, the private sector has high values, all of them above unity.

4.4.2 The Supply of Commodities

The supply of commodities from production activities is described in the make matrix in rows 1 to 24 and columns 25 to 36, in Table 4.3. The first twelve rows describe the supply of commodities produced by activities in the public sector whereas rows 13 to 24 record supply of commodities produced by the private sector. Again, these figures are recorded at producer prices and the output of trade and transport has been distributed along columns to the different commodities. We will come back to the question of margins in this section. Meanwhile it is interesting to note the structure of production of both public and private activities.

This is shown in Table 4.5, which shows the supply structure at producer prices, as revealed by our make matrix. It can be seen that with exception of petroleum & petrochemicals and capital goods, the public sector concentrates on the production of non traded commodities -other

services, electricity and transport. Private production, on the other hand, is more diversified, specially in the manufacturing industry, whose production is essentially made up of traded goods.

Table 4.5*
Supply at Producer Prices

Commodities	Public	%	Private	%
Agriculture	2469	0.24	503069	9.16
Mining	10015	1.00	84023	1.53
Petrol. & petroch.	175150	17.52	2830	0.05
Food process.	39336	3.94	531513	9.67
Textiles	4027	0.41	127701	2.32
Chemicals	12114	1.22	188007	3.42
Capital goods	105550	10.57	454898	8.29
Other manufc	11047	1.10	739734	13.46
Construction			607069	11.05
Electricity	58388	5.84		
Trade & transp.	60057	6.01	1327772	24.17
Other services	521141	52.15	927248	16.88
TOTAL	999294	100.00	5493864	100.00

* (Source Table 4.3)

An important point to note regarding the make matrix in Table 4.3 is in relation to the treatment given to trade and transport margins. As before, they have been distributed along the commodity columns and, as we did previously with the remaining activities, margins (trade and transport) have also been split into public and private. The criteria for distributing margins for public and private sectors were the same as the criteria used with total margins, with the exception of public trade which was allocated to only two commodities, food processing and other manufactures. The reason for that is that the intervention of the public sector in the commercialisation process is concentrated in staple products[10] and some other commodities of basic use, all belonging to our category of food processing or other manufactures. The precise proportion in which public trade was allocated to these two commodities was taken from a published document on the role of the public sector in the Mexican economy by the Ministry of Planning (see Secretaria de Programacion y Presupuesto [1980], El Papel del Sector Publico en la Economia Mexicana, p.

[10] Through a big public enterprise called CONASUPO.

40).

Finally, adding downwards, in columns 25 to 36, domestic taxes, import duties and imports, we arrive at the total supply of commodities at market prices.

4.4.3 The Demand For Commodities

The demand side in Table 4.3 is not very different from the demand side in Table 4.2, except for the fact that intermediate purchases are now split into public and private. Domestic final demand and exports are not disaggregated at this stage, although it appears clearly that the main export is by and large made up of the commodity petroleum and petrochemicals. In the next section, we will look at the performance of both public and private activities in more detail.

4.5 The Framework for Modelling

4.5.1 A Further Expansion

In this section we expand further our accounting framework. The purpose is to obtain a consolidated SAM with enough information to model accurately the effects on the price system of different public pricing policies. It should be said, however, that in this section we will limit our exposition to the consolidated SAM as a data framework while the theoretical issues related to the modelling of the price system will be dealt with in the next chapter. The final accounting framework, which will serve as a basis for modelling purposes, is presented in Table 4.6. The general structure of Table 4.6 is the same as Table 4.3. Nevertheless, for constructing Table 4.6 more information relative to Table 4.3 was needed. In particular, two major changes have been made in Table 4.6 in relation to Table 4.3.

On the activity side, the sector transport was split in two in order to capture transport used in domestically-produced commodities, on the one hand, and transport used in moving imports

from the border to the place of consumption, on the other hand.[11] The purpose of allocating transport to domestic production and imports separately is to arrive at market prices of both, and then in modelling the price system, to allow for substitution between imports and domestic production, both at market prices. Therefore, two new activities appear in Table 4.6, public and private transport in imports. In order to split transport in this way we used the proportions between value of imports and value of domestic production for each commodity.

We must note that trade margins on imports are not specified. The assumption here is that they do not exist. In other words, it is assumed that no intermediary process between the border and the place of consumption exists. Moreover, since a high proportion of imports are used by activities in the form of raw materials,[12] we assumed that imports are directly ordered by domestic producers, without going through the hands of intermediaries, other than transporters. It is very likely, however, that, in reality, a large number of small firms have to pay commerce cost. Our assumption, therefore, is imposed by the lack of statistical information.

The second major change was made in the details of commodities. As can be appreciated in Table 4.6, for each one of the original commodities in Table 4.3 we are now distinguishing between domestic, exports, imports, and an additional account, composite, made of domestic and imported commodities. An important consequence of this four account classification for each commodity, in terms of margins, is that we now also have to separate margins, depending on whether the commodity goes to domestic markets, exported or imported. Margins on exports, however, do no need to be distinguished as an activity. It is only necessary to estimate a fraction of total margins once margins on imports have been previously deducted. That is, from total margins in domestic production we estimated a fraction of transport margins and allocated them to the column of export for each commodity. Such fractions were estimated according to the proportion actually exported. We must mention that we are also assuming that there are no trade margins on exports. That is, it was assumed that exporters sell commodities direct to the rest of the

[11] Recall that imports are valued at *cif* prices.

[12] Of total imports 53.63 percent is made by production activities.

world so that they pay only for transportation costs, not commerce costs.

Perhaps the best way to explain how Table 4.6 is to be interpreted is to choose one activity-commodity and, by example, explain the mechanism. Take the commodity petroleum and petrochemicals. The cost structure of public and private activities petroleum and petrochemicals are shown in columns 6 and 32. They are exactly the same as in Table 4.3. The supply at producer prices of domestic origin is shown in columns 61 and 62. We recall from Table 4.3 that of total supply of petroleum and petrochemicals 175,150 is supplied by the public sector while the private sector supplies only 2,830. The same remains true in Table 4.6 although now it shows how much of the gross output goes abroad in the form of exports: 40,297 as exports of petroleum and petrochemicals from the public sector and 407 exported by the private activity (column 62).

Thus column 61 describes the supply devoted to domestic markets whereas column 62 denotes exports. Reading downwards in column 61 if we add margins and commodity taxes, we arrive at the supply from domestic origin to the domestic market at market prices. As we mentioned, public and private exports of petroleum and petrochemicals at producer prices are 40,704, as recorded in column 62 and made up of 40,297 of exports of the public sector plus 407 coming from private producers. They are not yet, however, ready to be exported because it is still necessary to add transport margins and taxes on exports in order to arrive at the figure at market prices. This figure is 181,478, which is the total in column 62 and recorded in row 62 intersecting with column (105) (rest of the world), as exports at market prices ready to be exported.

Imports of petroleum and petrochemicals are recorded in the intersection of column 63 with row 105, amounting to 23,558 at *cif* values. In order to get market prices of imports we should add transport margins which in our example are 1,745 (343 of public transport and 1,402 of private transport) so that imports at market prices are 26,433 as total of column 63, which is also recorded in the intersection with column 64 and row 63. Thus, we have in column 64 domestic supply and imports, both at market prices, recorded as total supply (217,690). It is important to note that it was also necessary to separate taxes on production to the domestic markets from

export taxes, for each commodity in which export taxes existed.

As can be seen, in expanding our accounting framework additional information was needed. First, it was necessary to determine, for each commodity, the proportions of public and private exports. Such proportions were obtained from a publication of the Foreign Trade Bank (see Instituto Mexicano de Comercio Exterior [1982]), which shows in great detail the relative proportions of exports by public and private sectors at *fob* prices. We applied these proportions to our data at producer prices. Table 4.7 shows exports of both public and private sectors as contained in our make matrix.

Table 4.7*
Exports at Producer Prices

Commodity	Public	%	Private	%	Total
Agriculture	65	0.50	13180	99.50	13245
Mining	2222	10.65	18645	89.35	20867
Petrol. & petroch.	40297	99.00	407	1.00	40704
Food process.	4925	21.47	18023	78.53	22948
Textiles	1581	17.84	7284	82.16	8865
Chemicals	2105	28.82	5199	71.18	7304
Capital goods	1621	7.68	19508	92.32	21129
Other manufc.	1953	7.54	23949	92.46	25902
Construction	-	-	-	-	-
Electricity	2044	100.00	-	-	2044
Trade & transp.	-	-	9267	100.00	9267
Other services	-	-	35131	100.00	35131
TOTAL	56813	-	150593	-	207406

* (Source: Table 4.6)

It is clear that the main exports of the public sector are petroleum and petrochemicals, which account for 70.9 percent of total exports from public activities. Taxes are not added in Table 4.7 and that is why exports of petroleum appear to be relatively low, but if we add taxes we can see that petroleum and petrochemicals are the main export of the economy as a whole. It also ought to be noticed that the public sector devotes its production mainly to the domestic markets. Indeed, if we ignore petroleum it turns out that the public sector exports only 9 percent of its production. It should then be clear that the private sector is the main exporter of the economy, con-

centrating in manufactures.

Finally, the second type of information needed was related to taxes, in order to fit our four type disaggregation for commodities as between domestic, exports, imports and composite. In particular, it was necessary to distinguish between export taxes and taxes on output going to the domestic market. The figures for export taxes were obtained from a publication of the Ministry of Finance (see Secretaria de Hacienda y Credito Publico [1986], Estadisticas Hacendarias del Sector Publico, 1965-1982), and allocated to the commodities agriculture and petroleum and petrochemicals.

4.6 Summary and Conclusions

The SAM set out in the previous sections of this chapter puts together very important aspects of the Mexican economy; the interindustry relations and the public/private dichotomy. In the first instance, it enables us to obtain a general view of the structure of the production side of the Mexican economy. While we emphasised the methodology for putting the data together there still remains much descriptive analysis to be done, and further extensions can easily be made in order to get a higher level of disaggregation. However, our concern in this study is to go beyond the descriptive analysis and to trace the potential impact on the price system arising from policy changes, notably pricing policies and economic performance of PEs, but also commercial policy. It is in this dimension where the advantages of our accounting framework acquire full meaning, particularly when compared with I-O tables. Several aspects ought to be noted.

First, we incorporate into the analysis the public/private dichotomy of the economy thus introducing one of the multiple forms of dualism that characterise many developing countries. In particular, for modelling the price system, this characteristic becomes relevant when the public sector pricing policy is substantially different from the private sector.

Second, in constructing our SAM we recognise that distribution plays an important role in

determining the prices that consumers pay for goods. Such recognition encouraged us to value commodity balances at market prices which, as we have seen, are the relevant prices for modelling the behaviour of economic agents. Most studies based on traditional I-O models simply do not deal with this problem. And third, our data framework, because of its SAM approach, contains most of the relevant information that can influence the price formation process. From this perspective, when it comes to modelling, the analysis is enhanced since several elements can be brought into the picture at the same time.

There are less obvious advantages of our accounting framework which will become evident once we discuss the modelling of the price system. We shall defer the discussion of these characteristics to the next chapter. Meanwhile, to conclude this chapter it will be convenient to underline the novelty of our SAM when compared to previous data bases used for the analysis of the price system in the Mexican economy.

First, even though our base year is 1980, it is nevertheless the only SAM built with information of this year, since the latest I-O table published is precisely 1980. Indeed, even though Seade [1986], for instance, makes his analysis for 1983, he actually uses an updated version of the published I-O table for 1975. Second, no SAM constructed for Mexico has so far dealt fully, as we do, with the treatment of trade and transport margins. And, thirdly, with the exception of the SAM constructed by Pleskovic and Trevino [1985] no SAM constructed for Mexico has properly dealt with the public/private dichotomy, which indeed has a great relevance in view of the significant intervention of the public sector in the Mexican economy.

Perhaps our great limitation is that we do not address the institutional dimension of the economy. This has more to do with our purpose of modelling the price system. Nonetheless, extensions are both possible and desirable. Indeed, having our accounting framework as a basis one can, relatively easily, disaggregate the institutional side of the economy and address many different issues among which, perhaps the most relevant, would be the evaluation of the macroeconomic effects that the overall economic performance of the public sector can have (see Pyatt [1987]).

Appendix A

Mapping of the 72 sectors of the I-O table to our level of disaggregation.

AGRICULTURE

Agriculture
Livestock
Forestry
Hunting & fishing

MINING

Coal mining
Iron ore
Non-ferrous minerals
Quarrying
Other non-metallic minerals

PETROLEUM AND PETROCHEMICALS

Petroleum extraction
Oil refining and products
Basic petrochemical

FOOD PROCESSING

Milk products and meats
Canned fruits and vegetables
Wheat milling
Maize milling
Coffee
Sugar
Edible oils and fats
Animal food
Miscellaneous food products

TEXTILES

Soft textiles
Hard textiles
Other textiles

CHEMICALS

Basic chemicals
Fertilisers
Synthetic rubber & fib
Pharmaceutical products
Soaps, cosmetics & sim
Other chemical products

CAPITAL GOODS

Iron & steel
Non-ferrous metals
Metal furniture
Structural metal products
Other metal products
Non-electric machinery & equipment
Electric machinery & equipment
Batteries, elect. cab.
Motor vehicles
Motor vehic. eng. & parts
Transport material and equip.

OTHER MANUFACTURES

Alcoholic beverages
Beer
Soft beverages
Tobacco
Clothing
Leather & products
Sawmilling
Other wood prods. & cork
Paper and products
Printing & publishing
Rubber products
Plastics
Glass products
Cement
Non-metallic mineral prods.
Electric household goods
Electronic equipment
Miscellaneous manufc. ind.

CONSTRUCTION

Construction

ELECTRICITY

Electricity

TRANSPORT AND COMMUNICATIONS

Transport
Communications

OTHER SERVICES

Restaurants and hotels
Financial services
Real-estate renting
Professional services
Education
Medical health
Entertainment services
Other services

TRADE

Trade

REFERENCES

Chander, R., Gnasegarah, S., Pyatt, G. and Round, J. (1980). "Social Accounts and the Distribution of Income: The Malaysian Economy in 1970." Review of Income and Wealth. Series 26, No. 1, pp. 67-85.

Delgado, O., Machado, J. and Pérez, W. (1986). "La Estructura de la Industria Estatal 1970-1985." Economía Mexicana. Análisis y Perspectivas. CIDE, No. 7, México, pp. 123-135.

Floyd, R. (1984). "Some Topical Issues Concerning Public Enterprises." in Floyd, R., Gray, C. and Short, R. (eds.). Public Enterprise in Mixed Economies. Some Macroeconomic Aspects. IMF, Washington, D.C.

Greenfield, C. and Fell, H. (1979). "The Estimation of Price Effects in a Social Accounting Matrix. "Review of Income and Wealth. Series 25, No. 1, pp. 65-84

Instituto Mexicano de Comercio Exterior (1982). Boletín Mensual. Indicadores de Comercio Exterior. México.

Mateo de, F. (1984). "La Protección Efectiva en México en 1983." IMCE, México.

Pleskovic, B. and Treviño, G. (1985) "The Use of a Social Accounting Matrix Framework for Public Sector Analysis: The Case Study of Mexico. International Center for Public Enterprises in Developing Countries. Monograph Series, No. 17, Ljubljana.

Pyatt, G. (1987). "Public Enterprises: A SAM Perspective". mimeo.

_____ (1985). "Commodity Balances and National Accounts: A SAM Perspective". Review of income and Wealth. Series 31, No. 1, pp. 155-169.

Pyatt, G. and Round, J. (ed) (1985). Social Accounting Matrices. A Basis for Planning. The World Bank, Washington, D.C.

Seade, J. (1986). "An Analysis of Price Distortions from Commodity Taxation, Pricing Policy and Commercial Policy in Mexico." mimeo.

Secretaría de Hacienda y Crédito Público (1986). Estadísticas Hacendarias del Sector Público. 1956-1982. México

Secretaría de Programación y Presupuesto (1986). Matriz de Insumo-Producto. Año. 1980. Instituto Nacional de Estadística, Geografía e Informática. México.

_____ (1985a) Sistema de Cuentas Nacionales de México. Cuentas de Producción del Sector Público 1975-1985. Instituto Nacional de Estadística, Geografía e Informática. México.

_____ (1985b). Sistema de Cuentas Nacionales de México. Estructura Económica Regional. México

_____ (1983) Sistema de Cuentas Nacionales. Tomo I, Instituto Nacional de Estadística Geografía e Informática. México

_____ (1980a) VII Censo Comercial. 1976. Instituto Nacional de Estadística Geografía e Informática. México.

_____ (1980b) El Papel del Sector Público en la Economía Mexicana. Secretaría de Programación y Presupuesto y Centro Internacional para las Empresas Públicas de los Países en Desarrollo. México

United Nations Statistical Office (1968) A System of National Accounts. Studies in Methods, Series F, No. 2, Rev. 3, New York.

SERIE DOCUMENTOS DE TRABAJO

Los siguientes documentos de trabajo de publicación reciente pueden ser solicitados a:

Rocío Contreras,
Centro de Documentación, Centro de Estudios Económicos, El Colegio de México A.C., Camino al Ajusco # 20 C.P. 01000 México, D.F.

85/I	Bhaduri, Amit. "The race in arms: its mathematical commonsense".
85/II	Garber, Peter M. and Vittorio U. Grilli. "The belmont Morgan syndicate as an optimal investment banking contract".
85/III	Ros, Jaime. "Trade, growth and the pattern of specialization".
85/IV	Nadal, Alejandro. "El sistema de precios de producción y la teoría clásica del mercado".
85/V	Alberro, José Luis. "Values and prices in joint production: discovering inner-productivities".
85/VI	Urquijo Hernández, Luis Alfredo de. "Las plácticas de ajuste en el sector externo: análisis de un modelo computable de equilibrio general para la economía mexicana".
85/VII	Castañeda Sabido, Alejandro I. "La proposición de inefectividad de la nueva macroeconomía clásica un estudio crítico".
85/VIII	Alba, Enrique de y Ricardo Samaniego, "Estimación de la demanda de gasolinas y diesel y el impacto de sus precios sobre los ingresos del sector público".
85/IX	Alba, Enrique de y Yolanda Mendoza"Disaggregation and forecasting: A bayesian analysis"

86/I Blanco, Herminio. "The term structure of the futures exchange rates for a fixed exchange rate system: the mexican case".

86/II Ize, Alain and G. Ortíz."Fiscal rigidities, public debt and capital flight".

86/III Alberro, José. "La dinámica de los precios relativos en un ambiente inflacionario".

86/IV Bucay, Nisso ."Wage rigidity and the firm alternative approaches".

86/V Alberro, José y Jorge Cambiaso."Características del ajuste de la economía mexicana.

87/I Alberro, José, José Córdoba and Eytan Sheshinsky "On measures of dispersion of relative prices under inflation".

87/II Alberro, José, Herminio Blanco and Peter Garber "The effects of terminating the mexican two-tiered exchange rate system".

87/III Fernández, Oscar y Nora Lustig. "Estrategias de crecimiento, sustitución de importaciones y balanza de pagos en un modelo de crecimiento multisectorial".

87/IV Tornell, Aaron. "Insulating properties of dual exchange rates: a new-classical model".

87/V Villarreal, Roberto."El manejo de la deuda externa de México en la década 1978-1987"

87/VI Mercado, Alfonso. "Automatización asistida por computadora y desarrollo industrial en México. El uso de las máquinas-herramienta de control numérico computarizado".

87/VII García Alba, Pascual. "Un enfoque para medir la concentración industrial y su aplicación al caso de México".

87/VIII Villarreal, Robert I. "Investment and financing interactions at the firm's level: an econometric simultaneous equation approach".

87/IX Lustig, Nora. "México: size and impact of non transfer expenditures: 1920-1985".

87/X Lustig, Nora. "Del estructuralismo al neoestructuralismo: la búsqueda de un paradigma heterodoxo"

88/I Guerrero, Víctor M. "Obtención de pronósticos óptimos, sujetos a restricciones, con modelos arima".

88/II Lustig, Nora. "Stabilization and adjustment in post 1982,Mexico:are there signs of export-led growth?

88/III Yúnez, Antonio. "Theories of the exploited peasantry; a critical review".

88/IV Unger, Kurt y Luz C. Saldña, "Las economías de escala y de alcance en las exportaciones mexicanas más dinámicas".

88/V García Rocha, Adalberto, Aurora Gómez y Miguel Szequely. "Estrutura de la desigualdad en México".

88/VI Hart, Michael. "Dispute settlement and the Canada- United States free trade agreement".

88/VII Pérez Motta, Eduardo, Evelyn Greenwell y Gabriela Quezada. "Participación de la mujer casada en el mercado laboral del área urbana en México: un análisis económico de su relación con la división sexual del trabajo dentro de la estructura familiar".

88/VIII Baillet, Alvaro. "An analysis of direct taxation on mexican taxpayers: a microsimulations approach"

88/IX Baillet, Alvaro y Arlette Cisneros. "La inversión extranjera directa en el sector de servicios en México".

88/X Baillet, Alvaro. "La evolución de los ingresos del sector público".

88/XI Kehoe, Timothy. "A general equilibrium analysis of the indirect tax reform in Spain".

88/XII Férnadez, Oscar and Nora Lustig. "Optimal allocation of investment and the role of import substitution".

88/XIII Fernández, Oscar. "Valores y precios en producción análisis de comportamientos destructivos ocultos".

89/I Unger, Kurt and Luz Saldaña. "MNC, global strategies and technical change: implications for industrializing countries"

89/II Cuddington, John and Carlos Urzúa. "Primary commodity prices: a time-series analysis of trends and cycles".

89/III Urzúa, Carlos M. "Tests for multivariate normality of observations and residuals".

89/IV Crane, Randall. "Tax-price specification and the demand for local public goods".

89/V Crane, Randall. "A note on hedonic prices in cost/ benefit analysis".

90/I Ize, Alain. "Trade liberalization, stabilization, and growth: some notes on the mexican experience".

90/II Sandoval Musi, Alfredo "Construction of new monetary aggregates: the case of Mexico".

90/III Fernández, Oscar. " Algunas notas sobre los modelos de Kalecki del ciclo económico".

90/IV Sobarzo, Horacio E. "A consolidated social accounting matrix for input-output analysis".