

4. The Accounting Framework: A 2003 Social Accounting Matrix

At this stage, we want to explore the Mozambican economy in order to capture its essential elements for utilisation in building CGE models. Then, we want to exploit the comprehensive framework of a SAM to address our empirical issue. In this way, we will easily be able to sum up the basic features of the economy and the relationships among different economic agents. In a SAM framework, we may study the liberalization process by locating its effects on income distribution and production pattern changes. As Round (2003a) states: “[a SAM] *connects the following aspects: the levels and distributions of incomes available to institutions (in particular households); the private and public spending of these incomes on goods and services (which are part of the determination of individual’s living standards); transfer payments and savings by institutions; the production of goods and services, and the generation of factor incomes*”.

First, a macro SAM is built to generally quantify the size of the economy and the overall changes after the policy. Then, we profoundly study the economy and highlight its structural features. To briefly sum up the fundamental nature of this, we quote Tarp et al. (2002): “*this SAM confirms the critical importance of high marketing costs, the sizeable share of agricultural production consumed on-farm, and the severe capital constraint, which inhibits marketed agricultural production particularly*”. The disaggregated, or micro, SAM exploits information from the National Household Survey (2002/ 03 IAF), and permits us to divide the household account into two categories according to location (i.e. rural or urban). Furthermore, both from the IAF 2002/ 03 and from Labour Force statistics (2004/ 05 IFTRAB), we divide labour into three categories according to workers’ skills. Naturally, skilled, unskilled, or semiskilled workers should earn different wages and should be employed in different proportions in the activity sectors. For instance in the agricultural sector there should be more unskilled labour than in the service sector.

II. The Mozambican economic performance in 2003

Since the 1980s, the Mozambican government has withdrawn its direct participation in production, processing, and marketing activities in the agricultural sector. As a consequence, it has liberalized input prices, removed subsidies and the monopolistic positions of cooperatives. and suppressed marketing boards.

The primary sector is one of the leading forces in the development of the country. Although it counts only for 16 percent of the total GDP, it employs more than 80 percent of the total workforce. Its results, however, are affected by the country's proneness to natural disasters, such as droughts and floods¹, and the remnants of the Civil War which left a trail of land mines in a large part of rural areas. The main sectors are food grains, sugar production, tobacco/ tea production, and cashew/ cotton production. Among these sectors only the one of cashews is stagnant even though it was recovered after the war's end. Cashew nuts production is one of low quality and the exported crops do not result in high prices. An important consequence is poverty in rural areas. Rural farmers consider cashew nuts to be the most profitable crop. Generally, this is largely due to the small-scale farmers' concerns about food self-sustainability for the coming year. Food grain cultivation has been expanded in terms of land cultivation because of an increasing cross-border trade of maize with Malawi. The tobacco and tea production has attracted Zimbabwean companies' and farmers' investments. The tea sector was seriously damaged by the Civil War which destroyed the highest producing region, Zambesia province. However, since the privatization of the tea growing and processing units, the sector has started growing again. Nevertheless, sugar production leads development since it is attractive for foreign investors. These investments are mainly due to the special protection policy they are subject to: this sector benefits from an exemption from sales taxes and a surcharge on sugar imports that reached 90 percent in 2003. Moreover, preferential quotas are offered in the U.S. market.

This sector features two main innovations: the former is the market integration inside the Country while the latter is the technological progress. The market integration involves the Northern, Central and Southern regions that until now have been self- sufficient due to high transportation costs² and poor communication.

As a result, prices in agricultural products converge across sub-regions and the percentage of smallholders selling food crops (maize and cassava) increases, especially in the maize segment. The final results of the *2002/03 IAF* show that 66 percent of the agricultural products are self- consumed at the national level, although it reaches 69 percent in rural areas and only 52 percent in urban zones.

The technological progress is not clear. Calculated in terms of employed fertilizers and chemical products, this progress has not given a unique result. The paradox has been

¹ For these reasons, the production changes. There is the prioritisation of short cycles especially in the Gaza province in order to maximize production in a situation of rainfall uncertainty.

² However, in 2003 the circulation of agricultural products has worsened as a consequence of the deterioration of infrastructures and damages mainly caused by the lowering atmospheric pressure (*Delfina*) and the *Japhet* cyclone.

represented by the cash crop segment (beans and potatoes) that remains underdeveloped despite use of fertilizers'. Because of the suppression of subsidized fertilizers, their employment has decreased³.

In the same period the depreciation of the Metical in the international context has raised their costs. Therefore the Government encourages the domestic fertilizer production and seeks international investments in this area.

One of the most significant features of the agricultural sector is the coexistence of a family and a business sector. The *2002/03 IAF* demonstrates that nearly 87 percent of household are self-employed with only 16.4 percent working in the agricultural private sector. This affirmation restates what we have previously cited about own-consumption. For 95 percent of family workers there is no money remuneration but an in-kind transfer, mainly a part of their crop production.

The business sector contributes to the global sector's production around 90 percent and in the marketed production 75 percent. Moreover, this sector employs only 10 percent of total capital value added and, supposing the rate of return of capital is equal across the sub-sectors, this means that agriculture in Mozambique is relatively low capital intensive.

	Unit of measure	Quantity
Basic food crops		
Maize	Ton	1,178,792
Sorghum	Ton	190,820
Mafurra	Ton	21,609
Unshelled rice	Ton	117,483
Beans	Ton	112,578
Batata	Ton	877,165
Peanuts	Ton	87,463
Cassava	Ton	6,547,298
Cash crops		
Cotton	Ton	54,144
Raw cashew	Ton	63,818
Sugarcane	Ton	1,940,799
Leaf tea	Ton	12,690
Citrus fruits	Ton	30,000
Coconut husk	Ton	47,600
Tobacco	Ton	37,051
Sunflowers	Ton	6,400

Source: MADER Mozambique, 2003 TIA (INE website, 2009)

The mining sector has rapidly developed and is sustained by the increasing extraction of products such as limestone, sand for construction, clay, riolite, and tantalite, which are used

³ A simple way to demonstrate this proposition is an analysis of the IO table, where the intermediate consumption of each sector is shown. From these data we derive that pesticides and fertilizers are mainly used in the forestry sector (nearly 40 percent of the total used pesticides), while for crops production they are not employed for crops other than maize, and only a small fraction (0.1 and 0.6 percent, respectively) is dedicated to beans and other basic vegetables (namely fruit and vegetables, and bulbs and roots).

in the electronics and steel industry. At the same time, however, there has been a decrease in coal extraction and in raw bentonite because of old extraction equipment and the bad weather in the area of Cuamba, where the main mines are located. The projections for this sector demonstrate an increasing trend in production when the Pande- Temane Gas pipeline project starts operating. This will mean an increase in the production and a change in the internal composition since natural gas extraction will become a major division.

Nowadays, this sector employs less than one percentage point of the total national workforce and it is mainly composed of private companies (6 percent of them are involved in this activity). However Mozambique is rich in other mineral deposits: ilimenite, graphite, fluorine, gold, marble, granite, precious or semi- precious stones, asbestos, diamonds, apatilite, and beilite. Many of these have yet to be exploited.

	Unit of measure	Quantity
Coal	Ton	36,742
Bentonite	Ton	24,627
Sand for construction	Ton	1,372,032
Clay	Ton	100,176
Bauxite	Ton	10,250
Natural gas	Gj	2,522,897

Source: INE website, 2009

The overall impact of the manufacturing and industrial production is positive but this trend is mainly led by the aluminium production that significantly increased after the beginning of the MOZAL project (along the Maputo- Johannesburg corridor) and more considerably after MOZAL phase II. This does not mean solely an increase in this segment, but it has positive spill-over on the overall transformation industry. This has been especially true for the metallic product industry, machineries and equipment. In fact, without counting aluminium production, these activities would have had a very negative trend. An example is the indicator of base metallurgy, where aluminium counts for 99.89 percent of the total production.

Furthermore, the positive trend is sustained by the food, beverage and tobacco segments that represent a large share in the total industrial production (more than 47 percentage points) structure but that has also benefited from the encouraging performance in the agricultural sector.

Bad performances have been in the textile and paper activities. In the former, the problem is that half of the productive complex is not operative while the ones that are still operational are reducing their production levels. As in the mining sector, the manufacturing activities employ only one percent of the total active population. However, the employment levels differ across regions. In fact, industries are concentrated in the South of the Country where there is

half of the total sectoral employment and especially in Maputo city (3.9 percent of the sector employment).

The service sector has not had a unique trend. In fact, the overall sector presented a positive trend in 2003. However, when disaggregating data, we can note some opposing performances. First of all the transportation compartment has had a positive result. Led by the road construction⁴ that offsets the negative trend recorded in the railway and pipeline segments, they all are still affected by the Zimbabwean crisis. The notably good performance of the construction sector is not only a result of political commitment in building infrastructure but is led by private sector construction with a high level of urbanization in the country as well.

Then, led by the positive results of the agricultural, fishery, transformation, and the extractive industries, the commerce sector has grown since there has been an increase in marketable products. The communication sector growth should be more robust than constant with an increase of only 0.3 percent over the previous year, especially taking into account the full privatization of the sub- sector.

This sector employs 14 percent of the workforce, mainly in the commerce activity, which counts for 7 percent. In the primary sector, there are 1.3 female workers for each male, conversely the service sector is mainly dominated by male workers (28.3 percent against 9.9 for female workers). Moreover, particularly in the commerce segment there is a concentration of workers in Maputo province and City where nearly 40 percent of the total sector workforce is employed.

Public utilities, electricity, and water are quite a different matter. Potentially, Mozambique could be the main supplier to the region thanks to its hydroelectric prospects. Nonetheless, the activity has recorded a downfall, mainly caused by modernization works at the “Hydroelectric de Cahora Bassa”. This decrease affects the export performance more than the production for domestic demand⁵. Furthermore, this component has increased as a result of the economic growth and the rural electrification efforts. Despite the natural endowment of electricity, Mozambique imports part of its power need. This is caused by the localization of the Cahora Bassa plant that is too far from the Southern provinces and especially from Maputo City whose higher electric requirement is satisfied by South African imports. As previously cited,

⁴ Road construction and maintenance are two pillars of the Mozambican developmental strategy included in the PARPA.

⁵ Although in 2003 Mozambique started exporting to Zambia.

there is a huge amount of Mozambican electrical exports. Their destination is South Africa. For a long period this trade was unbalanced: Mozambique exported electricity and imported it at double the price.

After this brief introduction on the Mozambican economy, we must focus on two peculiarities that are fundamental for the SAM building: own consumption and marketing margins. These two phenomena are largely correlated and one explains the other. One of the startling features of the Mozambican economy is the presence of high marketing margins that change the farm gate price from the final purchaser's price⁶ sensibly.

This wedge changes across sectors and may reflect a wide variety of arguments: a certain degree of imperfect competition, poor infrastructure level and therefore difficulties in trading, or a high cost of capital⁷ (Arndt and Tarp, 2000). As Arndt *et al.* (1998) showed, these margins are connected both to domestic transactions and international exchanges. Domestic transaction, as previously mentioned, does not mean solely the whole output produced domestically but it takes into account another important feature of the economy: own consumption⁸.

This means producers consume part of their production, especially in the agriculture, livestock and fisheries sectors and in the food processing sector. The motives are to maintain food security. To strengthen this concept we may take into account the cassava productive sector. It is composed both of a formal sector and an informal one, both of which contribute to total production for less than 1 percent and 99 percent, respectively. Additionally, the total own consumption counts for 73 percent while the marketed production is only a quarter of the

⁶ This characteristic has an historic grounding. High marketing margins were introduced during the Portuguese colonialism when prices of a wide variety of commodities were set by Government according to commodity types, processing stages and final uses. After the independence this centralized price system was maintained with the establishment of a series of state- owned marketing boards, each one for a different kind of commodity, that acted as wholesalers. For instance, in the 1960s the Mozambican government funded a state marketing board for cereals. Although, the presence of marketing boards in Africa is quite common, the Mozambican ones were characterized by a price control not only on the exported goods, but also on domestic transactions.

⁷ Gohin A. (2000) highlighted "*four main types of marketing services*" that we may classify as: "*transport activities, storage activities, wholesale trade and retail trade*". Moreover in the last sector (i.e. retail trade), Betancourt et Gautschi (1992) said "*accessibility of location, assortment, assurance of production delivery in the desired form and at the desired time, information, and ambiance*" are collected.

⁸ As the *2002/03 IAF* (INE, 2003d) demonstrates, home consumption is mainly a widespread rural phenomenon.

total production. Only in this small fraction may marketing margins be applied since, by definition, own consumption avoids marketing margins. At this stage we may briefly describe the trade service sector, how it acts, and its weight in the economy. Trade services are produced by two different activities that reflect the various nature of the marketing margins. Together with a pure marketing margin that counts for the highest amount (nearly 97.40 percent), a part of these margins is caused by transportation costs⁹. This sector provides 12 percent of the total domestic production, nearly 20 percent of total capital value added and 11 percent of labour value added. This is a demonstration of Arndt and Tarp's (2000) affirmation "*the commerce activity, which provides marketing services, is capital intensive. [...] Due to the capital intensity of the commerce sector, returns to capital have a strong impact on marketing services prices*". From many sources, we derive that marketing margins are particularly high for the agricultural sector and for the food processing sector, while by definition, they are zero for services.

For the year 2003, we deduce that the general features in the margins' distribution still held. In fact, if we consider the agricultural sector and the food processing we had nearly half of the total marketing margins in the economy while the manufacturing sector, as a whole, had a lower margin rate. Moreover, it is worth noting that basic food crops, grains and cassava counted for more than 12 percent, nearly as much as the fuels and chemical sector which produced more output and included a wider range of goods. Under deeper scrutiny, the higher margins in the agricultural sector appear higher if we consider that in this sector there was a high level of own consumption. In other words, more than half of total domestic production (considered both in the formal and the informal sectors) was consumed inside the productive units¹⁰ and the total margins could be applied to a smaller output volume since own consumption avoids marketing margins.

⁹ This transportation costs are not associated with transport in general but with goods transported by road. This means that it is mainly part of the domestic margins since it is well-known that the infrastructure level inside the country is very low. As Tarp F. *et al.* (2002) shows, the only developed road system is the so called east-west corridor linking Maputo, Beira, and Nacala to the landlocked African countries, South Africa, Zimbabwe, and Malawi. Infrastructure in the north-south direction is poor, rail links are lacking and permanent roads minimal. It makes agricultural goods' trade more expensive and food shortages in the South more frequent.

¹⁰ In this case with the definition "productive units" we mainly define small-size family farms where family components work and earn no monetary wages but an in-kind transfer, as the final results of the *2002/03 IAF* (INE, 2003d) show.

This means that the margin per unit of output is higher. Tarp F. *et al.* (2002) demonstrated that in these sectors margins a wedge of at least 50 percent from the farm gate price and the final consumer's price could be created.

III. The analytical framework

The pioneer in the SAM development was Sir Richard Stone, who in the early 1960s participated in preparing a SAM for the U.K. According to many scholars, "*a social accounting matrix (SAM) is a particular representation of the macroeconomic and mesoeconomic accounts of a socioeconomic system*" (Pyatt and Round, 1985; Round, 2007).

Although used in a different context and for a different analysis (fixed- price multipliers, flex- price multipliers, or as the benchmark for calibrating a CGE), SAMs share some common features in their construction. Three main aspects are usually emphasised (Round, 2003, 2007). The first is that the SAM is a *square matrix* where each economic transaction is inserted into a cell so that the matrix displays explicitly the connections between institutions. The second is rows and columns have different meanings. Since the SAM captures the circular flow of income inside the economy, rows represent incomings and columns outgoings for each institution. The third is each column's sum is equal to the corresponding institution's row sum. This directly derives from the circular idea of income where a receipt for an institution is a payment for another one at the same time. No transfer goes outside of this flow, so in the SAM we will find all the transactions between agents.

There are two different entries. First, there are entries which describe flows across markets, typically payments moving in one direction (from column to row) and commodities moving in the opposite one. Second, there are "*nominal flows without a counterpart*". This definition means this class of transaction does not involve productive activity or real exchange. In this group we may insert all the financial transactions and the so- called transfers, that include other non- market nominal flows and pure transfers, such as welfare payments and tax payments. As Robinsons (1989) recognised: "*while financial flows and transfers have no real counterparts, they nonetheless represent important economic transactions, reflecting the institutional structure of the economy and assumptions about the behaviour of various actors. These flows largely define the macroeconomic structure of the economy and must be capture in any model that is concerned with distributional issues or macro adjustment*".

Then, the SAM is *comprehensive*, describing all the economic activities inside the system. Although for analysis purposes the compiler may prefer to stress certain elements instead of others. In these peculiarities we recognise the *flexibility* of the system. Although a basic representation, a SAM may be disaggregated in different ways or more attention may be put on particular relationships in the system.

The effectiveness of SAM is based mainly on three motivations. Its construction helps to combine statistical data from different sources, such as national accounts, surveys on enterprises or households, or sector specific statistics. Then, it is easy to pass from the macro- to the meso- level of the economy, or in other words “*a macroeconomic SAM evolves naturally into a mesoeconomic framework*” (Round, 2007), showing “*in a clear way the linkages between the generation of income, and the distribution to and redistribution between institutions*” (Round, 2007). Finally, this is the analytical framework for modelling. As previously cited, the SAM is the benchmark for calibrating a whole CGE model, and it gives some fundamental relations between the structures of the economic system.

A basic SAM is composed of a “*use matrix*” (otherwise defined as input-output matrix) where intermediate consumption is shown. Then, there is the “*make matrix*” where activities sell their products to the market. Finally, the “*institutional matrix*” captures the transactions between the activities’ and the commodities’ accounts and the institutions we introduce in the SAM.

The role and the importance of the accounts change according to the issues we address. For instance, as Robinson (1989) described, the commodity account is particularly important when the SAM is the basis for an analysis on international trade. It is also true that if the focus is on distributional issues the household decomposition becomes crucial. Finally, a tax incidence analysis needs a disaggregation among different taxes instead of a generic government account.

In table 25 below we present a basic SAM in order to capture the essential relationships and practically describe how to interpret the entries.

The 2003 SAM

Table 25: A basic macro- SAM

	1	2	3	4	5	6	7	8	9	10	11
	ACTIVITY	COMMODITY	LABOR	CAPITAL	HHDS	ENTERPRISE	GOVT	PRIVATE INV.	GOVT INV.	ROW	TOTALS
A	ACTIVITY										Total domestic production
B	COMMODITY	Intermediate consumption			Final household consumption		Final government consumption	Private invest.'s	Govt invest.'s	Exports (FOB)	Total marketed supply
C	LABOR	Labour									Labour income
D	CAPITAL	Capital									Capital income
E	HHDS		Labour income			Distributed profits	Welfare transfers Subsidies			Remittances from abroad	Total household income
F	ENTERPRISE			Capital income							Total enterprise income
G	GOVT	Activity subsidies and indirect tax	Import duties and taxes on final goods (Excises, import duties)		Individual income taxation	Corporate taxation					Total government income
H	PRIVATE INV				Household savings	Enterprise savings				Net private capital inflows	Total private savings
I	GOVT INV						Government savings			Aid in govt budget	Total govt savings
L	ROW		Imports (CIF)								Total foreign exchange outlays
M	TOTALS	Total cost of production	Total absorption	Labour income	Capital income	Total household expenditure	Total enterprise expenditure	Total government expenditure	Total private investment	Total govt investment	Total foreign exchange earnings

Source: Own modifications of Arndt et al. (1998)

The 2003 SAM

To analyse a SAM, it is useful to start from column 1 which is the cost decomposition column. It states that the total output (cell M- 1) is exhausted by intermediate consumption (B- 1), the payments to factors of production (C- 1, D- 1), and tax payments on output or subsidies (G- 1). Note that if we have a multi- sector model the intermediate consumption is not a single entry but a sub- matrix called an “input-output” table. Then, the activity sells its commodity in the market (A- 2) where imports (L- 2) also build up the total supply (M- 2). Imports enter the internal market gross of import tariff, while on the domestic sales there are other sales taxes (G- 2). Labour and capital incomes go to the institutions, households and enterprises. The former earns labour income (E- 3), distributed profits from enterprises (E- 6), remittances from foreign workers (E- 10) and welfare payments from the government (E- 7); the latter gets gross profits (F- 4) and subsidies (F- 7). These incomes are used according to columns 5 and 6. Households pay part of their income in consumption of commodity (B- 5), a share is devoted to personal direct taxation (G- 5) and a fraction is saved (H- 5). Enterprises pay distributed profits (E- 6) and direct tax (G- 6) while they save a part (H- 6). Government income derives from tax payments so the total revenue (G-11) is equal to the sum of indirect taxes on activity and commodity (G- 1, G- 2) and the direct taxes (G- 5, G- 6). Its expenditures are consumption of goods (B- 7), welfare and subsidy payments (E- 7, F, 7) while it saves (I- 7). Both the private sector (households and enterprises) and the government invest (B- 8, B- 9). Total private investment should equal the total private savings (H- 11, M- 8), and the same happens in the public sector account (I- 11, M- 9). If these identities are not satisfied, there are foreign capital inflows that may occur both in the private sector (H- 10) and in the public one (I- 10).

As Robinson (1989) points out, “*the definition of the SAM should be tailored to the problem being analyzed, and there is no standard SAM that can serve all purposes*”. We could add: there is no world- wide SAM but it should be tailored to address a country’s peculiarities since each country has distinct characteristics. For this reason the SAM presented above is a good starting point to build up a SAM for Mozambique but it does not take into account some specificities of the Mozambican economy. We perform our analysis in two steps. First, we build a macro SAM where only some characteristics are shown, and then we make a micro SAM where all the peculiarities are shown and directly observable.

a. A 2003 macro SAM for Mozambique

This macro SAM is based upon an unpublished SAM used in Arndt et al. (2008). It follows the traditional format employed in the IFPRI SAMs. It does not differ greatly from the example presented in table 25. We only introduce a new element in cell A- 5 that we call “own consumption.” We explicitly count for marketing margins and we disaggregate the government

revenue accounts according to the tax nature. In this way, we take into account the specificities of the Mozambican economy with the first two elements, and the third one becomes useful when we run our policy simulation and we want to evaluate changes in government revenues due to trade liberalization (i.e. a reduction in import duties and VAT collected at borders).

As briefly summarized in the introduction, the macro SAM presents two sectors: one is specifically the trade margins sector while the other is the productive one (an aggregation of agricultural, mining and quarrying, manufacturing, and service sectors).

As many scholars suggest, one of the main advantages of the SAM framework is to reconcile data from different institutions and sources. As Round (2003b) states: “*the construction of a SAM helps to bring together data from many disparate sources that help to describe the structural characteristics of an economy*”. However, this is also a great problem in its construction since data are often not matching and so the compiler has to decide how to handle them with personal criteria. In the construction of this SAM the data sources are more than one.

The construction of the macro SAM starts from National Accounts data. We re-compile them in an income - expenditure balance sheet format and present them in table 5. Moreover, as Round (2003b) clearly expresses: “*an aggregate SAM is a particular way of representing the national accounts within a matrix framework*”.

The 2003 SAM

Table 26: National income statistic balance sheets (in Billion MT)			
GDP	Income		Expenditure
Compensation to employees	61,824	Government final consumption	14,745
Gross operating surplus	39,500	Private final consumption	92,205
Net indirect taxes	10,555	Gross fixed capital formation	24,373
		Increase in stock	2,660
		Exports	30,527
		Less Imports	-52,631
Total GDP (market price)	111,879	Total GDP (market price)	111,879
National Disposable Income	Income		Expenditure
Compensation to employees	61,824	Government final consumption	14,745
Gross operating surplus	39,500	Private final consumption	92,205
Net indirect taxes	10,555	Savings	2,439
Compensation of employees from ROW	1,343		
Property and entrepreneurial income to ROW	-3,833		
Current transfers from ROW	12,505		
Total	109,389	Total	109,389
Capital Accounts	Income		Expenditure
Gross savings	2,439	Gross fixed capital formation	24,373
Current account deficit	24,594	Increase in stock	2,660
Total	27,033	Total	27,033
Rest of World	Income		Expenditure
Imports of goods and services	52,631	Exports of goods and services	30,527
Compensation of employees to ROW	n.a.	Compensation of employees from ROW	1,343
Property and entrepreneurial income to ROW	3,833		
Other current transfers to ROW	n.a.		
Surplus on current account to ROW	-24,594		
Total	31,870	Total	31,870

Source: Constructed from National Accounts (INE, 2003, 2009 and BM, 2009)
 Note: n.a. means "not available"

In this framework we record changes in stock of assets and liabilities held by institutions, and each flow account represents a particular economic activity, such as production, generation, distribution, redistribution or use of income. Usually, accounts are recorded by transactor of origin, or resource, and destination, or use. In our case, we use the terms income and expenditure.

As Round (2003b) expresses: "*it can be viewed as a system whereby income "cascades" from one account to another*". In the first account, value added is the balancing item which cascades in the national disposable income account through the process of redistribution of income. Then, the uses of the income itself are shown distinguishing between capital account and a connecting account for the rest of the World.

In the table below we summarize the macro labels and the different data sources employed. Then, the final macro SAM is presented.

The 2003 SAM

Box 26: Label definitions and data sources in the 2003 macro SAM

ROW	COLUMN	LABEL DEFINITION	DATA SOURCE
Activity	Commodity	Marketed domestic supply	National Accounts- Produto Interno Bruto, Óptica Da Produção (INE website, 2009), SU table (INE, 2003a)
Activity	Household	Own consumption	Household Survey (2002/03 IAF, INE 2003d) and SU table (INE, 2003a)
Commodity	Activity	Intermediate consumption	RESIDUAL
Commodity	Household	Private final consumption	Household Survey (2002/03 IAF, INE 2003d) and SU table (INE, 2003a)
Commodity	Trd	Marketing margins for domestic transactions	Unpublished MACROSAM 2003 Arndt et al. (2008)
Commodity	Tre	Marketing margins for exports	Unpublished MACROSAM 2003 Arndt et al. (2008)
Commodity	Trm	Marketing margins for imports	Unpublished MACROSAM 2003 Arndt et al. (2008)
Commodity	Govt	Government recurrent expenditures	Orçamento Geral do Estado-Despesas, Déficit e Produção Total (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Commodity	Capital	Private investments	National Accounts- Produto Interno Bruto, Óptica de Despesas (INE website, 2009) and SU table (INE, 2003a)
Commodity	Govt capital	Government capital expenditures	Orçamento Geral do Estado- Despesas, Déficit e Produção Total (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Commodity	Dstk	Private change in stocks	National Accounts- Produto Interno Bruto, Óptica de Despesas (INE website, 2009) and SU table (INE, 2003a)
Commodity	Row	Exports (FOB)	Balance of Payments- current account (BM website, 2009) and SU table (INE, 2003a)
Labour	Activity	Labour component of value added	National Accounts- Produto Interno Bruto, Óptica de Rendimento (INE website, 2009) and GDP table (INE, 2003b)
Capital	Activity	Capital component of value added	National Accounts- Produto Interno Bruto, Óptica de Rendimento (INE website, 2009) and GDP table (INE, 2003b)
Household	Labour	Labour income and mixed income	National Accounts- Produto Interno Bruto, Óptica de Rendimento (INE website, 2009) and GDP table (INE, 2003b)
Household	Capital	Capital income	National Accounts- Produto Interno Bruto, Óptica de Rendimento (INE website, 2009) and GDP table (INE, 2003b)
Household	Enterprise	Distributed profits	RESIDUAL
Household	Govt	Welfare transfers	Orçamento Geral do Estado- Despesas, Déficit e Produção Total (BM website, 2009) and IMF(2005)
Household	Row	Remittances	Balance of Payments- capital account (BM website, 2009)

The 2003 SAM

(Box 26 continues)			
ROW	COLUMN	LABEL DEFINITION	DATA SOURCE
Enterprise	Capital	Gross profits	National Accounts- Produto Interno Bruto, Óptica de Rendimento (INE website, 2009) and GDP table (INE, 2003b)
Enterprise	Govt	Subsidies to enterprises	Orçamento Geral do Estado- Despesas, Déficit e Produção Total (BM website, 2009) and IMF (2005)
Govt	Enterprise	Profit payment for state-owned enterprises	Orçamento Geral do Estado- Receitas (BM website, 2009) and IMF (2005)
Ytax	Household	Personal income tax	Orçamento Geral do Estado- Receitas (BM website, 2009) and IMF (2005)
Ytax	Enterprise	Company income tax	Orçamento Geral do Estado- Receitas (BM website, 2009) and IMF (2005)
Vatb	Commodity	VAT tax collected at borders	Orçamento Geral do Estado- Receitas (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Vatd	Commodity	VAT tax domestically collected	Orçamento Geral do Estado- Receitas (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Reb	Activity	VAT rebate	RESIDUAL
Atax	Activity	Activity tax (or subsidy to activities)	Orçamento Geral do Estado- Receitas (BM website, 2009) and GDP table (INE, 2003b)
Stax	Commodity	Sale tax (or excises)	Orçamento Geral do Estado- Receitas (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Mtax	Commodity	Import duties	Orçamento Geral do Estado- Receitas (BM website, 2009), IMF (2005) and SU table (INE, 2003a)
Capital	Household	Private savings	Household Survey (2002/03 IAF, INE 2003d)
Capital	Enterprise	Enterprise savings	National accounts (INE website, 2009) and IMF (2005)
Capital	Govt	Government savings (or dissavings)	Orçamento Geral do Estado- Despesas, Déficit e Produção Total (BM website, 2009) and IMF (2005)
Govt capital	Govt capital	Government savings (or dissavings) for investments	Orçamento Geral do Estado- Despesas, Déficit e Produção Total (BM website, 2009) and IMF (2005)
Capital	Row	Capital inflows	Balance of Payments- capital account (BM website, 2009)
Row	Commodity	Imports (CIF)	Balance of Payments- current account (BM website, 2009)
Row	Enterprise	Enterprise payments to foreigners	Balance of Payments- capital account (BM website, 2009)

The 2003 SAM

Table 27: A 2003 macro- SAM for Mozambique

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Activity	Commodity	Lab.	Cap.	Hhds	Enter.	Trd	Tre	Trm	Govt	Ytax	VATb	VATd	REB	Stax	Atax	Mtax	Priv Capital	Govt capital	Dstk	Foreign	TOTAL	
A	Activity				26,225																		174,579
B	Commodity	76,622	148,354		65,980		15,783	1,172	4,078	14,745									12,284	12,089	2,660	4,964	235,940
C	Labour	61,824																					61,824
D	Capital	39,500																					32,281
F	Hhds			61,824		33,113				411												1,343	96,691
G	Enterpr.				39,500					147													39,647
H	Trd		15,783																				15,783
I	Tre		1,172																				1,172
J	Trm		4,078																				4,078
K	Govt					102					3,129	5,289	4,027	-	2,468	-190	2,138						13,786
L	Ytax				2,204	925								3,177									3,129
M	VATb		5,289																				5,289
N	VATd		4,027																				4,027
O	REB	-3,177																					-3,177
P	Atax	-190																					-190
Q	Stax		2,468																				2,468
R	Mtax		2,138																				2,138
S	Private Capital				2,282	1,674				-1,517													12,505
T	Govt capital																						12,089
U	Dstk																		2,660				2,660
V	Foreign		52,631			3,833																	56,464
Z	TOTAL	174,579	235,940	61,824	32,281	96,691	39,647	15,783	1,172	4,078	13,786	3,129	5,289	4,027	-	2,468	-190	2,138	14,944	12,089	2,660	56,464	

Source: Unpublished 2003 SAM and own calculation

The notation for the macro SAM cell entries is [**row account, column account**]. Here we briefly describe them. All values are in 2003 Billion of MT, unless otherwise specified.

1. Intermediate consumption [Commodity, Activity]: 76,622. Total intermediate demand includes imported intermediate inputs, tariffs and marketing margins.

2. Labour value added [Labour, Activity]: 61,824. This account includes compensation to employees and part of the mixed income account. Mixed income is the expression used to define the income from small family enterprises mainly devoted to agricultural activity. Specifically, 75 per cent of this income accrues the labour account. It is a reasonable assumption if we consider the particular nature of the activity: family enterprises mainly employ household workers in traditional labour intensive activities (i.e. agricultural activities).

3. Capital value added [Capital, Activity]: 39,500. This account includes operating surplus of the formal sector and the remaining 25 per cent of income from family firms. Finally, land remuneration enters into this account.

4. VAT rebate [Reb, Activity]: 3,177. This account shows the so-called VAT rebate. Activities pay VAT for the intermediate consumption but VAT, for its own nature, should be imposed only on final transactions so activities are entitled to obtain a refund for this expenditure. It is coherent with the 1998 law establishing VAT that recognises four categories: normal, simplified, exempted, and “zero rate” regimes. In the last case, enterprises are enabled to ask the VAT for reimbursement for inputs.

5. Activity subsidies [Atax, Activity]: 190. This is a negative entry and it counts for subsidies given to activities according to their production. As compared to 2001, this value has more than doubled although it has changed in its composition. There are no subsidies for agricultural activities but they mainly concentrate on the service sector.

6. Domestic sales [Activity, Commodity]: 148,354. Marketed supply is residual when we subtract own consumption from total costs of production. Domestic sales are subject to marketing margins and include exports at producer prices.

7. Trade margins [Tr, Commodity]: 21,033. This is the sum of trade and transport margins for domestic, imported, and exported goods and services. However, in our macro SAM we already decompose the three components.

8. VAT [VAT, Commodity]: 9,316. This account is composed of a vector. VA tax has a unified rate of 17 percent collected both on domestic transactions and imported goods by DNIA and DNA, respectively. Exemptions were introduced by decree in 2001, 2002 and finally in 2004. They may be classified in three groups: full exemptions cover both imported and

domestically-produced items, simple exemptions apply only for domestic products while exemption for imports, as the definition suggests, are limited to imported goods.

9. Sales taxes [Stax, Commodity]: 2,468. With this label we count for special taxes on particular kinds of goods. In 1998 the excise system was introduced through the creation and enforcement of the Excise Taxes Code, later amended by decree. The initial provisions established a tariff rate of 20-75 percent that has been lowered to 15-65% since. The items subject to excises are the same as before: mostly luxury, superfluous and unhealthy goods, with some expansions to cover musical instruments, games and sports equipment. The collectors for excises are different according to the goods the taxation is imposed upon. In fact, where the excises' collection should be due to the DNIA, for excises on alcoholic beverages, beer, wine and tobacco, the collector is actually the DGI. Besides the excise taxes (ICE), there is a different taxation on all fuels sold in Mozambique, known as *Taxa sobre Combustiveis*. Its revenues are dedicated to the transport sector. While excises have been lowered, in 2003 fuel taxes increased as a consequence of internal inflation and the international price of petroleum products to partially offset the real erosion accumulated.

10. Import duties [Mtax, commodity]: 2,138. Import tariffs are applied only on goods, while services are exempted.

11. Imports [Foreign, Commodity]: 52,631. This account is composed of imports at c.i.f. prices.

12. Own consumption [Activity, Households]: 26,225. The household own consumption is derived from the Household Survey *2002/03 IAF*. It is recorded in farm gate price therefore to obtain this value we must multiply it by the consumer price index (CPI) for 2003.

13. Final private consumption [Commodity, Households]: 65,980. Final private consumption is valued at final prices so it includes marketing margins.

14. Individual income tax [Ytax, Households]: 2,204. With regard to the personal income tax (also called IRPS) established in 2002 and applied for the first time in 2003, it may be defined as a single, progressive tax on the total amount of the income of natural persons. The tax base includes employment income, pensions, and annuities; it includes business income and income from professions practiced on a self-employed basis; it includes income from capital and capital gains, and income from real estate; and finally it includes gains from lotteries and gambling. The system is progressive. This means there are classes of income with a different tax rate, increasing as the income level increases. Moreover, each group has a lump sum deduction besides the family quotient. Indeed, the system recognizes the following categories: incomes up to 28 Mill Mts have a 10 percent rate; incomes between 28 and 112 Mill Mts have a 15 percent rate and are entitled to a 1.4 Mill Mts subtraction; incomes between 112 and 336 Mill Mts have a 20 percent rate and 7 Mill Mts subtraction; incomes between 336

and 1,008 Mill Mts have a 25 percent rate and 23.8 Mill Mts subtraction; incomes above 1,008 Mill Mts have a 32 percent rate and are entitled to a 94.36 Mill Mts subtraction. Households earning less than 24 Mill Mts are exempted from the IRPS payment. Exemptions from this progressive tax system are for incomes of non- residents and most of the income from capital and gaming gains. In these cases the final tax rate is 20 percent for stock dividends and other incomes of non- residents and 10 percent for residents. Another special treatment is determined by agricultural income which is taxed with a marginal rate of only 10 percent. Since, when possible, incomes are taxed at source with a 20 percent marginal rate for all incomes and a 10 percent rate for ones from capital, these payments at the source should be subtracted from the annual income.

15. Household savings [Private Capital, Households]: 2,282. National Accounts data figure out only “total (gross) savings” so it includes both household and enterprise savings. To derive this item we use it as the balancing item equilibrating the household income (row) and expenditures (column).

16. Distributed profits [Household, Enterprises]: 33,113. Distributed profits are computed as enterprise income (gross operating surplus plus government subsidies to enterprises) minus other enterprise payments (corporate tax, money payment to ROW, and accumulated savings.)

17. Nonfinancial enterprise profits [Government, Enterprises]: 102.

18. Corporate tax [Ytax, Enterprises]: 925. The corporate taxation, also named IRPC, is levied on the overall profits of all Mozambican companies (and enterprises) and all Mozambican- sourced income of foreigner ones. However, the State, the local governments, law enforcement and social security institutions are exempt. Its general rate is proportional and it is 32 percent, although special rates are accorded for incomes from particular sources. For example, for agricultural income the rate is 10 percent; for large mining companies there is a 24 percent tax in the first five years; operators in tax free zones pay 12.8 percent in the first ten years and, agriculture, handicrafts, and cultural cooperatives have a 16 percent rate.

19. Enterprise savings [Private Capital, Enterprises]: 1,674. This is a residual feature balancing enterprise income and expenditures.

20. Enterprise factor payments to ROW [Foreign, Enterprises]: 3,833.

21. Government final consumption [Commodity, Government]: 14,745. From data in the Budget Execution we see that the sum of the final consumption, welfare payments and enterprise subsidies exhaust the total current expenditures.

22. Welfare payments [Household, Government]: 411. This item includes pensions, transfers and social security.

23. Subsidies to enterprises [Enterprises, Government]: 147.

24. Government savings [Private Capital, Government]: 1,517. They are computed as residual such that the sum of private savings, enterprise savings, and government savings equal the total domestic gross savings value in the National Accounts.

25. Cross fixed capital formation [Commodity, Private Capital]: 12,284. The official data show total private investment without distinguishing changes in stock.

26. Public investments [Commodity, Government Capital]: 12,089. This figure is slightly underestimated as compared to official data. It is approximately 1 percentage point lower.

27. Change in stock [Commodity, Dstk]: 2,660. The change in stock value is obtained from the SU table but there is no other information to check this feature.

28. Exports [Commodity, Foreign]: 30,527. Exports are calculated at f.o.b. prices. In their price the marketing margins are included.

29. Remittances [Household, Foreign]: 1,343. This feature represents labour income from abroad. It is mainly due to the Mozambican workers employed as miners and farmers in South Africa.

30. Private foreign capital inflows [Private Capital, Foreign]: 12,505. There is only a feature in National Accounts on capital inflow. We calculate it as the balancing residual in the saving- investment account. It balances capital expenditures (private and public gross fixed capital formation, and changes in stock) and capital income (the sum of private savings, and current account deficit).

31. Foreign capital inflows in the government budget [Government Capital, Foreign]: 12,089. This is the balancing item in the public account. It guarantees the necessary capital to balance capital expenditure (investments) and current account deficit.

b. The micro SAM for Mozambique

As Round (2007) states: “*a macroeconomic SAM evolves naturally into a mesoeconomic framework*”. In this way the SAM is truly “social” since we disaggregate the macro accounts capturing the essential features of the economy. But, to obtain such a disaggregation, “*their construction requires a significant degree of detailed estimation and use of data sets that have not hitherto formed part of standard national accounting practice*” (Round, 2003b). Our micro SAM, proposed by IFPRI, has five sectors: the agricultural one is comprised of 14 agricultural activities; the mining sector has 1 mining and quarrying activity; the manufacturing sector oversees two related food and beverage processing activities and 3 other manufacturing activities; the marketing sector, although been part of the service sector we treat it separately; finally, the services sector figures out 11 service activities. In this way we have a clear and effective general outlook on all the important economic sectors and the agricultural sectors.

The 2003 SAM

The population in Mozambique in 2003 was more than 70 percent rural with a vast majority employed in agricultural activities and dependent on agriculture for their livelihood. Although this model does not want to specifically address the agricultural development issue, it is worth noting that any policy which affects poverty and living conditions inside the country must consider this sector. Moreover, trade liberalization concerns agricultural products and this means different behaviours of farmers in the production choice. There will be a change in relative prices affecting the choice between producing food crops and export crops, or cash crops and food crops.

In the table below we summarize the codes for the activity and commodity accounts.

Box 27: The activity and commodity accounts' codes		
ACTIVITY and ACTIVITY COMPOSITION	ACTIVITY CODE	COMMODITY CODE
AGRICULTURAL ACTIVITY	A-AGRI	C-AGRI
0. Wheat	awhea	cwhea
1. Maize	amaiz	cmaiz
2. Unshelled rice	arice	crice
3. Other grains	aogr	cogr
4. Cotton	acott	ccott
5. Other crops (Peanuts, tea, etc)	aocrp	coexp
6. Other export crops (Citrus fruits, sugarcane, etc)	aoexp	coexp
7. Cassava	acass	ccass
8. Other basic food crops (Vegetables, fresh fruit, etc)	aobfc	cobfc
9. Beans	abean	cbean
10. Raw cashew	acash	ccash
11. Livestock	alive	clive
12. Forestry	afrst	cfst
13. Fisheries	afish	cfish
MINERAL RESOURCE ACTIVITY	A-MINE	C-MINE
14. Mining	amine	cmine
MANUFACTURING ACTIVITY	A-MAN	C-MAN
15. Food processing	afood	cfood
16. Beverages and tobacco	abevt	cbev
17. Light manufacturing (textile, garments, wood, paper, and furniture)	alman	clman
18. Heavy manufacturing	ahman	chman
19. Metal products	ameti	cmeti
TRADE ACTIVITY	A-TRADE	C-TRADE
20. Trade	atrad	tr
SERVICES	A-SERV	C-SERV
21. Energy	aengy	cengy
22. Construction	acons	ccons
23. Repairs	arepa	crepa
24. Hotels and restaurant	are_h	cre_h
25. Transports (Rail, pipelines, marine, other)	atran	ctran
26. Road transport	aroad	croad
27. Air transport	aaero	caero
28. Other services (financial, real estate, etc)	aosrv	cosrv
29. Public administration and social security	apadm	cpadm
30. Private services (education, health)	apsrv	cpsrv

In the activity account we distinguish among different type of labour according to skills: unskilled, semiskilled, and skilled labour. Thus, we may distinguish “traditional” sectors, where unskilled workers are mainly employed and “modern” sectors with a high share of skilled labour. After our simulation, we should be able to say something about the connection between trade liberalization and labour characteristics. If, for instance, trade liberalization positively affects “modern” sector, a policy prescription could be an improvement in the

educational system to have more skilled workers. Obviously, we will set different wage rate for each group according to its skills.

Once, again land is not included as a separate factor, supposing, according to Arndt *et al.* (1998) that “*supply of arable land vastly exceeds demand*”. Moreover, as already said, this analysis has a trade- focused aim so we are not concerned of agricultural issues where land availability, productivity, and employment are crucial variables. In the final SAM we count for land as a part of capital, and it is completely owned by rural households.

Other feature to explain is the treatment of marketing margins. Since there is no direct information on how they are allocated among commodities and how they are divided between domestic, imported, and exported commodities, we follow the judgement applied in Arndt *et al.* (1998): “*margins are split between exports, imports, and domestics according to shares in total commodity supply*”.

The foreign sector in the disaggregated SAM needs a special treatment since we build a specific “trade matrix” to detail our analysis. As we have introduced above, our aim is to detect the effects of the Mozambican participation into the SADC free trade area from 2008¹¹.

A peculiarity of this agreement is the principle of asymmetry in the tariff phase out process among member states. Indeed, we have to clearly identified how Mozambique has to reduce its tariffs respect to each participant. As the SADC Trade protocol establishes: “*developed countries should accelerate their tariff phasing out more than developing countries and least developing ones*”. Moreover, the WTO recognizes that “*the size of the South African economy in relation to the other economies necessitated the application of asymmetry in the scheduling of tariff reductions by the non- SACU Members*”. So following these judgements, we build a trade matrix with three foreign regions: South African Republic (RSA), the rest of the SADC- FTA members (RoSADC), and, finally the rest of the World (RoW).

To decompose the trade data, we have to base on another source that is the *SADCtrade database*. In fact, the National Institute of Statistics’s (INE) data are incomplete. They present only either data on trade with the main trading partners, or the aggregate value of total imports and exports. So we integrate it with this new database, which, on the contrary, shows three kinds of data according to trading partners for the year 2003: RSA, SADC as a whole, and the World.

Although we have solved one question, another problem arises. These data are expressed in HS classification of commodity, so we have to translate them into our classification. Firstly,

¹¹ A detailed presentation of the provisions, schedule, and legal framework of the SADC Trade Protocol has been presented in chapter 3.

however, the *SADCtrade database* gives us the total import and export for each trading partners. Exports to South Africa are 18.8 per cent, 7.2 to the rest of the SADC members and the remaining 74 percent to the rest of the World. Imports from South Africa, instead, are 25.1 per cent, 2.8 per cent from the rest of the SADC, and 72. 1 per cent from the rest of the World. Then, according to each commodity section we decompose these flows.

It is worth noting that this is a database for commodity trade. Here there are no data on trade in service, which will be derived from a different source, the *Africa GTAP Database*. Here, after having aggregated services into a unique bowl and defined the three trading partners, we obtain the percentage composition of service trade according to region. Let us start with imports; 4.5% of total service imports derives from RSA, 0.3% from RoSADC, and 95.2% from ROW. Exports, instead, are equally distributed towards RSA and the rest of the World (43.8% and 41.9% respectively) while the RoSADC region is destination of 14.2% of the total Mozambican service exports.

Up to this stage we have solved the problems of the trade flows, however trade decomposition requires other information we have to collect from different sources. In fact, there are other economic quantities depending on regional decomposition, namely taxes imposed on imports. They are the import duties, and consequently the tariff rate and the VAT at borders, and its rate. These two categories have been treated differently. For import duties we consider the Custom Code (in Portuguese *Pauta Aduaneira*), the best source in terms of data accuracy. It collects 5370 tariff lines, each of them presents a general import duty applied for imports from RoW, and the two offers to SADC and SACU Members, and to RSA. However, the one at our disposal is the for 2008 and, as a consequence, we have to underline some basic facts. Firstly, the general import duty for RoW is the one for 2008 and we have to change them. Basically, we should consider that in 2003 the maximum rate was 25 percent and it was applied each time in 2008 we see a 20 percent rate. Secondly, we have to derive the RSA and the RoSADC Mozambican proposals as they were in 2003, since in 2008 the liberalization process has gone further. Moreover, we have to aggregate the HS chapters according to our commodity classification.

Respect to imports from RoW, the average tariff rate goes from 25 percent for arms and jewellery, and some primary products (i.e. agricultural products and foodstuffs) to only 2.5 percent for plastics, wood and raw cotton. The situation for the SADC area reflects exactly the SADC trade protocol provisions. Imports from RSA pay a higher tariff rate up to five percentage points more than imports from other SADC Member States. This differential treatment is particularly evident for agricultural products (fisheries) and the foodstuff industry while there is no evident gap, for instance, for machineries and equipment.

The 2003 SAM

To distinguish tariffs in terms of imports' country of origin and good, we may have at least two procedures. The first one, which is the simplest, is to divide proportionately tariffs on a specific good among countries according to the imports' percentage from that country. Supposing agricultural imports from RSA are 10% we give 10% of the total tariffs on agricultural products to that origin. However, this means an equal tariff rate among countries and differentiated according to commodity, a quite unreasonable assumption. The second procedure is the one adopted here, assuming the Custom Code as the reference source. In this way, tariff rates are differentiated both among commodities and countries of origin. Moreover, the final tariff matrix is likely to well interpret the reality. Tariff rates of imports from ROW are higher than the other origins respect to all goods, as in the Custom Code, while the best treatment is reserved to imports from RSA. Moreover, industrial products have a higher tariff rate respect to agricultural and mining products because of the higher incidence of final products while agricultural products are mainly raw products with lower rates. In the table below we sum up the tariff matrix.

Table 28: The tariff matrix			
	Agricultural goods	Mining goods	Industrial goods
Republic of South Africa- RSA	7	-	619
Rest of SADC- RoSADC	1	-	84
Rest of World- RoW	40	5	1381
Source: Author's own calculations			
Note: Features are billion MT			

A different approach is followed for VAT collected at borders. We have used no specific source or criterion but we simply obtain these values as residuals in order to maintain the total balance. In other words, VAT values are derived considering the commodity columns and interpreting them as residuals. VA payments are summarized according to sectors and origins in the table below:

Table 29: VAT collected at borders				
	Agricultural goods	Mining goods	Industrial goods	Services
Republic of South Africa- RSA	22	4	1110	65
Rest of SADC- RoSADC	3	-	151	4
Rest of World- RoW	59	16	2481	1374
Source: Author's own calculations				
Note: Features are billion MT				

Now all the fundamental values are derived and here we presents the codes for the factors' and the institutions' accounts.

The 2003 SAM

Box 28: The factors' and institutions' account codes			
	Definition	Elements in the Set	Code
FACTORS	Labour	Unskilled labour	USK-LAB
		Semiskilled labour	SSK-LAB
		Skilled labour	SK-LAB
DOMESTIC INSTITUTIONS	Capital	Capital	CAP
		Households	Rural households
	Urban households		U-HHDS
EXTERNAL INSTITUTIONS	Enterprises	Enterprises	ENTR
	Government	Local government	GOVT
	Republic of South Africa	Republic of South Africa	RSA
	Rest of SADC	Rest of SADC	RoSADC
SAVING-INVESTMENT	Rest of World	Rest of World	RoW
		Saving-investment	S-I

Source: Author's own modifications from the 2003 unpublished SAM

In appendix A the micro 2003 SAM is presented. It is broken down in its constitutive sub-matrices: the input- output table (commodity x activities), the institutional part of the activity columns (institutions x activities), the make matrix (activities x commodities), the institutional part of the activity rows (activities x institutions), the institutional part of the commodity rows (commodities x institutions), the institutional part of the commodity columns (institutions x commodities), and the institutional diagonal matrix (institutions x institutions).