Inclusive growth in Mozambique – scaling up research and capacity

Documenting the 2019 Social Accounting Matrix for Mozambique

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Abstract: This technical note describes how the 2015 Social Accounting Matrix (SAM) for Mozambique was updated. New Household Budget Survey data availability, changes in the economic structure as captured by the underlying Supply and Use Tables and National Accounts as well as the frequency of previous SAM utilization indicates the relevance of an update. A new SAM has been prepared for the year 2019, which is a more normal year than 2020, due to the COVID-19 pandemic and economic recession later in the year. Subsequent work will make use of the SAM in analytical and descriptive studies.

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1 Introduction

This technical note describes how a 2015 Social Accounting Matrix (SAM) for Mozambique (Cruz, et al. 2018) was updated. The Household Budget Survey (INE 2021b) 2019–2020 data availability, changes in the economic structure as captured by the Supply and Use Tables (INE 2022a) and National Accounts (INE 2021a) as well as the frequency of previous SAM utilization (Betho et al. 2021; Hartley et al. 2016; Mondlane and van Seventer 2019a, 2019b) indicates the relevance of an update. A new SAM has been prepared for the year of 2019. This is a more normal year than 2020 due to the COVID-19 pandemic and economic recession later in the year.

SAM data is used to analyse the economic structure and to provide basic information for economy-wide models such as SAM multiplier models and computable general equilibrium (CGE) models. These types of models are suitable to simulate macroeconomic policies and analyse their economic and distributional effects. The latter effects could, for example, be measured across types of labour force and income size family groups.

This project is part of the 2022 Work Plan for the joint 'Inclusive growth in Mozambique (IGM)' Programme, a partnership with the Mozambican Ministry of Economy and Finance, University Eduardo Mondlane, Copenhagen University, and UNU-WIDER. Updating the 2015 SAM also has the objective of contributing to capacity building as foreseen in the IGM Programme, not only for MEF-DNPED and UEM-FE-CEEG staff, but also other public sector institutions, including INE.[1]

Section 2 documents the construction of the macro SAM, while Section 3 presents the key features of the 2019 micro SAM for Mozambique. Section 4 discusses finalizing the SAM in two stages while Section 5 features constructing supplementary employment data.

2 Macro SAM

Based on sources of information from INE (2022a), National Accounts (INE 2021a), industry production accounts in the Supply and Demand Reconciliation tables (INE 2022b) and the household survey data for 2019–2020 (INE 2021b), the 2019 State General Account government statistics (GdM 2020), the Balance of Payments statistics from the IMF (2022), the exchange rate statistics from the 2019 Statistical Yearbook (INE 2020), and the basic structure of a verbal macro SAM for Mozambique as shown in Table 1, a numerical macro SAM for 2019 was elaborated as shown in Table 2.

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[1] The participants of the collection and compilation of data, and the preparation of the 2019 Macro SAM are António S. Cruz, a researcher collaborating with the University of Copenhagen (UCPH-DERG), Cipriano Cláudio, Director of National Accounts and Global Indicators at National Institute of Statistics (INE), and Finn Tarp (UCPH-DERG). Household Survey data for 2019–2020 has been extracted by Vincenzo Salvucci (UCPH-DERG). Minor revision of the Macro SAM, the manipulation of the Supply and Use Tables and of the Household Survey data was undertaken by Dirk van Seventer (research associate with UCPH-DERG).

Table 1: Basic structure of a 2019 SAM for Mozambique

	Activities	Commodities	Land	Labour	Capital	Enterprises	Households	Government	Net activity taxes	Net domestic product taxes	Import duties	Income taxes	Changes in inventories	Accumulation	Rest of the world	
Activities		Marketed output of total domestic economy					Output for domestic (own) consumption									Gross output
Commodities	Intermediate inputs	Transaction margins					Marketed consumption expenditure by households	Consumption expenditure by general government					Change in inventories	Gross fixed capital formation	Exports of goods & services	Total demand
Land	Compensation for land use															Income from land
Labour	Compensation of employees														Compensation of Mozambican residents in the rest of the world	Labour income
Capital	Net operating surplus + consumption of fixed capital (Depreciation)														Investment income (primary income) receipts	Capital income
Enterprises						Gross operating surplus of enterprises		Government transfers to enterprises							Current transfers from the rest of the world to enterprises	Enterprise earnings
Households			Household earnings from land holdings	Compensation of residents		Property and investment income received by households		Government transfers to households							Current transfers from the rest of the world to households	Household earnings
Government						Property income of the government	Miscellaneous transfers by enterprises to government	Miscellaneous transfers by households to government	Government transfers to other government units	Sales tax collected and transferred to the government	Import duties collected and transferred to the government	Income and corporate tax collected and transferred to the government			Current transfers from the rest of the world to government	Government receipts
Net activity taxes																Net other taxes on production in all industries
Net product taxes		Taxes on products														Net taxes on products less import duties
Import duties		Import duties														Import duties
Income taxes						Corporate tax	Income tax on individuals									Current taxes on income
Changes in inventories														Change in inventories		Change in inventories
Accumulation						Corporate savings	Household savings	Government budget deficit on current account							Balance on the current account	Savings
Rest of the world		Imports of goods & services		Remittances by non-resident workers	Investment income outflows	Transfers by enterprises to the rest of the world	Transfers by households to the rest of the world	Government transfers to the rest of the world								Foreign exchange outflows
Total	Gross output	Total supply	Distribution of income from land	Distribution of labour income	Distribution of capital income	Enterprise outlays	Household outlays	Government outlays	Net other taxes on production in all industries	Net taxes on products less import duties	Taxes on international trade and transactions: Import duties	Current taxes on income	Change in inventories	Gross fixed capital formation (investment) + change in inventories	Foreign exchange inflow	

Source: authors' compilation.

Table 2: A 2019 macro SAM for Mozambique (millions of meticais)

	Activities	Commodities	Land	Labour	Capital	Enterprises	Households	Government	Net domestic product taxes	Import duties	Income taxes	Changes in inventories	Accumulation	Rest of the world	Total
Activities	0	1,571,873	0	0	0	0	189,442	0	0	0	0	0	0	0	1,761,315
Commodities	906,034	250,333	0	0	0	0	432,879	219,047	0	0	0	151,068	427,066	310,622	2,697,049
Land	35,717	0	0	0	0	0	0	0	0	0	0	0	0	0	35,717
Labour	483,185	0	0	0	0	0	0	0	0	0	0	0	0	8,205	491,390
Capital	336,378	0	0	0	0	0	0	0	0	0	0	0	0	8,088	344,467
Enterprises	0	0	0	0	313,455	0	0	18,310	0	0	0	0	0	13,947	345,712
Households	0	0	35,717	484,867	0	195,789	0	17,396	0	0	0	0	0	10,533	744,302
Government	0	0	0	0	2,729	8,694	4,611	4,955	90,186	17,155	144,001	0	0	60,002	332,333
Net product taxes	0	90,186	0	0	0	0	0	0	0	0	0	0	0	0	90,186
Import duties	0	17,155	0	0	0	0	0	0	0	0	0	0	0	0	17,155
Income taxes	0	0	0	0	0	106,658	37,343	0	0	0	0	0	0	0	144,001
Changes in inventories	0	0	0	0	0	0	0	0	0	0	0	0	151,068	0	151,068
Accumulation	0	0	0	0	0	34,571	73,900	60,323	0	0	0	0	0	409,341	578,135
Rest of the world	0	767,503	0	6,524	28,282	0	6,127	12,302	0	0	0	0	0	0	820,738
Total	1,761,315	2,697,049	35,717	491,390	344,467	345,712	744,302	332,333	90,186	17,155	144,001	151,068	578,135	820,738	

Source: authors' calculations.

3   Micro SAM

In what follows, the reader will find a detailed presentation of information sources and explanation of estimations for each entry in the 2019 Macro SAM shown above and how it is expanded into a 2019 Micro SAM for Mozambique with 51 industries and 52 commodities.[2] Labour is disaggregated by a rural–urban split and by education attainment level (not completed primary/completed primary/completed secondary completed tertiary) while household income and expenditures are reported by expenditure quintiles both for urban and rural areas. The SAM features production for home consumption as reported in the unpublished INE accounts and INE (2021b) household survey data and also identifies government, investment and foreign accounts.

i   Commodities, Activities: MT906,034 million

Intermediate demand by industries. The totals for each SAM industry are aggregated (see Appendix 1) up from unpublished INE industry production accounts (INE 2022b) and have been adjusted to match gross value of production and value added from the same source, with the latter benchmarked on 1 digit industry levels mapped according to the last column of Appendix 2 from the National Accounts (INE 2021a). These totals are aggregated to SAM activities according to Appendix 1. Their intermediate input patterns are available from the INE Use Table (INE 2022a). The limited number of industries identified in the INE Use Table are mapped to the SAM activities according to Appendix 2. Disaggregation into more detailed SAM industries is discussed in the next section. Detailed intermediate inputs, as reported by the INE Use Table, are mapped to SAM commodities according to Appendix 3.

While the INE Supply Table offers gross value of production for all activities identified in the SAM, the unpublished INE industry production accounts (INE 2022b) do not account for disaggregation of crops, livestock and textiles-clothing. The shares of intermediate inputs as well as their shares of value added in gross value of production for these activities are taken from the 2015 SAM (Cruz et al. 2018). Consistency with total intermediate inputs (as well as value added) from the INE industry production accounts (INE 2022b) for crops, livestock and textiles-clothing was ensured by means of biproportional scaling subroutines.

ii   Land, Activities: MT35,717 million

Compensation for land use. At the macro level this is part of gross value added with the latter available from published INE GDP accounts using the income approach (INE 2021a) and unpublished[3] INE industry production accounts (INE 2022b). Industry-level value added (GDP) is aggregated up from (INE 2022b) according to the mapping in Appendix 1 to SAM industries and has been benchmarked on 1 digit industry levels from the National Accounts (INE 2021a; see mapping in Appendix 2). Compensation for land use applies to agricultural crop activities and is based on the authors' assumption of an increase by 2% in the share of the compensation for land in the total agricultural crop

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[2] Refined petroleum is an important commodity, but it is not produced in Mozambique.

[3] Gross value added at factor cost and taxes on products are also available from INE's published GDP account using the production approach (INE 2021a). This is also valid for entries iii (Labour, Activities), iv (Capital, Activities), vii (Net product taxes, Commodities), viii (Import duties, Commodities), and all other entries containing these items.

value added, compared to the SAM 2015 share. The distribution of these returns across detailed agricultural activities is initially based on the 2015 SAM. The residual is allocated to labour and capital components of value added (explained in point iii and iv below). In the final SAM, the values for the three livestock farming activities are allocated to a separate account representing returns on livestock capital.

iii   **Labour, Activities: MT483,185 million**

Compensation of employees. At the macro level this is part of gross value added with the latter available from published INE Gross Domestic Product (GDP) accounts using the income approach (INE 2021a) and unpublished INE industry production accounts (INE 2022b). Industry level value added (GDP) is aggregated up from (INE 2022b) according to the mapping in Appendix 1 to SAM industries and has been benchmarked on 1 digit industry levels from the national accounts (INE 2021a, see mapping in Appendix 2). The share of labour in economy-wide value added is based on the INE's remunerations of employees plus a share of mixed income. The latter corresponds to 45% of INE's total gross operating surplus (from which the land use value (see ii) is subtracted). The mixed income share is based on historical data from INE and on the authors' assumptions. The remaining 55% corresponds to the share of capital in INE's total gross operating surplus (to be used in iv below).

Wages earnings are distributed across the SAM activities and types of labour in a number of steps. In the first step, total wage earnings are distributed across activity by taking the shares of wage earnings in value added for each SAM activity according to the 2015 SAM (Cruz et al. 2018).[4] The sum of activity wage earnings is forced to add up to total wage earnings in the Macro SAM discussed above. The same steps are followed for the industry distribution of gross operating surplus (see point iv below) and returns to land/livestock discussed (see point ii. above). A biproportional scaling sub-routine is used for this purpose.

Disaggregation of wage earnings for each SAM activity in rural-urban and highest level of education attainment is based on the Household Budget Survey (INE 2021b). Not all activities are covered by the survey and for a number of them, proxies were used. Details can be found in Appendix 4.

iv   **Capital, Activities: MT336,378 million**

Gross operating surplus [GOS, net operating surplus + consumption of fixed capital (depreciation)]. At the macro level this is part of gross value added with the latter available from unpublished INE industry production accounts (INE 2022b) and published INE Gross Domestic Product (GDP) accounts using the income approach (INE 2021a). Industry level value added (GDP) is aggregated up from (INE 2022b) according to the mapping in Appendix 1 to SAM industries and has been benchmarked on 1 digit industry levels from the national accounts (INE 2021a, see mapping in Appendix 2). Fifty-five per cent of INE's total gross operating surplus corresponds to the share of capital in economy-wide value added (as already mentioned in iii above). The share of capital in total agricultural crop value added is estimated using the average shares estimated for the 1994-1995 SAM (Arndt et al. 1998) and the 2007 SAM (Arndt and Thurlow 2014), plus the assumption that the capital share increased 2% compared to the 2015 SAM level. The

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[4] Manual adjustment was made to account of unpublished INE data on wage earnings in the natural gas industry that became available subsequent to the publication of the 2015 SAM.

distribution of GOS across industries follows from the wage and land/livestock earnings discussed in the previous two points. A biproportional scaling sub-routine is used for this purpose.

v   Activities, Commodities: MT1,571,873 million

Marketed output of total domestic economy. Available from unpublished INE industry production accounts, commodity supply accounts, including the distribution across activity and commodity (INE 2022b). Data are presented so that activities produce homogeneous commodities which creates a near[5] diagonal domestic marketed supply matrix. Total output (gross value of production) is the sum of the elements discussed in points i–iv above less own consumption of production by households, see point xxi below.

vi   Commodities, Commodities: MT250,333 million

Transaction margins. Initially available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodity accounts on which margins are raised and those who received them. Adjusted from its initial values by the final rebalancing procedure (see next section for a discussion).

vii   Net product taxes, Commodities: MT90,186 million

Domestic taxes on products. Initially available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities. As will be discussed in the next section, the elimination of the product groups 'unspecified' results in extensive rescaling across SAM commodities.

viii   Import duties, Commodities: MT17,155 million

Import duties. Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities.

ix   Rest of the world, Commodities: MT767,503 million

Imports of goods & services. Available from unpublished[6] INE commodity supply-demand balance accounts (INE 2022b). Adjustments have been made for purchases by residents abroad. These purchases are reported as totals by INE for intermediate sales and for household expenditures and have been distributed and added to them according to the respective demand patterns. Their sum is added to imports to keep commodities' supply and demand in balance.

x   Households, Land: MT35,717 million

Household earnings from land (and livestock) holdings. Is equal to compensation for land and livestock use (see ii above). All income is allocated to households and distributed across household quintiles as well as along urban–rural divide using Household Budget

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[5] Petroleum is a commodity, but no such activity is identified as all petroleum products are imported.

[6] GDP components are also available from INE's published GDP account using the expenditure approach (INE 2021a). This is the case for private consumption, public consumption, gross fixed capital formation, change in inventories, exports and imports. This is also valid for all entries containing these items.

Survey (INE 2021b) data for household income other wage earnings from crops and livestock.[7]

xi   **Households, Labour: MT484,867 million**

Compensation of residents. Is calculated as compensation of employees, including mixed income (discussed in iii above), plus remittances from workers abroad less remittances to non-resident workers. Disaggregation across household income quintile (and urban–rural) and labour category by highest level of education attained (as well as urban–rural) is initially based on the Household Budget Survey (INE 2021b).

xii   **Rest of the world, Labour: MT6,524 million**

Remittances to non-resident workers. Available from IMF Balance of Payments statistics, as primary income flows (IMF 2022). Disaggregation across labour categories by highest level of education attained as well as urban–rural is initially based on the average for all labour according to the Household Budget Survey (INE 2021b).

xiii   **Enterprises, Capital: MT313,455 million**

Gross operating surplus of corporations. Derived as a residual by subtracting net primary income outflows and property income of the government from total gross operating surplus (GOS, see point iv). Net primary income outflows are available from the IMF Balance of Payments statistics; (IMF 2022), see xv and xli. Property income received by the government and domestic interest received from government are available from the 2019 State General Account government statistics; (GdM 2020), see next point.

xiv   **Government, Capital: MT2,729 million**

Property income of the government. Available from 2019 State General Account government statistics (GdM 2020).

xv   **Rest of the world, Capital: MT28,282 million**

Investment income outflows. Available from IMF Balance of Payments statistics, as primary income flows (IMF 2022).

xvi   **Households, Enterprises: MT195,789 million**

Property and investment income received by households. Derived as a residual by netting total enterprise earnings from enterprise transfers to the government (for details, see next point), the rest of the world (see xx below), corporate tax (see xviii below) and savings (see xix below).

xvii   **Government, Enterprises: MT8,694 million**

Miscellaneous transfers by enterprises to government. Available from 2019 State General Account government statistics {(GdM 2020) [property revenues = 'receitas patrimoniais (receitas das participações do Estado nags empresas, incluindo dividendos; rendas de imóveis; concessões de exploração)', excluding dividends], [revenues from activities affecting public goods (sea areas; nature protection; energy potential) = 'exploração de

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[7] Some proxies were used due to lack of survey data. In particular Pulses (apuls) were used as a proxy for income earned from Groundnuts (agnut) and Other oilseeds (aoils) while Other crops (aocrp) was used for Sugar cane (asugr), Tobacco (atoba) and Coffee and tea (acoff).

bens de domínio público'], [sales of public goods and services (Education and health services, documents, culture and sports, inputs, activity inspection, public sales of goods, various)], [other current revenues]}. It is assumed by authors that: (i) 50% of total house rents (MT157.012 million), and (ii) 30% of sales of public goods and services (MT5,737.875 million) are paid by enterprises to the government.

xviii   **Income taxes, Enterprises: MT106,658 million**

Corporate tax. Available from 2019 State General Account government statistics (GdM 2020) Also includes simplified tax on small taxpayers.

xix   **Accumulation, Enterprises: MT34,571 million**

Corporate savings. Assumed to be 10% of their total revenue.

xx   **Rest of the world, Enterprises: MT000 million**

Transfers by enterprises to the rest of the world. Available from IMF Balance of Payments statistics, as Other current transfers, secondary income outflows (IMF 2022).

xxi   **Activities, Households: MT189,442 million**

Home consumption (consumption of own-produced goods). Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities.[8] Disaggregation of household expenditure across income groups is based on the Household Budget Survey 2019–2020 (INE 2021b) some of which is not captured and proxies have been used, as shown in Appendix 5.[9] More detail on the split between home consumption and marketed consumption by households is discussed in the next section (Section 4 below)

xxii   **Commodities, Households: MT432,880 million**

Marketed consumption expenditure by households. Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities. Disaggregation of household expenditure across income groups is based on the Household Budget Survey 2019–2020 (INE 2021b). Not all commodities are covered by the survey. Proxies have been used as shown in Appendix 5.

xxiii   **Government, Households: MT4,611 million**

Miscellaneous transfers by households to government. Available from 2019 State General Account government statistics (GdM 2020). Included are the following items: non-fiscal revenues, house rents paid to government and sales of public goods and services (education and health services, documents, culture and sports). It is assumed by authors that: (i) 50% of total house rents (MT157.012 million), and (ii) 70% of sales of public goods and services (MT5,737.875 million) are paid by households to the government. The distribution of these transfers across household types is taken to be the same as the distribution of household expenditures on public administration services, as part of household expenditure, discussed in the previous point.

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[8] Since activities are assumed to produce homogenous products there is a one-to-one mapping between them.

[9] In addition to those shown in Appendix 5, poultry required expenditure on meat as proxy, while real estate and other services expenditures are approximated by marketed demand (see next point).

xxiv   Income taxes, Households: MT37,343 million

Income tax on households. Available from 2019 State General Account government statistics (GdM 2020). Also includes national reconstruction tax. The distribution of income tax across the household categories is derived from the 2007 SAM (Arndt and Thurlow 2014).

xxv   Accumulation, Households: MT73,900 million

Household savings. Derived as a residual of household income and expenditure. The distribution of savings across the household categories is derived from the 2007 SAM (Arndt & Thurlow 2014).

xxvi   Rest of the World, Households: MT6,127 million

Transfers by households to the rest of the world. Available from IMF Balance of Payments statistics, as other transfers, secondary income inflows (IMF 2022). The distribution of foreign transfers across households is based on the savings shares described in points xxvi above.

xxvii   Commodities, Government: MT219,047 million

Final consumption expenditure by general government. Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities. The total is also available from INE's published GDP account using the expenditure approach (INE 2021a).

xxviii   Enterprises, Government: MT18,310 million

Government transfers to enterprises. Available from 2019 State General Account government statistics (GdM 2020, subsidies to enterprises). This entry also includes MT17,246 million for 'Domestic interests' paid by government.

xxix   Households, Government: MT17,396 million

Government transfers to households. Available from 2019 State General Account government statistics (GdM 2020) it includes social security paid to pensioners, social assistance, other current transfers to households, net of stamp tax. Distribution across household categories is based on the Household Budget Survey (INE 2021b). The distribution of transfers other than pensions are approximated by pensions due to lack of data in the survey data.

xxx   Government, Government: MT4,955 million

Government transfers to other government units. They are available from 2019 State General Account government statistics (GdM 2020) and includes current transfers to public and private administrations.

xxxi   Accumulation, Government: MT60,323 million

Government budget deficit. Derived as a residual of government revenues and expenditures.

xxxii   Rest of the world, Government: MT12,302 million

Government transfers to the rest of the world. Available from the 2019 State General Account government statistics (GdM 2020) it includes government current transfers abroad, and external public debt servicing (interest).

xxxiii   Government, Net product taxes: MT90,186 million

Value added tax and domestic taxes on other products collected and transferred to the government. Same as entry vii above. Available from the 2019 State General Account government statistics (GdM 2020).

xxxiv   Government, Import duties: MT17,155 million

Import duties collected and transferred to the government. Same as entry viii above. Available from the 2019 State General Account government statistics (GdM 2020).

xxxv   Government, Income taxes: MT144,001 million

Income personal and corporate tax collected and transferred to the government. Also includes national reconstruction tax and simplified tax on small taxpayers. Derived from elsewhere in the SAM (see xviii and xxiv above). Available from the 2019 State General Account government statistics (GdM 2020).

xxxvi   Commodities, Changes in inventories: MT151,068 million

Change in inventories. Available from unpublished INE commodity Supply-Demand Balance accounts (INE 2022b), including the distribution across commodities. The total is also available from INE's published GDP account using the expenditure approach (INE 2021a).

xxxvii   Commodities, Accumulation: MT427,066 million

Gross fixed capital formation. Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including its distribution across commodities. The total is also available from INE's published GDP account using the expenditure approach.

xxxviii   Changes in inventories, Accumulation: MT151,068 million

Change in inventories. Derived from elsewhere in the SAM and transferred to the accumulation account (see xxxvi above).

xxxix   Commodities, Rest of the world: MT310,622 million

Exports of goods and services. Available from unpublished INE commodity supply-demand balance accounts (INE 2022b), including the distribution across commodities. The total is also available from INE's published GDP account using the expenditure approach (INE 2021a). An adjustment has been made for purchases by non-residents in Mozambique. These purchases are reported by INE for household expenditures as a total which has been distributed and subtracted according to the household expenditure demand patterns. The same is then added to exports to keep demand balanced with supply for each commodity.

xl   Labour, Rest of the world: MT8,205 million

Primary income, compensation of employees residing in the rest of the world. Available from IMF Balance of Payments statistics, as primary income inflows (IMF 2022). The

distribution across education levels and the urban–rural divide is based on the weighted average distribution of wage earnings across all industries.

xli   **Capital, Rest of the world: MT8,088 million**

Primary income, investment income from the rest of the world. Available from IMF Balance of Payments statistics, as primary income inflows (IMF 2022).

xlii   **Enterprises, Rest of the world: MT13,947 million**

Current transfers from the rest of the world to enterprises. Available from IMF Balance of Payments statistics, as secondary income inflows (IMF 2022).

xliii   **Households, Rest of the world: MT10,533 million**

Current transfers from the rest of the world to households. Available from IMF Balance of Payments statistics, as secondary income inflows (IMF 2022). Distribution across household categories is based on the Household Budget Survey (INE 2021b)

xlvi   **Government, Rest of the world: MT60,002 million**

Current transfers from the rest of the world to government. Available from IMF Balance of Payments statistics, as secondary income inflows (IMF 2022).

xlv   **Accumulation, Rest of the world: MT409,340 million**

Balance on the current account. Derived as a residual of receipts from and payments to the rest of the world.

4   Finalizing the SAM

Finalizing the SAM takes place in two stages. First, a SAM is constructed with detailed activities (industries) and commodities (product) that identifies single entries for the factor of production labour and for households. This SAM is known as the SUTSAM. In a second stage, the labour and household accounts in the SUTSAM are disaggregated.

4.1   SUTSAM

As mentioned at the start of the previous section, the core data of this SUTSAM is derived from INE's unpublished industry-level production accounts, commodity-level supply–demand balances, a highly aggregate Use Table and a full-sized Supply Table for 2019. These data sources are broadly consistent with each other.[10] Aggregation of these data sources to SAM commodities

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[10] By adopting the INE Industry Production Accounts as the benchmark, for example, the coal export orientation seems high compared to what can be derived from the INE Supply-Demand Reconciliation data. Using the INE Industry Production Accounts as the benchmark for industry production, intermediate inputs and value added, the electricity sector's intermediate inputs, including coal, is much lower than in the INE Use Table. This, in turn, scaled down intermediate sales of coal to the point that its exports as a share of total demand is now close to 75% while the INE Supply-Demand Reconciliation data implies a share of less than 50%. Put differently, according to the Use-Table, intermediate inputs of coal by electricity is about four times the total value of all intermediate inputs by electricity as reported in the Industry Production Accounts. Another seemingly implausible entry suggest that about 61% of the total sales of fish is destined to be delivered back to the fishing industry itself. A manual adjustment has been made to allocate a higher share of total demand to households and some to other food processing (which includes fish processing) and hotel and related food services.

and activities is reported in the appendices. However, some adjustments were required in order to fit them in a consistent SAM framework. They are discussed below.

The INE Use Table is highly aggregated and only identifies 18 activities. The Use Table can be expanded by assuming that the intermediate input patterns for the 18 activities apply to the full set of 52 SAM activities by mapping them to the SAM activities according to Appendix 2. However, some manual manipulation is required. Agriculture, livestock and forestry is a single activity in the INE classification of the INE Use Table. The intermediate input patterns for detailed industries are initially based on INE's aggregate for Agriculture, livestock and forestry. To make this representative for the SAM's 20 agricultural activities required some re-arranging such that for example the maize cropping activities only uses matching maize inputs for seeds and does not use for example rice as inputs etc. In doing so a 20x20 diagonal submatrix of the use matrix is created with relevant crop specific seed inputs from what was initially a column vector.

Similarly, the patterns of intermediate inputs purchased by the food processing sub-activities needed to be adapted. For example, meat processing doesn't require inputs from cereal cropping while cereal and vegetable processing doesn't need intermediate inputs from livestock farming. Such adjustments were also applied to textiles, clothing and leather.

For other intermediate inputs and/or other detailed activities, the assumption was made that average patterns of the INE activities were reasonable priors. Total intermediate sales for each commodity were forced to remain consistent with INE's Supply-Demand Reconciliation accounting (INE 2022b) while preserving total intermediate inputs for each activity from the INE Industry Production Accounts (INE 2022b). One complication is that the INE Supply-Demand Reconciliation and the Use as well as the Supply Table report a large residual (unspecified) commodity. This account shows negative intermediate sales and accounts for more than 60% of domestic product taxes and about 75% of changes in stocks. Its gross value of production is equal to the differences between the INE supply-demand balance for the trade services sector and this sector's industry account. It made sense to merge to two commodity accounts so as to maintain consistency with the industry gross value of production accounts (INE 2022b).

Domestic product taxes on (the expanded) trade services and their negative intermediate sales and changes in stock were set to zero in order to stay within the realm of economic plausibility. The adjustments of the former two could easily be adjusted to arrive at reasonable cross-entropy priors across the other commodity accounts because of a large number of non-zero entries while at the same time maintaining consistency with the Macro SAM. This was, however, not the case for changes in stock as it is only reported for a few commodities. Thus, scaling could have resulted in relatively large commodity account differences which would require major shifts in other parts of the SAM. To avoid this, a random number generator was used to create changes in stocks for all goods that did not have any. Some additional manual adjustment was required to keep the prior errors broadly in check.

An additional complication arose from the lack of sufficient detail in the INE industry production accounts for crop, livestock and textile/clothing. The dominant presence of agriculture in Mozambique requires disaggregation of crop production into a range of crop activities as well as livestock production accounts. Moreover, the aggregation of textiles and clothing warrants a breakdown into its respective components. The INE Supply Table (INE 2022a) reports total domestic supply for detailed crop, livestock and textile and clothing activities. This is scaled to their respective lower-level control totals from the INE industry production accounts (INE 2022b). The shares of total intermediate inputs to gross value of production for each of these detailed activities is taken from the 2015 SAM (Cruz et al. 2018) which allows for the derivation

total intermediate inputs as well as value added at the required level of SAM activity detail. The latter is used in point ii, iii and iv of the previous section.

In order to complete the SUTSAM, remaining inconsistencies between row and column totals were resolved using the cross-entropy estimation method as described by Robinson et al. (2001). The method has been set up such that the Macro SAM entries of Table 2 are preserved.

4.2   Standard micro SAM

The balanced SUTSAM includes production and consumption for own account by households which is at this stage not separated out. The INE Supply-Demand Balance accounts (INE 2022b) identify both and they were made to balance for each commodity. In doing so, domestic supply can be split into marketed and own account and the latter can be subtracted from total household expenditure so that the commodity accounts still balance. Underlying data inconsistency required an additional adjustment in order to avoid negative domestic marketed supply and marketed household demands.

After separating out own and marketing household expenditure, the SUTSAM, is disaggregated across factors and households. Since the SUTSAM is balanced, a final balancing act can be set up such that it only results in adjustments for the household accounts. There are a number of steps to this process.

1.   Total wage earnings are disaggregated across levels of highest education attained as described in point iii of the previous section for each industry using the 2019/20 Household Survey data (INE 2021b). Summing across industries creates total labour income for each labour type — after netting out in and outflows from and to the rest of the world (see points xl and xii of the previous section).

2.   Household outlays (expenditure on own produced and marketed goods and services, transfers made to government and the rest of the world, income taxes paid and savings) were distributed across households according to the 2019/20 Household Survey data (INE 2021b) as mentioned in the previous sections points xxi–xxvi. This nails down total outlays for each household.

3.   The shares of household incomes from the various sources - labour (mentioned in point 1) above, land, livestock, enterprises, government and the rest of the world - were also taken from the household survey as mentioned in sections x, xi, xvi, xxix and xliii of the previous section.

4.   Since total outlays must be equal to total income for each household, the latter were made to match the former with a biproportional scaling routine. In doing so, the resulting total income matches the total outlays of each household and imbalances are eliminated while holding all other non-household-related entries of the SUTSAM constant.

5   Final remarks on supplementary data to the SAM

For modelling purposes, estimates of physical employment in Mozambique are often considered to be useful. For purposes of the 2019 SAM for Mozambique employment data has been generated in four steps.

In the first step, shares of total employment for agriculture, industry (mining, manufacturing, utilities and construction) and services are taken from the World Development Indicators (WDI) (World Bank 2022). Total employment is given as a share of the 15+ population by the WDI. The latter is the difference between the WDI's 2019 estimates for total population and the population in the 0–14-year bracket.

In a second step, employment is further disaggregated to 12 sectors using the Economic Transformation Database (de Vries et al. 2001) for 2018 by multiplying their shares in the WDI subtotals with the latter.

The third step creates shares of total employment in Mozambique for the detailed SAM industries using the results of the second stage and wage earnings data from the SAM. The shares of the latter in the former are matched to the results of the second stage to arrive at total employment for each SAM activity.

The final step involves disaggregation of industry level employment into the highest level of education attainment level and urban–rural using employment shares from the Household Survey for 2019–20. Proxies are required for missing values according to mappings shown in Appendix 4.

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Appendix 1: INE industry accounts mapped to SAM industries

	SAM Activity Code	SAM Activity Label	INE Industry Production Code	INE Industry Label	INE Industry Production Label (English)
1	magric	Multiple Crops	R011	Agricultura	Agriculture
2	malive	Multiple Livestock	R014	Produção animal	Animal production
3	afore	Forestry	R020	Silvicultura, exploração florestal e actividades relacionadas	Forestry, logging and related activities
4	afish	Fishing	R031	Pesca maritima, em águas interiores e actividades dos serviços relacionados	Marine, inland fishing and related service activities
5	afish	Fishing	R032	Aquacultura	Aquaculture
6	acoal	Coal and lignite	R051	Extracção de carvão	Coal mining
7	angas	Natural gas	R062	Extracção de gás natural e condensados	Extraction of natural gas and condensates
8	aomin	Other mining	R070	Extracção e preparação de minérios metálicos	Mining of metal ores
9	aomin	Other mining	R080	Outras indústrias extrativas	Other mining and quarrying
10	aomin	Other mining	R090	Actividades dos serviços relacionadas com as indústrias extractivas	Service activities incidental to mining and quarrying
11	ameat	Meat	R101	Abate de animais, preparacao e conservaçao de carne e de produtos a base de carne	Slaughtering of animals, preparation and preserving of meat and meat products
12	afood	Other foods	R102	Preparação e conservação de peixes, crustâcios e moluscos	Processing and preserving of fish, crustaceans and molluscs
13	afood	Other foods	R105	Industria de lacticínios	Dairy products industry
14	acvgp	Cereal and vegetable processing	R106	Transformação de cereais e leguminosas; fabricação de rações	Processing of cereals and legumes; feed manufacture
15	acvgp	Cereal and vegetable processing	R1071	Panificação e pastelaria; fabricação de bolachas, etc.	Bakery and pastry making; cookie making, etc.
16	afood	Other foods	R1073	Indústria do açucar	Sugar industry
17	afood	Other foods	R1079	Fabricação de outros produtos alimentares diversos, n.e.	Manufacture of other miscellaneous food products n.e.c.
18	abevt	Beverages	R110	Fabricação de bebidas alcóolicas e não alcóolicas	Manufacture of alcoholic and non-alcoholic beverages
19	abevt	Beverages	R120	Processamento de tabaco e fabricação de cigarros, charutos e similares	Processing of tobacco and manufacture of cigarettes, cigars and similar products
20	mtxcl	Multiple: textile and clothing	R130	Fabricação de artigos têxteis e vestuário	Manufacture of textiles and apparel
21	aleat	Leather and footwear	R150	Preparação de couro e artigos de couro	Preparation of leather and leather products
22	awood	Wood and paper	R160	Industria de madeira e da cortica excepto mobiliario	Manufacture of wood and cork, except furniture
23	awood	Wood and paper	R170	Produção de papel e impressão	Production of paper and printing
24	achem	Chemicals	R200	Fabricação de produtos quimicos, plásticos e de borracha	Manufacture of chemicals, plastics and rubber products

SAM Activity Code	SAM Activity Label	INE Industry Production Code	INE Industry Label	INE Industry Production Label (English)
25 anmet	Non-metal minerals	R230	Fabricação de produtos minerais não metálicos	Manufacture of non-metallic mineral products
26 ametl	Metals and metal products	R241	Indústria metalúrgica de base	Manufacture of basic metals
27 ametl	Metals and metal products	R242	Indústria de aluminio de base	Manufacture of basic aluminium
28 amach	Machinery and equipment	R250	Fabricação de prod. metálicos incluido maquinas e equip.	Manufacture of metal products including machinery and equipment
29 aoman	Other manufacturing	R310	Fabricação de mobiliário (não madeira) e outrras indústrias transformadoras	Manufacture of furniture (non-wood) and other manufacturing industries
30 aoman	Other manufacturing	R329	Outras insdustrias transformadoras n.e. (Inclui artesanatos)	Other manufacturing n.e.c. (including handicrafts)
31 aelec	Electricity, gas and steam	R351	Produção, transporte, distribuição e comércio de electricidade	Production, transmission, distribution and trade of electricity
32 aelec	Electricity, gas and steam	R352	Produção de gás; distribuição de combustíveis gasosos por condutas e comércio de gás por conduta	Production of gas; distribution of gaseous fuels through mains; trade in gas through mains
33 awatr	Water supply and sewage	R360	Captação, tratamento e distribuição de água	Water collection, treatment and distribution
34 awatr	Water supply and sewage	R380	Recolha, tratamento, etc. de águas residuais, lixo, resíduos; descontaminação	Collection, treatment, etc. of sewage, garbage, waste; decontamination
35 acons	Construction	R410	Construção geral de edificios e desenvolvimento de projectos de edificios	General construction of buildings and development of building projects
36 acons	Construction	R421	Construção de auto-estradas, pontes, aeroportos e vias ferreas	Construction of freeways, bridges, airports and railways
37 acons	Construction	R422	Construção de redes de transporte de agua, distribuição de energia, de telecomunicacoes e outras redes	Construction of water transport, energy distribution, telecommunication and other networks
38 atrad	Wholesale and retail trade	R451	Comercio por grosso e a retalho	Wholesale and retail trade
39 atrad	Wholesale and retail trade	R452	Manutenção e reparação de veiculos automoveis e motociclos	Maintenance and repair of motor vehicles and motorcycles
40 atran	Transportation and storage	R491	Transporte ferroviario	Railroad transport
41 atran	Transportation and storage	R492	Transporte rodoviario	Road transport
42 atran	Transportation and storage	R493	Oleodutos e gasodutos	Oil and gas pipelines
43 atran	Transportation and storage	R500	Transportes por água	Water transport
44 atran	Transportation and storage	R510	Transportes aéreo	Air transport
45 atran	Transportation and storage	R520	Armazenagem e actividades auxiliares dos transportes	Warehousing and support activities for transportation
46 atran	Transportation and storage	R530	Actividades postais e dos correios	Postal and Courier Activities
47 ahotl	Accomodation and food services	R550	Alojamento, restauração e similares	Hotels, restaurants and similar activities
48 ahotl	Accomodation and food services	R560	Restauração e similares	Catering and similar activities
49 acomm	Information and communication	R580	Actividades de edição de livros, jornais e de outras publicações	Publishing activities of books, newspapers and other publications
50 acomm	Information and communication	R590	Actividades de rádio e de televisão	Radio and television activities

SAM Activity Code	SAM Activity Label	INE Industry Production Code	INE Industry Label	INE Industry Production Label (English)
51 acomm	Information and communication	R610	Telecomunicações	Telecommunications
52 acomm	Information and communication	R620	Consultoria informática e actividades de processamento de dados; portais web	Computer consultancy and data processing activities; web portals
53 afsrv	Finance and insurance	R641	Banco central	Central banking
54 afsrv	Finance and insurance	R642	Outras instituições financeiras monetárias	Other monetary financial institutions
55 afsrv	Finance and insurance	R650	Seguros e fundos de pensões	Insurance and pension funding
56 afsrv	Finance and insurance	R660	Actividades auxiliares de servicos financeiros e de seguros	Activities auxiliary to financial services and insurance
57 areal	Real estate activities	R680	Actividades imobiliarias	Real estate activities
58 absrv	Business services	R690	Actividades de consultoria, cientificas, tecnicas e similares	Consulting, scientific and technical activities
59 absrv	Business services	R770	Actividades de aluguer	Rental and leasing activities
60 absrv	Business services	R790	Agencias de viagem, operadores turisticos e outros servicos de reservas e actividades relacionadas	Travel agency, tour operator and other reservation service and related activities
61 absrv	Business services	R820	Actividades de servicos administrativos e de apoio perstados as empresas	Administrative and support service activities
62 apadm	Public administration	R841	Administração central	Central government
63 apadm	Public administration	R842	Administração local	Local government
64 apadm	Public administration	R843	Segurança social obrigatória	Compulsory social security
65 aeduc	Education	R850	Educação	Education
66 aheal	Health and social work	R860	Actividade de saude humana	Human health activities
67 aheal	Health and social work	R870	Actividades de acção social	Social work activities
68 aosrv	Other services	R900	Actividades artisticas, espectaculos, desportivos e recreativos	Artistic, entertainment, sports and recreational activities
69 aosrv	Other services	R940	Actividades de organizações associativas	Activities of associative organizations
70 aosrv	Other services	R950	Reparação de computadores e bens de uso pessoal e doméstico	Repair of computers and personal and household goods
71 aosrv	Other services	R960	Outras actividades de serviços pessoais	Other personal service activities
72 aosrv	Other services	R970	Actividades das familias empregadoras de pessoal domestico	Activities of households as employers of domestic staff
73 afsrv	Finance and insurance	R991	SIFIM	FISIM

Source: INE (2022b) and authors' mappings

Appendix 2: INE use table, industry and national accounts, industry mapping to SAM industries

SAM Activity Codes	SAM Activity Labels	INE Use Table Industry Codes	INE Use Table Industry Labels	INE National Accounts Industries
1 amaiz	Maize	a_agri	Agriculture, animal production and forestry	Agriculture
2 asorg	Sorghum and millet	a_agri	Agriculture, animal production and forestry	Agriculture
3 arice	Rice	a_agri	Agriculture, animal production and forestry	Agriculture
4 aocer	Other cereals	a_agri	Agriculture, animal production and forestry	Agriculture
5 apuls	Pulses	a_agri	Agriculture, animal production and forestry	Agriculture
6 agnut	Groundnuts	a_agri	Agriculture, animal production and forestry	Agriculture
7 aoils	Other oilseeds	a_agri	Agriculture, animal production and forestry	Agriculture
8 acass	Cassava	a_agri	Agriculture, animal production and forestry	Agriculture
9 aroot	Other roots	a_agri	Agriculture, animal production and forestry	Agriculture
10 avege	Vegetables	a_agri	Agriculture, animal production and forestry	Agriculture
11 asugr	Sugar cane	a_agri	Agriculture, animal production and forestry	Agriculture
12 atoba	Tobacco	a_agri	Agriculture, animal production and forestry	Agriculture
13 acott	Cotton and fibres	a_agri	Agriculture, animal production and forestry	Agriculture
14 afrui	Fruits and nuts	a_agri	Agriculture, animal production and forestry	Agriculture
15 acoff	Coffee and tea	a_agri	Agriculture, animal production and forestry	Agriculture
16 aocrp	Other crops	a_agri	Agriculture, animal production and forestry	Agriculture
17 acatt	Cattle	a_agri	Agriculture, animal production and forestry	Animal production
18 apoul	Poultry	a_agri	Agriculture, animal production and forestry	Animal production
19 aoliv	Other livestock	a_agri	Agriculture, animal production and forestry	Animal production
20 afore	Forestry	a_agri	Agriculture, animal production and forestry	Forestry
21 afish	Fishing	a_fishi	Fishing	Fishing, Aquaculture and related service activities
22 acoal	Coal and lignite	a_mine	Mining and quarrying	Extractive Industries
23 angas	Natural gas	a_mine	Mining and quarrying	Extractive Industries
24 aomin	Other mining	a_mine	Mining and quarrying	Extractive Industries
25 ameat	Meat	a_food	Other food processing industries	Manufacturing
26 acvgp	Cereal and vegetable processing	a_food	Other food processing industries	Manufacturing
27 afood	Other foods	a_food	Other food processing industries	Manufacturing
28 abevt	Beverages	a_food	Other food processing industries	Manufacturing

SAM Activity Codes		SAM Activity Labels	INE Use Table Industry Codes	INE Use Table Industry Labels	INE National Accounts Industries
29	atext	Textiles	a_oman	Other manufacturing	Manufacturing
30	aclth	Clothing	a_oman	Other manufacturing	Manufacturing
31	aleat	Leather and footwear	a_oman	Other manufacturing	Manufacturing
32	awood	Wood and paper	a_oman	Other manufacturing	Manufacturing
33	achem	Chemicals	a_oman	Other manufacturing	Manufacturing
34	anmet	Non-metal minerals	a_oman	Other manufacturing	Manufacturing
35	ametl	Metals and metal products	a_oman	Other manufacturing	Manufacturing
36	amach	Machinery and equipment	a_oman	Other manufacturing	Manufacturing
37	aoman	Other manufacturing	a_oman	Other manufacturing	Manufacturing
38	aelec	Electricity, gas and steam	a_elec	Electricity, gas and water production and distribution, waste collection and treatment	Production and Distribution of Electricity and Gas
39	awatr	Water supply and sewage	a_elec	Electricity, gas and water production and distribution, waste collection and treatment	Collection, Treatment and Distribution of Water
40	acons	Construction	a_cons	Construction	Construction
41	atrad	Wholesale and retail trade	a_trad	Wholesale and retail trade; vehicle maintenance and repair	Trade, Repair of Motor Vehicles
42	ahotl	Accomodation and food services	a_acco	Accommodation, restaurants and similar	Accommodation, Restaurants and Similar Services
43	atran	Transportation and storage	a_tran	Transportation and storage	Transportation, Warehousing
44	acomm	Information and communication	a_pcom	Publishing and communication activities	Information and Communication
45	afsrv	Finance and insurance	a_fins	Financial activities	Financial Activities
46	areal	Real estate activities	a_busrv	Rental and leasing activities, travel agencies…	Real Estate, Rental and Services Rendered to Companies
47	absrv	Business services	a_busrv	Rental and leasing activities, travel agencies…	Services Rendered to Companies
48	apadm	Public administration	a_pusrv	Public administration, defence and compulsory social security	Public Administration, Defense, and Social Security
49	aeduc	Education	a_edhs	Education, health and social work	Education
50	aheal	Health and social work	a_edhs	Education, health and social work	Health and Social Work
51	aosrv	Other services	a_osrv	Artistic activities; activities of associations; activities of households and domestic staff	Other community, social and personal service activities

Source: INE (2021a) and INE (2022a) and authors' mapping

Appendix 3 INE supply table, products mapped to SAM commodities

SAM Commodity Label	SAM Commodity Code	INE Product Label (English)	INE Product Code	INE Product Label
1 Other cereals	cocer	Wheat	P01111-1	Trigo
2 Maize	cmaiz	Corn	P01111-2	Milho
3 Sorghum and millet	csorg	Sorghum, millet and other cereal grains	P01111-9	Mapira, mexoeira e outro cereais em grão
4 Pulses	cpuls	Beans	P01112-1	Feijão
5 Groundnuts	cgnut	Peanut	P01112-2	Amendoim
6 Rice	crice	Rice in Husk	P01120	Arroz em casca
7 Cassava	ccass	Cassava	P01131	Mandioca
8 Other roots	croot	Other tubers and roots	P01139-1	Outros tubérculos e raízes
9 Vegetables	cvege	Vegetables	P01139-2	Produtos hortícolas
10 Sugar cane	csugr	Sugar cane	P01140	Cana de açúcar
11 Tobacco	ctoba	Leaf tobacco	P01150	Tabaco-folha
12 Cotton and fibres	ccott	Seed cotton	P01161	Algodão-caroço
13 Fruits and nuts	cfrui	Fresh fruit	P01200	Frutos frescos
14 Fruits and nuts	cfrui	Cashew	P01231	Cajú
15 Other oilseeds	coils	Copra and coconut	P01240-1	Copra e coco
16 Coffee and tea	ccoff	Leaf tea	P01251	Chá-folha
17 Other crops	cocrp	Other agricultural products for industrial use	P01291	Outros 21spectácu agrícolas de uso industrial
18 Other crops	cocrp	Other non-industrial agricultural products	P01292	Outros 21spectácu agrícolas não industriais
19 Cattle	ccatt	Cattle	P01410	Gado bovino
20 Other livestock	coliv	Sheep and goat cattle	P01420	Gado ovino e caprino
21 Other livestock	coliv	Pig cattle	P01430	Gado suíno
22 Poultry	cpoul	Live poultry	P01440-1	Aves vivas
23 Poultry	cpoul	Fresh eggs	P01440-2	Ovos frescos
24 Other livestock	coliv	Wild animals and other edible animals	P01499-1	Animais selvagens e outros comestíveis
25 Other livestock	coliv	Animal products	P01499-9	Produtos de origem animal
26 Forestry	cfore	Fuelwood and charcoal	P02200-1	Lenha e carvão vegetal
27 Forestry	cfore	Logs and other forestry products	P02200-2	Madeira em toros e 21spec 21spectácu da silvicultura
28 Forestry	cfore	Other forest products, except timber	P02300	Outros 21spectácu florestais, excepto madeira
29 Fishing	cfish	Fresh, chilled fish	P03111-1	Peixes frescos, refrigerados
30 Fishing	cfish	Shrimp, prawns and lobster	P03111-2	Camarão, gamba e lagosta
31 Fishing	cfish	Other fishing products	P03111-3	Outros produtos da pesca
32 Coal and lignite	ccoal	Mineral coal	P05100	Carvão mineral
33 Natural gas	cngas	Natural gas, liquefied or in gaseous state	P06201	Gás natural, liquefeito ou no estado gasoso
34 Natural gas	cngas	Natural gas condensate	P06202	Condensados de gás natural
35 Other mining	comin	Bauxite	P07291	Bauxite

	SAM Commodity Label	SAM Commodity Code	INE Product Label (English)	INE Product Code	INE Product Label
36	Other mining	comin	Other metallic minerals	P07299	Outros minerais metálicos
37	Other mining	comin	Stone, clay and sand	P08100	Pedra, argila e areia
38	Other mining	comin	Extracted salt	P08930	Sal extraido
39	Other mining	comin	Precious and semi-precious stones	P08991	Pedras preciosas e semi-preciosas
40	Other mining	comin	Other non-metallic minerals	P08999	Outros minerais não metálicos
41	Other mining	comin	Mining services	P09000	Serviços de mineração
42	Meat	cmeat	Beef and veal	P10101-1	Carne de bovino
43	Meat	cmeat	Pork	P10101-2	Carne de suino
44	Meat	cmeat	Meat of other domesticated animals except poultry	P10101-3	Carne de outros animais domesticados, 22spect aves
45	Meat	cmeat	Skins and hides	P10101-8	Peles e couro
46	Meat	cmeat	Poultry meat	P10102	Carne de aves
47	Meat	cmeat	Meat products	P10104	Produtos a base de carne
48	Other foods	cfood	Prepared and preserved fish products	P10200	Produtos da pesca preparados e em conserva
49	Other foods	cfood	Processed fruits and vegetable products incl. juices	P10301	Frutos e 22spectácu vegetais transformados 22spec sumos
50	Other foods	cfood	Whole and broken cashew kernels	P10302	Amêndoa de cajú inteira e partida
51	Other foods	cfood	Vegetable and animal oils	P10400	Óleos vegetais e animais
52	Other foods	cfood	Processed milk and dairy products	P10500	Leite processado e derivados
53	Cereal and vegetable processing	ccvgp	Wheat flour	P10611-1	Farinha de trigo
54	Cereal and vegetable processing	ccvgp	Maize flour	P10611-2	Farinha de milho
55	Cereal and vegetable processing	ccvgp	Manioc flour and derivatives, including tapioca	P10612	Farinha de mandioca e derivados, inclui tapioca
56	Cereal and vegetable processing	ccvgp	Husked rice	P10613	Arroz descascado
57	Cereal and vegetable processing	ccvgp	Other milling products and services	P10619	Outros 22spectácu e serviços de moagem
58	Other foods	cfood	Bread, pastry, and confectionery products	P10710	Pão, e 22spectácu de pastelaria e doçaria
59	Other foods	cfood	Sugar and sugar molasses	P10730	Açúcar e Melaço de açúcar
60	Other foods	cfood	Pasta	P10750	Massas alimentícias
61	Other foods	cfood	Other products of food industries	P10790	Outros 22spectácu das 22spectácul alimentícias
62	Cereal and vegetable processing	ccvgp	Feed	P10800	Rações
63	Beverages	cbevt	Spirits and other spirituous beverages	P11010-1	Aguardentes e 22spec bebidas espirituosas
64	Beverages	cbevt	Traditional alcoholic beverages	P11010-2	Bebidas alcóolicas tradicionais
65	Beverages	cbevt	Wine	P11020	Vinho
66	Beverages	cbevt	Beer and malt	P11030	Cerveja e malte
67	Beverages	cbevt	Mineral waters and soft drinks	P11041	Águas minerais e bebidas refrigerantes não alcoólicas

SAM Commodity Label	SAM Commodity Code	INE Product Label (English)	INE Product Code	INE Product Label
68 Beverages	cbevt	Tobacco products and manufactured tobacco substitutes; homogenized or reconstituted tobacco; tobacco extracts and essences	P12001	Produtos do tabaco e seus 23spectácul, manufacturados; tabaco homogenizado ou reconstituído; extractos e molhos de tabaco
69 Beverages	cbevt	Cigarettes, cigars and similar products	P12002	Cigarros, de charutos e similares
70 Textiles	ctext	Cotton fiber	P13111-1	Fibra de algodão
71 Textiles	ctext	Other products of spinning	P13111-2	Outros produtos de fiação
72 Textiles	ctext	Textile products, knitted or crocheted	P13900	Produtos têxteis, malhas e tapecaria
73 Clothing	cclth	Clothing, except of plastics	P14100	Vestuário, 23spect de plástico
74 Leather and footwear	cleat	Tanning, dressing and leather goods	P15000	Curtumes, calçado e artigos de couro
75 Wood and paper	cwood	Products of wood sawmilling, veneer sheets and plywood, carpentry	P16000	Produtos da serração de madeira, folhados e contraplacados, carpintaria
76 Wood and paper	cwood	Paper and articles of paper and board	P17000	Papel e artigos de papel e cartão
77 Wood and paper	cwood	Graphic arts and publishing products	P18100	Produtos das artes gráficas e edição
78 Petroleum	cpetr	Gasoline	P19200-1	Gasolina
79 Petroleum	cpetr	Diesel	P19200-2	Gasóleo
80 Petroleum	cpetr	Other petroleum-derived fuels	P19200-3	Outros combústíveis derivados do petróleo
81 Petroleum	cpetr	Oils and lubricating greases, including bitumen	P19200-9	Óleos e massas lubrificantes, inclui betume
82 Chemicals	cchem	Other industrial chemicals	P20100	Outros produtos químicos industriais
83 Chemicals	cchem	Fertilizers and pesticides	P20210	Adubos e pestecidas
84 Chemicals	cchem	Paints, varnishes, synthetic resins and plastic materials	P20220	Tintas, vernizes, resinas sintéticas e materiais plásticas
85 Chemicals	cchem	Soaps, detergents, cleaning products	P20231	Sabões e sabonetes, detergentes, 23spectácu de limpeza
86 Chemicals	cchem	Miscellaneous chemical products	P20290	Produtos químicos diversos
87 Chemicals	cchem	Pharmaceutical products	P21000	Produtos farmacêuticos
88 Chemicals	cchem	Tires and tubes	P22110	Pneus e 23spectá de ar
89 Chemicals	cchem	Other rubber articles	P22190	Outros artigos de borracha
90 Chemicals	cchem	Plastic articles	P22200	Artigos de plástico
91 Non-metal minerals	cnmet	Glass and glassware	P23100	Vidro e artigos de vidro
92 Non-metal minerals	cnmet	Porcelain, earthenware and stoneware	P23910	Artigos de porcelana, faiança e grés
93 Non-metal minerals	cnmet	Clay building materials	P23920	Materiais de barro para a construção
94 Non-metal minerals	cnmet	Cement and clinker	P23941	Cimento e clinquer
95 Non-metal minerals	cnmet	Lime and gypsum products or (Manufacture of concrete products)	P23950	Produtos de fibrocimentoç cal e gesso ou (Fabricação de 23spectácu de betão)
96 Non-metal minerals	cnmet	Stone for construction and other non-metallic products	P23960	Pedra para construção e 23spec 23spectácu nao metalicos
97 Metals and metal products	cmetl	Rolled products of iron and steel	P24100-1	Produtos laminados de ferro e aço
98 Metals and metal products	cmetl	Iron or steel rod, wire and tube	P24100-2	Varão, arame e tubos de ferro ou aço
99 Metals and metal products	cmetl	Other basic products of iron or steel	P24100-3	Outros 23spectácu básicos de ferro ou aço
100 Metals and metal products	cmetl	Aluminum	P24200-1	Aluminio
101 Metals and metal products	cmetl	Other products of the basic non-ferrous metal industry	P24200-2	Outros 23spectácu da industria 23spect de metais não ferrosos

SAM Commodity Label	SAM Commodity Code	INE Product Label (English)	INE Product Code	INE Product Label
102 Machinery and equipment	cmach	Metal construction elements	P25110	Elementos de construção em metal
103 Machinery and equipment	cmach	Cutlery, hand tools	P25930	Cutelarias, ferramentas manuais
104 Machinery and equipment	cmach	Other metal products	P25990	Outros produtos metálicos
105 Machinery and equipment	cmach	Office machinery and equipment	P26200	Maquinas de escritorio e equipamento
106 Machinery and equipment	cmach	Radio, TV and communications equipment and apparatus	P26400	Equipamento e aparelhos de radio, TV e comunicacoes
107 Machinery and equipment	cmach	Other electronic and optical products	P26999	Outros 24spectácu electrónicos e ópticos
108 Machinery and equipment	cmach	Electrical and non-electrical household appliances	P27500	Aparelhos para uso doméstico, 24spectácu e não electrico
109 Machinery and equipment	cmach	Electrical machinery and appliances except household appliances	P27900	Maquinas e aparelhos 24spectácul exc. Para uso doméstico
110 Machinery and equipment	cmach	Tractors and accessories, agricultural machinery and equipment	P28210	Tractores e seus acessórios, maquinas e equipamentos agricolas
111 Machinery and equipment	cmach	Machinery for mining, quarrying and construction	P28240	Máquinas para as 24spectácul extractivas e para construção
112 Machinery and equipment	cmach	Other machinery and equipment	P28999	Outras maquinarias e equipamento
113 Machinery and equipment	cmach	Cars for passenger transport	P29100-1	Automóveis para o transporte de passageiros
114 Machinery and equipment	cmach	Other motor vehicles (incl. passenger coaches)	P29100-2	Outros automóveis (incl. machimbombos)
115 Machinery and equipment	cmach	Parts, spare parts and accessories of motor vehicles	P29300	Partes, peças separadas e acessórios de automveis
116 Machinery and equipment	cmach	Other transport equipment n.e.c.	P30000	Outro material de transporte n.e.c.
117 Other manufacturing	coman	Furniture	P31000	Mobília
118 Other manufacturing	coman	Other unspecified manufactured goods	P32000	Outros 24spectácu transformados não especificados
119 Other manufacturing	coman	Handicraft products	P32900	Produtos de artesanatos
120 Machinery and equipment	cmach	Repair and maintenance of metal products, machinery and equipment	P33000	Reparação e manutenção de 24spectácu metálicos, máquinas e equipamentos
121 Electricity, gas and steam	celec	Electricity	P35100	Electricidade
122 Electricity, gas and steam	celec	Gas	P35200	Gás
123 Water supply and sewage	cwatr	Water collection, treatment and distribution	P36000	Captação, tratamento e distribuição de 24spe
124 Water supply and sewage	cwatr	Collection, treatment, etc. of wastewater, garbage, waste; decontamination	P38000	Recolha, tratamento, etc. De águas residuais, lixo, 24spectác; descontaminação
125 Construction	ccons	Building construction (residential and non-residential)	P41000	Construção de 24spectácu (residenciais e não residenciais)
126 Construction	ccons	Construction of highways, roads, bridges, airports and railways	P42100	Construcao de auto-estradas, estradas, 24spect, aeroportos e 24spe ferreas
127 Construction	ccons	Construction of water transport, energy distribution, telecommunication and other networks	P42200	Construcao de redes de transporte de agua, distribuicao de 24spectá, de telecomunicacoes e 24spec redes
128 Wholesale and retail trade	ctrad	Trade services	P45100	Serviços de comércio

SAM Commodity Label	SAM Com-modity Code	INE Product Label (English)	INE Product Code	INE Product Label
129 Wholesale and retail trade	ctrad	Repair of vehicles and personal and household goods	P45200	Reparação de veículos e bens de uso pessoal e doméstico
130 Transportation and storage	ctran	Passenger rail transport	P49110	Transporte ferroviário de passageiros
131 Transportation and storage	ctran	Railroad transportation of merchandise	P49120	Transporte ferroviário de mercadorias
132 Transportation and storage	ctran	Road passenger transport	P49210	Transporte rodoviário de passageiros
133 Transportation and storage	ctran	Road transport of merchandise	P49230	Transporte rodoviário de mercadorias
134 Transportation and storage	ctran	Transport of goods by pipeline	P49300-1	Transporte por oleodutos
135 Transportation and storage	ctran	Transport of goods by pipeline	P49300-2	Transporte por gasoduto
136 Transportation and storage	ctran	Sea and coastal water transport	P50000	Transporte marítimo e cabotagem
137 Transportation and storage	ctran	Air transport	P51000	Transporte aéreo
138 Transportation and storage	ctran	Supporting and auxiliary transport services	P52240	Serviços anexos e auxiliares dos transportes
139 Information and communication	ccomm	Courier services	P53000	Servicos de correio
140 Accomodation and food services	chotl	Hotel services	P55000	Serviços de hotéis
141 Accomodation and food services	chotl	Restaurant services	P56000	Serviços de restaurantes
142 Information and communication	ccomm	Publishing of books, newspapers and other publications	P58000	Edição de livros, jornais e de outras publicações
143 Information and communication	ccomm	TV, radio, film and video services	P59000	TV, 25spec,25spec videos
144 Information and communication	ccomm	Wireline telecommunications services	P61100	Serviços de telecomunicações por fio
145 Information and communication	ccomm	Mobile telephone services	P61200	Servicos de telefonia móvel
146 Information and communication	ccomm	Other telecommunications services	P61900	Outros serviços de telecomunicações
147 Information and communication	ccomm	Computer consulting, etc.	P62000	Consultoria informática, etc.
148 Finance and insurance	cfsrv	Monetary intermediation services except FISIM	P64000-1	Serviços de intermediação monetária exc. SIFIM
149 Finance and insurance	cfsrv	FISIM	P64000-2	SIFIM
150 Finance and insurance	cfsrv	Insurance services	P65000	Serviços de seguros
151 Finance and insurance	cfsrv	Services auxiliary to financial intermediation	P66000	25spectácu auxiliares de intermediação financeira
152 Real estate activities	creal	Residential real estate services	P68000-1	Serviços de imóveis residenciais
153 Real estate activities	creal	Other real estate services	P68000-2	Outros serviços de imóveis
154 Business services	cbsrv	Scientific, technical and similar consulting	P69000	25spectáculos 25spectáculo, 25spectác e similares
155 Business services	cbsrv	Rental and leasing services of transport equipment and machinery	P77000	Serviços de aluguer de máquinas e equipamentos de transporte
156 Business services	cbsrv	Travel agency services	P79000	Serviços das agências de viagens e turismo
157 Business services	cbsrv	Main business services	P82000	Serviços prestados principalmente às empresas

SAM Commodity Label	SAM Commodity Code	INE Product Label (English)	INE Product Code	INE Product Label
158 Public administration	cpadm	Public administration (central) and defense services	P84111	Serviços da administração pública (central) e defesa
159 Public administration	cpadm	Municipal government services	P84112	Serviços da administração autárcica
160 Public administration	cpadm	Compulsory social security services	P84300	26spectácu de segurança social obrigatoria
161 Education	ceduc	Public education services	P85000-1	Servicos de educação pública
162 Education	ceduc	Private education services	P85000-2	Serviços de educação privada
163 Education	ceduc	Other education services	P85000-3	Outros serviços educativos
164 Health and social work	cheal	Public Health Services	P86000-1	Servicos de saúde pública
165 Health and social work	cheal	Private Health Care Services	P86000-2	Serviços de saúde privada
166 Health and social work	cheal	Public Social Welfare Services	P87000-1	26spectácu de acção social pública
167 Health and social work	cheal	Private social work services	P87000-2	26spectácu de acção social privada
168 Other services	cosrv	Arts, entertainment, sports and recreation services	P90000	Serviços 26spectácul, 26spectáculos, desportivos e recreativos
169 Other services	cosrv	Services provided by organizations	P94000	Serviços prestados por organizações
170 Other services	cosrv	Repair of computers and personal and household goods	P95000	Reparação de computadores e bens de uso pessoal e doméstico
171 Other services	cosrv	Other personal services	P96000	Outros serviços pessoais
172 Other services	cosrv	Domestic services	P97000	Serviços domésticos

Source: INE (2022a) and authors' mapping.

Appendix 4: Mapping of proxy activities for the distribution of wage earnings and employment by rural-urban and highest level of education attainment

	SAM Activity Code	SAM Activity Label		SAM Activity Code	SAM Activity Label
1	amaiz	Maize	Used as Proxy for	asorg	Sorghum and millet
2	amaiz	Maize	Used as Proxy for	arice	Rice
3	amaiz	Maize	Used as Proxy for	aocer	Other cereals
4	amaiz	Maize	Used as Proxy for	apuls	Pulses
5	amaiz	Maize	Used as Proxy for	agnut	Groundnuts
6	amaiz	Maize	Used as Proxy for	aoils	Other oilseeds
7	amaiz	Maize	Used as Proxy for	acass	Cassava
8	amaiz	Maize	Used as Proxy for	aroot	Other roots
9	amaiz	Maize	Used as Proxy for	avege	Vegetables
10	afrui	Fruits and nuts	Used as Proxy for	asugr	Sugar cane
11	afrui	Fruits and nuts	Used as Proxy for	atoba	Tobacco
12	afrui	Fruits and nuts	Used as Proxy for	acott	Cotton and fibres
13	afrui	Fruits and nuts	Used as Proxy for	acoff	Coffee and tea
14	afrui	Fruits and nuts	Used as Proxy for	aocrp	Other crops
15	acatt	Cattle	Used as Proxy for	apoul	Poultry
16	acatt	Cattle	Used as Proxy for	aoliv	Other livestock
17	aclth	Clothing	Used as Proxy for	aleat	Leather and footwear
18	aoman	Other manufacturing	Used as Proxy for	amach	Machinery and equipment

Source: authors' mapping.

Appendix 5: Mapping of proxies for the distribution of household marketed expenditure across rural-urban and income quintiles

	SAM Commodity Code	SAM Commodity Label		SAM Commodity Code	SAM Commodity Label
1	cpuls	Pulses	Used as Proxy for	cgnut	Groundnuts
2	cpuls	Pulses	Used as Proxy for	coils	Other oilseeds
3	cocrp	Other crops	Used as Proxy for	csugr	Sugar cane
4	cocrp	Other crops	Used as Proxy for	ctoba	Tobacco
5	cocrp	Other crops	Used as Proxy for	ccoff	Coffee and tea
6	cmeat	Meat	Used as Proxy for	ccatt	Cattle
7	cfood	Other foods	Used as Proxy for	cfish	Fishing

Source: authors' mapping.

Appendix 6: List of acronyms

CEEG	Centro de Estudos Económicos e de Gestão (Centre for Economic and Management Studies, University of Eduardo Mondlane, Maputo)
CGE	computable general equilibrium
ETD	Economic Transformation Database (UNU-WIDER)
GDP	Gross domestic product
GOS	Gross operating surplus
GVP	Gross value of production (output/costs of production)
IMF	International Monetary Fund
INE	Instituto Nacional de Estatística (Public Sector Statistical Office, Maputo)
IOF	Inquérito Sobre Orçamentos Familiares (Household Budget Survey)
MEF-DNPED	Ministry of Economy and Finance
NA	National accounts
SAM	Social accounting matrix
ST	Supply table
SUT	Supply-use table
SUTSAM	Supply-use SAM, with single household and single labour account
UCPH-DERG	Development Economic Research Group (University of Copenhagen)
UNU-WIDER	United Nations University World Institute for Development Economic Research
UT	Use table
WB	World Bank
WDI	World Development Indicators (World Bank)