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Nota técnica N°6

Social Accounting Matrix for Uruguay 2022

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Marzo 2026

ISSN 3072-869X

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Cita APA:

Ibarra, Ulyses, Mercartante, Juan I., Romero, Carlos A. & Ramos, M. Priscila (2026). Social Accounting Matrix for Uruguay 2022. Serie MESi NT, 6, 1-29.

Editorial:

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Resumen

MCS
Uruguay

Esta nota técnica presenta la construcción y el análisis de la Matriz de Contabilidad Social (MCS) de Uruguay para 2022. La MCS integra datos de las Tablas de Oferta y Utilización, Cuentas Nacionales, encuestas de hogares, informes fiscales y balanza de pagos en un marco coherente e internamente consistente. Incluye 21 sectores productivos, 5 grupos de hogares por quintil de ingreso, una cuenta del gobierno central y una cuenta del Resto del Mundo. La MCS de Uruguay 2022 constituye la base empírica para calibrar modelos de simulación multisectoriales, incluidos modelos de Equilibrio General Computable (EGC), orientados a evaluar políticas públicas y shocks exógenos. La nota también presenta un análisis insumo-producto de la estructura productiva uruguaya, con multiplicadores de oferta y demanda y encadenamientos sectoriales.

Abstract

SAM
Uruguay

This technical note presents the construction and analysis of Uruguay's 2022 Social Accounting Matrix (SAM). The SAM integrates data from Supply and Use Tables, National Accounts, household surveys, fiscal reports, and balance of payments into a coherent and internally consistent framework. It includes 21 productive sectors, 5 household groups by income quintile, a central government account, and a Rest of the World account. The Uruguay 2022 SAM provides the empirical basis for calibrating multisectoral simulation models, including Computable General Equilibrium (CGE) models, to assess public policies and exogenous shocks. The note also includes an input-output analysis of Uruguay's productive structure, estimating supply and demand multipliers and sectoral linkages.

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1. Introduction

The objective of this technical note is to present the Social Accounting Matrix (SAM) for Uruguay for the year 2022. This matrix serves not only as a comprehensive information framework but also provides the necessary empirical foundation for the development and implementation of Computable General Equilibrium Models (CGE).

The estimation results presented herein detail the structural interdependencies of the Uruguayan economy, including 21 productive sectors, 5 representative households divided by income quintiles, a central government account, and a representative agent for the Rest of the World.

The remainder of this document is organized as follows:

- Section 2 outlines the fundamental conceptual aspects and the accounting structure of a SAM.
- Section 3 describes the data sources and methodologies employed to estimate the primary accounts for the Uruguay 2022 SAM, while providing the aggregated version of the matrix.
- Section 4 analyzes the production linkages derived from this SAM, exploring current input-output relationships and offering a comparative perspective on the country's economic structure.
- Finally, Section 5 concludes.

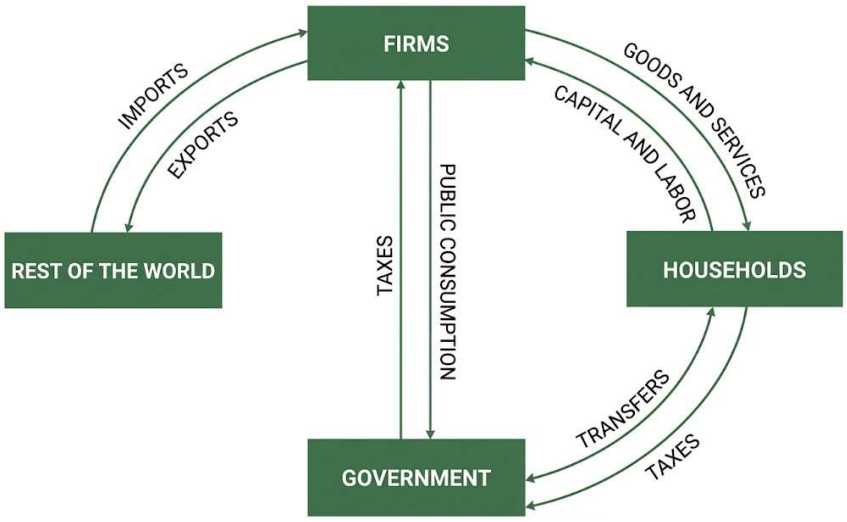
2. Key Aspects of a Social Accounting Matrix (SAM)

2.1 What is a SAM?

A Social Accounting Matrix (SAM) serves as a comprehensive statistical system designed to map the diverse economic transactions within a country during a specific year. Beyond being a simple data repository, it functions as an integrated framework that guarantees accounting equilibrium, ensuring that all economic flows are internally consistent and balanced.

The SAM generalizes the input-output matrix by extending production flows toward the distribution of value-added and transfers between institutions. Within this framework, every sale recorded by one agent is necessarily a purchase by another, making explicit the circular flow of the economy and the interdependence between production activities, factor remuneration, value-added generation, and redistribution among institutions and socioeconomic strata. This can be observed in Figure 1.

Figure 1 | Simplified circular flow of the economy



Source: (Michelena, 2022)

At its core, the SAM is a square matrix where each account is represented by a corresponding row and column. Following the double-entry bookkeeping principle, rows record receipts (income) while columns detail expenditures (outlays). For the matrix to be internally consistent, it must satisfy the fundamental accounting identity: total income for each account must equal its total expenditure. This ensures that the budget constraints of all economic agents are strictly met (Pyatt, 1985).

The architecture of a SAM is flexible and can be adapted based on the specific classification of its accounts. As shown in Table 1, the SAM extends the traditional Input-Output framework to encompass all institutional sectors. Generally, the matrix is organized into five primary categories:

1. Production Activities: The process of generating goods and services.
2. Commodities: The domestic and international supply of products.
3. Factors of Production: Labor and capital services.
4. Institutions: Primarily households and the government.
5. Rest of the World (RoW): All external transactions and foreign trade.

Table 1 | Basic SAM structure

	Firms	Households	Government	Investment	Rest of the World	Total
Firms	Intermediate Consumption	Private Consumption	Public Consumption	Investment	Exports	Demand
Households	Income		Government Transfers		Transfers	Household Income
Government		Taxes			Transfers	Government Revenue
Savings		Household savings	Government savings		Current Account Balance	Savings
Rest of the World	Imports					Currency outflows
Total	Supply	Household Expenditure	Government Expenditure	Investment	Currency inflows	

Source: (Michelena, n.d.).

The structure of Table 1 is straightforward: rows record sales (revenues), while columns detail expenditures (outlays). For instance, the "Private Consumption" cell, located at the intersection of the Firm row and the Households column, denotes income for firms and a corresponding expense for households.

Similarly, "Government Transfers" reflect a public sector expenditure that constitutes income for households. This schematic arrangement explicitly demonstrates the fundamental budget consistency inherent in the SAM framework, where every financial flow is accounted for as both a receipt and an outlay.

2.2 Developing a SAM

Developing a SAM requires integrating the most recent economic data into a unified framework. A significant challenge in this process is that the necessary information originates from highly diverse sources—including Supply and Use Tables (SUT), National Accounts, household and business surveys, labor market statistics, fiscal reports, and balance of payments data.

Furthermore, these sources often operate on different timescales. For instance, while National Accounts and trade data are typically updated annually, Input-Output structures may only be fully revised every five years or more. Depending on data availability, a SAM is either built from the ground up or updated from a previous iteration using new information.

The construction of the Uruguay 2022 SAM followed these essential phases:

1. Baseline Selection: Choosing 2022 as the base year ensures access to comprehensive datasets while providing a period of relative macroeconomic stability to avoid structural biases.
2. Macro-SAM Development: Establishing a high-level aggregate matrix to define the overall economic boundaries.

3. Sub-matrix Disaggregation: Breaking down the Macro-SAM into detailed components for activities, sectoral disaggregation, commodities, and institutional agents.
4. Data Reconciliation (Micro-SAM): This final stage involves harmonizing conflicting data from multiple sources to produce the final "Micro-SAM". This remains the most demanding phase, requiring efficient balancing techniques to ensure all accounts satisfy the fundamental accounting identities.

2.3 Why are SAMs useful?

Once the foundational principles and construction methods are established, it becomes clear why a SAM is the indispensable framework for both Input-Output (I-O) analysis (Miller & Blair, 2009) and Computable General Equilibrium (CGE) models (Chisari et al., 2012). A SAM facilitates model development in two critical ways:

1. Systematic Data Organization: It synthesizes a country's disparate economic data into a coherent and unified structure.
2. Theoretical Consistency: It provides the empirical validation required to calibrate models that adhere to Walras' Law, ensuring that the sum of excess demands across all markets equals zero.

Furthermore, the I-O data embedded within the SAM allows for sophisticated sectoral analyses. This includes descriptive studies of economic structures, as well as the calculation of productive linkages and multiplier effects. Within the Uruguay context, several studies have utilized this framework to explore these interdependencies.

We can highlight some works that utilize an Input-Output analysis, such as: Piaggio et al. (2014) identify key greenhouse gas emitting sectors and study which kind of policies and technical improvements should target either direct or indirect polluters; (Lechon et al., 2019) is another case study that uses the Input-Output framework to find that sugarcane bioethanol's impact on value added and job creation compensates for the costs related to shifting away from fossil fuels.

There are some other applications of SAM matrices in the Uruguayan economy, related to CGE models. (Rosas, 2025) models a CO_2-neutral scenario for 2050, which implies a sharp reduction in fossil fuels demand, and assesses the impact on some macroeconomic variables. Some other interesting works on trade are: Estrades & Terra (2012) which explores the impact of changes in commodity prices on poverty; Chisari et al. (2009) evaluate gains on productivity and welfare caused by the liberalization of trade in services for Uruguay, Argentina and Brazil; Terra et al. (2009) analyze the gender-differentiated impacts of trade openness in Uruguay on employment, wages and time allocation, by simulating different scenarios of tariff changes. Some other CGE models applied to Uruguay on various topics are: BCU (2021) which studies shocks on three core sectors for the Uruguayan economy: pulp, agricultural and livestock production; Ackermann et al. (2021) estimate the macroeconomic and sectoral effects of eradicating a parasitic disease that largely affects Uruguayan livestock farming; Llambi et al.(2016) study the economy-wide effects of a tax reform that took place in Uruguay in 2007, and find large impacts on macroeconomic and labor outcomes, poverty and inequality.

As demonstrated by the extensive literature in the region, these matrices offer a versatile foundation for both Input-Output (I-O) analysis and the calibration of Computable General Equilibrium (CGE) models. By integrating these elements, the SAM transforms raw national statistics into a powerful diagnostic and predictive tool for evidence-based policymaking.

3. SAM Uruguay 2022

This section details the sectoral disaggregation of the SAM, outlines the primary data sources, and describes the assumptions made to ensure construction and consistency. It also presents the results obtained from this process.

3.1 Sectorial Disaggregation

The 2022 Social Accounting Matrix (SAM) was developed using the Central Bank of Uruguay's Supply and Use Tables as a primary data source. While the original dataset comprises 95 sectors, we present them aggregated into 21 broad sectors, as detailed in Table 2. A more detailed SAM comprising 56 sectors is available upon request. The 'COU Sector' column lists source data references, as it appears in the Supply and Use Tables for Uruguay. Corresponding 'SAM Sector' codes refer to the above-mentioned longer version of the SAM.

Table 2 | 21 Broad Sectors

#	Sector	SAM Sector	COU Sector
1	Agriculture, livestock and forestry	S1 to S8 and S10	A.1 to A.10 and A.12
2	Mining	S11	B.1
3	Food and beverages	S12 to S32	C.1 to C.15
4	Textiles and Leather	S33	C.16 to C.18
5	Wood and Paper	S9, S34 and S35	A.11 and C.19 to C.21
6	Fuels	S36	C.22
7	Chemicals	S37	C.23 and C.24
8	Rubber and Plastic	S38	C.28
9	Non-metallic minerals	S39	C.29
10	Metals and metal products; Machinery and Equipment	S40 and S41	C.31 to C.33
11	Vehicles, trailers and semi-trailers	S42	C.34 and C.35
12	Rest of industry	S43	C.25 to C.27, C.36 to C.38
13	Electricity, gas and Water	S44	D.1 to E.2
14	Construction	S45	F.1 and F.2
15	Commerce	S46	G.1 to G.5
16	Transport	S47 to S49	H.1 to H.6
17	Accommodation and restaurants	S50 and S51	I.1 and I.2
18	Financial, real estate and business activities	S52 and S53	K.1 to K.3
19	Public administration and defense; compulsory social security schemes	S54	O.1
20	Education and Health	S55	P.2 to Q.3
21	Rest of Services	S56	J.1 to J.4, M.1, N.2, N.3 and R.1 to T.1

Note: 'SAM Sector' indicates the sector code used in the longer version of the SAM (available upon request). 'COU Sector' refers to the original classification from Uruguay's National Accounts; COU stands for Cuadros de Oferta y Utilización, the Spanish acronym for Supply and Use Tables (SUT).

Source: own elaboration.

As a reminder, results in the upcoming sections will be displayed according to the 21 sectors described in Table 2.

3.2 Global Supply and Demand

This section presents the calculation and results for Uruguay's aggregate supply and demand for the year 2022. Aggregate demand is defined as the total value of goods and services required by the economy in a given year, comprising private consumption (C), investment (I), public consumption (G), and exports (X). According to national accounts identity, aggregate demand (AD) is expressed as:

$$AD = C + I + G + X$$

On the other hand, aggregate supply is defined as the sum of the value of final goods and services produced internally, measured at market prices (Gross Domestic Product, GDP_{mp}),

plus imports (M). The measurement of *GDP* at market prices includes taxes net of subsidies, ensuring consistency with the presentation of aggregate demand. Thus, the corresponding identity is:

$$AS = GDP_{mp} + M$$

In equilibrium, aggregate supply equals aggregate demand ($AS = AD$), ensuring that the market 'clears' without excess supply or demand in the Walrasian sense. For the estimation of the data presented in this section, the aggregate supply and demand tables prepared by the Central Bank of Uruguay (BCU) were used. Table 3 displays the values for aggregate supply and demand, along with the composition of each item, expressed in 2022 current Uruguayan pesos (UYU).

Table 3 | Uruguay 2022. Global Supply and Demand in millions of UYU and % shares

Concept	UYU (Millions)	%
GDP at market prices	2,906,435	78%
Imports	805,059	22%
GLOBAL SUPPLY	**3,711,494**	**100%**
Household Consumption	1,725,272	46%
Public Consumption	475,258	13%
Gross Domestic Investment	542,202	15%
Exports	968,762	26%
GLOBAL DEMAND	**3,711,494**	**100%**

Note: Values in millions of Uruguayan pesos (UYU) and percentage shares.

Source: own elaboration based on Central Bank of Uruguay (BCU).

The structure of Uruguay's economy in 2022 shows that GDP at market prices constitutes the bulk of Total Supply at 78%. On the demand side, combined public and private consumption represent a majority share (59%), while Gross Domestic Investment accounts for a smaller portion at 15% of the total. GDP in dollars accounted for 70,681 million, at an average exchange rate of 41.12 Uruguayan pesos per US dollar.

Further on, GDP at market prices is composed as detailed in Table 5.

Table 5 | Uruguay, 2022. Estimates of Gross Domestic Product at Market Prices in millions of UYU and % shares

Concept	UYU (Millions)	%
GDP at basic prices	2,569,124	88%
Taxes on products (net of subsidies)	337,311	12%
GDP at market prices	**2,906,435**	**100%**

Source: own elaboration based on BCU.

As shown in Table 5, tax burden (net of subsidies) applied to production amounts for 12% of GDP at market prices, for Uruguay in 2022.

3.3 Productive Factors Account

Table 6 provides a detailed breakdown of the Net Value Added (NVA) for Uruguay in 2022, categorized by sector of activity and factor of production. It highlights the distribution between labor (L), gross mixed income (GMI), and capital (K) to illustrate the primary drivers of value within each specific industry.

Table 6 | Uruguay, 2022. Value Added by sector in millions of UYU and % shares

Sector	UYU (Millions)			Net VA by factor	Percentage of Net VA at factor cost		
	L	GMI	K		L	GMI	K
Agriculture, livestock and forestry	35,117	16,928	107,013	159,057	22%	11%	67%
Mining	2,827	80	4,619	7,526	38%	1%	61%
Food and beverages	48,940	3,178	78,572	130,690	37%	2%	60%
Textiles and Leather	7,176	3,172	5,741	16,089	45%	20%	36%
Wood and Paper	11,191	1,555	41,172	53,919	21%	3%	76%
Fuels	2,722	-	16,558	19,280	14%	0%	86%
Chemicals	13,310	181	14,175	27,667	48%	1%	51%
Rubber and Plastic	3,948	121	3,233	7,301	54%	2%	44%
Non-metallic minerals	4,361	601	706	5,668	77%	11%	12%
Metals and metal products; Machinery and Equipment	9,308	2,189	9,436	20,933	44%	10%	45%
Vehicles, trailers and semi-trailers	4,793	1,020	3,273	9,087	53%	11%	36%
Rest of industry	7,858	3,002	8,473	19,332	41%	16%	44%
Electricity, gas and Water	21,467	398	50,689	72,554	30%	1%	70%
Construction	74,209	19,503	31,252	124,965	59%	16%	25%
Commerce	136,499	31,050	120,041	287,591	47%	11%	42%
Transport	61,629	5,713	72,581	139,923	44%	4%	52%
Accommodation and restaurants	26,466	5,130	26,147	57,744	46%	9%	45%
Financial, real estate and business activities	180,221	43,601	452,279	676,102	27%	6%	67%
Public administration and defense; compulsory social security schemes	121,141	-	4,870	126,011	96%	0%	4%
Education and Health	220,146	11,745	32,130	264,021	83%	4%	12%
Rest of Services	54,230	11,095	26,080	91,406	59%	12%	29%
Total	**1,047,560**	**160,264**	**1,109,040**	**2,316,864**	**45%**	**7%**	**48%**

Note: This table presents the breakdown of Net Value Added (NVA) at factor cost for Uruguay in 2022 across different sectors of activity. It details the contribution of labor (L), gross mixed income (GMI), and capital (K) to the total value generated by each industry.

Source: own elaboration based on BCU.

"Financial, real estate, and business services"—alongside "Commerce", "Education, and Health"—stand out as the primary contributors to Uruguay's Value Added (VA). The former is notably capital-intensive, whereas the latter is characteristically labor-intensive. In contrast, the Commerce sector occupies a middle ground between these two extremes.

3.4 Imports Accounts

Table 7 presents the sectoral distribution of imports for Uruguay in 2022, classified by their primary type of use: intermediate goods, investment, or consumption. This breakdown illustrates how imported resources are utilized across different economic activities, highlighting the sectors' reliance on foreign inputs for production or direct consumption.

Table 7 | Uruguay, 2022. Sectoral imports (in millions of UYU) distributed by type of use (as a percentage of total imports)

Sector	Intermediate	Investment	Consumption	Total
Agriculture, livestock and forestry	64%	0%	36%	21,127
Mining	100%	0%	0%	57,065
Food and beverages	34%	0%	66%	63,182
Textiles and Leather	15%	0%	85%	39,816
Wood and Paper	76%	0%	24%	14,034
Fuels	62%	0%	38%	13,911
Chemicals	75%	4%	20%	130,775
Rubber and Plastic	78%	0%	22%	19,474
Non-metallic minerals	89%	0%	11%	9,391
Metals and metal products; Machinery and Equipment	62%	23%	15%	137,457
Vehicles, trailers and semi-trailers	36%	18%	46%	61,025
Rest of industry	14%	2%	83%	26,614
Electricity, gas and Water	100%	0%	0%	5,074
Construction	0%	100%	0%	5,799
Commerce	90%	0%	10%	18,857
Transport	57%	0%	43%	36,256
Accommodation and restaurants	100%	0%	0%	287
Financial, real estate and business activities	81%	1%	19%	130,513
Public administration and defense; compulsory social security schemes	91%	1%	8%	2,319
Education and Health	100%	0%	0%	1,454
Rest of Services	59%	0%	41%	10,631
Total	**63%**	**7%**	**30%**	**805,059**

Note: This table presents the sectoral distribution of Uruguay's imports for 2022, categorized by their primary economic use: intermediate, investment, or consumption. It details the weight of each category relative to the total imports for each specific sector.

Source: own elaboration based on BCU.

"Metals and metal products; Machinery and Equipment", "Chemicals", and "Financial, real estate and business activities" represent Uruguay's leading importing sectors. Most of these imports comprise capital goods.

Table 8 illustrates the sectorial share of Uruguay's imports in 2022, categorized by type of use. Unlike previous data, this table shows the relative weight of each sector within the total 100% of intermediate, investment, and consumption imports, identifying which industries are the primary drivers of foreign demand in each category.

Table 8 | Uruguay, 2022. Sectorial imports share as a % of total imports by type of use

Sector	Intermediate	Investment	Consumption	Total
Agriculture, livestock and forestry	3%	0%	3%	3%
Mining	11%	0%	0%	7%
Food and beverages	4%	0%	17%	8%
Textiles and Leather	1%	0%	14%	5%
Wood and Paper	2%	0%	1%	2%
Fuels	2%	0%	2%	2%
Chemicals	19%	10%	11%	16%
Rubber and Plastic	3%	0%	2%	2%
Non-metallic minerals	2%	0%	0%	1%
Metals and metal products; Machinery and Equipment	17%	58%	8%	17%
Vehicles, trailers and semi-trailers	4%	19%	12%	8%
Rest of industry	1%	1%	9%	3%
Electricity, gas and Water	1%	0%	0%	1%
Construction	0%	10%	0%	1%
Commerce	3%	0%	1%	2%
Transport	4%	0%	7%	5%
Accommodation and restaurants	0%	0%	0%	0%
Financial, real estate and business activities	21%	1%	10%	16%
Public administration and defense; compulsory social security schemes	0%	0%	0%	0%
Education and Health	0%	0%	0%	0%
Rest of Services	1%	0%	2%	1%
Total	**509,343**	**55,527**	**240,189**	**805,059**

Note: This table presents the sectoral share of total imports for each type of use in Uruguay for the year 2022. Unlike previous tables, the percentage values here represent the contribution of each specific sector to the national total for that category (Intermediate, Investment, or Consumption), with each column totaling 100%.

Source: own elaboration based on BCU.

As illustrated in Table 8, 'Financial, real estate, and business activities' represents the leading importer of intermediate goods. In terms of capital investment, 'Metals and metal products; Machinery and Equipment' is the primary importer of investment goods, while 'Food and beverages' accounts for the largest share of consumption goods imports.

3.5 Domestic Demand Accounts

Table 9 presents the sectoral distribution of national demand for Uruguay in 2022. This data breaks down how the total output of each industry is allocated among four key destination categories: intermediate use, investment, consumption, and exports, providing insight into each sector's primary economic function.

Table 9 | Uruguay, 2022. Sectoral national demand (in millions of UYU) distributed by type of use (as a percentage of total imports)

Sector	Intermediate	Investment	Consumption	Exports	Total
Agriculture, livestock and forestry	62%	12%	3%	23%	390,793
Mining	13%	0%	83%	3%	23,480
Food and beverages	21%	40%	1%	38%	539,478
Textiles and Leather	20%	29%	3%	48%	83,427
Wood and Paper	46%	5%	0%	48%	188,533
Fuels	58%	35%	0%	7%	113,899
Chemicals	41%	7%	9%	43%	109,520
Rubber and Plastic	57%	9%	4%	29%	31,858
Non-metallic minerals	92%	2%	3%	3%	23,525
Metals and metal products; Machinery and Equipment	13%	9%	49%	29%	66,672
Vehicles, trailers and semi-trailers	25%	21%	44%	10%	41,038
Rest of industry	20%	50%	22%	9%	78,701
Electricity, gas and Water	56%	39%	0%	5%	147,322
Construction	15%	0%	85%	0%	340,514
Commerce	29%	29%	10%	32%	553,918
Transport	68%	15%	2%	15%	282,694
Accommodation and restaurants	5%	58%	0%	37%	152,758
Financial, real estate and business activities	39%	42%	7%	12%	1,165,359
Public administration and defense; compulsory social security schemes	6%	90%	2%	3%	214,395
Education and Health	14%	85%	1%	0%	475,957
Rest of Services	17%	72%	2%	9%	147,864
Total	**33%**	**37%**	**11%**	**19%**	**5,171,705**

Note: This table presents the sectoral distribution of national demand in Uruguay for 2022 by type of use. The percentage values indicate how the total domestic demand for each sector's production is allocated between intermediate use, investment, final consumption and exports.

Source: own elaboration based on BCU.

As evidenced in Table 9, 'Financial, real estate, and business activities', 'Commerce', and 'Food and Beverages' emerge as the three sectors with the highest domestic demand. The former is by far the largest, with demand heavily concentrated on intermediate and investment uses. Conversely, 'Commerce' and 'Food and Beverages' exhibit a more diversified demand profile, with a significant portion directed toward exports.

Table 10 illustrates the sectoral share of national demand in Uruguay for 2022. This vertical analysis expresses each industry's contribution as a percentage of the total for each category, identifying which specific sectors are the primary drivers of intermediate use, consumption, investment, and exports across the entire economy.

Table 10 | Uruguay, 2022. Sectoral national demand share as a % of total demand by type of use

Sector	Intermediate	Consumption	Investment	Exports	Total
Agriculture, livestock and forestry	14%	2%	2%	9%	8%
Mining	0%	0%	4%	0%	1%
Food and beverages	7%	11%	1%	21%	10%
Textiles and Leather	1%	1%	1%	4%	2%
Wood and Paper	5%	1%	0%	9%	4%
Fuels	4%	2%	0%	1%	2%
Chemicals	3%	0%	2%	5%	2%
Rubber and Plastic	1%	0%	0%	1%	1%
Non-metallic minerals	1%	0%	0%	0%	1%
Metals and metal products; Machinery and Equipment	1%	0%	6%	2%	1%
Vehicles, trailers and semi-trailers	1%	0%	3%	0%	1%
Rest of industry	1%	2%	3%	1%	2%
Electricity, gas and Water	5%	3%	0%	1%	3%
Construction	3%	0%	51%	0%	7%
Commerce	10%	8%	10%	18%	11%
Transport	11%	2%	1%	5%	6%
Accommodation and restaurants	1%	5%	0%	6%	3%
Financial, real estate and business activities	27%	25%	15%	14%	23%
Public administration and defense; compulsory social security schemes	1%	10%	1%	1%	4%
Education and Health	4%	21%	1%	0%	9%
Rest of Services	1%	6%	1%	1%	3%
Total	**1,700,865**	**1,938,439**	**563,638**	**968,762**	**5,171,705**

Note: This table presents the sectoral share of the total national demand in Uruguay for 2022. The percentage values indicate the contribution of each specific economic activity to the country's total intermediate consumption, investment, final consumption and exports.

Source: own elaboration based on BCU.

Table 10 underscores 'Financial, real estate, and business activities' as the largest sector regarding intermediate and investment demand. Construction concentrates more than half of total investment demand, while 'Food and Beverages' is the sector that exports the most.

3.6 Institutional Agents and Sectors Account

The analysis in this section focuses on data from the economic agents' accounts, incorporating both income distribution and the composition of national consumption, as well as the role of institutions—specifically the consolidated public sector. This approach moves beyond a traditional input-output framework toward a broader perspective that

considers not only productive interdependencies but also the socioeconomic relationships between households and institutions.

Within the SAM, households are disaggregated into income deciles. Data regarding household income and expenditure were sourced from the 2016-2017 ENGIH (*Encuesta de Gasto e Ingreso de los Hogares*). To enhance readability, Tables 11 and 12 present national household consumption figures aggregated by income quintiles.

Table 11 | Uruguay, 2022. Household revenue and expenditure in millions of UYU and as a % share of total

Concept	H1	H2	H3	H4	H5
Revenue	**133,963**	**240,231**	**284,129**	**519,491**	**1,123,846**
Labor	73%	64%	70%	47%	31%
GMI	11%	10%	11%	7%	5%
Capital	2%	15%	9%	36%	53%
Transfers of stocks	0%	1%	1%	3%	5%
Transfers	13%	9%	10%	7%	6%
Expenditure	**198,401**	**301,828**	**323,791**	**504,842**	**975,333**
Consumption	99%	92%	94%	75%	58%
Direct taxes	0%	0%	1%	1%	1%
Investment	1%	8%	5%	25%	41%
Balance	**- 64,438**	**- 61,597**	**- 39,662**	**14,649**	**148,513**

Source: own elaboration based on 2016-2017 ENGIH.

Table 11 details the composition of household income and expenditure across quintiles. The data reveal a clear structural shift in income sources: while labor is the primary driver for the first three quintiles (H1–H3), its relative importance declines in the upper tiers, where capital becomes the dominant source—accounting for 53% of revenue in H5. On the expenditure side, consumption absorbs nearly all resources in the lower strata (99% in H1), whereas investment grows significantly with income, reaching 41% for the highest quintile.

A critical finding is the distribution of the net balance. The three lowest quintiles (H1–H3) consistently operate at a deficit, with H1 showing the most significant gap relative to its total revenue. This deficit is only reversed in the top two quintiles (H4 and H5), which generate a substantial surplus. This aggregate imbalance suggests that the financing for lower-income households must be sustained by other institutional agents or external flows, as the surplus from H4 and H5 alone may not fully stabilize the household sector's global position.

In Table 12, we represent how each household's consumption is composed.

Table 12 | Uruguay, 2022. Household demand composition in % shares

Concept	H1	H2	H3	H4	H5
Agriculture, livestock and forestry	3%	3%	3%	3%	3%
Mining	0%	0%	0%	0%	0%
Food and beverages	23%	17%	17%	14%	10%
Textiles and Leather	2%	2%	2%	2%	2%
Wood and Paper	1%	1%	1%	1%	1%
Fuels	3%	3%	3%	3%	3%
Chemicals	1%	1%	1%	0%	0%
Rubber and Plastic	0%	0%	0%	0%	0%
Non-metallic minerals	0%	0%	0%	0%	0%
Metals and metal products; Machinery and Equipment	0%	0%	0%	0%	0%
Vehicles, trailers and semi-trailers	1%	1%	1%	1%	1%
Rest of industry	3%	3%	3%	2%	3%
Electricity, gas and Water	5%	4%	4%	4%	3%
Construction	-	-	-	-	-
Commerce	9%	11%	9%	13%	11%
Transport	3%	3%	3%	3%	3%
Accommodation and restaurants	3%	4%	5%	7%	8%
Financial, real estate and business activities	32%	37%	33%	32%	30%
Public administration and defense; compulsory social security schemes	1%	1%	1%	1%	2%
Education and Health	6%	7%	9%	9%	12%
Rest of Services	4%	4%	6%	6%	9%
Total	**163,093**	**236,237**	**257,197**	**320,522**	**486,130**

Note: This table details the national consumption structure of Uruguayan households for 2022, categorized by income quintiles (from H1 to H5). The percentage values represent the share of each economic sector's goods and services within the total consumption basket of each specific household group.

Source: own elaboration based on 2016-2017 ENGIH.

The data reveal that 'Financial, real estate, and business activities' consistently represents the largest share of expenditure for all households, maintaining a relatively stable participation of around 30% to 37% regardless of income level.

In contrast, other sectors exhibit clear trends tied to income growth. For instance, the share of expenditure on 'Food and beverages' follows a marked downward trajectory, decreasing

from 23% in the lowest quintile (H1) to 10% in the highest (H5). This illustrates a traditional Engel's Law effect, where the relative weight of basic necessities diminishes as total income rises.

Conversely, sectors such as 'Education and Health' and 'Accommodation and restaurants' show a positive correlation with income, nearly doubling their share from H1 to H5. Specifically, Education and Health expenditure grows from 6% to 12%, suggesting that higher-income households allocate a significantly larger portion of their budget to human capital and services. Similarly, 'Rest of Services' increases from 4% to 9%, reflecting a more diversified consumption basket in the upper deciles.

In the next stage of our analysis, we focus on the consolidated public sector's income and spending patterns. Table 13 highlights the makeup of each category and its specific weight in Uruguay during 2022.

Table 13 | Uruguay, 2022. Consolidated Public Sector: revenue and expenditure in millions of UYU and as a % share of GDP

Concept	UYU (Millions)	% GDP
Revenue	**619,679**	**21.3%**
Tax Revenue	619,354	21.3%
Import Duties	6,755	0.2%
VAT	225,716	7.8%
IMESI	44,001	1.5%
Carbon Tax	10,481	0.4%
Factor Taxes	252,260	8.7%
Direct Taxes	14,570	0.5%
Other Taxes	65,571	2.3%
Other	325	0.0%
Expenditure	**719,943**	**24.8%**
Public Consumption	475,258	16.4%
Public Investment	55,278	1.9%
Economic Subsidies	15,213	0.5%
Transfers	174,194	6.0%
Balance	**-100,264**	**-3.4%**

Note: This table presents the fiscal performance of Uruguay's Consolidated Public Sector for 2022. "IMESI" refers to the Specific Internal Tax applied to certain goods, and "Factor Taxes" include levies applied to production factors.

Source: own elaboration based on data from the BCU and General Tax Administration (*Dirección General de Impuestos*, DGI).

According to Table 13, the consolidated public sector recorded a deficit of 3.4% of GDP in 2022. Total revenue reached 21.3% of GDP, almost entirely driven by tax collection. A closer look at the tax structure reveals that Factor Taxes (8.7% of GDP) and VAT (7.8% of GDP) are the primary pillars of the Uruguayan fiscal system, together accounting for more than three-quarters of total tax revenue. Other components, such as IMESI (1.5%) and Other Taxes (2.3%),

provide additional support, while specific levies like the Carbon Tax and Import Duties maintain a more marginal share.

On the expenditure side, total outlays amounted to 24.8% of GDP. The largest portion was allocated to Public Consumption (16.4%) and Transfers (6.0%), underscoring the significant weight of public service provision and social redistribution policies. Meanwhile, Public Investment and Economic Subsidies represented a smaller fraction of total spending, at 1.9% and 0.5% of GDP, respectively.

Finally, the last estimated account covers the links between the national economy and the Rest of the World. For this analysis, data on primary income receipts and payments were sourced from the 2022 Balance of Payments published by the Central Bank of Uruguay (BCU) and displayed in Table 14.

Table 14 | Uruguay, 2022. External Sector: credit and debit in millions of UYU and as a % share of GDP

Concept	Mill. Pesos	% GDP
Credit	**968,762**	**33.0%**
Exports	968,762	33.0%
Goods	522,200	18.0%
Services	446,562	15.0%
Debit	**1,071,561**	**37.0%**
Imports	805,059	28.0%
Goods	593,869	20.0%
Services	211,190	7.0%
Net Factor Income	266,502	9.0%
Balance	**-102,799**	**-4.0%**

Note: This table summarizes the performance of Uruguay's External Sector in 2022. It presents the total flows of Credits (Exports) and Debits (Imports plus Net Factor Income), measuring the country's economic interaction with the rest of the world.

Source: own elaboration based on BCU.

Table 14 presents the balance of Uruguay's external sector for 2022, showing a net deficit of 4.0% of GDP. Total credits, driven entirely by exports, reached 33.0% of GDP, with a relatively balanced composition between goods (18.0%) and services (15.0%). On the other hand, debits amounted to 37.0% of GDP, primarily due to imports—where goods (20.0%) significantly outweigh services (7.0%)—and a notable Net Factor Income outflow equivalent to 9.0% of GDP.

3.7 Social Accounting Matrix for Uruguay in 2022.

This section provides a summary of the 2022 Social Accounting Matrix (SAM) for Uruguay. As previously noted, the SAM comprises 21 sectors, 5 representative households, the government, and the rest of the world. For the purposes of presentation, we have consolidated the productive sectors into the 3 categories:

1) S1: Comprises primary sectors. Specifically sectors 1 and 2 from Table 2.

2) S2: Consists of industrial sectors. Specifically, sectors 3 to 12 from Table 2.
3) S3: Integrates service-related sectors. Specifically, sectors 13 to 21 from Table 2.

The five representative households have been aggregated into two groups based on their income levels, also for readability purposes.

Table 15 | Social Accounting Matrix for Uruguay in 2022 in millions of UYU

	S1	S2	S3	L	K	Taxes	H1	H2	Government	Investment	Exports	Total
S1	86,395	202,283	3,120	-	-	-	18,933	32,611	20	31,856	90,741	465,959
S2	50,545	236,847	203,619	-	-	-	173,859	229,144	2,160	377,342	439,285	1,712,802
S3	65,506	200,631	651,918	-	-	-	335,138	673,496	473,078	154,440	438,737	2,992,944
F1	11,235	59,193	356	-	-	-	2,815	4,848	-	27	-78,473	-
F2	25,954	210,125	49,212	-	-	-	73,890	112,375	-	54,713	-526,269	- 0
F3	3,147	32,082	118,039	-	-	-	11,758	34,504	-	787	-200,317	- 0
L	42,991	204,237	800,332	-	-	-	-	-	-	-	-	1,047,560
K	141,648	285,192	842,464	-	-	-	-	-	-	-	-	1,269,304
VAT	33,877	78,894	93,058	-	-	-	7,677	12,209	-	-	-	225,716
Direct Taxes	-	-	-	-	-	-	3,137	12,209	-	-	-	15,346
Other Taxes	-6,665	158,392	209,647	-	-	-	742	12,209	-	466	-	374,791
Government	-	-	-	-	325	604,141	-	-	-	-	-	604,466
Investment	11,326	44,926	21,177	-	-	-	34,175	530,178	55,278	-	-	697,060
H1	-	-	-	351,941	104,844	-	-	-	54,785	-	-	511,570
H2	-	-	-	695,619	897,634	-	-	-	119,409	-	-	1,712,662
RoW	-	-	-		266,502	-	-	-		-	-	266,502
Balance							-150,554	58,879	-100,264	-	102,799	- 89,141
Total	465,959	1,712,802	2,992,944	1,047,560	1,269,304	604,141	511,570	1,712,662	604,466	619,631	266,502	

Note: S1 refers to primary sectors, S2 corresponds to industrial sectors and S3 integrates service sectors. F1 to F3 refer to primary, industrial and service imports, respectively. Factors are: L: Labor, K: Capital. VAT refers to Value Added Tax, for both domestic and import products. Economic agents are: Government; H1 and H2: households that represent low and high-income households respectively; RoW: Rest of the World. Investment refers to Public and Private Investment, and it also includes Stocks variation. Values within each cell are displayed in millions of Uruguayan pesos (UYU).

Source: own elaboration based on Central Bank of Uruguay (BCU), General Tax Administration (DGI) and 2016-2017 ENGIH

4. Productive Structure Analysis

4.1 Sectoral Linkages with the Input-Output Matrix

To examine intersectoral relationships, this study employs the methodology developed by Rasmussen (1956), which proposes evaluating productive linkages to identify the relative importance of each sector within the economic circuit.

According to this framework, sectors can be classified into four groups. **Key sectors** are those exhibiting both forward and backward linkages above the average, meaning they exert significant influence over other sectors while simultaneously depending heavily on them. **Strategic sectors** show a low pull capacity on the rest of the economy but receive strong external influence; that is, they rely largely on intermediate demand from other branches. Conversely, **Inducing** (or Forward-Driven) **sectors** show high influence over other sectors, although the inverse effect is limited. Finally, **Independent sectors** are those with restricted interactions in terms of linkages, as they neither generate significant pull nor are particularly dependent on other industries.

To quantify these interdependencies, Rasmussen proposes the construction of indicators based on the Leontief inverse matrix coefficients, capturing both the direct and indirect effects of economic shocks. In this sense, backward linkages reflect the demand for inputs that a sector generates across the economy following an increase in its final demand, while forward linkages express the sector's importance as an input supplier for other productive branches in response to an increase in its output. A detailed review of this approach can be found in Chisari et. al (2020).

Table 16 displays the resulting coefficients for each of the 21 sectors in which we disaggregate the Uruguayan economy and their respective Rasmussen classification.

Table 16 | Uruguay, 2022. Results and classification for the 21 sectors of the economy

Cod.	Sector	Linkages		Rasmussen Classification
		Backward	Forward	
S01	Agriculture, livestock and forestry	1.66	2.02	Key
S02	Mining	1.29	1.06	Independent
S03	Food and beverages	1.81	1.63	Key
S04	Textiles and Leather	1.65	1.22	Strategic
S05	Wood and Paper	1.83	1.78	Key
S06	Fuels	1.09	1.55	Inducing
S07	Chemicals	1.37	1.43	Independent
S08	Rubber and Plastic	1.31	1.17	Independent
S09	Non-metallic minerals	1.68	1.14	Strategic
S10	Metals and metal products; Machinery and Equipment	1.25	1.07	Independent
S11	Vehicles, trailers and semi-trailers	1.24	1.08	Independent
S12	Rest of industry	1.60	1.07	Strategic
S13	Electricity, gas and Water	1.46	1.62	Inducing
S14	Construction	1.48	1.18	Strategic
S15	Commerce	1.39	1.99	Inducing
S16	Transport	1.46	2.21	Inducing
S17	Accommodation and restaurants	1.70	1.03	Strategic
S18	Financial, real estate and business activities	1.33	3.16	Inducing
S19	Public administration and defense; compulsory social security schemes	1.44	1.07	Independent
S20	Education and Health	1.48	1.19	Strategic
S21	Rest of Services	1.29	1.15	Independent

Note: Rasmussen classification is based on each sector's backward and forward linkages compared to the average. In this case, both backward and forward averages are approximately 1.47.

Source: own elaboration based on BCU.

Based on the criteria applied, the results indicate that only three sectors can be considered key to the Uruguayan economy: 'Agriculture, livestock and forestry'; 'Food and beverages ' and 'Wood and Paper'. Their relevance lies in the fact that they possess both forward and backward linkages above the average, meaning they exert a strong "pull" effect on the productive circuit while simultaneously being highly dependent on the rest of the economy. These are critical sectors for policy design due to their potential to dynamize the overall economy.

At the opposite end there are seven independent sectors. This category includes industrial sectors, such as 'Chemicals'; 'Rubber and Plastic' or 'Vehicles, trailers and semi-trailers' and

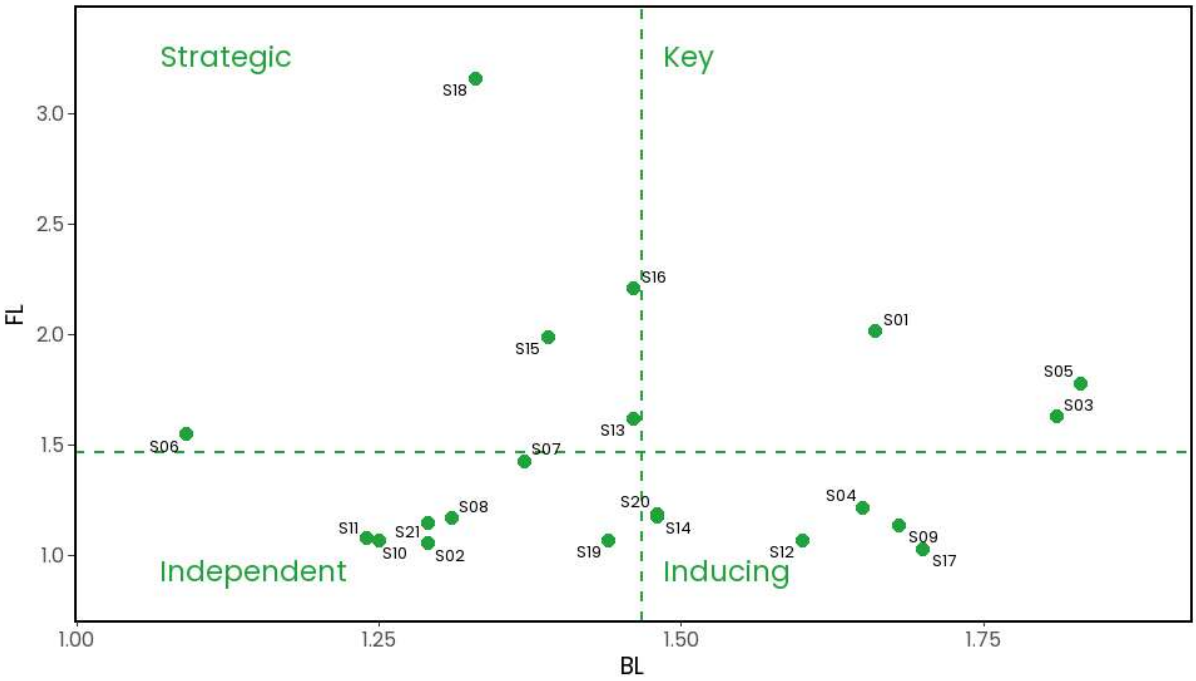
service-related sectors, such as 'Public administration and defense; compulsory social security schemes' and 'Rest of Services'.

Furthermore, six strategic sectors are identified: four of them are industrial ('Construction', 'Textiles and Leather', 'Non-metallic minerals' and 'Rest of Industry') and the remaining two consists of 'Education and Health' and 'Accommodation and Restaurants'. These are characterized by receiving a strong influence from other sectors, even though their own "pull" capacity is lower.

Finally, five sectors are classified as inducing (or leading): 'Financial, real estate and business activities'; 'Electricity, gas, and water'; 'Fuels'; 'Commerce' and 'Transport'. These have a high influence over other sectors, although their dependence on inputs from third parties is reduced.

Figure 2 provides a visual representation of how economic sectors are grouped according to their productive linkages. This visualization is particularly useful as it offers an intuitive understanding of each sector's relative importance within the economic framework and its interaction with the rest of the system, providing a clear overview of the overall distribution.

Figure 2 | Uruguay, 2022. Intersectoral classification by linkages



Note: Backward Linkages (BL): Relative extent to which an increase in final demand for an industry's products spreads throughout the rest of the productive sectors. Forward Linkages (FL): This indicator measures the extent to which the industrial system relies on a specific industry, generating downstream effects.

Source: own elaboration.

5. Conclusion

This paper provides a detailed account of the procedures followed to construct a simplified Social Accounting Matrix (SAM) for Uruguay, based on 2022 data. The central objective was to transform a purely statistical instrument into an analytical framework capable of serving

as a basis for the structural analysis of the economy at a specific point in time. Furthermore, this matrix provides the necessary foundation for calibrating multisectoral simulation models to evaluate public policies within the country.

After presenting the results derived from the estimated SAM, the document describes the decomposition of the matrix and includes an analysis of supply and demand multipliers, as well as the productive linkages implicit in the Uruguayan 2022 SAM. This step illustrates the potential of the SAM as an input for exploring, in quantitative terms, the interactions between sectors and the systemic effects resulting from shifts in the productive structure or final demand.

Consequently, this statistical and theoretical construction is now available as an analytical resource for studying the Uruguayan economy. It serves as a vital input for the development and calibration of computational models that allow for the simulation (both ex-ante and ex-post) of public policies and exogenous shocks, highlighting the critical role of quantitative analysis in evaluating policy alternatives to support informed decision-making.

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