



# Social accounting matrix: A new estimation methodology

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## Abstract

In this article, we present a new methodology to develop bootstrap estimates of a social accounting matrix (SAM), by combining entropy minimization and Monte Carlo simulation techniques. An application is presented to the Italian economy, demonstrating how a set of policy measures can be evaluated by incorporating the prior degree of uncertainty on the model parameters and the historical volatility in the main variables. The results of this exercise show that the methodology proposed provides specific evaluations of the policy measures considered, as well as a rich informational structure on the extension and the limitations of the inference from the data and the economic model.

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## 1. A general model: social accounting matrix

The Social Accounting Matrix (SAM) is a system of national/regional/sub-regional accounts represented in a matrix format. It includes the inter-industry linkages through transactions typically found in the I–O accounts and the transactions and transfers of income between different types of economic agents, such as households, government, firms and external institutional sectors (Pyatt & Thorbecke, 1976; Stone & Brown, 1962). The SAM consists of a set of interrelated subsystems that, on the one hand, give an analytical picture of the economy in a particular accounting period

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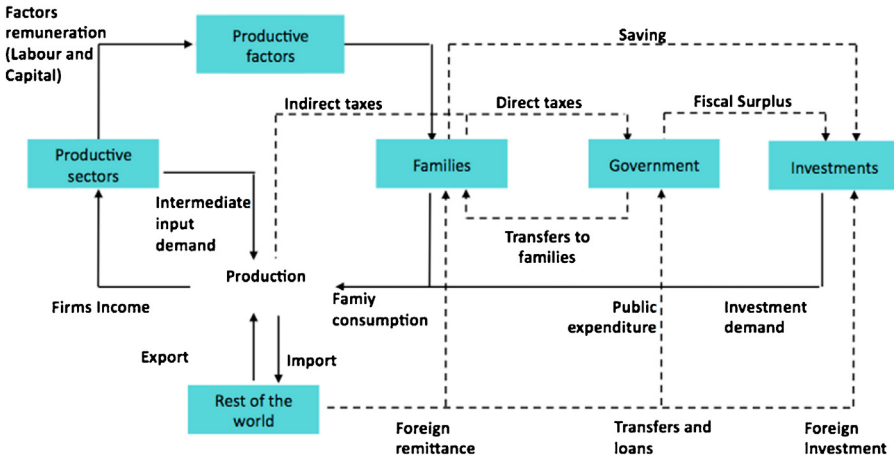


Fig. 1. The income circuit.

Source: Scandizzo et al. (2010).

and, on the other hand, serve as an instrument for assessing the effects of changes on the flows represented (injections and leakages in the system), which might be the result of policy measures. The Matrix is a double-entry table, describing the structure of the economic system through its disaggregation in key blocks, thought as origin and destination of transaction flows. Thanks to its theoretical and methodological characteristics, it can represent the distributive and redistributive income process by including the accounts headed to the institutional sectors (households, firms and government).

Following this approach, the economic system is typically disaggregated into the following blocks:

- i. Primary production factors (Labor and Capital);
- ii. Production sectors (Agriculture, Industry, Services and their disaggregations);
- iii. Households;
- iv. Firms;
- v. Government (Public Administration);
- vi. Capital Formation (Public and Private gross fixed investments);
- vii. Rest of the Country (ROC) and Rest of the World (ROW).

Both the expenditures (columns) and revenues (rows) are defined for any productive and institutional sector. If data are available, any of the above blocks can be further disaggregated depending on the objective of the analysis. The SAM is considered an extension of the traditional Input–Output (I/O) model proposed by Leontief, which also consists of a transaction matrix and records, in quantitative terms, the exchange flows of an economic system in a specific place, for a specific period. In its usual configuration, the SAM includes the Input–Output matrix of the intermediate exchanges between production sectors, the accounts related to institutional sectors (households, firms and government), production factors (labor and capital), capital formation and rest of the economy.

The Matrix allows considering the entire structure of relations characterizing an economic system through the different phases of the production, distribution, utilization and income accumulation process as shown in Fig. 1.

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