



The Financial Social Accounting Matrix: Evolution, Framework and Applications

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Executive Summary

In recent years, policy attention and academic debates have shifted to the increasing role of financial development to economic growth. However, as the global financial architecture continues to evolve, the resulting complexities have highlighted the need for additional tools to facilitate deeper analysis of financial transactions across institutional sectors of the economy.

One such analytical tool is the Financial Social Accounting Matrix (FSAM). The FSAM is an extended Social Accounting Matrix (SAM) that analyzes the structure of the economy by articulating in detail the sub-sectors of the financial sector as well as the financial transactions of all the institutional units that are carried out through the use of the various financial instruments. The use of FSAM has been widely recognized because of its *economy-wide* data framework where financial transactions of key sectors in the economy are articulated. The Bangko Sentral ng Pilipinas (BSP) recognizes the importance of the FSAM as database for developing the Financial Computable General Equilibrium (FCGE) model, an evaluative tool to assess the impact of monetary policy (i.e., interest rate cuts) and shocks in financial variables on the sectors of the economy. Thus, the BSP developed the first FSAM for the Philippines in 2012 using the 2009 data on Flow of Funds (FOF), Balance of Payments (BOP) and Philippine System of National Accounts (PSNA).

This article aims to elicit a broader understanding and appreciation of the FSAM. Section I discusses the evolution behind the concept of the SAM and the FSAM. Section II provides the framework for building FSAM. Section III highlights some of the important analytical applications of the FSAM particularly on the aspect of financial policy. Finally, Section IV concludes with brief information on the construction of the first FSAM for the Philippine economy.

Evolution of the FSAM

The FSAM was mainly derived from the concept of the SAM. The SAM records in a matrix format all the economic activities of the national economy in a given period.²

The origin of SAM dates back more than 200 years ago when the French economist Francois Quesnay's *Tableau Economique* model was first published in 1758. His model, which illustrates the different economic sectors of the society and the flow of payments between them, was a precursor to the Input-Output model (Steenge & Van den Berg, 2007). In the twentieth century, social accounting became significant owing to the contributions of American economist Simon Kuznets on **National Income Accounts** (1934) and Russian-American economist Wassily Leontief on **Input-Output (I-O) Analytical Tables** (1965).

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² Examples of economic activities are production, consumption, distribution of income and accumulation of assets.

The work of Leontief on the I-O Analytical Tables captures the inter-industry production transactions where outputs from one industry become inputs to another industry. Thereafter, the analysis of the I-O table was further expanded by the British economist Sir Richard Stone in the early 1950s to what he formally called as SAM which provide details on the flow of income and expenditures among the institutional sectors of the economy (Stahmer, 2002). Stone's ideas eventually led to the conceptualization of the 1968 System of National Accounts (1968 SNA) where the use of SAM has become the integral framework in the SNA. The SAM accounts for greater emphasis on socio-economic analysis by articulating the distribution of income through patterns of *transfers* or *transfer flows* and the structure of production through patterns of inter-related transactions among, within and between the different economic agents. Consequently, the extensive use of SAM began during the 1980s (Hubic, 2012). During this time, there has been an increased awareness to expand the conventional policy decisions by incorporating the *social* with the *economic* dimensions of the economy. These developments were elaborated with the introduction of the 1993 SNA and 1995 European System of Accounts (1995 ESA).

The SAM can be structured into two accounts – the *current accounts* where real economic activities are detailed, and the *accumulation accounts* where financial accounts are elaborated. The articulation of the financial accounts which makes a SAM a financial SAM or FSAM became an integral tool in policy analyses following the recent global financial crisis. The crisis has highlighted the importance of articulating the details of financial transactions of the institutional sectors, particularly the financial sector, as well as the financial instruments used in the economy.

The Framework

The specification of sub-sectors comprising the financial sector as well as the financial transactions of all the institutional units in the economy that are carried out through the use of the various financial instruments is what makes a SAM a financial SAM or FSAM. In this regard, understanding the framework of SAM is imperative.

The SAM is defined as the presentation of the full sequence of accounts (SOA) for each institutional sector in a matrix format. The full sequence of accounts involves a systematic recording of activities and transactions that starts from the current accounts to the accumulation accounts (Please see Annex 1 for a detailed discussion of the SOA).

The basic prerequisite for building a SAM entails familiarization of the conceptual elements of the SNA that serves as the building blocks of the SNA. These three elements of SNA are the following: (i) institutional units and sectors; (ii) activities and transactions; and (iii) accounts.

Institutional units, when clustered together, form institutional sectors which are capable of engaging in the full range of transactions. Institutional sectors are broadly categorized into resident and non-resident sectors.³ Resident sectors are further classified into non-financial corporations, financial corporations, general government, households and non-profit institutions serving households (NPISHs).⁴ These institutional units engage in different economic activities and transactions which comprise the second element of SNA. The activities that institutional units usually undertake

³ Non-resident sector is otherwise known as the Rest of the World (ROW) sector.

⁴ For a broader discussion on the concepts about functions and definitions of these institutional sectors, please refer to p.17 of the 2008 System of National Accounts.

are production, consumption and the accumulation of assets which are then carried out in the form of transactions by recording the exchange of goods, services, payments and receipts of incomes and transfers between those economic units. The recording of the activities and transactions is done in the accounts of the SNA, which is the third building block. The full SOA is partitioned into two main sections, namely, the current accounts and the accumulation accounts. Meanwhile, Figures 1 and 2 show the full sequence of current and accumulation accounts.⁵

Figure 1: Sequence of Current Accounts

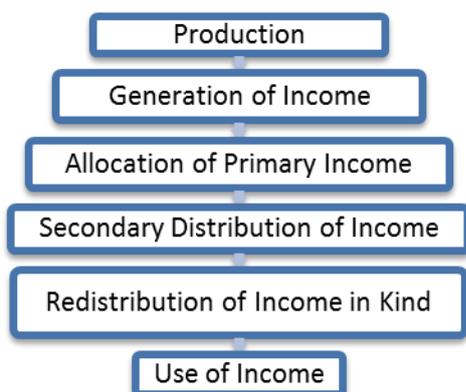
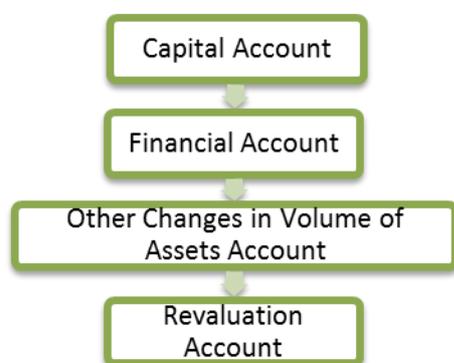


Figure 2: Accumulation Accounts



Other features of the FSAM are the following: (1) the supply and use table

⁵ For the complete and integrated presentation of the full sequence of current and accumulation accounts, please refer to pp.31-32 of the 2008 System of National Accounts (SNA).

(SUT) reflecting the flow of goods and services to industries and institutional sectors; (2) SNA integrated institutional sector accounts presented in a *T-account* format; and (3) the FSAM matrix itself is a representation of the SNA *T-account* that shows the uses of funds of the column sectors and the resources/sources of funds of the row sectors.

An in-depth understanding and practical application of the SNA integrated institutional sector accounts is vital in constructing a SAM (Annex 1). The construction of the FSAM requires that the financial sector should be disaggregated into the following sub-sectors, namely, Depository Corporations and Other Financial Corporations. The Depository Corporations are then further broken down into Central Bank and Other Depository Corporations. Meanwhile, the Other Financial Corporations can also be broken down into insurance and pension funds and other financial intermediaries. Moreover, FSAM also entails an articulation of the financial transactions of the other sectors in the economy including the ROW by showing the *from-whom-to-whom* transactions on the different financial instruments such as currency and deposits, loans, shares and other equity, and securities other than shares.

Importance of the FSAM

The importance of the analytical applications of FSAM in the assessment of policy decisions covers the multi-faceted aspects of the economy. In particular, the FSAM places greater emphasis on the financial side of the economy.

The analytical applications of the FSAM are important to the BSP's conduct of monetary policy. For one, the FSAM, which tracks the *from-whom-to-whom* transactions of the institutional sectors of the economy using the different financial

instruments, provides a benchmark database for the FCGE model. The FCGE is a forthcoming work of the BSP that serves as an evaluative model to assess the impact of monetary policy (i.e., interest rate cuts) and shocks in financial variables on the different sectors of the economy (Ignacio et.al., 2013).

On a wider financial policy perspective, the results of the FSAM can be used to analyze the structural characteristics of the economy as well as structural interdependencies of institutional sectors in several ways. First, it facilitates the study of the saving-investment process by tracing the channels by which saving reaches borrowing, after passing through various financial institutions and instruments. Second, it provides an economic analysis and description of the activity and trends in current periods, determining which sectors are incurring deficits (net borrowers) or surpluses (net lenders). Lastly, it provides the users an idea on the demand and supply of financial instruments which, in turn, indicates how the economy performs in light of the recent financial developments.

The First Philippine FSAM

The BSP's recognition of the important analytical uses of the FSAM resulted in the construction of the first FSAM for the Philippine economy. In 2012, the BSP through the collaboration of the Department of Economic Statistics (DES) and the Center for Monetary & Financial Policy (CMFP) has completed the 2009 Philippine FSAM (PFSAM).

The major data sources in constructing FSAM are the PSNA, BOP and FOF. The PSNA generated by the National Statistical Coordination Board (NSCB) and the BOP produced by the DES of the BSP serve as the source data for building the current account. Meanwhile, the PFOF which is also produced by the DES of the

BSP forms the database for constructing the capital account and financial account portion of the FSAM.⁶

The compilation of FSAM, however, entails some data and resource constraints. First, the FSAM requires manpower resources since the construction of the matrix entails a lot of validation and consistency checks of data coming from different data sources. Moreover, the compilation of the FSAM is stringent since compilers need to ensure that row totals should equal column totals. Second, the data of the PFOF makes the process quite challenging given that the PFOF is made available with one year lag after the reference year.

Meanwhile, the construction of another FSAM (2010 PFSAM) is scheduled to start in 2014. The forthcoming 2010 PFSAM will be used to validate the results of 2009 PFSAM and as database for prospective economic research and for economic modeling and analysis of the BSP.

References

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⁶The PFOF presents a summary of financial transactions among the different institutions of the economy, and between these institutions and the rest of the world.

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ANNEX 1. The Full Sequence of Accounts (SOA)⁷

The full SOA is a systematic recording of the activities and transactions of each institutional sector which starts from the current accounts down to the accumulation accounts. It is typically presented in a format called as T-account that shows the resources (*R*) of funds on the right side and the uses (*U*) of funds on the left side for each institutional sector or unit along with the balancing items for each segment of accounts.⁸

The balancing item of the **Production Account** is the Value Added which is measured either gross or net of Consumption of Fixed Capital (CFC). The Gross Value Added, also commonly referred to as Gross Domestic Product, is then forwarded to the **Generation of Income Account** where the former is distributed to the factors of production such as labor and capital. Here, the balancing item is the Operating Surplus or

⁷ The readers may view or access the reduced format of the structure or representation of the SAM/FSAM on the provisional Table 2.5 of the 1993 SNA.

⁸ In the Sequence of Current Accounts, *R* refers to income and *U* pertains to expenditures while in the Sequence of Accumulation Accounts, *R* refers to changes in liabilities and net worth while *U* pertains to changes in assets. The balancing item is the difference between the total *R* on the right side and the total *U* on the left side. The balancing items, which are carried forward in the next account, are important measures of the whole economy's economic performance.

Mixed Income which will now be treated as *R* on the next account, the **Allocation of Primary Income Account** where property income receivables and payables such as interest and dividends are recorded. The balancing item for this account, measured as gross or net, is the Balance of Primary Income or National Income. The National Income is then recorded as part of the *R* of the **Secondary Distribution of Income Account** in addition with the current transfers such as taxes on income and wealth. The balancing item for this account is the Disposable Income. For the government, households and NPISHs, the Disposable Income is recorded under the *R* side of the next account, **Redistribution of Income in Kind Account**. On the one hand, this account records social transfers in kind as *R* for households as a result of the transfers or provision of services made by government and NPISHs to them at an economically insignificant price. On the other hand, social transfers in kind are recorded as *U* of government and NPISHs as a result of their purchase of goods and services that are transferred or provided to the households/individuals. The balancing item of this account is the Adjusted Disposable Income which is then carried forward to the next account, the **Use of Income Account**. The balancing item after deducting the final consumption expenditures of the government, households and NPISHs is the Saving which ends the sub-sequence of the current accounts. For the corporate sector, which does not have final consumption, their disposable income is already their saving.

Saving is the starting component of the Accumulation Accounts. First, it is imperative to distinguish the **Capital Account** from the **Financial Account** in order to show the balancing item that is useful in economic analysis which is the



Net Lending (+)/Net Borrowing(-).⁹ Net Lending/Borrowing from the Capital Account is measured as [Saving plus net capital transfers (R)] less [acquisition less disposal of non-financial assets (U)] while Net Lending/Borrowing from the Financial Account is measured as Net acquisition of financial assets less Net incurrence of financial liabilities. Net Lending/Net Borrowing arising from the Capital Account should be equal to the Net Lending/Net Borrowing arising from the Financial Account. In addition to the above transactions recorded in the capital and financial accounts, the SOA also include changes in the balance sheet that are due to **Other Changes in the Volume of Assets Account and Revaluation Account**. The former includes changes that affect the quality or volume of the assets and liabilities like catastrophic losses while the latter involves changes that are due to changes in the structure and level of prices such as appraisal surplus for fixed assets.

⁹ The different sub-sectors of financial sector as well as the various financial instruments used in the economy are discussed in Section 2 of this article. Lending/Borrowing by the sector is measured as net of consumption of fixed capital.

