

Social Accounting Data and Economic Analysis of the Northern Mountain Region of Vietnam

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Introduction

- ❑ Persistent rural poverty is often associated with economic isolation.
- ❑ To elucidate this question with reference to the Northern Mountain region, we will disaggregate the Vietnam national Social Accounting Matrix (SAM) and introduce detailed regional data.
- ❑ Various multiplier analyses of this data will help to identify economic linkages within the region and with respect to the outside domestic and international economy.
- ❑ Estimates of this kind can give an indication about how economic policies can facilitate more effective economic diversification, strengthen rural-urban linkages, and raise rural incomes.



Multi-Sectoral Development Analysis

- ❑ Macro policy is important.
- ❑ But so is economic structure and economic interactions between sectors of the economy within a region, between the region and the rest of Vietnam, and vis-à-vis external sectors (including capital account, central government, and rest of the world).
- ❑ We want to understand these interactions to formulate appropriate policy recommendations.



Social Accounting Matrix: SAM

- ❑ A SAM is a square matrix that builds on the input-output table - but it goes further.
- ❑ A SAM considers not only production linkages, but tracks income-expenditure feedbacks (institutions are introduced).
- ❑ Each transactor (such as factors of production, households, enterprises, the government and the ROW) has a row (income sources) and a column (expenditures) – double entry national income accounting.
- ❑ A SAM is consistent data system that provides a snapshot of the economy – note that the SAM reconciles data from different sources.



Social Accounting Matrix: SAM (cont.)

A macroeconomic SAM is also an extension of basic national income identities:

1. $Y + M = C + G + I + E$ (GNP)
2. $C + T + Sh = Y$ (Income)
3. $G + Sg = T$ (Govt. Budget)
4. $I = Sh + Sg + Sf$ (Savings-Investment)
5. $E + Sf = M$ (Trade Balance)

Schematic Macroeconomic SAM

			Expenditures			
Receipts	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	E	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acct.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	M	-	-	-	-	Imports
Total	Supply	Expenditure	Expenditure	Investment	ROW	



Schematic Macroeconomic SAM



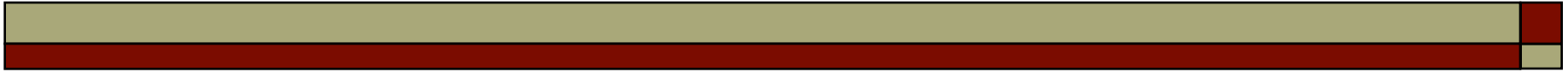
A Short Definition of a SAM

An economy-wide accounting device to capture detailed interdependencies between institutions and sectors/regions. An extension of input-output analysis.

For further information see:

- The 1999 national Vietnam SAM is available in a CIEM 2001 document, which can be downloaded from:
<http://eurasia.nias.ku.dk/ciemnias>
- See also <http://www.ciem.org.vn>

Other studies can also be downloaded from these web-sites.





The 1999 National Vietnam SAM

- ❑ 97 domestic production activities/commodities
- ❑ 13 factors of production
 - ❑ 12 labour categories
 - ❑ Capital
- ❑ 5 household types
- ❑ 3 enterprises (Private, Public, and Foreign)
- ❑ State (detailed fiscal instruments)
- ❑ Consolidated capital account
- ❑ 94 international trading partners



Updating to 2000 and Regionalizing

1. We are updating to 2000.
2. Regionalizing (north, centre, south) a goal.
3. Further detail: 16 household types facilitating distributional analyses (with disaggregation based on rural-urban, gender, and the following employment categories: farmers, self-employed, wage-earners, and non-employed).

The JBIC project an important example of how to move this process forward.



Key Sources of Data for Analysis of Northern Mountain Region

- ❑ National 2000 SAM (under documentation and finalization).
- ❑ New GSO data on macro, output, and fiscal accounts for 14 provinces (underway).
- ❑ VLSS – detailed household/local information at province level for 16 types of households (being extracted from original data base).



Outputs

- ❑ The actual SAM: useful in its own right through inspection – descriptive analyses of the structure of the regional economy.
- ❑ Economywide multiplier analysis.
- ❑ Block decomposition.
- ❑ Path decomposition.

Multiplier Analysis

The SAM accounts can give detailed information about direct and indirect income and expenditure linkages in the economy. For the economywide SAM, one uses the basic multiplier calculation

S_{vv}	S_{vx}
S_{xv}	S_{xx}

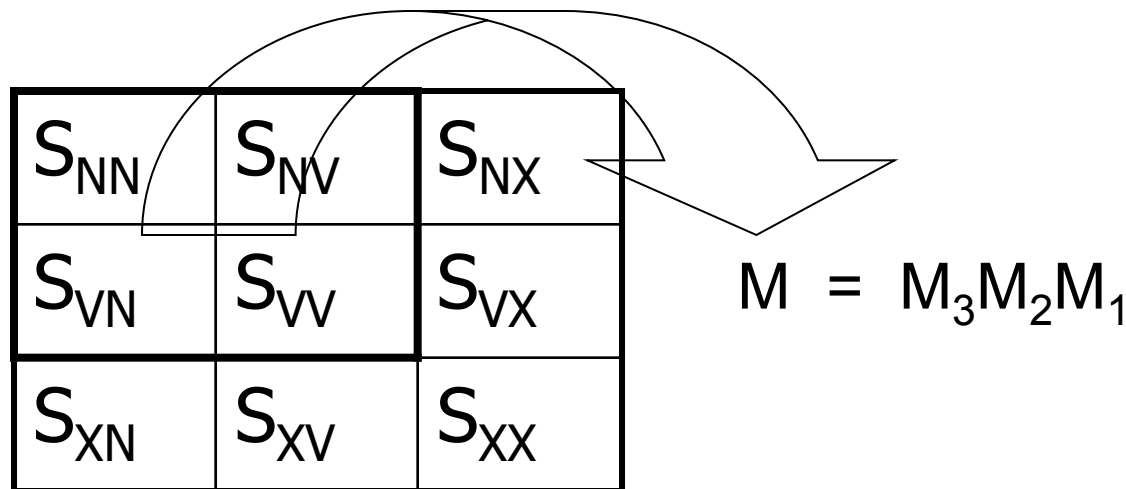
$$\longrightarrow M = (I - A)^{-1}$$

where M is the square matrix of multipliers for exogenous demand changes on endogenous accounts, and A is the coefficients (expenditure) matrix of endogenous accounts (note: m_{ij} = income multiplier for i arising from j)

Block Decomposition

To elucidate regional linkages and interactions, we decompose the national SAM into a Northern Mountain Region (N), Rest of Vietnam (V), and External (X) region (including capital account, central government, and rest of the world).

This leads to the following multiplier decomposition:



Block Decomposition (cont.)

$$M_1 = \begin{bmatrix} (\mathbf{I} - \mathbf{A}_{NN})^{-1} & \mathbf{0} \\ \mathbf{0} & (\mathbf{I} - \mathbf{A}_{VV})^{-1} \end{bmatrix}$$

Linkages

Intra-regional

Inter-regional

Equilibrium Indirect

$$M_2 = \begin{bmatrix} \mathbf{I} & (\mathbf{I} - \mathbf{A}_{NN})^{-1} \mathbf{A}_{NV} \\ (\mathbf{I} - \mathbf{A}_{VV})^{-1} \mathbf{A}_{VN} & \mathbf{I} \end{bmatrix}$$

$$M_3 = \begin{bmatrix} \mathbf{I} - (\mathbf{I} - \mathbf{A}_{NN})^{-1} \mathbf{A}_{NV} (\mathbf{I} - \mathbf{A}_{VV})^{-1} \mathbf{A}_{VN} & (\mathbf{I} - \mathbf{A}_{NN})^{-1} \mathbf{A}_{NV} \\ (\mathbf{I} - \mathbf{A}_{VV})^{-1} \mathbf{A}_{VN} & \mathbf{I} - (\mathbf{I} - \mathbf{A}_{VV})^{-1} \mathbf{A}_{VN} (\mathbf{I} - \mathbf{A}_{NN})^{-1} \mathbf{A}_{NV} \end{bmatrix}$$

Path Decomposition

In the SAM accounts, each pair $\langle i, j \rangle$ is called an arc. A path is a sequence s of indices $s = \langle i, k, l, \dots, m, j \rangle$ that can be decomposed into consecutive arcs $\langle i, k \rangle, \langle k, l \rangle, \dots, \langle m, j \rangle$. Denoting the influence of i on j over a path s by $(i \rightarrow j)_s$.

To measure the income effect of i on j along $\langle i, j \rangle$, consider the basic expenditure relationship $\frac{\partial y_j}{\partial y_i} = a_{ji}$

measured by entry (j, i) of the transpose of the (column normalized) expenditure share matrix A .

Along a detailed expenditure path $s = \langle i, k, \dots, m, j \rangle$ we find all the constituent arcs,

$$D_{(i \rightarrow j)s}^P = a_{ki} \dots a_{jm}$$

in addition to direct effects, account must be taken of all the interactions along the path, i.e. total $i \rightarrow j$ induced income includes the multiplier effect

$$T_{(i \rightarrow j)s}^P = D_{(i \rightarrow j)s}^P \mu_s^P$$

Summing over all possible bilateral paths, we have

$$G_{(i \rightarrow j)s}^P = \sum_{s \in \mathcal{S}} T_{(i \rightarrow j)s}^P = \sum_{s \in \mathcal{S}} D_{(i \rightarrow j)s}^P m_{ji}^P$$

These Direct, Total, and Global influences are the three distinct components that make up the transmission mechanism underlying income determination.

Path Decomposition of Manufacturing Linkages to Urban Households

Path	Global Effect	Direct Effect	Path Effect	Total Effect	% of Global	Cum %
1.Mfg, LabUrb, HHUrb	.227	.069	1.548	.107	47.1	47.1
2.Mfg, Forest, LabUrb, HHUrb		.001	1.719	.002	.7	47.8
3.Mfg, Forest, Land, HHUrb		.001	1.757	.002	1.0	48.8
4.Mfg, EnrgMin, LabUrb, HHUrb		.005	1.607	.008	3.7	52.5
5.Mfg, OthInd, LabUrb, HHUrb		.001	1.672	.001	.6	53.1
6.Mfg, ElGsWat, LabUrb, HHUrb		.003	1.717	.005	2.2	55.3
7.Mfg, TrdTrns, LabUrb, HHUrb		.014	1.732	.024	10.6	65.8
8.Mfg, PrivSrv, LabUrb, HHUrb		.003	1.784	.006	2.7	68.6
9.Mfg, Capital, Entr, HHUrb		.002	1.554	.003	1.5	70.1
10.Mfg, EnrgMin, PrivSrv, LabUrb, HHUrb		.001	1.850	.001	.5	70.6
11.Mfg, TrdTrns, PrivSrv, LabUrb, HHUrb		.001	1.982	.001	.6	71.3
12.Mfg, LabRur, HHRur, OthCrop, LabUrb, HHUrb		.001	2.073	.002	.9	72.2
13.Mfg, LabRur, HHRur, Pig, LabUrb, HHUrb		.001	2.003	.002	.7	72.9
14.Mfg, LabRur, HHRur, OtLvstk, LabUrb, HHUrb		.001	2.003	.001	.5	73.4
15.Mfg, LabRur, HHRur, ProcFd, LabUrb, HHUrb		.001	2.122	.002	1.1	74.5
16.Mfg, LabRur, HHRur, TrdTrns, LabUrb, HHUrb		.001	2.166	.002	.8	75.3
17.Mfg, LabRur, HHRur, PrivSrv, LabUrb, HHUrb		.001	2.233	.003	1.4	76.8
18.Mfg, LabRur, HHRur, PubServ, LabUrb, HHUrb		.001	2.108	.003	1.2	78.0



Final Remarks

- ❑ SAMs are critically important (consistent) data tools
- ❑ By regionalising we can describe the economic structure and capture a variety of economic linkages through multiplier analysis and decomposition
- ❑ Overall goal: Help identify opportunities for policy makers to facilitate economic integration and more widely propagate the benefits of economic reform and growth