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A SOCIAL ACCOUNTING MATRIX FOR ANHUI PROVINCE

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OCTOBER, 2005

Development Research Center
State Council of the People's Republic of China
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Beijing 100010, PRC

RESEARCH PAPERS ON

ECONOMIC DEVELOPMENT

This report is part of a series of research studies on Chinese regional economic growth and development. Sponsored jointly by the Development Research Center and the World Bank, these studies are intended to contribute to policy dialogue and promote capacity development for policy research.

Special thanks are due to the ASEM fund, administered by the World Bank, for supporting this project, “Capacity for Regional Research on Poverty and Inequality”. To support a new generation of coherent policies addressing poverty and regional inequality, this activity is delivering empirical tools and training to a prominent national Chinese research institution and its regional counterparts. As several of China’s provinces are now among East Asia’s largest economies, more detailed insight into their own growth challenges and their role in national development is essential for both public and private stakeholders. This new capacity will enable the State Council and other Chinese agencies to better understand detailed incidence and facilitate more equitable growth, extending its benefits to the low-income majority of the country. The project includes original data development, research capacity development, collaborative prototype studies, and regional training and dissemination workshops.

The present report was authored by Zhaoyuan XU of Peking University, under supervision of Mme, Shantong Li and other DRC staff. Dr. David Roland-Holst, an international consultant retained for this project, has provided ongoing technical support. The author thanks other academic colleagues and seminar participants for many insights and helpful comments. All remaining errors are the author’s, as are any opinions expressed in this document.

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A SOCIAL ACCOUNTING MATRIX FOR ANHUI PROVINCE

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1. INTRODUCTION

Anhui Province is an inland province situated in the east of China. Generally, the mainland of China is divided into three parts: the east, the middle and the west, while Anhui province belongs to the middle part along the Yangtze River.

There are 64.61 million registered citizens in Anhui at the end of 2004, the 8th most populous region in China. However, the land of Anhui is limited compare with its huge population. The total area of Anhui is 139.6 thousand square kilometers, which is only 1.45 percent of China's total area. The population density is 447 persons per square kilometer in Anhui province, more than three times denser than the average level of China.

Anhui is a relatively poor province in China. Anhui, with 5.14 percent of China's total population, produced a total GDP of 11.29 billion Yuan in 1978, which was only 3.1 percent of the total GDP in China. In 2004, the GDP of Anhui province was 481.27 billion Yuan, accounting for 3.5 percent of the national GDP. The GDP per capita is 7768 Yuan, which was 71.5 percent of the national GDP per capita (10859.54 Yuan).

Recently, the economic growth rate of Anhui has been a little faster than ten years ago. From 1979 to 1992, Anhui province experienced an annual average GDP growth rate of 9 percent,

while the national annual growth rate averaged 9.39 percent. However, from 1993 to 2000, the GDP growth rate of Anhui province was 13.4 percent, 3.7 percent higher than the average national growth rate. From 2001 to 2004, the China's GDP growth rate is 8.65% annually, while that of Anhui is 9.8%.

The volumes of Anhui province's import and export are relatively small. The total export is 25.34 billion Yuan and the import is 23.81 billion Yuan, both accounting for only about 0.7 percent of total export and import of China.

2.Construction of Macro SAM

2.1. Definitions and Explanations

The 1997 Social Accounting Matrix for Anhui is a square matrix which encompasses every transaction of Anhui in 1997, i.e. production, sale, consume, and distribution. The Sources for a SAM come from Anhui input-output table, income statistics, and household income and expenditure statistics etc.

A SAM is a square matrix in which each transactor or account has its own row and column. The payments (expenditures) are listed in columns and the receipts in rows. Algebraically, a SAM may be represented as the following square matrix:

$$T = \{t_{ij}\}$$

Where t_{ij} is the value of transaction with income accruing to account i from expenditure by account j.

The 1997 Macro SAM for Anhui is a square matrix comprising 15 rows and columns forming separate accounts in the economy. Table 1 and table 2 denote the Macro SAM for Yunnan,1997. The non-zero intersections between rows and columns in the Macro SAM give the specific flows of funds between various accounts.

A SAM shows the circular flow among the accounts. “Activities” receive incomes from the sale of goods and services produced and distribute these incomes to other production activities, factors of production, and government. The factors of production (Labor and Capital), transfer income to the institutions (Household and Enterprise) in the economy. Government and extra-budget account earn income by imposing tax and fee on production activities and other institutions

(Household and Enterprise), as well as imported goods. The institutions (Households, Enterprise, Government and Extra-budget account) expend income on the production activities through consumption of goods and services. The capital account serves as the reserve of savings from institutions and ROW. Likewise, expenditure from the capital account occurs through the consumption of capital goods from the production activities. The ROW account collects foreign exchange from purchases of foreign goods and services from the production activities. The ROW distributes foreign exchange to the production activities through exports. Furthermore, there are many trivial transactions happens between accounts, e.g. various transfers and subsidies. ROMC account reflects the economic relation between Anhui and the rest of the China (mainland of China).

e 2.1 A Descriptive Macro SAM For Anhui, 1997

	Expenditure													
1. modities	2. Activities	3. VA- Labor	4. VA- Capital	5. Households	6. Enterprise	7. Local Gov. Sub	8. Central Gov. Sub	9. Local Gov.	10. Central Gov.	11. Extra-system	12. Capital Account	13. Stock change	14. Rest of the World	15. Rest of Chi
	Intermediate Consumption			Private Consumption				Government Consumption	Government Consumption	Extra-budget Consumption	Gross Fixed Capital Formation	Changes in Inventories	Export	Outflow t ROMC
mestic duction														
	Compensation of Employees Depreciation; Operating Surplus													
		Compensation of employees distr. to HH			Transfers to households			Transfers to households	Transfers to households					
			Capital income distr. to Enterprise.											
	Subsidy on Production (Negative)							Expenditure of Subsidy						
	Subsidy on Production (Negative)								Expenditure of Subsidy					
	Indirect Taxes			Income tax	Income tax				Central Gov. transfer to Local Gov					
ort tax . Tariff)	Indirect Taxes				Income tax			Local Gov. transfer to Central Gov						
	extra-budget fee													
				Households savings	Enterprise savings			Government saving	Government saving	Extra-budget savings			Foreign Saving	ROMC Savi
											Changes in Inventories			
nports														
for ROMC														
Total mmodity upply	Total Cost of Production	Total Labor Payments	Total Capital Payments	Total Household Expenditure	Total Enterprise Expenditure	Total Local Gov. Subsidy	Total Central Gov. Subsidy	Total Local Gov. Expenditure	Total Central Gov. Expenditure	Total Extra-budget Expenditure	Total Investment Expenditure	Total Changes in Inventories	Total Foreign Exchange Earnings	Total interregior outflow

Table 1.2 shows the Anhui Macro SAM in 1997, which is built on the basis of various data, e.g. 1997 Anhui and China Input-Output Table (I/O table), *1998 China Statistical Yearbook*, *1998 Anhui Statistical Yearbook*, etc. The following content describes the macro SAM cell entries and identifies their sources.

2.2. Commodity

1.1.1. Total supply

SAM (2, 1): Provincial (Municipal) Total Output (683.416 billion Yuan)

Source: *Intermediate Use Part of Anhui IO Table (1997)*.

Because no unbalance are assumed in the SAM, the data from the input-output table are chosen as the regional total output while potential errors will be dealt with in balanced items.

SAM (11, 1): Tariff & consumption tax and value added tax on imports (0.627 billion Yuan)

Source: "The table of tax revenue and the tables of import and export value of commodity by places of destination or origin in China by region" in *China Statistical Yearbook 1998*; "Central and local government financial budget table" in *China Financial Yearbook 1998*.

The tariff and value-added tax on imports are deduced from the several items mentioned above. First of all, the share of Anhui imported volume in China's imported goods in 1997 can be obtained by using the total import volume of Anhui divided by the national volume, then multiplying this proportional percentage with the corresponding national taxes, we can estimate the Anhui consumption taxes and value added tax on imports. The tariff can also be deduced by the same approach. The sum of the two items results in the Anhui tariff, consumption tax and value added tax on imports.

SAM (12, 1): Import (8.5378 billion Yuan)

Source: *China Foreign Economic Statistical Yearbook 1998*, the table of regional import value of commodities by places of destination.

The US $ value in the table should be converted into the RMB equivalent.

SAM (13,1): Interregional inflow(207.649 Million Yuan)

Source: *Final Use Part of Anhui IO Table (1997)*.

TABLE 2.2 1997 ANHUI MACRO SAM

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Commodities	Activities	Labor	Capital	Households	Enterprises	Local Gov. Subsidies	Central Gov. Subsidies	Extra-system	Local Gov	Central Gov	ROW	ROMC	Investment	Stock Change	Total
1	Commodities		4208			1454				*28*	148	42	167	2072	778	107	9002
2	Activities	6834															6834
3	Labor		1564														1564
4	Capital		876														876
5	Households			1564	89		*185*				23						1861
6	Enterprises				*772*												772
7	Local Gov. Subsidies		-21														-21
8	Central Gov. Subsidies		-23														-23
9	Extra-system		*69*														69
10	Local Gov		72			10	105	-21				75					263
11	Central Gov	6	88				18		-23		10						123
12	ROW	85			15												101
13	ROMC	2076															2076
14	Savings					397	*464*			*41*	*62*	*-18*	-66	*5*			885
15	Stock Change														*107*		107
16	Total	9002	6834	1564	876	1861	772	-21	-23	69	263	99	101	2076	885	107	

1.1.2. Total Demand

SAM (1, 2): Intermediate Inputs (420.765 billion Yuan)

Source: *1997 Anhui IO table*.

SAM (1, 5): Household consumption (145.359 billion Yuan)

Source: *1997 Anhui IO table*.

SAM (1, 10): Local government consumption (14.755 billion Yuan)

Source: the Anhui's Budget and Final Accounting of Revenue and Expenditure Table, *the China Finance Yearbook 1998*.

Since only the total government consumption is reported in the 1997 IO table, the detailed consumption of local government has to be found from the other Source. Here we add up the corresponding local government's expenditure items and the outcome will be its consumption.

SAM (1, 11): Central government consumption (4.208 billion Yuan)

Source: the Central government's Budget and Final Accounting of Revenue and Expenditure Table in *the China Finance Yearbook 1998*.

The calculation method is similar to the above procedures.

SAM (1, 9): Extra-budget consumption (2.783 billion Yuan)

This figure can be obtained by deducting the local government and central government's total consumption from the total government consumption (directly reported in *the 1997 Anhui IO table*)

SAM (1, 12): Exports (16.675 billion Yuan)

Source: *1997 Anhui IO table*.

SAM (1, 13): Exports to Rest of Mmainland of China (207.198 billion Yuan)

Source: *1997 Anhui IO table*.

SAM (1, 14): Fix capital formulation (77.756 billion Yuan)

Source: *1997 Anhui IO table*.

SAM (1, 15): Net Change of Stock (10.732 billion Yuan)

Source: *1997 Anhui IO table*.

2.3. Activity

1.1.3. Total Output

SAM (2, 1): Provincial Products (683.416 billion Yuan)

This account is the same as Provincial Products Accounts in the Commodities Accounts.

1.1.4. Total Input

SAM (1, 2): Intermediate Inputs (4207.65 billion Yuan)

This account is the same as Intermediate Input Accounts in the Commodities Accounts.

SAM (3, 2): Rewards to Labor (156.363 billion Yuan)

Sources: *1997 Anhui IO table*.

SAM (4, 2): Capital Renumeration (87.644 billion Yuan)

Sources: *1997 Anhui IO table*.

The Depreciation of Fixed Assets plus the Surplus Reserve is capital renumeration.

SAM (7, 2): Subsidies from Local Government (-2.058 billion Yuan)

Sources: the Anhui's Budget and Final Accounting of Revenue and Expenditure Table, the *China Finance Yearbook 1998*.

Subsidies to Enterprise Loss, Income Taxes Returned to Enterprises and Policy Subsidies are mainly included in the Subsidies from Local Government.

SAM (10, 2): Product taxes to Local Government (7.222 billion Yuan)

Sources: the 1997 Gross Taxation by regions and by categories of taxes (Local Taxes), *China Taxation Yearbook 1998*. Aggregate the respective product tax items.

SAM (8, 2): Production Subsidies from Central Government(-2.289 billion Yuan)

Sources: the *Finance Yearbook of China (1998)*, the *1997 Anhui final accounting of General Budget Revenue and Expenditure (1997).*

Although the total production subsidy from central government to enterprises across the nation is available in the statistic book, the detailed production subsidies from central government to every region are not reported. Here we assume the ratio of production subsidy from central government to Anhui province and the total subsidy from central government to Anhui province is equal to the ratio of central government's total production subsidy and its total subsidy. Then, we will get the total subsidy to Anhui province from the central government, the central government's total production subsidy and the central government's total subsidy from the

above Sources, and calculate for the production subsidy to Anhui province according to the assumed relation.

SAM (11, 2): the production tax distributed to central government (8.843 billion Yuan)

Source: the *Tax Yearbook of China (1998)*. Calculated method: The Central government's revenues of each type of tax from each region are reported in the *Tax Yearbook of China (1998)*, so the total production tax distributed to central government from Anhui province can be acquired by adding each type of production tax.

SAM (9, 2): Extra-budget revenue (6.927 billion Yuan)

Source: *the 102 flow table of 1997 Anhui IO table.*

The Extra-budget revenue is calculated by subtracting the total production subsidy and production tax from the net production tax in the IO table.

2.4. Factors

1.1.5. Factor revenues

SAM (9, 2): Labor Remuneration (156.363 billion Yuan)

Source: *the 102 flow table of 1997 Anhui IO table*.

See *"Labor Remuneration account"* in activity accounts.

SAM (4, 2): Capital Remuneration (87.644 billion Yuan)

Sources: *the 102 flow table of 1997 Anhui IO table.*

1.1.6. Factor expenditures:

SAM (5, 3): labor income (156.363 billion Yuan)

Source: *the 102 flow table of 1997 Anhui IO table.*

SAM (5, 4): Household Capital Income (8.943 billion Yuan)

Sources: Flow of Funds Table (Physical Transaction, 1997) in *China Statistical Yearbook (2000)*, Basic Conditions of Urban Households and Per Capita Net Income of Rural Households by Source and by Region in *China Statistical Yearbook (1998)*, Total Population over the Years in China statistical Yearbook (1998), Basic Conditions of Urban Households and Per Capita Net Income of Rural Households by Source and by Region in *Anhui statistical yearbook (1998)*, Total Population over the Years in *Anhui Statistical Yearbook (1998)*.

Because there is no statistical data of household's capital income, we have to estimate this figure. To estimate this figure, we first assume that there is a steady relationship between the household's capital incomes and their wealthy income. That is: the Anhui household's capital income/the estimated wealthy income of Anhui households = the national households' capital income/the estimated wealthy income of national households. Then, we can estimate the Anhui household's wealthy income, national household's capital income and national households' wealthy income based on the Sources listed above, and finally the 1997 Anhui households' capital income can be calculated according to the assumed relation.

SAM (12, 4): foreign investment income (1.522 billion Yuan)

Sources: the *China statistical yearbook (1998)*, the *balancing account of national trade (1997),* the *actually foreign directly investment* (by regions).

Just as the household's capital income, we have to estimate the foreign investment income because there is no direct statistic data. The calculating method is as following: It is assumed

that there is a fixed correlation between the amount of foreign investment and foreign investment income. In other words, foreign investment income from Anhui/foreign investment income from nation = the amount of foreign investment received by Anhui/the amount of foreign investment received by China. Then we find the nations total received foreign investment, the Anhui received foreign investment and nation's foreign investment income and calculate the foreign investment income from Anhui City.

SAM (6, 4): Enterprise's capital income (77.179 billion Yuan)

Calculating Method: Enterprise's capital income = Capital remuneration – household's capital income – foreign investment income

2.5. Households

1.1.7. Household Expenditures

SAM (1, 5): household consumption (145.359 billion Yuan)

Sources: *Final Use Part of Anhui IO Table (1997)* and *Anhui Statistical Yearbook (1998)*.

See "Household Consumption" in commodity accounts.

SAM (10, 5): individual income tax (1.047 billion Yuan)

Source: *Tax Yearbook of China (1998)*.

SAM (14, 5): household saving (39.737 billion Yuan)

Sources: Flow of Funds Table (Physical Transaction, 1997) in *China Statistical Yearbook (2000)*, *China Statistical Yearbook (1998)*, *Anhui Statistical Yearbook (1998)*, and Individual Investment

in Fixed Assets in Rural Areas by Source of Funds and by Region in *China Statistical Yearbook on Investment in Fixed Assets (1998).*

Due to lack of data on provincial household savings, we compute this item by referring to "Annual Increase in Saving Deposits of Urban and Rural Households" and "Individual Investment in Fixed Assets in Rural Areas". However, the sum of "Annual Increase in Saving Deposits of Urban and Rural Households" and "Individual Investment in Fixed Assets in Rural Areas" at the national level in 1997 is much less than the total savings in *Flow of Funds Table.* Therefore, we assume that these two figures are proportional both at the national level and at the provincial level. Then we calculate the total household savings of Anhui in terms of this assumption.

Total Household Savings of Anhui / (Annual Increase in Saving Deposits of Urban and Rural Households of Anhui + Individual Investment in Fixed Assets in Rural Areas of Anhui) = Total Household Savings of the Nation / (Annual Increase in Saving Deposits of Urban and Rural Households of the Nation + Individual Investment in Fixed Assets in Rural Areas of the Nation)

1.1.8. Household Revenues

SAM (5, 3): wages (156.363 billion Yuan)

Sources: *Intermediate Use Part of Anhui IO Table (1997)* and *Anhui Statistical Yearbook (1998)*.

See "Labor Income" in factor accounts.

SAM (5, 4): household capital income (8.943 billion Yuan)

Sources: Flow of Funds Table (Physical Transaction, 1997) in *China Statistical Yearbook (2000)*, Basic Conditions of Urban Households and Per Capita Net Income of Rural Households by Source and by Region in *China Statistical Yearbook (1998)*, Monthly Per Capita Cash Receipts and

Expenditures of Urban Households, Per Capita Total Income and Net Income of Rural Households, and Total Population over the Years in *Anhui Statistical Yearbook (1998)*.

See "Household Capital Income" in factor accounts.

SAM (5, 10): transfer payment from local government to households (2.336 billion Yuan)

Sources: *China Statistical Yearbook (1998)*, *Anhui Statistical Yearbook (1998)*, and *China SAM (1997).*

Because it is difficult to find "transfer payment from local government to households" in provincial official statistical data, we have to calculate it by adding up relevant items in local government expenditures, which include government expenditure for pension and social welfare, price subsidies, retirement expenses of non-business and administrative units, and interest expenses. In among of these government expenditures, the interest expenses should be computed in terms of national data, i.e., by multiplying the share of annual increase in saving deposits of urban and rural households of Anhui with the interest expenses in *China SAM (1997)*.

SAM (5, 6): transfer payment from enterprise to households (18.5 billion Yuan)

Source**:** other household accounts.

Calculating Method: household consumption + individual income tax + household savings – wages – household capital income – transfer payment from local government to households.

2.6. Enterprise

1.1.9. Enterprise's Revenues

SAM (6, 4): Enterprise's capital income (77.179 billion Yuan)

Source: other factor accounts.

See “enterprise’s capital income” in factor accounts.

1.1.10. Enterprise’s Expenditures

SAM (5, 6): transfer payment from enterprise to households (18.501 billion Yuan)

Source: other enterprise accounts.

See “transfer payment from enterprise to households” in household accounts.

SAM (10, 6): direct enterprise taxes distributed to local government (10.485 billion Yuan)

Sources: *Summery Table of General Budget Revenue and Expenditure of Anhui (1997)* in *Finance Yearbook of China (1998)*, and *Tax Yearbook of China (1998)*.

We select those items with characteristics of direct taxes in *Summery Table of General Budget Revenue and Expenditure of Anhui*, and add them up to get the total value of direct taxes, which are distributed to local government and central government respectively. From *Tax Yearbook of China (1998)*, we can look up the local and national tax values of those direct taxes and calculate the proportion of the direct taxes distributed to local government and those distributed to central government, and thus figure out direct enterprise taxes distributed to local government and those distributed to central government.

SAM (11, 6): direct enterprise taxes distributed to central government (1.827 billion Yuan)

Sources: Summery Table of General Budget Revenue and Expenditure of Anhui (1997) in *Finance Yearbook of China (1998)*, and *Tax Yearbook of China (1998)*.

The calculating method is the same as the calculation of direct enterprise taxes distributed to local government.

SAM (14, 6): transfer payment from enterprise to households (46.366 billion Yuan)

Source: other enterprise accounts.

Calculating Method: enterprise's capital income – transfer payment from enterprise to households – direct enterprise taxes distributed to local government – direct enterprise taxes distributed to central government.

2.7. Government Subsidies

1.1.11. Expenditures

SAM (7, 2): production subsidies from local government (-2.058 billion Yuan)

Sources: *Summery Table of General Budget Revenue and Expenditure of Anhui (1997)* in *Finance Yearbook of China (1998)*.

See "subsidies from local government" in activity accounts.

SAM (8, 2): production subsidies from central government (-2.289 billion Yuan)

See "subsidies from central government" in activity accounts.

1.1.12. Revenues

SAM (10, 7): local government expenditure of production subsidies (-2.058 billion Yuan)

It is consistent with “production subsidies from local government”, which indicates the local source of production subsidies.

SAM (11, 8): central government expenditure of production subsidies (-2.289 billion Yuan)

It is consistent with “production subsidies from central government”, which indicates the national source of production subsidies.

2.8. Local Government

1.1.13. Revenues

SAM (10, 2): local production taxes (7.222 billion Yuan)

See “local production tax” in activity accounts.

SAM (10, 5): individual income taxes (1.047 billion Yuan)

Source: *Tax Yearbook of China (1998)*.

See “individual income tax” in household accounts.

SAM (10, 6): direct enterprise taxes (10.485 billion Yuan)

See “direct enterprise taxes distributed to local government” in enterprise accounts.

SAM (10, 7): local government expenditure of production subsidies (43.70 billion Yuan)

See “local government expenditure of production subsidies” in government subsidies accounts.

SAM (10, 11): subsidies income from central government (7.538 billion Yuan)

Sources: *Summery Table of General Budget Revenue and Expenditure of Anhui (1997)* in *Finance Yearbook of China (1998)*.

1.1.14. Expenditures

SAM (1, 10): consumption of local government (14.755 billion Yuan)

See "consumption of local government" in commodity accounts.

SAM (5, 10): transfer payment from local government to households (2.336 billion Yuan)

See "transfer payment from local government to households" in household accounts.

SAM (11, 10): local revenues distributed to central government (0.959 billion Yuan)

Sources: *Summery Table of General Budget Revenue and Expenditure of Anhui (1997)* in *Finance Yearbook of China (1998)*.

SAM (14, 10): savings of local government (8.242 billion Yuan)

Sources: *Summery Table of General Budget Revenue and Expenditure of Anhui (1997)* in *Finance Yearbook of China (1998)*.

Calculating Method: local production taxes + individual income taxes + direct enterprise taxes + subsides from central government – consumption of local government – transfer payment from local government to households – local government expenditure of production subsidies – local revenues distributed to central government.

2.9. Central Government

1.1.15. Revenues

SAM (11, 1): tariffs, consumption taxes and value-added taxes on imported goods (0.627 billion Yuan)

See “tariffs, consumption taxes and value-added taxes on imported goods” in commodity accounts.

SAM (11, 2): national production taxes (8.843 billion Yuan)

See “national production taxes” in activity accounts.

SAM (11, 6): direct enterprise taxes distributed to central government (1.827 billion Yuan)

See “direct enterprise taxes distributed to central government” in enterprise accounts.

SAM (11, 8): central government expenditure of production subsidies (37.13 billion Yuan)

See “central government expenditure of production subsidies” in government subsidies accounts.

SAM (11, 10): revenues from local government (0.959 billion Yuan)

See “local revenues distributed to central government” in local government accounts.

1.1.16. Expenditures

SAM (1, 11): consumption of central government(4.208 billion Yuan)

See “consumption of central government” in commodity accounts.

SAM (10, 11): national revenues distributed to local government (7.538 billion Yuan)

See “subsides income from central government” in local government accounts.

SAM (14, 11): savings of central government (-1.78 billion Yuan)

Sources: other central government accounts.

Calculating Method: national production taxes + direct enterprise taxes distributed to central government + tariffs, consumption taxes and value-added taxes on imported goods + revenues from local government - consumption of central government - central government expenditure of production subsidies - subsides income from central government

2.10.Extra-budget

1.1.17. Extra-budget Revenues

SAM (9, 2): extra-budget revenues (6.927 billion Yuan)

See “extra-budget revenues” in activity accounts.

1.1.18. Extra-budget Expenditures

SAM (1, 9): extra-budget consumption (2.783 billion Yuan)

See “extra-budget consumption” in commodity accounts.

SAM (14, 9): extra-budget savings (4.144 billion Yuan)

Calculating Method: extra-budget savings = extra-budget revenues – extra-budget consumption.

2.11. Rest of World (ROW)

1.1.19. Revenues of ROW

SAM (12, 1): import (8.538 billion Yuan)

See “import” in commodity accounts.

SAM (12, 4): foreign investment income (1.522 billion Yuan)

See “foreign investment income” in factor accounts.

1.1.20. Expenditures of ROW

SAM (1, 12): export (16.675 billion Yuan)

See “export” in commodity accounts.

SAM (14, 12): foreign savings (-6.616 billion Yuan)

Calculating Method: foreign savings = import + foreign investment income – export.

2.12. Rest of Mainland China (ROMC)

1.1.21. Revenues of ROMC

SAM (13, 1): import from ROMC (207.649 billion Yuan)

See “import from ROMC” in commodity accounts.

1.1.22. Expenditures of ROMC

SAM (1, 13): export to ROMC (207.198 billion Yuan)

See “export to ROMC” in commodity accounts.

SAM (14, 12): savings of ROMC (4.52 billion Yuan)

Calculating Method: savings of ROMC = import from ROMC – export to ROMC.

2.13.Capital Formation and Stock Change

Capital formation refers to total investment and total saving, both of which have been explained above. Total saving reflects the savings of other accounts in the SAM while total investment is manifested as fixed capital formation and net stock change. Net stock change can be combined with capital account or be listed independently, so we can distinguish fixed capital formation from net stock change in total investment. Capital formation and stock change correspond to the fourteenth and fifteenth columns and rows in the SAM respectively.

3. Documenting the 1997 Disaggregated SAM

3.1. Disaggregate the Macro SAM

Many data come from the I/O table when constructing the Disaggregated SAM. However, the *1997 ANHUI IO TABLE* from the CHINESE STATISTICAL BUREAU (CSB) has 102 sectors, which are different from the 53-sector version used in our Disaggregated SAM, so we should first aggregate the 102 sectors to 53 sectors according to their mapping relations. In the following content, when we get data from the *1997 ANHUI IO TABLE*, it refers to the aggregated I/O table. In addition, CSB has updated the provincial I/O table in 2005 and thus we use it instead.

In terms of the purpose of research and the availability of the data, we disaggregate many accounts of the macro SAM, including accounts of labor, household and production tax. Detailed splitting is documented as follows.

Table 3.1 The Disaggregated Sectors in Anhui SAM

Types	No.	Sector	Types	No.	Sector
Agriculture	1	Crops	***Industry***	28	Plastics
	2	Forestry		29	Building materials
	3	Livestock		30	Primary iron and steel
	4	Fishing		31	Non-ferrous metals
	5	Other agriculture		32	Metal products
Industry	6	Coal mining		33	Machinery
	7	Crude oil and natural gas		34	Special equipment
	8	Ferrous ore mining		35	Automobiles
	9	Non-ferrous ore mining		36	Other transportation equipment
	10	Quarrying		37	Electronic machinery
	11	Logging		38	Electronics
	12	Food Processing		39	Instruments
	13	Beverages		40	Other manufacturing
	14	Tobacco		41	Electricity and stream water
	15	Textile		42	Gas
	16	Apparel		43	Water
	17	Leather	***Construction***	44	Construction
	18	Sawmills	***Service***	45	Transportation
	19	Furniture		46	Postal and communication
	20	Paper		47	Commerce
	21	Printing		48	Restaurants
	22	Social articles		49	Finance
	23	Petroleum refining		50	Real estate
	24	Chemicals		51	Social services
	25	Medicine		52	Education & health
	26	Chemical fibers		53	Public administration
	27	Rubber			

(1) Activities: The Macro SAM account of Activities is divided into 53 sectors, which contain 5 agricultural sectors, 38 industrial sectors, construction and 9 service sectors. The detailed sectors are shown in the table 2.1.

(2) Commodities: Commodities are disaggregated into 53 types in the same way as we split the Activities.

(3) Factors: The capital is further divided into two types: land and non-land capital, while the labor is disaggregated into farmer, worker and technician.

(4) Local government: The taxes raised by local government are separated from the local government account and further divided into value-added tax, business tax and other production tax.

(5) Central government: The taxes collected by central government are disaggregated into four types, which are value-added tax, business tax, other production tax and import tax including tariff, consumption tax and value added tax on imports. All these four types of taxes are separated from the central government account.

(6) Household: Household is disaggregated into rural and urban households, in line with the classification of I/O table.

After decomposing, the items of macro SAM are expanded to corresponding matrix and the detailed dimensions of every sub-matrix are reported in table 2.2.

Table 3.2 Dimensions of the 1997 Disaggregated SAM

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Commodities	Activities	Labor	Capital	Households	Enterprise	Local Gov. Subsidies	Central Gov. Subsidies	Extra System	Local Gov.	Local Taxes	Central Gov.	National Taxes	ROW	ROMC	Investment	Stock Change	Total
1	Commodities		53×53			53×2				53×1	53×1		53×1		53×1	53×1	53×1	53×1	53×1
2	Activities	53×53																	53×1
3	Labor		3×53																3×1
4	Capital		2×53																2×1
5	Households			2×3	2×2		2×1				2×1								2×1
6	Enterprise				1×2														1×1
7	Local Gov. Subsidies		1×53																1×1
8	Central Gov. Subsidies		1×53																1×1
9	Extra System		1×53																1×1
10	Local Gov.							1×1				1×3	1×1						1×1
11	Local Taxes		3×53			3×2	3×1												3×1
12	Central Gov.								1×1		1×1			1×4					1×1
13	National Taxes	4×53	4×53				4×1												4×1
14	ROW	1×53			1×2														1×1
15	ROMC	1×53																	1×1
16	Savings					1×2	1×1			1×1	1×1		1×1		1×1	1×1			1×1
17	Stock Change																1×1		1×1
18	Total	1×53	1×53	1×3	1×2	1×2	1×1	1×1	1×1	1×1	1×1	1×3	1×1	1×4	1×1	1×1	1×1	1×1	

3.2. Sources and Reconciliation

SAM (1, 2) "Commodities—Activities": Intermediate Consumption

Source: *Anhui IO Table (1997).*

Note: Intermediate consumption is disaggregated into a 53×53 matrix. Every row represents the supply of individual commodities to production sectors, while every column reflects the consumption of each commodity used in production.

SAM (1, 5) "Commodities—Households": Household Consumption

Source: *Anhui IO Table (1997).*

Note: Households are split into two categories: rural and urban, creating a 2×53 matrix.

SAM (1, 9) "Commodities—Extra system": Consumption of the extra system

Calculating Method: Total consumption of the three public sector accounts (extra system, local government and central government) has been calculated in the construction of our Macro SAM. Total government consumption of every commodity is reported in the *Anhui IO Table (1997)*, but detailed consumption by each of the three public sector groups is not available. To create a detailed consumption account for each public sector, we assume that consumption shares of each commodity by the total government are equal to the shares for each branch of the public sector. The extra system consumption of each commodity is calculated by multiplying total consumption of the extra system with the relevant consumption share.

SAM (1, 10) "Commodities—Local government": Consumption of the Local government

Calculating Method: The consumption of local government by commodity is estimated in the same way as above, that is, by multiplying total local government consumption with the corresponding consumption shares.

SAM (1, 11) "Commodities—Central government": Consumption of the Central government

Calculating Method: The consumption of central government by commodity is calculated by multiplying consumption shares with central government consumption.

SAM (1, 12) "Commodities—Rest of the World": Exports to the Rest of the World

Source: *Anhui IO Table (1997).*

SAM (1, 13) "Commodities—Rest of Mainland China": Exports to Rest of Mainland China

Source: *Anhui IO Table (1997).*

SAM (1, 14) "Commodities—Investment": Investment

Source: *Anhui IO Table (1997).*

SAM (1, 15) "Commodities—Stock Change": Net Stock Change

Source: *Anhui IO Table (1997).*

SAM(2,1)"Commodities-Activities": Provincial Gross Product

Source: *Anhui IO Table (1997).*

Note: Provincial gross product is disaggregated into a 53×53 diagonal matrix. Diagonal elements represent sectored gross outputs, while all other elements in the matrix are zeros.

SAM(11,1)"Central Government—Commodities":Tariffs, Consumption Taxes and Value Added Taxes on Imports

Calculating Method: There are no statistical data available for disaggregated tariffs and other taxes, therefore we estimate them. We obtain nominal tax rates for each of the 53-sector

imports based on data provided by the DRC. We then multiply gross import taxes from our Macro SAM by the relevant sector proportion.

SAM(12,1)"ROW Commodities": Foreign Imports

Calculating Method: Commodity trade is computed in terms of CIF (Cost, Insurance and Freight) using Customs' statistics. Customs' statistics are calculated according to place of operation, thus we transform them into data in terms of place of destination. That is to say, we control the total of import in Macro SAM and take Customs' statistics which are computed in terms of place of operation as structural parameters, and then we can get the actual foreign imports.

Note: "Imports" in the *Anhui IO Table (1997)* include actual imports and tariffs, which are deduced proportionally, and their calculating methods refer to SAM (11, 1) and SAM (12, 1) mentioned above. The sum of these two items by sector is not equal to the IO table result for imports by sector. Therefore, we take the difference between our figure and the IO figure, and include it as a "stock change". This eliminates the differences and balances the commodity accounts.

SAM(13,1)"ROMC—Commodities":Commodities imported from other Provinces

Source: *Anhui IO table (1997)*.

SAM(3,2)"Labors—Activities": Wages

Calculating Method: Labor is disaggregated into three groups—agricultural laborers, unskilled workers and skilled workers. Because there are only data for gross wages by sector, we use the following steps to divide labor into our three groups:

1. Calculate the size of the labor force at the end of the year in each of the 53 sectors in the disaggregated SAM using data taken from the "Work Force by Sector at the End of the Year

Table and Industry Work Force at the End of the Year Table," *China Labor Statistical Yearbook (1998)*.

2. Calculate the number of employed people at the end of the year in each of the 53 sectors in the disaggregated SAM. The data is taken from "Statistical number of employed people disaggregated by 16 sectors in 1997,"*China Statistical Yearbook (1998)*. We use the size of the work force by sector at the end of the year in step one to calculate the number of employed people by sector.

3. Because the industry partition in the *China Statistical Yearbook (1998)* and in the *China Labor Statistical Yearbook (1998)* is different than our partition, we disaggregate the number of employed people for certain industries. We split the number of employed people from groups 18, 19, 35 and 36 sector of our SAM, according to their proportions in all of China (*Data Collection on the Third Industrial Census of China 1995*).

4. Decompose employed people in each sector into agricultural laborers, unskilled workers and skilled workers, excluding industrial sectors, according to their proportions in the China Occupational Distribution by Sector Table (*1% Spot Check of China's Population in 1995*). Assume there are no unskilled workers in agricultural sectors, and no agriculture workers in other sectors. There are seven types of labors in the China's Occupational Distribution by Sector Table. We group skilled workers and principals of governmental departments, the Party's Association and enterprises or business units in agricultural sectors as skilled workers. Other people working in agricultural sectors are aggregated into the agricultural laborer group. The aforementioned groups in other sectors are also placed into the skilled workers group, while the remaining people working in other sectors are counted as unskilled workers.

5. All employed people in industrial sectors are disaggregated into unskilled workers and skilled workers according to the proportions in "Staff and Workers of Industrial Enterprises with Independent Accounting Systems by Townships Level and Above" (*Data Collection on the Third Industrial Census of China 1995*).

6. Calculate gross labor equivalents by sector. Here labor equivalents refer to weights given to laborers in terms of their different efficiency. Because efficiency varies among different labor groups, we find labor equivalents for each labor group, and assume wages are distributed accordingly. In the Micro SAM, labor equivalents of skilled workers, unskilled workers and agricultural laborers are 1.55, 1 and 0.5 respectively. We calculate gross labor equivalents in each sector by multiplying the number of each type of laborer in a given sector by their corresponding labor equivalent.

7. Calculate wages for the three types of laborers in each sector.

SAM(4,2)"Capital—Activities": Returns to Capital

Calculating Method: Returns to capital are decomposed into returns to land capital and returns to other forms of capital as follows:

1. Calculate gross sectored returns to capital by the depreciation of fixed assets plus operating surplus (*Anhui IO Table).*

2. Calculate the returns to capital for agricultural sectors. We get the returns to land capital by multiplying the gross sectored returns to capital by GTAP 4.0 coefficient. The returns to land capital subtracted from gross returns give the returns to other forms of capital.

3. Calculate the returns to capital for sectors other than agriculture. We suppose returns to land capital in these sectors are zero, so the gross returns to capital equal the returns to non-land capital.

SAM(7,2)"Subsidies from the Local Government—Activities":Subsidies from the Local Government

Calculating Method: There are no statistical data for subsidies to each sector from the local government, so we calculate them as follows:

1. Various types of subsidies from the government are listed in the Summary Table of General Budget Revenue and Expenditure of China (*Finance Yearbook of China 1998*). All the items are aggregated into four types of subsidies from the central government: agricultural, industrial, commercial and other sectors.

2. Suppose subsidies to each sector from the local government are proportional to subsidies from the central government to find the same four subsidies for the local government.

3. For agricultural sectors, subsidies by sector are proportional to their corresponding added value.

4. For industrial sectors, subsidies by sector are proportional to their corresponding loss.

5. For commercial sectors, subsidies are directly calculated in step 2.

6. For other remaining sectors, subsidies are proportional to their corresponding added value.

*SAM(8,2)"Subsidies from Central Government—*Activities*":Subsidies to All sectors from the Central Government*

Calculating Method: There are gross subsidy data from the central government in the Macro SAM, and subsidies from the central government are disaggregated into sectors in the same way as above.

SAM (10, 2) "Local government—Activities": Production taxes distributed to the local government.

Calculating Method: Production taxes are divided into three items: Value-added taxes, business taxes, and other production taxes.

A. Local value-added taxes:

1. The value-added taxes of agricultural sectors is set to zero.

2. For industrial sectors, the value-added tax is based on data from the "Main Financial Index of Industrial Enterprises with Independent Accounting Systems by Township Level and Above(Anhui)," *Data Collection on the Third Industrial Census of China 1995.* Sectored aggregation is calculated using corresponding national statistical data.

3. For services, we refer to the "Domestic Value-added Tax by Sector (Anhui)" in *China Tax Statistics (1998)*, which only includes commercial sectors. Because the *China Tax Statistics (1998)* has the value-added tax data classified by sector, we adopt the total amount of added value in *Tax Yearbook of China (1998)* for consistency. For simplicity, "Other Services" value-added taxes are summed into the "Restaurants" sector, and "Other Services" value-added taxes are set to zero. Because the data in *The China Tax Statistics (1998)* are actual value-added taxes, we convert it into payable value-added taxes using the following formula:

$$\frac{\text{Value-added tax of manufacturing sectors}}{\text{Actual value-added tax of manufacturing sectors}} = \frac{\text{Value-added tax of commerce and restaurant sectors}}{\text{Actual value-added tax of commerce and restaurant sectors}}$$

4. Multiply total local value-added taxes over total (local plus central) value-added taxes by the corresponding sectoral value-added taxes calculated above, to solve for local value-added taxes by sector.

B. Local business taxes:

1. The business tax of industrial and agricultural sectors is set to zero.

2. For service sectors, we refer to "Domestic Business Tax by Sector (Anhui)", *China Tax Statistics (1998).*

3. Multiply total local business taxes over total (local plus central) business taxes by the corresponding sectored business tax calculated above, to solve for local business tax by sector.

C. Other local taxes:

The calculating method is the same as calculation of extra-system fees.

SAM (11, 2) "Central Government—Activities": Production tax distributed to the central government

Calculating Method: The production tax distributed to the central government is also divided into three items: value-added taxes, business taxes, and other production taxes.

A. National value-added taxes:

Value-added taxes collected from enterprises are distributed between the local government and the central government at a ratio of 1:3. So the national value-added taxes by sector are three time those of the local government.

B. National business taxes:

We find national business tax by sector by multiplying the total national business tax by its shares of sectoral business taxes calculated above.

C. Other national taxes:

The calculating method is the same as calculation of extra-system fees.

SAM (9, 2) "Extra-system—Activities": Extra-system fees

Calculating Method: There are no data available for extra-system fees, consequently we estimate them as follows:

We subtract production taxes and subsidies from the net production tax of each sector, and get sectoral residues. Then we take these residues as structural parameters and the total extra-system fee as a controlling number, and find the value of extra-system fees by sector.

SAM (5, 3)"Households—Labor": Labor income

Calculating Method: Labor income is divided into a 2×3 matrix, reflecting earnings of rural and urban households by labor category.

1. We find the amount of rural and urban employment of Anhui from *China Labor Statistical Yearbook (1998)*, which is divided into 6 sectors.

2. Aggregate the employed people of 53 sectors according to above-mentioned 6 sectors, thus we can get the numbers of employment of 6 sectors.

3. In terms of the ratios of rural and urban employment calculated in step 1, we further subdivide the numbers of employment of 6 sectors calculated in step 2 into the numbers of rural and urban employment by sector and by three labor categories.

4. Merger these 6 sectors and get the numbers of rural and urban employment by three labor categories.

5. Multiply the figures obtained in step 4 by their corresponding labor equivalents.

6. Taking the total labor wages in *Anhui IO Table (1997)* as the controlling number and labor equivalents calculated in step 5 as structural parameters, we can easily get rural and urban labor incomes by labor categories.

SAM (5, 4)"Households—Capital": Capital income

Calculating Method: This account reflects the income of rural and urban households from land and non-land capital.

1. Capital income from land is assumed to be zero for urban households, therefore the returns to land capital calculated by disaggregating SAM (4, 2) are equal to rural households return from land.

2. Subtract the capital income from land from the total capital income to get the earnings of non-land capital.

3. Take the annual property income of residents of Anhui (*China Statistical Yearbook (2000)*) as structural parameters, and allocate capital income from non-land capital between rural and urban households.

SAM (6, 4) "Enterprises—Capital": Enterprises' capital income

See cell (6, 4), Macro SAM.

SAM (12, 4)" ROW—Capital": Returns to foreign investment

See cell (12, 4), Macro SAM.

SAM (5, 6)"Households—Enterprise": Transfer payments from enterprises to households

Calculating Method:

1. We find per capita transfer incomes of rural and urban households from the *Anhui Statistical Yearbook (1998)*, and then multiply them by the rural and urban population of Anhui to get gross transfer incomes for rural and urban households.

2. Taking transfer incomes as structural parameters, we can allocate the total transfer payments between rural and urban households.

SAM (5, 10)"Households—Local government": Transfer payment from the local government to households

Calculating Method: Similarly, we take transfer incomes as structural parameters, and allocate the total transfer payment from the local government to households between rural and urban households.

SAM (10, 5) "Local government—Households": Individual income taxes

Calculating Method: Because there is no statistical data available for rural and urban households, here we assume that 80% of individual income taxes come from urban households, while the other 20% come from rural households.

SAM (14, 5) "Savings—Households": Savings of households

Calculating Method: There is no statistical data available for rural and urban households. We find the national savings of rural and urban households from the *China Statistical Yearbook (1998)*, the *Finance Yearbook of China (1998)* and the *China Securities and Futures Statistical Yearbook (2002)*. Under the assumption that the ratio of urban savings to rural savings of Anhui is the same as that of the nation, we decompose the total household savings in the Macro SAM into urban and rural savings.

SAM (10, 6)"Local government—Enterprises": Direct enterprise taxes collected by the local government.

See cell (10, 6), Macro SAM.

SAM (11, 6) "Central government—Enterprises": Direct enterprise taxes collected by the central government

See cell (11, 6), Macro SAM.

SAM (14, 6) "Savings—Enterprises": Enterprises' savings

See cell (14, 6), Macro SAM.

SAM (10, 7) "Local government—local government subsidy": Local government subsidy

See cell (7, 2), Macro SAM.

SAM (14, 9) "Savings—Extra-system": Savings of the extra-system

See cell (14, 9), Macro SAM.

SAM (10, 11) "Local government—Central government": Transfer payments from the central government to the local government

See cell (10, 11), Macro SAM.

SAM (11, 10)"Central government—Local government": Transfer payments from the local government to the central government.

See cell (11, 10), Macro SAM.

SAM (14, 10)"Savings—Local government": Savings of the local government.

See cell (14, 10), Macro SAM.

SAM (14, 11)"Savings—central government": Savings of the central government

See cell (14, 11), Macro SAM.

SAM (14, 12) "Savings—ROW": Foreign savings

See cell (14, 12), Macro SAM.

SAM (14, 13) "Savings—ROMC": Savings of the rest of mainland China

See cell (14, 13), Macro SAM.

SAM (15, 14)"Stock change—Investment": The total amount of stock change.

See cell (15, 14), Macro SAM.

4. Relevant policy issues

As introduced in the first section of this paper, Anhui is a poor province with abundant labors. It is an important fact that millions of labors (most of them are farmers) in Anhui are migrating to other regions (mainly its eastern counterparts). Without permanently residing at where they work, these labors usually remit most of their earnings to their families. In 2004, there were about 7 million people migrating out of Anhui and earned about 28 billion Yuan (In 2004, the GDP of Anhui province was 481.27 billion Yuan).

The policy issues I would like to address here are the impacts of labor migration on the economy of Anhui province. Firstly, due to the massive migration and thus the increasing incomes of local people, private consumption will also increase and some of the consumption will be satisfied by local products. Secondly, the wages of the people that did not migrate may rise because of the reduction in the work force and the enhancement of labor productivity. Thirdly, I want to investigate the effects of some other policies. For example, the local government can improve the education for the children and the youths, or it can allocate more money for skill-training programs. Finally, the impacts of labor migration on the regional disparity will be examined to identify whether more labor migration alleviate or aggravate the regional disparity.