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A SOCIAL ACCOUNTING MATRIX AND CGE MODEL FOR SHANGHAI

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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.

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CONTENT

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1. OUTLINE OF SHANGHAI ECONOMY

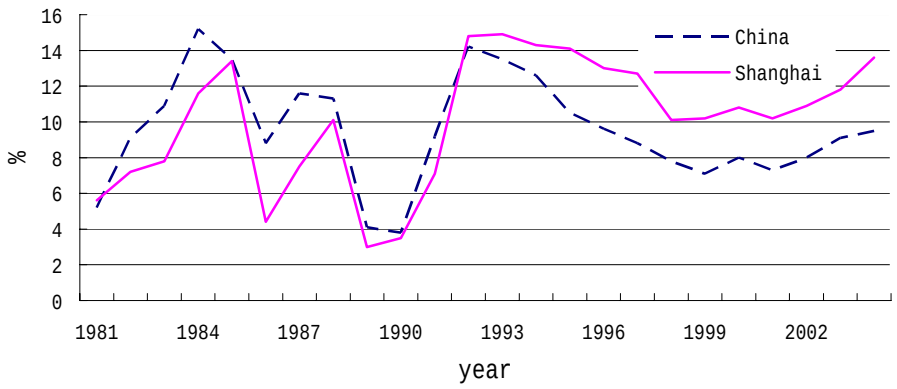
Shanghai is one of the four cities that directly under the authority of the Chinese central government. It is located at the coast of Yangzi River in eastern China. Shanghai is the leader in this delta, which includes its neighbors Jiangsu Province and Zhejiang Province. Nowadays, Shanghai is one of the biggest industrial, commercial and financial centers in China. It has the Shanghai Stock Exchange Center, along with other markets for bonds, futures, insurance, foreign exchange and inter-bank transactions, which serve the whole country. At the same time, Shanghai is challenging other international metropolis, especially after the APEC Conference held in October 2001 and the World's Fire, which will be held in 2010.

Shanghai has been always the most developed province since the founding of P.R. China. A simple outline of Shanghai's economy over the recent years will be given below.

1.1 Growth of Shanghai Economy

From the GDP Growth of China and Shanghai Table, it illustrates that the growth rate of Shanghai's GDP is even greater than the GDP of China since 1990. Moreover, it has 745.02 billion Yuan in 2004. The respective growth rate is 13.6% under the comparable price level, and it has exceeded over 10% for the past 13 years; it peaked since 1996. In 2004, Shanghai's GDP is 5.5% of China's, and this percent is even 0.1 % larger than the previous year. In addition, the GDP per capita of Shanghai in 2004 has reached 55,306 Yuan, with 8589 Yuan improvement.

GDP Growth of China and Shanghai



1.2 Industrial Structure

Shanghai has the highest urbanization rate among the entire country and it has a minimal agricultural sector. The main industries in Shanghai are the Secondary and Service Industry. In the year of 2004, the proportions of Shanghai's GDP of the Primary, Secondary and Tertiary Industries are respectively: 1.3%, 50.8%, and 47.9%. In 2004, although there had been 9.67 billion Yuan incensement in the Primary Industry, it has been decreased by 5% in comparing to the previous year. However, there was a boost in the remaining two industries: the Secondary industry has 378.82 billion Yuan which has increased by 14.9% and in the Tertiary Industry has 356.53 billion Yuan which has increased by 12.9%. In particular, the raise in GDP of Shanghai financial industry is 74.17 billion Yuan which has increased by 13.7% than the year before. The proportion of the financial industry is nearly to the one-tenth of the total GDP; .this demonstrates the prosperity side of the financial industry of Shanghai.

1.3 Population and the Labor Market

Shanghai is a city that has the highest population rate in China. Its population encompasses the locals, permanent residents and the floating populations, it is hard to estimate Shanghai's population and labor market exactly, so the following figures are just an approximation: the proportion of non-agricultural population has increased from 60.7% in 1979 to 77.6% in 2003. On the other hand, the amount of local residents in Shanghai is 13,417.7 thousand in 2003; the permanent population is 17,421.5 thousand at the end of 2004 which has added 313.1 thousand than the year before, at a growth rate of 1.8%. In 2003, the employed labors are 7,372 thousand in the Primary industry; 31,712 thousand in Secondary industry and 42,221 in Tertiary industry. The proportion of employees in these three industries are 9: 39: 52.

1.4 Trade and Trade Dependence

The international trade in Shanghai is incredibly prosperous. By having such a high degree of open economy, its trade dependence (imports plus exports divided by GDP) is more than triple times in 2004; the total trade value through the Shanghai Port has exceeded 280 billion U.S. dollars, which is for the first time in Chinese history. The exact trade value is 282.6 billion dollars which had an up-grown of 40% than in 2003. Moreover, Shanghai's total value of imports and exports in 2004 is 24.47% of China's total trade at which is 1154.74 billion dollars. Indeed, the import value of Shanghai is 161.3 billion dollars and export is 121.3 billion dollars. The total value of trade by the foreign investors has reached 176.6 billion dollars in the first-eleventh months of 2004, which accounts for more than 60% of all trades.

1.5 Government Revenues

In 2004, the total revenue generated by the Shanghai government is 359.17 billion Yuan, which has grown by 27% compared to the previous year. The financial revenue of the local government is 112 billion Yuan, which has increased by 24.5%; similarly, the revenue from taxes grew by 27% at a present value of 310.4 billion Yuan. The growth rate of revenues exceeds that of the Shanghai's GDP, implicating a robust growth development in the Shanghai's economy. However, due to the fact that the system of taxes returned on exports changed, the revenue of the government of Shanghai dropped to 3325.14 Yuan, which resulted in a growth rate of only 17.5%.

2. CONSTRUCTION OF MACRO SAM OF SHANGHAI

2.1 Definitions and Explanations

The 1997 Social Accounting Matrix for Shanghai is a square matrix which encompass every transaction of Shanghai in 1997, i.e. production, sale, consume, and distribution. The data sources for a SAM come from Shanghai 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 Shanghai 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 Shanghai,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 Shanghai and the rest of the China (mainland of China).

The macro SAM is built on the basis of various data, e.g. 1997 Shanghai Input-Output Table (I/O table), Statistic Yearbook of Shanghai (1998), Financial Yearbook of China (1998). The following describes the macro SAM cell entries and identifies their sources. The cell entries are referenced by their "row-column" location, i.e., “ Commodities, Activities” represents an expenditure flow from the column “Activities” to the row “Commodities.”. All entries are in 1997 RMB 10,000 Yuan. All non-zero intersections between rows and columns in the Macro SAM will be discussed as following.

	Expenditure															Total
Receipts	1. Commodity	2. Activity	3. VA- Labor	4. VA- Capital	5. Households	6. Enterprises	7. Local Gov. Sub	8. Central Gov. Sub	9. Local Gov.	10. Central Gov.	11. Extra-budget	12. Capital Account	13. Stock change	14. Rest of the World	15. Rest of China	
1. Commodity		Intermediate Consumption			Private Consumption				Government Consumption	Government Consumption	Extra-budget Consumption	Gross Fixed Capital Formation	Changes in Inventories	Export	Outflow to ROMC	Total Commodity Demand
2. Activity	Domestic Production															Total Domestic Production
3. VA- Labor		Compensation of Employees														Labor Earning
4. VA- Capital		Depreciation; Operating Surplus														Capital Earning
5. Households			Compensation of employees distr. to HH			Transfers to households			Transfers to households	Transfers to households						Household Income
6. Enterprises				Capital income distr. to Enterprise.												Enterprise income
7. Local Gov. Sub		Subsidy on Production (Negative)							Expenditure of Subsidy							Local Gov. Subsidy
8. Central Gov. Sub		Subsidy on Production (Negative)								Expenditure of Subsidy						Central Gov. Subsidy
9 Local Gov.		Indirect Taxes			Income tax	Income tax				Central Gov. transfer to Local Gov						Local Gov. Revenue
10. Central Gov.	Import tax (incl. Tariff)	Indirect Taxes				Income tax			Local Gov. transfer to Central Gov							Central Gov. Revenue
11. Extra-budget		extra-budget fee														Extra-budget Income
12. Capital Account					Households savings	Enterprise savings			Government saving	Government saving	Extra-budget savings			Foreign Saving	ROMC Saving	Total savings
13. Stock change												Changes in Inventories				Total Changes in Inventories
14. Rest of the World	Imports															Total Foreign Exchange Outlays
15. Rest of China	Inflow for ROMC															Total interregional inflow
Total	Total Commodity Supply	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 interregional outflow	

Table 2.2 1997 Shanghai MacroSAM

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Commodity	Activity	Labor	Capital	Household	Enterprise	Local gov. subsidy	Central Gov. subsidy	Extra-budget	Local Gov	Central Gov	ROW	ROC	Fix capital formation	St. change	Sum
1	Commodity		7295.09			1135.42				10.12	215.08	63.50	1224.21	1659.01	1796.47	256.23	13655.13
2	Activity	10655.30															10655.30
3	Labor		1154.30														1154.30
4	Capital		1496.25														1496.25
5	Household			1154.30	59.55		1160.53				78.66						2453.05
6	Enterprise				1312.1												1312.18
7	Local Gov. subsidy		(43.70)								43.70						
8	Central Gov. subsidy		(37.13)									37.13					
9	Extra-budget		93.48														93.48
10	Local Gov		253.25			29.42	48.11					203.30					534.08
11	Central Gov	90.62	443.76				32.96				124.52						691.86
12	ROW	1293.11			124.52												1417.63
13	ROC	1616.10															1616.10
14	Fix capital formation					1288.21	70.58			83.35	72.12	387.93	193.42	(42.92)			2052.69
15	St. change														256.23		256.23
16	Sum	13655.13	10655.30	1154.30	1496.2	2453.1	1312.2			93.48	534.08	691.86	1417.63	1616.1	2052.69	256.23	

2.2 Data Sources and Balancing

Table 2.2 shows the Shanghai Macro SAM in 1997, which is built on the basis of various data, e.g. 1997 Shanghai and China Input-Output Table (I/O table), China Statistical Yearbook (1998), Shanghai Statistical Yearbook (1998), etc. The following content describes the macro SAM cell entries and identifies their sources.

2.2.1 Commodity

Total supply

(1) SAM (2, 1): Provincial (Municipal) Total Output (10655.30)

Source: Intermediate Use Part of Shanghai IO Table (1997).
Note: 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.

(2) Inflows: Include the interregional inflow, import, tariff, consumption tax and value added tax on imports.

A. SAM (11, 1): Tariff, consumption tax and value added tax on imports (90.62)

Source: Tax revenue tables and 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*.

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

B. SAM (12, 1): Import (1293.11)

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

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

C. SAM (13, 1): Interregional inflow (1616.10)

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

Total Demand

(1) SAM (1, 2): Intermediate Input (7295.09)

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

Note: 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.

(2) Final Consumption: Including Household Consumption, Local Government Consumption, Central Government Consumption and Public Sector Consumption

A. SAM (1, 5): Household Consumption (1135.42)

Source: Shanghai IO Table (1997), Shanghai Statistical Yearbook(1998).

Note: Household Consumption in Shanghai Statistical Yearbook (1998) is 113.524 billion Yuan, almost the same as in Shanghai IO Table (1997).

B. SAM (1, 10): Local Government Consumption (215.08)

Source: the Summery Table of General Budget Revenue and Expenditure of China (*Finance Yearbook of China 1998)*.

Note: Because Shanghai IO Table has only one government consumption account, we have to calculate disaggregated consumption of local government, central government and public sector.

Calculating Method: Aggregate the nonprofit expenditure items in the financial budget, which belongs to regular operational expenditure. Through this method, we can get consumptions of the Shanghai local government and the central government. The surplus is an Extra-Budget system account.

C. SAM (1, 11): Central Government Consumption (63.50)

Source: the Summery Table of General Budget Revenue and Expenditure of China, the Summery Table of General Budget Revenue and Expenditure of Shanghai (*Finance Yearbook of China 1998)*.

Calculating Method: The consumption of the central government is estimated in the same way as above, SAM (1, 10).

D. SAM (1, 9): Public Sector Consumption (10.12)

Source: Shanghai IO Table (1997), Shanghai Statistical Yearbook (1998).

Calculating Method: Government consumption from IO Table subtracts the calculated local government and central government consumption above.

(3) Provincial Exports : Include Exports to Foreign Countries (Exports) and Exports to Other Provinces

A. SAM (1, 12): Exports (1224.21)

Source: Total Exports by Region (by Domestic Origination), Foreign Trade Statistical Yearbook of China (1998).

B. SAM (1, 13): Exports to Other Provinces (1659.01)

Source: Shanghai IO Table (1997).

Calculating Method: Total Exports to Other Provinces subtract Exports.

(4) Capital Formation: Includes Fixed Capital Formation, Net Added of Inventory

A. SAM (1, 14): Fixed Capital Formation (1796.47)

Source: Shanghai IO Table (1997), Shanghai Statistical Yearbook (1998).

B. SAM (1, 15): Net Added of Inventory (256.23)

Calculating Method: Total Demand subtracts Intermediate Input, Final Consumption, Provincial Exports and Fixed Capital Formation.

2.2.2 Activities

Total Output

(1) SAM (2, 1): Provincial Products (10655.30)

Sources: the 1997 Shanghai IO table by 102 sectors.

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

Total Input

(1) SAM (1, 2): Intermediate Inputs (7295.09)

Sources: the 1997 Shanghai IO table by 102 sectors.

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

(2) Factor Inputs: Including Rewards to Labor and Capital

A. SAM (3, 2): Rewards to Labor (1154.30)

Sources: the 1997 Shanghai IO table by 102 sectors.

B. SAM (4, 2): Rewards to Capital (1496.25)

Sources: the 1997 Shanghai IO table by 102 sectors.

Calculating Method: The Depreciation of Fixed Assets plus the Surplus Reserve is the Rewards to Capital.

(3) Net Product Taxes: Including Subsidies from Local Government, Product taxes to Local Government, Subsidies from Central Government, Product taxes to Central Government and Extra-system Fees

A. SAM (7, 2): Subsidies from Local Government (-43.70)

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

Note: Subsidies to Enterprise Loss, Income Taxes Returned to Enterprises and Subsidies Due to Policy are mostly included in the Subsidies from the Local Government.

B. SAM (10, 2): Product taxes to Local Government (253.25)

Sources: the 1997 Gross Taxation by regions and by categories of taxes (Local Taxes), China Taxation Yearbook in 1998.

Calculating Method: Aggregate the respective product tax items.

C. SAM (8, 2): Production Subsidies from Central Government (-37.13)

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

Calculating Method: Although the total production subsidy from the central government to enterprises all over the nation is available in the statistic book, the detailed production subsidies from the central government to every region are not reported. Here we assume that the ratio of production subsidy from the central government to Shanghai city to the total subsidy from central government to Shanghai city is equal to that of central government's total production subsidy to its total subsidy. Then, we get the central government's total subsidies to Shanghai city, the central government's total production subsidy and the central government's total subsidy from the above data then to calculate the production subsidy to Shanghai city according to the assumed relationship.

D. SAM (11, 2): the production tax distributed to central government (443.76)

Source: the Tax Yearbook of China (1998).

Calculating method: The Central government's revenues in every tax category from each region are reported in the *Tax Yearbook of China (1998)*, so the total production tax is distributed to the central government from Shanghai city can be obtain by adding each type of production tax.

E. SAM (9, 2): Extra-budget revenue (93.48)

Source: the 102 flow table of 1997 Shanghai IO table.

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

2.2.3 Factors

Factor revenues

(1) SAM (9, 2): Labor Remuneration (1154.30)

Source: the 102 flow table of 1997 Shanghai IO table.

Note: It is the same as "Labor Remuneration account" in activity accounts.

(2) SAM (4, 2): Capital Remuneration (1496.25)

Source: the 102 flow table of 1997 Shanghai IO table.

Factor expenditures:

(1) SAM (5, 3): labor income (1154.30)

Source: the 102 flow table of 1997 Shanghai IO table.

(2) Distribution of Capital remuneration: including Household Capital Income, foreign investment income and Enterprise capital income

A. SAM (5, 4): Household Capital Income (59.55)

Sources: China statistical yearbook (2000), 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 Shanghai statistical yearbook (1998), Total Population over the Years in Shanghai Statistical Yearbook (1998).

Calculating method: Due to there is no statistical data of household's capital income, we have to use approximation for this figure. In the estimation process, we first assume that there is a steady relationship between the household's capital incomes and the wealthy income. For example: Shanghai household's capital income/the estimated wealthy income of Shanghai households = the national households' capital income/the estimated wealthy income of national households. Then, we can estimated the wealthy income of Shanghai household, capital income of national household and wealthy income of national household based on the data resources that listed above. Finally the 1997 Shanghai households' capital income can be calculated from the assumed relationship.

B. SAM (12, 4): foreign investment income (124.52)

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

Calculating method: Just as the household's capital income, we have to estimate the foreign investment income since there is no direct statistical data. The calculation method is as the following: assumed that there is a fixed correlation between the amount of foreign investment and the foreign investment income. In other words,, foreign investment income from Shanghai/foreign investment income from nation = the amount of foreign investment received by Shanghai/the amount of foreign investment received by China. Then we can find the total foreign investment received by the nation, by Shanghai and the nation's foreign investment income, from that we can calculate the foreign investment income from Shanghai City.

C. SAM (6, 4): Enterprise capital income (1312.18)

Calculating Method: Enterprise's capital income is equal to the capital remuneration subtracts from the sum of household's capital income and foreign investment income.

2.2.4 Households

Household Expenditures

(1) SAM (1, 5): household consumption (1135.42)

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

Note: It is the same as "Household Consumption" in commodity accounts.

(2) SAM (10, 5): individual income tax (29.42)

Source: Tax Yearbook of China (1998).

(3) SAM (14, 5): household saving (1288.21)

Sources: Flow of Funds Table (Physical Transaction, 1997) in China Statistical Yearbook (2000), China Statistical Yearbook (1998), Shanghai 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).

Calculating Method: Due to the lack of data on provincial household savings, we will compute this item by referring to the "Annual Increase in Saving Deposits of Urban and Rural Households" and the "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 of 1997 is much less than the total savings in *Flow of Funds Table.* Therefore, we assume that these two figures are both proportional at national and provincial level so as to calculate the total household savings of Shanghai.

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

Household Revenues

(1) SAM (5, 3): wages (1154.30)

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

Note: It is the same as "Labor Income" in factor accounts.

(2) SAM (5, 4): household capital income (59.55)

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 Shanghai Statistical Yearbook (1998).

Note: It is the same as "Household Capital Income" in factor accounts.

(3) SAM (5, 10): transfer payment from local government to households (78.66)

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

Calculating Method: Due to the fact that it is difficult to find the statistical data of "transfer payment from local government to households" from the provincial officials, we have to calculate it by summing up the relevant items from the expenditures of local government. They include the expenditures for pension and social welfare, price subsidies, retirement expense of non-business and administrative units, and interest expense. Indeed, the interest expenses should be computed in terms of the national data, i.e., by multiplying of the share of the annual increase in saving deposits of urban and rural households in Shanghai with the interest expenses in *China SAM (1997)*.

(4) SAM (5, 6): transfer payment from enterprise to households (1160.53)

Source: other household accounts.

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

2.2.5 Enterprises

Enterprise Revenues

(1) SAM (6, 4): Enterprise capital income (1312.18)

Source: other factor accounts.

Note: It is the same as "enterprise's capital income" in factor accounts.

Enterprise's Expenditures

(1) SAM (5, 6): transfer payment from enterprise to households (1160.53)

Source: other enterprise accounts.

Note: It is the same as "transfer payment from enterprise to households" in household accounts.

(2) SAM (10, 6): direct enterprise taxes distributed to local government (48.11)

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

Calculating Method: We have selected items that characterize the direct taxes in *Summery Table of General Budget Revenue and Expenditure of Shanghai*, next add them up to get the total value of direct taxes; they 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 direct taxes and calculate the proportion of which in the distribution to the local government in respect to the central government. The aim is to figure out the amount of direct enterprise taxes distributed to local government and to the central government.

(3) SAM (11, 6): direct enterprise taxes distributed to central government (32.96)

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

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

(4) SAM (14, 6): transfer payment from enterprise to households (70.58)

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.

2.2.6 Government Subsidies

Expenditures

(1) SAM (7, 2): production subsidies from local government (-43.70)

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

Note: It is the same as "subsidies from local government" in activity accounts.

(2) SAM (8, 2): production subsidies from central government (-37.13)

Note: It is the same as "subsidies from central government" in activity accounts.

Revenues

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

Note: It is consistent with "production subsidies from local government", which indicates the local source of production subsidies.

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

Note: It is consistent with "production subsidies from central government", which indicates the national source of production subsidies.

2.2.7 Local Government

Revenues

(1) SAM (10, 2): local production taxes (253.25)

Note: It is the same as "local production tax" in activity accounts.

(2) SAM (10, 5): individual income taxes (29.42)

Source: Tax Yearbook of China (1998).

Note: It is the same as "individual income tax" in household accounts.

(3) SAM (10, 6): direct enterprise taxes (48.11)

Note: It is the same as "direct enterprise taxes distributed to local government" in enterprise accounts.

(4) SAM (10, 11): subsidies income from central government (203.30)

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

Expenditures

(1) SAM (1, 10): consumption of local government (215.08)

Note: It is the same as "consumption of local government" in commodity accounts.

(2) SAM (5, 10): transfer payment from local government to households (78.66)

Note: It is the same as "transfer payment from local government to households" in household accounts.

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

Note: It is the same as "local government expenditure of production subsidies" in government subsidies accounts.

(4) SAM (11, 10): local revenues distributed to central government (124.52)

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

(5) SAM (14, 10): savings of local government (72.12)

Sources: Summery Table of General Budget Revenue and Expenditure of Shanghai (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.

2.2.8 Central Government

Revenues

(1) SAM (11, 2): national production taxes (443.76)

Note: It is the same as “national production taxes” in activity accounts.

(2) SAM (11, 6): direct enterprise taxes distributed to central government (32.96)

Note: It is the same as “direct enterprise taxes distributed to central government” in enterprise accounts.

(3) SAM (11, 1): tariffs, consumption taxes and value-added taxes on imported goods (90.62)

Note: It is the same as “tariffs, consumption taxes and value-added taxes on imported goods” in commodity accounts.

(4) SAM (11, 10): revenues from local government (124.52)

It is the same as “local revenues distributed to central government” in local government accounts.

Expenditures

(1) SAM (1, 11): Consumption of central government (63.50)

It is the same as “consumption of central government” in commodity accounts.

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

It is the same as “central government expenditure of production subsidies” in government subsidies accounts.

(3) SAM (10, 11): national revenues distributed to local government (203.30)

It is the same as “subsides income from central government” in local government accounts.

(4) SAM (14, 11): savings of central government (387.93)

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.

2.2.9 Extra-budget

Extra-budget Revenues

(1) SAM (9, 2): extra-budget revenues (93.48)

It is the same as “extra-budget revenues” in activity accounts.

Extra-budget Expenditures

(1) SAM (1, 9): extra-budget consumption (10.12)

It is the same as “extra-budget consumption” in commodity accounts.

(2) SAM (14, 9): extra-budget savings (83.35)

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

2.2.10 Rest of World (ROW)

Revenues of ROW

(1) SAM (12, 1): import (1293.11)

It is the same as “import” in commodity accounts.

(2) SAM (12, 4): foreign investment income (124.52)

It is the same as “foreign investment income” in factor accounts.

Expenditures of ROW

(1) SAM (1, 12): export (1224.21)

It is the same as “export” in commodity accounts.

(2) SAM (14, 12): foreign savings (193.42)

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

2.2.11 Rest of China (ROMC)

Revenues of ROMC

(1) SAM (13, 1): import from ROMC (1616.10)

It is the same as "import from ROMC" in commodity accounts.

Expenditures of ROMC

(1) SAM (1, 13): export to ROMC (1659.01)

It is the same as "export to ROMC" in commodity accounts.

(2) SAM (14, 12): savings of ROMC (-42.92)

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

2.2.12 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 that 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. Construction of 1997 Disaggregated SAM of Shanghai

3.1 Disaggregate the Macro SAM

Many data come from the I/O table when constructing the Disaggregated SAM. However, the AHIO1997 delivered from the 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 AHIO1997, it refers to the aggregated I/O table. In addition, the CSB has updated the provincial I/O table in 2005 and 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.

(1) Activities: The Macro SAM account of Activities is divided into 53 sectors, which contains 5 agricultural sectors, 38 industrial sectors, 1 construction sector 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.

Table3.1 the disaggregated sectors in Shanghai SAM

Sectors		Sector	Sector		Sector
Agriculture	1	Crops	Industries	28	Plastics
	2	Forestry		29	Building material
	3	Livestock		30	Primary iron and steel
	4	Fishing		31	Non-ferrous metals
	5	Other Agriculture		32	Metal products
Industries	6	Coal mining		33	Machinery
	7	Crude Oil and natural gas		34	Special equipment
	8	Ferrous ore mining		35	Automobile
	9	Non-ferrous ore mining		36	Oth.Transport equipment
	10	Quarrying		37	Electric machinery
	11	Logging		38	Electronics
	12	Food process		39	Instruments
	13	Beverage		40	Other manufacturing
	14	Tobacco		41	Electricity and steam water
	15	Textile		42	Coal gas
	16	Apparel		43	Water
	17	Leather	Construction	44	Construction
	18	Sawmills	Service	45	Transportation
	19	Furniture		46	Post and communication
	20	Paper		47	Commerce
	21	Printing		48	Restaurant
	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			

(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 the corresponding matrix and the detailed dimensions of every sub-matrix are reported in Table 2.2.

Table 2.2 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	labors	Capitals	Households	Enterprise	Local government Subsidies	central government Subsidies	Extra system	Local government	local government Taxes	Central government	Central government Taxes	Rest of word	Rest of mainland of China	Capital Accumulation	Inventory	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	labors		3×53																3×1
4	Capitals		2×53																2×1
5	Households			2×3	2×2		2×1				2×1								2×1
6	Enterprise				1×2														1×1
7	Subsidies from Local government		1×53																1×1
8	Subsidies from central government		1×53																1×1
9	Extra system		1×53																1×1
10	Local government							1×1				1×3	1×1						1×1
11	Taxes raised by local government		3×53			3×2	3×1												3×1
12	Central government								1×1		1×1			1×4					1×1
13	Taxes raised by Central government	4×53	4×53				4×1												4×1
14	Rest of word	1×53			1×2														1×1
15	Rest of mainland of China	1×53																	1×1
16	Capital Accumulation					1×2	1×1			1×1	1×1		1×1		1×1	1×1			1×1
17	Inventory																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 Data Sources of Disaggregated SAM and Reconciliation

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

Source: *Shanghai 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: *Shanghai 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 *Shanghai 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: *Shanghai IO Table (1997).*

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

Source: *Shanghai IO Table (1997).*

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

Source: *Shanghai IO Table (1997).*

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

Source: *Shanghai IO Table (1997).*

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

Source: *Shanghai 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 *Shanghai 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: *Shanghai 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 (*Shanghai 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(Shanghai)," *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 (Shanghai)" 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 (Shanghai)", *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 Shanghai from *China Labor Statistical Yearbook (1998)*, which is divided into 6 sectors.

2. Aggregate the employed people[8] 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[9].

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 *Shanghai 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 Shanghai (*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 *Shanghai Statistical Yearbook (1998)*, and then multiply them by the rural and urban population of Shanghai 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 Shanghai 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. SIMULATION

In this Shanghai CGE model, the following six scenarios will be simulated: (1) Base Scenario, where I got my initial solution from. (2) The tariff rates are halved for all imports. (3) To remove all tariffs. (4) The VAT rate is at normal standard for all commodities. (5) VAT rate is reduced by 5% based on Scenario 4. (6) Productivity is grown by 5%.

In particular, special interest will be given to the effect of taxes on consumption and investment. So I want to simulate the Shanghai Economy supposing that VAT or income taxes change. Nowadays, China is pushing a tax reform that fixed assets can be fully or partly deductible in the near future. Another tax reform is about individual income tax.

5. References