

**ECONOMIC POLICY
RESEARCH PAPER SERIES**

**A SOCIAL ACCOUNTING
MATRIX FOR
HEILONGJIANG PROVINCE**

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OCTOBER, 2005

Development Research Center

State Council of the People's Republic of China

No. 225. Chaoyangmen Nei Dajie

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 Yanming JIN 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 AND CGE MODEL FOR HEILONGJIANG PROVINCE

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1. INTRODUCTION

The Heilongjiang Province represents 453,600 square kilometers of northeast China. It acts as an important base for the coal, petroleum, timber and agriculture. There are 9.601million-ha.farmland areas in Heilongjiang, which has the most farmlands amongst all provinces in China with personal farmland occupying 7.7 units of this area. In 2003, imports was \$2,455 million and exports was \$2,874million. Together, Heilongjiang netted \$5,329million, 0.63% of China's total amount of imports and exports. In 2001, the province contained 28 development areas. Until 2003, the Heilongjiang's population was 59.89 million, 2.9% of the national population. Jumping forward to 1997, the GDP growth rate stood at 10.3% and stayed that way until 2000. It grew again in 2000 and by the year 2004 the growth rate rose to 11.7%. At the end of 2004, the GDP of the Heilongjiang province was 530.3 billion Yuan and the personal GDP was 10, 184 Yuan per person.

2.HEILONGJIANG SAM

2.1. Definitions and Explanations

The 1997 Social Accounting Matrix for Heilongjiang is a square matrix which encompass every transaction of Heilongjiang in 1997, i.e. production, sale, consume, and distribution. The data

sources for a SAM come from Heilongjiang 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 Heilongjiang is a square matrix comprising 15 rows and columns forming separate accounts in the economy. Table 1 denote the Macro SAM for Heilongjiang, 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 Heilongjiang and the rest of the China (mainland of China).

The macro SAM is built on the basis of various data, e.g. 1997 Heilongjiang Input-Output Table (I/O table), Statistic Yearbook of Heilongjiang (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	

2.2. Data Sources and Balancing

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

2.2.1. Commodity

Total supply

(1) SAM (2, 1) : Provincial (municipal) Total Output.

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

Note: No imbalances are assumed in the SAM, therefore, the data from the input-output table is chosen as the regional total output while potential errors will be dealt with in balanced items.

(2) Inflow : Includes 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

Source: Central and Local Government Financial Budget Table in China Statistical Yearbook 1998.

Tax revenue tables and tables of Import and Export Value of Commodity are, organized by region according to place of destination or origin inform

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

B . SAM (12, 1) : Import

Source: Table of regional import value of commodities by places of destination in China Foreign Economic Statistical Yearbook 1998. .

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

C. SAM (13,1): Interregional inflow

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

2.2.2. Total output

SAM (1,2): Intermediate output

Source: 1997 HeiLongJiang table.

Because no imbalances 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 includes residents' consumption, consumption of local government, consumption of central government and public sector consumption.

SAM (1,5): Residents' consumption

Source: 1997 HeiLongJiang table.

B. SAM (1,10): Consumption of local government

Source: HeiLongJiang's Budget and Final Accounting of Revenue and Expenditure Table in The China Public Finance Yearbook 1998.

Because the IO table does not distinguish between local government consumption, central government consumption and extra-budget items, we must control the value of government consumption in IO table.

Calculating method: Select items of business expenditure relating to financial budget, which belongs to regular expenditure, and aggregate them to get local and central government consumption. The remainder is public sector consumption.

C .SAM (1,11): Central government's consumption

Sources: Central and local government financial budget table in China Statistical Yearbook 1998, HeiLongJiang Budget and Final Accounting of Revenue and Expenditure Table in China Statistical Yearbook 1998, Central Budget and Final Accounting of Revenues and Expenditure Table in China Public Finance Yearbook 1998.

Calculating method: It is the same as SAM (1, 10).

D.SAM (1, 9): Public sector's consumption

Source: *HeiLongJiang Statistics Yearbook 1998*. HeiLongJiang IO Table organized by 102 sectors identified in the table.

Consumption in IO table subtracts local and central government consumption.

(3) Outflow : Include export and interregional outflow

A. SAM (1, 12): Export

Source: *China Foreign Economic Statistical Yearbook 1998*, specifically the table of regional import value of commodities by places of origins. The RMB in the table should be converted into US dollar (\$) value.

SAM (1, 13): Interregional outflow

Source: *HeiLongJiang Statistics Yearbook 1998*. The HeiLongJiang IO table organized in 102 sectors.

Calculating method: Interregional outflow = Total outflow - export

(4) Capital formulation: Includes fixed capital formulation, stock increasing

A.SAM (1,14): Fixed capital formulation

Source: *HeiLongJiang Statistics Yearbook 1998*. The HeiLongJiang IO table is identified by 102 sectors. SAM (1, 15): Stock increasing

Source: Other account

Calculating method: Stock increasing = Total need -intermediate input -final consumption-outflow-fixed capital increasing

2.3. Activities

Total Output

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

Source: 1997 HeiLongJiang IO table by 102 sectors. This account is the same as Provincial Products Accounts in the Commodities Accounts.

Total Input

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

Source: 1997 HeiLongJiang IO table by 102 sectors. 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

Source: the 1997 HeiLongJiang IO table by 102 sectors.

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

Source: 1997 HeiLongJiang IO table by 102 sectors. The Depreciation of Fixed Assets added to the Surplus Reserve equals 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

Source: HeiLongJiang's Budget and Final Accounting of Revenue and Expenditure Table in China Public Finance Yearbook 1998.

Subsides from Local Government primarily includes subsidies to enterprise loss, income taxes returned to enterprises and subsidies due to policy

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

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

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

Source: Finance Yearbook of China 1998, and HeiLongJiang final accounting of General Budget Revenue and Expenditure (1997).

Although the total production subsidy from central government to enterprises is available in the statistic book, detailed production subsidies from central government to every region are not reported. Here we assume that the ratio of production subsidy from central government to HeiLongJiang over the total subsidy from central government to HeiLongJiang. This ratio is equal to that of central government's total production subsidy to its total subsidy. This ratio is important because it points to the central government's total subsidies to Heilongjiang, the central government's total production subsidy and the central government's total subsidy from

the above sources, and calculate the production subsidy to Heilongjiang according to the assumed relation.

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

Source: Tax Yearbook of China 1998.

The total production tax distributed to the central government by HeiLongJiang is calculated by aggregating each type of regional tax as reported by the *Tax Yearbook of China (1998)*.

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

Source: 1997 HeiLongJiang IO table.

The Extra-budget revenue derived by subtracting the total production subsidy summed with the production tax from the net production tax in the IO table.

2.4. Factors

Factor revenues

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

Source: 1997 HeiLongJiang IO table.

Note: Same as "Labor Remuneration account" in activity accounts.

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

Source: 1997 HeiLongJiang IO table.

Factor expenditures

(1) SAM (5 , 3) : Labor income

Source: 1997 HeiLongJiang IO table.

(2) Distribution of Capital remuneration including Household Capital Income, Foreign Investment Income and Enterprises' Capital Income

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

Sources: 1.China statistical yearbook 2000, Flow of Funds Table (Physical Transaction, 1997).

2. China Statistical Yearbook 1998, Basic Conditions of Urban Households and Per Capita Net Income of Rural Households by Source and by Region.
3. China Statistical Yearbook 1998, Total Population over the Years.
4. HeiLongJiang Statistical Yearbook 1998, Basic Conditions of Urban Households and Per Capita Net Income of Rural Households by Source and by Region.

HeiLongJiang Statistical Yearbook 1998, Total Population over the Years. Because there is no statistical data of a household's capital income, this figure has to be estimated. This is predicated on the assumption that there is a steady relationship between the household's capital incomes to the wealthy household's income. The proportion of household's capital income over the estimated wealthy income of HeiLongJiang households equals the national households' capital income over the estimated wealthy income of national households. This gives the information needed to estimate HeiLongJiang's wealthy households' income, national household's capital income and national households' wealthy income (based on the sources listed above). Finally now the 1997 HeiLongJiang households' capital incomes can be calculated according to the aforementioned relationships.

B . SAM (12 , 4) : Foreign investment income

Source: *China Statistical Yearbook (1998)*, *Balancing Account of National Trade (1997)*, and *Actual Foreign Direct Investment (by regions)*. To estimate foreign investment income, a similar procedure is used as with the household's capital income, because of a lack of direct statistical data. The calculating method is as follows: It is assumed that there is a fixed correlation between the amount of foreign investment and foreign investment income. That is to say foreign investment income from HeiLongJiang divided by foreign investment income from nation equals the amount of foreign investment received by HeiLongJiang divided by the amount of foreign investment received by China. This gives the nation's total received foreign investment, the amount of foreign investment HeiLongJiang received, , the nation's foreign investment income and the calculated foreign investment income from Heilongjiang City.

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

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

2.5. Households

Household Expenditures

(1) SAM (1, 5) : Household consumption

Source: Final Use Part of HeiLongJiang IO Table (1997) and HeiLongJiang Statistical Yearbook (1998).

It is the same as “Household Consumption” in commodity accounts.

(2) SAM (10, 5) : Individual income tax

Source: Tax Yearbook of China (1998).

(3) SAM (14, 5) : Household saving

Source: Flow of Funds Table (Physical Transaction, 1997) in China Statistical Yearbook (2000), China Statistical Yearbook (1998), HeiLongJiang 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, these items are computed 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, and calculate the total household savings of HeiLongJiang in terms of this assumption.

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

Source: Intermediate Use Part of HeiLongJiang IO Table (1997) and HeiLongJiang Statistical Yearbook (1998).

It is the same as “Labor Income” in factor accounts.

(2) SAM (5 , 4) : Household capital income

Source: 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 HeiLongJiang Statistical Yearbook (1998).

It is the same as “Household Capital Income” in factor accounts.

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

Source: China Statistical Yearbook (1998), HeiLongJiang Statistical Yearbook (1998), and China SAM (1997).

Due to the difficulty in finding “transfer payment from local government to households” in provincial official statistical data, it requires manual calculations by adding up relevant items in local government expenditures, including government expenditure for pension and social welfare, price subsidies, retirement expenses of non-business and administrative units, and interest expenses. Among them the interest expenses should be computed in terms of national data, i.e., by multiplication of the share of annual increase in saving deposits of urban and rural households of HeiLongJiang with the interest expenses in *China SAM (1997)*.

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

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

Enterprise’s Revenues

(1) SAM (6 , 4) : Enterprise’s capital income

Source: other factor accounts.

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

Source: other enterprise accounts.

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

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

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

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

Source: Summery Table of General Budget Revenue and Expenditure of HeiLongJiang (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.

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

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

Expenditures

(1) SAM (7 , 2) : Production subsidies from local government

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

It is the same as “subsidies from local government” in activity accounts.

(2) SAM (8 , 2) : Production subsidies from central government

It is the same as “subsidies from central government” in activity accounts.

Revenues

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

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

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

2.8. Local Government

Revenues

(1) SAM (10 , 2) : Local production taxes

It is the same as “local production tax” in activity accounts.

(2) SAM (10 , 5) : Individual income taxes

Source: Tax Yearbook of China (1998).

It equated to be the same as “individual income tax” in household accounts.

(3) SAM (10 , 6) : Direct enterprise taxes

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

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

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

Expenditures

(1) SAM (1 , 10) : Consumption of local government

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

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

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

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

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

(5) SAM (14 , 10) : Savings of local government

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

Calculating Method: local production taxes + individual income taxes + direct enterprise taxes + subsidies 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

Revenues

(1) SAM (11 , 2) : National production taxes

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

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

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

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

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

Same as “local revenues distributed to central government” in local government accounts.

Expenditures

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

Equivalent to “consumption of central government” in commodity accounts.

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

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

Same as “subsidies income from central government” in local government accounts.

(4) SAM (14 , 11) : Savings of central government

Source: 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 - subsidies income from central government

2.10. Extra-budget

Extra-budget Revenues

(1) SAM (9 , 2) : Extra-budget revenues

Identical to “extra-budget revenues” in activity accounts.

Extra-budget Expenditures

(1) SAM (1 , 9) : Extra-budget consumption

Equivalent to “extra-budget consumption” in commodity accounts.

(2) SAM (14, 9) : Extra-budget savings

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

2.11. Rest of World (ROW)

Revenues of ROW

(1) SAM (12, 1) : Import

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

(2) SAM (12, 4) : Foreign investment income

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

Expenditures of ROW

(1) SAM (1, 12) : Export

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

(2) SAM (14, 12) : Foreign savings

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

2.12. Rest of China (ROMC)

Revenues of ROMC

(1) SAM (13, 1) : Import from ROMC

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

Expenditures of ROMC

(1) SAM (1, 13) : Export to ROMC

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

(2) SAM (14, 12) : Savings of ROMC

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, distinguishing 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.

Part II Documenting the 1997 Disaggregated SAM

2.14. 2.1 Disaggregate the Macro SAM

Much data comes from the I/O table when constructing the Disaggregated SAM. The IO TABLE delivered from the CSB (the Chinese Statistical Bureau) has 102 sectors, which are different from the 53-sector version used in our Disaggregated SAM requiring first an aggregation of the 102 sectors to 53 sectors according to their mapping relations. In the following content, data from the IO TABLE refers to the aggregated I/O table. In addition, the CSB has updated the provincial I/O table in 2005 and is used instead.

In terms of the purpose of this 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 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 similar to the split in Activities.

(3) Factors: 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: value-added tax, business tax, other production tax and import tax including tariff,

consumption tax and value added tax. . These four types of taxes are separate from the central government account.

Table2.1 the disaggregated sectors in Heilongjiang 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					

(6) Household: Household is divided out 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 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	Inventor y	Total	
1	Commodities		53×5 3			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	Inventor y																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	

2.15. Disaggregating Heilongjiang Macro SAM

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

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

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

Source: *Heilongjiang IO Table (1997)*.

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

Source: *Heilongjiang IO Table (1997)*.

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

Source: *Heilongjiang IO Table (1997)*.

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

Source: *Heilongjiang 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 *Heilongjiang 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: Heilongjiang 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 (*Heilongjiang 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(Heilongjiang),” *Data Collection on the Third Industrial Census of China 1995*. Sectoral aggregation is calculated using corresponding national statistical data.
3. For services, we refer to the “Domestic Value-added Tax by Sector (Heilongjiang)” 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 (Heilongjiang)”, *China Tax Statistics (1998)*.
3. Multiply total local business taxes over total (local plus central) business taxes by the corresponding sectoral 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 times 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 Heilongjiang from *China Labor Statistical Yearbook (1998)*, which is divided into 6 sectors.
2. Aggregate the employed people⁸ 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 categories⁹.
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 *Heilongjiang 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 Heilongjiang (*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 *Heilongjiang Statistical Yearbook (1998)*, and then multiply them by the rural and urban population of Heilongjiang 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

Heilongjiang 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.

	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	3126			1285				136	146	53	313	1416	723	17	7306
2	Activity	5881														5881
3	Labor	1316														1316
4	Capital	932														932
5	Household		1316	51		481				55						1903
6	Enterprise			859												859
7	Local gov. subsidy	-28								28						0
8	Central Gov. subsidy	-17									17					0
9	Extra-budget	208														208
10	Local Gov	123			5	53					95					276
11	Central Gov	6	130			51				8						196
12	ROW	93		22												115
13	ROC	1325														1325
14	Fix capital formation				613	274			73	38	31	-198	-90			740
15	St. change													17		17
16	Sum	7306	5881	1316	932	1903	859	0	0	208	276	196	115	1325	740	17