CHAPTER 4

DATA BASE OF THE MODEL

After deriving the theoretical structure of the CGE model, the next step is to obtain the parameters required for the model calibration. This chapter is aimed to present the necessary data base for the model solution. The data base required for the CGE simulations consists of two files which are the input-output data file and the elasticity file. For the input-output data file, the main composition is derived from the Input-Output Table. The input-output data file shows the flows of commodities among the sectors of production for intermediate uses and for distribution to final demand uses. Moreover, the primary factors and the other costs for production of each commodity are also included in this file. For the elasticity file, this file contains elasticities used to determine the behavioral parameters in the model.

4.1 The Input-Output Data File

In obtaining the input-output data file, the main source of data is the Input-Output Table of Thailand provided by National Economic and Social Development Board (NESDB). The selected base year for this study is the year 2000 which is the most recent data available. This study also utilizes data from the National Income Account of Thailand of the year 2000 provided by NESDB. The input-output data file provides the information needed to derive the values of miscellaneous share parameters in the equation system of the model discussed in Chapter 3. In this section, it is concerned on how the Input-Output Table can be formulated in order to construct the input-output data file used in this study.

4.1.1 Sector Classification

According to the model descriptions in Chapter 3, there are nine production sectors (nine commodities) which are Metal and metal products, Rubber and plastic products, Components, Engines, Electrical machineries, Agricultural and mining, Other manufacturing, Services and Motor vehicle. These nine sectors of production are classified according to the supply chains of the automotive sector including itself and the other sectors who supply intermediate inputs used in producing the output of Motor vehicle sector. This is due to the fact that the backward linkages of the automotive sector are considered as the most effective channel of productivity spillover effects. As a result, this study needs to construct the input-output data file corresponding to the model formulation with size of 9×9 sector. Thus, the 180-sector Input-Output Table (see Appendix G) is aggregated to reduce its size into the 9-sector size to conform with the sector definitions listed in Table 4.1.

Table 4.1

Definition of 9-Sector Input-Output Classification

Sector	**Code of 180-Sector Input-Output Table**
Metal and Metal Products (met)	105-111
Rubber and Plastic Products (rub)	095-098
Components (com)	067-074, 084-094, 099-104
Engines (eng)	112
Electrical Machineries (ele)	116-122
Agricultural and Mining (agm)	001-041
Other Manufacturing (oma)	042-066, 075-083, 113-115, 123/124, 126, 128-134
Services (ser)	127, 135-180
Motor Vehicle (mot)	125

4.1.2 Structure of the Input-Output Data File

The form of input-output data file with size of 9×9 sector is illustrated in Figure 4.1. The general formulations are as following: there are nine production sectors (nine types of commodity), two types of primary factor which are labor and capital, five groups of final demand which are household consumption, government consumption, exports, capital formation and change in inventories and two sources of commodity which are domestic production and imports.

Figure 4.1

Form of the Input-Output Data File of 9×9 Sector

	Production sector	Final demand						
		Household	Government	Exports	Capital formation	Change in inventories		
Domestic	A1 (9×9)	B1 (9×1)	C1 (9×1)	D1 (9×1)	E1 (9×1)	F1 (9×1)	row sum is total direct usage of domestic commodities	
Import	A2 (9×9)	B2 (9×1)	C2 (9×1)	D2 (9×1)	E2 (9×1)	F2 (9×1)	Import tariffs -Z (9x1)	row sum is total imports (c.i.f.)
Labor	G (1×9)							
Capital	H (1×9)							
Other costs	I (1×9)							
	column sum is total outputs of domestic production	column sum is total household consumption expenditure	column sum is total government consumption expenditure	column sum is total exports	column sum is total investment expenditure	column sum is total change in inventories		

	Production sector	Household
Income taxes	J (1×9)	K (1×1)

Matrices in the first row of Figure 4.1 show the flows of domestically produced commodities valued at the producer prices (basic prices). Matrix A1 with dimension 9×9 is the flows of domestic commodities to current production such that element in row i and column j represents domestic commodity i used as intermediate input in producing output of production sector j. Vectors B1, C1, D1, E1 and F1 with dimension 9×1 are the flows of domestic commodities to household consumption, government consumption, exports, capital formation and change in inventories, respectively. Therefore, the sums of the first row represent total direct usage of domestically produced commodities.

Matrices in the second row of Figure 4.1 show the direct flows of imported commodities valued at c.i.f. prices plus import tariffs in local currency term (Baht). Matrix A2 with dimension 9×9 is the flows of imported commodities to current production of nine production sectors while vectors B2, C2, D2, E2 and F2 with dimension 9×1 are the flows of imported commodities to household consumption, government consumption, exports, capital formation and change in inventories, respectively. In the case, all elements in vector D2 are zero since the model assumes that there are no exports of imported commodities or no re-export commodities. Vector –Z with dimension 9×1 shows the negative values of tariffs paid on imported commodities. Therefore, the sums of the second row are total import values of all commodities valued at c.i.f. prices, in terms of Baht.

Vector G, H and I provide information on the value added. Note that there are no entries in the final demands since the model, like other conventional models, assumes that primary factors are used only in current production. Vector G and H with dimension 1×9 contain wages paid to labor and rental values of capital by sectors of production, respectively. Vector G comes from the vector of Wages and Salaries, while vector H comes from the vector of Operating Surplus and Depreciation in the Input-Output Table. In addition, vector I with dimension 1×9 is the value of indirect taxes paid by the production sectors.

Vector J with dimension 1×9 and scalar K are the data of corporate income taxes paid by the production sectors and personal income paid by a household, respectively. Unfortunately, there are no information available from the Input-Output Table for vector J and scalar K in the input-output data file. Therefore, the data of corporate income taxes and personal income taxes can be obtained using information from the National Income Account of Thailand of the year 2000 provided by NESDB. Total direct taxes from personal income were 95,711 million Baht, where as total direct taxes from corporations were 154,673 million Baht. The values of corporate income taxes are distributed to all of the production sectors according to the shares of operating surplus by each production sector.

From the form of input-output data file illustrated in Figure 4.1, all matrix components have the notation in Chapter 3, as following

$$A1 = \left[P^0_{c,dom} . X^{(1)}_{c,dom,i}\right]_{9\times 9} \qquad A2 = \left[P^0_{c,imp} . X^{(1)}_{c,imp,i}\right]_{9\times 9}$$

$$B1 = \left[P^0_{c,dom} . X^{(2)}_{c,dom}\right]_{9\times 1} \qquad B2 = \left[P^0_{c,imp} . X^{(2)}_{c,imp}\right]_{9\times 1}$$

$$C1 = \left[P^0_{c,dom} . X^{(3)}_{c,dom}\right]_{9\times 1} \qquad C2 = \left[P^0_{c,imp} . X^{(3)}_{c,imp}\right]_{9\times 1}$$

$$D1 = \left[P^0_{c,dom} . X^{(4)}_{c}\right]_{9\times 1} \qquad D2 = \left[0\right]_{9\times 1}$$

$$E1 = \left[P^0_{c,dom} . X^{(5)}_{c,dom}\right]_{9\times 1} \qquad E2 = \left[P^0_{c,imp} . X^{(5)}_{c,imp}\right]_{9\times 1}$$

$$F1 = \left[P^0_{c,dom} . X^{(6)}_{c,dom}\right]_{9\times 1} \qquad F2 = \left[P^0_{c,imp} . X^{(6)}_{c,imp}\right]_{9\times 1}$$

$$-Z = -\left[T^M_c . P^W_c . \Phi . MD_c\right]_{9\times 1}$$

$$G = \left[W_i . L_i\right]_{1\times 9} \qquad H = \left[R_i . K_i\right]_{1\times 9}$$

$$I = \left[T^0_c . Z^0_c\right]_{1\times 9} \qquad J = \left[T^{(1)}_i . \left(P^0_{i,dom} . X_i\right)\right]_{1\times 9}$$

$$K = \left[T^{(2)} . Y^H\right]_{1\times 1}$$

The complete set of information on the input-output data file used in this study is shown in Appendix A. All share parameters derived from the theoretical structure of the model listed in Appendix B can be calculated using the base period values in the input-output data file. The values of miscellaneous share coefficients used for model solution are shown in Appendix C.

4.2 The Elasticity File

This file contains the values of elasticities required for the model for which the summary of these parameters is in Table 4.2. These elasticities are behavioral parameters describing the behavior of producers and consumers assumed in the model. This section summarizes the previous studies on these elasticities and also provides some descriptions about these elasticities. The values of these behavioral parameters adopted in the model will be shown afterward. Parameters in the elasticity file used in this study are mostly based on the NARAI1 general equilibrium model of Thai economy by Office of Industrial Economics (OIE, 2004).

Table 4.2

Parameters in the Elasticity File Used in the Model

Parameter	**Set**	**Number**	**Description**
σ_i^{LK}	*IND*	9	Elasticity of substitution between labor and capital of production of industry i
σ_c	*COM*	9	Elasticity of substitution between domestic and imported commodity c
γ_c	*COM*	9	Foreign elasticity of demand for exported commodity c where $0 \leq \gamma_c \leq \infty$
ε_c	*COM*	9	Household expenditure elasticity of commodity c
η_{ck}	$COM \times COM$	81	Household price elasticity of demand including owned and cross price elasticity of commodity c

From Table 4.2, there are 4 groups of parameters in the elasticity file classifying by users' types. The first group is elasticity of substitution between labor and capital in current production. The second group is elasticity of substitution between domestic and imported commodity for intermediate uses and final demand uses. The third group is foreign elasticity of demand for Thai's exports. The last group is expenditure and price elasticity of demand for household consumption.

4.2.1 Elasticity of Substitution between Labor and Capital

From the theoretical structure of the CGE model in Chapter 3, the production structure has assumed that labor and capital can be substituted in some degree represented by Constant Elasticity of Substitution (CES) function. The CES function denotes the value of elasticity of substitution between labor and capital to be constant but not necessary to be equal one likes Cobb-Douglas function. Hence, the substitution elasticity between labor and capital should be specified. The value of this substitution elasticity is important for analyzing the impact of policy shocks on the output efficiency. The higher the elasticity of substitution between labor and capital, the more that labor can be substituted for capital. Therefore, output can be expanded without having to invest greatly (Cintakulchai, 1997).

The substitution elasticity between primary factors can be estimated using time series data as well as cross-sectional data. Jomini et al. (1994) points out that estimates of substitution elasticities are found to vary depending on the level of aggregation, the particular functional form or parameter restrictions and whether the estimation is based on time-series or cross-sectional data. This finding has been supported by Caddy (1976) who indicates that cross-sectional estimates yield higher value than time series estimates such that time series estimates are centered around 0.5 while cross-sectional estimates are centered around 1.0.

Limskul (1988) estimates the substitution elasticity between labor and capital for 10 sectors of production in the case of Thailand using time series data from the National Income Account for the period 1970 to 1985. The estimated values of this substitution elasticity are equal to 0.99 for agricultural sector, 1.41 for service sector and 1.00 for manufacturing sectors.

Warr and Jieamanugulgit (1994) estimates the elasticity of substitution among any types of primary factor in case of Thailand using time series data for the period 1977 to 1989 in which these estimated values are incorporated into the PARA model. The PARA model incorporates four primary factors in agricultural sectors including labor, tractor, land and fertilizer and three primary factors in manufacturing sectors which are labor, building and machinery. These estimated values are generally less than one and most of them are centered around 0.5.

OIE (2004) estimates the CES production function to obtain the values of elasticity of substitution between labor and capital for sixty production sectors using cross-sectional data from Thailand's Industrial Survey of the year 1997. As a result of insufficient data used in estimating such elasticities for some sectors, the estimation will be carried on only for the sectors with enough information. For the other sectors which are unable to estimate, the values of this substitution elasticity are assumed. The estimated values are ranged from 0.0 to 1.2.

This study follows the estimates of OIE (2004) or the values of estimated parameters adopted in the NARAI1 model since this is the most recent parameter estimated in Thailand. The values of elasticity of substitution between labor and capital of production sector i used in this study are in Table 4.3.

Table 4.3

Elasticity of Substitution between Labor and Capital

Production Sector	**Elasticity** $\left(\sigma_i^{LK}\ ;\ i \in IND\right)$
Metal and metal products (met)	0.92
Rubber and plastic products (rub)	0.27
Components (com)	0.61
Engines (eng)	0.92
Electrical machineries (ele)	0.81
Agricultural and mining (agm)	0.50
Other manufacturing (oma)	0.24
Services (ser)	1.20
Motor vehicle (mot)	0.00

4.2.2 Elasticity of Substitution between Domestic and Imported Commodity

According to the model description noted in Chapter 3, there are many groups of user of domestic and imported commodity which are intermediate uses of producer and final demand uses of household, government and investor. Each user decides to use commodities from different sources in such a way that the total cost of usage is the least in which domestic and imported commodities are not perfectly substituted according to the Armington's assumption. Therefore, the value of elasticity of substitution between domestic and imported commodity is required. According to the theoretical structure of the CGE model, the substitution elasticities between domestic and imported commodity of the producer, household, government and investor appear in equation (7a), (13a), (21a) and (31a), respectively.

In an open economy, each commodity sold domestically can be differentiated according to its sources of production, namely domestic and foreign. The degree of substitution between these two sources of commodity, which are domestic and foreign in terms of importing, is indicated by the Armington elasticity. The higher the value of this elasticity, the closer the degree of substitution between them. If the substitution elasticity is very high then any slight change in relative prices of domestic and imported commodities will bring about large changes in relative quantity share between these commodities.

According to the Allen definition, the elasticity of substitution between domestic and imported commodity of type c (σ_c) is given by

$$\sigma_c \quad = \quad \eta_c / SD_c$$

$$\text{or} \qquad \sigma_c \quad = \quad \eta_c / (1 - SM_c)$$

where η_c is the price elasticity of demand for imported commodity c with respect to domestic price of commodity c

SD_c is the share of total consumption of domestic commodity c

SM_c is the share of total consumption of imported commodity c

such that $SD_c + SM_c = 1$

Although the model distinguishes demand for commodity by users, which requires elasticities by users, the model imposes the restriction that the elasticities of substitution between domestic and imported commodities are the same for all users; here they are producers, household, government and investor, i.e. $\sigma_c^{(1)} = \sigma_c^{(2)} = \sigma_c^{(3)} = \sigma_c^{(5)} \;\; ; \;\; for \;\; c \in COM$

Stern et al. (1976), also cited in Cintakulchai (1997), points out that the Armington's assumption seems reasonable since the required elasticities of substitution can be deduced from import demand equations which are, in general, estimated from total imports. This assumption is also used in the ORANI model of the Australian economy where Dixon et al. (1982) points out that most of Australian's major imports are used predominantly by one user, and therefore justify using the same substitution parameter for all users. This is also the case for Thailand's imports in which the data support of this reason is shown in Table 4.4.

Table 4.4

Share of Usage Categories in Total Imports of Commodities

Commodity	Output distribution to all users				Share to total imports
	Intermediate	Household	Government	Investment	
met	93.20%	0.68%	0%	6.12%	10.37%
rub	96.14%	2.67%	0%	1.20%	2.56%
com	84.94%	14.18%	0%	0.88%	16.57%
eng	80.14%	1.09%	0%	18.77%	1.14%
ele	78.47%	4.18%	0.01%	17.34%	26.87%
agm	98.01%	1.96%	0%	0.03%	11.14%
oma	41.18%	20.42%	0.06%	38.33%	20.76%
ser	7.29%	92.62%	0%	0.10%	6.52%
mot	77.88%	11.21%	0%	10.91%	4.06%

Source: calculated from the input-output data file by author

Table 4.4 reveals that most of import values are derived from commodities intended for intermediate uses of the producers in which the major use of imported Metal and metal products, Rubber and plastic products, Components, Engines, Electrical machineries, Agricultural and mining and Motor vehicle represents more than 75% of total use of imports. Even though the heavy user of imported Services is a household accounted for 92.62% of total imports of Services, the share of imported Services to total import values of all commodities is just 6.52%.

Warr and Lapiz (1994) estimates the Armington elasticities in case of Thailand for imported commodities using time series data from 1970 to 1987 in which these estimated values are incorporated in the PARA model. The estimated values of this substitution elasticity for agricultural commodity range from 0.39 to 3.35, while in the case of manufacturing commodity; the estimated values range from 0.37 to 1.44. Cintakulchai (1997) determines the values of Armington elasticity in the THAITRADE model following Warr and Lapiz (1994) with some adjustments due to the differences in classification of commodities. The values of substitution elasticities between domestic and imported commodities of type agricultural and manufacturing vary from 0.5 to 1.5. For services, those values are set at 0.0.

The values of Armington elasticity in this study are determined according to the OIE (2004) in which the values of this substitution elasticity in the NARAI1 model are adapted from the estimates by Warr and Lapiz (1994) which provides the latest estimation of Armington elasticity using Thai data. Due to an inconsistency between classification of commodities in the NARAI1 model and this study, some adjustments are made. The values of elasticity of substitution between domestic and imported commodities used in this study are reported in Table 4.5.

Table 4.5

Elasticity of Substitution between Domestic and Imported Commodity

Commodity	**Elasticity** $\left(\sigma_c\ ;\ c \in COM\right)$
Metal and metal products (met)	0.80
Rubber and plastic products (rub)	1.00
Components (com)	1.10
Engines (eng)	1.20
Electrical machineries (ele)	1.20
Agricultural and mining (agm)	1.00
Other manufacturing (oma)	0.80
Services (ser)	0.50
Motor vehicle (mot)	1.20

4.2.3 Foreign Elasticity of Demand for Thai's Exports

Thailand is considered a small economy which maintains only a small share of exports for most commodities in the world market. It is usually the general assumption of the price taker as such. Except for agricultural commodity especially rice where Thailand is regarded as the first ranking of rice exporting countries. This statement has been supported by Thanapornpan (1983) who reviewed studies of the elasticities of foreign demand for Thai rice exports and found that the estimates of the own price elasticity of world demand for Thai rice exports vary significantly ranging from -0.2 to infinity. Patamasiriwat and Sathitsirikul (1991) found that the estimates of elasticity of demand for Thai rice exports range from 1.2 and 1.7.

The values of foreign elasticity of demand for Thai's exports used in this study are determined following OIE (2004). In the NARAI1 model, the values of this elasticity are assumed by classifying domestically sold commodities into two categories which are tradable and nontradable commodities. The values of foreign elasticity of demand for Thai's exports of tradable commodity are assumed to be equal to -5.00, while those of nontradable commodity; they are assumed to be equal to -0.01. Such values are reported in Table 4.6.

Table 4.6

Foreign Elasticity of Demand for Thai's Exports

Commodity	**Elasticity** $(\gamma_c\ ;\ c \in COM)$
Metal and metal products (met)	-5.00
Rubber and plastic products (rub)	-5.00
Components (com)	-5.00
Engines (eng)	-5.00
Electrical machineries (ele)	-5.00
Agricultural and mining (agm)	-5.00
Other manufacturing (oma)	-5.00
Services (ser)	-0.01
Motor vehicle (mot)	-5.00

4.2.4 Expenditure Elasticity and Price Elasticity of Demand

The model is designed to study the impacts of FDI productivity spillover by overlooking the effects on income distribution; therefore only one group of household is assumed in the model. Expenditure and price elasticities of demand for a household are required. Household expenditure elasticity of any commodity represents the percentage change in household consumption on that commodity when total household consumption expenditure is changed by one percent. Thus, the higher the value of expenditure elasticity, the more the response of household consumption demand to the change in household consumption expenditure.

Lluch et al. (1977) estimates the expenditure elasticities of eight commodities for Thailand using data in the period of 1960 to 1969. The estimated values range from 0.16 to 1.99. The expenditure elasticity in housing has the lowest value while that of recreation has the highest value. Patamasiriwat (1993) estimates the expenditure elasticities of five commodities using data for the period 1970 to 1990. Following the Linear Expenditure System, the estimated values of this elasticity range from 0.38 to 1.55. The lowest value is the food expenditure elasticity while the highest value is the services expenditure elasticity. These two estimates did not differentiate the elasticities by household income

Sarntisart (1993) estimates the expenditure elasticity of ten groups of household for ten types of commodity using cross-sectional data from Socioeconomic Survey of the year 1988. The estimated results indicate that the expenditure elasticities of high income households are generally lower than those of the low income households. Only the housing expenditure elasticities of the rich are higher than those of the poor. Cintakulchai (1997) determines the values of expenditure elasticity of the five household groups for the six consumption goods based on the estimates by Sarntisart (1993). The estimated values range from 0.241 to 2.154.

This study determines the values of household expenditure elasticity according to OIE (2004) in which the values of this elasticity used in the NARAI1 model are based on THAITRADE model or the CGE model in Cintakulchai (1997). In the NARAI1 model, following the THAITRADE model, households are disaggregated into five income level groups which are high income, medium-high income, medium income, medium-low income and high income household. Since this study assumes only one group of household, therefore the values of expenditure elasticity used in this study are the values of expenditure elasticity of the middle income group. The values of household expenditure elasticity of commodity of type c used in the model are reported in Table 4.7.

Table 4.7

Expenditure Elasticity of a Household

Commodity	**Elasticity** $\left(\varepsilon_c\ ;\ c \in COM\right)$
Metal and metal products (met)	0.87
Rubber and plastic products (rub)	0.94
Components (com)	0.94
Engines (eng)	0.87
Electrical machineries (ele)	1.56
Agricultural and mining (agm)	1.04
Other manufacturing (oma)	1.04
Services (ser)	1.56
Motor vehicle (mot)	0.91

For a given value of expenditure elasticity, the own and cross price elasticities of demand for any type of commodities of a household (η_{ij}), can be calculated using the Frisch formula (Frisch, 1959):

$$\eta_{cc} \;=\; \varepsilon_c/\varpi \;-\; \varepsilon_c.S_c.\left(1+\ \varepsilon_c/\varpi\right)\ ;\ \ for\ \ c,k \in COM$$

$$\eta_{ck} \;=\; -\varepsilon_c.S_k.\left(1+\ \varepsilon_k/\varpi\right)\ \ ;\ \ for\ \ c,k \in COM\ and\ c \neq k$$

where η_{cc} is the own price elasticity of demand of commodity c

η_{ck} is the cross price elasticity of demand for commodity c with respect to the change in price of commodity k

ϖ is the Frisch parameter

ε_c ; *where* $c \in COM$ is the household expenditure elasticity

S_c ; *where* $c \in COM$ is the budget shares for commodity c of a household

In the Linear Expenditure System (Lluch et al., 1977), the Frisch parameter (ϖ**)** is defined as the ratio of total consumption expenditure to the supernumerary income:

$$\varpi = -\left(\frac{C^H}{C^H - \sum_{k \in COM} P_k . \Theta_k} \right)$$

where C^H is the total household consumption expenditure

P_c is the price of composite commodity c

Θ_c is the subsistence level for the consumption of commodity c

such that $\sum_{k \in COM} P_k . \Theta_k$ is the expenditure for floor consumption or subsistence minimum

The Frisch parameter estimated by Lluch et al. (1977) for the case of Thailand is equal to -2.14. However, the absolute value of Frisch parameter declines as income increases. This statement is supported by the study of Patamasiriwat (1993) who estimated the committed consumption expenditure of a household in Thailand and found that the average is 30%. Therefore, the left amount or 70% is the supernumerary income. Hence, the Frisch parameter calculated from the above formula in case of Thailand is around -1.50.

The value of Frisch parameter used in this study is determined to be equal to -2.50 according to OIE (2004). The own and cross price elasticities of demand can be calculated from the values of household expenditure elasticities and the value of Frisch parameter by using the Frisch formula. The values of own and cross price elasticity of demand used in this study are reported in Table 4.8.

Table 4.8

Own and Cross Price Elasticity of Demand of a Household

Commodity	**Price Elasticity** $\left(\eta_{ck}\ ;\ c,k \in COM\right)$								
	met	**rub**	**com**	**eng**	**ele**	**agm**	**oma**	**ser**	**mot**
met	-0.3522	-0.0039	-0.0683	-0.0001	-0.0048	-0.0193	-0.1174	-0.1830	-0.0091
rub	-0.0045	-0.3802	-0.0738	-0.0001	-0.0052	-0.0209	-0.1268	-0.1977	-0.0098
com	-0.0045	-0.0042	-0.4498	-0.0001	-0.0052	-0.0209	-0.1268	-0.1977	-0.0098
eng	-0.0042	-0.0039	-0.0683	-0.3481	-0.0048	-0.0193	-0.1174	-0.1830	-0.0091
ele	-0.0075	-0.0070	-0.1224	-0.0002	-0.6326	-0.0346	-0.2104	-0.3282	-0.0163
agm	-0.0050	-0.0047	-0.0816	-0.0001	-0.0057	-0.4391	-0.1403	-0.2188	-0.0108
oma	-0.0050	-0.0047	-0.0816	-0.0001	-0.0057	-0.0231	-0.5563	-0.2188	-0.0108
ser	-0.0075	-0.0070	-0.1224	-0.0002	-0.0086	-0.0346	-0.2104	-0.9522	-0.0163
mot	-0.0044	-0.0041	-0.0714	-0.0001	-0.0050	-0.0202	-0.1228	-0.1914	-0.3735

Source: calculated from the input-output data file by author