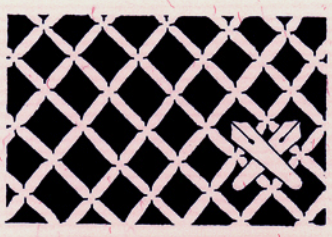
KEO DISCUSSION PAPER



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How to Become a Big Player In the Global Capital Market

—A Flow-of-Funds Approach—

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Abstract

The first purpose of this paper is to present the country-by-country asset-liability-matrix (ALM) by which we can grasp the international financial transactions on the whole. We drew up ALM using external assets and liabilities data obtained from IFS for 1996 and 1999. The second purpose of this article is to single out the essential qualification to become a big player in the global capital market, in the context of the worldwide flow of funds. As a conclusion, it can be said that a big players in the global capital market do not necessarily have huge amount of excess assets by their own. It is surely an advantage to have surplus in assets, but it is not a necessary or sufficient condition to play a leading role. In a sense, most valuable ability to be a big player is to find money whenever required and lend it to whomever in want.

Key Words

Flow of Funds, Asset-Liability-Matrix, External Assets and Liabilities, Leontief-Inverse

1. Introduction[ξ]

In the spring of 2002, the downgrading of the Japanese sovereign to A2 by Moody's infuriated the government of Japan, one of the wealthiest nations of the world. The Ministry of Finance (MOF) sent letters to the rating agencies in order to ask them clarify the rating standards for Japanese government bonds (JGB). MOF pointed out three essential factors: a) From a macro-economic viewpoint, Japan has the largest savings surplus in the world. b) The above enables Japan to finance most of the debt domestically and stably at very low interest rates. c) Japan has the largest current account surplus, is the largest creditor country, and has the largest foreign exchange reserves in the world. Although these arguments sound reasonably persuasive, still not only Moody's but also S&P and Fitch assign Japan to the same rating as emerging market countries with wide gaps in economic fundamentals. The irony is that the countries with largest excess assets are not necessarily considered as the big players in the global capital market. The stereotype textbooks do not teach the strategy to get into the world premier league. It is essential to have a bird-view of the global flow of funds to understand what kind of qualification is required to move into the lead.

Flow of funds (FOF) analysis has been stem from "Social Accounting for Money flows" authored by Morris Copeland in 1949. Since then it has developed as an accounting system describing the inter-sectoral financial transactions between the economic actors. There have been a number of analyses using FOF, as Cohen (1972,1987) and Bain (1973) review the literature. Some of them tried to apply the method borrowed from input-output analysis on FOF assuming that stable relationships may exist among the flows within the financial system. Bain (1973) demonstrated that the portfolio selection of each sector was not sensitive to changes in relative interest rates, rather governed by the historical elements particular to the country. Chipman (1950) carried out a major theoretical study of inter-sectoral money flows and income formation using these ideas. Then Stone (1966) developed models of the financial system based upon the social accounting matrix. Cohen (1963) has employed the notion of fixed technical coefficients. Tsujimura and Mizoshita (2002a,b) successfully demonstrated that the combination of Asset-Liability-Matrix (ALM) compiled from FOF Accounts consist of balance sheets and the various techniques developed in input-output analysis is a powerful tool to analyse domestic financial market.

If we could apply this scheme to the international flow of funds, it must be a powerful weapon for understanding the structure of global financial system, so that the authors have produced country-by-country ALM based on the information available in the

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[ξ] This paper is a revised edition of KEO discussion paper no.72.

International Financial Statistics (IFS) published by the International Monetary Funds (IMF). The first approximation is that there is only one worldwide pool of funds for each form of financial transactions and every supplier of funds throw money into that pool and every user of funds draw money from it. This idea, widely known as supply-and-use method, is originally proposed by Stone (1966). As an alternative, we have revised the table taking geographical and other factors into account in addition to the volume of external assets and liabilities of a country. We name it gravity method after famous attempts by Leontief (1966) in his inter-regional input-output table.

The main theme of this tract is to examine the positioning of each country in the view of the global flow of funds. To begin with, the matrices are triangulated so that the countries listed at the bottom are the primary supplier of the funds while the countries at the top of the table are the final user of the funds. Those countries tabulated in the middle are either net supplier or net user but also acting as intermediaries of the funds between the lenders and the borrowers. In the triangulated ALM based on the supply-and-use method, Japan and Switzerland are situated right at the bottom of the table, proving that they are the ultimate source of the funds-supply. However, in the more intuitive gravity-method, it is demonstrated that the euro countries including Germany, France and Belgium take over these places.

Another powerful devices to demonstrate the fundamental structure of the ALM are the dispersion indices. Unlike the triangulation, which illustrates only the direct linkage between the countries, dispersion indices account for the indirect transactions as well. In this sense, dispersion indices are superior to triangulation to single out the prominent players of the international financial market. The United States and The United Kingdom have the largest dispersion sensitivity indices indicating that they are the most valuable players of all. Japan, Germany and Switzerland are just behind the leaders. Also the euro countries including Italy, France, The Netherlands, Belgium and Spain plays leading roles in this directory of power players. Other countries of the world depend on them directly or indirectly whenever they seek money. It is surely an advantage to have surplus in assets, but it is not a necessary or sufficient condition to play a principal role. As a conclusion, it can be said that indispensable ability to be a big player is to find the money whenever required and lend it to whomever in want.

2. Data

2.1 Asset-Liability- Matrices

The fundamental data used for analysis of the international financial transactions between countries are obtained from the IFS published by IMF. Table1 presents the balance sheets of international investment positions reported in IFS, which show what

amount of external liabilities and assets the particular country has.

Table1: International Investment Position

Assets	Liabilities
Direct Investment Abroad	Dir. Invest. in Rep. Economy
Portfolio Investment	Portfolio Investment
Equity Securities	Equity Securities
Debt Securities	Debt Securities
Financial Derivatives	Financial Derivatives
Other Investment	Other Investment
Monetary Authorities	Monetary Authorities
General Government	General Government
Banks	Banks
Other Sectors	

By collecting this kind of balance sheets, we can compile worldwide FOF matrix as the first step. This format of FOF describes the portfolio selection activity of the countries as well as the final balance of object-economy. As the second step, it is necessary to build an ALM to examine the international financial transactions on the whole. We start with the compilation of ALM named Y-table. Fig.1 shows the components of Y-table. $\mathbf{Y}$ is a m × m matrix whose elements y_{ij} are the amount of funds provided from country i to country j. ε_i^Y are elements of m× 1 vector $\boldsymbol{\varepsilon}^{\mathbf{Y}}$, which represent excess liabilities, and ρ_j^Y are elements of m× 1 vector $\boldsymbol{\rho}^{\mathbf{Y}}$, which represent excess assets. $\mathbf{T}^{\mathbf{Y}}$ is an m× 1 vector that consist of t_j^Y, either the sum of assets or liabilities whichever is greater.

$$
\begin{array}{cccccc}
y_{11} & y_{12} & \cdots & y_{1m} & \varepsilon_1^{\,Y} & t_1^{\,Y} \\
y_{21} & y_{22} & \cdots & y_{2m} & \varepsilon_2^{\,Y} & t_2^{\,Y} \\
\vdots & \vdots & \ddots & \vdots & \vdots & \vdots \\
y_{m1} & y_{m2} & \cdots & y_{mm} & \varepsilon_m^{\,Y} & t_m^{\,Y} \\
\rho_1^{\,Y} & \rho_2^{\,Y} & \cdots & \rho_m^{\,Y} & & \\
t_1^{\,Y} & t_2^{\,Y} & \cdots & t_m^{\,Y} & &
\end{array}
$$

Figure 1: Y-table

In the next section, we describe two methods of compilation of Y-table from the balance sheet format data, namely Supply-and-Use method and Gravity method. The former assume that every country raises funds from the same one market without any restrictions. On the other hand the latter stems from the idea that country tends to raise funds from nearby countries with which it has close relations. The present analysis is conducted for 60 countries for the year 1996 and for 72 countries for the year 1999 respectively.

2.2 Supply-and-Use method

If one country could raise funds from any other countries without restraints, it could be described as that there is only one worldwide market on the globe.

2.2.1 E- and R-tables

The first step to draw up ALM is to pick out the assets and liabilities vectors separately from the balance sheets of the countries to make out two matrices $\mathbf{E}$ and $\mathbf{R}$. $\mathbf{E}$ is a matrix to show the portfolio of fund-employment of each country, $\boldsymbol{\varepsilon}$ and $\mathbf{T}^{\mathbf{E}}$ are vectors that represent excess liabilities, and sum of each row respectively. Likewise, $\mathbf{R}$ is a matrix to show the portfolio of fund-raising of each country, $\boldsymbol{\rho}$ and $\mathbf{T}^{\mathbf{R}}$ are vectors that represent excess assets, and sum of each row respectively. $\mathbf{T}$ is the vector that consist of either the sum of assets or liabilities whichever are greater. n and m denote the number of financial instruments and the number of countries. The structure of E and R tables in terms of their components are depicted below.

$$\begin{array}{ccccc} e_{11} & e_{12} & \cdots & e_{1m} & t_1^E \\ e_{21} & e_{22} & \cdots & e_{2m} & t_2^E \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ e_{n1} & e_{n2} & \cdots & e_{nm} & t_n^E \\ \varepsilon_1 & \varepsilon_2 & \cdots & \varepsilon_m & \\ t_1 & t_2 & \cdots & t_m & \end{array}$$

Figure 2: E-table

$$\begin{array}{ccccc} r_{11} & r_{12} & \cdots & r_{1m} & t_1^R \\ r_{21} & r_{22} & \cdots & r_{2m} & t_2^R \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{nm} & t_n^R \\ \rho_1 & \rho_2 & \cdots & \rho_m & \\ t_1 & t_2 & \cdots & t_m & \end{array}$$

Figure 3: R-table

2.2.2 Y-table

It is commonly known that the E- and R- matrices do not have to be square. In fact, the number of products may be more than the number of countries and vice versa. In these cases both E- and R- matrices are rectangular. The method that could be used to convert two rectangular tables into a square one is described in United Nations (1999), in which the use and supply matrices are multiplied each other to derive the traditional

symmetric I/O table based on either the industry-technology assumption or the commodity-technology assumption. After these methods, we compile Y-table in accordance with fund-raising portfolio, assuming that a country always raises funds in the same proportions of each financial instrument. First, **R** matrix is substituted for **U** matrix (financial instrument by country) and transposed **E** matrix for **V** matrix (country by financial instrument):

$$\mathbf{U} \equiv \mathbf{R}, \tag{1}$$

$$\mathbf{V} \equiv \mathbf{E}'. \tag{2}$$

The coefficient matrix, **B** is constructed from **U** and **T** by dividing the cells in each column of **U** by the column sums **T**:

$$b_{ij} = \frac{u_{ij}}{t_j}. \tag{3}$$

In the same manner, coefficient matrices **D** corresponding to **V** is defined as follows:

$$d_{ij} = \frac{v_{ij}}{t_j^E}, \tag{4}$$

where t_j^E is the sum of assets for financial instrument j. That is, d_{ij} is regarded as i country's share of assets for j financial instrument. The m x m coefficient matrix **C** corresponding to **Y** is estimated using country-portfolio assumption, which is equivalent to the industry-technology assumption in the scheme of I/O analysis:

$$\mathbf{C} = \mathbf{DB}. \tag{5}$$

Using this matrix **C**, transaction-quantity matrices **Y** is reduced in the following manner:

$$y_{ij} = c_{ij} t_j, \tag{6}$$

where y_{ij} is the amount of funds provided from country i to country j. This matrix is shown in Fig.1. As mentioned above, square ALM is drawn up in compliance with the behavioural pattern of fund raising – Supply-and-Use method.

2.3 Gravity method

Supply-and-Use method presented in the previous section assumed that every country raises funds from any countries holding excess assets. However, taking the prevailing economic situation into consideration, there could be many factors that prevent free transactions: such as long distance, imperfect information, ill diplomatic relations, etc.

The gravity method is based on an assumption that most countries raise funds from familiar countries situated in their neighbourhood, the idea originated in gravity model introduced by Leontief and Strout (1963). Some people might say that more realistic ALM is compiled on gravity method rather than on Supply-and-Use method.

In a worldwide economy subdivided into m separate countries, the international flow of funds must satisfy balance of the following kind:

$$y_{go} = \sum_{h=1}^{m} y_{gh} \quad (g = 1,\ldots,m), \tag{7}$$

$$y_{oh} = \sum_{g=1}^{m} y_{gh} \quad (h = 1,\ldots,m), \tag{8}$$

where y_{go}, y_{oh} and y_{gh} represent the total supply of funds of country g, the total demand for funds of country h, and the amount of funds country h raise from country g, respectively. Summing each of these two sets of equations over all countries, we see that the aggregate supply of funds for the world wide economy as a whole equals the aggregate demand for funds:

$$\sum_{g=1}^{m}\sum_{h=1}^{m} y_{gh} = \sum_{g=1}^{m} y_{go} = \sum_{h=1}^{m} y_{oh} = y_{oo}. \tag{9}$$

The structural equations that we are to use in explaining the magnitude of international flow of funds are of the following general form:

$$y_{gh}^{0} = \frac{y_{go}y_{oh}}{y_{oo}} Q_{gh} \qquad (g = 1,2,\cdots,m)\ (h = 1,2,\cdots,m)\ (g \neq h). \tag{10}$$

The flow of funds from country g to any other country h is assumed to be directly proportional to its total fund-employment in country g and to its total fund-raising in country h, and inversely proportional to the aggregate amount of funds. The coefficients Q_{gh} are empirical constants that represent the relationship between country g and country h. We have adopted OAG's air flight miles as proxy for the weight Q_{gh}, because the state of relation between two countries is not a little reflected in it regardless of geographical distance. Air flight miles matrix given in Fig.4 is drawn up making use of data obtained from OAG, that is m × m matrix composed of w_{gh}, the air flight miles between country g and country h.

$$\begin{array}{c|cccc} & 1 & 2 & \cdots & m \\ 1 & w_{11} & w_{12} & \cdots & w_{1m} \\ 2 & w_{21} & w_{22} & \cdots & w_{2m} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ m & w_{m1} & w_{m2} & \cdots & w_{mm} \end{array}$$

Figure4: Flight mileage matrix

We substituted the reciprocals of OAG's air flight miles for Q_{gh} in order to give priority to neighbouring countries over remote countries. If there is no flight between country g and country h, that means two countries do not have close relationship, so that Q_{gh} equal zero, as follows:

$$\begin{aligned} Q_{gh} &= 0 \quad (\textit{if } w_{gh} \textit{ is not available}), \\ Q_{gh} &= \frac{1}{w_{gh}} \quad (\textit{otherwise}). \end{aligned} \tag{11}$$

A problem that occurs in calculation of y_{gh}^0 is to adjust the raw and column totals to be equal to y_{go} and y_{og} respectively. This problem is known as balancing the matrix, and the RAS method is widely used to solve it. Following is the modified RAS algorithm we have adopted for our analysis. From equation (10), set the initial value to y_{gh}^0.

(a) As initial value, set k=0; that is $y_{gh} = y_{gh}^0$.

(b) The first step of iteration is to calculate the row multipliers μ_g^k:

$$\mu_g^k = \frac{y_{go}}{\sum_{h=1}^{m} y_{gh}^k} \quad (g = 1,\ldots,m), \tag{12}$$

$$\nu = \prod_{g=1}^{m} \mu_g^k . \tag{13}$$

And then to update y_{gh}^k by

$$y_{gh}^k \leftarrow c_r \mu_g^k y_{gh}^k, \quad (g = 1,2,\cdots,m)\ (h = 1,2,\cdots,m)$$

where c_r is positive constant.

(c) The second step is to calculate the column multipliers σ_g^k:

$$\sigma_h^k = \frac{y_{og}}{\sum_{g=1}^{m} y_{gh}^k} \quad (h = 1,...,m), \tag{14}$$

$$\varsigma = \prod_{h=1}^{m} \sigma_h^k . \tag{15}$$

And define y_{gh}^{k+1} as

$$y_{gh}^{k+1} \leftarrow y_{gh}^k c_c \sigma_h^k, \quad (g = 1,2,\cdots,m)\,(h = 1,2,\cdots,m)$$

where c_c is positive constant. As a result of this step in the iteration, the row total is no longer y_{go}. A second set of multipliers μ_g^{k+1} must now be applied to the rows so that they sum up again to y_{go}. The column sums will then require further adjustment and this process will continue until no further adjustment is necessary.

(d) If ν and ς converge to 1, then we stop the iteration process; else replace k←k+1, and return to Step(b).

Although, in the traditional algorithm, c_r and c_c are defined as 1, we substitute constants 0.05 through 1.00 at intervals of 0.05 for c_r and c_c, so as to minimize errors of row and column sums from y_{go} and y_{og} respectively. The optimal solution is combination that minimize θ, where θ is given by

$$\theta = \max\{(1-\nu)^2, (1-\varsigma)^2\}. \tag{16}$$

Table2 describes the results of iteration using IFS data of 1996 and 1999, with which balanced Y matrix is made.

Table2: Results of iteration

Year	c_r	c_c	θ
1996	0.90	0.10	0.207
1999	0.45	0.45	0.976

2.4 Comparison of Supply-and-Use method and gravity method

In the prior sections, two methods of making Y-table are presented. One is Supply-and-Use method, which assumes that there is only one worldwide pool of funds for each form of financial transactions. The other is gravity method based on the idea

that countries tend to borrow money from familiar countries. Though in accordance with these methodologies, two kinds of Y-tables are drawn, a problem awaiting solution is which Y-table is more appropriate than the other. If data of each country's bilateral investment position by counterparty were available, it could be possible to single out the better method by measuring errors. But it is impossible to gain such data across the world. Table3 shows the bilateral investment position of Japan with other countries of the world obtained from *Ministry of Finance Statistics Monthly*.

Table3: Japanese investment position, 1999 (millions of U.S. dollars)

Country	Assets	Liabilities
Australia	26973	13028
Belgium	45178	47101
Canada	28982	8158
France	58032	31112
Germany	108516	33567
Italy	26923	18018
Netherlands	69051	21849
New Zealand	3527	1178
Russia	178	41
South Africa	1204	163
Spain	10876	398
Sweden	22394	5723
Switzerland	9069	38257
Thailand	6202	5723
United Kingdom	117749	363842
United States	486067	340574

Source: *Ministry of Finance Statistics Monthly*.

The approach we have adopted is to compare the similarities between observed value and estimated value in terms of correlation. These results are given in table4, which show that supply-and-use method is somewhat superior to the gravity method. Although correlation coefficients for both methods are almost same as far as assets are concerned, as for gravity method, the coefficient of liabilities is a little too low. In a sense, it is fortunate because supply-and-use method is technically easier to handle than gravity method is. However it must be too much haste if we jump into the conclusion that supply-and-use method excels gravity method because there is only one country available to prove it. So,

we are to use both tables, which have been compiled from two alternative methods in the following discussion.

Table4: Correlation coefficients of observed and estimated values

	Assets	Liabilities
Supply-and-Use method	0.9633	0.9059
Gravity method	0.9666	0.7074

3 Methodologies

Having presented the analytical basis of the entire system and its overall design, we turn now to discussion of quantitative analysis. The objective of this section is to analyse the structure of interdependence as represented in the pattern of international flow of funds and compare the role of each country in the global market. The approach that we have adopted is to establish a hierarchy of countries leading from primary suppliers of funds to the end user and to see the extent to which the resulting sequence is the same in each year.

3.1 The triangulation of ALM

Since countries posted in ALM are in alphabetical order, one glance is not enough to grasp the mutual relations within the system. So that we rearrange the rows and columns of the original ALM to reveal the causal sequence and ranking within the worldwide financial economy. There are two patterns of funds interdependence, one is sequential relation like household-bank-company, and the other is circular relation like household-bank-household. If there were no circular relations found in the worldwide economy, it would be possible to arrange the Y matrix in a triangular form having only zeros on the upper side of the diagonal. The number of transactions that fall above the diagonal of the optimally arranged matrix means the extent to which the actual economy departs from one-way interdependence.

In case of triangulation of ALM, first, we net out the symmetrical elements of Y matrix. Then sorting countries of Y matrix to minimize the number of upper right elements of Y matrix as depicted in Fig.5; it would prove that there are one-way flow of funds and clear relation of cause and effect in ALM.

In order to minimize the number of above-diagonal non-zero cells by revising the order of countries, we have to count the number for every possible sort of matrix. Let M denote the every possible order of the first m positive integers, and let each element of the set M denote $\mu = (\mu(1), \mu(2), \cdots, \mu(m)) \in M$, thus there are m! elements in the set M. Let $Y^{tr}(\mu)$ denote a matrix constructed by rearrangement of rows and columns by

μ, and denote function $T(Y^{tr}(\mu))$ as follows:

$$T(Y^{tr}(\mu)) = \sum_{i<j} y^{tr}_{\mu(i)\mu(j)} . \tag{24}$$

Thus the triangulation problem is finding the μ^* in which $T(Y^{tr}(\mu))$ is minimized:

$$T(Y^{tr}(\mu^*)) = \min_{\mu \in M} T(Y^{tr}(\mu)) . \tag{25}$$

We have reached the optimum solution of $T(Y^{tr}(\mu))$ by way of iteration method.

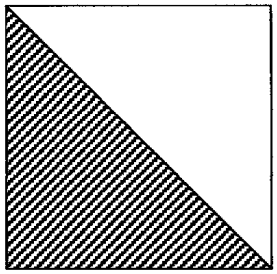

Figure 5: Triangulation of ALM

3.2 Leontief Inverse

As an alternative, we will apply the Leontief Inverse, namely the indices of the power and the sensitivity of dispersion to ALM. Let us denote c_{ij} as follows:

$$c_{ij} = \frac{y_{ij}}{t^Y_j} . \tag{17}$$

As Fig.1 shows, the fundamental equations respect to Y table is expressed as follows:

$$\sum_{i=1}^{m} y_{ij} + \varepsilon^Y_i = t^Y_i , \tag{18}$$

or in matrix terms:

$$\mathbf{C} \cdot \mathbf{T}^{\mathbf{Y}} + \boldsymbol{\varepsilon}^{\mathbf{Y}} = \mathbf{T}^{\mathbf{Y}} . \tag{19}$$

Solving each equation for $\mathbf{T}^{\mathbf{Y}}$ yields

$$\mathbf{T}^{\mathbf{Y}} = (\mathbf{I} - \mathbf{C})^{-1} \boldsymbol{\varepsilon}^{\mathbf{Y}} , \tag{20}$$

where $\mathbf{I}$ denotes the m × m unit matrix, $(\mathbf{I} - \mathbf{C})^{-1}$ is the m × m Leontief inverse matrix by which how much demand for funds would be induced to each country can be calculated. Matrix $\boldsymbol{\Gamma}$ is denoted as follows;

$$\boldsymbol{\Gamma} = (\mathbf{I} - \mathbf{C})^{-1} = \begin{bmatrix} \gamma_{11} & \gamma_{12} & \cdots & \gamma_{1m} \\ \gamma_{21} & \gamma_{22} & \cdots & \gamma_{2m} \\ \vdots & \vdots & \ddots & \vdots \\ \gamma_{m1} & \gamma_{m2} & \cdots & \gamma_{mm} \end{bmatrix} \tag{21}$$

where γ_{ij} describes the amount of increase in demand for i country's funds when the country j's demand for funds rise. We can calculate both indices of the power of dispersion and of the sensitivity of dispersion using γ_{ij}. Two distinct indices are defined as follows:

$$w_j^Y = \frac{\sum_{i=1}^{m} r_{ij}}{\frac{1}{m}\sum_{j=1}^{m}\sum_{i=1}^{m} r_{ij}}, \tag{22}$$

$$z_i^Y = \frac{\sum_{j=1}^{m} r_{ij}}{\frac{1}{m}\sum_{i=1}^{m}\sum_{j=1}^{m} r_{ij}}, \tag{23}$$

where w_j^Y is index of the power of dispersion while z_i^Y is index of the sensitivity of dispersion.

4. Results

4.1. The implications of Triangulation

As it is shown in Table5 for 1996 and Table6 for 1999 respectively, each country has surplus either in assets or in liabilities. In both years, Japan has the largest surplus in assets and Switzerland stands second among the countries providing the asset/liability figures in the IFS. France, which took the third place in 1996, fell into the red in 1999 making way for Germany. Although there are some alterations, the numbers of the countries with excess assets are 11 in both years. In 1996, the country with the largest excess liabilities was the U.S. and it retained the place in 1999 as well. While Canada, which had the second largest excess debt in 1996, retreated to the fifth place in 1999, Australia shifted its position from third to second. That means only a handful of countries supply the funds required by the majority of the countries of the world. It is worth notice that many of the net fund suppliers are euro countries, namely Germany and Belgium in both years, France and the Netherlands in1996, and Italy in 1999.

[Table 5: International Investment Position, 1996]
[Table 6: International Investment Position, 1999]

However it is a hasty conclusion if one judges the importance of a country by net assets alone. To get deeper insight, it is indispensable to have a bird's-eye view of the

cross-border flow of funds from the worldwide perspective. The country-by-country consolidated ALM for 1996 and 1999 based on supply-and-use method are presented in Table7 and Table8. In this method it is assumed that there is only one worldwide pool of funds for each form of financial transactions and every supplier of funds throw money into that pool and every user of funds draw money from it.

[Table 7: Y-table, 1996]
[Table 8: Y-table, 1999]

These matrices are triangulated so that the countries listed at the bottom are the primary supplier of the funds while the countries at the top of the table are the final user of the funds. Those countries tabulated in the middle are either net supplier or net user but also acting as intermediaries of the funds between the lenders and the borrowers. In case of 1996, Switzerland, Japan, France, Belgium and Germany held the bottom of the table in that order. As for 1999, the order was unaltered except for Italy that replaced France. All of these countries had surplus in assets by then. However, it should be noted that the United States, which has the largest excess liabilities, is in the 10th place from the bottom of the triangle in both years. This could be explained by the fact that the United States has massive external assets as well as liabilities in the gross term. Same logic applies to the United Kingdom. These countries act as financial intermediaries in the global market. In Table9 only 59 countries common to both 1996 and 1999 IFS data are picked so that we can compare the relative position of each country in the triangles. There are not too many countries that shifted its place. Among them, France and Finland moved up their positions by 4 and 6 respectively, somewhat loosing their grounds in the global financial market. On the other hand, Italy and Spain moved their positions downwards by 6 and 5, increasing their presence in the economy.

[Table9 Ordering of countries in triangulation (Supply-and-Use Method)]

Ordering of nations in the country-by-country triangulated ALM for 1996 and 1999 based on gravity method are presented in Table10. In this method, geological, historical, religious, and cultural as well as political and economic linkages implied in the air transportation are taken into account along side the distances between the countries, in addition to the volume of external assets and liabilities of a country. Roughly speaking, there are three main economic blocks in the world, namely Euro-African block, American block and Asia-Oceania block. Each block has its hub state(s) with one of the major currency of the world, euro, U.S. dollar or yen. The funds flow between these three hubs

as well as between each hub and the spoke countries of the region. Although there are some financial transactions between the hub country of a block and some local hub country of another, flow of funds between small countries belonging to different economic blocks is almost nil. That means there are not few zero-cells in the ALM. In this case, those countries situated at the bottom of the triangle are not just wealthy in assets but also easily accessible by the borrowers.

[Table10 Ordering of countries in triangulation (Gravity Method)]

We can compare the relative position of each country using Table9 and Table10. In 1996, France held the first place from the bottom while diamond-rich Botswana occupied the second. The order had been a little altered in 1999; Botswana led the league and Germany was just behind it. In both years Japan, which has the largest excess assets, is placed 6th from the bottom in the gravity-method triangle, though it hold the second place in the supply-and-use method triangles. It does mean that however rich Japan is, not too many countries directly approach Japan for funds. Instead, they seek money somewhere else, most probably in the United States or in the United Kingdom because of the geographical or political reasons.

4.2. The Dispersion Indices Estimated

The other powerful devices to demonstrate the fundamental structure of the ALM are the dispersion indices. While the triangulation is a tool to reveal the construction of an ALM itself, dispersion indices characterize the configuration of the Leontief-inverse matrix of the ALM. The dispersion power index indicates how much funds are drawn from the countries of the world in total, if the country specified in the column increase borrowing by one unit. The dispersion sensitivity index implies how much funds are drawn from the country designated in the row if every country of the world increases borrowing by one unit. Unlike the triangulation, which illustrates only the direct linkage between the countries, dispersion indices account for the indirect transactions as well. In this sense, dispersion indices are superior to triangulation to single out the most valuable player of the international financial market.

Table11 is the table of dispersion indices obtained from the Leontief-inverse of the ALM based on the supply-and-use method. The countries with largest dispersion power index are Tunisia, Cambodia, Estonia and so on. They are final user of the funds, but also too small to directly tap the global market for funds, so that they depend on the regional hub countries to satisfy their requirements. In contrast with this, the countries with smallest dispersion power index are Botswana, Switzerland, Japan and Russia. These

countries are not only self-sufficient in funds, but also are bystanders of the international capital market. Those countries like the United States and the United Kingdom situated in the middle of the table are the most active participants of the cross-border financial transactions as intermediaries. Almost all euro countries including Spain, Austria and Portugal belong to this category.

[Table11 Index of the power of dispersion (Supply-and-Use Method)]

The dispersion indices obtained by the gravity method presented in Table12 give slightly different view of the world. Just as in case of supply-and-use method, Japan and Switzerland have reserved seats at the bottom of the table. The United States, which is drifting upper-middle in the former tables, stabilizes quarter way from the bottom in the latter. Most of the euro countries hold middle position in both cases. The only difference is that the Netherlands and Finland play more active role in the gravity-method table, most probably because their political neutrality and the introduction of the new currency have reworded them right.

[Table12 Index of the power of dispersion (Gravity Method)]

According to the dispersion sensitivity index shown in Table13 obtained by means of supply-and-use method, the United States, the United Kingdom, Japan and Germany lead the league. Among them, the former two have net liabilities while the latter two have net assets. In any case, the countries of the world consider that these countries are most dependable when they seek money. On the other hand, Maldives, Lesotho and Kyrgyz Republic hold the last places on the table. The Republic of Maldives is a group of atolls in the midst of the Indian Ocean. Lesotho is totally surrounded by the Republic of South Africa. Kyrgyz Republic is a country with the Tien Shan mountain range covering almost the whole territory. In other words, they are geographically isolated countries with practically no one depending on them for financial transactions. You will find Botswana, the wealthiest African country with diamonds, quarter way from the bottom also because of its geographically isolated position in the Kalahari Desert.

[Table13 Index of the sensitivity of dispersion (Supply-and-Use Method)]

On Table14, the dispersion sensitivity index based on the gravity method is tabulated. In the case of dispersion sensitivity index, there is not too much difference between the two methods of estimation. The interesting thing is that supply-and-use method has

successfully picked out the most isolated countries of the world without any a priori information concerning to the geography. Actually, there are some trivial discrepancies between the indices based on the alternative methods; the dissimilarity between the two periods remains minimal. As for the West European countries including the euro area, almost all of them are situated in the upper quarter of the table both in 1996 and 1999. Spain and the Netherlands moved slightly upward in the ranking between the years proving that the European financial integration has benefited them right.

[Table14 Index of the sensitivity of dispersion (Gravity Method)]

Fig.6 plots the index of the power of dispersion against the index of the sensitivity of dispersion, while Fig.7 display the partially magnified image of that. Those countries with both indices exceeding one, that is more than average, including U.S., U.K., The Netherlands and France, are situated in the first quadrant. Fig.7 shows that Canada and Spain also belong to this category; though the sensitivity indices for them are only just above the unity. The sovereign of these countries are awarded AAA without exception for their high profile in the world capital market regardless of their own financial positions in terms of excess assets or liabilities. Actually, none of these countries have excess assets; rather some of them are heaviest debtors of the world. Among these countries, U.S. and U.K. have extremely large number of indices of the sensitivity of dispersion, giving them the places of the most valuable players in the global capital market.

On the other hand, the nations with largest excess assets including Japan, Switzerland, Germany, Belgium and Italy belongs to the second quadrant; indicating that they have relatively large index of the sensitivity of dispersion, but have relatively small index of the power of dispersion, that is less than unity. The rating companies tend to give lower grade to these countries, because of their reluctance to participate actively in the world financial market most probably because they find themselves self-sufficient. Among the countries belonging to this category, Japan and Switzerland have the smallest indices of the power of dispersion, indicating that they give slightest effects to the capital market as obligors.

Except for Swaziland and Lesotho, which have strong economic as well as geographic ties with South Africa, those countries lying on the third quadrant, Botswana, Russia, Venezuela and Bahrain have one thing in common; that the all four are natural resources rich. Since they can earn a certain amount of money by exporting crude oil, natural gas or diamonds (in case of Botswana), all of them have excess assets. Still the sovereign ratings for these countries are not favourable, most probably because they are entirely cut off from the rest of the world in terms of financial transactions. Both of the dispersion indices are so

small, that is less than unity, indicating that they do not borrow but they do not lend either.

Majority of the countries of the world excepting the ones aforementioned find themselves in the forth quadrant. As of these countries, the index of the sensitivity of dispersion is less than one, but the index of the power of dispersion exceeds unity. Among them, Sweden, Austria, Denmark, Australia having relatively large sensitivity index between 0.5 and 1.0 are awarded AAA by the rating agencies. On the other hand, some other countries including Moldova, Costa Rica, Tunisia, El Salvador and Lithuania with smaller sensitivity indices are assigned lower grades.

The sovereign rating is just an indicator regarding the probability of non-performance of government securities and not more than an opinion expressed by the rating agencies. Nonetheless it is considered to be one of the few visible expressions concerning the overall evaluation of the financial soundness of the particular country. The above cross-tabulation analysis tells us that those countries belonging to first and fourth quadrant tend to get high scores while the countries situated in second and third quadrant are poorly graded.

[Figure6: Index of the power of dispersion and Index of the sensitivity of dispersion]
[Figure7: Index of the power of dispersion and Index of the sensitivity of dispersion (Partially magnified)]

5 Conclusions

The fundamental situation is that only small number of countries of the world possesses excess assets and rest of them are net borrowers. Japan and Switzerland have the largest surplus in assets while The United States bears the largest debt. Among the European nations, Germany and Belgium are the principal creditors, and Italy joined the rich-man-club lately. By contrast, The United Kingdom and Sweden are the pre-eminent obligors, and Finland and Spain among euro countries belong to this group.

Actually, in the triangulated asset-liability-matrices on the supply-and-use method, Japan and Switzerland are situated right at the bottom of the table, proving that they are the fundamental source of the fund-supply. However, in the gravity-method, which takes geographical and political linkages between the countries into consideration, it is demonstrated that the euro countries including Germany, France and Belgium take over these places. Moreover, in either case, The United States and The United Kingdom do not place themselves at the top of the triangle. Rather, they are situated just above the countries with excess assets aforementioned. These facts imply that The United States and The United Kingdom are not just countries of huge debt, but are great intermediates

of the global capital market. They borrow money a lot, but they lend most of it somewhere else. Many of the small countries access them first for money; few countries access directly to the net creditors like Japan or Switzerland though they are the last resorts. Usually small debtors seeking new money reach the hub states of the region.

There are three main economic blocks in the world with their own hub-countries corresponding to three major currencies. There is enormous volume of capital-flow between those hub-countries, and they are the financial centres of the block with some local hubs to assist them. Those countries placed at the bottom of the triangle inclusive of the euro countries mentioned above are supposed to be the countries that act as hub countries of the economic block they belong to.

The triangulation is a prominent technique to reveal the structure of ALM, though another powerful tool is the Leontief-inverse that produces dispersion indices. Among which, the dispersion power index indicates how much funds are drawn from the countries of the world in total, if the country in question increase borrowing by one unit. Japan and Switzerland have the smallest dispersion power index, if it is allowed to make an exception of Botswana, the diamond-rich African country. Both The United States and The United Kingdom, and some of the euro countries including Germany, Italy and Belgium have indicators around one, tabulated quarter way from the bottom. Most of the European nations not listed above find their positions in the middle of the table. Since the dispersion index covers indirect transactions as well as the direct ones taken into account in the triangulation, the busy transactions between the European countries result in larger power index for them. Especially, France and The Netherlands gained a lot from the financial integration.

In contrast to the dispersion power index, the dispersion sensitivity index displays how much funds are drawn from the country in question if every country of the world increases borrowing by one unit. In this list, The United States and The United Kingdom shoot out just to the top of the table indicating that they are the most valuable players of all. Japan, Germany and Switzerland are just behind the leaders. Also the euro countries including Italy, France, The Netherlands, Belgium and Spain plays leading roles in this directory of power players. Other countries of the world depend on them directly or indirectly whenever they seek money.

As a conclusion, it can be said that a big players in the global capital market do not necessarily have huge amount of excess assets by their own. It is surely an advantage to have surplus in assets, but it is not a necessary or sufficient condition to play a leading role. The countries with net assets or affluent natural resources tend to isolate themselves because of self-sufficiency so that they never make their name renowned. The big players draw huge amount of money from wealthier countries and let it to the

countries that need it. In a sense, most valuable ability to be a big player is to find money whenever required and lend it to whomever in want.

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Table5: International Investment Position, 1996 (Millions of US dollars)

Country	Assets (A)	Liabilities (L)	Excess Assts or Liabilities (A)-(L)
Japan	2652610	1761590	891020
Switzerland	924354	587559	336795
France	1470160	1284360	185800
Germany	1699680	1610140	89540
Belgium	580689	539010	41679
Netherlands	696816	658739	38077
Russia	29041	22162	6879
Bahrain	69519	65188	4331
Botswana	6001	1942	4059
Slovak Republic	10311	9769	542
Swaziland	922	895	28
Lesotho	522	536	-13
Maldives	100	178	-78
Mauritius	1243	1427	-184
Namibia	2096	2355	-259
Latvia	2366	2717	-351
Paraguay	2567	2954	-388
Slovenia	7126	7625	-500
Cambodia	711	1351	-640
Estonia	1344	2008	-664
Moldova	612	1290	-677
Belarus	1335	2065	-729
Macedonia	497	1243	-746
Kyrgyz Republic	203	1070	-867
Lithuania	1693	2813	-1121
Benin	613	1803	-1189
Costa Rica	1421	3268	-1847
Jordan	7827	9833	-2006
Romania	9084	11468	-2384
Venezuela	24926	27324	-2398
Czech Republic	30629	33151	-2522
El Salvador	1771	4336	-2564
Uruguay	8718	11604	-2886
Iceland	1319	4719	-3400
Senegal	641	4101	-3460
Panama	24677	30082	-5405
Portugal	86425	93951	-7526
Tanzania	744	9966	-9222
Chile	16257	27785	-11528
Bangladesh	2614	15510	-12896
Cote d ivoire	875	16101	-15226
Tunisia	3112	23382	-20271
Israel	34162	57817	-23655
South Africa	35056	60449	-25393
Colombia	16769	43233	-26464
Austria	161785	189264	-27479
Peru	14869	43611	-28742
Poland	28746	58515	-29769
Italy	727498	761656	-34158
Denmark	145614	187737	-42123
New Zealand	23573	71631	-48058
Turkey	27613	79643	-52030
Finland	65386	118245	-52860
Thailand	46005	108742	-62737
Sweden	248580	352787	-104207
Spain	290877	399970	-109093
United Kingdom	2764530	2882360	-117830
Australia	161821	388362	-226541
Canada	371736	599081	-227345
United States	4549180	5091420	-542240

Source: IFS

Table6: International Investment Position, 1999 (Millions of US dollars)

Country	Assets (A)	Liabilities (L)	Excess Assts or Liabilities (A)-(L)
Japan	3013600	2184480	829120
Switzerland	1238940	887117	351823
Germany	2392770	2302170	90600
Belgium	655973	594723	61250
Italy	1081100	1027730	53370
HongKong	417980	405325	12655
Botswana	7356	2515	4841
Bahrain	92459	88016	4443
Russia	28393	24086	4307
Venezuela	26812	24949	1863
Swaziland	1134	1058	76
Lesotho	579	559	20
Vanuatu	265	281	-16
Maldives	148	214	-66
Mauritius	1396	1601	-206
Cambodia	1109	1455	-346
Macedonia	904	1604	-700
Benin	726	1748	-1022
Rwanda	231	1295	-1064
Kazakhstan	2598	3678	-1080
Armenia	489	1608	-1119
Moldova	597	1924	-1327
Togo	364	1729	-1365
Paraguay	2514	3929	-1415
Costa Rica	1919	3341	-1422
Kyrgyz Republic	398	1868	-1470
Uruguay	12747	14512	-1764
Latvia	3262	5235	-1973
Slovenia	7787	9790	-2002
Belarus	1004	3420	-2415
Jordan	8222	10830	-2608
Estonia	2415	5225	-2810
Uganda	973	3990	-3017
Czech Republic	37465	40549	-3083
Yemen, Republic of	3111	6305	-3194
Bulgaria	9061	12377	-3316
Senegal	890	4223	-3333
Azerbaijan	1061	4716	-3655
Lithuania	2453	6114	-3661
Iceland	3370	7597	-4227
Slovak Republic	8652	13201	-4548
El Salvador	3875	9408	-5534
Croatia	5920	12235	-6316
Tanzania	1153	7648	-6495
Romania	9718	16761	-7044
Bolivia	2681	9950	-7269
Myanmar	328	8467	-8139
Netherlands	1077480	1085950	-8470
Panama	24395	32997	-8603
Bangladesh	2535	15267	-12732
Cote d ivoire	2641	16581	-13940
Chile	19235	38005	-18771
France	981440	1001690	-20250
Tunisia	3359	24295	-20936
Denmark	213446	237097	-23651
South Africa	98507	122921	-24415
Peru	14293	40553	-26259
Hungary	19353	49955	-30602
Colombia	19824	50889	-31065
Portugal	125052	156473	-31421
Austria	225924	262994	-37070
New Zealand	21320	67651	-46331
Thailand	48360	95051	-46691
Israel	57616	105061	-47445
Poland	40101	89257	-49156
Turkey	37604	103847	-66243
Sweden	353559	430625	-77066
Spain	452063	567505	-115442
Canada	484282	671838	-187556
United Kingdom	3852010	4067640	-215630
Finland	109694	327260	-217566
Australia	219854	441936	-222082
United States	7206360	8731670	-1525310

Source: IFS

Table7: Y-table,1996 (Supply-and-Use Method) (Millions of U.S. dollars)

	Australia	Austria	Bahrain	Bangladesh	Belarus	Belgium	Benin	Botswana	Cambodia	Canada	Chile	Colombia	Costa Rica	Cote d Ivoire	Czech Republic	Denmark	El Salvador	Estonia	Finland	France	Germany	Iceland	Israel	Italy	Japan	Jordan	Kyrgyz Republic	Latvia	Lesotho	Lithuania
Australia	4478	1042	302	57	10	4030	8	23	14	4361	154	331	12	59	274	1113	22	20	857	14472	8665	27	289	4076	10270	36	7	23	2	20
Austria	2513	1753	709	178	22	4769	20	13	10	4782	270	378	36	184	274	1650	46	15	951	9822	15062	47	568	7153	16604	113	11	23	6	25
Behrain	784	838	462	117	14	2625	13	7	5	1867	165	212	21	122	154	721	29	8	389	4655	7569	23	318	3490	9510	74	7	14	4	15
Bangladesh	4	8	6	2	0	31	0	0	0	14	2	3	0	2	2	6	0	0	3	50	79	0	4	35	115	1	0	0	0	0
Belarus	6	9	7	2	0	34	0	0	0	17	2	3	0	2	2	7	0	0	4	57	90	0	4	40	128	1	0	0	0	0
Belgium	12995	7105	2268	553	72	18110	64	55	40	21838	947	1424	123	574	1055	7058	151	61	4301	42038	59570	184	2090	29590	61199	351	36	85	19	94
Benin	6	5	2	1	0	13	0	0	0	13	1	1	0	1	1	5	0	0	2	25	42	0	2	20	45	0	0	0	0	0
Botswana	24	7	3	1	0	32	0	0	0	30	1	3	0	1	2	7	0	0	4	74	54	0	2	27	60	0	0	0	0	0
Cambodia	1	2	2	0	0	8	0	0	0	4	1	1	0	0	1	2	0	0	1	13	21	0	1	9	31	0	0	0	0	0
Canada	7859	2782	1238	277	39	10949	32	53	36	9637	530	921	49	287	745	2724	81	50	1817	25625	24682	58	950	11264	31856	175	22	64	10	59
Chile	3	6	5	1	0	24	0	0	0	11	2	2	0	1	1	5	0	0	3	39	61	0	3	27	89	1	0	0	0	0
Colombia	184	106	27	7	1	236	1	1	0	339	10	18	2	7	12	108	2	1	60	528	837	3	27	425	700	4	0	1	0	1
Costa Rica	2	4	3	1	0	16	0	0	0	8	1	1	0	1	1	3	0	0	2	27	42	0	2	19	62	1	0	0	0	0
Cote d ivoire	2	3	2	1	0	11	0	0	0	5	1	1	0	1	1	2	0	0	1	17	28	0	1	12	40	0	0	0	0	0
Czech Republic	161	195	127	32	4	691	3	2	1	387	46	57	5	34	43	159	8	2	89	1208	1851	5	83	820	2599	20	2	4	1	4
Denmark	2429	1345	602	145	19	4359	16	16	11	3897	242	356	27	151	276	1266	39	17	784	9384	11898	33	465	5484	14540	92	10	23	5	24
El Salvador	5	7	5	1	0	27	0	0	0	13	2	2	0	1	2	5	0	0	3	45	65	0	3	29	93	1	0	0	0	0
Estonia	12	8	4	1	0	25	0	0	0	22	1	2	0	1	2	8	0	0	4	50	71	0	3	34	83	1	0	0	0	0
Finland	1095	597	270	64	8	2077	7	8	6	1830	94	171	12	66	125	560	18	8	302	4206	5046	15	189	2457	5669	40	4	12	2	11
France	34542	14595	5658	1305	179	48627	153	202	140	47807	2039	3948	260	1355	2903	14174	376	196	8327	124071	120475	393	4279	59268	129138	827	97	264	45	256
Germany	30194	18163	7725	1898	242	54187	213	175	127	51204	3128	4374	367	1970	3343	17146	496	194	10549	116067	159757	457	6177	73930	189448	1203	120	277	66	291
Iceland	28	7	2	1	0	23	0	0	0	24	1	2	0	1	2	7	0	0	6	105	60	0	2	27	75	0	0	0	0	0
Isreal	346	259	129	32	4	835	4	3	2	674	46	68	6	33	50	232	8	3	126	1589	2264	7	90	1069	2697	20	2	4	1	5
Italy	15322	9027	2852	694	90	22848	81	69	50	27840	1065	1793	157	721	1257	8934	191	75	5023	49279	73723	236	2510	36523	70056	440	45	108	24	118
Japan	61302	35824	9907	2458	315	80651	288	207	153	110403	4043	6183	594	2546	4361	36050	673	241	21217	185665	292822	957	9795	143855	272378	1555	152	349	85	408
Jordan	41	64	44	11	1	230	1	1	0	116	16	19	2	12	14	50	3	1	27	385	609	2	28	269	869	7	1	1	0	1
Kyrgyz Republic	0	1	1	0	0	3	0	0	0	1	0	0	0	0	0	1	0	0	0	5	8	0	0	3	11	0	0	0	0	0
Latvia	25	19	9	2	0	60	0	0	0	50	3	5	0	2	3	17	1	0	9	113	167	1	7	79	194	1	0	0	0	0
Lesotho	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	0	0	4	6	0	0	3	9	0	0	0	0	0
Lithuania	7	10	6	2	0	34	0	0	0	18	2	3	0	2	2	8	0	0	4	57	91	0	4	41	126	1	0	0	0	0
Macedonia	1	2	2	0	0	9	0	0	0	4	1	1	0	0	1	2	0	0	1	15	24	0	1	10	34	0	0	0	0	0
Maldives	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	3	0	0	0	0	0
Mauritius	2	4	3	1	0	14	0	0	0	6	1	1	0	1	1	3	0	0	1	22	35	0	2	15	51	0	0	0	0	0
Moldova	2	3	2	1	0	12	0	0	0	6	1	1	0	1	1	2	0	0	1	20	29	0	1	13	42	0	0	0	0	0
Namibia	15	21	14	3	0	73	0	0	0	39	5	6	1	4	5	17	1	0	9	125	196	1	9	86	278	2	0	0	0	0
Netherlands	15460	6690	2230	511	71	20295	61	84	57	22623	986	1650	108	531	1293	6760	151	82	4349	48812	56821	157	2011	26834	62766	324	39	107	18	106
New Zealand	490	143	43	8	1	542	1	3	2	593	22	46	2	9	38	153	3	3	108	1433	1211	3	41	565	1419	5	1	3	0	3
Panama	201	273	172	44	5	925	5	2	2	540	61	75	8	46	56	223	11	3	119	1569	2542	7	113	1146	3437	28	2	5	2	5
Paraguay	14	15	10	3	0	59	0	0	0	31	4	5	0	3	4	12	1	0	6	101	141	0	6	63	198	2	0	0	0	0
Peru	53	51	35	9	1	197	1	1	0	105	13	16	1	9	13	41	2	1	24	358	490	1	22	214	718	6	1	1	0	1
Poland	141	128	66	17	2	399	2	1	1	308	24	32	3	17	23	113	4	1	61	731	1138	3	46	532	1382	11	1	2	1	2
Portugal	1241	624	331	83	10	2218	9	6	4	2233	131	175	17	86	129	776	21	7	466	4849	7139	22	271	3350	8047	53	5	11	3	12
Romania	72	71	48	12	1	256	1	1	1	185	19	21	2	13	17	58	3	1	39	491	708	2	33	294	1085	8	1	1	0	1
Russia	203	149	79	19	2	518	2	2	1	389	27	43	3	20	31	132	5	2	69	969	1307	4	53	619	1591	12	1	3	1	3
Senegal	4	4	2	1	0	14	0	0	0	9	1	1	0	1	1	4	0	0	2	24	38	0	2	17	49	0	0	0	0	0
Slovak Republic	50	68	46	12	1	248	1	1	1	128	17	20	2	12	15	54	3	1	29	423	646	2	30	286	924	7	1	1	0	1
Slovenia	43	50	34	8	1	189	1	1	0	102	12	16	1	9	12	40	2	1	21	324	465	1	21	210	652	5	1	1	0	1
South Africa	852	185	65	9	2	1056	1	7	5	1005	18	92	2	10	70	203	5	6	105	2488	1334	3	35	752	1222	6	2	7	0	6
Spain	3200	2454	1360	335	42	8640	37	29	22	6180	479	711	59	348	524	2145	85	32	1154	16107	21907	63	907	10217	27640	213	21	48	12	48
Swaziland	7	6	4	1	0	25	0	0	0	14	1	2	0	1	2	5	0	0	3	44	59	0	3	27	81	1	0	0	0	0
Sweden	6479	1783	779	177	25	6839	21	31	20	5845	336	552	32	184	445	1707	51	29	1329	25231	15663	57	608	7105	20900	112	14	38	6	35
Switzerland	21979	11116	3076	743	98	26696	88	82	58	35563	1426	2088	176	772	1589	11333	210	89	7227	65525	93111	281	3186	44357	94265	471	49	121	26	135
Tanzania	2	3	2	1	0	12	0	0	0	6	1	1	0	1	1	2	0	0	1	20	31	0	1	14	46	0	0	0	0	0
Thailand	54	75	54	14	2	292	1	1	1	142	19	24	2	14	18	59	3	1	30	486	718	2	33	320	1033	9	1	2	0	2
Tunisia	8	11	8	2	0	43	0	0	0	21	3	4	0	2	3	9	0	0	5	74	111	0	5	48	163	1	0	0	0	0
Turkey	56	105	77	20	2	396	2	1	1	180	27	33	3	20	24	81	5	1	42	643	1016	3	48	447	1483	12	1	2	1	2
United Kingdom	57583	32635	11600	2860	366	86141	326	257	185	95987	5063	6825	599	2969	5258	31909	758	291	20318	197164	282785	826	10452	131453	316956	1813	179	412	99	451
United States	106079	38475	12591	2759	403	126793	334	594	392	139327	6245	10467	567	2865	8636	39757	861	560	27801	325633	333619	827	11932	153040	394945	1749	233	693	95	659
Uruguay	38	66	47	12	1	244	1	1	1	116	17	20	2	12	15	51	3	1	27	399	632	2	29	279	912	8	1	1	0	1
Venezuela	163	62	33	7	1	299	1	2	1	231	10	26	1	7	19	59	2	1	28	607	505	1	19	250	578	4	1	2	0	2

(Continued) Table7: Y-table,1996 (Supply-and-Use Method) (Millions of U.S. dollars)

Macedonia	Maldives	Mauritius	Moldova	Namibia	Netherlands	New Zealand	Panama	Paraguay	Peru	Poland	Portugal	Romania	Russia	Senegal	Slovak Republic	Slovenia	South Africa	Spain	Swaziland	Sweden	Switzerland	Tanzania	Thailand	Tunisia	Turkey	United Kingdom	United States	Uruguay	Venezuela
5	1	5	6	31	5946	728	161	22	284	396	672	69	89	16	65	57	539	3332	9	4252	4653	42	465	252	292	17955	42110	42	123
14	2	16	14	13	4706	495	306	27	416	537	827	109	248	46	93	67	442	3148	7	2937	4685	111	1184	166	882	26515	38403	128	249
9	1	10	9	5	2230	204	183	16	258	304	451	64	162	30	56	37	209	1524	4	1614	2589	73	742	89	538	14894	16159	77	96
0	0	0	0	0	25	2	2	0	3	4	5	1	2	0	1	0	2	16	0	20	33	1	9	1	7	178	147	1	1
0	0	0	0	0	28	2	2	0	4	4	6	1	2	0	1	0	3	19	0	22	36	1	10	1	7	198	173	1	1
44	6	52	45	65	20871	2297	1058	95	1439	1987	3171	394	787	146	326	254	1940	13270	26	11424	18670	351	3899	682	2953	99260	174078	432	1107
0	0	0	0	0	12	1	1	0	1	1	2	0	1	0	0	0	1	8	0	8	12	0	3	0	3	72	98	0	1
0	0	0	0	0	37	5	1	0	2	3	5	0	1	0	1	0	3	24	0	15	27	0	4	2	2	120	284	0	1
0	0	0	0	0	7	1	1	0	1	1	1	0	1	0	0	0	1	4	0	5	9	0	3	0	2	48	40	0	0
22	3	23	24	66	14384	1607	553	67	920	1161	1874	219	398	74	203	159	1298	8219	23	6856	12734	184	1901	616	1256	54035	96435	180	281
0	0	0	0	0	19	1	2	0	3	3	4	1	2	0	1	0	2	13	0	15	25	1	7	1	5	138	114	1	1
1	0	1	1	1	224	33	14	1	16	25	40	5	9	2	4	3	22	174	0	119	176	4	49	8	39	1192	2406	6	18
0	0	0	0	0	13	1	1	0	2	2	3	0	1	0	0	0	1	9	0	11	17	1	5	1	4	95	79	1	0
0	0	0	0	0	9	1	1	0	1	1	2	0	1	0	0	0	1	6	0	7	11	0	3	0	2	62	51	0	0
3	0	3	2	1	628	48	49	5	72	81	120	17	44	8	15	10	57	392	1	453	758	20	200	25	141	4015	3854	20	18
12	2	13	12	18	5019	511	258	26	387	482	756	97	205	38	85	62	457	3020	7	2764	4842	93	966	193	686	23532	35539	99	164
0	0	0	0	0	22	2	2	0	3	3	5	1	2	0	1	0	2	15	0	16	27	1	8	1	5	146	136	1	1
0	0	0	0	0	24	3	2	0	2	3	4	1	1	0	1	0	2	16	0	15	24	1	6	1	4	135	188	1	1
5	1	6	5	10	1961	273	118	13	172	223	344	41	90	17	40	30	188	1390	4	1093	1781	41	430	99	301	9787	15869	43	67
105	15	117	112	244	48902	6911	2599	281	3764	5086	7990	920	1865	346	888	691	4689	33949	92	34787	41706	852	9140	2347	6434	223567	406412	933	1794
152	22	167	148	189	61555	5997	3310	315	4824	6059	9479	1236	2652	494	1054	769	5615	37294	85	34828	60268	1200	12607	2185	9151	302446	448465	1323	2409
0	0	0	0	0	33	3	1	0	2	2	4	0	1	0	0	0	3	18	0	37	29	0	4	1	3	118	226	0	1
3	0	3	2	3	752	86	53	5	76	93	141	19	44	8	17	12	71	522	1	481	777	20	207	33	148	4387	5799	21	30
56	8	66	57	81	22805	2980	1346	120	1737	2480	3896	471	988	183	412	321	2162	16144	33	12297	19279	441	4939	841	3761	117199	210340	551	1403
197	28	243	200	246	86657	10324	4810	392	6015	8650	14120	1738	3502	647	1408	1121	8254	59355	102	47713	74759	1544	17777	2595	13988	443261	816274	2063	6044
1	0	1	1	0	196	14	17	2	24	27	40	6	15	3	5	3	18	125	0	149	246	7	69	8	49	1338	1177	7	6
0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	2	0	2	3	0	1	0	1	17	14	0	0
0	0	0	0	0	53	6	4	0	5	7	10	1	3	1	1	1	5	37	0	34	54	1	15	2	11	315	418	2	2
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	1	0	1	14	12	0	0
0	0	0	0	0	28	2	2	0	4	4	6	1	2	0	1	0	3	19	0	21	35	1	10	1	7	194	178	1	1
0	0	0	0	0	7	1	1	0	1	1	2	0	1	0	0	0	1	5	0	6	10	0	3	0	2	53	44	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	5	4	0	0
0	0	0	0	0	11	1	1	0	1	2	2	0	1	0	0	0	1	7	0	9	14	0	4	0	3	79	66	0	0
0	0	0	0	0	10	1	1	0	1	1	2	0	1	0	0	0	1	6	0	7	12	0	3	0	2	66	60	0	0
0	0	0	0	0	65	5	5	0	8	9	13	2	5	1	2	1	6	41	0	48	80	2	21	3	15	427	394	2	2
41	6	47	45	106	26408	2968	1058	112	1600	2167	3528	414	740	137	360	289	2410	15640	87	12607	22709	335	3671	986	2626	104861	198881	383	935
1	0	1	1	4	823	98	23	3	40	55	93	10	13	2	9	8	74	457	1	336	653	6	67	34	42	2522	5759	6	17
4	1	4	3	2	771	62	66	6	96	108	159	28	60	11	21	13	71	514	1	585	949	27	272	32	195	5327	5051	28	27
0	0	0	0	0	49	5	4	0	6	7	10	1	4	1	1	1	5	33	0	35	58	2	16	2	11	316	315	2	1
1	0	1	1	1	194	15	13	1	20	23	34	5	12	2	4	3	17	116	0	130	224	5	54	8	37	1119	1132	5	4
1	0	1	1	1	346	35	27	2	38	46	68	9	23	4	8	6	33	240	1	238	381	10	107	14	78	2198	2619	11	15
7	1	7	6	6	2327	225	142	12	196	251	388	52	116	22	43	31	215	1482	3	1515	2332	52	553	76	413	12679	18236	60	118
1	0	1	1	1	300	16	18	2	28	30	46	7	17	3	6	4	26	155	0	196	354	8	74	10	52	1627	1566	7	7
2	0	2	2	2	452	55	33	3	47	57	87	11	27	5	11	7	43	320	1	289	465	12	125	22	89	2626	3442	13	16
0	0	0	0	0	12	1	1	0	1	2	2	0	1	0	0	0	1	8	0	8	14	0	4	0	3	77	81	0	0
1	0	1	1	0	217	17	18	2	26	29	43	6	16	3	6	4	20	138	0	161	267	7	72	9	51	1429	1308	7	6
1	0	1	1	0	159	15	13	1	19	22	32	5	12	2	4	3	15	106	0	115	189	5	52	7	37	1032	1015	5	4
1	0	1	1	10	1147	228	37	7	66	98	161	13	15	3	17	16	113	832	3	409	715	8	88	79	41	3157	9602	6	9
27	4	28	26	28	7748	867	552	55	805	967	1456	193	465	87	179	124	729	5295	14	5016	8196	212	2147	361	1514	44996	56212	217	250
0	0	0	0	0	21	2	2	0	2	3	4	1	1	0	1	0	2	14	0	15	24	1	7	1	5	131	140	1	1
14	2	15	15	37	8694	925	344	40	565	707	1139	136	254	47	123	95	785	4917	13	8768	7853	117	1208	356	813	33680	57975	117	188
60	9	73	62	104	34983	3598	1500	133	2057	2923	4779	585	1071	198	461	373	3197	20863	38	17329	30406	474	5418	1013	4173	151645	285105	614	1837
0	0	0	0	0	10	1	1	0	1	1	2	0	1	0	0	0	1	6	0	8	13	0	4	0	3	70	58	0	0
1	0	1	1	1	240	21	21	2	30	34	50	7	19	3	7	4	22	160	0	181	297	6	84	11	58	1520	1470	8	6
0	0	0	0	0	39	3	3	0	5	5	7	1	3	1	1	1	4	24	0	29	48	1	13	2	9	251	224	1	1
2	0	2	1	1	323	24	29	3	43	47	68	10	27	5	9	6	30	211	1	255	418	12	120	14	84	2286	1894	12	6
229	33	262	226	291	107153	9950	5182	466	7376	9641	15387	1992	4042	748	1605	1211	9701	62781	124	57710	101297	1804	19551	3244	14614	500735	806767	2128	4914
221	32	251	255	784	189111	19893	6098	711	10043	13392	22321	2560	4060	748	2201	1817	16892	103198	257	84493	160840	1852	20219	6917	13911	659552	1313147	2022	5131
1	0	1	1	0	200	15	18	2	26	29	42	6	16	3	5	3	18	131	0	156	256	7	73	9	52	1407	1191	7	5
1	0	1	1	2	268	48	15	2	23	30	47	5	10	2	5	4	27	204	1	133	215	5	49	18	31	1141	2183	4	4

Table8: Y-table,1999 (Supply-and-Use Method) (Millions of U.S. dollars)

	Armenia	Australia	Austria	Azerbaijan	Bahrain	Bangladesh	Belarus	Belgium	Benin	Bolivia	Botswana	Bulgaria	Cambodia	Canada	Chile	HongKong	Colombia	Costa Rica	Cote d Ivoire	Croatia	Czech Republic	Denmark	El Salvador	Estonia	Finland	France	Germany	Hungary	Iceland	Israel	Italy	Japan	Jordan	Kazakhstan	Kyrgyz Republic	Latvia
Armenia	0	1	2	0	2	0	0	6	0	0	0	0	0	3	1	0	1	0	0	0	0	2	0	0	1	9	20	0	0	1	8	21	0	0	0	0
Australia	11	4723	1312	52	430	65	26	4695	9	88	25	72	14	4583	197	5910	388	13	90	78	369	2248	65	51	3200	8595	14182	439	36	783	5547	14975	46	16	12	42
Austria	14	4092	3253	28	901	163	28	5392	18	74	17	142	10	7336	401	1387	478	40	164	124	303	2540	84	37	2589	9567	24758	442	94	969	12646	20964	116	41	17	43
Azerbaijan	0	3	4	0	4	1	0	13	0	0	0	0	0	7	1	0	1	0	1	0	1	4	0	0	2	19	42	1	0	2	16	43	0	0	0	0
Bahrain	11	1043	1234	15	731	135	20	2972	14	50	10	57	7	2262	256	118	276	24	129	68	174	1014	60	19	528	4595	10480	162	44	439	4640	9706	96	28	13	28
Bangladesh	0	7	10	0	9	2	0	32	0	1	0	1	0	17	3	0	3	0	2	1	2	9	1	0	4	46	99	1	0	4	38	102	1	0	0	0
Belarus	0	7	9	0	6	1	0	23	0	0	0	0	0	16	2	0	2	0	1	1	1	8	0	0	4	35	79	1	0	3	34	76	1	0	0	0
Belgium	42	13317	9178	116	2360	412	89	16863	48	253	63	419	37	22514	1047	9472	1457	106	444	367	1040	7591	250	132	7597	29308	70689	1471	259	2874	36025	57143	292	109	49	138
Benin	0	5	5	0	2	0	0	10	0	0	0	0	0	10	1	0	1	0	0	0	1	4	0	0	2	17	40	1	0	2	20	34	0	0	0	0
Bolivia	0	32	29	0	5	1	0	37	0	0	0	1	0	65	3	2	3	0	1	1	2	21	0	0	11	69	192	3	1	6	116	124	1	0	0	0
Botswana	0	19	8	0	4	1	0	33	0	1	0	0	0	27	1	40	3	0	1	1	3	9	1	0	9	47	83	3	0	5	32	70	0	0	0	0
Bulgaria	1	65	79	1	48	9	1	193	1	3	1	4	0	143	17	6	18	2	8	4	11	65	4	1	31	296	672	10	3	28	297	622	6	2	1	2
Cambodia	0	2	3	0	2	0	0	8	0	0	0	0	0	4	1	0	1	0	0	0	0	2	0	0	1	11	24	0	0	1	9	25	0	0	0	0
Canada	33	7692	3392	124	1550	256	74	11668	29	230	62	184	35	10580	615	12689	985	46	303	216	926	3484	191	123	6140	17927	36159	989	99	1944	13283	37174	181	57	38	113
Chile	1	34	51	1	42	8	1	155	1	3	1	2	0	81	14	0	15	1	7	3	9	45	3	1	20	227	487	7	2	22	188	498	6	2	1	2
HongKong	23	6597	1291	167	291	0	62	9982	4	236	75	129	39	9199	0	21806	751	0	103	148	944	1969	134	133	986	13063	14760	1034	26	1047	5848	2481	0	6	23	101
Colombia	1	247	196	2	49	9	2	345	1	5	1	9	1	472	20	183	30	2	9	8	20	153	5	3	80	582	1387	29	6	52	770	909	6	2	1	3
Costa Rica	0	3	4	0	3	1	0	13	0	0	0	0	0	7	1	0	1	0	1	0	1	4	0	0	2	18	38	1	0	2	15	40	0	0	0	0
Cote d ivoire	0	20	26	0	17	3	0	67	0	1	0	1	0	45	6	0	6	1	3	2	4	22	1	0	10	102	229	3	1	10	97	220	2	1	0	1
Croatia	0	34	26	1	19	3	1	96	0	2	0	1	0	62	6	62	8	1	4	2	7	25	2	1	13	136	256	6	1	13	99	229	2	1	0	1
Czech Republic	3	248	282	4	199	37	6	778	4	14	3	13	2	498	70	47	72	6	35	17	48	244	16	5	192	1183	2647	40	10	119	1048	2752	26	7	4	8
Denmark	12	4113	1782	33	716	126	26	4537	15	74	18	82	11	4447	315	2601	399	25	133	88	303	2343	72	39	3257	8595	17231	361	54	834	7136	19125	89	28	15	39
El Salvador	0	11	12	0	10	2	0	40	0	1	0	1	0	23	3	10	4	0	2	1	3	11	1	0	5	58	119	2	0	6	46	115	1	0	0	0
Estonia	0	24	21	0	9	2	0	49	0	1	0	1	0	47	3	19	4	0	2	1	3	18	1	0	9	77	171	3	1	7	83	137	1	0	0	0
Finland	7	2312	1142	23	318	53	14	2669	7	44	12	56	7	3115	135	2295	228	13	62	52	180	1261	39	24	1199	4740	9418	236	32	420	4602	7769	38	14	7	23
France	87	16062	10332	223	5039	892	179	28376	99	506	122	518	73	24740	1775	16840	2511	169	929	581	1879	10675	499	230	6874	46554	89277	2006	338	4024	40417	75815	632	193	102	264
Germany	164	40271	26707	397	9764	1737	336	57440	193	934	224	1216	133	63597	4208	27880	4992	366	1797	1225	3774	22801	954	475	33742	97023	235422	4564	790	10605	103192	234810	1232	404	193	507
Hungary	1	183	80	2	54	10	2	269	1	5	1	4	1	167	18	101	25	2	10	5	16	142	5	2	60	494	738	16	3	34	327	699	7	2	1	2
Iceland	0	55	19	0	5	1	0	42	0	1	0	1	0	53	4	31	3	0	1	1	3	20	1	0	86	87	244	4	0	14	72	377	1	0	0	0
Israel	4	475	406	8	218	39	7	1072	4	19	4	20	3	892	76	455	96	7	39	23	70	350	20	8	231	1639	3525	70	14	156	1551	3110	28	8	4	10
Italy	54	23029	15381	151	3054	531	116	24439	65	328	82	675	47	37752	1599	12327	2094	158	580	543	1454	12400	330	189	15791	45243	117615	2322	415	4719	60477	100339	377	157	63	186
Japan	185	56202	45919	357	11885	2149	370	72691	246	967	215	2007	133	103193	5278	16863	6465	555	2168	1697	3936	35607	1106	478	31064	130218	337218	6024	1322	12710	178987	268677	1525	561	221	568
Jordan	1	68	96	1	74	14	2	274	1	5	1	5	1	157	25	0	26	2	13	6	17	82	6	2	41	408	889	13	4	40	353	900	10	3	1	3
Kazakhstan	0	5	7	0	6	1	0	21	0	0	0	0	0	11	2	0	2	0	1	0	1	6	0	0	3	30	65	1	0	3	25	66	1	0	0	0
Kyrgyz Republic	0	2	2	0	1	0	0	5	0	0	0	0	0	3	0	2	0	0	0	0	0	1	0	0	1	7	14	0	0	1	6	14	0	0	0	0
Latvia	0	36	35	0	15	3	0	73	0	1	0	2	0	72	6	15	7	1	3	2	4	28	1	0	15	117	274	5	1	11	133	227	2	1	0	1
Lesotho	0	1	1	0	1	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	4	9	0	0	0	3	9	0	0	0	0
Lithuania	0	10	14	0	11	2	0	41	0	1	0	1	0	24	4	2	4	0	2	1	3	12	1	0	6	61	131	2	1	6	52	131	1	0	0	0
Macedonia	0	3	5	0	4	1	0	15	0	0	0	0	0	8	1	0	1	0	1	0	1	4	0	0	2	22	46	1	0	2	18	47	1	0	0	0
Maldives	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	2	0	0	0	0
Mauritius	0	5	7	0	6	1	0	23	0	0	0	0	0	12	2	0	2	0	1	1	1	6	1	0	3	33	71	1	0	3	27	72	1	0	0	0
Moldova	0	3	5	0	4	1	0	14	0	0	0	0	0	8	1	1	1	0	1	0	1	4	0	0	2	20	43	1	0	2	17	43	0	0	0	0
Netherlands	60	24605	11652	193	3087	525	130	24952	65	386	101	537	57	30649	1495	17938	2142	129	593	494	1649	13168	353	218	17183	47369	100616	2252	324	4562	46818	97320	373	138	69	203
New Zealand	1	347	156	4	40	6	2	411	1	8	2	8	1	486	20	485	33	2	8	8	32	147	6	4	271	675	1476	40	4	74	618	1424	4	2	1	4
Panama	3	244	306	4	188	35	5	744	4	13	3	14	2	546	65	0	69	6	33	17	43	251	15	5	120	1145	2608	39	11	109	1149	2429	25	7	3	7
Paraguay	0	15	16	0	12	2	0	51	0	1	0	1	0	31	4	14	5	0	2	1	3	14	1	0	7	75	153	3	1	7	60	148	2	0	0	1
Peru	1	67	51	1	34	6	1	149	1	3	1	2	0	105	13	44	13	1	6	3	10	47	3	1	69	233	525	9	2	26	191	598	4	1	1	1
Poland	2	143	161	2	101	19	3	424	2	7	2	8	1	304	35	69	39	3	18	9	26	136	9	3	65	640	1399	23	6	60	604	1284	13	4	2	4
Portugal	9	2218	1735	16	571	104	17	3155	12	45	10	77	6	3792	231	700	285	24	103	72	175	1520	52	21	1079	5588	13126	236	53	509	6776	10695	74	25	11	26
Romania	1	75	69	1	52	10	1	201	1	4	1	3	0	120	19	9	18	2	9	4	13	63	4	1	96	313	730	11	3	36	253	887	7	2	1	2
Russia	2	159	191	3	133	24	4	536	3	10	2	9	1	347	45	73	50	4	24	12	33	164	11	4	75	799	1720	28	7	76	714	1635	17	5	2	5
Rwanda	0	0	1	0	1	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	6	0	0	0	2	6	0	0	0	0
Senegal	0	7	7	0	4	1	0	15	0	0	0	0	0	13	1	1	1	0	1	0	1	6	0	0	3	24	57	1	0	2	26	51	0	0	0	0
Slovak Republic	1	45	56	1	42	8	1	166	1	3	1	3	0	99	14	23	15	1	7	4	10	49	4	1	23	244	518	8	2	23	207	508	5	2	1	2
Slovenia	1	44	49	1	38	7	1	156	1	3	1	2	0	91	12	41	14	1	7	3	10	44	3	1	21	227	464	8	2	22	181	451	5	1	1	2
South Africa	3	1725	455	18	90	11	8	1470	2	28	9	22	5	1779	82	2236	110	3	21	24	137	534	19	20	2221	2637	6344	168	9	385	1814	9034	8	4	3	13
Spain	33	7454	5335	90	1867	327	69	11801	37	198	49	255	29	13086	726	7246	1025	72	349	250	768	4464	193	96	3795	19059	43037	937	160	1835	20785	34849	232	78	39	105
Swaziland	0	7	8	0	6	1	0	26	0	0	0	0	0	15	2	7	2	0	1	1	2	7	1	0	3	37	77	1	0	4	30	74	1	0	0	0
Sweden	17	7776	2668	68	784	127	39	7268	16	123	34	128	19	7978	409	7114	608	28	156	130	540	3760	101	74	6467	13963	27394	681	72	1418	10916	31209	90	32	20	62
Switzerland	81	22019	15009	191	4851	864	166	29472	97	456	108	672	65	36504	2165	13043	2564	194	893	640	1872	12483	473	236	17771	50949	127060	2415	435	5533	58173	122703	613	209	95	252
Tanzania	0	3	4	0	4	1	0	13	0	0	0	0	0	7	1	0	1	0	1	0	1	4	0	0	2	19	41	1	0	2	16	42	0	0	0	0
Thailand	2	108	152	3	124	23	3	467	2	9	2	7	1	250	41	28	44	4	22	10	29	133	10	3	60	682	1446	22	6	66	559	1466	16	4	2	5
Togo	0	2	3	0	2	0	0	8	0	0	0	0	0	5	1	-1	1	0	0	0	0	3	0	0	1	12	27	0	0	1	11	28	0	0	0	0
Tunisia	0	8	11	0	9	2	0	33	0	1	0	1	0	18	3	2	3	0	2	1	2	9	1	0	6	48	104	2	0	5	39	110	1	0	0	0
Turkey	2	99	152	2	125	23	3	458	2	8	2	7	1	240	42	0	43	4	22	10	28	132	10	3	58	671	1438	21	6	65	556	1472	16	4	2	5
Uganda	0	7	6	0	0	0	0	4	0	0	0	0	0	15	0	0	0	0	0	0	0	4	0	0	2	11	35	1	0	1	25	17	0	0	0	0
United Kingdom	299	64714	46079	704	17985	3209	609	101821	354	1683	398	2132	239	107768	7297	47564	8922	663	3298	2186	6594	39027	1733	818	47135	167869	396206	7754	1400	17505	177855	373868	2277	732	353	911
United States	436	128698	56050	1697	19854	3236	994	164719	381	3095	850	2846	472	171781	9116	177132	13472	652	3928	3070	13005	55475	2536	1752	116809	267030	583552	14973	1525	30717	220127	629665	2295	775	492	1530
Uruguay	1	98	126	2	82	15	2	320	2	6	1	6	1	221	28	3	30	3	14	7	19	105	7	2	48	488	1094	16	5	46	471	1035	11	3	1	3
Vanuatu	0	2	3	0	2	0	0	8	0	0	0	0	0	4	1	0	1	0	0	0	0	2	0	0	1	11	24	0	0	1	9	25	0	0	0	0
Venezuela	1	179	97	4	45	7	2	342	1	7	2	6	1	300	14	387	29	1	9	6	26	94	6	3	47	491	867	28	3	43	382	586	5	2	1	3
Yemen Republic of	0	12	19	0	15	3	0	56	0	1	0	1	0	29	5	0	5	0	3	1	3	16	1	0	7	82	176	3	1	8	68	180	2	1	0	1

(continued) Table8: Y-table,1999 (Supply-and-Use Method) (Millions of U.S. dollars)

Lesotho	Lithuania	Macedonia	Maldives	Mauritius	Moldova	Netherlands	New Zealand	Panama	Paraguay	Peru	Poland	Portugal	Romania	Russia	Rwanda	Senegal	Slovak Republic	Slovenia	South Africa	Spain	Swaziland	Sweden	Switzerland	Tanzania	Thailand	Togo	Tunisia	Turkey	Uganda	United Kingdom	United States	Uruguay	Vanuatu	Venezuela	Yemen, Republic of
0	0	0	0	0	0	7	0	0	0	1	1	2	0	0	0	0	0	0	0	5	0	2	10	0	2	0	0	2	0	49	43	0	0	0	0
2	47	7	1	7	11	11621	515	207	29	278	869	1115	138	110	6	22	89	68	1249	4016	10	4521	8514	40	463	8	229	421	17	26372	73098	77	2	95	37
6	54	17	2	18	19	9038	574	324	33	378	794	1588	137	253	13	43	126	93	876	5483	7	4082	7657	77	1019	18	171	1205	43	39374	78872	155	3	357	60
0	0	0	0	0	0	15	1	1	0	1	2	4	0	1	0	0	0	0	1	11	0	4	21	0	3	0	1	4	0	101	89	0	0	0	0
5	31	14	2	13	14	3565	202	209	25	233	465	806	78	205	11	34	76	54	269	2560	5	1190	4326	62	722	15	108	812	35	22024	25589	99	2	81	47
0	0	0	0	0	0	36	2	2	0	3	5	9	1	2	0	0	1	1	2	26	0	9	49	1	8	0	1	9	0	240	213	1	0	0	1
0	0	0	0	0	0	27	1	2	0	2	4	6	1	2	0	0	1	0	2	20	0	9	35	1	6	0	1	6	0	174	186	1	0	1	0
15	171	43	6	45	52	27870	2026	938	102	1112	2446	4579	436	652	35	113	373	281	3120	16295	26	12527	21347	204	2723	46	604	3125	108	109927	254926	428	7	1024	166
0	0	0	0	0	0	13	1	1	0	1	2	3	0	1	0	0	0	0	1	9	0	5	14	0	2	0	0	3	0	74	106	0	0	0	0
0	0	0	0	0	0	51	4	2	0	2	5	11	1	2	0	0	1	1	5	38	0	30	36	0	7	0	1	9	0	244	579	1	0	4	0
0	0	0	0	0	0	44	4	2	0	2	5	6	1	1	0	0	1	1	7	25	0	15	36	0	4	0	2	4	0	167	424	1	0	0	0
0	2	1	0	1	1	227	13	14	2	15	30	52	5	13	1	2	5	3	17	165	0	75	279	4	47	1	7	53	2	1425	1616	6	0	5	3
0	0	0	0	0	0	9	0	1	0	1	1	2	0	1	0	0	0	0	1	6	0	2	12	0	2	0	0	2	0	59	52	0	0	0	0
9	124	27	4	25	36	20347	1422	609	83	774	1787	2629	356	411	23	76	250	196	2777	10207	26	7052	17036	138	1578	30	579	1539	67	72106	166912	242	6	198	120
0	2	1	0	1	1	174	8	11	1	13	25	41	4	12	1	2	4	3	12	127	0	46	241	4	40	1	6	44	2	1178	1042	5	0	2	3
0	111	0	0	0	17	10160	1805	373	53	478	1403	1228	294	39	3	16	172	143	2785	6199	30	3661	4191	38	388	3	617	0	0	22428	150915	96	4	0	53
0	4	1	0	1	1	436	43	20	2	22	46	90	8	14	1	2	8	6	53	314	1	216	330	4	57	1	12	66	2	2007	4859	9	0	22	3
0	0	0	0	0	0	14	1	1	0	1	2	3	0	1	0	0	0	0	1	10	0	4	19	0	3	0	0	4	0	95	94	0	0	0	0
0	1	0	0	0	0	78	4	5	1	5	11	18	2	5	0	1	2	1	6	57	0	24	101	1	17	0	2	19	1	506	524	2	0	1	1
0	1	0	0	0	0	107	9	6	1	7	15	21	3	5	0	1	2	2	13	73	0	31	118	2	19	0	4	19	1	581	890	3	0	1	1
1	6	4	1	4	4	1023	48	55	7	53	124	210	22	56	3	9	20	14	78	672	1	306	1265	17	192	4	30	213	10	6091	6495	26	1	13	13
5	44	13	2	13	15	11298	444	248	30	313	671	1297	129	197	11	34	99	72	951	4314	8	4385	7813	62	742	14	182	804	33	33226	63322	109	2	150	50
0	0	0	0	0	0	45	3	3	0	3	6	10	1	3	0	0	1	1	4	32	0	12	57	1	9	0	2	10	0	280	311	1	0	0	1
0	1	0	0	0	0	59	5	3	0	3	7	12	1	3	0	0	1	1	6	42	0	23	59	1	10	0	2	11	0	315	536	1	0	2	1
2	27	6	1	6	7	5037	334	136	16	165	378	671	71	86	5	15	55	42	545	2348	5	2151	3113	28	360	6	109	387	14	15301	39052	58	1	115	24
33	295	94	12	90	104	40834	2826	1696	210	1948	4226	6932	759	1383	75	237	647	473	4223	23199	52	15292	34294	435	5124	99	1173	5517	233	172917	313065	744	15	733	351
64	590	182	24	180	203	106411	5900	3378	395	4126	8789	15929	1629	2702	145	465	1328	969	11165	56924	95	41295	94726	839	10943	194	2241	11528	454	429644	817930	1532	29	2499	673
0	3	1	0	1	1	524	29	16	2	18	39	71	7	15	1	3	6	4	30	198	0	197	329	5	53	1	10	57	3	1633	2203	7	0	3	4
0	0	0	0	0	0	180	4	2	0	3	7	15	2	1	0	0	1	1	16	60	0	65	146	0	6	0	2	6	0	493	995	1	0	2	0
1	11	4	1	4	4	1342	96	68	8	78	165	267	29	60	3	10	26	19	142	901	2	467	1413	19	218	4	43	238	10	7099	11065	31	1	27	15
19	243	56	7	52	69	47990	3080	1314	132	1606	3619	7194	635	851	45	148	533	405	5148	26012	34	22318	35071	263	3772	60	805	4484	139	170508	423946	614	9	1879	215
79	729	226	30	237	246	116498	7928	4954	438	5013	10544	21454	1783	3346	176	560	1685	1253	11133	73407	93	55104	95333	1007	13698	237	2197	16371	562	514956	1063855	2100	33	5343	789
1	3	1	0	1	1	318	16	20	2	22	44	73	7	21	1	3	7	5	22	228	0	88	426	6	70	1	11	78	4	2091	1960	9	0	4	5
0	0	0	0	0	0	23	1	2	0	2	3	5	1	2	0	0	1	0	2	17	0	6	32	0	5	0	1	6	0	156	139	1	0	0	0
0	0	0	0	0	0	6	0	0	0	0	1	1	0	0	0	0	0	0	1	4	0	2	7	0	1	0	0	1	0	34	42	0	0	0	0
0	1	0	0	0	0	91	6	5	1	5	11	20	2	4	0	1	2	1	8	65	0	36	95	1	16	0	3	18	1	506	779	2	0	3	1
0	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	1	4	0	1	0	0	1	0	21	18	0	0	0	0
0	0	0	0	0	0	47	2	3	0	3	7	11	1	3	0	1	1	1	3	34	0	13	63	1	10	0	2	12	1	308	297	1	0	1	1
0	0	0	0	0	0	16	1	1	0	1	2	4	0	1	0	0	0	0	1	12	0	4	23	0	4	0	1	4	0	112	99	1	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	5	4	0	0	0	0
0	0	0	0	0	0	25	1	2	0	2	4	6	1	2	0	0	1	0	2	18	0	7	35	1	6	0	1	6	0	171	151	1	0	0	0
0	0	0	0	0	0	16	1	1	0	1	2	4	0	1	0	0	0	0	1	11	0	4	21	0	3	0	1	4	0	103	99	0	0	0	0
19	245	55	7	57	71	58426	2958	1270	147	1605	3581	6979	684	842	45	150	520	391	5607	24246	42	24674	37431	270	3506	61	968	3869	137	169054	395788	557	10	1231	227
0	4	1	0	1	1	803	57	20	3	26	61	97	12	10	1	2	8	6	111	389	1	315	592	4	46	1	20	45	2	2521	6997	8	0	15	3
1	8	4	0	3	4	873	48	53	6	59	117	202	20	53	3	9	19	13	62	637	1	286	1090	16	195	4	27	209	9	5557	6127	25	0	13	12
0	1	0	0	0	0	58	4	4	0	4	8	13	1	3	0	1	1	1	5	41	0	16	73	1	12	0	2	16	1	357	410	2	0	1	1
0	2	1	0	1	1	248	11	10	1	12	24	40	4	9	1	2	4	3	23	136	0	77	269	3	33	1	6	36	2	1182	1564	4	0	2	2
1	4	2	0	2	2	490	31	29	4	33	66	110	11	28	2	5	11	8	41	353	1	157	593	9	99	2	16	110	5	3006	3616	14	0	9	7
4	32	11	1	11	12	5015	309	194	21	220	460	904	78	160	9	27	74	54	423	2950	4	2225	4057	48	623	11	101	726	27	21741	39885	92	2	182	38
0	2	1	0	1	1	340	11	14	2	17	33	57	6	15	1	2	5	4	26	187	0	100	399	4	50	1	8	55	3	1738	1851	7	0	3	3
1	6	3	0	2	3	610	36	36	5	42	85	139	14	37	2	6	14	10	49	441	1	182	771	11	129	3	21	142	6	3859	4264	17	0	9	9
0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	1	3	0	1	0	0	1	0	15	13	0	0	0	0
0	0	0	0	0	0	19	1	1	0	1	2	4	0	1	0	0	0	0	2	14	0	7	22	0	4	0	1	4	0	112	147	1	0	1	0
0	2	1	0	1	1	189	11	12	1	13	26	43	5	12	1	2	4	3	15	135	0	53	244	4	40	1	7	44	2	1203	1265	5	0	2	3
0	2	1	0	1	1	176	11	11	1	12	25	39	4	10	1	2	4	3	16	125	0	49	222	3	36	1	6	39	2	1088	1229	5	0	2	3
0	15	1	0	1	3	4909	215	58	8	97	234	393	55	21	1	5	28	21	619	1732	3	1765	3685	9	103	2	82	78	3	12294	39438	20	1	39	9
12	123	34	5	34	40	16694	1326	682	80	797	1750	2971	313	513	28	88	267	198	1993	10625	21	6957	14382	161	2012	37	465	2225	86	73613	155380	305	6	505	132
0	0	0	0	0	0	29	2	2	0	2	4	6	1	2	0	0	1	0	3	21	0	8	36	1	6	0	1	6	0	179	203	1	0	0	0
5	71	13	2	13	19	20102	882	340	43	463	1060	1981	218	208	11	39	145	109	1982	7090	14	7912	12608	70	859	15	324	872	33	50135	121697	138	3	244	62
32	300	91	12	91	102	55313	3113	1722	194	2097	4463	8382	818	1347	72	231	679	498	5722	29846	46	22440	47896	416	5271	97	1093	5981	226	221473	436765	791	14	1526	333
0	0	0	0	0	0	15	1	1	0	1	2	3	0	1	0	0	0	0	1	11	0	4	20	0	3	0	1	4	0	99	88	0	0	0	0
1	5	2	0	2	2	524	27	34	4	38	75	121	13	35	2	6	12	8	38	379	1	139	711	10	118	2	18	130	6	3478	3252	16	0	5	8
0	0	0	0	0	0	10	0	1	0	1	1	2	0	1	0	0	0	0	1	7	0	3	13	0	2	0	0	2	0	64	57	0	0	0	0
0	0	0	0	0	0	40	2	2	0	3	5	9	1	2	0	0	1	1	3	27	0	11	52	1	8	0	1	9	0	250	243	1	0	0	1
1	5	2	0	2	2	514	25	34	4	37	74	121	13	35	2	6	12	8	35	374	1	134	710	11	119	3	18	131	6	3478	3077	16	0	5	8
0	0	0	0	0	0	8	1	1	0	0	0	2	0	0	0	0	0	0	1	6	0	7	2	0	1	0	0	1	0	26	119	0	0	1	0
118	1053	337	45	331	371	168027	10267	6108	718	7282	15502	27409	2916	4978	267	851	2373	1730	17760	96257	170	65050	153691	1643	18881	357	3960	21011	939	728582	1344631	2775	53	4153	1233
119	1722	340	45	332	476	336104	20782	9291	1094	10934	25216	39875	5108	5258	288	981	3476	2605	43810	156943	351	122713	269959	1779	21026	392	7958	20850	846	1102802	2655443	3323	74	4402	1560
1	3	2	0	2	2	371	20	23	3	25	51	86	9	23	1	4	8	6	27	271	1	116	473	7	80	2	12	90	4	2392	2540	11	0	7	5
0	0	0	0	0	0	9	0	1	0	1	1	2	0	1	0	0	0	0	1	6	0	2	12	0	2	0	0	2	0	58	53	0	0	0	0
0	4	1	0	1	1	378	44	18	2	21	50	87	9	12	1	2	7	6	54	254	1	135	310	4	47	1	17	46	2	1620	4146	7	0	6	4
0	1	0	0	0	0	63	3	4	1	5	9	15	2	4	0	1	1	1	4	46	0	16	87	1	15	0	2	16	1	425	378	2	0	1	1

Table9: Ordering of countries in triangulation (Supply-and-Use Method)

1996		1999	
ranking	Country	ranking	Country
1	Cote d ivoire	1	Tanzania
2	Chile	2	Bangladesh
3	Tanzania	3	Tunisia
4	Bangladesh	4	Senegal
5	Thailand	5	Kyrgyz Republic
6	Senegal	6	Maldives
7	Kyrgyz Republic	7	Cote d ivoire
8	Tunisia	8	Costa Rica
9	Lesotho	9	Lesotho
10	Maldives	10	Peru
11	Peru	11	Turkey
12	Turkey	12	El Salvador
13	Colombia	13	Chile
14	Costa Rica	14	Benin
15	Iceland	15	Thailand
16	El Salvador	16	Poland
17	Macedonia	17	Iceland
18	Benin	18	Moldova
19	Poland	19	Cambodia
20	Cambodia	20	Belarus
21	Moldova	21	Colombia
22	New Zealand	22	Macedonia
23	Lithuania	23	New Zealand
24	Mauritius	24	Lithuania
25	Estonia	25	Estonia
26	Belarus	26	Paraguay
27	Australia	27	Slovak Republic
28	Israel	28	Mauritius
29	Paraguay	29	Israel
30	Botswana	30	Latvia
31	Russia	31	Botswana
32	South Africa	32	Romania
33	Latvia	33	Slovenia
34	Jordan	34	Russia
35	Czech Republic	35	South Africa
36	Sweden	36	Australia
37	Uruguay	37	Uruguay
38	Venezuela	38	Jordan
39	Romania	39	Finland
40	Slovak Republic	40	Czech Republic
41	Slovenia	41	Panama
42	Spain	42	Venezuela
43	Swaziland	43	Swaziland
44	Panama	44	Canada
45	Finland	45	Portugal
46	Portugal	46	Denmark
47	Canada	47	Spain
48	Denmark	48	Sweden
49	Austria	49	Austria
50	United States	50	United States
51	Italy	51	United Kingdom
52	United Kingdom	52	Bahrain
53	Netherlands	53	France
54	Bahrain	54	Netherlands
55	Germany	55	Germany
56	Belgium	56	Belgium
57	France	57	Italy
58	Japan	58	Japan
59	Switzerland	59	Switzerland

Table10: Ordering of countries in triangulation (Gravity Method)

1996		1999	
ranking	Country	ranking	Country
1	Turkey	1	Finland
2	Poland	2	Turkey
3	Peru	3	Peru
4	Colombia	4	Tunisia
5	Australia	5	Colombia
6	Tunisia	6	Chile
7	Finland	7	Australia
8	Thailand	8	Poland
9	New Zealand	9	Tanzania
10	Chile	10	New Zealand
11	Lithuania	11	Lithuania
12	Tanzania	12	Estonia
13	Moldova	13	Belarus
14	Estonia	14	Moldova
15	South Africa	15	Bangladesh
16	Bangladesh	16	Romania
17	Maldives	17	Latvia
18	Macedonia	18	Israel
19	Iceland	19	El Salvador
20	Israel	20	Portugal
21	Canada	21	Macedonia
22	Cote d ivoire	22	Maldives
23	Belarus	23	Iceland
24	El Salvador	24	Thailand
25	Cambodia	25	Cote d ivoire
26	Costa Rica	26	Canada
27	Uruguay	27	Jordan
28	Romania	28	South Africa
29	Senegal	29	Cambodia
30	Latvia	30	Costa Rica
31	Kyrgyz Republic	31	Mauritius
32	Mauritius	32	Benin
33	Benin	33	Kyrgyz Republic
34	Spain	34	Senegal
35	Jordan	35	Uruguay
36	Sweden	36	Slovak Republic
37	Lesotho	37	Slovenia
38	Paraguay	38	Paraguay
39	Slovak Republic	39	Panama
40	Swaziland	40	Swaziland
41	Venezuela	41	Lesotho
42	Panama	42	Spain
43	Slovenia	43	Venezuela
44	Portugal	44	Bahrain
45	Denmark	45	Sweden
46	Bahrain	46	Austria
47	Austria	47	Czech Republic
48	Czech Republic	48	Denmark
49	United States	49	United States
50	Italy	50	United Kingdom
51	United Kingdom	51	Italy
52	Russia	52	Russia
53	Netherlands	53	Netherlands
54	Japan	54	Japan
55	Belgium	55	France
56	Germany	56	Switzerland
57	Switzerland	57	Belgium
58	Botswana	58	Germany
59	France	59	Botswana

Table11: Index of the power of dispersion, (Supply-and-Use Method)

1996		1999	
Country	Index of the power of dispersion	Country	Index of the power of dispersion
1 Tunisia	1.0476	1 Tunisia	1.0374
2 Cambodia	1.0468	2 Cambodia	1.0373
3 Estonia	1.0445	3 Estonia	1.0370
4 Latvia	1.0414	4 South Africa	1.0367
5 Czech Republic	1.0405	5 Czech Republic	1.0350
6 Paraguay	1.0399	6 Finland	1.0329
7 South Africa	1.0390	7 Romania	1.0314
8 Peru	1.0383	8 Belarus	1.0311
9 Sweden	1.0381	9 Latvia	1.0311
10 Kyrgyz Republic	1.0367	10 Netherlands	1.0305
11 Colombia	1.0363	11 Paraguay	1.0298
12 Chile	1.0360	12 New Zealand	1.0291
13 New Zealand	1.0357	13 El Salvador	1.0277
14 Lithuania	1.0356	14 Poland	1.0276
15 Slovenia	1.0349	15 Lithuania	1.0276
16 Spain	1.0345	16 Kyrgyz Republic	1.0273
17 Portugal	1.0339	17 United States	1.0264
18 Romania	1.0336	18 Israel	1.0258
19 Poland	1.0335	19 Peru	1.0254
20 Belarus	1.0330	20 Australia	1.0249
21 United Kingdom	1.0328	21 Colombia	1.0249
22 Tanzania	1.0322	22 Slovenia	1.0244
23 Moldova	1.0322	23 Slovak Republic	1.0244
24 El Salvador	1.0320	24 Sweden	1.0240
25 Senegal	1.0312	25 Moldova	1.0238
26 Bangladesh	1.0311	26 France	1.0238
27 Cote d ivoire	1.0311	27 United Kingdom	1.0236
28 Jordan	1.0311	28 Spain	1.0234
29 Lesotho	1.0311	29 Panama	1.0229
30 Macedonia	1.0311	30 Cote d ivoire	1.0227
31 Maldives	1.0311	31 Tanzania	1.0223
32 Australia	1.0306	32 Senegal	1.0219
33 Benin	1.0306	33 Portugal	1.0209
34 Panama	1.0304	34 Chile	1.0193
35 United States	1.0304	35 Benin	1.0192
36 Thailand	1.0292	36 Bangladesh	1.0189
37 Israel	1.0273	37 Jordan	1.0189
38 Mauritius	1.0267	38 Macedonia	1.0189
39 Turkey	1.0249	39 Maldives	1.0189
40 Uruguay	1.0241	40 Uruguay	1.0183
41 Finland	1.0237	41 Thailand	1.0182
42 Costa Rica	1.0227	42 Denmark	1.0173
43 Canada	1.0217	43 Mauritius	1.0166
44 Italy	1.0202	44 Canada	1.0161
45 Austria	1.0200	45 Turkey	1.0136
46 Denmark	1.0191	46 Costa Rica	1.0109
47 Swaziland	1.0176	47 Iceland	1.0088
48 Iceland	1.0147	48 Austria	1.0086
49 Venezuela	1.0088	49 Lesotho	0.9858
50 Netherlands	0.9888	50 Germany	0.9812
51 Slovak Republic	0.9861	51 Bahrain	0.9748
52 Bahrain	0.9744	52 Swaziland	0.9729
53 Germany	0.9735	53 Italy	0.9619
54 Belgium	0.9660	54 Belgium	0.9361
55 France	0.9154	55 Venezuela	0.9304
56 Russia	0.8077	56 Russia	0.8737
57 Japan	0.7153	57 Japan	0.7582
58 Switzerland	0.6947	58 Switzerland	0.7534
59 Botswana	0.3989	59 Botswana	0.3932

Table12: Index of the power of dispersion, (Gravity Method)

1996		1999	
Country	Index of the power of dispersion	Country	Index of the power of dispersion
1 Lesotho	1.0844	1 Benin	1.0765
2 Kyrgyz Republic	1.0806	2 Cote d ivoire	1.0647
3 Moldova	1.0699	3 Kyrgyz Republic	1.0552
4 Iceland	1.0673	4 Moldova	1.0424
5 Uruguay	1.0657	5 Iceland	1.0422
6 Costa Rica	1.0650	6 Uruguay	1.0405
7 El Salvador	1.0631	7 Paraguay	1.0391
8 Paraguay	1.0631	8 Costa Rica	1.0365
9 Colombia	1.0622	9 Senegal	1.0363
10 Senegal	1.0605	10 Colombia	1.0357
11 Panama	1.0598	11 Lithuania	1.0351
12 Lithuania	1.0576	12 El Salvador	1.0346
13 Canada	1.0564	13 Panama	1.0340
14 Romania	1.0553	14 Canada	1.0324
15 Swaziland	1.0544	15 Romania	1.0321
16 Belarus	1.0522	16 Belarus	1.0315
17 Mauritius	1.0521	17 Netherlands	1.0303
18 Macedonia	1.0501	18 France	1.0294
19 Venezuela	1.0432	19 Mauritius	1.0286
20 Portugal	1.0395	20 Portugal	1.0261
21 Cote d ivoire	1.0390	21 Macedonia	1.0253
22 Denmark	1.0372	22 Denmark	1.0252
23 Estonia	1.0363	23 Estonia	1.0247
24 Benin	1.0363	24 Spain	1.0238
25 Spain	1.0359	25 Peru	1.0236
26 Peru	1.0324	26 Sweden	1.0218
27 Poland	1.0320	27 Chile	1.0217
28 Sweden	1.0314	28 Lesotho	1.0211
29 Latvia	1.0313	29 Finland	1.0207
30 Czech Republic	1.0311	30 Poland	1.0206
31 Finland	1.0302	31 United Kingdom	1.0200
32 Austria	1.0289	32 Latvia	1.0199
33 Chile	1.0282	33 Czech Republic	1.0188
34 Turkey	1.0239	34 Austria	1.0171
35 Jordan	1.0236	35 Jordan	1.0163
36 Slovenia	1.0231	36 Turkey	1.0152
37 Tunisia	1.0228	37 Slovenia	1.0140
38 United Kingdom	1.0224	38 Israel	1.0130
39 Italy	1.0206	39 Tunisia	1.0076
40 Israel	1.0191	40 Tanzania	1.0065
41 Tanzania	1.0041	41 South Africa	1.0029
42 South Africa	1.0036	42 Slovak Republic	0.9978
43 Netherlands	0.9943	43 New Zealand	0.9942
44 New Zealand	0.9822	44 Swaziland	0.9889
45 United States	0.9809	45 Australia	0.9836
46 Belgium	0.9768	46 United States	0.9819
47 Germany	0.9706	47 Bangladesh	0.9783
48 Slovak Republic	0.9688	48 Germany	0.9769
49 Australia	0.9661	49 Thailand	0.9732
50 Bangladesh	0.9598	50 Italy	0.9685
51 Thailand	0.9516	51 Cambodia	0.9676
52 Bahrain	0.9442	52 Venezuela	0.9612
53 Cambodia	0.9423	53 Bahrain	0.9582
54 France	0.9278	54 Belgium	0.9465
55 Maldives	0.9177	55 Maldives	0.9352
56 Russia	0.7999	56 Russia	0.8706
57 Japan	0.7330	57 Japan	0.7649
58 Switzerland	0.7013	58 Switzerland	0.7600
59 Botswana	0.4020	59 Botswana	0.3950

Table13: Index of the sensitivity of dispersion (Supply-and-Use Method)

1996		1999	
Country	Index of the power of dispersion	Country	Index of the power of dispersion
1 United States	13.0890	1 United States	19.1644
2 United Kingdom	9.2332	2 United Kingdom	11.3369
3 Japan	8.7329	3 Japan	8.7188
4 Germany	5.4333	4 Germany	6.8178
5 France	4.4731	5 Switzerland	3.6230
6 Switzerland	3.0438	6 Italy	3.2232
7 Italy	2.3440	7 Netherlands	3.0842
8 Netherlands	2.1253	8 France	2.7268
9 Belgium	1.9744	9 Belgium	1.9952
10 Canada	1.1030	10 Spain	1.2776
11 Spain	0.8378	11 Canada	1.2716
12 Sweden	0.7583	12 Sweden	0.9671
13 Austria	0.5563	13 Austria	0.7059
14 Denmark	0.5055	14 Denmark	0.5957
15 Australia	0.4870	15 Australia	0.5702
16 Bahrain	0.3263	16 Portugal	0.4043
17 Portugal	0.3118	17 Finland	0.3433
18 Finland	0.2671	18 Bahrain	0.3401
19 Panama	0.1697	19 South Africa	0.2838
20 South Africa	0.1643	20 Israel	0.1587
21 Israel	0.1626	21 Czech Republic	0.1319
22 Czech Republic	0.1496	22 Panama	0.1275
23 New Zealand	0.1406	23 Russia	0.1056
24 Russia	0.1324	24 New Zealand	0.1049
25 Poland	0.1241	25 Thailand	0.0984
26 Turkey	0.1217	26 Turkey	0.0978
27 Romania	0.1127	27 Poland	0.0963
28 Thailand	0.1124	28 Colombia	0.0938
29 Colombia	0.1121	29 Uruguay	0.0872
30 Venezuela	0.1101	30 Venezuela	0.0862
31 Slovak Republic	0.1096	31 Jordan	0.0822
32 Uruguay	0.1088	32 Romania	0.0788
33 Jordan	0.1080	33 Peru	0.0732
34 Peru	0.1053	34 Slovak Republic	0.0722
35 Slovenia	0.1039	35 Chile	0.0711
36 Latvia	0.0933	36 Slovenia	0.0710
37 Paraguay	0.0928	37 Iceland	0.0654
38 Tunisia	0.0917	38 Latvia	0.0648
39 Belarus	0.0909	39 Cote d ivoire	0.0637
40 Lithuania	0.0908	40 Estonia	0.0622
41 Bangladesh	0.0905	41 Paraguay	0.0620
42 Botswana	0.0904	42 Lithuania	0.0612
43 Iceland	0.0904	43 El Salvador	0.0609
44 Estonia	0.0902	44 Tunisia	0.0605
45 El Salvador	0.0901	45 Botswana	0.0604
46 Swaziland	0.0900	46 Bangladesh	0.0603
47 Chile	0.0899	47 Swaziland	0.0597
48 Costa Rica	0.0893	48 Belarus	0.0596
49 Benin	0.0891	49 Mauritius	0.0595
50 Senegal	0.0891	50 Senegal	0.0590
51 Mauritius	0.0891	51 Macedonia	0.0588
52 Tanzania	0.0889	52 Moldova	0.0587
53 Moldova	0.0889	53 Tanzania	0.0586
54 Cote d ivoire	0.0888	54 Costa Rica	0.0586
55 Macedonia	0.0887	55 Benin	0.0585
56 Cambodia	0.0886	56 Cambodia	0.0582
57 Kyrgyz Republic	0.0881	57 Kyrgyz Republic	0.0579
58 Lesotho	0.0881	58 Lesotho	0.0577
59 Maldives	0.0880	59 Maldives	0.0575

Table14: Index of the sensitivity of dispersion (Gravity Method)

1996		1999	
Country	Index of the power of dispersion	Country	Index of the power of dispersion
1 United States	13.7364	1 United States	20.2471
2 United Kingdom	8.6446	2 United Kingdom	10.7562
3 Japan	7.5228	3 Japan	7.7536
4 Germany	5.3771	4 Germany	6.7627
5 France	4.6494	5 Switzerland	3.5367
6 Switzerland	2.9565	6 Netherlands	3.0932
7 Italy	2.3033	7 Italy	3.0127
8 Netherlands	2.2284	8 France	2.8560
9 Belgium	1.8951	9 Belgium	1.9369
10 Canada	1.1054	10 Spain	1.2703
11 Spain	0.9575	11 Canada	1.2599
12 Sweden	0.8423	12 Sweden	0.9964
13 Austria	0.6478	13 Austria	0.7318
14 Australia	0.5451	14 Australia	0.6830
15 Denmark	0.5283	15 Denmark	0.6418
16 South Africa	0.3931	16 South Africa	0.4655
17 Portugal	0.3352	17 Portugal	0.3880
18 Finland	0.2857	18 Finland	0.3600
19 Bahrain	0.2841	19 Bahrain	0.3035
20 Thailand	0.2233	20 Israel	0.2216
21 Israel	0.1951	21 Thailand	0.1951
22 Czech Republic	0.1827	22 Poland	0.1718
23 Russia	0.1759	23 Turkey	0.1669
24 Poland	0.1751	24 Czech Republic	0.1667
25 Turkey	0.1730	25 Russia	0.1389
26 Venezuela	0.1565	26 Venezuela	0.1344
27 Panama	0.1561	27 Panama	0.1278
28 New Zealand	0.1472	28 Chile	0.1243
29 Chile	0.1347	29 New Zealand	0.1193
30 Colombia	0.1343	30 Colombia	0.1171
31 Peru	0.1290	31 Cote d ivoire	0.1115
32 Slovak Republic	0.1227	32 Peru	0.1066
33 Romania	0.1140	33 Uruguay	0.1033
34 Uruguay	0.1121	34 Romania	0.0881
35 Jordan	0.1103	35 Slovak Republic	0.0877
36 Slovenia	0.1097	36 Slovenia	0.0847
37 Botswana	0.1081	37 Jordan	0.0831
38 Cote d ivoire	0.0992	38 Botswana	0.0825
39 Tunisia	0.0963	39 Benin	0.0749
40 Paraguay	0.0941	40 El Salvador	0.0714
41 Bangladesh	0.0941	41 Tunisia	0.0714
42 Latvia	0.0938	42 Paraguay	0.0712
43 Swaziland	0.0929	43 Iceland	0.0703
44 Lithuania	0.0919	44 Latvia	0.0702
45 El Salvador	0.0917	45 Bangladesh	0.0683
46 Mauritius	0.0910	46 Lithuania	0.0682
47 Costa Rica	0.0908	47 Estonia	0.0675
48 Belarus	0.0908	48 Costa Rica	0.0666
49 Estonia	0.0907	49 Swaziland	0.0663
50 Iceland	0.0905	50 Mauritius	0.0659
51 Benin	0.0903	51 Tanzania	0.0650
52 Lesotho	0.0902	52 Cambodia	0.0646
53 Tanzania	0.0891	53 Belarus	0.0644
54 Senegal	0.0889	54 Macedonia	0.0643
55 Cambodia	0.0887	55 Senegal	0.0643
56 Moldova	0.0887	56 Lesotho	0.0641
57 Macedonia	0.0884	57 Moldova	0.0634
58 Kyrgyz Republic	0.0874	58 Kyrgyz Republic	0.0629
59 Maldives	0.0871	59 Maldives	0.0622

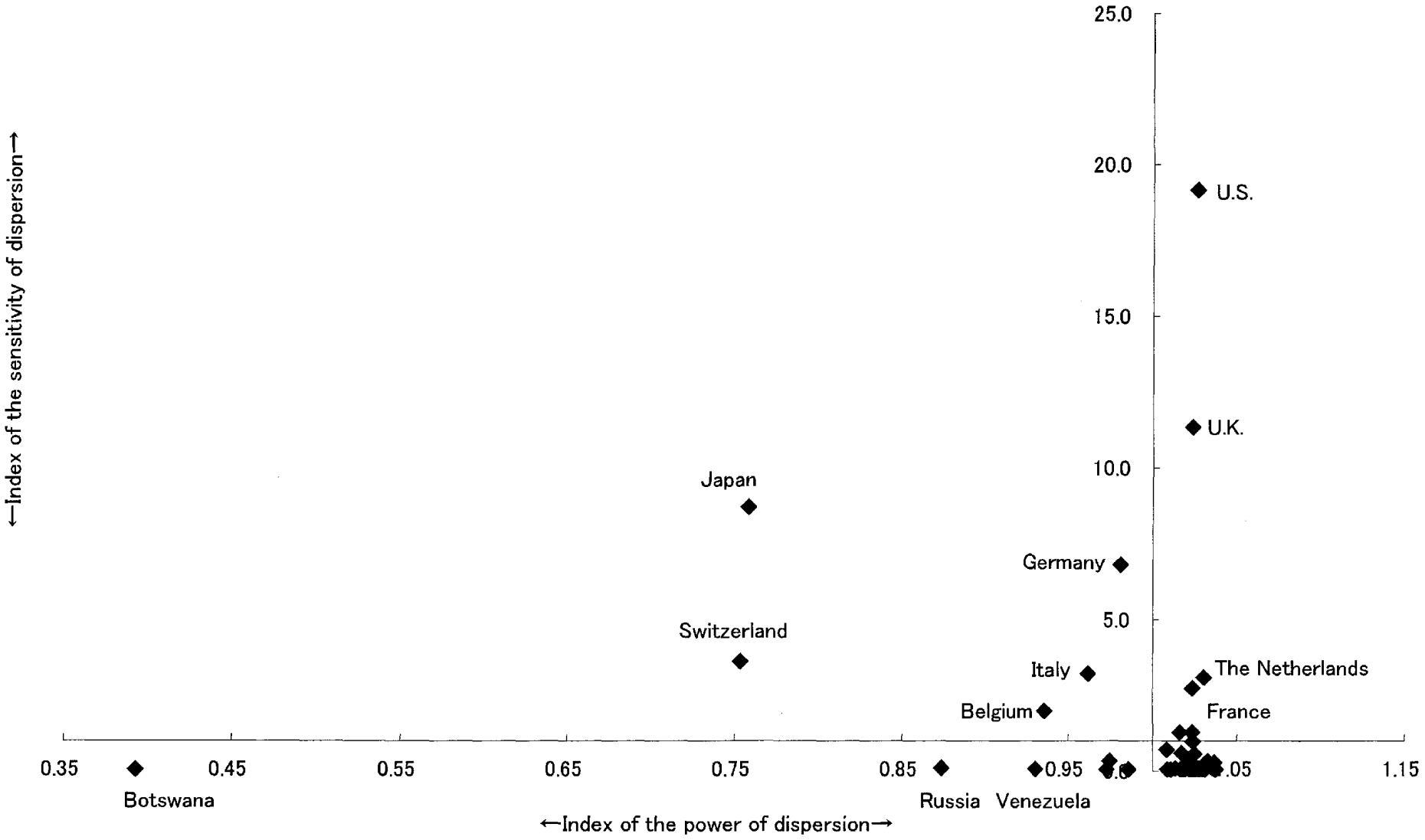

Figure 6: Index of the power of dispersion and Index of the sensitivity of dispersion

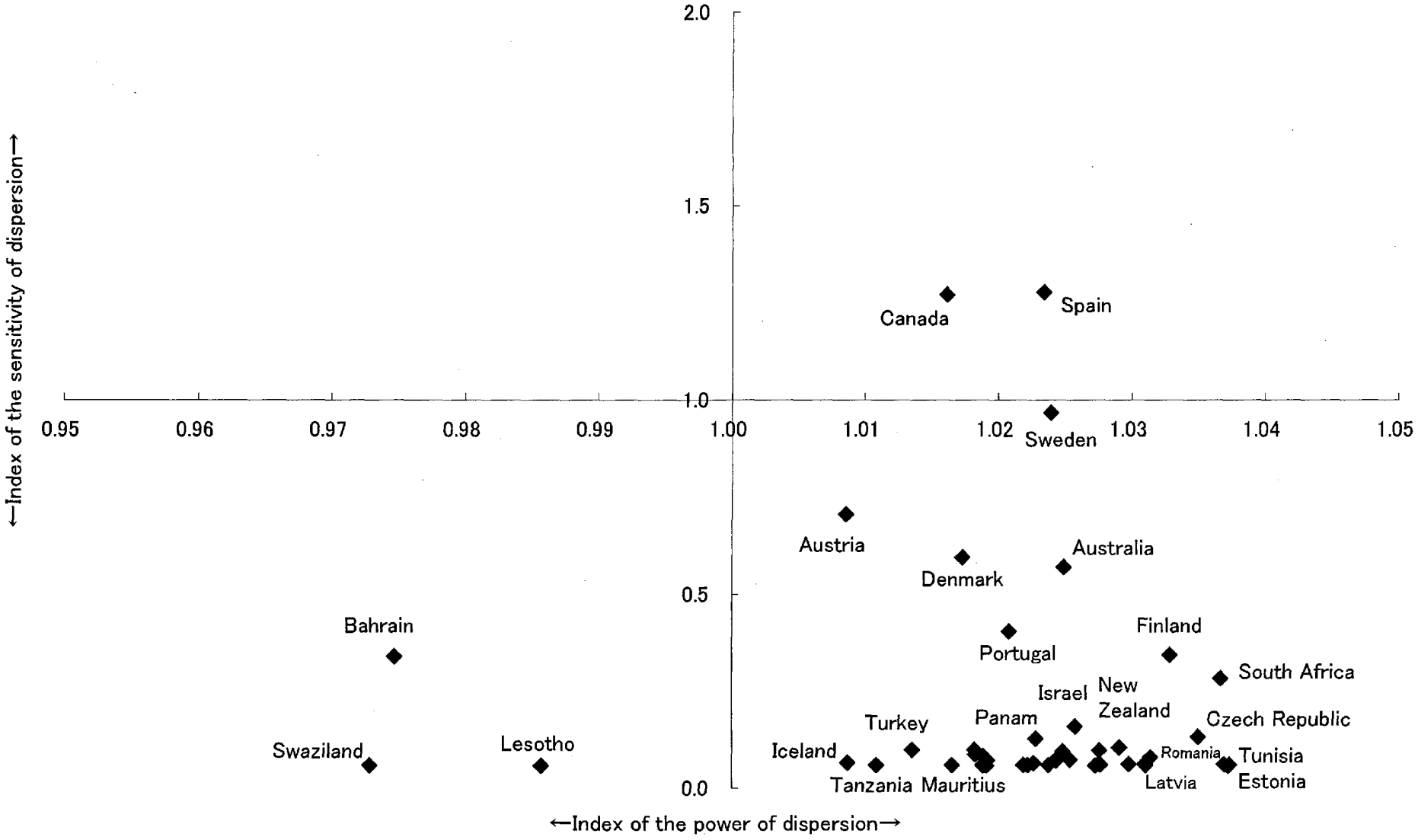

Figure 7: Index of the power of dispersion and Index of the sensitivity of dispersion (partially magnified)