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Dynamic Development of Trade in Services

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1. Introduction

Since the middle of 1980s, trade in services that include various types such as travel, transportation services, telecommunication services, information and computer services have rapidly emerged. Entering into the 1990s, development of IT (Information Technologies) accelerated the growth of trade in services. Under the economic circumstances, WTO (World Trade Organization) started negotiations on new round of trade liberalization contained the service

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sector. Today, a decade has passed since the establishment of WTO. The objective of this paper is to describe the contemporary trade in services, to examine the comparative advantage with respect to trade in services, and to indicate the dynamics of the contemporary trade in services. In order to achieve the objective, the author analyzes comparative advantage and mobility concerning the trade in services, respectively. Since it is believed that if WTO trade liberalization policies affected effectively, market of international services transactions would be more active. Analytical consequences suggest a few remarkable features of trade in services.

The paper is constituted as follows. Section 2 presents the outlook of contemporary trade in services. The author picks up a few points about it. In order to prepare for following analyses, we discuss validity of the comparative advantage in section 3. Because it is understood as source of international competitiveness, a series of discussion is useful for considering the relation between comparative advantage and international competitiveness. As measurement of comparative advantage, furthermore, following analyses adopt the "Revealed Comparative Advantage (RCA) Index". The stronger one country has competitiveness, the higher value of index of RCA becomes. In section 4, we separate out the features of trade in services through analyzing the RCA concerning it. Analyses are consisted two stages: first stage, based on the RCA tables showed in section 3, we examine the RCA distribution and the time series changes; second stage (section 5), transition probability matrices are made up from RCA tables. We observe the fluctuation of an order of RCA about several years and the distribution of the state transitions. Results of a series of examinations would suggest that international trade in services has dynamically developed in observation periods. Finally, the author notes that current trade in services has active mobility, and tries to contribute to some policy implications (Section 6).

2. Growth of Trade in Services

Trade in services, today, is one of the hot issues on international trade and the world economy. The new round of trade liberalization negotiation in WTO mainly discusses on trade in services. Negotiation of trade liberalization in services had started from GATT Uruguay Round (1986-94). The negotiation had mainly discussed about so called "new trade in services", such as telecommunication service, financial service, professional services including computer, accounting, and law service. Following new round negotiation of trade liberalization have started

on WTO since 1995.

Total value of international transaction in services also has rapidly increased since the middle of 1980s. In 1980, the world export of trade in services amounted for 364.3 billion dollars, and recent year, 2003, that was 1,858.8 billion dollars[1]. During 22 years, the value had swelled 5.1-fold. Comparison to trade in goods, moreover, the volume gap between goods and services had shrunk from 5.5 to 4.0 times in this period. In 2003, 5 surplus countries of balance of trade in services were the United States (U.S.), the United Kingdom (U.K.), France, Greece, and Turkey, and 5 deficit countries were Germany, Japan, Ireland, Russia, and Mainland China (Table 1). It will be found interesting fact to compare the surpluses to the deficits. The fact is that while countries accounted for surplus in services such as the U.S. or the U.K. have deficit in goods, countries amounted for deficit in services such as Japan or Germany have surplus in goods on the contrary. That is, we can observe twist of trade balance between goods and services. This fact also shows room for reconsidering about the theory of development of balance of payments[2].

To observe worldwide trend of trade in services, the author employs *Balance of Payments Statistics*, which is developed by standard based on *Balance of Payments Manual*[3] published by IMF (International Monetary Fund). Because bureau of statistics in every country develop statistics according to the standard, the statistics is useful for international comparison. According to the manual, classification of trade in services breaks down three accounts: "Transportation", "Travel", and "Other services" including "Communication services", "Construction services", "Insurance services", "Financial services", "Computer and information services", "Royalties and license fees", "Other business services", "Personal, cultural, and recreational services", and "Government services n.i.e". Especially, "Other services" that contain new trade such as "Communication services", "Computer and information services", and "Royalties and license fees" have rapidly increased throughout the last decade. "New", in this context, has dual meanings, which are both as policy objects and as raising sectors.

The United States is the largest surplus country of trade in services, as already indicated. In order to observe in detail, in following discussions on U.S. trade in services we employ new

[1] IMF, *Balance of Payments Statistics 2005*, CD-ROM, IMF Publication Services.
[2] Kidleberger, C.P. [1963]; Crowther, G. [1957]; Onitsuka, Y. [1974]. Explicit instruction of trade in services for this theory is remaining problem.
[3] IMF [1994]; *cf.* United Nations, *et al.* [2002].

statistics[4] that is published by U.S. Department of Commerce and is for U.S. trade in private services. Although classification system of the statistics differs from *Balance of Payments Statistics*, it informs us detailed contents on U.S. international transactions of services.

According to the statistics, U.S. trade in private services is broken down in five components. Major divisions are "Travel", "Passenger Fares", "Other Transportation", "Royalties and License Fees", and "Other Private Services". According to definition of the statistics[5], "Travel" covers purchases of goods and services by U.S. persons traveling abroad and by foreign travelers in the United States for business or personal reasons. "Passenger fares" cover the fares received by U.S. air carriers from foreign residents for travel between the United States and foreign countries and between two foreign points, and the fares received by U.S. vessel operators for travel on cruise vessels. The fares paid by U.S. residents to foreign air carriers for travel between the United States and foreign countries and to foreign vessel operators for travel on cruise vessels. "Other transportation" covers international transactions arising from the transportation of goods by ocean, air, land (truck and rail), pipeline, and inland waterway carriers to and from the United States and between two foreign points. "Royalties and license fees" covers transactions with nonresidents that involve patented and unpatented techniques, processes, formulas, and other intangible assets and proprietary rights used in the production of goods. Transactions including, for example, are such as trademarks, copyrights, franchises, broadcast rights, and other intangible rights, so called "Intellectual Property Rights"; and the rights to distribute, use, and reproduce general-use computer software. "Other private services" consists of education, financial services, insurance, telecommunications, business, professional, and technical services, and other unaffiliated services.

U.S. trade in services has increased from the middle of 1980s. In 1986, exports, imports, and the balance of trade in services are $77,545, $64,731 and $12,814 millions[6] respectively. By 2003, these values have increased to $294,080, $228,216 and $65,864 millions[7] respectively. In recent years, emerging items of the components are both "Other private services (OPS)" and "Royalties and license fees". These may be included in new trade in services. In the U.S. some studies

[4] U.S. Department of Commerce [2003].
[5] U.S. Department of Commerce [2004].
[6] *ibid.*
[7] *ibid.*

focuses on the relationship between "Other Private Services" and New Economy. Mann [2004], for instance, pointes out that: "it is the best match for the concept of New Economy services…the category is increasingly important in US trade[8]". As a matter of fact, in 2003 OPS makes up 45.5% and 37.6% of total exports and imports of private services respectively, and the balance on OPS accounts for 47,989 millions of dollars surplus in that year[9]. In U.S. trade in services, OPS occupies an important position. "Royalties and license fees" is also powerful trailer for it. This account makes up 16.4% and 8.8% of total exports and imports of private services respectively, and the balance on "Royalties and license fees" accounts for 28,178 millions of dollars surplus. It will be found that the sum of both, so called new trade in services, constitutes the majority of the surplus.

3. Comparative Advantage and Trade in Services

We examine validity to apply the law of comparative advantage for trade in services. Existing literatures that dealt with issue between comparative advantage and trade in services acknowledge the validity. Hindley=Smith [1984], for example, concluded that: "None of the potential difficulties in applying the normative theory of comparative cost to trade and investment in service industries appear to yield any *a priori* reason to suppose that the theory does not apply". In Japan, Sazanami=Urata [1990] that is one of the pioneer works about trade in services indicated significance of comparative advantage about trade in services by using econometric methods.

One of measurements is an index of "Revealed Comparative Advantage (RCA)", or "Balassa index". Although Liesner [1958] was first to develop the index revealed comparative advantage, since Balassa [1965, 1986] refined and popularized it, the index is called "Balassa index" named after Balassa. The index is defined as follows:

$$RCA_{ij} \equiv \frac{X_{ij} \Big/ \sum_{j} X_{ij}}{\sum_{i} X_{ij} \Big/ \sum_{i} \sum_{j} X_{ij}}, \qquad (1)$$

where X_{ij} presents export value of sector j in country i. This formula that presents the ratio of domestic specialization (numerator) against that of world specialization (denominator)

[8] Mann [2004], P.265.
[9] U.S. Department of Commerce [2004].

indicates degree of specialization. According to the definitional equation, what one sector has RCA $>$ 1 identifies that it has comparative advantage. On the contrary, RCA $<$ 1 means comparative disadvantage. If RCA is equal to one, ratio of the sector in the country is equal to that of the sector in the world.

4. Preliminary RCA Analysis

According to the preceding section, the law of comparative advantage can be applied to trade in services. In this section, we analyze changes of RCA in several countries picked up. The countries are Germany, Japan, the United Kingdom, and the United States. Germany and Japan are representatives of deficit of trade in services and surplus of trade in goods. The U.S. and the U.K. are those of surplus of trade in services and deficit of trade in goods.

A set of RCA data is calculated by *Balance of Payments Statistics*, which is mentioned in the section 2. Two items which are "Government services n.i.e" and "Insurance services" of the statistics related to trade in services are counted out. Because the observer is interested in transactions of international private services, "Government services n.i.e" including transactions related to military, ambassador, or the like are excluded. Because "Insurance services" statistics includes not only sales commissions but also premium and loss, export of it may be counted negative value. Insurance services, additionally, seem to be capital flow rather than service transaction. In computing RCA, what includes them disturbs all RCA value. The calculation, moreover, includes goods account as benchmark. Table 2 shows detail of material dataset of RCA calculation. We have 15 (years) $\times$ 35 (countries) $\times$ 10 (items) = 5,250 non-negative observations.

Firstly, we observe RCA changes in selected countries. Figure 1 shows RCA changes during the observation periods. The U.S. has higher RCA in "Royalties and license fees" during the period. Nevertheless, "Computer and information services" have decreasingly lost their comparative advantage, of which revealed value declines from 3.96 in 1989 to 0.75 in 2003. Expansion of offshore outsourcing, so called "Offshoring", may be one of the reasons why the RCA has declined. It can be said that most of offshoring are associated with IT-related services. The U.S. seems to have a great extent of advantage of IT sectors at the beginning of 1990s. As Information Technologies spreads more globally, computer or information services became to

product around the world. As a rule, labor-intensive production process moves to developing countries. In this instance, we can consider that labor-intensive IT works move from the U.S. to other developing countries. Consequently, it is believed that in the U.S. the ratio of "Computer and information services" to total export value declined, and the ratio of that to total amount of the world export increased, thus RCA for "Computer and information services" decreased. Moreover, if labor-intensive works were to transfer developing countries, because remainders of IT works seem to be technology-intensive, it would be believed that the U.S. enhanced advantage of export of IT sectors.

Throughout observation period, the U.K. has gradually increased RCA in "Financial services", and has lost comparative advantage in "Computer and information services", as well as the U.S. At the beginning of period, the U.K. accounted for relatively high RCA (3.77) in "Financial services". The U.K. where is well-known financial center, or "the City" at London, has advantage in the financial sector. The U.K. accounted for 5.76 at the end of period. During the period, it has increased by 52.8%. Both Japan and Germany wholly scored lower value of RCA than the U.S. and U.K. In the first half of 1990s, Japan only has "Construction services" except for "Goods". When it comes to the second half of 1990s, the value of "Royalties and license fees" has rapidly increased by 103.3 % from 0.89 in 1993 to 1.81 in 2003. Two third of the items, nevertheless, account for less than 1 in 2003. Germany, in general, has lower value through periods. Both "Construction services" and "Computer and information services" barely accounted for more than 1. Both countries have commonly accounted for more than 1 in "Goods" export throughout the period.

Secondly, we observe RCA deviations. The author defines RCA deviation as gap between RCA counted and benchmark (=1). The deviations present degree of comparative advantage. If RCA deviation of one sector is positive number, the sector has comparative advantage. On the contrary, if RCA deviation of one sector is negative number, the sector has no comparative advantage, or has comparative disadvantage. Changes of RCA deviations indicate sectors that have comparative advantage or disadvantage more explicitly than time-series figures. Figure 2 shows RCA deviations of selected countries. The figures indicate distributions of comparative advantage or disadvantage in several items at 1989 (1991), 1995, 2000, and 2003. In other words, they yield

information concerning *intra-distribution dynamics*[10]. Deviations on the figures in general have shrunk except for a few items. Prominent exceptions are "Royalties and license fees" in the U.S. and Japan, and "Financial services" in the U.K. "Royalties and license fees" in the U.S. persists with a certain higher level. That is, while the U.S. has lost comparative advantage and has reduced disadvantage in other sectors, U.S. has kept its comparative advantage in the sector. As in the U.K., "Financial services" has strengthened throughout the period. It may be a typical example that specialization of trade in services. It is remarkable that inversion of deviation sign and following positive increases on "Royalties and license fees" in Japan.

Distributions of RCA deviation among countries, on the whole, show persistency that positive deviations keep an initial sign or increase initial deviations, and negative deviations keep it, except for some exceptions such as decreases and inversion of "Computer and information services" in U.S., and deviations on the neighborhood of deviation zero. It seems to be believed that domestic structures of (revealed) comparative advantages rarely change.

Finally, we analyze degree of import concentration. Since RCA only acquires export aspect, we cannot observe import aspect. The correlation between expansions of "Offshoring" and RCA deterioration of " Computer and information services" in U.S. suggests analyses with considering import aspect. Because intra-firm transactions of trade in services amount for considerable sum, we need to analyze from the viewpoint of both aspects. To satisfy the requirement, the author tries to measure a degree of import concentration by improving RCA index. In order to measure the degree, we substitute import value data for definitional equation of RCA. We can define index of import concentration (IIC) as follows:

$$IIC_{ij} \equiv \frac{M_{ij} \Big/ \sum_{j} M_{ij}}{\sum_{i} M_{ij} \Big/ \sum_{i} \sum_{j} M_{ij}}, \tag{2}$$

where M_{ij} presents imports value of sector j in country i. According to the equation, what one sector has IIC $>$ 1 identifies that import ratio of sector j in country i larger than that in the world. On the contrary, IIC $<$ 1 means inverse of former. If IIC is equal to one, import ratio of the sector in the country is equal to that of the sector in the world. Because world exports value,

[10] Proudman=Redding [2000].

in theory, is equal to world import value and both trade structures are as well, denominator of RCA is equal to that of IIC. By combining RCA with IIC, we can multiply analyze trade in services.

Figure 4 to 6 show IIC changes in several countries, deviation of IIC at four points of time, and changes of variance of deviation of IIC, respectively. Although we expect that IIC of "Computer and information services" in U.S. has increased in contrasted to RCA of it, our expectations are disappointed. It has transited below IIC = 1 during observation period. It will seem to be found that the larger the deficit, the more actively the IIC fluctuates in other observation countries.

5. Transition Probability Matrix Analysis

In order to observe the trade dynamics, this analysis adopts the "Transition Probability Matrix (TPM)" which represents the fluctuation of respective states. Firstly, we define the matrix described transitions as $P_{t-1,t}$. It expresses state transitions from $t-1$ to t. The elements of the matrix, thus, are constituted by transition probability that means the probability of state changes. A transition probability p_{ij}, for instance, represents that one state i at $t-1$ changes another state j at t. The matrix can be described as follows:

$$P_{t-1,t} = \begin{pmatrix} p_{11} & \cdots & p_{1j} & \cdots & p_{1n} \\ \vdots & \ddots & & & \vdots \\ p_{i1} & & p_{ij} & & \vdots \\ \vdots & & & \ddots & \vdots \\ p_{n1} & \cdots & \cdots & \cdots & p_{nn} \end{pmatrix}. \tag{3}$$

This analysis focuses on an order fluctuation of each country. Here, each element of the matrix (p_{ij}) is defined as the number of countries that moved from rank i to j, or state transition (S_{ij}) against the number of sectors (n_s):

$$p_{ij} = \frac{S_{ij}}{n_s}. \tag{4}$$

Because each diagonal elements means that there are no transition between two states ($t-1$ to t), the value of trace which is summation of all diagonal elements presents state persistency[11] or the degree of less mobility of objective market. Because the all elements of p_{ij} are stochastic

[11] Hinloopen=Van Marrewijk [2001]; Proudman=Redding [2000].

variables, we can recognize mobility for complementary event of persistency, and thus, define "Discrete-time Mobility Index (DMI)" as follows:

$$DMI_t \equiv 1 - \frac{tr_{n_t}[P_{t-1,t}]}{n_t}, \tag{5}$$

where n is the number of observation countries and t is subscript of discrete time. Range of DMI_t is $0 \le DMI_t \le 1$. The closer value of DMI_t is 1, the more active the market has ranking fluctuation[12]. In terms of treating the mobility as the complementary event of persistency, it is indirect index. Further detailed researches require direct index with considering the range of transitions.

Figure 7 shows DMI of trade in services from 1989 to 2003. DMI is computed from order changes of RCA that is used in section 4. In order to secure analysis data accuracy, the author set effective country number (ECN) of countries up depending on accuracy: the number of level 1 of ECN is constituted of countries satisfied with conditions that no items of all observation countries are missing value; the level 2 is constituted of the minimum number obtained from observations although all items of all countries do not match completely; the number of level 3 is constituted of the maximum number that we can obtain at each point of time. Thus, level 1 data are more reliable than other two levels. In actual computation of DMI, the author substitutes each level of ECN for n in definitional equation.

Result of computation indicates that the mobility of trade in services has increased year by year. Although some skepticism whether observation data is sufficient lingers on, dynamics in the second half of 1990s shows more actively than that in the first half of 1990s. DMI on IIC also indicates about the same result that the mobility on import aspect has also increased (Figure 7 (2)). Reasons that the mobility increases may be due to improvement of tradability on services through the use of IT-related equipments, and fruit of service trade liberalization policy in WTO.

Although we examined time-series RCA changes in the section 4, we could not observe obvious RCA structural changes among observation countries. Accounts that have higher RCA keep higher position. The author tries to reconsider by using TPM. Three data sequences in Figure 8 are based on TPM. "Upper", "Middle", and "Lower" are a third at the head, medium, and inferior

[12] Index with considering range of transition is remaining problem.

of TPM, respectively. The figure demonstrates that the DMI of "Upper" is not more movable than that of "Middle" and "Lower". RCA structures of some observation countries that have higher RCA such as U.S. and U.K., therefore, would be more persistent.

6. Conclusion

The author has mainly examined trade in services. A series of discussions demonstrates following points. First, one of the features concerning current trade in services is increases of new trade in services such as IT-related services and intellectual property rights. Since in the U.S. these trades relate to New Economy services, this feature is hardly limited to not only international trade but also domestic economy. Second, while RCA deviations have shrunk during observation period, domestic RCA structures or *intra-distributions dynamics* in some countries that had higher RCA has been persistent although the mobility of trade in services has increased globally since the early 1990s. According to the discussion in section 5, we can realize that the countries that are located in the "Middle" or "Lower" positions of RCA distributions would be trailer of pulling up the mobility of trade in services, and the countries that have the "Upper" RCA position are more persistent than them. It might be believed that from the viewpoint of persistency current trade in services seems to have a tendency toward polarizing. Therefore, countries with being higher advantage on service sectors keep or strengthen the advantage, and others with being lower advantage on them are compelled to the severe competition.

This paper yields questions as well as consequences. Several avenues for further research are to investigate remaining problems in this paper. One of the remainder problems is to build up the framework based on microeconomics of the RCA analysis. For instance, it is necessary to indicate correlation between changes of RCA and those of domestic or world welfare. Convergence of variance of RCA, additionally, suggests the question whether specialized growth is superior to unspecialized growth? Finally, in TPM analysis, to develop a new index with considering range of transition is also remaining problem.

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Table 1: *International Comparison to Trade Balances of Goods and Services 2003*

(billions)	Services	Goods	Goods and Services
Surplus Countries of Trade in Services			
United States	59.2	-544.3	-485.2
United Kingdom	25.1	-77.3	-52.2
France	15.2	1.0	16.3
Greece	13.5	-25.6	-12.1
Turkey	11.2	-14.0	-2.8
Deficit Countries of Trade in Services			
Germany	-56.1	151.7	95.5
Japan	-34.3	106.4	72.1
Ireland	-14.5	37.8	23.3
Russia	-10.6	60.5	49.9
China,P.R.: Mainland	-8.5	44.7	36.2

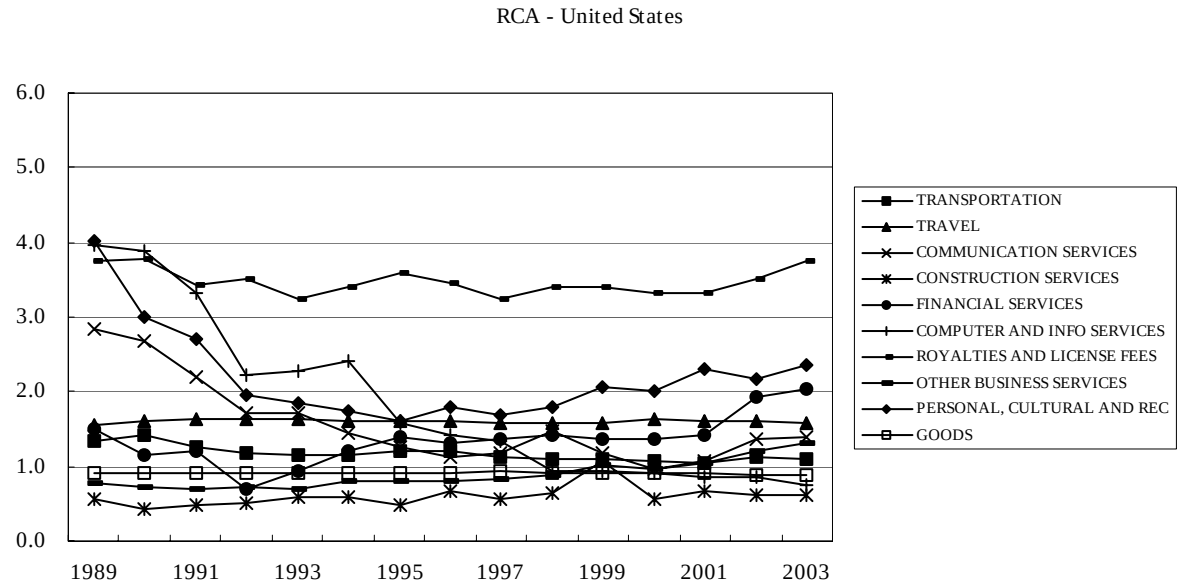
International Monetary Fund, *Balance of Payments Statistics 2005*, CD-ROM, IMF.

Table 2: *Detail of RCA Calculation*

Data Source	Internationl Monetary Fund, *Balance of Payments Statistics 2005* , CD-ROM, IMF.			
Observation Periods (15 years)	1989 - 2003			
Observation Countries	Argentina	Australia	Austria	Belgium-Luxembourg
(35 countries)	Brazil	Canada	China,P.R.: Mainland	China,P.R.:Hong Kong
	Denmark	Finland	France	Germany
	Greece	Hungary	Iceland	India
	Ireland	Israel	Italy	Japan
	Korea	Malaysia	Mexico	Netherlands
	New Zealand	Norway	Philippines	Poland
	Portugal	Russia	Sweden	Thailand
	Turkey	United Kingdom	United States	
Observation Items	Transportation		Travel	
(10 items)	Communication services		Construction Services	
	Financial Services		Computer and Information Services	
	Royalties and License Fees		Other Business Services	
	Personal, Cultural, and Recreational Services			
	Goods			

Figure 1: *RCA Change of Selected Countries*

(1) United States



(2) United Kingdom

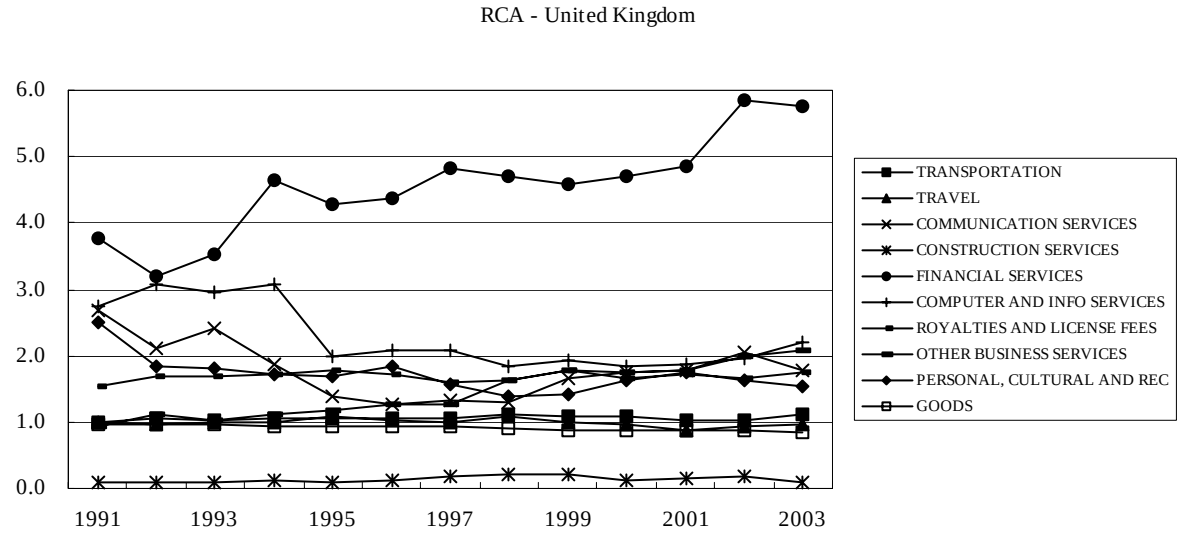
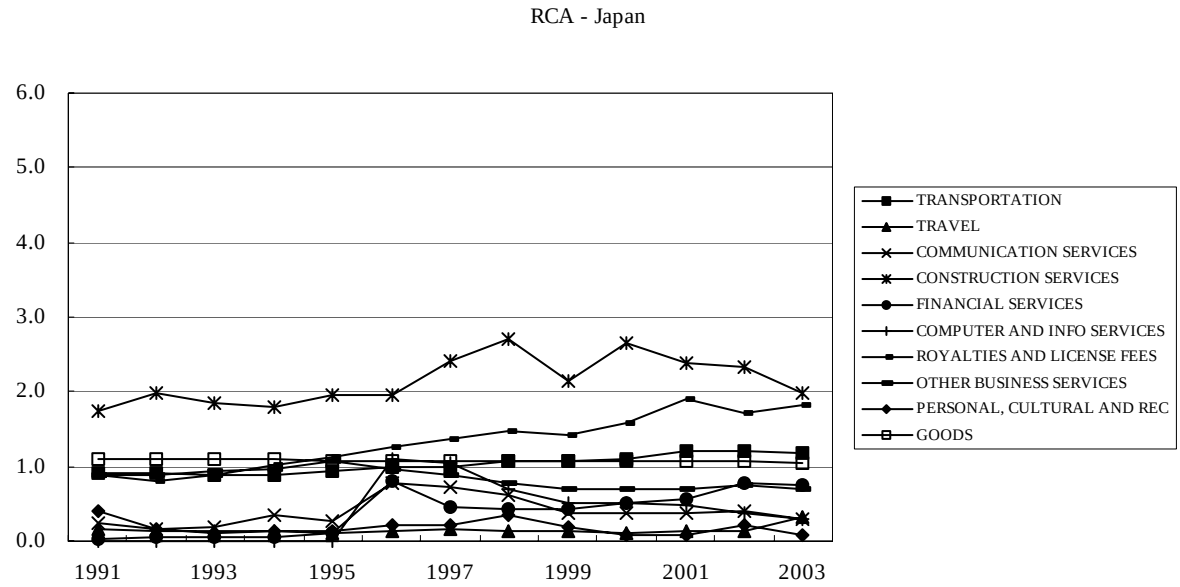


Figure 1: *RCA Change of Selected Countries (Continued)*

(3) Japan



(4) Germany

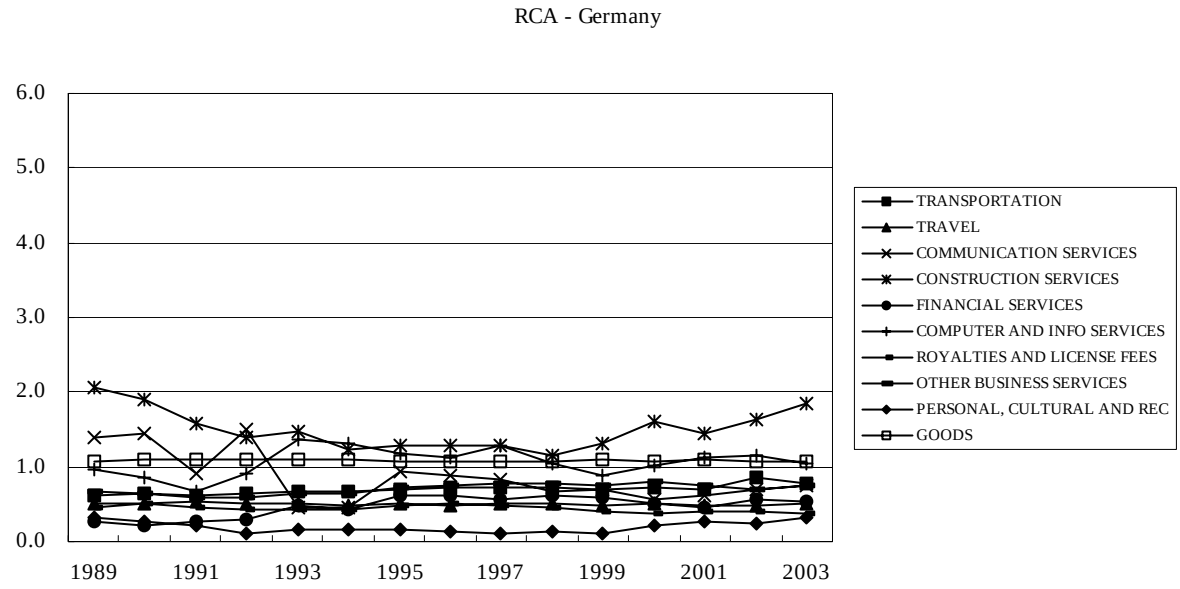
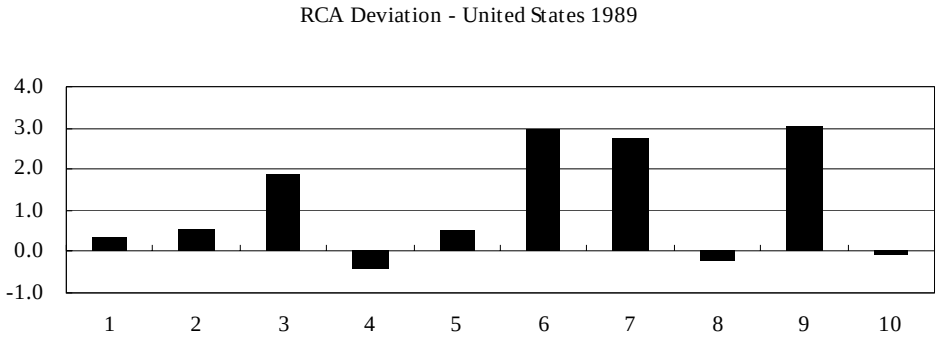
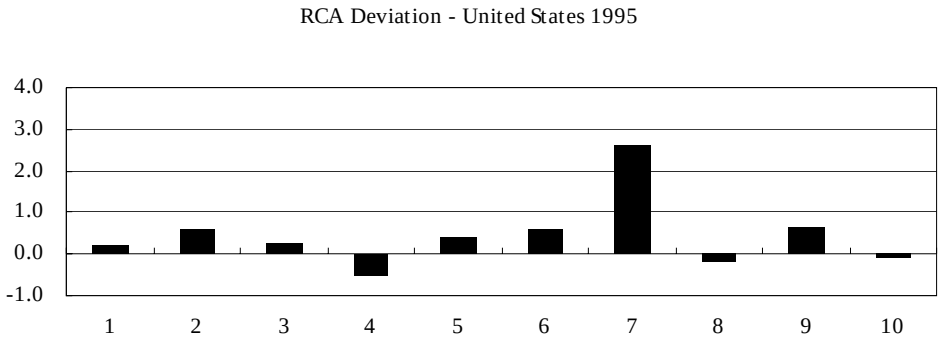
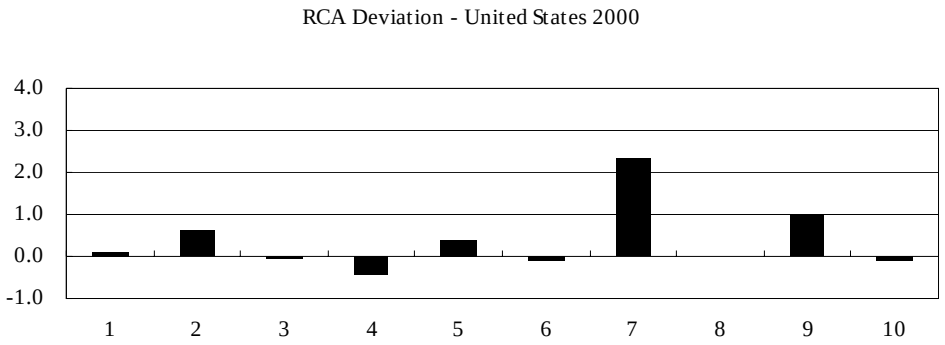


Figure 2: *RCA Deviation of Selected Countries*

(1) United States







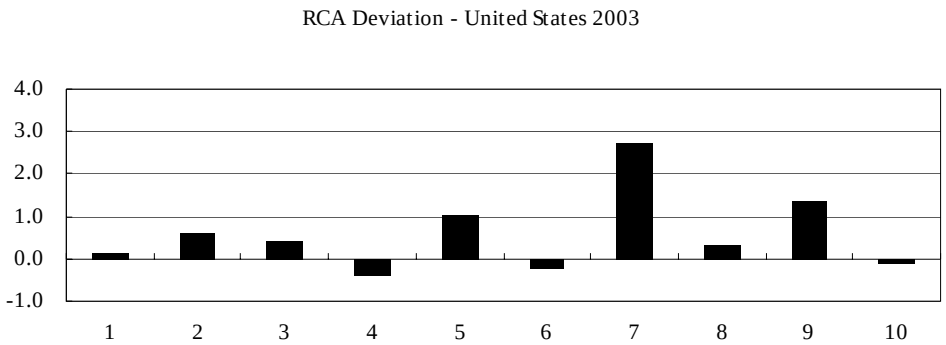
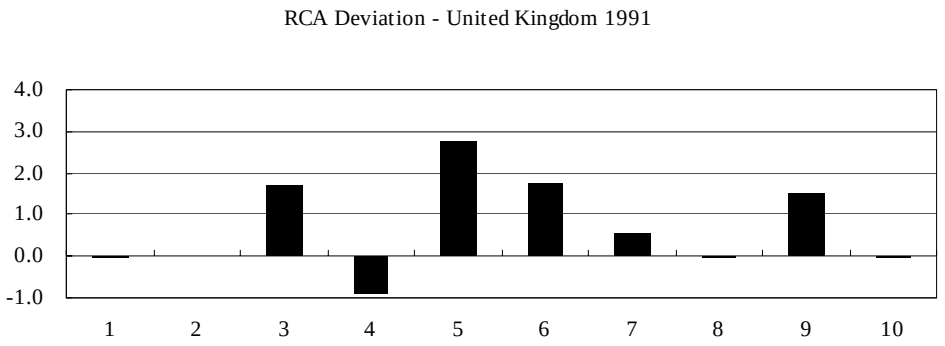
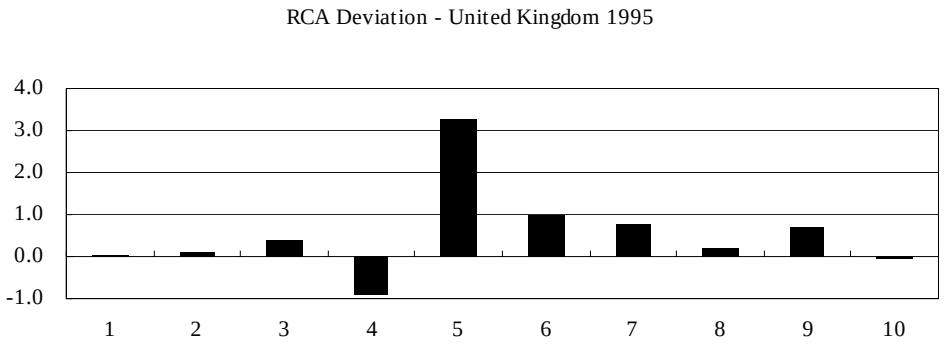
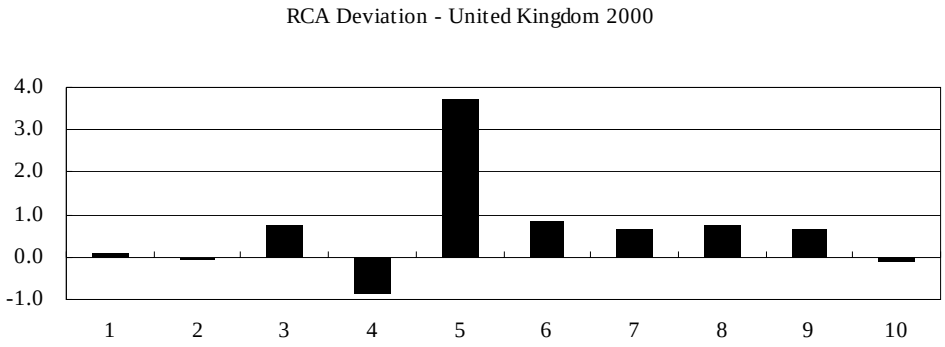


Figure 2: *RCA Deviation of Selected Countries (Continued)*

(2) United Kingdom







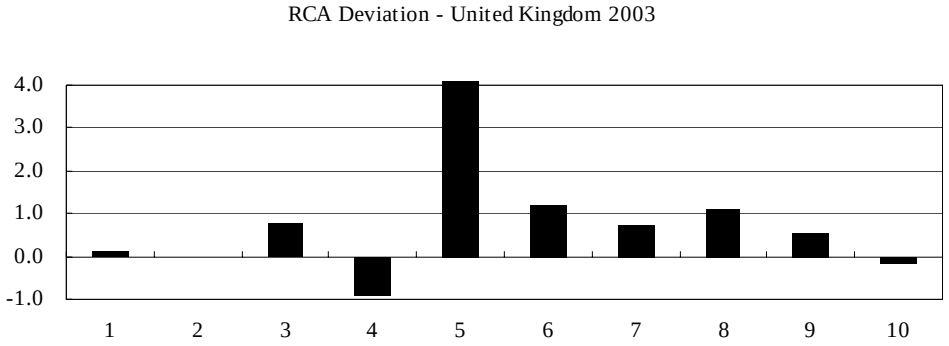
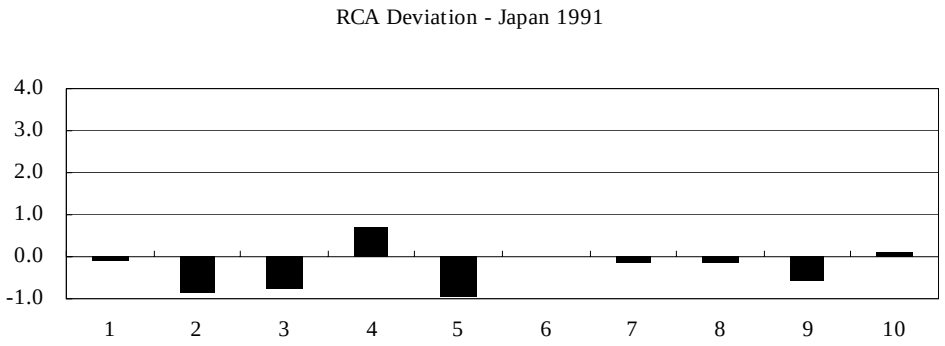
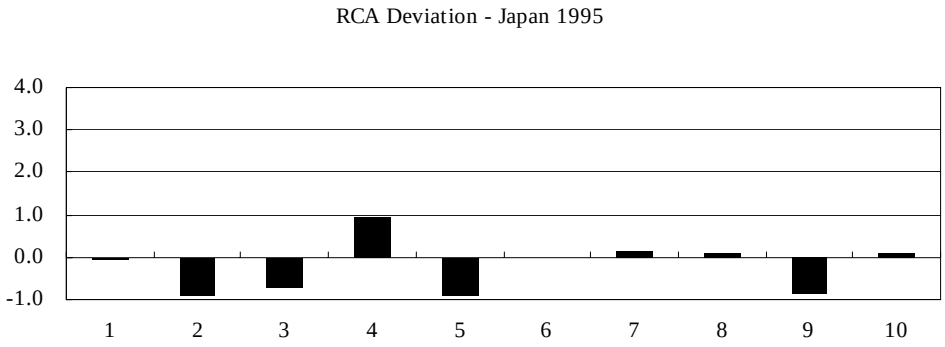
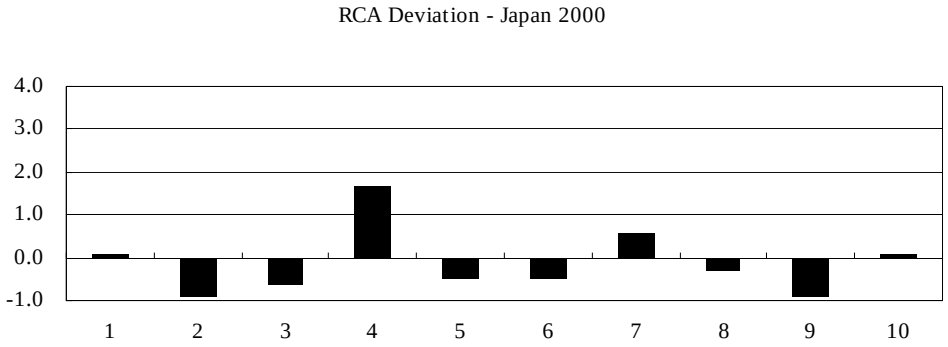


Figure 2: *RCA Deviation of Selected Countries (Continued)*

(3) Japan







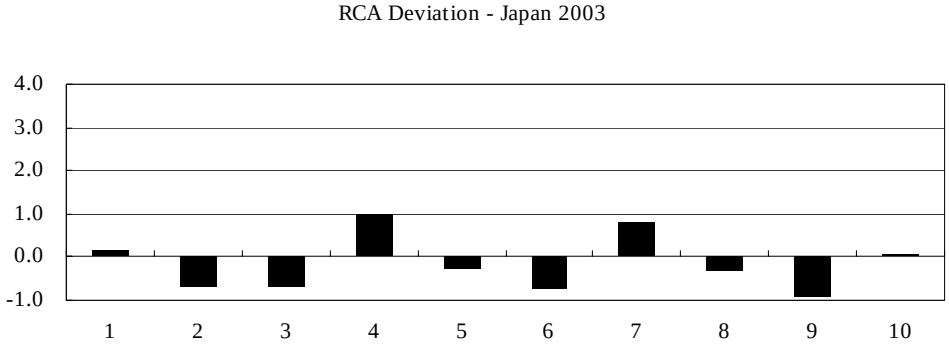
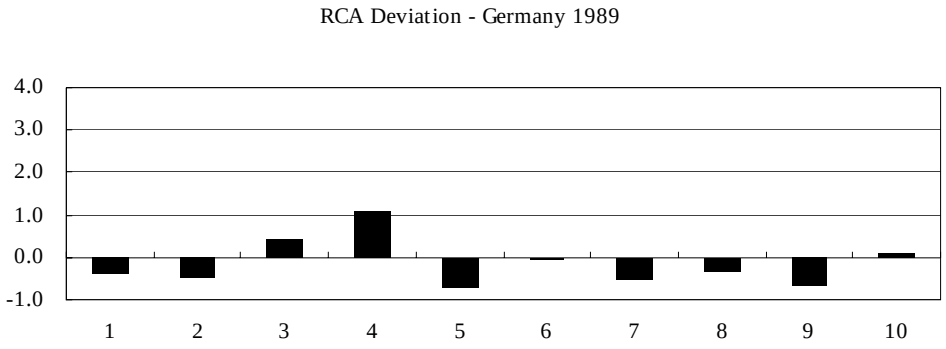
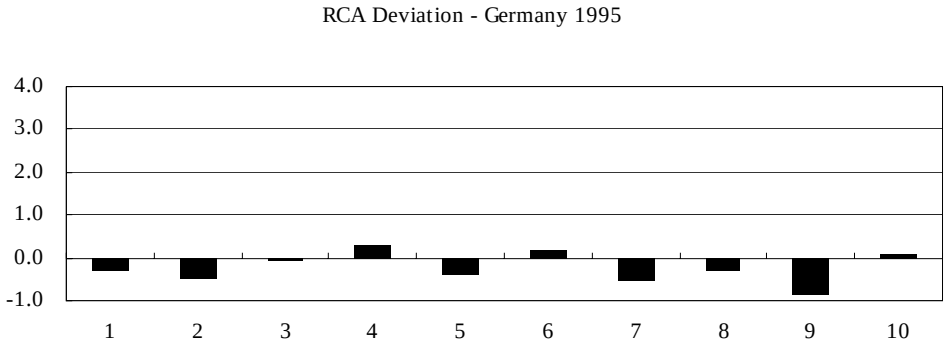
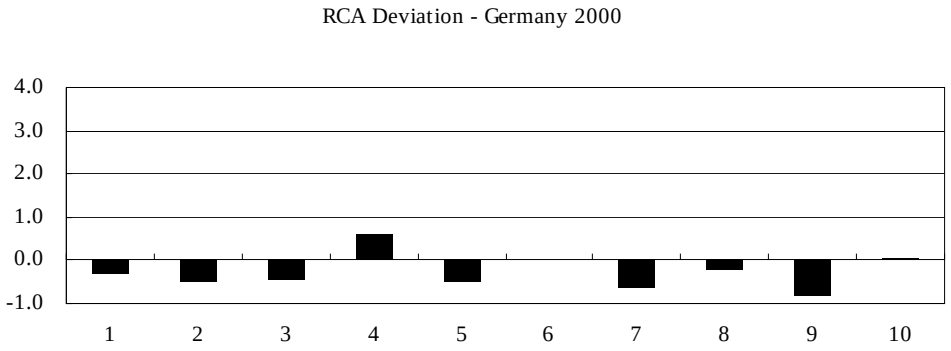


Figure 2: *RCA Deviation of Selected Countries (Continued)*

(4) Germany







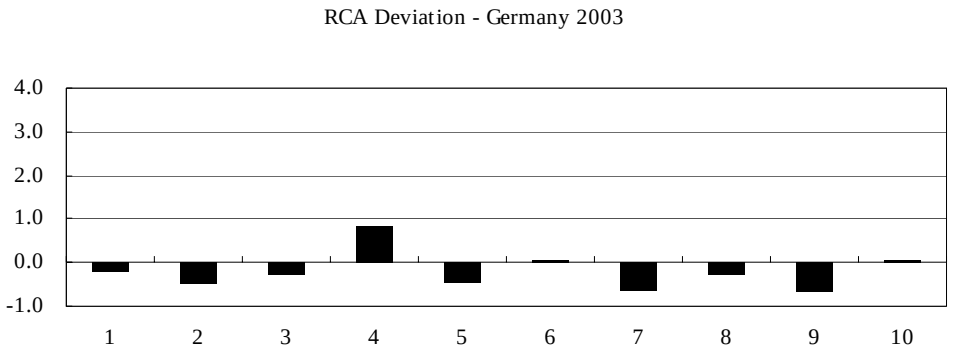
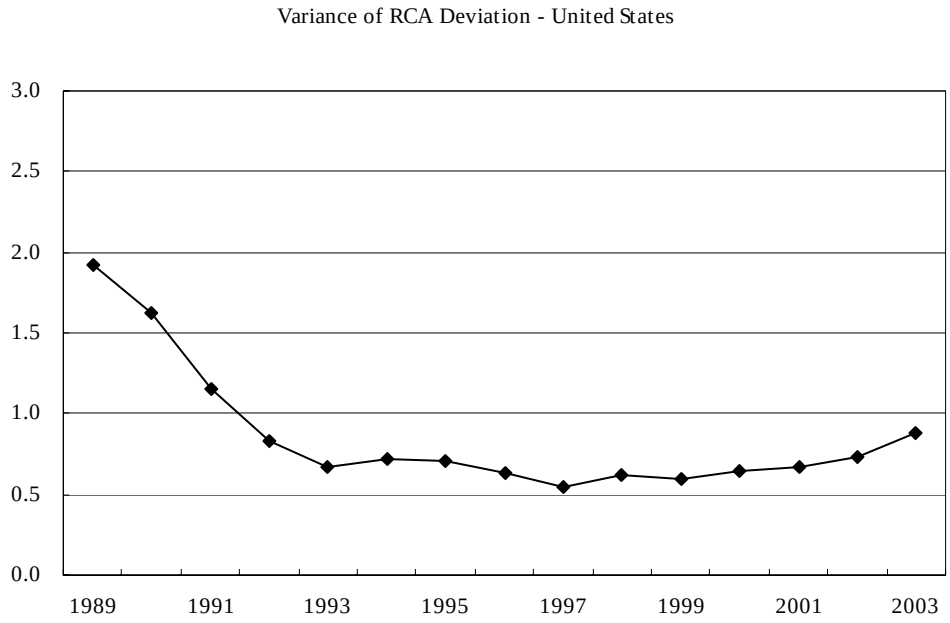


Figure 2: *RCA Deviation of Selected Countries (Continued)*

1. Transportation
2. Travel
3. Communication Services
4. Construction Services
5. Financial Services
6. Computer and Information Services
7. Royalties and License Fees
8. Other Business Services
9. Personal, Cultural and Recreation Services
10. Goods

Figure 3: *Variance of RCA Deviation of Selected Countries*

(1) United States



(2) United Kingdom

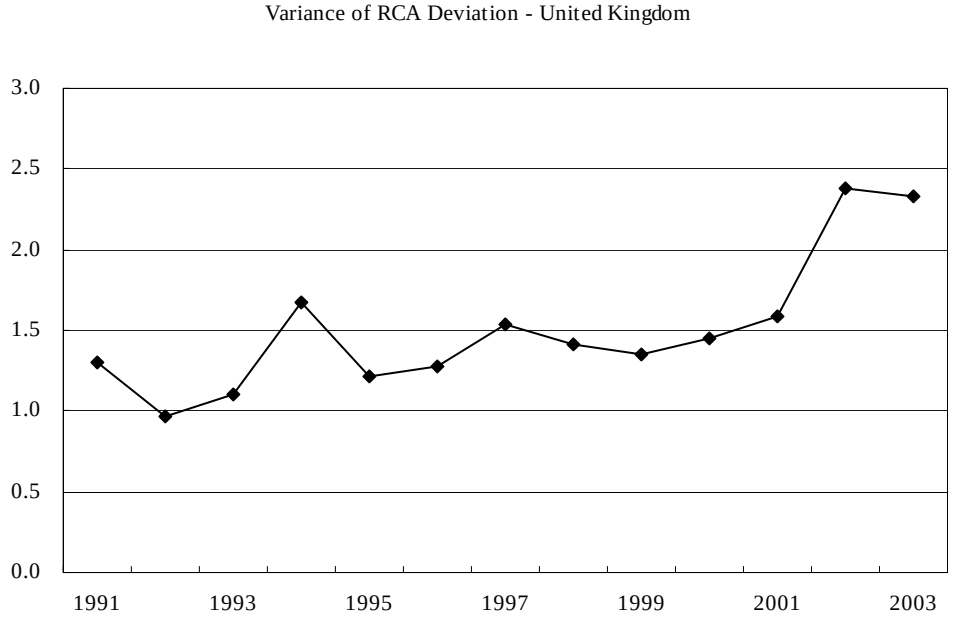
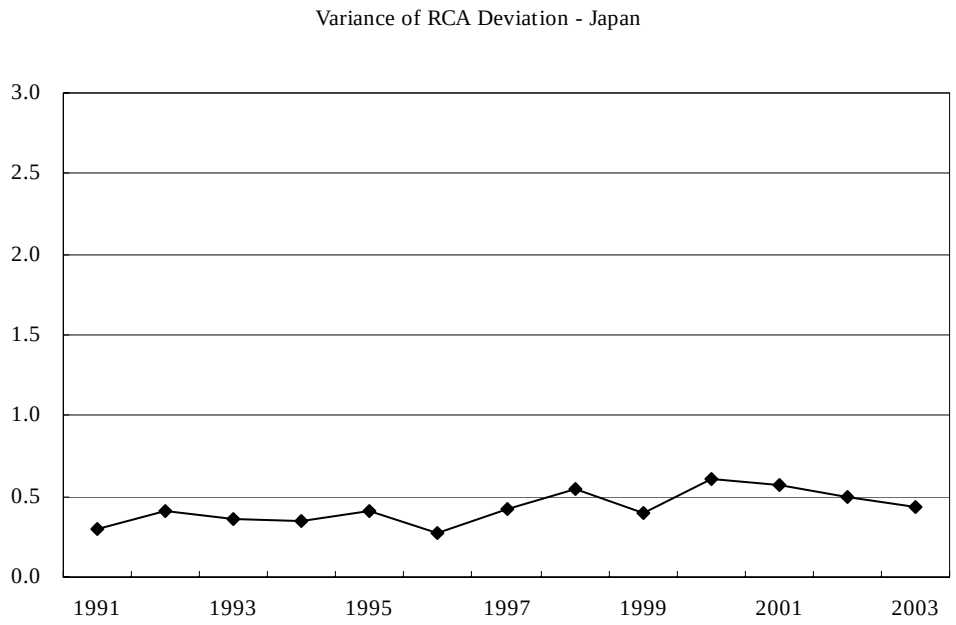


Figure 3: *Variance of RCA Deviation of Selected Countries (Continued)*

(3) Japan



(4) Germany

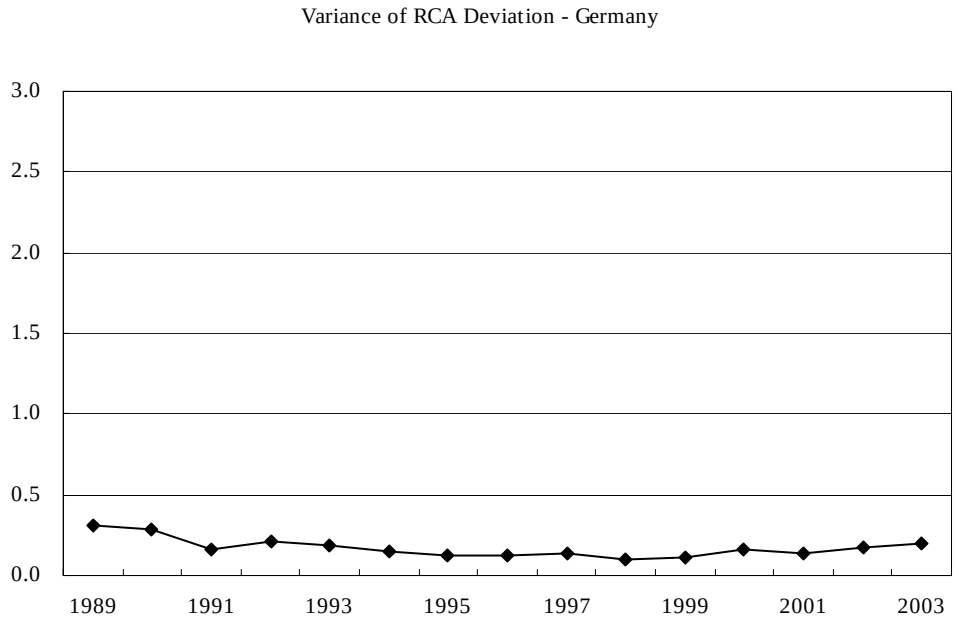
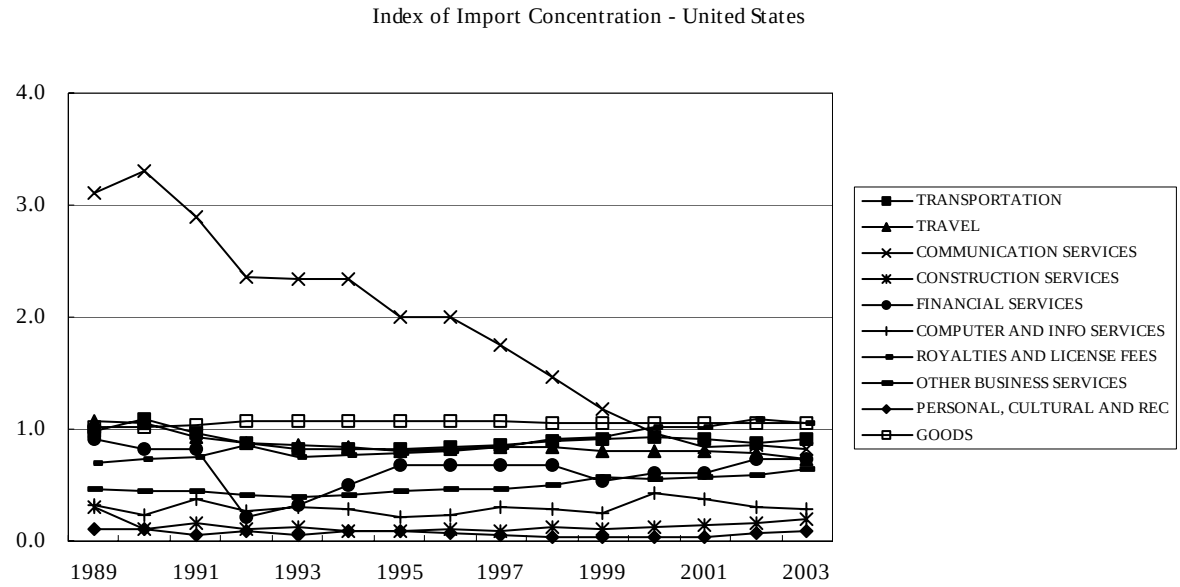


Figure 4: *Index of Import Concentration (IIC)*

(1) United States



(2) United Kingdom

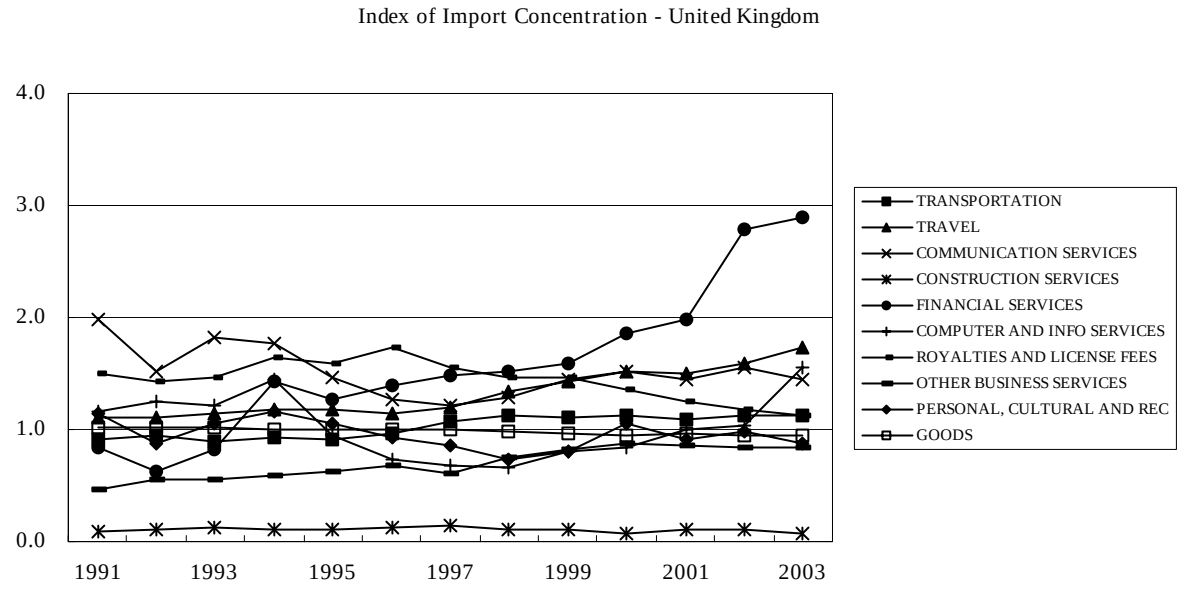
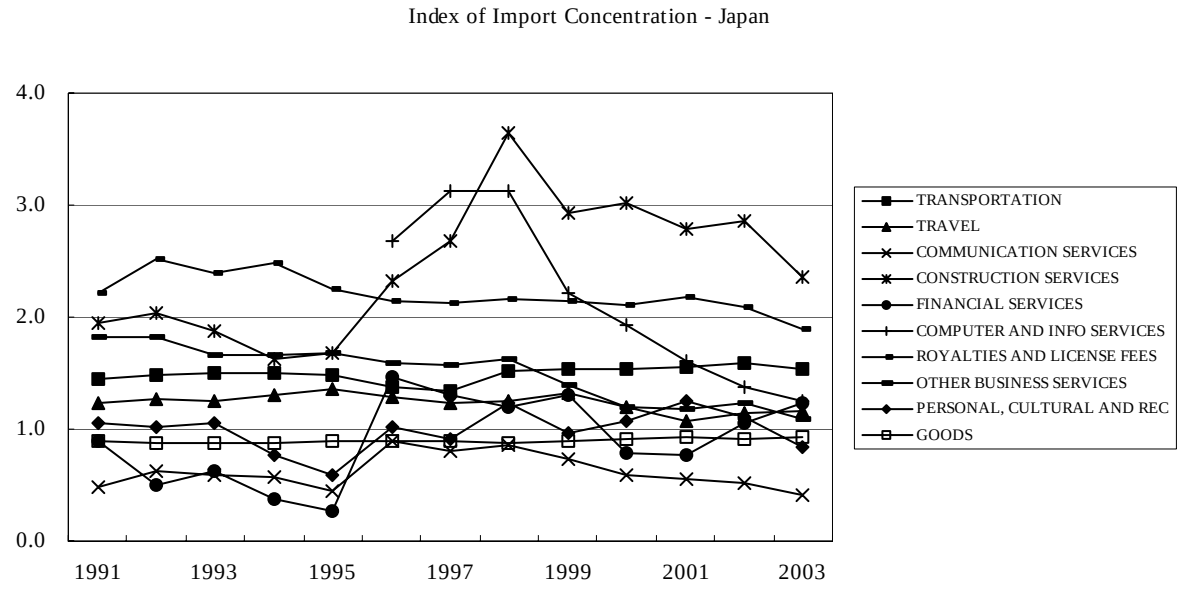


Figure 4: *Index of Import Concentration (IIC) (Continued)*

(3) Japan



(4) Germany

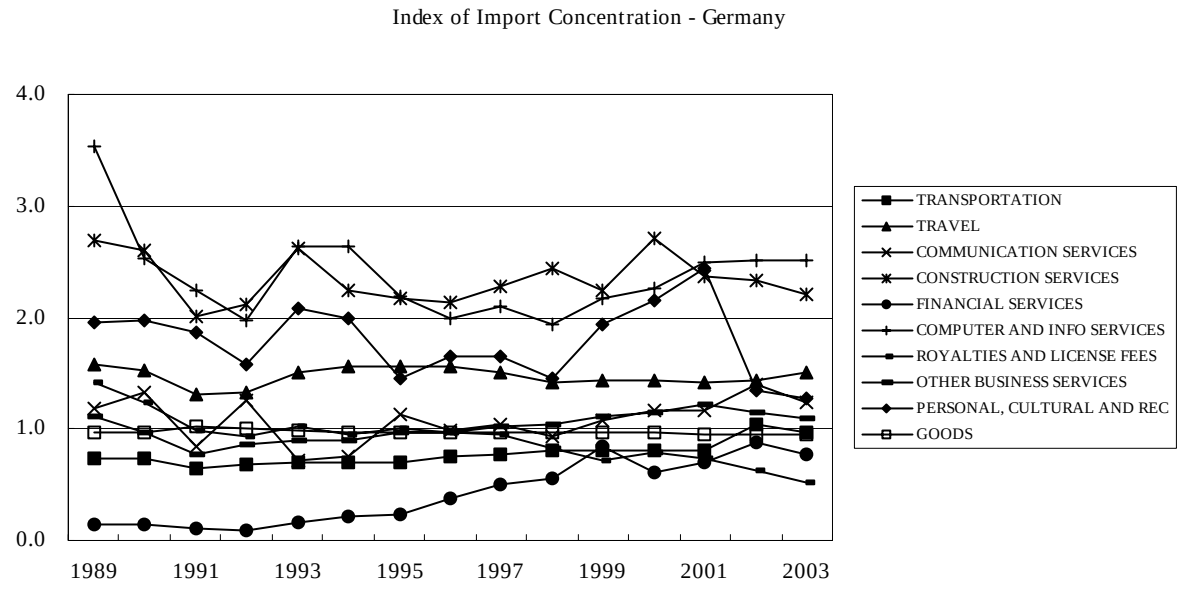
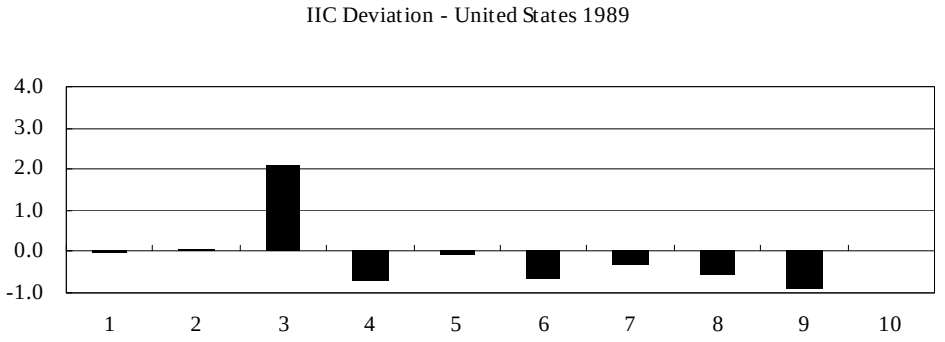
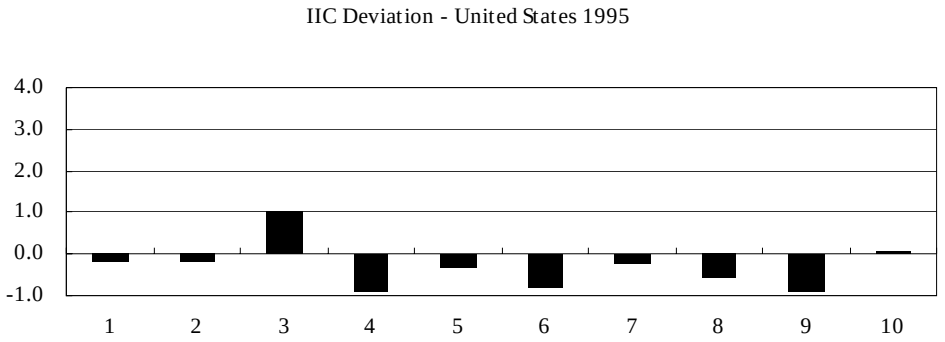
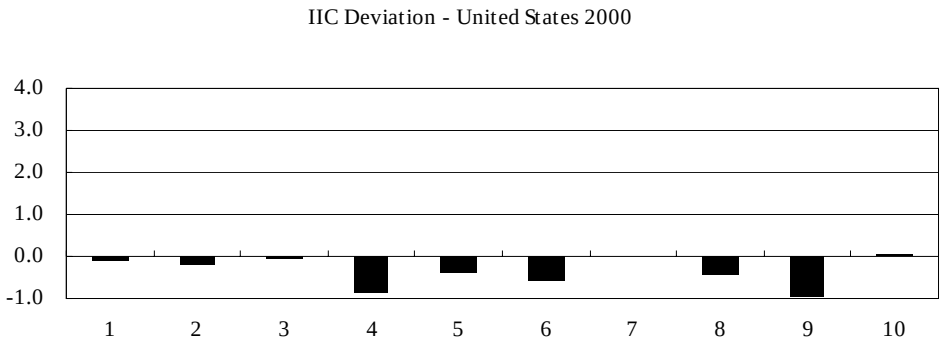


Figure 5: *IIC Deviation of Selected Countries*

(1) United States







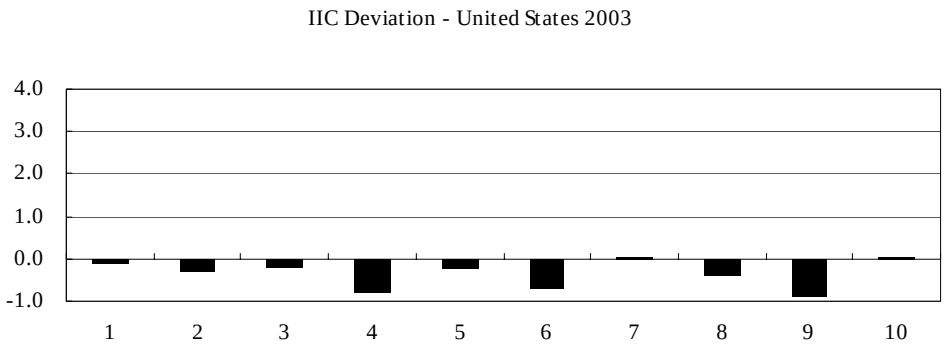
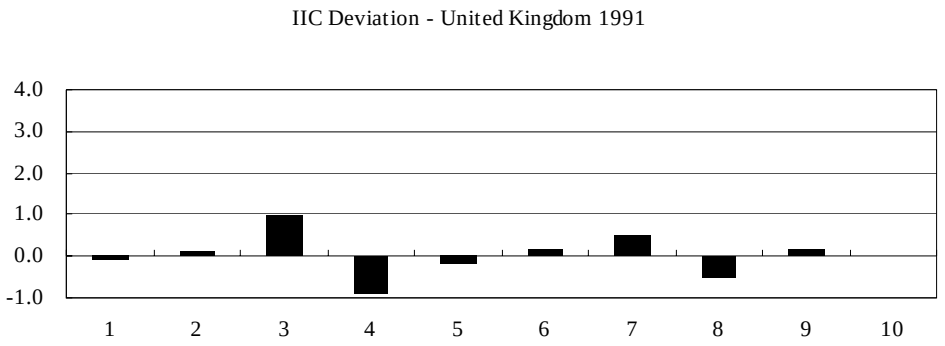
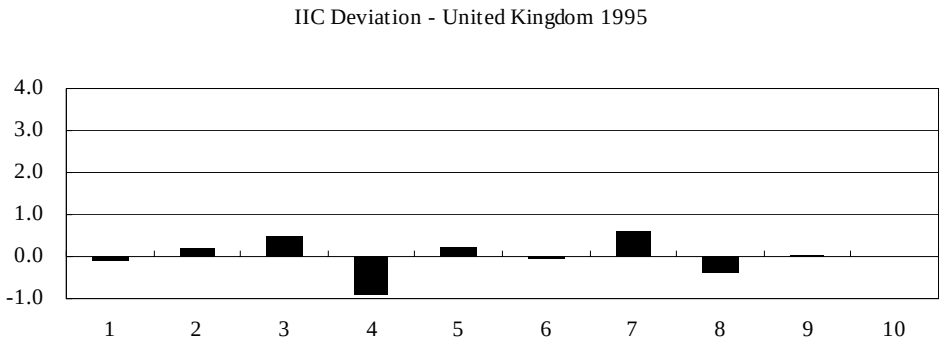
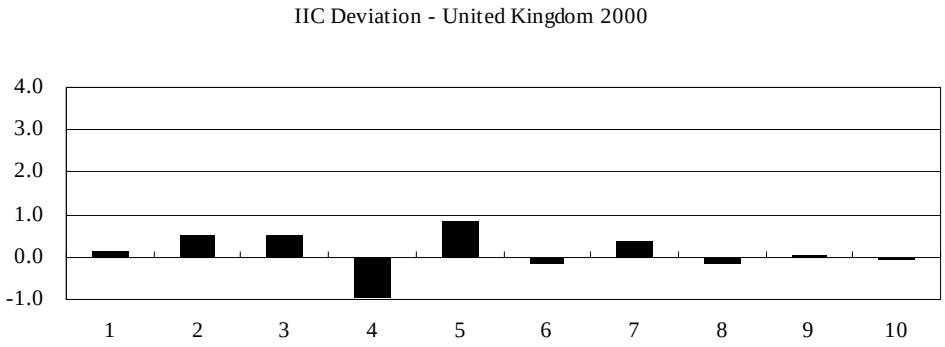


Figure 5: *IIC Deviation of Selected Countries (Continued)*

(2) United Kingdom







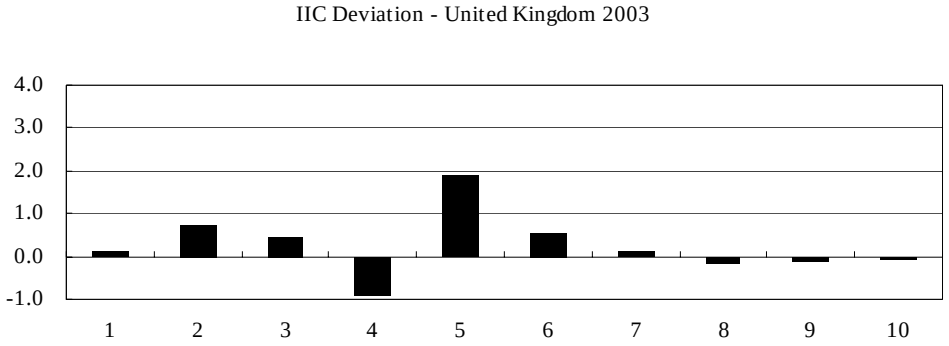
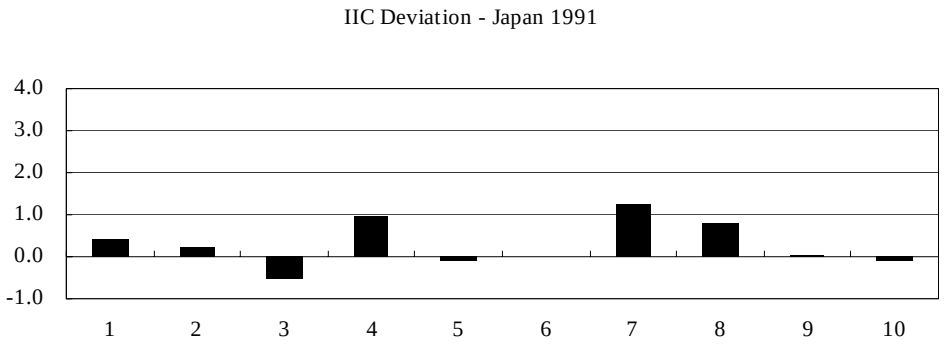
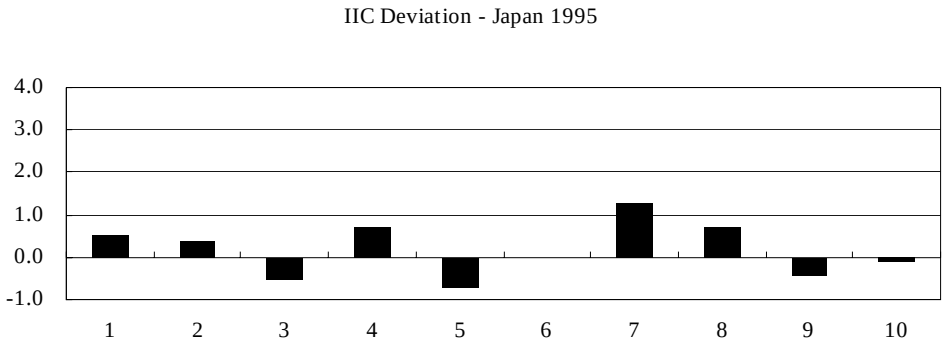
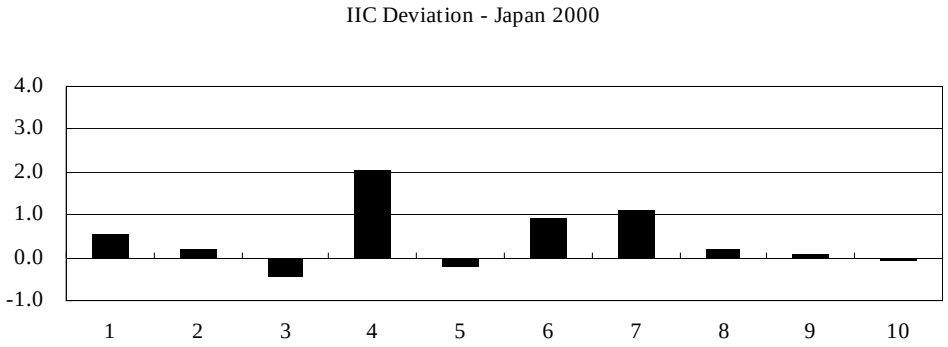


Figure 5: *IIC Deviation of Selected Countries (Continued)*

(3) Japan







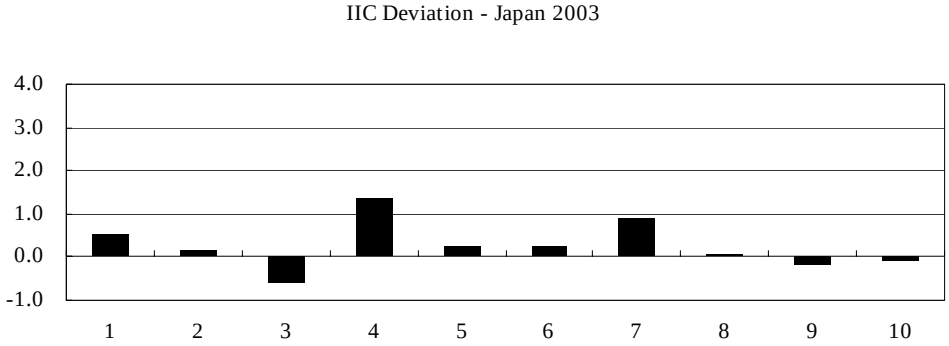
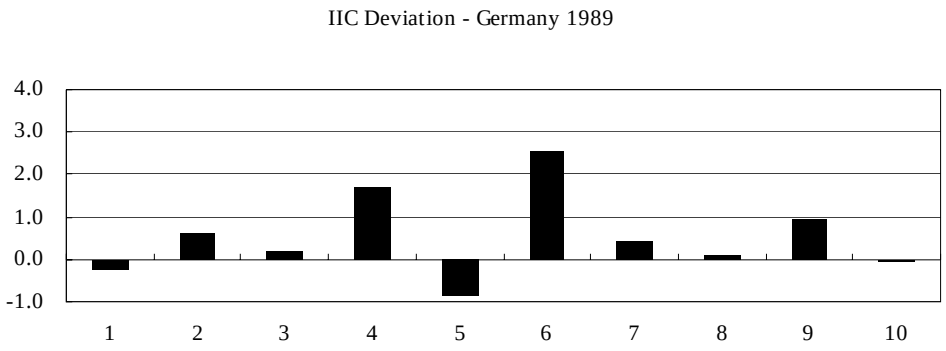
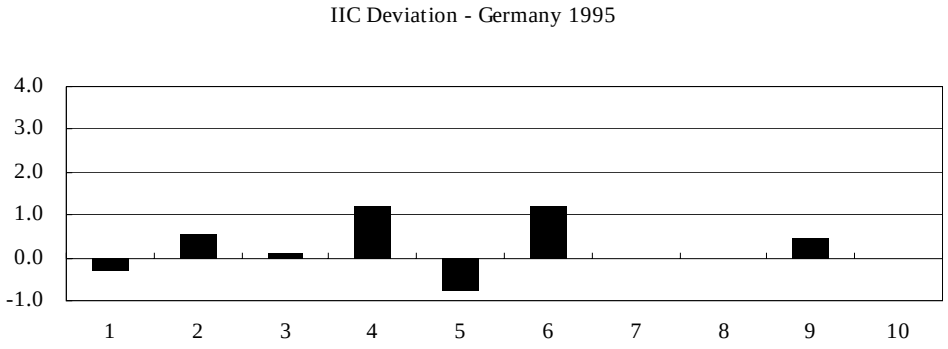
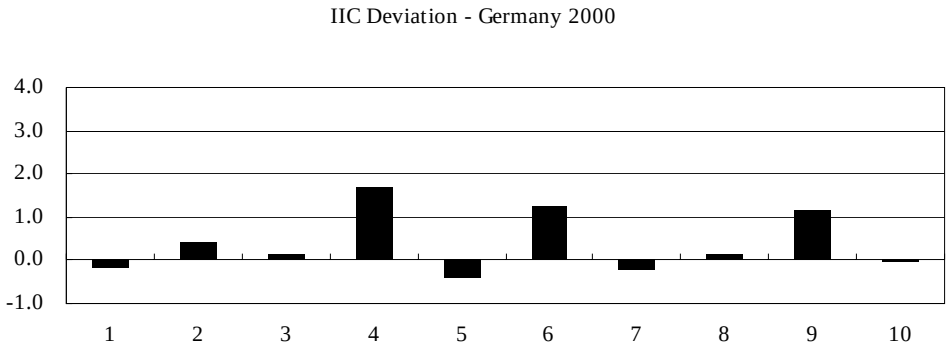


Figure 5: *IIC Deviation of Selected Countries (Continued)*

(4) Germany







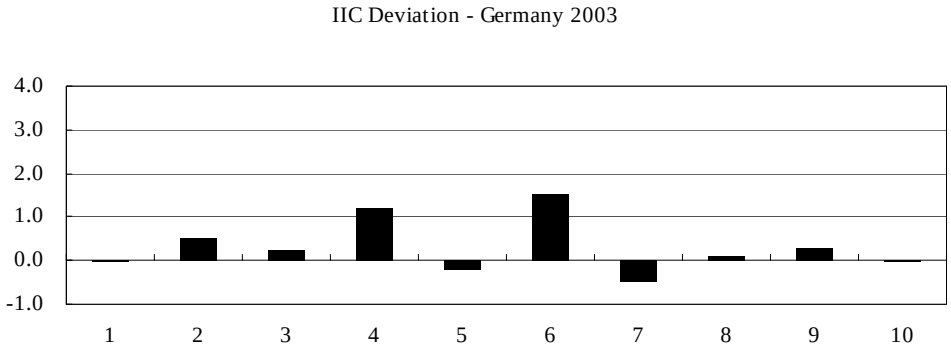
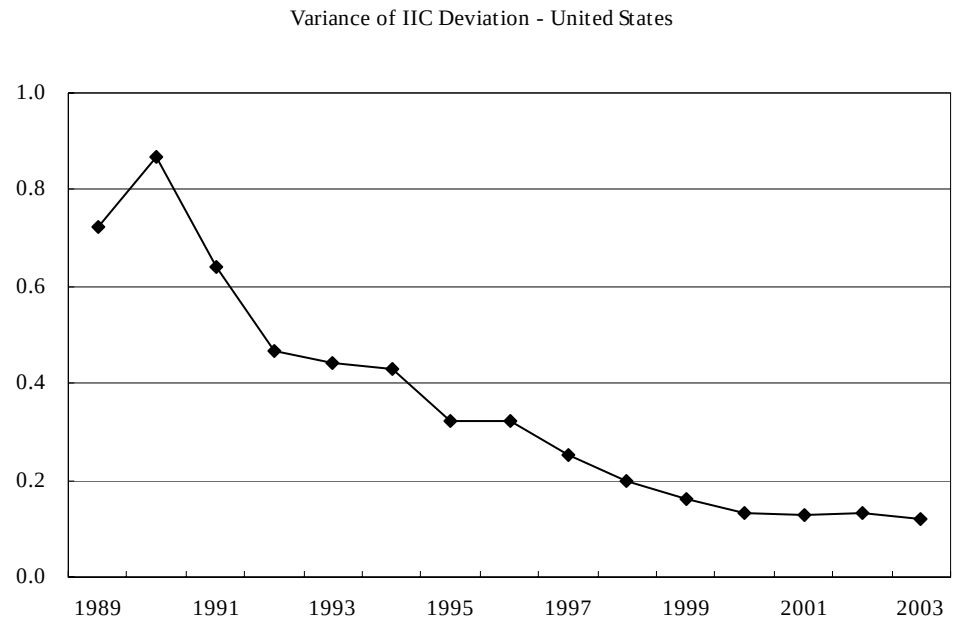


Figure 5: *IIC Deviation of Selected Countries (Continued)*

1. Transportation
2. Travel
3. Communication Services
4. Construction Services
5. Financial Services
6. Computer and Information Services
7. Royalties and License Fees
8. Other Business Services
9. Personal, Cultural and Recreation Services
10. Goods

Figure 6: *Variance of IIC Deviation of Selected Countries*

(1) United States



(2) United Kingdom

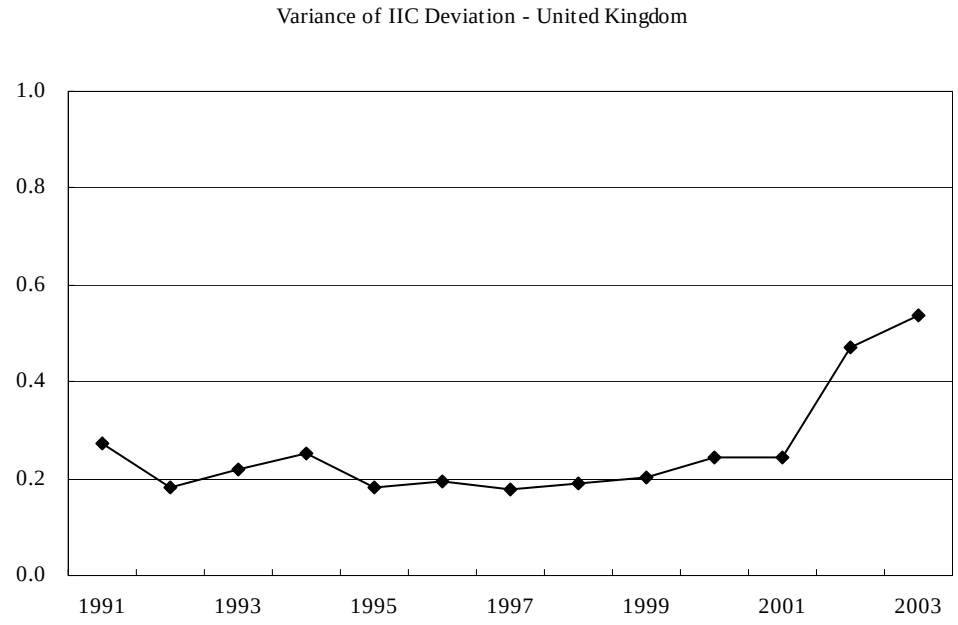
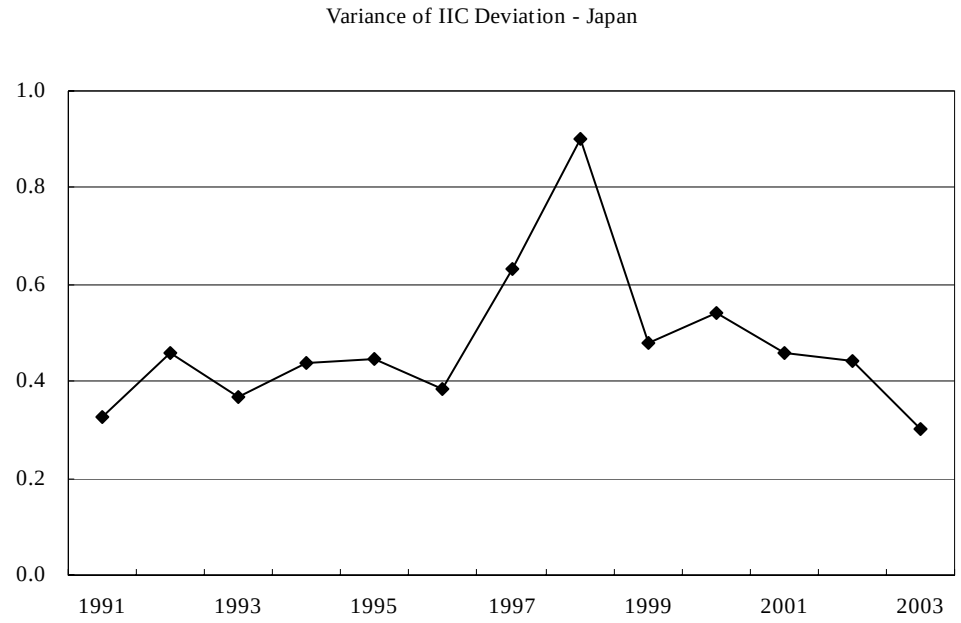


Figure 6: *Variance of IIC Deviation of Selected Countries (Continued)*

(3) Japan



(4) Germany

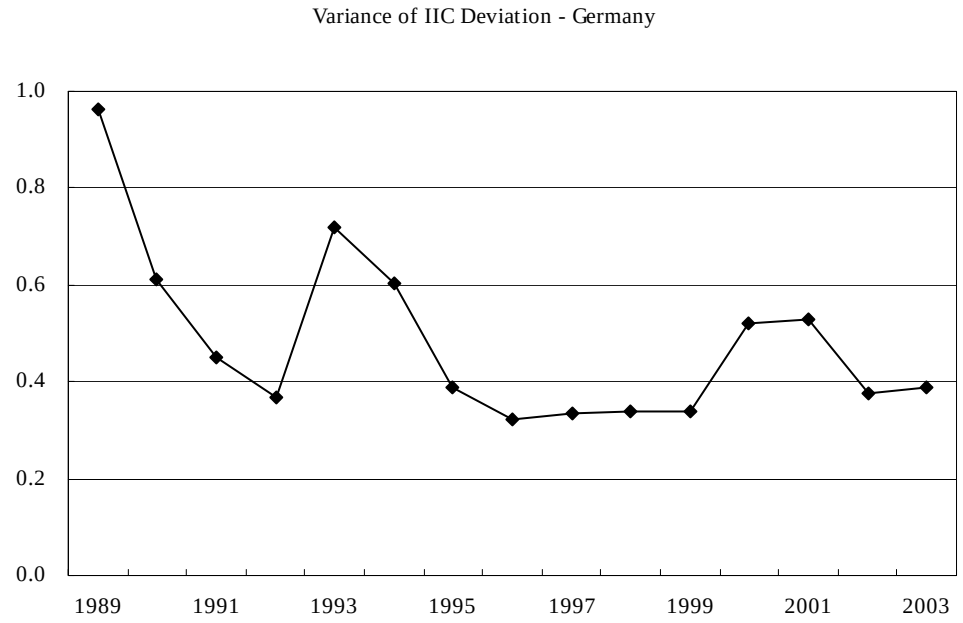
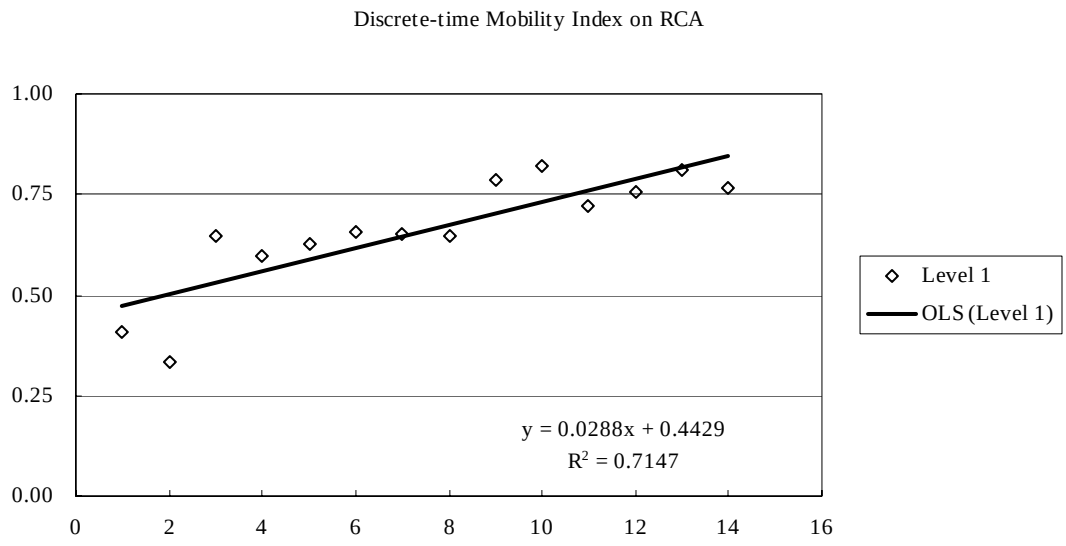
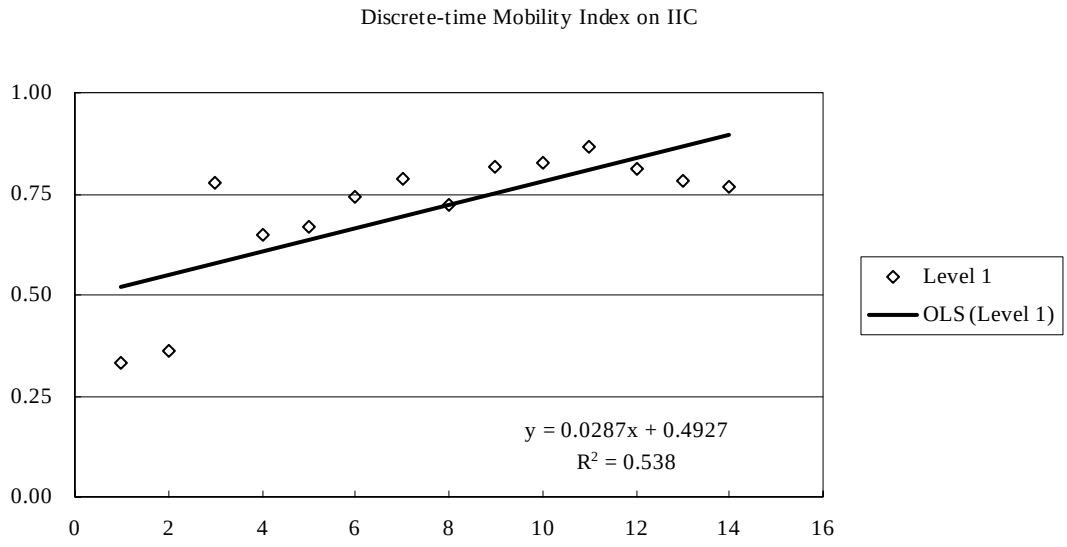


Figure 7: *Mobility Trend of Trade in Services*

(1) *On RCA*

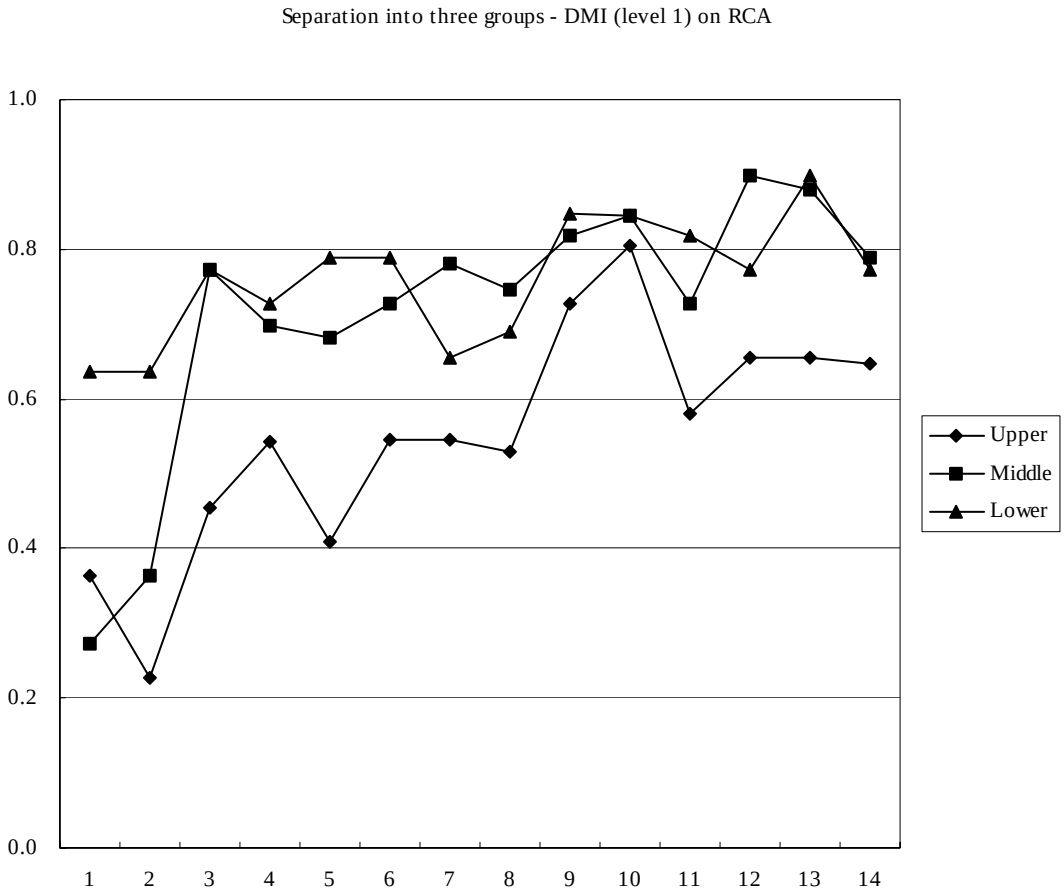


(2) *On IIC*



Period 1: 1989-90	Period 8: 1996-97
Period 2: 1990-91	Period 9: 1997-98
Period 3: 1991-92	Period 10: 1998-99
Period 4: 1992-93	Period 11: 1999-2000
Period 5: 1993-94	Period 12: 2000-01
Period 6: 1994-95	Period 13: 2001-02
Period 7: 1995-96	Period 14: 2002-03

Figure 8: *Mobility Trend of Trade in Services – Separation into three groups*



Period 1: 1989-90	Period 8: 1996-97
Period 2: 1990-91	Period 9: 1997-98
Period 3: 1991-92	Period 10: 1998-99
Period 4: 1992-93	Period 11: 1999-2000
Period 5: 1993-94	Period 12: 2000-01
Period 6: 1994-95	Period 13: 2001-02
Period 7: 1995-96	Period 14: 2002-03