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［研究論文］

Effectiveness of International Investment Agreements
投資協定の締結効果

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Abstract: This research addressed a question on which country/countries are likely to have developed “effective” positioning by concluding international investment agreements (IIAs), by using data for 100 countries based on the large number of IIAs that each country has concluded. The effectiveness, or the “advantage of position” of IIAs in this research, is examined by the calculation of eigenvector centrality. Our conclusions included that China has the most effective positioning in having IIAs among the selected 100 countries in this research.

本稿では、投資協定の締結によりどの国が「効果的」なポジションを築いているか、について考察した。締結済の投資協定の数が上位100の国を対象とし、各国が締結した投資協定数及び締結国のデータを用いて固有ベクトル中心性の計算式に基づき検証した。その結果、対象国のうち、投資協定の締結により中国が最も効果的なポジションを有している旨等を結論づけた。

Keywords: international investment agreements, eigenvector centrality, 100 countries
投資協定、固有ベクトル中心性、100か国

1 Introduction

International investment-related agreements primarily consist of either investment chapters in Economic Partnership Agreements (EPAs)/Free Trade Agreements (FTAs) or International Investment Agreements (IIAs). The number of international investment-related agreements has been increasing, especially since the year 2000. There are more than 2,600 such agreements in force as of September 10, 2020 [1]. Investment-related rules are also included in World Trade Organization (WTO) agreements, under the Agreement on Trade-Related Investment Measures (TRIMS), but no further developments or agreements have been made since, due to the stagnation of the most recent round of negotiations [2]. Instead, and as a result, the number of concluded EPAs/FTAs with investment related provisions and IIAs is increasing. Because EPAs/FTAs and IIAs are concluded among the participating countries (parties) of the negotiations, it is, in general, easier to reach an agreement compared with those of the WTO, which basically require agreement among its more than 160 member countries.

IIAs and investment chapters of EPAs/FTAs are important for companies that invest in overseas countries, as these agreements are relevant to the protection of investments. There is a high demand from business sectors for the conclusion of international investment-related agreements. As for Japan, the policy paper "Calling for Accelerated Conclusion of Investment Agreements" (2015) by Keidanren [3], an economic organization in Japan in which most of the country's large and leading companies are the members, asked to conclude more investment-related agreements. Keidanren also occasionally urges this conclusion, while also requesting the inclusion of important elements in specific negotiations, such as Japan-EU (European Union) EPA and the Trans-Pacific Partnership Agreement [4]. Similar requests have also been made by other organizations [5] in Japan. In addition, given the stagnation of WTO negotiations for rule making, as well as the increase of international investment-related agreements globally, the Japanese government is proactively trying to conclude agreements that include international investment-related provisions. For example, in May 2016, the Japanese government established a plan to work on

negotiations aiming to sign and/or achieve the enforcement of international investment-related agreements (IIAs and EPAs/FTAs with investment chapters) covering 100 countries/regions by 2020, which is also mentioned in Japan's policy, "Growth Strategy 2018 (Basic Outlook and Key Strategies)" [6]. The Japanese government has been working to conclude international investment-related agreements based on this policy.

One question we need to ask here is the impact of agreements. Previous studies had examined the impact, political and economic contributions and implications, of the IIAs. A study by Urata (2015) [7], based on the analysis of foreign direct investment by Japanese firms by examining the data of 97 countries from 1980-2012, concluded that EPAs, FTAs, and IIAs have positive impacts on foreign direct investment by Japanese firms. This research is an example of endeavours to see the impact of agreement by studying the agreements that were concluded. This research is another endeavour to see the impact of agreements, analyzing the dynamics among the countries that concluded IIAs. To be more precise, the purpose of this research is to address a question on which countries are likely to have "effective" positioning by the IIAs that they have concluded. The effectiveness, or the "advantage of position" or effective positioning [8] in this research, is examined by the eigenvector centrality, by the combination of the number of agreements and the counterpart countries of IIAs for respective countries. The calculation shows which country/countries are likely to be at the "center" of IIA agreements globally, which was quantitatively calculated based on an assumption that the effects of concluded agreements act cumulatively. In order to address the question, the paper firstly analyzes the relationships among the 15 countries, namely, Japan, Germany, China, Switzerland, Turkey, the United Kingdom, France, Egypt, South Korea, Luxembourg, the Netherlands, the Russian Federation, the United States, India, and Brazil. Then, secondly, the paper analyzes a larger sample of 100 countries, in order to examine their effectiveness or effective positionings.

2 International Investment Agreement and the definition of "effectiveness"

As overseas investment increases globally, the number of international investment-related agreements has also increased. The purpose of such agreements is mainly to protect the "investment" [9]. There are also types of agreements that contribute in liberalization such as gaining market access and covering pre investment, in addition to protection of the investors and investments. Usually, IIAs are easier to conclude than EPAs/FTAs, as IIAs are focused specifically on investment, while EPAs/FTAs generally include other treatments and obligations, such as tariff reduction, services, etc., which often makes these agreements more complicated and harder to conclude. Apart from the geopolitical, political, and economic benefits at the State level, the benefits are for the investors of the country that invest in foreign countries. For example, if country A's investor invests in country B, country A's investor as well as its investment are protected under an investment agreement between A and B. Each agreement is a result of negotiations between or among the negotiating parties, which theoretically and practically makes each agreement unique. However, many of the agreements, especially those which were concluded in later years, usually include the following [10]: Definition and Scope (of investment), Most-Favored Nation (MFN), National Treatment (Pre-establishment/Post-establishment) [11], Prohibition of Performance Requirements [12], Fair and equitable treatment [13], Umbrella Clause [14], Expropriation and compensation for losses, Transfer, Subrogation, Dispute Settlement Mechanism (Investor State Dispute Settlement). Among the provisions, Most Favored Nation (MFN) is the most relevant clause to this research. MFN is a principle that prevents countries from discriminating between the respective trading partners [15]. MFN aims to "treat other people equally" [16], and has a function designed to "grant someone a special favour (such as a lower customs duty rate for one of their products) and you have to do the same for all other WTO members" [17]. Therefore, for example, when country A concludes an IIA with country B, country A must also provide the same treatment, including other rights and obligations mentioned above, to its future counterparts resulting from the IIA as it has given to country B, if the IIA

between A and B includes an MFN clause stating such obligation[18]. This, MFN, is the fundamental concept of the WTO and GATT rules as well, as it facilitates trade without discrimination [19]. With IIAs, the right for foreign investors or obligations to the host countries transferred through MFN is also important as many of them included provisions on Investor State Dispute Settlement (ISDS) which works as a means to settle disputes between investors and Host State. ISDS provides foreign investors with the right to access an international and third party tribunal to resolve investment disputes. Among more than 1,000 ISDS cases as of the end of August 2020, there are around 100 ISDS cases that claimed the violation of MFN [20]. The analysis by this research is especially relevant as most of IIAs include the MFN treatment, and is conducted based on an assumption that all IIAs include an MFN clause [21]. This paper sets an assumption that all IIAs include MFN Clause [22], and considers that a country that has created the most effective positioning among the other countries is the one that most cumulatively gathers the rights, including the transferred ones through MFN[23].

The pace and number of the concluded agreements per country differ. The tendency of the conclusion of IIAs in terms of the numbers by the year was examined in Figure 1 for the selected 15 countries, namely, Japan, Germany, China, Switzerland, Turkey, the United Kingdom, France, Egypt, South Korea, Luxembourg, the Netherlands, the Russian Federation, the United States, India, and Brazil. These countries were chosen according to the following categories: 1) countries that have a high number of international investment-related agreements [24] (Germany, Luxembourg, the Netherlands, Turkey, China, Switzerland, the United Kingdom, France, Egypt, South Korea), 2) emerging countries (BRICs, Brazil, Russia, India, (and China, which is also included in the first category)), and 3) the country that makes the largest overseas investment (the United States), and 4) Japan.

Figure 1 is created based on the number (accumulated) of IIAs for respective countries. As shown in the graph, the accumulation of the numbers by year for the respective countries and the tendencies, such as when the respective countries: 1) started to conclude IIAs, 2) rapidly increased their number of IIAs, and 3) stopped or

moderately concluded their IIAs, etc., differ from country to country. Figure 1 shows that Japan and Brazil are the countries that have increased their numbers of concluded IIAs at the highest pace in recent years. As for Japan, it could be assumed that its increase in recent years is in accordance with its aforementioned policy on the conclusion of international investment-related agreements. Furthermore, it is also understandable that Japan implemented such a policy, especially when compared with countries in Europe that have a large number of IIAs. On the other hand, there are a few countries whose numbers of the IIAs are not increasing or which remain at a moderate pace. For example, the United States has concluded only few IIAs since 1999. The United States increased its free trade agreements that include chapter on investments, instead, which might be the cause. Germany, the country that has the most international investment-related agreements (a combination of IIAs and EPAs/FTAs), has also only concluded a moderate number of IIAs in recent years. This is also true for several other countries, especially in European Union (EU), such as the United Kingdom and the Netherlands. This is relevant to the fact that EU as a whole negotiates and concludes trade and investment-related agreements such as free trade agreement. The trend for developing countries, such as India and Brazil, might be in line with their developments. Both countries concluded their first IIAs in 1994, rather recent especially compared with other countries. However, they have since increased their numbers of concluded IIAs. In the case of India, its steady increase in the pace of its IIAs might be as a result of the interests of its counterpart countries. There is a possibility that other countries are interested in having IIAs with India as their investors (namely, the investors of the countries that concluded IIAs with India) aim to make investments in India.

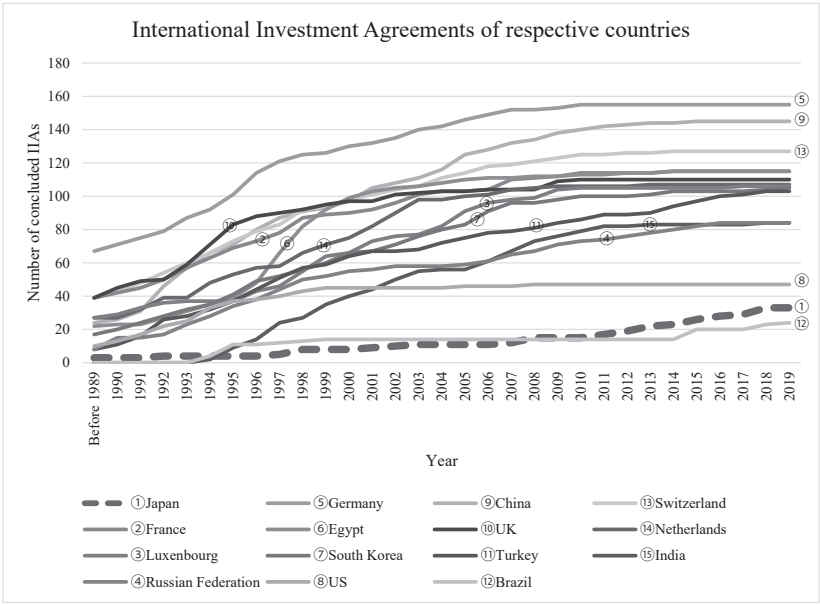

Figure 1 IIAs of respective 15 countries
Source: United Nations Conference on Trade and Development (UNCTAD)

3 Methodology

The benefits gained by each country as a result of concluding IIAs are considered to be transmitted to partner countries, and vice versa, because of MFN Clauses; that is, the profit or obligation of one country reflects that of the partner countries, and there is an inherent structure in which the home country also produces benefits for the partner countries. The "advantage of position," or effective positioning, or the "effectiveness" of IIAs in this research, is examined by the eigenvector centrality. The eigenvector centrality is a good tool for expressing such a chained profit propagation structure. This index is mathematically equivalent to what is called "advantage of position" in the field of urban engineering and "page rank" in the field of network science. The main point of this research is to examine the following: to what extent each country plays a central role. To examine, this research

mathematically positions each country, based on data that shows the relationships between and among the countries. In the fields of mathematical sociology, information engineering, and urban geography, there are indexes for measuring the centrality of the subject based on the networking structure or state of connection between subjects such as eigenvector centrality (what is called advantage of position in the field of urban geography), Katz centrality, page rank, degree centrality, closeness centrality, and betweenness centrality. This research uses eigenvector centrality for the following reasons. Firstly, eigenvector centrality is an index that has a feature of receiving a positive contribution from the centrality of the connected subjects, and at the same time, exerting the influence of its own centrality to the connected subjects. As it is assumed that the greater the benefits one country receives by its connectivity with other countries through agreements, the more it also gives the benefits to the partner countries, eigenvector centrality is an effective method to analyze based on the purpose of this research. Secondly, as the network among the countries which was developed by the concluded agreements constitutes a connected graph, the adjacency matrix is irreducible. Therefore, this research especially did not use Katz centrality which is used to analyze the similar cases but only when they are not irreducible.

The effectiveness in this paper is examined by the combination of the number of agreements and the counterpart countries of IIAs for respective countries, therefore showing which country/countries are likely to be at the "center" of IIA agreements globally or effectively positioning itself among the countries. This research firstly examines the selected 15 countries (n=15 countries) which were chosen according to the aforementioned categories. This research then enlarges the number of countries and examines the 100 countries (n=100 countries) [25]. Those 100 countries are selected by the number of the agreements that they have concluded, from the top to the 100th. The data on the concluded investment-related agreements of the respective countries, both data for those 15 and 100 countries in this research, are based on publicly available data published by the United Nations Conference on Trade and Development (UNCTAD) (accessed in May and June 2019).

The relationships among the countries, based on their concluded IIAs, were examined using the following procedure: 1) to make an n × n square adjacent matrix A=[a_{ij}] among the countries - if there is an investment-related agreement between the countries, put “1” for the element a_{ij} and a_{ji} of the matrix A=[a_{ij}], and if not, then put “0” , and 2) to derive the eigenvector of the maximum eigenvalue of the matrix A. We used Mathmatica for the calculations. The value of the i-th element of the eigenvector was called the eigenvector centrality of i-th country. If matrix A is given by the adjacency matrix of the traffic network, the eigenvectors can be regarded as having “advantage of position”. Furthermore, if the adjacency matrix A is given by the link relation of the web site, the well-known “page rank” can also be obtained.

The meaning of the elements of the eigenvectors associated with the largest eigenvalue of the adjacency matrix is explained as follows. The adjacency matrix A is a (0,1) matrix, which is an n-th order real symmetric matrix corresponding to the number of vertices of the plotted graph. The eigenvalue λ and eigenvector x of this adjacency matrix A are expressed as:

$$A \cdot x = \lambda x. \qquad (1)$$

Here, according to the Peron-Frobenius theorem, A has the largest positive eigenvalue, while the largest eigenvalue belongs to the eigenvector consisting of nonnegative components. This “component x_i of the eigenvector belonging to the largest eigenvalue” is called the eigenvector centrality of the vertex i. Furthermore, from equation (1),

$$x_i = \frac{1}{\lambda}\sum_{i=1}^{n} a_{ij}x_j \quad (i = 1, 2, \ldots, n) \qquad (2)$$

is obtained. If a vertex is connected to either vertices with a large centrality value or many vertices, the centrality value tends to be large. Thus, this is an effective and unique method that describes the intensity of vertices recursively, based on the adjacency between vertices. An image of the matrix is shown in Table 1.

Table 1 Image of the matrix of 100 countries (first 15 countries as a sample here)

	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number	Country	Germany	Nether lands	France	United Kingdom	Switzer land	Luxem bourg	Romania	Czech Republic	Belgium	Spain	China	Finland	Sweden	Italy	Bulgaria
1	Germany	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
2	Netherlands	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
3	France	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
4	United Kingdom	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1
5	Switzerland	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
6	Luxembourg	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
7	Romania	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
8	Czech Republic	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
9	Belgium	0	0	0	1	0	0	1	1	0	0	1	0	0	0	1
10	Spain	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
11	China	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
12	Finland	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
13	Sweden	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
14	Italy	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
15	Bulgaria	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

The matrix is then calculated using both the formula and Mathmatica in order to produce the figures as shown in Table 2. The larger the number, the more “effective” positioning that the country has in terms of this research. The country with higher number for eigenvector centrality is considered to have developed more effective positioning in the world by concluding IIAs, in this paper.

Table 2 Sample of the outcome of 100 countries (first 10 countries as a sample here)

#	country	eigenvector centrality
1	China	0.168373
2	Turkey	0.163743
3	Czech Republic	0.160481
4	Romania	0.15247
5	Egypt	0.148388
6	Ukraine	0.144384
7	Germany	0.143708
8	South Korea	0.143623
9	India	0.140993
10	France	0.138638

4 Literature studies

There is no previous research that examined IIAs and/or effectiveness of MFN by using the same methodology of this research. Previous studies which are relevant to this research could primarily be those that dealt with networking. There is an accumulation of studies that investigated the networks and connections between or among places on trade and investments, especially in the field of economics. Studies include categories such as spatial economy and gravity model. Baldwin and Okubo (2005) concluded that re-locating to the big region is most attractive for the most productive firms, and Baldwin and Okubo (2006) showed "how more productive firms sort themselves to the large core region" [26]. Those studies, however, did not use eigenvector centrality to analyze. Other researches on networking that used eigenvector centrality are the following. Iino et al. (2018) examined how the research collaboration of firms affects the quality of their innovation outcomes by using comprehensive patent data for firms in the world, and showed that research collaboration substantially improves the quality of innovation of firms by combining a variety of knowledge in the collaboration. This study was based on a paper in Japanese, Iino et al. (2017), which considered eigenvector centrality to examine the effects. Yasumono and Itohisa (2013) investigated the networks in the process of cross-industrial standardization by using eigenvector centrality. Ukai and Kurita (2003) examined theoretical value for advantage of position associated with traffic network, by analyzing an eigenvector of the adjacency matrix corresponding to traffic network. In addition, in terms of MFN and its effects, among the accumulations of studies on MFN, a few studies examined the effects of MFN relevant to tariff reduction which could also be considered as the effects of networking among the countries. These studies considered more on trade side of WTO and FTA schemes, rather than MFN in IIAs, and did not use the same methodology of this research [27].

5 Analysis on 15 selected countries

The analysis was conducted, firstly, among the selected 15 countries. Following the aforementioned methodology, if there is an agreement between country A and

country B, then "1" was recorded in the cell where country A and country B intersect. If there is none, then a "0" was used, as shown in Table 3.

Table 3 The matrix of IIAs concluded among the 15 countries

#	country	Egypt	Turkey	South Korea	China	Russian Federation	India	Brazil	Switzerland	UK	France	Luxenbourg	Netherlands	Germany	Japan	US
1	Egypt	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
2	Turkey	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1
3	South Korea	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0
4	China	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0
5	Russian Federation	1	1	1	1	0	1	0	1	1	1	1	1	0	0	1
6	India	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0
7	Brazil	0	0	1	0	0	0	0	1	1	1	1	1	1	0	0
8	Switzerland	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
9	UK	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
10	France	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
11	Luxenbourg	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
12	Netherlands	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
13	Germany	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0
14	Japan	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
15	US	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	Total	13	13	13	12	11	11	7	7	7	7	7	7	6	4	3

The results were calculated and plotted using Mathematica under the aforementioned methodology, which is shown in Table 4. The plotted graph based on the results is shown in Figure 2. The vertical line of Figure 2 shows the result of eigenvector centrality and the horizontal line is the attributed number of the countries in the data table, Table 3 (first one is Egypt and the last one is the United States for Figure 2, based on the order in Table 3).

Table 4　Results of the 15 countries

#	country	eigenvector centrality	times (#15's as 1)	number of IIAs
1	South Korea	0.344309	3.3296	13
2	Turkey	0.337382	3.26261	13
3	Egypt	0.337382	3.26261	13
4	China	0.327512	3.16717	12
5	India	0.313953	0.03605	11
6	Russian Federation	0.305329	2.95265	11
7	Switzerland	0.225985	2.18536	7
8	UK	0.225985	2.18536	7
9	France	0.225985	2.18536	7
10	Luxenbourg	0.225985	2.18536	7
11	Netherlands	0.225985	2.18536	7
12	Germany	0.19377	1.87383	6
13	Brazil	0.175989	1.70188	7
14	Japan	0.142077	1.37394	4
15	US	0.103408	1	3

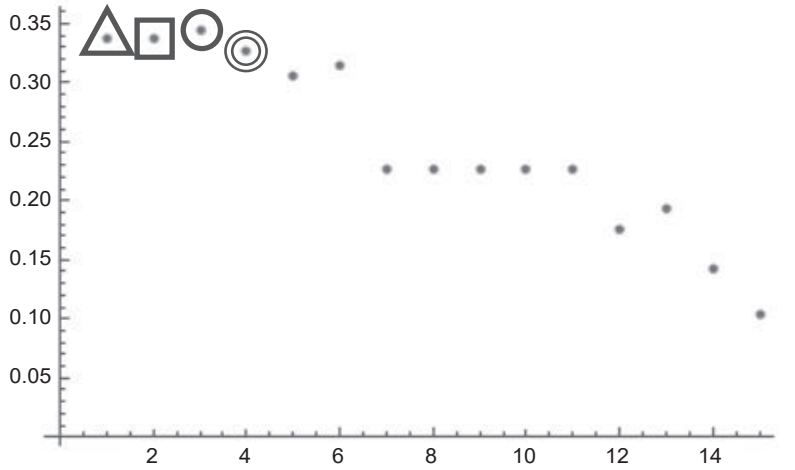

Figure 2　Plotted graph by the eigenvector centrality based on Table 4 [28)]

South Korea is marked in a circle, Turkey is marked in a square, Egypt is marked in a triangle, in Figure 2. These countries are the top three countries in terms of having “effectiveness.” China, marked in doubled circle, is the fourth. The results shown above imply the following: the number of IIAs works positively to the result,

as those three countries that have the highest number of IIAs (South Korea, Turkey, and Egypt) all came in the top three of the calculation. However, the results regarding the outcome figure highlight the difference, which is relevant to the counterpart countries of the respective countries. The same applies to those countries that have seven IIAs respectively, namely, Switzerland, the United Kingdom, France, Luxenbourg, the Netherlands, and Brazil. While all countries except Brazil have the same figure for eigenvector centrality, Brazil's eigenvector centrality is lower than the others. Among those top three countries that had the same number of IIAs, as well as the 15 countries as a whole, South Korea has the most effective positioning due to the IIAs that it had concluded. This shows that South Korea has more benefit compared with other countries, including those countries which had the same number of IIAs, due to its counterpart countries. Japan ranked fourteenth, the second to the last of the 15 countries, which is primarily due to its small number of IIAs among the countries. Separately, Japan has been increasing EPAs/FTAs that included investment chapter. This research only covers IIAs and does not cover EPAs/FTAs, but if it did, the ranking would be different. This also applies to other countries such as the United States that tend to conclude EPAs/FTAs in recent years.

6 Analysis on 100 countries

This research then expanded the scope to 100 countries, following the same procedure as that used with the initial 15 countries, as described above. The results, ranked from the higher figures to lower of the eigenvector centrality, are shown in Table 5. Figure 3 used a data table in which the numbers were attributed according to the number of concluded IIAs (the largest is on the left). The vertical in Figure 3 shows the effectiveness of the respective countries (the larger the amount, the more effective).

Table 5　Results of the 100 countries

#	country	eigenvector centrality	times (#100's as 1)	number of IIAs
1	China	0.168373	54.423	89
2	Turkey	0.163743	52.9264	84
3	Czech Republic	0.160481	51.8722	85
4	Romania	0.15247	49.2829	76
5	Egypt	0.148388	47.9633	74
6	Ukraine	0.144384	46.669	70
7	Germany	0.143708	46.4506	79
8	South Korea	0.143623	46.4231	73
9	India	0.140993	45.5731	71
10	France	0.138638	44.8119	76
11	Russian Federation	0.136695	44.1837	67
12	Kuwait	0.136387	44.0842	66
13	Bulgaria	0.136259	44.0427	64
14	Hungary	0.134025	43.3207	64
15	Switzerland	0.133927	43.289	73
16	Poland	0.133394	43.117	63
17	Belgium	0.131297	42.4391	71
18	Luxembourg	0.130487	42.1772	71
19	United Arab Emirates	0.126782	40.9796	64
20	Viet Nam	0.124755	40.3244	60
21	Slovakia	0.124544	40.2562	58
22	United Kingdom	0.124485	40.2371	66
23	Netherlands	0.123891	40.0452	67
24	Croatia	0.123376	39.8787	57
25	Iran, Islamic Republic of	0.121408	39.2425	59
26	Italy	0.120294	38.8824	63
27	Spain	0.120106	38.8217	63
28	Belarus	0.118857	38.418	58
29	Indonesia	0.117609	38.0148	58
30	Finland	0.11597	37.4849	60
31	Sweden	0.11597	37.4849	60
32	Lithuania	0.115195	37.2343	55
33	Malaysia	0.113318	36.6278	55
34	Kazakhstan	0.112074	36.2256	50
35	Argentina	0.111879	36.1625	55
36	Morocco	0.111568	36.0621	51
37	Austria	0.110102	35.5883	56
38	Jordan	0.108943	35.2137	51
39	Uzbekistan	0.105962	34.2501	48
40	Latvia	0.100728	32.5582	46
41	Pakistan	0.100723	32.5567	49
42	Serbia	0.10062	32.5233	45
43	Azerbaijan	0.0998117	32.2621	46
44	Albania	0.0997011	32.2263	44
45	Lebanon	0.0972863	31.4458	44
46	Tunisia	0.0968946	31.3192	44
47	Mongolia	0.0968591	31.3077	43
48	Greece	0.0958104	30.9687	44
49	Qatar	0.0957179	30.9388	47
50	Denmark	0.0948224	30.6494	47

#	country	eigenvector centrality	times (#100's as 1)	number of IIAs
51	Slovenia	0.0946451	30.5921	41
52	Moldova, Republic of	0.0939537	30.3686	43
53	North Macedonia	0.0928651	30.0167	39
54	Bosnia and Herzegovina	0.0894846	28.924	38
55	Portugal	0.0891477	28.8151	43
56	Chile	0.0887885	28.699	44
57	Algeria	0.0880593	28.4634	40
58	Armenia	0.0879235	28.4194	41
59	Singapore	0.0872754	28.21	41
60	Cuba	0.0856456	27.6832	42
61	Syrian Arab Republic	0.0850121	27.4784	39
62	Tajikistan	0.0814896	26.3398	35
63	Philippines	0.0791129	25.5716	36
64	Kyrgyzstan	0.0788764	25.4952	35
65	Yemen	0.0786523	25.4227	34
66	Thailand	0.0780311	25.2219	35
67	Georgia	0.0771523	24.9379	33
68	Oman	0.0758647	24.5217	33
69	Israel	0.0752611	24.3266	36
70	Estonia	0.0725275	23.443	32
71	Mexico	0.0696468	22.5119	32
72	United States of America	0.0689183	22.2764	35
73	Uruguay	0.0680177	21.9853	32
74	Bahrain	0.0678879	21.9434	30
75	Bangladesh	0.0653208	21.1136	29
76	Ethiopia	0.0650065	21.012	28
77	Libya	0.0618126	19.9796	28
78	Sri Lanka	0.0602703	19.4811	27
79	Malta	0.0600823	19.4204	26
80	Peru	0.0599383	19.3738	30
81	Saudi Arabia	0.0590866	19.0985	25
82	Venezuela, Bolivarian Republic	0.0585271	18.9177	28
83	Senegal	0.0583377	18.8565	26
84	Cambodia	0.0582265	18.8205	26
85	Cyprus	0.056511	18.266	26
86	Montenegro	0.0561011	18.1335	26
87	Lao People's Democratic Repub	0.0539715	17.4452	25
88	Mozambique	0.0529878	17.1272	23
89	Mauritius	0.0526951	17.0326	22
90	Japan	0.051968	16.7976	26
91	Canada	0.0515829	16.6731	25
92	Paraguay	0.0510348	16.4959	24
93	Panama	0.0503976	16.29	23
94	Australia	0.0488738	15.7974	22
95	Guatemala	0.0453134	14.6466	19
96	Costa Rica	0.0413017	13.3499	19
97	El Salvador	0.0390835	12.6329	19
98	Norway	0.0354365	11.4541	16
99	Iceland	0.0203221	6.5687	9
100	Ireland	0.00309378	1	1

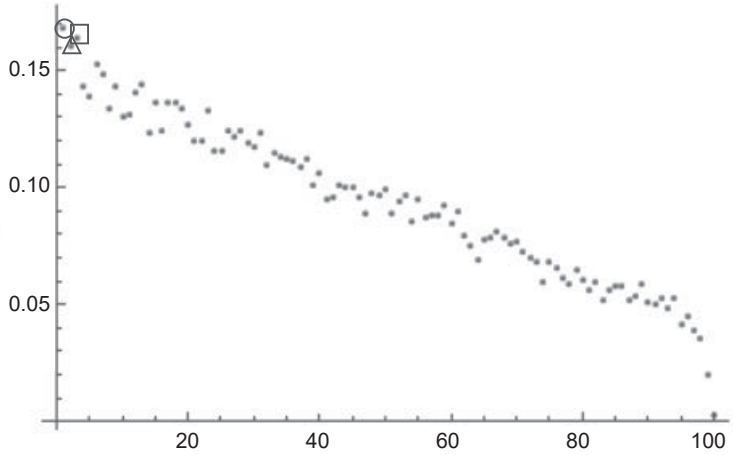

Figure 3　Plotted graph of 100 countries based on the list of 100 countries

As the table shows, in general, the more the number of IIAs the country has, the higher the country tends to rank in this calculation. However, again, the number of concluded agreements itself does not determine the rank of the effectiveness, but also who the partners are does. In Figure 3, China is marked in a circle, Turkey is marked in a square, and Czech Republic is marked in a triangle. These are the top three countries among the 100 countries. In terms of IIAs, these top three countries therefore have the most "effective" positions among the 100 countries. Although Turkey has smaller number of IIAs than Czech Republic, it has more "effective" position. This is due to the counterpart countries of the agreements. Turkey has agreements with the countries whose agreements, in total, exceeds the number of those of Czech Republic's partner counties.

China, which ranked fourth among the 15 countries, ranked first among the 100 countries [29]. China has the most effective position among those 100 countries, in terms of its conclusions of IIAs and the benefits it may have received from the agreements. South Korea, which ranked the first among the 15 countries, ranked eighth among the 100 countries. One of the reasons is that China has more IIAs than

South Korea when the counterpart countries are expanded to 100. The results also imply that China could be at the center of the rule making process of international investment-related agreements in terms of IIAs, especially as it has been concluding so many IIAs. Again, each agreement is the result of mutual agreements of the participating countries. Each agreement is unique though there are some tendencies in what kinds of obligations are included in the agreements which are relevant to protection of foreign investors and investments in host countries. The degree of such protection, as well as whether or not to include obligations relevant to liberalization of investment differentiate the quality of the agreements.

It could be assumed in terms of the Czech Republic, which is a current EU member country but which only joined in 2004, much later than the bloc's founding members, that other countries, including developed countries of EU members, needed an investment-related agreement with the Czech Republic, and that this resulted in the country's large number of concluded IIAs. A similar situation may also be true for other countries in Eastern Europe given their high ranks, Romania ranking in fourth, Ukraine in sixth, Bulgaria in thirteenth, and Hungary in fourteenth. These countries' economic relationships with the most developed countries in EU, such as Germany, France, and the United Kingdom, might be the key for the large number of concluded IIAs for Turkey, the Czech Republic, and other countries in Eastern Europe that are tightly clustered to those developing countries.

Japan ranked fourteenth among the 15 countries and ranked ninetieth among the 100 countries. These ranks illustrate that Japan is not currently in a position to have the effective or influential position among these countries, be it the selected 15 or 100, in terms of concluding IIAs. Japan’s relatively small number of IIAs may be the result of its policy prioritizing multilateral schemes, such as WTO agreements, rather than concluding bilateral agreements such as IIAs and EPAs/FTAs, until in the early 2000s. It is possible that effectiveness of Japan may increase in due course though, especially as the number of concluded IIAs is expected to increase following the aforementioned policy to conclude more international investment-related agreements.

As for the United States, the data shows its weak effectiveness compared to the

other 99 countries, while the same was also true among the selected 15 countries. This is a result of the relatively small number of IIAs that the United States had concluded compared with those countries which ranked highly. The United States has only concluded a small number of IIAs since 1999 and is more inclined to conclude EPAs/FTAs, which is assumed to be the main reasons of its low rank in this research.

7 Conclusion

This research addressed which country/countries are likely to have "effective" positioning by the IIAs, by using compiled data for total of 100 countries based on the large number of IIAs that each country has concluded. The research results show the following: Firstly, a country that has the most effective positioning among the 100 countries, thus in the world, is China. China has created the most effective positioning with the conclusions of IIAs among the selected 100 countries, which may also imply that China could be at the center of the rule making process of international investment-related agreements in terms of IIAs. China may also be a country that accumulate the rights and obligations relevant to foreign investment at the most through MFN provisions, as MFN provisions enables to transfer the rights and obligations of the agreements. As Chinese investors, including government funded ones, are vigorously making overseas investments, having international related agreements and gaining the feasibilities for protections of investors and investment as well as liberalization and market access would positively work for their activities. This also applies to overseas investments under China's Belt and Road initiatives. Secondly, though China positions itself effectively among the 100 countries, South Korea positions itself effectively among the selected 15 countries, many of which are developed countries. As developed countries, especially the United States and some of the countries in Europe, led in developing new types of provisions that contribute in protection and liberalization of investment, in general, it may be assumed that South Korea has the benefit of being transmitted rights for its investors with more sophisticated provisions.

There are also some possibilities for further studies based on this research. The

first would be a study that considers EPAs/FTAs and other regional and comprehensive agreements. This research primarily covered IIAs and not EPAs/FTAs. However, as there are also similarities between the obligations stated in EPAs/FTAs and those of IIAs, similar analysis focusing on EPAs/FTAs, or the combinations of EPAs/FTAs/IIAs, may also produce interesting results. This is especially so due to the fact that many countries are currently inclined to conclude EPAs/FTAs that have provisions on investment-related obligations. Comparing those may provide insights regarding other aspects of international investment-related agreement, as well. The second potential avenue for future research concerns the contents of the concluded IIAs. While this research conducted a quantitative analysis on effectiveness under a definition set for the purpose of this research, there are other ways to analyze the "effectiveness". One such way would be to analyze qualitatively, especially in terms of the top ranked countries including China. Even though many of the elements in the investment-related provisions may be similar to each other, each agreement could be unique. While many of the previous research on the qualitative analysis on the agreements were conducted separately, rather than looking at proliferation of the rights and obligation through networks of countries, it may bring an interesting outcome if the research would successfully be able to combine the qualitative analysis of the provisions and the qualitative analysis on proliferations as this research did. Such research would be relevant to examining the contents of agreements that China has concluded and to find the implications to the rule making in the world regarding foreign investment. Such endevour is also relevant to a question if individual agreement or a group of individual agreements is contributing in creating an environment for free trade. The third would be to examine the process of gaining effectiveness. This research was based on the recent number of agreements. However, as Figure 1 of this research shows, there are difference in the development, the pace and the number of agreements, among the countries. For example, by conducting the same analysis following the same procedure of this research for different times, such as by 10 years range, it may give us the idea on how certain countries have developed the effective positioning as well as the dynamics among the countries at certain times.

Endnotes

1) United Nations Conference on Trade and Development (UNCTAD), <https://investmentpolicy.unctad.org/international-investment-agreements> accessed on September 10, 2020.
2) Negotiations on international investment-related agreement at the WTO are in stagnation primarily due to opposition from developing countries. As for the recent Doha Round, which started in 2001, it was already decided in 2003 that investment-related negotiations would not be discussed within the round.
3) Keidanren <http://www.keidanren.or.jp/en/policy/2015/119.html> accessed 18 June 2019.
4) Trans-Pacific Partnership Agreement later changed to Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).
5) For example, Japan Foreign Trade Council, Inc., an economic organization in Japan, issued two requests for the facilitation for conclusion of Investment related Agreements on 18 June, 2016 (http://www.jftc.or.jp/proposals/2015/20160121_2.pdf), and June 25, 2018, (http://www.jftc.or.jp/proposals/2018/20180625_1.pdf, both in Japanese only, accessed 18 June 2019.
6) The Plan includes the following:
   "IV. Taking in Overseas Growing Markets
   (2) Specific measures to be newly taken
   i) Supporting overseas business expansion of Japanese companies
   ② Promoting Economic partnership negotiations, and conclusion/amendment of investment-related agreements and tax treaties
   - In order to expand free and fair markets in Asia-Pacific region and across the world, the Government will push forward to achieve entry into force of the TPP Agreement which Japan has concluded, and continue discussions on expansion of its member countries/regions. The Government will also promote negotiations on other economic partnerships strategically and expeditiously, including Japan-EU EPA, RCEP, and Japan-China-Republic of Korea FTA. Playing central roles in building such wide-area new economic order, Japan, as the standard-bearer of free trade, aim to take the lead in establishing comprehensive, balanced, and high-level global rules. The Government will implement cooperation with ASEAN to realize inclusive and innovative growth in Asian regions, and high-quality RCEP.
   - Based on the 'Action Plan for improvement of investment climate through promoting the conclusion of investment-related agreements' (announced in May 2016), the Government will work on negotiations aiming to sign and/or achieve entry into force of investment-related agreements (investment agreements and economic partnership agreements with Investment Chapters) covering 100 countries/regions by 2020, while strengthening organization. Expecting to cover eighty-two countries/regions in total, including those that are currently under negotiation, the Government will aim to launch new negotiations with thirteen other countries by the end of this year through consultation with them."

   Prime Minister of Japan and His Cabinet, <http://www.kantei.go.jp/jp/singi/keizaisaisei/pdf/ miraitousi2017_inttv_prgrm.pdf> accessed 18 June 2019.
7) Urata, Shujiro (2015) "Impacts of FTAs and BITs on the Locational Choice of Foreign Direct Investment: The Case of Japanese Firms" RIETI Discussion Paper Series 15-E-066 <https://www.rieti.go.jp/jp/publications/dp/15e066.pdf> accessed 18 June 2019.

8) This research focused specifically on IIAs, excluding EPAs/FTAs and any other comprehensive regional agreements that contain investment-related agreements. This is because this research primarily addresses rules on investment, and therefore tries to exclude other influences related to some of the other aspects of EPAs/FTAs, which are more comprehensive agreements than IIAs, such as tariff reduction. As this research covers only IIAs of the respective countries, the result may be different if all investment-related agreements, namely the investment chapters of EPAs/FTAs and the regional agreements are covered. For example, the member countries of the European Union, such as Germany and France, have more investment-related agreements when regional agreements are covered. This also applies to other countries including Japan.
9) The definition of "investment" or what to consider "investment" is usually stated at the beginning of the respective investment-related agreement. There are also IIAs that include elements of promotion and liberalization, in addition to protection.
10) The primary obligations of each clause or provisions are basically the same for most IIAs. However, the detail could be different among agreements, as each is the result of negotiations by the participating states.
11) "Under the national treatment rule, Members must not accord discriminatory treatment between imports and "like" domestic products (with the exception of the imposition of tariffs, which is a border measure)." extracted from a report by Ministry of Economy, Trade and Industry, <https://www.meti.go.jp/english/report/downloadfiles/gCT0213e.pdf>, p227 accessed 18 June 2019.
12) "This provision prohibits a contracting party from imposing performance requirements that hinder the free investment activities of investors, such as export requirements, local procurement requirements and technology transfer requirements, as conditions for investment and business activities of the investor in the other contracting party." extracted from METI, "2017 Report on Compliance by Major Trading Partners with Trade Agreements—WTO, EPA/FTA and IIA," 792.
13) "It is an "absolute", "non-contingent" standard of treatment, i.e. a standard that states the treatment to be accorded in terms whose exact meaning has to be determined, by reference to specific circumstances of application, as opposed to the "relative" standards embodied in "national treatment" and "most favoured nation" principles which define the required treatment by reference to the treatment accorded to other investment". extracted from OECD working papers on international investment 2004/04 "Fair and Equitable Treatment Standard in International Investment Law" <https://www.oecd.org/daf/inv/investment-policy/WP-2004_3.pdf> accessed 22 June 2019.
14) METI explains the Umbrella Clause this way: "The host country has an obligation to fulfill the promises made by itself to the investors (for example, permits for infrastructure projects and resource development, granting investment incentives, contracts with investors, etc.). If the host country violates the commitment, the investor could use international arbitration claiming a breach of the investment treaty, in addition to the domestic trial based on the breach of the contract." (Translated by the author). extracted from METI, <http://www.meti.go.jp/policy/trade_policy/epa/investment/cases.html> accessed 15 June, 2019.
15) WTO, <https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm> accessed 15 June, 2019.
16) Ibid.
17) Ibid.

18) There are treaties that are specifying the scope of application of MFN treatment to certain types of activities, especially by clarifying the nature of “treatment” under the IIA. There are treaties that excludes certain types of applications by stating in non-conforming measures.
19) WTO website states that MFN as the principle of trade without discrimination and foundation of the multilateral trading system. WTO, <https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm> accessed August 5, 2020.
20) UNCTAD, <https://investmentpolicy.unctad.org/investment-dispute-settlement> accessed August 5, 2020.
21) Though there are agreements without MFN, most of the agreements include MFN, especially as it is one of the fundamental of WTO and GATT principles, in order to develop “free and fair” trade and investment environment. Also, for those agreements that do not have MFN Clause may include the clause when concluded States make revisions or renewed agreements. Thus, this research also does not distinguish between agreements with MFN Clause and those without it.
22) Under MFN, receiving the “transferred rights” by MFN gives benefits to foreign investors of Country A investing in the Country B, host country, which is the counterpart country of an IIA.
23) The authors also acknowledge that a country that receives certain rights under MFN Clause also gives the similar rights to the third country. This means that it may increase the possibility for the country to become a respondent of ISDS case, too, if there are relevant obligations in the agreements.
24) These 15 countries, as well as the 100 countries of this research, were selected based on their number of concluded EPAs/FTAs. Though this study is focused on IIAs only, it was more relevant to consider the number of EPAs/FTAs when choosing the countries, as some of the countries have no or only a few IIAs, but also have EPAs/FTAs that include investment chapters. Those countries also have certain presence in the world due to their EPA/FTA agreements.
25) Though this research focuses on IIAs, those 100 countries were selected based on their number of concluded IIAs and Free Trade Agreements (FTAs). This is due to an expected future research that considers FTAs. This, the selection process of those 100 countries in this paper, does not violate the purpose of this paper. In addition, the numbers used in this research were based on the numbers of IIAs.
26) Baldwin, Richard and Okubo, Toshihiro (2006) “Heterogenous Firms, Agglomeration and Economic Geography: Spatial Selection and Sorting”, Journal of Economic Geography, 6(3), p323.
27) These studies include Chowdhury (2011), Ghosh et al. (2003), Tabakis (2014), Barbalet et al. (2015), and Vanegas and Baena (2019).
28) As the numbers on the horizontal line are the attributed numbers of the respective countries of those 15 countries, there is no correlation regarding the numbers on the horizontal line.
29) China may also be the first in the world. This assumption is based on the fact that other countries outside the 100 countries listed here have a limited number of IIAs and are not likely to affect the result of the research. There are a few countries that do not have any IIAs.

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