

Risk Analysis of the Chinese Outward Foreign Direct Investment from the Perspective of International Investment Competitiveness

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Abstract

The Chinese foreign direct investment experienced unprecedented growth during the last two decades. With \$118 billion of investment, China ranks 3rd following the U.S. and Japan in Outward FDI. However, with growth of foreign investment, associated risks and conflicts between the Chinese industry sectors and the recipients also continued to grow. This study attempts to analyze the troubled/risky transactions from a perspective of international investment competitiveness. By using Chinese Government data the authors create several indices as analytical tools. Revealed Investment Advantage (RIA) in combination with Industrial Static Agglomeration Degree (ISAD), and Industrial Dynamic Agglomeration Degree (IDAD) indices were computed to categorize the troubled/at risk transactions by industry sectors. Based on the analyses, the paper offers strategic suggestions toward reduction of risky transaction for Outward FDI.

Keywords: outward FDI; Revealed Investment Advantage (RIA); Industrial Static Agglomeration Degree (ISAD); Industrial Dynamic Agglomeration Degree (IDAD)

The Open Door economic policy that was initiated by Deng Xiaoping in 1978 to open up China to foreign businesses set into motion economic prosperity leading to massive economic transformation of modern China. Over the recent years, China has also become an outstanding participant on the stage of International investment. The Chinese Bureau of Business announced in January, 2016, that Chinese Outward Foreign Direct Investment (OFDI) reached to USD 118.2 billion in 2015 (Ministry of Commerce 2016). China virtually became the third biggest investing country in the world since 2012 following only the US and Japan. Commensurate with this rapid expansion of OFDI, both the degree of financial risks as well as the conflicts arising out of these investments continue to increase. Appendix 1 (column 4) shows, the annual increases in the number of troubled transactions followed by the amount of investment that is at a stake (in column 5). According to the 2015 statistics published by China Global Investment Tracker (CGIT), during 2008-2015, there were 149 troubled

projects out of the total of 1757 Chinese OFDI projects. The troubled projects thus accounted for 8.5% in terms of projects number and USD 1.3 billion or 15.8% of total volume of investment.

Sino Iron of China recently reduced billions of its investment in Australia. The Mexican government cancelled Chinese High-speed rail construction project. The Committee on Foreign Investment in the United States (CFIUS) disapproved Huawei-3Leaf System's deal (Xinhua Net, 2016). These are some typical cases which have aroused research interest on the subject matter. Political, social and economic reasons were listed and analyzed by many researchers, such as Agarwal & Feils (2007), Maliar & Sebastian (2008), Aven & Zio (2014), Fiodendji & Evlo (2015), and Sutherland (2015).

An in-depth study shows that the troubled projects are limited to certain industrial sectors. The CGIT data indicate that the troubled sectors include Energy and Mining, Transportation, Finance, Construction, IT, Manufacturing, Services and Agriculture. As reported in Appendix-2 the largest number of troubled investments has been in Energy and Mining sector (with 73 or 57.03% of all troubled investments during the period of 2008-2012). So a macro perspective on the issue of OFDI risk will not be useful, rather one should look into sector specific constraints and contingencies toward ascertaining sector specific competitive profile and their relative risk exposures.

Therefore, this article seeks to ascertain the Chinese OFDI risks from industry-specific international investment perspective. There are four sections in this article. The literature review has been done in section 1. In section 2, components of the research design including two indices were developed based on empirical analyses of available data. In section 3 the authors provide reports on each of the components of the research design including Revealed Investment Advantage (RIA), Industrial Static Agglomeration Degree (ISAD), based on CGIT updated industrial data (2008-2014). From the perspective of international investment competitiveness and industrial statistic agglomeration degree, this section also reports sector specific findings of the empirical analyses and formulates the tentative reasons for troubled investment projects toward risk assessment. In section 4, the paper proposes recommendations toward strategic OFDI decision making process to include to Industrial Dynamic Agglomeration Degree (IDAD).

1. Literature Review

The evolving literature on OFDI risks focuses on three aspects: First, several studies describe the positive and negative impacts of OFDI on the host country countries (Blomstrom & Kokko, 1997; Aitken & Harrison, 1999; Driffield & Taylor, 2000; Hanousek et al., 2011). These studies assert that the adverse impact leads to the investment troubles and greater risks of OFDI in the host country. These adverse impacts include: (1) OFDI may crowd out some local firms; (2) OFDI may yield potential risks to the physical environment of the host country; (3) it may also negatively affect the productivity of local firms; (4) it may also increase local firms' reliance on foreign capital and thereby impair the independent development of economic and technological capabilities.

Second, several studies assess the impact of political risks on OFDI. Both Pinto (2006) and Tuman (2009) use models showing how the incumbent government's partisanship affects the decision of foreign investors to invest in different sectors of Organization for Economic Co-operation and Development (OECD) countries. Based on a review of FDI performance in some Latin American and Asian countries, Emmert (2004), Oman (2007), Montero (2008) and Malesky (2008) show that in addition to fundamental factors such as market size, and GDP growth, socio-political stability and efficient legal framework have an effect on FDI inflows. Vadlamannati (2012) refers to micro economy of the U.S. especially to firms with an equity stake of 51% or higher and asserts that a lower political risk is associated with a higher proportion of investment in fixed assets; and also with higher returns on investments. He also hinted a possible variation of political risks across

different industrial sectors of Multinational Corporations (MNCs). In a recent article, Iqbal and Bai (2015) outline major political issues adversely affecting Chinese OFDI in South Asian countries.

Third, several studies reflect on the reasons behind the Chinese OFDI obstacles and risks. Some authors offer suggestions to the Chinese industrial strategy. The survey result of Economist Intelligence (2010) shows that the Chinese OFDI remains dominated by State Owned Enterprises (SOE), and the Chinese investors tend to feel unprepared for cross border acquisitions. The survey also predicted trending of the following: (i) that the demand for reciprocity between the host and the investors will increase; (ii) that the common fear of the western countries of job loss, and of the concerns for intellectual-property protection will remain acute. In addition, the survey cited a lack of effective communication between investor and recipient as a major obstacle. Wang et al. (2014) describe the following negative impacts that Chinese investors bring to the host economies: (1) limited technology transfers with job creation; (2) damages the reputation and relationship of the investors in the host country due to socially unacceptable misbehavior of the expatriate Chinese management personnel. Zhang and Liu (2015) offers suggestions that should encourage financial innovation, and, make full use of the advantages of the favorable exchange rate of RMB against the US dollar.

The evolving Chinese literature on OFDI also contributes to investment strategy and risk. Meng (2014) states that the political risk is generally higher in the resource area; and the expropriation risk is generally higher in technical areas of the Chinese OFDI. Ma (2014) points out that Chinese government should encourage industries with excess production capacity to invest outward, and discourage investment in the real estates as OFDI return in real estate is relatively lower than other areas. Wang (2013) analyzes risk tolerance of the industrial sectors and found that Chinese OFDI in IT, automobile, and finance would tend to have higher level of risk tolerance. Sheng & Cao (2015) assesses the current situation of the Chinese OFDI, and labels the Chinese investment mode as a focused resource acquisition. This author believes that such as a strategy engenders concerns in the western societies. Wei & Chen (2009) and Yang (2015) argued that under certain circumstances, China favors the strategy of pumping strategic resources into high risk countries. Therefore, OFDI risks are inherent and are unavoidable under such a strategy.

A review of the OFDI literature pertaining to Chinese investment establish the following facts: (1) Studies focus on the variables in the host countries; (2) Investment methods and strategies; (3) Studies dealt with country specific economic and political risk factors; (4) some studies mention about intensified conflicts between the host country recipients and the Chinese investor and the associated causes. However, there is no credible study done that deals with the relationship between the OFDI risks inherent in the investing industries or the sector of industries. This paper addresses the void in the literature and explores the reasons behind Chinese OFDI risks and conflicts with empirical measurements of industrial profiles created through three indices Revealed Investment Advantage index (RIA), ISAD Industrial Static Agglomeration Degree index (ISAD) and Industrial Dynamic Agglomeration Degree index (IDAD).

2. An Empirical Analysis with RIA

2.1 International Investment Competitiveness

Lu (2003) mentions investment competitiveness when he studied on the firm competitiveness. He argues for recognizing the company's international investment competitiveness (IIC) apart from the firm's capability of making external investment decisions and operating/ managing international projects. Ma (2010) while using IIC notes that it lays special emphasis on project investment and finance, technological complexity, entrepreneurship management and brand competitiveness, international trade competitiveness and marketing mix. However, Lu's study was mainly conceptual lacking an empirical depth of analysis.

2.2 Design of the Indicator-RIA

This study puts Lu's idea forward, calculates IIC indicator and attempts to assess the Chinese international investment competitiveness with quantitative analysis. The authors consider the availability of data and convenience of practices and calculates the Revealed Investment Advantage index (RIA) in the following way:

$$RIA_{ia} = (X_{ia} / X_{it}) / (X_{wa} / X_{wt})$$

In this formula, X_{ia} is the investment volume of country i in industry a ; X_{wa} is the world investment volume in industry a ; X_{it} and X_{wt} are the total international investment volumes of country i and the world market respectively in time period of t .

This indicator shows the comparative advantage of country i over other countries in the investment of industry during some period. Generally, if $RIA_{ia} > 1$, country i has comparative advantage over other countries in industry a , its advantage enlarges with the bigger RIA; If $RIA_{ia} < 1$, it means that country i is comparatively disadvantage in industry a .

This indicator thus eliminates the effect of gross fluctuations of variables in a country, as well as the world market.

2.3 The Empirical Analysis on IIC with RIA

2.3.1 Data Resources

The Chinese OFDI data of each industry comes from 2014 Statistical Reports of China's OFDI. Value of OFDI flow is adopted in this article. The world investment data came from World Investment Report 2015. The total value of cross-border M&A (Mergers and Acquisitions) and that of each industry sector are used.

2.3.2 Results and Analysis

The results of calculation on IIC with RIA sorted by 2014 RIA are presented in Table 1.

Table 1: RIA of Chinese OFDI by Industry: 2008-2014

Industrial Sectors	2008	2009	2010	2011	2012	2013	2014
Agriculture**	0.65	2.38	1.07	4.14	0.72	0.71	11.35
Mining**	0.74	1.30	0.44	0.73	1.16	2.15	1.36
Manufacturing	0.1	0.15	0.18	0.26	0.29	0.18	0.21
Infrastructure**	0.30	0.04	-0.75	0.66	0.61	0.20	0.32
Construction	1.77	0.16	0.77	3.99	5.38	3.98	4.69
Retails and Wholesales	2.47	8.78	4.72	5.01	3.83	-10.19	2.41
Transportation and Storage	1.98	1.93	2.67	1.19	1.07	1.68	1.30
Finance	1.50	2.59	0.74	0.70	1.00	0.88	0.38
Business Services	2.71	7.19	4.99	3.93	2.29	1.79	2.31
IT**	0.12	0.03	0.13	0.23	0.13	0.13	-0.17

(2014 Statistical Reports of China's OFDI, World Investment Report 2015)

*As there is no exact value of world OFDI by industry in the World Investment Report 2015, total value of cross-border M&A data and that of each industry have to be considered as the value of the world.

***Agriculture* includes: Hunting, Forestry and Fisheries; *Mining* includes: Quarrying and Petroleum; *Infrastructure* includes: Electricity, Gas and water. *IT* includes: Information and Communication

First, from RIA result of 2014, the authors can assure that China has comparative advantage over other countries in Agriculture (with RIA greater than 11); Business Services, Construction, Retail and Wholesales are more advantageous as sectors (with RIA between 2-5); The competitive advantage is weak in Mining, Transportation and Storage, Finance, Energy, and IT sectors are less advantageous relative to other countries.

2.4 The Analysis of IIC of Troubled Investments

Considering the fluctuation of RIA value of different industrial sectors in different years, a statistic feature of the troubled transactions according to RIA value in different years is shown in Table 2.

Table 2: Amounts of Troubled Transactions at Different RIA Value

RIA	0.01-0.50	0.51-1.00	1.01-1.50	1.51-2.00	2.01-2.50	2.51-3.00	3.01-3.50	3.51-4.00	4.01-4.50	Above 4.51	Sum
Amount	28	18	54	2	14	5	0	6	1	0	128
Proportion	22%	14%	41%	2%	11%	4%	0%	5%	1%	0%	100%

Data resource: Statistics according to Appendix 2

This study partitions the IIC level of troubled investments into 7 intervals according to the result of RIA, and shows the relationship between industrial proportion of troubled investment and its IIC level with the following pie chart (Chart 1).

Chart 1: Relationship between Industrial Proportion of Troubled Investment and Its IIC Level

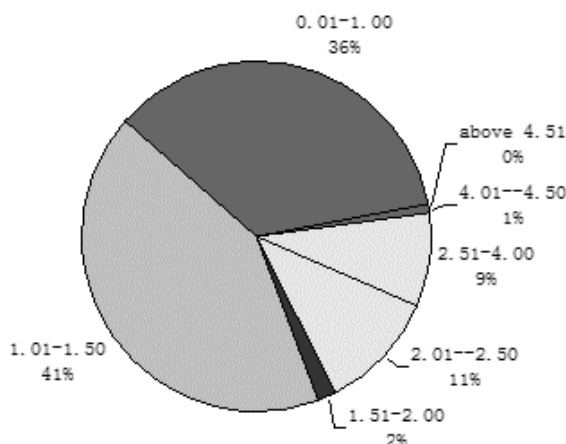


Chart 1 shows that 36% of troubled investment has IIC level lower than 1 and 41% of troubled investments have IIC level of 1-1.5. Two percent (2%) of the troubled investments have IIC level greater than 1.51 to 2; and 11% of the troubled investment have IIC level more than 2 to 2.5. Nine percent (9%) of the troubled investments have IIC level greater than 2.51 to 4 and finally, 1% of the troubled investments have IIC score of 4.01-5. Thus it seems that lower the industry sector's IIC score, the higher the proportion of troubled investment in the industry sector, and vice versa. The industrial sectors that lack competitiveness is at a higher troubled ratio in OFDI than the industrial sectors with higher competitiveness. There is no troubled investment when the competitiveness when its RIA value is 5 or higher.

A special situation exists in the competitive industry groups, that is, the less competitive industries with weak advantage, i.e. RIA value is 1-2, made more risky investment thus yielding a higher percentage of troubled investment than the industries with RIA value 0-1. Judging from the RIA values for each year, the groups of industries with RIA values 1-2 account for 43% of the troubles transactions. Typical industry sectors are mining, transportation, and financial. During 2008-2014, the average RIA of these three industry are 1.13, 1.69 and 1.1, with less competitiveness. The troubled investment of these 3 industries account for 75% of total troubled investment.

However, the mining, transportation, and financial sectors play an important role and that their respective investment volumes are much higher than other sectors. Therefore, these sectors rank high in the Chinese OFDI portfolio. Now the research questions may be formulated in the following two propositions: P₁: Higher the investment volume, higher is the likelihood of the investment getting into trouble, and P₂: Higher investment frequency higher is the investment risk irrespective of IIC (low) scores? The authors have used Industrial Static Agglomeration Degree (ISAD) to answer this question. ISAD is used widely in the area of industrial economics to measure the situation of industrial static agglomeration in Chinese OFDI. With the help of new index (ISAD), this paper will summarize and analyze the reasons contributing to the troubled investments of Chinese OFDI in addition to IIC perspective.

3. An Empirical Analysis with the Index of Industrial Static Agglomeration Degree (ISAD)

3.1 Introduction of ISAD

ISAD of OFDI shows the proportion of one country's OFDI in one industry to its total OFDI value. It is an indicator that measures the distribution of OFDI stock in different industries.

ISAD is calculated with the following formula:

$$Si = ai / \sum_{i=1}^n ai$$

In the formula, S_i shows the investing country's industrial static agglomeration degree of the

industry i ; a_i shows the OFDI stock value of the investing country in the industry i ; $\sum_{i=1}^n a_i$ shows the total OFDI stock value of this country.

3.2 The Empirical Analysis with ISAD

According to the above formula, the authors calculate Chinese ISAD of 2008-2014. The data resources are the same as that of Table 1. The industries are listed with ISAD score higher than 1, and rank them according to their respective values for 2014. The result is shown in Table 3.

Table 3: ISAD of Chinese OFDI: 2008-2014

Industries	2008	2009	2010	2011	2012	2013	2014
Business Services	29.67	29.68	30.66	33.50	33.03	29.64	36.53
Finance	19.95	18.72	17.42	15.87	18.13	17.73	15.59
Mining	12.43	16.51	14.08	15.77	14.06	16.07	14.02
Retails and Wholesale	16.23	14.52	13.24	11.56	12.82	13.27	11.66
Manufacturing	5.25	5.53	5.61	6.35	6.42	6.36	5.93
Transportation and Storage	7.89	6.77	7.31	5.95	5.49	4.88	3.93
Real Estate	2.23	2.17	2.29	2.12	1.80	2.33	2.79
Construction	1.46	1.39	1.95	1.90	2.42	2.94	2.56
Infrastructure	1.00	0.92	1.08	1.68	1.69	1.70	1.70
IT	0.91	0.80	2.65	2.25	0.91	1.12	1.40
Academic Service*	1.08	1.17	1.25	1.03	1.28	1.31	1.23
Agriculture	0.80	0.83	0.82	0.80	0.93	1.09	1.10
Other Services	0.39	0.39	1.02	0.38	0.67	1.16	1.02

Data Resource: 2015 *Statistical Reports of China's OFDI*

*Academic Service includes: Academic Service & Geological Prospecting;

Other Services include: Resident, Civil and other services

The preceding data show that, in China, during 2008-2014, Business Services, Finance, Mining, Retail and Wholesale account for more than 75% of total stock value of the Chinese OFDI. The stock value proportion of first two industries came up to 52% in 2014. The data presented above show that Chinese OFDI tends to agglomerate to these four industries. From the view of growing trend, the ISAD increases obviously in Business Service, Mining, Construction and other services industry; ISAD decreases in Retail, Wholesale, Transportation and Storage; it goes up slightly in Infrastructure, Academic Service, Agriculture; the ISAD fluctuates considerably in the construction industry.

3.3 The Analysis of ISAD of Troubled Investments

This study partitions the ISAD scores of troubled investments into 4 intervals and shows the relationship between proportion of troubled investments of the industrial sectors and its ISAD level with the pie chart (Chart 2).

Chart 2: Relationship between Industrial Proportion of Troubled Investment and Its ISAD Level

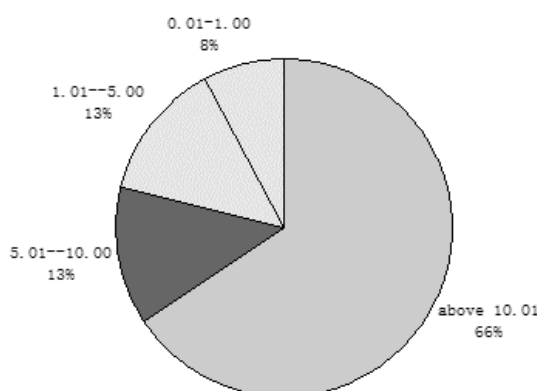
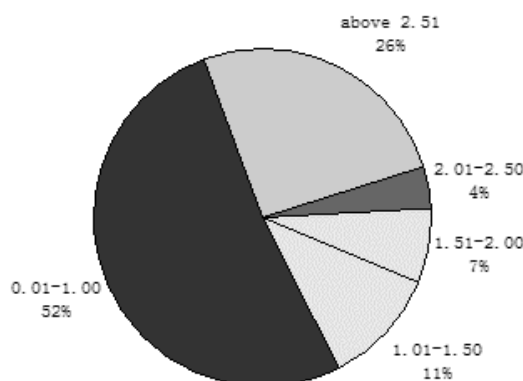


Chart 2 shows that the industries at ISAD level above 5.01 account for 79% of troubled investments; but only 8% of the troubled investments reported in the industries with ISAD level less than 1. Such percentage is lower than 8.5%, the average level of troubled Chinese Outward FDI during 2008-2014. So the ISAD level could explain the proportion of troubled investments in the industrial sectors. It could be inferred from the above pie chart that the relationship tends to be a positive association between ISAD and Investment, i.e., the higher ISAD level; the more likely it is that the investment of the industrial sector will be in trouble.

In order to test propositions P_1 and P_2 the authors put RIA and ISAD together, and contrasted them in Chart 3.

Chart 3: Relationship between Industrial Proportion of Troubled Investment, RIA and Its ISAD Level



In Chart 3, the authors chose the investment with an ISAD level above 5.01 to check whether they have the different possibility of being troubled at a different RIA level. The Chart 3 gives a clear view. In the chosen industries, only 5% troubled investment happened in the industries with RIA level over 2.51. On the contrary, more than 80% troubled investment happened in the industries with RIA level lower than 2. So the authors concluded that, in the higher ISAD level industries, IIC still will indicate the level of risk with the investment.

3.4 Summary and Conclusion

Based on the aforementioned analysis, one can draw the conclusion that, the industrial IIC score explains the variation of troubled investment and investment risk of Chinese OFDI. The industrial proportion of troubled Chinese OFDI seems to be negatively associated with industrial IIC, and positively associated with its ISAD. Thus IIC plays a leading role in successful investment. One special finding of this study is that the industries with a weak advantage over other countries (i.e. RIA level is 1.01-2.00) tend to experience a higher ratio of troubled investment than the industries without a favorable IIC score. This particular conclusion explains the current Chinese OFDI scenario well.

4. Strategies and Suggestions- Based on an Empirical Analysis with the Index of Industrial Dynamic Agglomeration Degree (IDAD)

After getting the fundamental factor of Chinese OFDI industrial risks, this study tries to judge whether the industrial choice of Chinese OFDI is logical, and whether the industrial location of the Chinese OFDI helps evade the investment risk. The authors adopted the IDAD index to analyze and make appropriate judgment. On the basis of such judgment, a few strategy recommendations will be provided.

4.1 Introduction of IDAD

The index of IDAD, which is different to ISAD, reflects the industrial agglomeration and transfer of OFDI of a investing country over a period of time. It shows the direction and speed of industrial transfer more clearly. The degree of IDAD has been calculated as follows:

$$D_i(0-t) = b_i(0-t) / \sum_{i=1}^n b_i(0-t)$$

In the above formula, $D_i(0-t)$ is the index of IDAD in industry i during the period $0-t$; $b_i(0-t)$ is the country's OFDI growth rate in industry i during the period $0-t$;

$\sum_{i=1}^n b_i(0-t)$ is the average growth rate of OFDI in the investing country during this period.

If $b_i(0-t) > 0$, it means the OFDI of industry i increases gradually, and one can say, industry i is a developing industry; if $b_i(0-t) < 0$, the authors call the industry i is a reversing industry.

When $\sum_{i=1}^n b_i(0-t) > 0$ and if $D_i(0-t) > 1$, it means the investing country's OFDI agglomerate to the industry i in the period $0-t$; if $D_i(0-t) < 0$, it means OFDI transfers from industry i to other industries in this period; but if $0 < D_i(0-t) < 1$, it means the OFDI in the industry i increase with the lower speed than the average growth of aggress OFDI, OFDI transfers from industry i to other industries in this period.

But when $\sum_{i=1}^n b_i(0-t) < 0$, if $D_i(0-t) > 0$, it must due to $b_i(0-t) < 0$, it means, OFDI transfers out from industry i in this period; but if $b_i(0-t) > 0$ and $D_i(0-t) < 0$, it means the investing country's OFDI agglomerate to the industry i in the period. But the authors think that the situation of $\sum_{i=1}^n b_i(0-t) < 0$ is so rare in the common economic situation, but it will happen in a crisis or other special circumstances.

4.2 Empirical Analysis with IDAD Index

The authors used China's 2008 – 2014 OFDI data to calculate the growth rate in each industry. On the basis of the average growth rate, the authors worked out the index of IDAD of each industry from 2009 thru 2014. The authors used the values of 2014 to rank 15 industrial sectors as shown in Table 4.

Table 4: IDAD of Chinese OFDI: 2009-2014

Industries	2009	2010	2011	2012	2013	2014
Accommodation and Catering	3.97	4.36	-1.32	0.54	-1.30	6.95
Infrastructure	13.74	2.58	2.43	0.10	-2.13	5.61
IT	-0.03	1.84	1.50	1.87	0.42	4.45
Culture and Amusement	5.71	19.71	-1.24	2.77	1.91	2.37
Real Estate	-1.12	1.61	0.63	0.07	3.15	2.36
Other Services	2.09	0.45	0.06	5.36	0.88	1.63
Business Services	5.13	1.07	-0.43	0.14	0.04	1.27
Manufacturing	-0.30	2.43	1.43	0.72	-0.56	1.17
Transportation and Storage	-0.62	3.89	-1.54	0.52	0.35	0.92
Retails and Wholesale	-0.02	0.22	1.50	0.83	0.40	0.88
Agriculture	-0.66	1.25	1.39	2.61	0.79	0.43
Finance	13.26	-0.03	-0.83	2.06	1.64	0.19
Academic service	-0.81	0.70	-0.86	3.42	0.70	-0.24
Construction	2.19	7.90	0.03	3.03	1.13	-0.78
Mining	0.77	-1.28	4.30	-0.20	2.73	-1.17
$\sum_{i=1}^n b_i(0 - q)$	0.56	0.45	0.36	0.32	0.30	0.28

Data Resource: 2014 *Statistical Reports of China's OFDI*

Based on Table 4, this study reveals the following findings. First, the average growth rate of Chinese OFDI gradually dropped from 2009 - 2014. Second, there are 9 agglomerated industries in Chinese OFDI during these 6 years. In general, most industrial sectors show growth tendencies. The Infrastructure industry grew more than tenfold over the Chinese OFDI average growth during this time period. Third, the Mining and Construction industrial sectors tend to be in the negative due in part to China's reduction in investment in these industrial sectors. Fourth, there are four industries (Transportation & Storage, Retail & Wholesale, Agriculture and Finance) with the index value between 0 and 1; this means the growth of OFDI in these industries is behind the average rate over these 6 years.

4.3 Strategies and Suggestions

Using the above research of the industrial distribution of the main deterred projects of Chinese OFDI during 2009-2015, the authors have summarized the investment situation of the industries in Table 5.

Table 5: The Comprehensive Situation of Industrial Targets and Risks of Chinese OFDI by Industry

Industrial Sectors	IIC (RIA)	Proportion in Total OFDI (ISAD)	Industry Tendency (IDAD)
Agriculture	>>2	1-5	Transferred*
Construction	>2	1-5	Agglomerated
Retails and wholesales	>2	>10	Transferred
Business services	>2	>10	Agglomerated
Mining	1-2	>10	Transferred
Transportation and Storage	1-2	1-5	Transferred
Finance	<1	>10	Transferred
Infrastructure	<1	1-5	Agglomerated
Manufacturing	<1	5-10	Weak Agglomerated
IT	<1	1-5	Agglomerated

Data Resource: 2015 Statistical Reports of China's OFDI, *World Investment Report* 2015

*Transferred investments to other industrial sectors

The authors have integrated three indices in Table 5. It shows where each industry stands on the Chinese OFDI and how generally favorable and riskier the investment. This is due to: (1) the investment in Mining, Transportation, Finance and other industries that are in trouble which shows an obvious trend. Manufacturing industry also slashed its investment and began to transfer investments into the new industries. (2) The investment in Infrastructure, IT and other industries without investment advantage (i.e. lower RIA) are found to be agglomerated. It shows that investments in these two sectors are exposed to increased risks. Chinese investors may therefore avoid targeting such industries when making investment decisions. (3) The investment in Agriculture, Retail and Wholesale industry although are most advantageous and competitive relative to other countries, but they yield lower than average growth rate. Therefore, there seems to be great potential in these industries provided Chinese government and the relevant companies strategically plan and execute such investments for greater effectiveness.

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Appendices

Appendix 1: Statistics of Troubled Investment (By Project and Volume)

Year	Total Projects	Total Volumes (millions of US Dollars)	Troubled Projects	Troubled Volumes (millions of US Dollars)	Troubled Project Percentage	Troubled Volume Percentage
2008	101	120,400	15	37,140	14.9%	30.8%
2009	156	139,930	17	36,500	10.9%	26.1%
2010	193	147,340	19	18,600	9.8%	12.6%
2011	227	155,990	23	36,730	10.1%	23.5%
2012	240	158,690	19	17,730	7.9%	11.2%
2013	258	168,000	16	17,130	6.2%	10.2%
2014	290	195,030	19	21,700	6.6%	11.1%
2015	292	213,840	21	20,150	7.2%	9.4%
Sum	1757	1,299,220	149	205,680	8.5%	15.8%

Appendix 2: Statistics of Troubled Investment (By Industry)

Industries	2008	2009	2010	2011	2012	2013	2014	Total Amount	Percentage
Mining	4	12	10	9	12	13	13	73	57.03%
Transportation and Storage	7		3	1	6	1	3	14	10.94%
Finance		2	1				1	11	8.59%
Construction	1			6				8	6.25%
IT	2	1	3			1	1	7	5.47%
Manufacturing	1	1	2	3				7	5.47%
Service				3		1	1	5	3.91%
Agriculture		1		1	1			3	2.34%
Sum	19	16	19	23	19	17	15	128	100%