

Risk Assessment of Chinese Enterprises' Foreign Direct Investment in African Agriculture

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Abstract: The “going out” initiative of agriculture has brought opportunities for Chinese companies to invest directly in foreign agriculture, accompanied by varying degrees of risk. This paper uses factor analysis to empirically analyze the risks of Chinese enterprises' direct investment in African agriculture. The empirical results show that West Africa and South Africa have relatively low investment risks; East Africa has moderate investment risks; Central Africa and North Africa have higher investment risks. In the face of these foreign direct investment risks, enterprises should improve their risk prevention capabilities, and the government should increase policy support.

Keywords Foreign direct investment, Investment risk, Factor analysis

INTRODUCTION

According to the “2017 China outward Foreign Direct Investment Statistics Bulletin” issued by the Ministry of Commerce and the National Bureau of Statistics, as of the end of 2017, China's outward foreign direct investment flows accounted for 5.9% of the global outward foreign direct investment flows, down 2.4 percent from the previous year. Ranked third in the world. In 2017, China's outward foreign direct investment flows in agriculture, forestry, animal husbandry, and fishery were US\$2.51 billion, down 23.7% from 2016 and accounting for 1.6% of outward foreign direct investment flows. By the end of 2017, China's total outward foreign direct investment balance in agriculture, forestry, animal husbandry and fisheries was US\$16.56 billion, accounting for 0.9% of the foreign direct investment stock.

In 2017, Chinese companies' investment flow to Africa was 4.1 billion us dollars, up 70.8 percent year-on-year, accounting for 2.6 percent of China's outward foreign investment flows and the fastest growing target market in the five continents. The stock of investment in Africa is 43.3 billion US dollars, accounting for 2.4% of China's outward foreign investment stock. China's outward investment in Africa involves 52 countries with a coverage rate of 87.6%. In 2017, China invested 150 million U.S. dollars in African agriculture. Due to the high political and natural risks in Africa, the investment volume is small, but the investment potential is large. Africa's economic growth rate in 2017 was 2.4%, significantly higher than the 1.3% growth rate in 2016. Internationally, it is generally believed that Africa will maintain or exceed the economic growth rate in 2017

in 2018. Therefore, it is necessary to assess the risk of agricultural foreign direct investment in African countries in order to increase the success rate of direct investment in agriculture in Africa.

LITERATURE REVIEW

Risks of enterprises' OFDI

At present, there is no unified standard for the types of outward foreign direct investment (OFDI) risks. Scholars have analyzed the risks of OFDI from different aspects. The analysis method of three - variable model is put forward and widely used in the world. It was proposed that the main risks faced by enterprises in OFDI are the macro risk, namely environmental risk, medium risk, namely industrial risk, and micro risk, namely firm-specific risk [Miller, et. al., 1996]. Trade links, economic development, political risk, and resource endowment are the main factors to be considered when an investor makes foreign investment [Thomas, et. al., 2001]. Took the telecommunications industry in Nigeria as an example to study the impact of political risk on OFDI, and the most significant impact of political risk on OFDI is government corruption [Ellis, et. al., 2015]. Through empirical analysis found that, compared with other types of risks, political risk has a more significant impact on OFDI in the long run [Daniel, et. al., 2018]. China started to analyze the risks of OFDI relatively late. Changes in policies and laws, political situation and economic situation of the host country would bring financial losses to investment enterprises [Shen, et. al., 2003]. Qualitatively analyzed the risks of the outward foreign direct investment in enterprises from three aspects of politics, economy and business risk [Xie, et. al., 2007]. Enterprises are faced with risks caused by trade barriers and investme

nt barriers in their OFDI, and put forward risk prevention measures from the legal level [Cui, et. al., 2010]. Used political stability, political democracy, government effectiveness, legal system perfection, corruption control, and terrorism to quantitatively evaluate the political risk of the host country [Zhou, et. al., 2017]. Divided the OFDI risks of Chinese enterprises into common risks and industry-specific risks by analyzing risks encountered by Chinese enterprises during their investment in Southeast Asia [Fan, et. al., 2017].

Risks of enterprises' investment in African agriculture

The main risks faced by China's agricultural investment in Africa are: political instability, low economic level, natural environment change, low level of opening-up and low efficiency of relevant departments, and put forward Suggestions from these aspects [Han, et. al., 2003]. The main risks of Chinese enterprises' direct investment in African agriculture are political instability, imperfect policies and systems, backward agricultural irrigation facilities, and restrictions on land resource development [Chen, et. al., 2013]. Through questionnaire survey that political, legal, social and natural risk of various types faced by Chinese enterprises in agricultural direct investment in Africa account for a large proportion [Hong, et. al., 2014].

EMPIRICAL ANALYSIS

This paper surveyed 151 companies that invested in agriculture in Africa, of which 20 were in a state of suspension and 23 were in preparation. The questions set in the survey included the most likely risks for enterprises in Africa. After sorting out the survey data, it was found that political risks ranked first, accounting for 51%, followed by economic risks accounting for 30%, natural risks accounting for 16%, and other types of risks accounting for 3%. China's OFDI involves 52 countries in Africa, and factor analysis is used to evaluate the risk of agricultural direct investment in these 52 countries. Data of South Sudan, Eritrea, and SAO Tome and Principe are seriously missing, so they are not included in this analysis.

Indicator selection

1) Political stability

Political stability means that the political system of the society maintains the order and continuity of dynamics, and it means that there is no overall political unrest and social unrest. The higher the political stability of the host country is, the lower the investment risk is, and the greater the investment of China in the country is [Song, et. al., 2018].

2) Government corruption control

Government corruption control reflects people's views on the extent to which public power is exercised for private benefit, including various forms

of corruption. Political corruption in the host country would make it less attractive for investors to invest in the country [Zhou, et. al., 2018].

3) Government effectiveness

Government effectiveness reflects public perceptions of the quality of public services, the quality of policy formulation and implementation, and the credibility of government commitments to such policies. The low efficiency of the government will increase the investment risk and difficulty of investors, and further affect investors' investment in the host country [Huang, et. al., 2008].

4) Quality of government supervision

The quality of government regulation reflects the government's ability to formulate and implement appropriate policies and regulations to permit and promote private sector development. The higher the regulatory quality of the host country, the lower the risk of OFDI [Meng, et. al., 2014].

5) Ratio of net FDI inflows to GDP

The net inflow of foreign direct investment as a percentage of GDP reflects the degree to which the host country absorbs foreign investment. The higher the value of this indicator is, the larger the amount of foreign investment flows into the country is, which reflects the country's strong support for foreign investment and low economic risk [Liu, et. al., 2018].

6) Crop production index

The crop production index shows annual agricultural production compared to the base period 2004-2006. It includes all crops except for feed crops. Chinese enterprises' OFDI faced infrastructure risks [Mao, et. al., 2017]. In this paper, crop production index is used to reflect the level of infrastructure in the host country.

7) Imports of goods and services as a percentage of GDP

Imports of goods and services as a percentage of GDP represent the ratio of the value of all goods and services received from the rest of the world to gross national product. The ratio between the total import and export of commodities and GDP reflects the level of opening up of the host country, and adopts this indicator to evaluate the economic risks of the host country [Zhang, et. al., 2017].

8) Per capita cultivated the land

Per capita cultivated land represents the level of land resources in the host country. Natural resource endowment of the host country has a significant impact on foreign direct investment through empirical analysis [Liu, et. al., 2016].

Sample selection and data sources

The data of the eight indicators selected in this paper are from the World Bank database, and the average values of 2015, 2016 and 2017 are selected as data sources.

Research methods

Factor analysis can find the hidden representative factors among many variables, classify variables with the same nature into one factor, reduce the number of variables, simplify complex problems, and test the hypothesis of the relationship between variables.

The mathematical representation matrix of factor analysis method is $X=AF+B$

Composite risk score = factor 1 score * variance contribution rate of factor 1 / cumulative variance contribution rate + factor 2 score * variance contribution rate of factor 2 / cumulative variance contribution rate +... Factor I score * variance contribution rate of factor I/cumulative variance contribution rate

Factor analysis process and results

SPSS22.0 was used to analyze the eight variables of risk assessment selected in this paper, and the following results were obtained after the standardized processing of the data. As shown in table 1 to table 3, The KMO and Bartlett test results showed that the null hypothesis of significant difference should be rejected. The KMO test result was 0.703, the Bartlett sphere test was 207.967, and the significance level was $0.000 < 0.1$, indicating a strong correlation between the original variable and the principal component. The cumulative rate of variance of common factors reached 79.750%. The results of common factor variance show that the information loss of selected variables is all below 0.4. It indicates that the selected index is suitable for factor analysis.

KMO sampling fitness measure			0.703
Bartlett Sphere test	Approximate chi-square		207.967
	Degrees of freedom		28
	Significant		0

Composition	Initial eigenvalue			Sum of squares of rotating loads		
	Total	Percentage variance	Cumulative %	Total	Percentage variance	Cumulative %
1	3.405	42.558	42.558	3.27	40.871	40.871
2	1.705	21.319	63.877	1.725	21.563	62.435
3	1.27	15.873	79.75	1.385	17.315	79.75
4	0.65	8.13	87.879			
5	0.402	5.019	92.898			
6	0.315	3.932	96.83			
7	0.152	1.905	98.735			
8	0.101	1.265	100			

Extraction method: principal component analysis

Table 3 Common factor variance

	Initial	Extract
Quality of government regulation	1	0.874
Government corruption control	1	0.864
Government effectiveness	1	0.9
Government stability	1	0.704
Net foreign investment inflows as a percentage of GDP	1	0.84
Imports of goods and services as a percentage of GDP	1	0.805
Index of the crop	1	0.743
Per capita cultivated land	1	0.65

Extraction method: principal component analysis.

By rotating the composition matrix (table 4), it can be found that the first factor represents the quality of government supervision, government corruption control, government efficiency, and government stability. Therefore, the first factor is named as the government governance level factor. The second factor represents the net inflow of foreign direct investment as a percentage of GDP and imports of goods and services as a percentage of GDP; from the perspective of these two variables, the second factor is named as the economic openness level factor. The third factor represents the crop production index and per capita cultivated land. From the characteristics of these two variables, the third factor is named as agricultural production level factor.

Table 4 Composition matrix after rotation

	Composition		
	1	2	3
Quality of government regulation	0.933	-0.046	-0.017
Government corruption control	0.921	0.098	-0.082
Government effectiveness	0.948	-0.036	0.005
Government stability	0.78	0.294	-0.091
Net foreign investment inflows as a percentage of GDP	-0.032	0.914	0.051
Imports of goods and services as a percentage of GDP	0.191	0.858	-0.181
Index of the crop	-0.067	0.096	0.854
Per capita cultivated land	-0.022	-0.212	0.778

Rotation method: Caesar normalizing maximum variance method.

RESULT ANALYSIS

Overall ranking analysis of investment risk

According to the results of the comprehensive ranking of countries (table 5), Seychelles has the lowest investment risk, while Sudan has the highest investment risk. Among the top 16 countries, Seychelles, Cape Verde and other countries have low investment risks. When making direct investment in African agriculture, priority can be given to investment projects based on their own characteristics and investment purposes. In the last 16 countries, Gambia, Cameroon, Chad, and other countries have high investment risks. According to the company's preference for investment risks, its own risk tolerance, experience in foreign direct investment in agriculture

and other aspects, the investment should be carefully considered.

Table 5 Country Ranking

Country	region	ranking	Country	region	ranking
eychelles	East Africa	1	Mali	West Africa	26
Cape Verde	West Africa	2	Gabon	Central Africa	27
Mauritius	South Africa	3	Burkina Faso	West Africa	28
Botswana	South Africa	4	Angola	South Africa	29
Namibia	South Africa	5	Ethiopia	East Africa	30
Liberia	West Africa	6	Côte d'Ivoire	West Africa	31
Mozambiqu	South Africa	7	Algeria	North Africa	32
Mauritania	West Africa	8	Madagascar	South Africa	33
Republic of Congo	Central Africa	9	Gambia	West Africa	34
Lesotho	South Africa	10	Cameroon	Central Africa	35
Guinea	West Africa	11	Chad	Central Africa	36
Rwanda	East Africa	12	Kenya	East Africa	37
Ghana	West Africa	13	Equatorial guinea	Central Africa	38
Zambia	South Africa	14	Comoros	South Africa	39
Sierra	West Africa	15	Guinea-Bissau	West Africa	40
Djibouti	East Africa	16	Uganda	East Africa	41
Senegal	West Africa	17	Egypt	North Africa	42
Togo	West Africa	18	Zimbabwe	South Africa	43
Morocco	North Africa	19	Libya	North Africa	44
Niger	West Africa	20	Dr Congo	Central Africa	45
Tunisia	North Africa	21	Central Africa republic	Central Africa	46
Benin	West Africa	22	Nigeria	West Africa	47
South African	South Africa	23	Burundi	East Africa	48
Malawi	South Africa	24	Sudan	North Africa	49
Tanzania	East Africa	25			

Regional analysis of investment risks

From the perspective of regional distribution (figure 1), there are 6 countries in North Africa, ranking in the overall ranking of 19, 21, 32, 42, 44 and 49 respectively, with relatively high investment risks. There are 8 countries in East Africa, ranking 1, 12, 16, 25, 30, 37, 41 and 48, respectively, with medium overall ranking and medium investment risk. South Africa has 12 countries ranked in the top 3, 4, 5, 7, 10, 14, 23, 24, 29, 33, 39 and 43 respectively, with low investment risk. There are 16 countries in West Africa, ranking 2, 6, 8, 11, 13, 15, 17, 18, 20, 22, 26, 28, 31, 34, 40 and 47 respectively, ranking high overall, with low investment risk. There are 7 countries in Central Africa, ranking at the bottom of 9, 27, 35, 36, 38, 45 and 46 respectively, with high investment risks. Among them, Mauritius and Botswana have higher governance level, while Libya and Sudan have lower governance level. Republic of Congo and Liberia have higher levels of economic openness, while Nigeria and Sudan have lower levels. Agricultural production is higher in Angola and Niger and lower in Uganda. From the perspective of the overall regional level, the governance level of South

Africa is generally strong, while that of Central Africa is the lowest. West Africa has a relatively high level of economic openness and overall agricultural production, while north Africa has a relatively low level of economic openness and agricultural production.

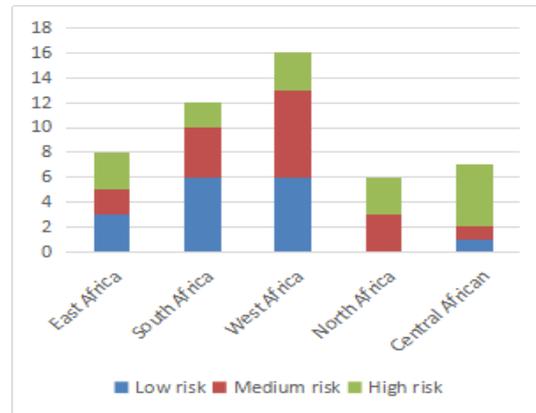


Figure 1 Regional risk distribution

ADVICE

The enterprise shall improve its risk assessment mechanism

From the aspects of the enterprise itself, due to a long period of political unrest in Africa, during the agricultural direct investment in Africa than in other regions investment and more attention to the political situation. Whether the political situation is stable, whether the degree of political corruption is serious, and whether the government's work efficiency is efficient, etc., comprehensively consider the level of government governance in the host country. Collect the information of the host country from multiple channels and aspects to understand the macro-political and economic environment of the host country as much as possible. At the same time, carry out a risk assessment before investment, and comprehensively consider the choice of investment region and project based on the conditions of the enterprise itself. For agricultural enterprises, the requirements for the natural environment are more stringent than for other enterprises. When making an agricultural investment, we should pay more attention to some preferential agricultural policies and natural environment of the investing countries. After the investment, we should not only pay attention to our own operation and profitability, but also consciously abide by the laws and regulations of the host country and respect the local culture and customs of the investment. In the business process of an enterprise, it is necessary to regularly carry out a risk assessment on the enterprise, so as to timely discover the risks in the business activities of the enterprise and take countermeasures.

Government increase policy support

From the perspective of the government, the local government should pay more attention to the enterprises that make direct investment in foreign agriculture, and on the other hand, improve the feedback mechanism. Enterprises that make direct investment in foreign agriculture can timely report their own risks to the government. Local governments can analyze and summarize these feedback and introduce more targeted policies. It can solve the problems faced by foreign investment enterprises more directly. The government should speed up the construction of an information sharing platform so that enterprises can obtain information more quickly and conveniently, and reduce the risk level of foreign investment. Preferential policies will be provided for enterprises investing in foreign countries. In terms of loan limits and interest rates, the capital problems of enterprises investing in foreign agriculture will be solved to a certain extent and more enterprises will be promoted to make direct investment in foreign agriculture.

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