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Trade Risk Analysis: Framework for Chinese Companies' Trade on High-tech Complex Products

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Abstract: The international trade of high-tech complex products has special economic and strategic importance for both exporters and importers. Therefore, related trade risk management is crucial and this study will provide an analytical framework over identification and prevention measures in such important international trade movement. This study applies practical survey and interviews with practitioners in this field and summarizes important principles and effective framework to identify trade risk and provides useful lessons for cooperation parties in international trade on high-tech complex products, particularly from the viewpoint of Chinese firms. Meanwhile, this study proposes the problem solving and risk prevention measures by focusing on the origin, identification and quantification analysis of trade risk and determines the principle system of risk identification on high-tech complex products based on practical needs of both economic and political consideration at home and abroad. The study may be used as reference for companies operating with companies in China and for Chinese companies developing their own market abroad.

Key words: High-tech complex products, trade risk, international trade

INTRODUCTION

In the process of promoting international markets, trade risk has become a major issue for enterprises in related field. Since the beginning of the new century, the evolution of international business background has developed with various kinds of dynamic pattern, especially under possible international financial crisis which may have profound impact on Chinese companies developing international market for China-made high-tech complex products. Moreover, high-tech complex products are usually characterized with a time-consuming production cycle and higher initial financial input. Rich technical resources require huge investment and the consequent higher trade risk may greatly impact local exporters' economic return and the economic potential of the companies involved. It is therefore, necessary to identify the specific trade risk involved in the international trade in advance and it is of great importance to make better preparations for anything harmful for export enterprises.

Generally speaking, end users and importers of high-tech complex products are usually government agencies or large enterprises, especially large state-owned enterprises, in importing countries. International trade of such products may suffer from less understanding and longer discussion and negotiation between trade partners. Besides, the technical complexity inherent in the products usually requires closer collaboration among multi-partners involved and this would increase the complicity of the operation and project maintenance apart from the so called all-life service operation for the total procedure. It is obvious that such trade requires closer relationship between the suppliers and users, for example, the suppliers have greater responsibility to provide users with spare parts and services of products during the service life of the products. According to the above-mentioned characteristics, the trade risk of international trade and economic cooperation on such products is quite different from those involved in other products and this is why we should pay special attention, make targeted assessments and take measures for risk prevention and control.

TRADE RISK IN INTERNATIONAL SCOPE

Analysis about trade risk usually involves economic, political, cultural and business considerations, especially within the international context. OECD is used to provide a formal concept of trade risk on the country level which includes five major elements; policy oriented payment termination when the debtor is government or government agency, economic issue oriented emergency event that

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causes termination or delay of payment transfers, legal failure due to unconvertible currencies for certain payment, any other business failure due to organization issues for repayment measures and force majeure (including war and civil war, expropriation, revolution, riots, coups, hurricanes, floods, earthquakes, volcanic eruptions, tidal waves and nuclear accidents). In addition to the sovereign state, special geographical areas may also be sensitive for conducting international trade, especially for trade over long term based high-tech complex products. In those geographical areas, importing parties may have great political, cultural, social and commercial differences with their exporting counterparts. In this case, more thorough analytical framework for trade risk may require collective risk assessment. Claessens and Embrechts (2003) suggest that trade risk on the country level may be summarized in three aspects, that are; sovereign risk, transfer risk and collective risk of debtor (Root, 1968). Economists Intelligence Unit (EIU) asserts that sovereign debt, efficiency of banking sector and overall performance of liquidity may be three major parts to influence trade risk in international business. It is obvious that trade on high-tech complex products due to its unique capital intensive and technology intensive nature should involve more financial factors other than commodity trade factors.

It is generally considered that theoretical and practical studies over trade risk in international business may develop through five different stages:

First, trade risk may be highly relevant to country level activities. Some scholars suggest that changes in economic environment and policies in developing countries may lead to default problems of government debt or commercial bank loan from the developed countries and trade risk may arise under such circumstances (Bouchet *et al*., 2003). Second, trade risk may occur during important international events such as international oil crisis. Third, trade risk may happen due to larger scale debt crises such as failure over larger volume of trade payment when Latin American debt and international credit risk emerged in 1982. Eaton *et al*. (1986) discussed the trade risk on the country level, in a theoretical way, especially on debtor default in the process of loaning to developing countries (Kaminsky, 1999). Fourth, Asian Financial Crisis revealed that larger international scale crises may bring chain reaction like nuclear fission which may affect many multinational companies and companies operating with capital-intensive and time-consuming trades. Scholars in many countries are working systematically on the various kinds of causes of international trade risks, trying to design methods to prevent such trade risks. For example, Kaminsky (1999) provides a practical framework for early prediction/alarm and further monitor of the trade risk under various kinds of complicated business background, ranging from financial operations through banking system to currency problems based on historical data about 20 countries from 1970-1995. Feldstein (2002) pointed out that financial crises in emerging markets gradually had global influence and exerted more destructive impact on the global economic and political stability than ever. Fifthly, trade risk study in the early 21st century has expanded to a larger extent. Several new elements such as international trade, investment friction, terrorism and avian flu have been incorporated into this field and became major components of trade risk. As David D. Hale has pointed out, the connotation of trade risk, especially on the country level, will evolve along with time and contain different combinations of newly emerged factors. Only market can tell which factors are important in certain historical moments (Claessens and Embrechts, 2003).

It's obvious that the concept and connotation of trade risk is increasingly broader and varies for different participants and the trade risk measurement and management has a special meaning and orientation. Therefore, as trade risk grows gradually out of state sovereignty field and becomes fully market-oriented today, an accurate grasp of the special meaning of trade risk is the core of risk management carried out by every international company.

ANALYSIS OF TRADE RISK

According to the sources of the risk, trade risk can be roughly divided into three types; political and social event based risks, economic and financial based risks and risk of unexpected event. Each risk type contains rich connotation.

Political and social risk: Political and social risk often refers to specific political reasons that make offshore banks unable to repatriate their loan, thus may hurt related trade payment. Such risks are generally the most important and serious. Perhaps, it should be noted that political risk is neither similar to social risk from non-governmental nor to the economic risks encountered in business operations within international context. The political risk is closely related to local government actions which often caused by discontinuous and unpredictable issues in business environment. Such risk can have significant influence on profits or other business performance of certain companies. Political risk can be divided into regime risks, external relation risks and political corruption risks according to the sources of the risk.

- **Regime risks:** Under the circumstances of a rapid changing world, the regime risk has become one of the prominent risks for commercial banks during their multinational business. This risk mainly manifests in two aspects. One is the increasing possibility of not fulfilling the obligations of the debtor because of the incapability of the regime or refusal by the regime due to the changes in the domestic political situation such as regime changes and anti-government riots etc. Even if there is no related political unrest, it is entirely possible that a government unilaterally announced its refusal to pay the principal and interest of the loan or to impose debt reduction conditions. The regime risk occurs mainly in developing countries or countries with imperfect law system. The regime risk could be ignored under current situation of economic globalization because risks of confiscation and expropriation are rare for current governments especially for developing countries aiming at attracting foreign investment to support their economic development. Second, the regime change and political turmoil in the host country have led to economic disorder and stagnation which further increase the risk of investment loss in multinationals and possible refusal to pay for the import of high-tech complex product. This risk is quite obvious in some developing countries and emerging economies which can be attributed to economic risks to a certain extent
- **Foreign relation risks:** The friendly relations degree between nations has great influence on the trade risk. If the relations are friendly, it will be normally smooth to develop international trade with these countries with lower trade risk and favorable development condition for both trade partners, however, if the relations become worse due to unexpected reasons, then exporting parties may suffer from such country level risks
- **Government corruption:** Corruption is also a major problem in daily operation of the multinational enterprises. Government corruption increases the trade cost and therefore trade risks for international companies because the corruption may lead to rent-seeking agencies and this could induce higher operation cost and consequently lower profit of the enterprise due to destroy of the fair competition environment

Social risk: Social risk is the risk that may cause value loss to foreign companies from the non-governmental aspect of an importing country. Commercial banks face the risks that bank loans in the country cannot be repatriated due to the unstable social environment of a particular country.

Foreign companies engaged in international business activities may also suffer from boycott or exclusion of non-governmental organizations such as associations, chambers of commerce, etc. This form often manifests as harassment, parades and even violent attacks etc. and the incident of burning Wenzhou shoes in Spain, Italy and other countries is a good example. Meanwhile, personnel working out of their mother country may suffer life or property loss caused by robbery and violence due to the poor social security condition of the host country and sometimes they may also attacked by rebels. The severe cases will lead to sudden termination of operating activities and huge losses and the initial investment will not be recovered.

Economic risk: Economic risk is the possibility of loss the foreign enterprises that may face if the economic outlook or economic policies of the host country change. The multinational operations of the commercial banks will not repatriate bank loans in the country because of the direct or indirect limitations of economic factors of a country. The economic risk mainly includes industrial structure adjustment and financial policies adjustment of the host country. Economic structure adjustment of the host country has a great impact on the market efficiency. Industrial structure adjustment aims to adapt to economic globalization, change in international division of production as well as the development trend of changing technology. On the other hand, improvement of production capacity of related product may raise further demand for more technology intensive product import. In addition, foreign direct investment may affect directly the supply and demand of technology intensive products. Therefore, accurate measure of the supply of economic society needs to take into consideration the industrial structure, production capacity, natural rate of unemployment, labor force growth rate, consumer productivity, labor productivity, natural resource availability and so on. Foreign exchange rate risk is one of the most common forms of such risks. Generally speaking, different exchange rate policy will bring different foreign exchange risk to international companies. Nations with fixed exchange rate system bear small trade risk while countries with floating exchange rate system will bring greater uncertainty to the value of the currency and the foreign exchange risk therefore increases.

BASIC CHARACTERISTICS AND DEVELOPMENT OF INTERNATIONAL TRADE IN HIGH-TECH COMPLEX PRODUCTS

The trade on high-tech complex products is often related with the consideration of the country's strategy development as well as the emphasis on the national interests other than merely consideration of economic behavior between the two countries. For instance, the international business of high-tech complex products typically features such characteristics. Figure 1 shows the possible factors in promoting exportation of such products.

Through further analysis on the above mentioned framework, some critical aspects of the trade of high-tech complex products are concluded as follows:

Firstly, the development of international trade on high-tech complex products is highly relevant to the development of international political pattern. With the in-depth development of internationalization in the 1990s and the multi-polarization trend of world political pattern, the production of high-tech complex products will also be of diversity. Some countries and regions relied on imports in the past are turning to export status after their full digestion of advanced technology and development of their own high-end manufacturing industries. The representative countries that have developed themselves via the abovementioned method and successfully became suppliers such as India, Israel, Argentina, South Africa and Brazil.

Secondly, the trade activities in international business on high-tech complex products often are generally games among great powers. Due to its nature of high technical complexity and diversity, high-tech complex products suppliers are quite few and are comprised of several developed countries and developing countries. From the perspective of quality, the high-tech complex products are therefore bound to become a measure of political and economic game among those countries.

Thirdly, the high-tech complex products are effective carriers that can achieve special economic benefits. Such products reflect the industrial strength of a country and the related export trade can enhance the country's industry status and stimulate the export of related products promoting economic development in a larger scale. Under the current environment of international financial crisis, international trade of high-tech complex products benefits big countries in helping them gets rid of trouble and crisis. For example, the total amount of foreign defense trade in the United States has been more than 30 billion dollars since 2008 and it is reasonable to assume that this number will remain stable if other factors remain the same.

Fourthly, the international market of high-tech complex products is a typical buyer's market, indicating that the importing country has greater freedom of choice compared with that of the exporting countries. A growing number of emerging economies have learned the value of trade to its own economic development, thus they are making great publicity efforts to join the international market with strong competitiveness leading to more competition that promotes this buyer's market and leaving the importing country of such products more bargaining power.

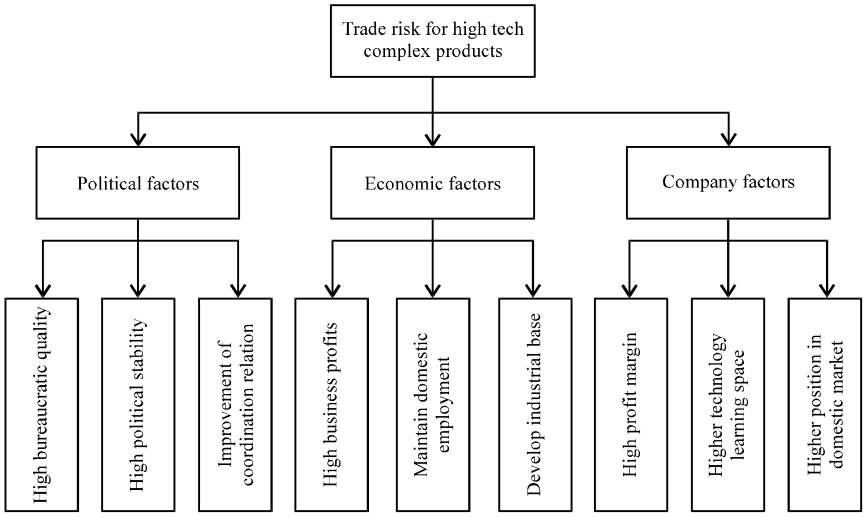

Fig. 1: Composition of stimuli to exportation of high-tech complex products

The change trends of above international trade also make the factors influencing trade risk of corresponding trade more complicated, providing more choices for the country to reduce the risk.

TRADE RISK FOR THE DEVELOPING COUNTRIES DURING THEIR INTERNATIONAL ECONOMIC ACTIVITIES ON HIGH-TECH COMPLEX PRODUCTS

Developing countries play an important role in the current international economic and trade activities on high-tech complex products and they are important buyer countries in the global market for some cutting-edge manufacturing products.

Meanwhile, as the political, economic and strength of developing countries is not as solid as that in developed countries, trade with importers in these countries may encounter larger threats of internal and external security environment and geo-political factors. On the other hand, developing countries have increasingly diversified demand for importing different technology intensive products ranging from simple procurement to upgrade of existing system and sometimes also being active in technology transfer and cooperation in production with international companies.

For such cases, the trade risk in international trade activities on high-tech complex products in developing countries shows the following characteristics; first of all, different demand for such products may imply different risk level. Developing countries with better economic conditions will generally have higher level facilities to adopt the high-tech complex products and will naturally have long-term willingness to cooperate with relevant exporters from abroad. In this case, project risk can be lower if compared with other less economically developed countries. Secondly, the differences of regime stability and ability of government's control result in different operation risk over such projects. Furthermore, the national political policy focus may have different impact upon such trade risk, for example, some countries with better economic development may have little demand for certain kind of high-tech complex product such as aircraft or defense products while some other countries with less developed economic conditions may have a more positive attitude to such trade. There is also another very important aspect on exporters. If the exporting countries have been developed good relationship, not only economically but also politically with importing countries, then trade risk for these exporters should be lower. Therefore, the trade of such products manifests more market behavior that government policy drives and the corresponding trade risk should also be analyzed from that perspective.

ASSESSMENT FRAMEWORK FOR ANALYSIS OF TRADE RISK IN INTERNATIONAL TRADE ON HIGH-TECH COMPLEX PRODUCTS

In order to scientifically and systematically analyze the supplier's trade risks in such trading activities, based on previous discussion, this study proposes a multi-level, multi-factor analysis framework as shown in Fig. 2. This assessment framework provides primarily in two groups of factors over trade risk on high-tech complex product trade. On the one hand, general referential risk assessment factors based on international professional rating agencies are included as universal risk index group on the other, exporting countries and product nature are also included as participation index group as the important output in this study.

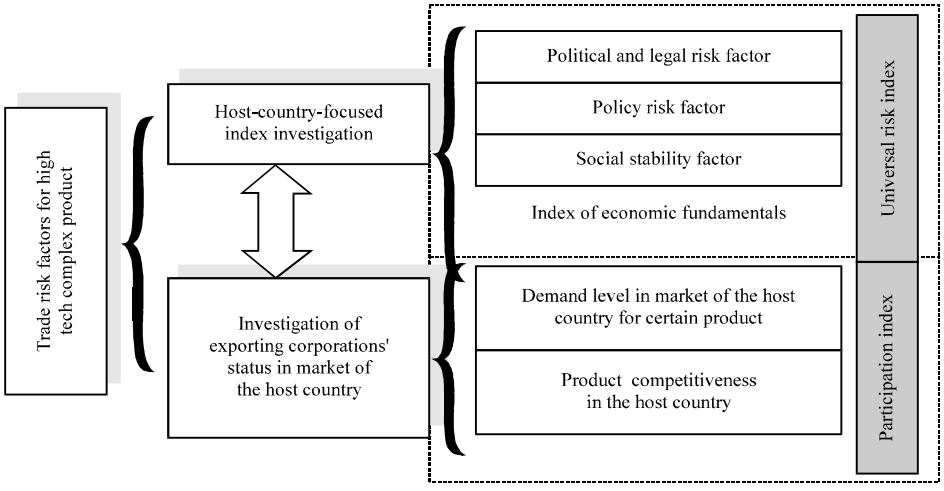

Fig. 2: Analysis framework of trade risk for international cooperation on China's high-tech complex products

Clearly, indicators in universal index group reflects general theoretical model covering macro-political and economic considerations, in the meantime, so called "participating index group" includes more practical considerations of particular product nature and related exporting country background. This can be best used in situations for trade risk analysis in Chinese companies' exporting such product to typical developing countries.

It should be noted that general connotation of trade risk is mainly reflecting index system in host countries or importing countries, however, this study adopts the connotation of home-host country or exporting-importing country relationships. It is obvious that if status or position of Chinese enterprises in host countries is taken into account, then trade risk analysis framework should be greatly expended and may achieve completely different results if compared with only consideration of universal indexes. In this way, to bring supplier's status into the analysis system for comprehensive analysis of trade risk in international context, further explanation over universal index and participatory index are given as follows:

Universal index: The so-called "universal index" in this study is related to index for political, social, economic, financial factors etc., in host or importing country. There are four secondary risk indexes involved.

- Political risk is generally important under such national level risk considerations. This usually focuses on government and stability of the country including bureaucratic quality and political stability. The executive capacity and quality of bureaucratic institutions can be judged from government efficiency or the continuity of policy implementation when the government changes
- Policy risk is another important consideration. Policy index refers to effectiveness of policies, laws and regulations and their possible negative influence on particular trade or investment from abroad. Various fiscal, monetary and capital controls of the host government exert impact on various operation of multinational business including local operating restrictions (from the aspect of labor force, management and procurement), tax policy, financial constraints and foreign exchange policies. Tax administration refers to the situation whether it has tax incentives or discrimination to foreign enterprises of the home country (relative to domestic enterprises or multinational companies of other countries) and the local operating restrictions may refer to the strict degree of host operating restrictions (including labor force, management, procurement, etc.) on foreign industries
- Social stability index mainly reflects the social security of economic activities and includes the crime rate, ethnic tensions and the degree of religious unity
- Economic fundamentals index are the index of the basic situation of host country economy, especially in financial aspects. Among them, the infrastructure construction can be seen as the conditions of a country's economic development and has an important impact on whether foreign capital chooses to enter the host country or not. The respective ratios of infrastructure, per capita GDP, GDP growth rate, inflation and government budget and foreign exchange reserves associate with such index to GDP and they may constitute a major index of economic fundamentals

Participatory index: Participatory index mainly contains indicators for relative sensitivity on corresponding traded products. This may include degree of demand for host or importing country and related agencies and positions of related product and corresponding closeness of exporters to the importing partners and their countries. Specific analysis can be carried out from the following aspects:

- Possible factors affecting degree of project demand for the host country are the industrial strategy status of the project, the collaborative nature of the projects with local businesses partners, the competitiveness of the project with other foreign companies, the degree of innovation and technology advancement of the project, the exporting company's image to importing countries and characteristics of the project meeting with the condition in host country, etc., these may all belong to policy-sensitive nature. If such degree of sensitivity or policy demand is low, then the trade risk measurement may primarily be more dependent on those universal indexes
- Possible factors affecting sensitivity degree of product demand in host countries are the quality of the product and cost performance for the project, the importance of product adoption to the field of procurement and public investment in the host country, etc. A further refinement of the influencing factors may be developed more in specific indexes such as the product position in the national economy, the relative competitiveness of products, the effective performance of the product in important areas such as defense, connection or closeness of the product and the project to social and public need. Legal constraints for product use or adoptions may be also important indicators for certain products. Similarly, in above cases, if measures over such criteria are low in related countries, then the whole trade risk analysis may be developed more on universal indexes

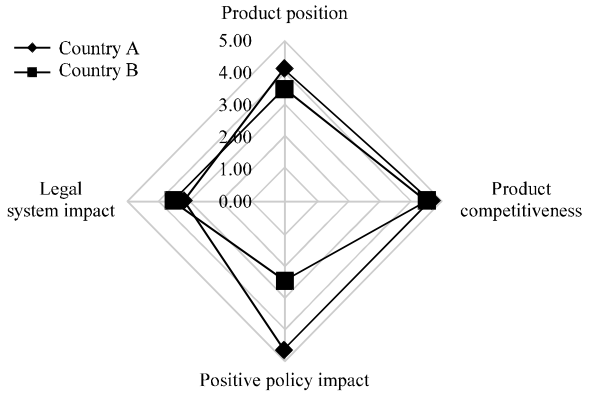

Fig. 3: Comparison of the two importing countries under participator trade risk index

Clearly, so called participatory index is important for exporting companies, especially for those companies in developing countries, when they export to some other developing countries.

PRACTICAL COMPARISON

By applying measurement framework, a more practical study is developed based on a questionnaire analysis over two high-tech complex product export projects by a Chinese company, to country A and country B, respectively. Both importing countries are developing countries and both countries are considered as less secure according to international country risk analytical framework or according to universal index standard. However, according to participator trade risk index framework, these countries can be considered as qualified importing countries. For exporters, related high-tech complex products to be exported appear in a highly competitive and in a higher secure position in both countries based on similar legal system impact (Fig. 3).

On the other hand, while the product imported may possess higher impact in policy terms in country A, this impact may be less significant in country B (Fig. 3). Therefore, in terms of the participator trade risk index, country A will have even less trade risk for exporter from China.

CONCLUSION

- This study puts forward an analysis framework of trade risk that adapts to China's high-tech complex products in the international economy and trade cooperation on the basis of trade risk general analysis framework. This analysis framework highlights two index systems; universal and participatory index and this makes a practical sense to the international development, especially market development in developing countries of China's high-tech complex products
- This study mainly describes macro-trade risk evaluation benchmark and takes policy risk and social risk as necessary dimensions, targeting especially the corresponding policy market characteristics of high-tech complex products and making analysis of participatory risk index considering the sensitivity degree of products and project needs as an important reference dimension, reflecting analysis needs of trade risk of China's national enterprise engaged in international economic cooperation in high-tech complex products overall

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