[IMPORT COMPETITION PRESSURE FACED BY CRUED OIL IMPORTERS IN THE INTERNATIONAL TRADE]

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Overview

The scarcity endowment of resources determines the resource is still a key factor in today's world economic development. Oil is one of the most popular raw material consumption in today's world economic development. Around the world economic superpower, the United States, Japan, Germany, France, Italy, Britain and so on in recent 20 years, their oil consumption largely import from the importers. Most scholars focus on the oil supply and demand relationship. They studied from the perspective of the oil supply and demand. However, the sharpening contradictions between the supply and demand will inevitably lead to increased competition between the importers.

Oil imports competitive relationship from all countries worldwide is complex forming network, and evolution over time. Through the analysis of network can access to important information. The complex network theory can well reveal the topological characteristics and evolution law of the network. There are corresponding literatures researching the international trade [1], business cooperation [2] and competition [3] through complex network theory. Therefore, this article will study the oil import trade competition strength evolution problem.

Methods

In this study, we construct a directed weighted OITCN. The nodes are the countries, and the edges are the fossil energy trade relationships. The direction of the edges corresponds to the direction of the energy flow. The exports and imports represent the energy flow out of and into a country respectively, and the competition coefficient is the weight of the edges. In the network, if country i exports energy to country j during year t, then a link from i to j is drawn and $a_{ij}(t)=1$. Otherwise, no link is drawn and $a_{ij}(t)=0$. If there is a link between i and j, the competition coefficient between country i and country j is denoted as w_{ij}. The competition pressure is calculated by formula 1.

$$\sum_{i\in N} CP_{ab} = \frac{M_{ai}}{M_a} \times \frac{M_{bi}}{M_i} \tag{1}$$

The import and export data between countries come from the United Nations Statistics Division from 1996 to 2012, which include 245 countries and areas. Each type of fossil energy has a code in terms of HS code. Thus the HS codes of crude oil in the database is 270900. In addition, each country has an international ISO country code.

Results

From 1996 to 2008, the cumulative degree distribution curve is obviously rising trend, the increasing in the number of competitive relationship between importers. It shows that there are more and more oil import competition countries in the trade competition network. At the same time, the competition relationship of countries with more competitors also getting more complex. There are two main factors which are import strategy of oil importer and distribution of exporter. First of all, because the oil is very important for national strategic resources, so in order to ensure energy security of supply and deal with sudden problem of energy crisis, the countries lacked of oil expand oil import channel strategy. On the other hand, the global distribution of oil is relatively concentrated, so it also makes the importers have very relatively limited import source selection, therefore, the competition relationship between the importers is becoming more and more complex.

The average clustering coefficient is larger and countries with less competitive relationship are more closely. It embodies the universality of oil import trade competition relations and globalization, and with the evolution of the time, the competition tightness between countries is gradually enhanced.

Oil import competition markets among importers are mainly in Russia and Saudi Arabia. The oil competition on the other market is relatively sparse compared with these two markets. It has close relationship with geographical position and political union of Russia and Saudi Arabia. Russia is major oil exporter and a member of the national independent body. Russia's main export objects are Asian countries such as China, Japan, South Korea and other cis countries. Saudi Arabia, one of the OPEC members, is in the Middle East and has the larger oil reserves and production in the world. Saudi Arabia mainly exports to the United States, Europe and Japan, China and other Asian countries. Therefore, the two countries have unique geopolitical caused various countries competing for their petroleum resources.

Conclusions

According to the international oil trade data published by UN Comtrade from 1996 to 2013, the oil importer as the node, the import competition relationship between importers as the edge, oil importing competitive strength between countries as the weight, the paper build oil import trade competition network. Using complex network theory analysis method, according to complex network characteristics such as the node degree, strength and clustering coefficient, the paper analyze oil import trade competition network evolution law from 1996 to 2013. The results showed that the oil import competition showing a trend of globalization and increasing year by year. The competition intensity difference is bigger, which focusing on the general areas of Asia and Europe. Competition markets are mainly in the Russia and Saudi Arabia. Competition relationships are mainly concentrated in Asia such as China, Japan, South Korea and the United States, Europe, showing obvious regional distribution among competitors. Geopolitical between oil exporter and importer has larger influence on the oil trade.

References

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