

CHANGES OF INTERNATIONAL OIL TRADE PATTERN AFTER OIL PRICE DROP

AN Qier, PetroChina Research Institute of Petroleum Exploration and Development, +86-01083593594, anqier@petrochina.com.cn
ZHU Ming, PetroChina RIPED, +86-01083593594, mingzhu@petrochina.com.cn
QU Debin, PetroChina RIPED, +86-01083593594, qdb@petrochina.com.cn
ZHAO Meng, PetroChina RIPED, +86-01083593594, mengzhao@petrochina.com.cn
(PetroChina Research Institute of Petroleum Exploration and Development)

Overview

Since the second half of 2014, the global oil industry has undergone major changes. The development of the United States unconventional resources and other factors caused the parties dropped dramatically. Price. The supply, demand, trade and other key factors in oil industry are changed to a different state of stability. The change of supply and demand, the adjustment of oil strategy, can be reflected by international oil trade. The analysis of trade has a certain effect on the identification of the current oil situation.

On the basis of the crude oil trade data published by the UN contrade, the paper analyzes the changes of crude oil trade using network-based methodologies. As international oil prices began to fall in the mid 2014, according to changes in oil prices, the time for the first half of 2014, the second half of 2014, the first half of 2015, the second half of 2015 and the first half of 2016. Five networks are constructed based on above deviation. The trade volume changes, degree, and community classification changes were analyzed. The purpose is to find out the impact of price drop in trade patterns, including major national status, interdependence among countries and the evolution of international trade communities. On the basis of the above characteristics, this paper summarizes the new changes in the international trade situation of crude oil and the possible impact on the future crude oil market.

Methods:

- 1) Complex network. We build a weighted directed crude oil trade network and analyze it using complex network theory methods. Complex network theory has gained popularity in recent years because of the number of new applications that have been found in transportation, international trade, oil price fluctuation and inflation .
- 2) Block modeling method. Block modeling is a useful method for separating a complex network into several sub-modules that depict the entire network in a more concise, simpler manner. It can be used to depict the main patterns of connectivity and functional roles in the network.

Results

(1) With the decline in oil prices during the study period, oil imports of most countries have declined, but a number of crude oil imports rose contrarian. The crude oil import presents a typical power-law distribution, that is, the major countries occupy a very important position. Before the first half of 2014 ten a major importer of crude oil imports accounted for the proportion of the world's total imports of crude oil is 66.5%, the second half of 2014 declined slightly to 60.6%. At the first half of 2016 proportion become 68.4%.

This shows that the decline in oil prices in the beginning of the main importing countries, the rapid decline in imports, and the decline is greater than the overall decline, leading to more dispersed oil importing countries. But after 2015, the decline in oil prices slowed down, the proportion of imports of major countries rebounded. As of the first half of 2016, the proportion of the top 10 countries, the top 20 countries have been restored to the level of the first half of 2014.

(2) Main crude oil exporting countries include Russia, Saudi Arabia, Canada, Nigeria, the United Arab Emirates. Crude oil exports fell significantly in major countries after the fall in oil prices. Among them, export of Russia, Iraq, Norway and other countries fell 60%, Saudi Arabia, Kuwait, Kazakhstan, Venezuela fell more than 75%.

(3) The average degree, which indicates the average number of trading partners decreased significantly during 2014 to 2016. In other words, countries tend to trade crude oil with less partners. Their relationship is more stable and important.

(4) There are 6 communities in 2014F and 4 communities in 2016F, indicating that after the crude oil price drop, the community structure of international crude oil trade become simplifier. The Eurasian community and North America-Africa community are biggest two communities in the network of 2016 first half.

Conclusions

The community structure of world oil trade network change a lot during 2014 to 2016. Some countries changed their group. There are 4 communities in crude oil marked in 2016-F. China, Russia and other Asian countries formed a community, the United States, Canada and Africa formed a community, Australia and the Middle East countries formed a community.