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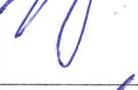
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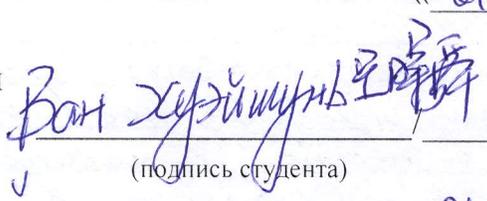
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АННОТАЦИЯ

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Цель работы заключается в предоставлении рекомендаций относительно торговли энергоресурсами между Россией и Китаем, а также относительно укрепления и стабилизации китайской экономики.

Предмет исследования – изучение ограничительных факторов в торговле между Россией и Китаем, а также вынесение соответствующих рекомендаций.

Исследование основано на текущей экономической ситуации в Китае и предполагает построение векторно-регрессионной модели, учитывающей уровень развития экономики Китая, средний заработок на душу населения, степень открытости в торговых отношениях между Россией и Китаем, а также уровень потребления нефти и газа в Китае. С целью выявления факторов влияния в торговых отношениях России и Китая в области энергоресурсов были проанализированы данные с 2000 по 2013 гг.

Данное исследование выявляет наиболее значимые факторы торговли России и Китая энергоресурсами и предлагает следующие необходимые мероприятия, включающие повышение эффективности нефтегазовых поставок, стимулирование развития новых энергетических технологий, повышение общей экономической эффективности, и, в конечном итоге, обеспечение абсолютной открытости в торговых отношениях между Россией и Китаем в области энергоресурсов.

Abstract

As the material foundation to the survival of human society, oil and natural gas is a necessary condition for economic development and social progress. As the world's second-largest consumer, as well as the biggest developing country, oil and gas security has become a focus of China's rapid economic development. Russia is the world's leading producer and exporter of oil and gas, China's oil and gas trade with Russia safer and oil cooperation between China and Russia are highly complementary. Favorable situation between China and Russia on good diplomatic relations and geographical advantages, it is very necessary to analyses of the influence factors to better safeguard China's oil and gas safety problem.

This paper firstly combed the domestic and foreign scholars for the current situation of oil and gas trade between China and Russia, characteristics and influence factors of research results. Then on the basis of the development trend of the oil trade between China and Russia are discussed in detail. Combined with the actual situation in our country, building the VAR model, and the level of China's economic development, per capita income level, China to Russia trade openness and China's oil and gas consumption proportion of producing light indicator, then using the data from 2000 to 2013 to make an empirical analysis of the influence factors of oil and gas trade between China and Russia, and analyzes the empirical results. As a result, production proportion of China's oil and gas consumption is the main influence factors of oil and gas trade between China and Russia with a positive impact, showing that oil and gas trade between China and Russia is largely in order to meet the domestic oil and gas supplies. Then the level of China's economic development and per capita income level to oil and gas trade

between China and Russia has positive correlation. Although the impact is less than oil and gas consumption accounted for the proportion of production factors, it also cannot be ignored. Finally combining the empirical results put forward relevant countermeasures and suggestions: Strengthening the effective oil and gas supply, strengthening the development of new energy, strengthening the construction of economy and gradually and orderly opening trade of oil and gas.

Key words: Energy economy Gross domestic product Trade openness

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INTRODUCTION

The two countries are politically strategic partnership of coordination; on the economy are important trading partners. China is the third largest trade partner of Russia. Russia is China's seventh largest trade partner. The bilateral trade volume between China and Russia is growing fast. It is conceivable that the official start of the operation of Russian energy trade, bilateral trade volume between the two countries will boost just around the corner. Develop energy trade between China and Russia has good foundation, especially natural gas. Natural gas as a commodity, there are two kinds of forms of transportation, one is used after liquefied natural gas carrier by sea, the other is a through the pipeline, the pipeline transport because of the economic, convenient, safe and widely used. Two countries more than 4300 km border between China and Russia, the pipeline has a short distance, without laying submarine pipeline, need not through third countries, from Russia directly to mainland China, the advantages of this in the global natural gas pipeline transportation is also rare. Energy is the motive force of economic construction. After the reform and opening up of China's economy took off, the rapid development of economy needs adequate energy supplies. China belongs to the country is rich in gas reserves more, but the per capita was limited. China's own growing ` energy cannot have satisfied the need of economic construction, the import part of the energy used to make up for the market gap is imminent.

From the point of the two countries, to carry out the energy trade is beneficial to the economic development of Russia and diversified energy exports, and conducive to China's economic development and diversified energy imports, in line with the interests of both countries. Natural gas trade between China and Russia conforms to The Times,

is mutually beneficial win-win choice. When considering the Sino-Russian energy trade cannot be ignored is that Russia is the world's energy superpower, China is the fastest developing speed in the developing world, complementarily is the cornerstone of participation in international division of labor between the two countries, mutual benefit is the power of push forward energy trade between the two countries. Can only confirm this explicit, Sino-Russian energy trade for the importance of the two countries, to establish a firm confidence in trouble, and actively respond to and accurate analysis and resolve the difficulties and obstacles on the way forward.

Although the natural gas in the early period of the trade between China and Russia work overall progress is good, but the protracted because of some unresolved problems. In addition, there are some new problems with power eliminates, the new trend. Air supply problems, for example, some Russian industry, if the air supply from the far east to China, the existing production capacity is insufficient to ensure gas supply quantity of gas field; Environmentalists are put forward such as the environmental protection question, and Russia, if the gas from the west to China, will damage the local into the world of intangible cultural heritage protection of the environment, in violation of the environmental protection law in Russia; Such as enterprises, local and central benefit gambling problems, the far east local governments hope to supplying natural gas to China by them, because it is the prosperity of the local economy, solve the employment problem, but also increase the local fiscal revenue, but Russia's federal government handed the task of state-owned Gazprom; Political influence on economic issues, for example, Russia, some politicians always put economic and political problems closely relates in together, rise to the problem of the ordinary trade political height, the natural gas as a negotiating weapons, is one of the most important bargaining chip in dealing

with the relationship between China and Russia national, think cannot easily sell strategic resources, natural gas to China so that a rising power; Such as natural gas prices problem, Russia has a significant number of people think that, as a result of the natural gas resources irrefragable, natural gas has the transition from a buyer's market into seller's market. In this case cannot sell cheap natural gas to China, China must perform to sold the same price of natural gas in Europe; Problem about the "China threat theory, for example, this view has a certain market in Russia, they gradually to the powerful neighbors have a deep fear, they opposed to China's large gas exports, think it will be more to promote the rapid development of China, thus no matter from the political, economic or military will cause a greater threat to Russia.

In case, it is very necessary for the study of Sino-Russian energy trade. This article first chapter specific comprehensive expounds the world energy market economy, the Russian energy market and energy market in China, respectively analyze the three problems of energy markets and their respective advantages. The second chapter from the perspective of economic and non-economic two analyzes the influence factors of Sino-Russian energy trade. After analyzing the image factors, in the third chapter, the collected data is used to establish the VAR model, through the model calculation to confirm those influence factors; the analysis results provide evidence for the third chapter. Chapter iv combines proven factors put forward reasonable Suggestions: increase the effective supply of China's oil and gas, strengthen my China's new energy development, maintain stable economic growth in China, gradually and orderly opening China's oil and gas trade, and enhance mutual trust and cooperation between the two countries. There are a series of reasonable measures In order to let the Sino-Russian energy trade can be better development in the future for a long time.

1 INTRODUCE THE ENERGY MARKET

1.1 Analysis of the world's natural gas market

In recent ten years, natural gas both as fuel or industrial raw materials, it is growing located in the world energy share. Compared to natural gas and oil, coal, high environmental performance of the natural gas has got the full attention of the world.

The world's natural gas reserves

According to the end of 2008, the world's natural gas reserves is 185 million cubic meters. From 1998 to 2008, the world's natural gas reserves have increased 1.25 times. In 2008 compared with the previous year increased by 8million cubic meters, or 4.5%.

The largest reserves growth of the world natural gas is Russia, 43.3million cubic meters. The next are Iran, 29.6million cubic meters, and Qatar, 25.5million cubic meters. Natural gas reserves of the three countries more than 50% of the total world's reserves. More natural gas reserves in the country there are Saudi Arabia, Turkmenistan, Arabia, United Arab Emirates, American, Venezuela. However, sum up these countries are much less than Russia.[1]

The world's natural gas exploitation

Despite the financial crisis in 2008, but the world gas production reached a record amount of mining, 3.1million cubic meters, 3.8% increase over 2007. The

first of the mining amount is Russia, the second is USA. The exploitation quantity of these two countries accounted for more than 38% of the total world natural recovery. Exploitation of natural gas in the top ten countries are Canada, Iran, Norway, Algeria, Qatar, Saudi Arabia, The United Kingdom and Holland.[2]

By the end of 2013, the global gas proven reserves of 185.7 trillion cubic meters, which can meet the production requirements of 54.8 years. Compared to 2012 figures, proven reserves rose by 0.2% in 2013.

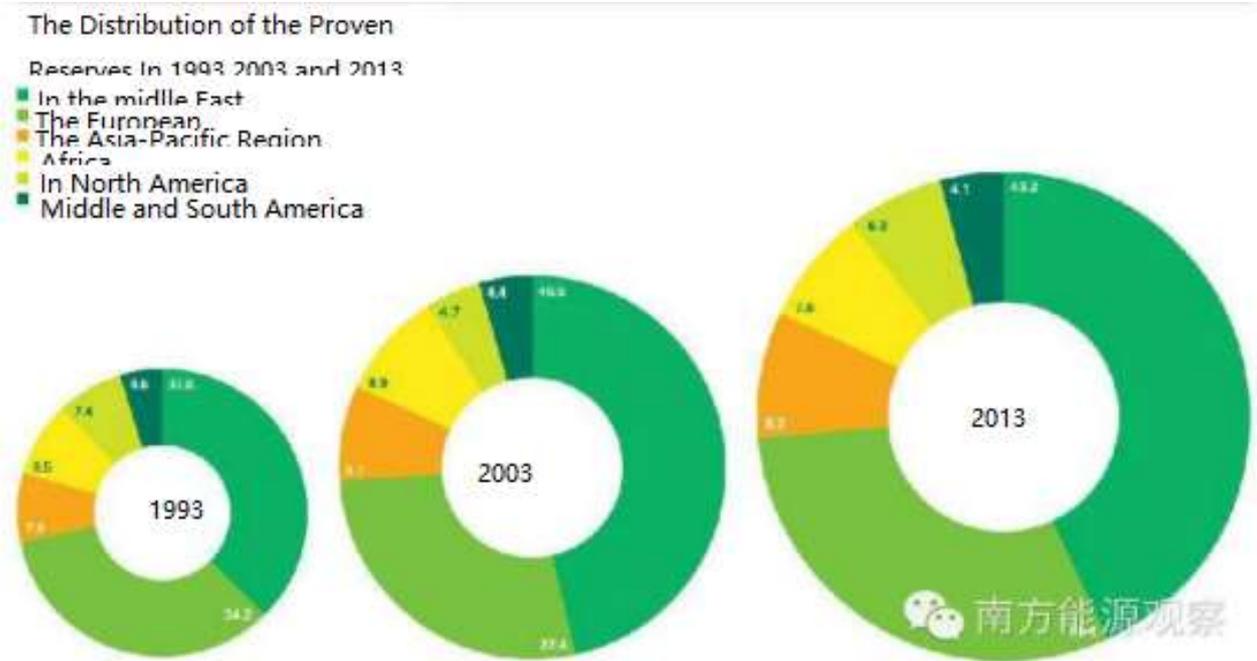


Fig 1 the Distribution of the Proven

Global gas consumption rose 1.4%, below the historical average of 2.6%. North American natural gas consumption growth of 2.7%, is the only region above the historical average. Natural gas consumption growth in China and the United States is the most significant, 10.8% and 2.4%, respectively, accounted for 81% of the world's natural gas consumption growth. The EU's gas consumption reached its

lowest level since 1999, consumption in India, most of 12.. 2%. Global scope, the natural gas in primary energy consumption accounted for 23.7%.

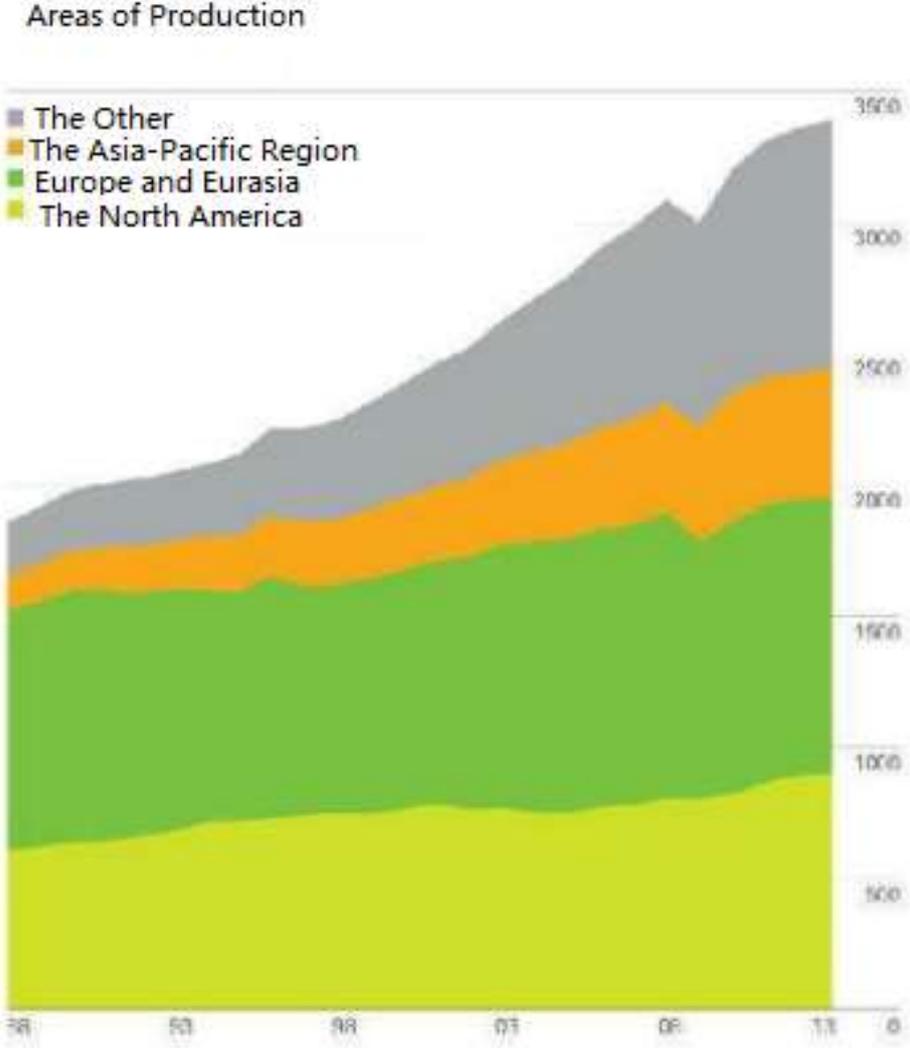


Fig 2 Areas of Production

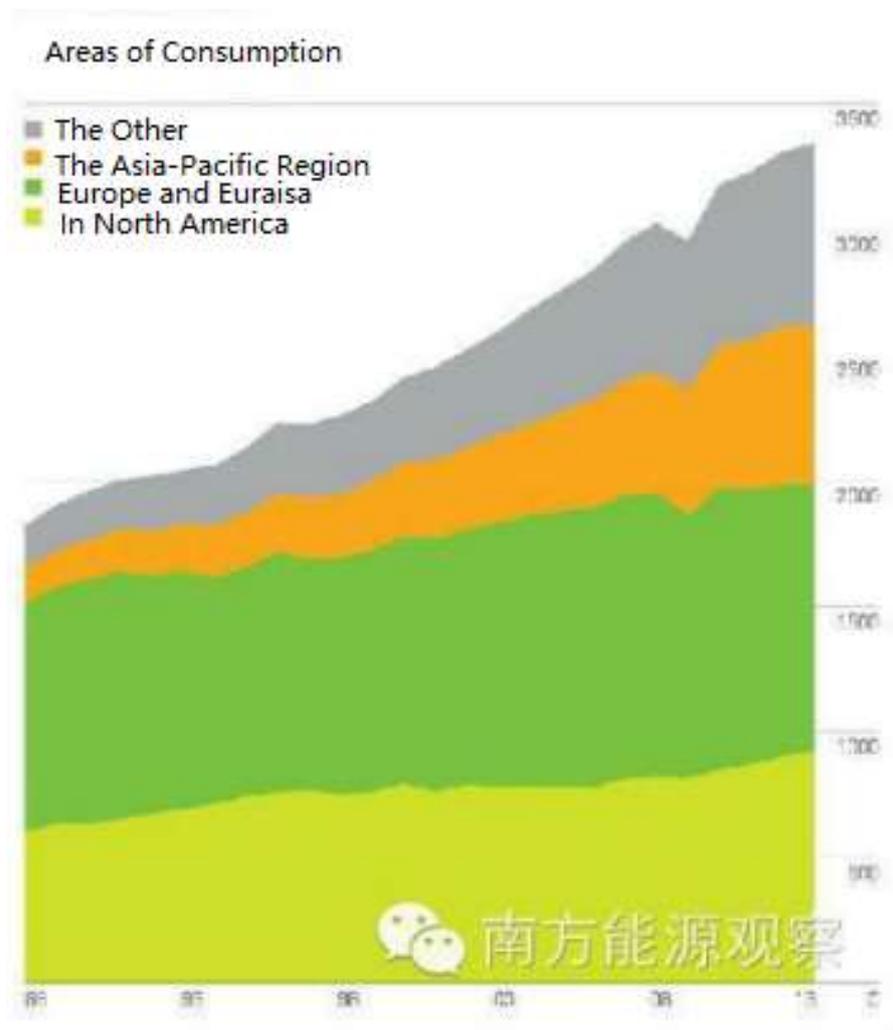


Fig 3 Areas of Consumption

The global natural gas increased by 1.1%. The United States (+1.3%) continues to be the world's largest natural gas producer status. Russia (+ 2.4%) and China (+ 9.5%) of natural gas production increase the most

The natural gas demand in the world.

In recent 20 years, the natural gas demand is increased from 19% to 24% in the proportion of the total energy demand in the world. According to the expert forecast, before 2020, this ratio will continue to rise gradually to 26%~28%. By 2050, it will rise to 30%.

In the world economy, the scale and structure of energy demand with the passage of the time. The demand and supply under the influence of heat, there will

be great changes.

In the factors of natural gas demand, the decisive is the state of development of world economic and energy department---power generation, chemical industry, metallurgy industry etc. The service industry, public utilities and household gas has certain effects on the demand for natural gas. In all sectors of the economy can observe different effects of many factors on the demand for natural gas. In general, the service industry, public undertakings and residents use gas lead to be growth of the natural gas demand, but the new energy-saving technology and advanced equipment to reduce the demand for natural gas.

As well as, changes in the supply of the energy resources lead to changes in the application volume of the natural gas. In recent years, non conventional forms of natural gas has been widely applied with the traditional energy (oil, coal) in the market, such as coal-bed gas and shale gas.

The world's natural gas transportation

Natural gas trade flows

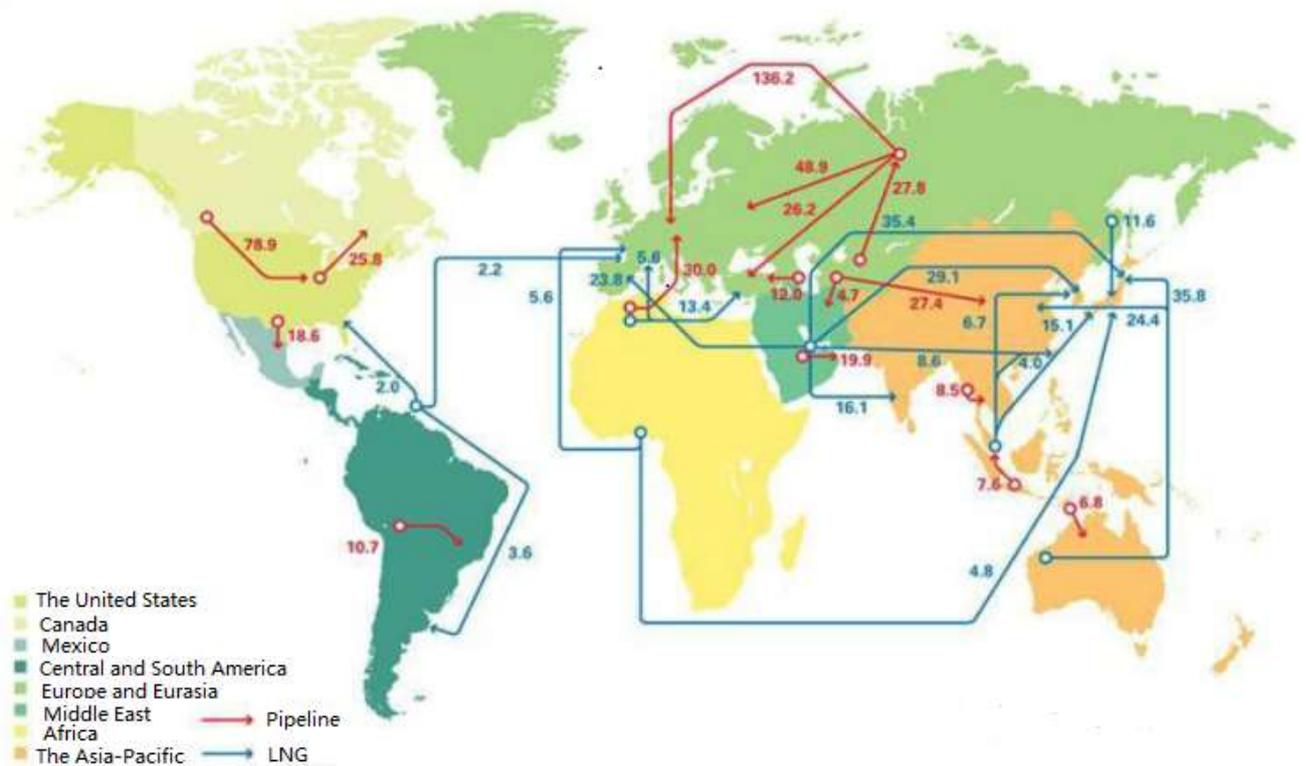


Fig 4 Natural gas trade flows

Natural gas transportation system is an important part of the world's natural gas market. Russia is a country that the most export volume of the pipeline natural gas. In 2008, Russia through pipelines to supply the natural gas to Europe for 1544 calculate cubic meters. Canada ranks second, 1032 calculate cubic meters.

The largest international natural gas transport systems are concentrated in Europe and the CIS countries, as well as North America, and the international natural gas transportation system is relatively rare in Southeast Asia. At the same time, natural gas transportation system of EU is the most international significance in all regions. This transport system to protect the energy security of EU in essence. Russia has played a vital role. Because the Russian natural gas accounted 25% for

the EU's total gas demand, and the 44% natural gas imports from Russia.

1.2 Analysis of the world's oil market

According to the BP world energy statistical yearbook data, by the end of 2014, China's proven oil reserves of about 2.5 billion tons. In China on the question of whether or not to belong to "lean-oil country", academic circles there is still a big debate, some scholars argue that China oil resources has proven rate is less than the real reserves is a third of the. However, according to the present, according to data released by China is not dominant in terms of proven oil reserves. And the east - west Siberian Russia's geopolitical vast oil and gas resources is rich, plus in nearly 10 years of "SA-HA-LIN" series of oil and gas field exploration strength increasing, its proven oil reserves reached 14.1 billion tons

Tab 1.Contrast proven oil reserves in the world

Countries	Reserves		The total percentage	Reserve production ratio
	Tons(hundred million)	Barrels		
China	25	185	1.1%	11.9
Russia	14.4	1032	6.1%	26.1
The United States	50	485	2.9%	11.4
Saudi Arabia	367	2670	70%	63.6
Iran	217	1578	9.3%	*
Venezuela	466	2983	17.5%	*
The United Arab Emirates	130	978	5.8%	72.2
Iraq	202	1500	8.8%	*

Russia on the oil storage amount compared with Middle East countries, does

not occupy the absolute superiority, it accounts for only 6.1% of the global total. But it should be pointed out that, along with Russia in recent years more to Siberia, Far East and other regions, and the exploration of offshore oil and gas fields, with the rising of the oil storage capacity will be. In China and the United States and Russia in the three countries, China's oil reserves at the bottom, accounting for 1.1% of the global total, reservoir production than just 11.9 years. In other words, if China's reserves and production levels unchanged, all oil reserves will be exhausted in 12 years. [3]

In terms of production capacity, as Mr. Putin's policies on energy exports drive economic growth directly, since 2000, the Russian oil production increase year by year; over the same period, China is restricted by its own inadequate reserves, oil production growth is relatively slow. According to the BP world energy statistical yearbook data, Russian oil production by 2002 tones in 383.7 million rose to 2014 tones in 534.1 million, accounting for 12.7% of world output (Saudi Arabia for 12.9%); China's oil production is rising from 166.9 million tons to 166.9 million tons, accounting for 5.0% of world output (at the same time the United States for 12.3%). But it must be pointed out that China's oil production is not entirely from its own mining reserves, but includes the import crude oil reprocessing parts production at the same time.[3]

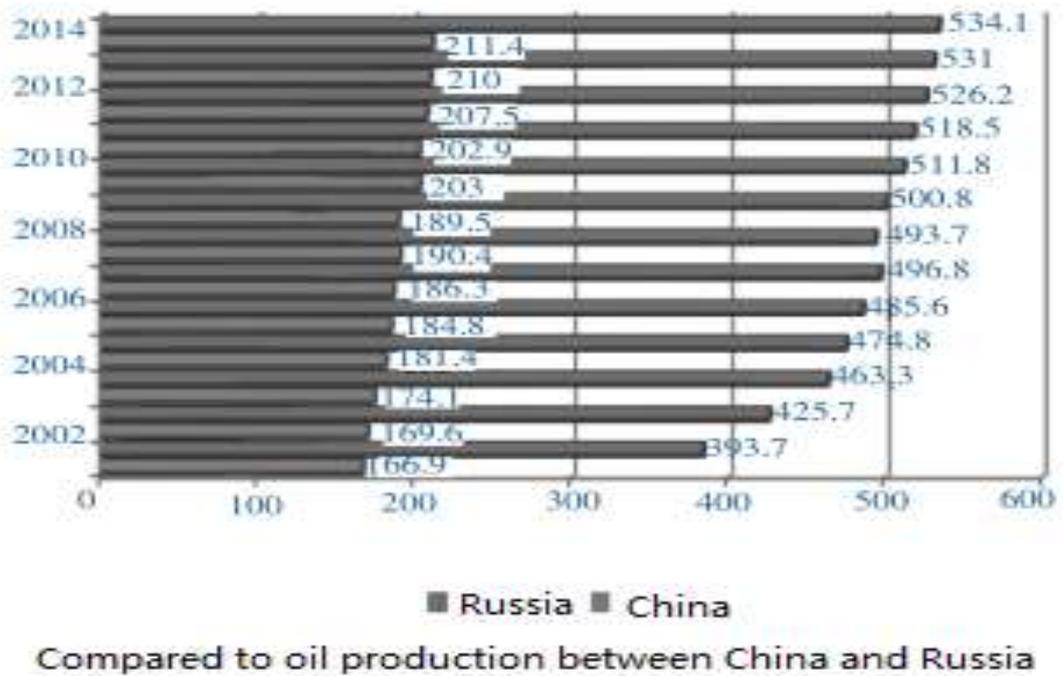
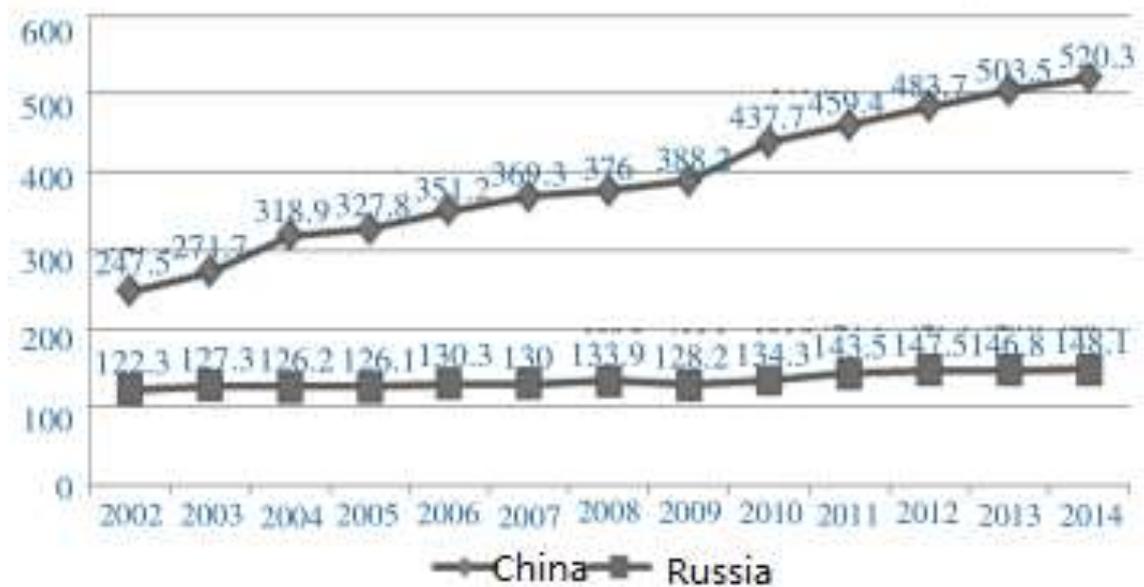


Fig 5 Compared to oil production between China and Russia

Thus, in terms of oil reserves, Russia than in China not only has a comparative advantage in the existing reserves, but also has obvious potential in production capacity. Russia in order to strengthen the control of oil resources, formulated the "2030 years ago, the Russian energy strategy", which points out that to realize the maximization of the interests of Russia in the international oil market, Russia will strive to promote the nationalization of oil resources, diversification of oil output and a series of policy designed to increase oil production and stable oil exports, further enhance oil this special commodity in the strategic position in the national economic development. Therefore, can think, despite Russia's oil reserves and do not have absolute advantage in comparison to other oil producers, but, as a result of oil exports in the future that play a decisive role in economic development, Russia will continue to spare no effort to continue to expand capacity.[4]



Compared to oil consumption between China and Russia

Fig 6 Compared to oil consumption between China and Russia

From the data can be found that China's domestic economic development mean dependence on oil is gradually intensified, low oil reserves of high consumption have become one of the major problems restricting China's economic stable growth. Russia is dependent on oil and other energy products output, not only get rid of the dilemma of economic development, and also acquired a strong voice in political diplomacy. But, at present Russia still faces some problems in the oil, among them, in order to "single engine" growth model and single output direction two problems is most obvious. "Single engine" growth pattern, refers to the Russian economic growth momentum, for the most part, comes from natural resources products exports, among them, the combination of oil and gas is the core part. This kind of the hidden trouble of the economic growth mode lies in the industrial structural imbalance is aggravating, slow growth, in addition to the energy industry of other industries makes easy to suffer from "Dutch disease" of economic development. And single output direction, it refers to the current key

distribution in the European part of Russia's energy output, although is given priority to with Europe and the United States of the consumer groups is relatively stable, but always faced with a big political factors of interference. [4] In this case, the Russian oil export diversification strategy is proposed, through agreed to Japan, India to participate in the SAHALIN oil and gas field development, the south Korean key countries on energy cooperation and other measures, will gradually shift of centre of gravity of oil output, in order to get rid of the dependence on traditional consumer market.

In 2015, the oil and gas industry to enter business cycle trough, the overall is still the continuation of the supply crude oil, refined oil, natural gas, oil and gas price down the "three big two down" trend. The world economic recovery is slow, the major economies monetary and fiscal policy orientation differentiation; OPEC to increase the insurance market, the United States showed good toughness, unconventional oil and gas production is not as expected slowdown, the world's oil and gas market serious supply greater than demand, prices are low. Oil company, oil and gas production, not the rose, a sharp drop in performance. International oil companies generally adopted control investment, risk controlling, cost controlling, controlled and big accident, upstream investment, cash flow, scientific and technological innovation and shareholder dividends "five control four protect" measures. Slowing in China's economic operation under pressure, stability, loose degree increase oil supply and demand, slow growth in consumption, the external dependency above 60% for the first time. At the same time, our country started mass close down backward production facilities, oil refining capacity is still obvious excess oil net exports sharply increasing for three consecutive years;

Natural gas consumption growth is a new low for 10 years, overall easing of supply, but the shortage of off-season YaChan season; Accelerate reform of oil and gas field, from partial reform of "dot" to covering industry, enterprise and the government of the whole industry chain "vertical reform". [5]

In 2016, the oil and gas industry predicament remains. Rebalancing of the world's oil supply and demand will take time, international oil prices low. LNG supply concentrated capacity plan, excess gas resources is increasing; The United States to become the new oil and gas exporter, influence the ability to further strengthen the international market; The oil and gas industry M&A activities tend to be more active, industry structure adjustment is remarkable. [6]China's oil demand growth is slowing, continue to present "steam fast, high coal, wood is low" characteristics, among so many brands of crude oil and product oil import and liberalized and refinery power, oil refining and marketing chain of market main body increases, competition intensified; Stricter environmental protection, gas price cut, the natural gas demand growth picks up, resource supply general enough, but I can't relieve seasonal contradiction; The reform plan of the oil and gas industry will accelerate the industry market reform process.

Widespread slowdown in emerging economies, the world economic recovery is still tough

In 2015, the world economy is in the depth adjustment after the financial crisis, the global economic growth is slowing, comprehensive estimated growth rate of 3.0%, 0.4% slower than in 2014. Major economies continue divergent, moderate recovery in the developed countries; including the us economy is strong,

estimated annual growth of 2.6%; European economic moderate recovery, the estimated annual growth of 1.5%; Japan's economic recovery, estimated annual growth of 0.8% year-on-year. By the decline in commodity prices, financial policy tightening and internal structure of internal and external factors, such as emerging economies widespread slowdown in economic growth. Estimates India's economic growth rate can reach 7.3% in 2015, the first Chinese; Russia, Brazil's economy is shrinking, annual growth rate of 3.8% and 1.3% respectively; China's economic growth continues to fall, GDP growth of 6.9%. In addition, the federal reserve to raise interest rates make pressure on emerging market currencies and capital outflows, raised some emerging market debt risk and inflation pressures.[7]

In 2015, the global total primary energy consumption were an estimated 12.76 billion tons of oil equivalent, up 0.7% from a year earlier. Including a 3.5% drop in coal, oil, natural gas, respectively 1.80%, 2.7%, nuclear power and hydropower growth of 3.3%, 1.7%, respectively, other renewable energy jumped by 8.5%.[8] Present the sufficient supply, the international energy market and weak demand situation, especially fossil energy supply capacity significantly beyond the consumer demand.

Fossil energy in the global primary energy consumption structure the proportion continues to fall, from 86.5% in 2010 to 85.7% by 2015. The proportion of coal and oil fell 1.2% and 0.2%, respectively, up 0.7% proportion of natural gas. Proportion of non-fossil energy, including nuclear power than 2010 fell by 0.7%, the proportion is 4.7%; Hydropower 0.3% higher than in 2010, the proportion is 7.0%; Wind, solar and other renewable energy supply costs fell significantly, competitive advantage began to emerge, the proportion rose from 1.4% in 2010 to

2.6% in 2015, up 1.2%.[9]

In 2015, the WTI and Brent crude oil futures price respectively for \$48.76 a barrel and \$53.60 a barrel, down 47.52% and 46.02% respectively, compared to the same 22 December Brent oil prices to \$36.11 a barrel, a new low since the financial crisis in 2008. WTI and Brent spreads significantly narrowed, influenced by U.S. crude oil export ban, once by the end of a reversal.

The world oil market in the most severe since the new century the excess supply of year-round supply greater than demand of 1.7 million barrels a day. By low oil prices to the stimulation of demand and the recovery of developed countries, the world oil demand increase, 1.7 million barrels per day to 94.4 million barrels a day, including OECD countries from negative to positive oil demand growth, growth of 450000 BPD. The world's oil supply in 2.6 million barrels a day, up to 96.1 million barrels a day, the OPEC countries stick to protect market share strategy, supply growth of 1.3 million barrels a day; Unconventional oil and gas production showed good toughness, average U.S. shale oil production cost from \$60 a barrel to \$40 a barrel, the break-even point down, production is not as the market is expected to decline, but the increment by last year's 1.25 million barrels per day to 630000 barrels a day. Dollar contributed to a drop in oil prices. According to estimates, 2015 dollar index to rise 17%, international oil prices drop on dollar-denominated contribute more than a third. Speculation in the market effect is abate, speculators net position and the relationship between the oil price from 3 ~ 4 months in advance in 2008 into a basic synchronization, speculators from market maker to followers and disturbance. Emergency easing of supply and demand environment impact of the market is not continuous, past events to the

adverse effects of oil prices in 2015 more than a week.[10]

The world's natural gas consumption growth picks up, demand growth driven by the Asia Pacific to Europe and the United States; Easing of supply and demand, the three major market prices dropped significantly.

In 2015, global gas consumption is estimated to be 3.48 trillion cubic meters, up 2.7% from a year earlier, the growth is increased by 2.3% in 2014. By the economic slowdown, warm in winter, gas price competitiveness and factors such as Japan and South Korea nuclear power to restart gas consumption growth fell to 1.2% in the Asia-Pacific region; Thanks to gas prices, gas consumption in Europe over the continuous downward trend since 2011, a 5.8% jump in; In the United States, under the drive of north American natural gas consumption growth 3.8%; Natural gas consumption for two consecutive years high speed growth in the Middle East. In 2015, the global natural gas production is estimated at 3.67 trillion cubic meters, up 2.4% from a year earlier, in addition to the Europe and Russia, the natural gas production area all have different degrees of growth. Apparent easing global gas supply and demand, the buyer market characteristics.

In 2015, the new global LNG production capacity of 20 million tons/year, output can reach 325 million tons/year, an increase of 5.2%. Asia LNG demand is weak, and imports fell, surplus resources mainly to Europe, Britain, France, Germany and other major national LNG imports rebounded sharply. Latin America LNG consumption growing rapidly, growth is expected to become the new demand. From LNG exporter to importer of Egypt, Pakistan, Jordan, and the polish for the first time into the LNG importer. [10]

Natural gas prices fell sharply. Henry Hub annual average price was \$2.62 per million British thermal units, down 39.8%; British NBP annual average price of \$6.62 per million British thermal units, down 14.0%. Affected by falling oil prices and market fundamentals loose, Japan imported LNG annual average estimate of \$10.64 per million British thermal unit, fell 34.4%, the LNG spot annual average price was \$7.46 per million British thermal units, down 46.9%. Asian gas market flexibility increases, destination restrictions, "pay not meeting" scale, isometric trade terms of the contract price formula to loosen, China, Singapore, Japan racing to build up natural gas market in Asia.[10]

In 2015, the global oil and gas reserves to maintain growth, estimated residual oil reserves of 241.6 billion tons, up 0.8% from a year earlier. Gas remaining reserves of 189 trillion cubic meters, up 1% from a year earlier. The global oil and gas production continues to grow, 4.28 billion tons and 3.67 trillion cubic meters, respectively, year-on-year growth of 2.8% and 2.8% respectively. Global oil and gas found is mainly concentrated in deepwater and ultra deepwater areas of Africa, Mediterranean especially Egypt, Angola sea waters and Mauritania, Senegal, and the natural gas found in the majority. In recent years, the global oil and gas exploration investment efficiency is falling, falling scale and new discovery of oil and gas reserves.

Capital spending continued sharp drop in global oil and gas field. In 2015, according to Barclays bank estimates of oil and gas upstream capital expenditures of \$521 billion, down 22% year on year. The engineering services market size of \$336.492 billion, down 25%, including drilling and well completion services market is the biggest drop in plate, a drop of 26%. In North America, the use of

drilling rig number fell by 54%; Exploration and development activities at sea slow shallow sea and various types of offshore rig drilling cost decreased by 10% ~ 20%. Lower oil prices, the United States of shale oil and gas exploration and development boom receded, oil and gas reserves value continues to shrink, petroleum enterprise debt have risen sharply, refinancing ability to drop, in bankruptcy or reorganization of the number of small and medium-sized enterprises is increasing.

The world crude oil processing capacity growth, reached a record high throughputs refining margins improved significantly; Ethylene supply tight, production cost of ethylene naphtha dropped sharply.

In 2015, due to large-scale close down backward production facilities in China, the world's refining capacity is only a net gain of 26 million tons/year, significantly less than that of last year, the total capacity of 4.833 billion tons/year. North American refiners continued expansion of shale oil processing capacity, the new capacity of 10.8 million tons/year. "Area" countries continue to push oil refining project construction, the Middle East oil refining, continued expansion, efforts to improve the clean oil production capacity. In 2015, the global crude oil processing capacity of 79.4 million barrels a day, up 2.7% from a year earlier, to an all-time high. Refinery starts at about 84% on average, increases by about 1% over the previous year. Basic stability of north American refinery capacity, 87.8%; Western Europe and the Asia-Pacific economic cooperation (APEC) national refinery capacity utilization have risen sharply, from 79.4% in 2014 and 79.4% respectively to 85.2% and 81.7%; Influenced by China, Asia Pacific non-OECD countries average

refinery capacity utilization is only 81%, the lowest among regions. Refining margins in the world is much better than that of last year. North-western Europe Brent oil cracking margins averaged \$7.55 a barrel, up 125%; U.S. refining margin increased by more than 20%, the gulf of Mexico central HLS/LLS, WTI crude oil cracking gross margin of \$9.5 a barrel respectively, \$16.98 a barrel; Singapore Dubai crude oil cracking margins for \$6.19 per barrel, growth above 50%, but in the center of the world's top three oil refining in the bottom.[10]

In 2015, the steady growth of the world ethylene production capacity, output can reach 159 million tons/year, net gain of 6.165 million tons/year. In the Middle East to further improve the status of world ethylene production. The world ethylene demand growth of 4.9 million tons, the market supply is still tight. Ethylene prices with frequent fluctuations of oil prices, the device starts up slightly, an average of about 85%, with North America starts to keep 95% of the higher level, the Middle East, Western Europe and the Asia-Pacific starts were 86%, 82% and 83%, respectively. Low oil prices made oil-base ethylene production cost greatly reduced, ethane cracking relative advantage weakened, around \$40 a barrel of oil prices has made coal to olefin losses.

Major global oil supply and demand continued easing, refined petroleum products trade steady growth; Product exports continue to expand in the United States, the Middle East region for the first time a diesel net exports, steam coal diesel sustained surplus in the Asia-Pacific region.

In 2015, the total global oil demand is estimated at 81.77 million barrels a day, 82.72 million barrels a day in supply, surplus, 950000 barrels per day over the

previous year, including gasoline, naphtha supply tension, diesel, jet fuel and residual fuel oil supply exceeds demand. Europe, Africa, Latin America, the main product is a small gap, in other parts of the overall surplus, the Russian central Asia excess oil is most serious.

In 2015, the United States, Europe, Singapore three market product stocks has increased the U.S. gasoline and distillate stocks increased by 3.8% and 14.8% respectively, the gasoline, diesel oil inventory growth of about 3.7%, Singapore light distillates and intermediate distillate inventories increased by 5.6% and 5.6% respectively. The three parts of the world oil price level around a 40% drop in overall. In addition to the New York harbor, Rotterdam, petrol price volatility is larger, the rest of relatively stable oil price fluctuations.

New changes appear in the global oil trade patterns. U.S. exports of refined oil products continuously, the gasoline, diesel, kerosene net exports in 2015 reached 1.163 million barrels a day, up 17.6%; Increase in imports in several European diesel, petrol exports; Middle East become diesel net exports, still needs to import gasoline; Gasoline, diesel, kerosene continued easing of supply and demand in the Asia-Pacific region, the excess amount of 1 million barrels a day, with excess diesel is given priority to, the main export trade increasingly fierce competition.

Resources and investment risks raise obviously, the multinational adjustment policy response to the crisis

2015, low oil prices on the influence of the world's major oil and gas resources countries gradually appear, Russia and central Asia, Middle East, Latin America and other major oil-producing countries export revenues have fallen sharply, financial

tension, currency, foreign exchange reserves shrink, part of the country's economic growth is slowing sharply and even into recession, especially in Middle East, and west Africa terrorist activities increased, the resource countries increased economic, social, and political risk.

In response to the crisis, the resource countries take various policies and measures to attract foreign investment, reduce the financial burden on enterprises. Actively modify contract, ease in investment, workload, development period and cost recovery, remuneration clause limits, breakthrough the limitation of the original buy-back contract model; Countries such as Mexico, Uganda, Angola ease restrictions on the tender, targeted to give difficult mining area preferential fiscal and taxation. Russia, Kazakhstan, England, Indonesia and other countries by reducing the specific areas and specific resources of mining tax, gains and cancel some taxes and fees reduce the financial burden on enterprises.

Part of the resource countries to ease the financial burden, to reduce the subsidies and tax increases, the measure such as asset sales, in order to raise funds through. Represented by Saudi Arabia country of multiple resources to raise domestic energy prices, reducing subsidies; Russia's adjustment of domestic mineral resources, mining tax, plans by 776 rubles/ton to 950 rubles/ton; Russia has sell the oil and gas assets of more than \$10 billion, including some strategic assets, change the policy of strategic assets for sale. Kazakhstan will implement privatization programmer, to the international investors sell shares more than state-owned enterprises.

In 2015, the foreign oil company's oil and gas production, oil processing capacity, product sales and other production indicators generally keep growing,

but international oil prices fell sharply hit the performance of all kinds of oil companies.[10] Exxon Mobil, shell, BP, chevron and total five big international oil companies, as well as Russian oil, Russia, Norway's national oil company, petrobras, Malaysia's state oil company, Mexico's state oil company 6 national oil companies operating income, net profit fell 40% and 70% respectively; ConocoPhillips, Anadarko 10 independent oil companies operating income fell by around 45%, all into loss; Seven technical service companies such as Schlumberger, Halliburton, revenue fell nearly 30%, most of the loss. Thanks to the increase of profit in the downstream, the international oil companies and the state oil company's performance is better than other companies, integration advantages of anti-risk.

Winter 2015, the international oil companies to cope with the industry, has taken control of investment, high risk control project, cost control, control the number of employees and control of major accidents, highlight the core business, upstream investment, cash flow, scientific and technological innovation and shareholder returns. Five big international oil companies' investment fell at about 15%, \$8.2 billion plan to reduce operating costs; In response to the challenge, the international major oil companies take reduced people don't pay strategy, national oil company is not reduced people pay cut. Seven technical service companies such as Schlumberger capital spending fell by nearly 40%, to nearly 70000 job cuts, in extremely difficult circumstances, technology services company keep basic not r&d intensity, remained at 2% ~ 3%.

Oil industry giant M&A again in 2015. For the sake of strengthening advantage, shell \$70 billion acquisition of BG in deep water, LNG, and other fields to improve

the competition ability; Schlumberger's \$12.43 billion acquisition of Cameron company, further enhance integrated service ability. Dow chemical company and DuPont announced a merger of equals, the combined market value of more than \$130 billion, becoming the first big company for the chemical industry.

The United States to become the important production and exporter of oil, to the oil and gas industry and the market have a significant impact. 40 years after the U.S. lifted crude oil export bans, more refined oil exports and become the new LNG exporter, will greatly change the pattern of global oil and gas supplies. Around the United States is the world's new oil and gas market regulator, the resources of the global energy market capacity significantly increased, will reshape the world petroleum geopolitics. The situation in the Middle East more volatile. Russia's choice of refugees plagued Europe, the United States counter-terrorism washout of the favorable opportunity, the strong are involved in the war on terror of Syria, to get rid of the crisis, Ukraine and consolidate and improve the influence of the Middle East, occupy the moral high ground. Meanwhile Russian airliner crashed in a terrorist attack, the French ISIS terrorist attacks, to pull the anti-terrorism, challenge America's dominance against terrorism. Turkey to achieve its strategic interests, rely on NATO, aircraft shot down Russia, the Middle East situation is more complex, has a profound influence on the global oil market.

1.3 Analysis the energy market in Russia

European factors existing in the development of natural gas in Russia

Since January, 2006, the crisis which caused by the supply of Russian natural

gas price dispute in Ukraine and reduce the supply of natural gas of Moldova, the debate of Europe have a high degree of dependence on Russian gas is more intense. The Russian natural gas stock company is known as the main tool of Russian foreign policy, which controls the world natural gas reserves of oil about 16%, is be worthy of the name of the Russian state gas monopoly. Russian through its supply of Russian gas to Europe. The geopolitical and economic factors are intertwined, so that the problem becomes more complex. However, the views, "Europe strongly dependent on Russian natural gas", which is often demonstrated by the people should be accurately described as: In fact, between the countries of Western Europe and central and Eastern European countries less dependent on Russian natural gas is not the same.

European dependence on Russian gas

On 2005, the Gazprom to demand for natural gas in Europe to reach 28% of the index is satisfied, because of its share in the European natural gas import structure of account for about 60%.According to the degree of dependence on Russian gas supplies to distinguish, European countries can be divided into 3 groups.[11]

The first group is mainly Western European countries such as France, Germany and Italy: basically, they meet their demand for gas by supplying in Gazprom, but they also have other alternative sources of supply (such as northern Europe, Algeria).Existing gas pipelines will be their source and the supply connected together.[12]

Germany and Gazprom have close contact (In 2005, Gazprom's supply of natural gas demand accounted for 44%), other countries on Russian natural gas dependence is shown in Figure 2-5. Gazprom to these countries' supply of natural gas based on long-term contracts in accordance with the method is bound with the price of a basket of European oil with about 6 month lag price supply. Gazprom intends to keep gas supply to these countries, because they are the main source of the profit and cash flow to Gazprom. Indeed, the quantity of natural gas in the overseas market sales accounted for the Russian gas company Gazprom mining 1/3 of the total, but bring foreign exchange income 2/3 for the company. This shows that, in the domestic market of natural gas is to be regulated to very low rates of sales. Russia, a person with breadth of vision, point that the Russian domestic natural gas sales price must be in accordance with the plan in 2010 gradually raised to 60 dollars a thousand cubic meters (contrast to the \$35 in 2005) but it is still much lower than the current Russia sold to European countries and the price (\$200 / 1000 cubic meters). To this group of countries the supply of natural gas is mostly by some Western European company. [13] These companies out of business operational considerations and Gazprom have established a joint venture company. For example, BASF AG Company signed the asset exchange agreement in 2006, according to the agreement, Gazprom Russian natural gas field in South West Siberia with a 35% stake, will own shares in joint ventures in Germany's WINGAS GmbH increased from 35% to 50% minus 1.

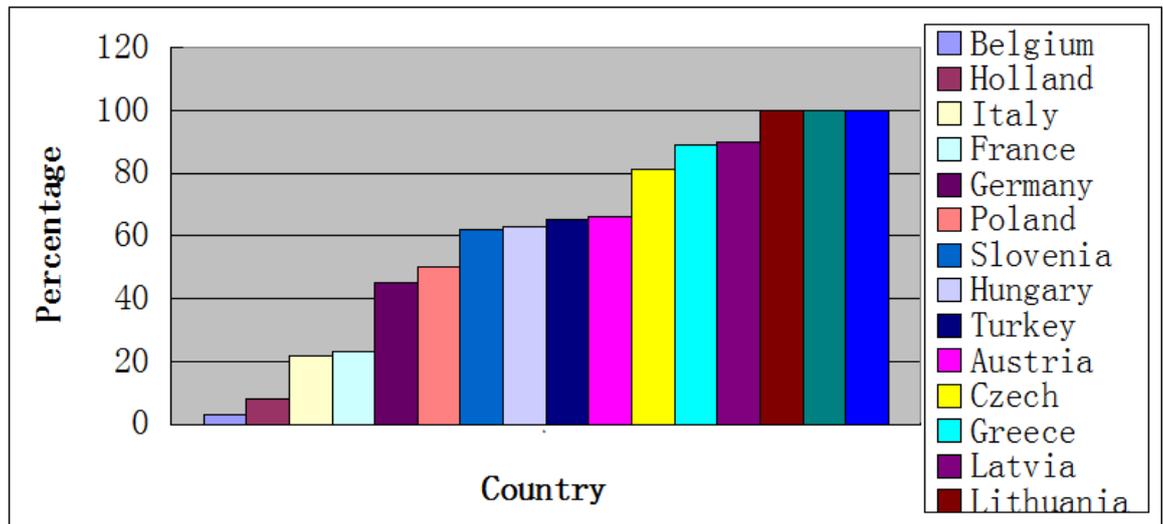


Fig 7 Members of the EU of natural gas consumption in the proportion of Russian natural gas

From: In twenty-first Century the economy for Russian

The second group is the central and East European countries, for example, Czech and Poland, they buy the number to Gazprom natural gas accounted for most of its natural gas consumption, but the contract price is close to the market price of the transaction in accordance with the standard. The future of these countries in alternative energy supply country will go smoothly, largely because of they are close to the market price level to buy gas, but also because they want and are likely to invest in natural gas pipeline has the vitality in the economic infrastructure.

The third group is the former Soviet countries, especially Ukraine and Belarus, in fact, the Russian natural gas is the best choice for them, because they get from Russia is subsidized, low price. For example, in 2005 before Russia sold to Ukraine's natural gas price is \$50 / 1000 cubic meters, and not long ago to Belarus is \$46.68 per thousand cubic meters. They provide subsidies to contain political factors, and the fact that, as a state authorized to Gazprom to these countries selling cheap natural gas. In 2005 the first 9 months of Russian gas to

Western Europe sales average price of \$181 / 1000 cubic meters, in 2005 to Ukraine and Belarus's natural gas subsidies were \$3300000000 and \$2600000000. Due to the easy availability of cheap natural gas, these countries in economic development are no power to promote energy-saving technology. From this perspective, they are more on Russian gas increases the sense of dependence, and improve their market price changes on gas sensitivity.

The most unsubstantial in this group is Ukraine, because its economy is the largest energy consumption in all countries and regions. In January 2006, Gazprom will Ukraine natural gas prices rise to \$230 / 1000 m³, but Ukraine in the first half of 2006 the purchase of natural gas the actual average price of \$95 per thousand cubic meters. This shows that the Ukraine to buy natural gas not only from Russia, and from Central Asia, and the latter is cheaper. In addition, the Russian gas company Gazprom raised Belarus gas prices in 2007. Sharply raising prices will have a negative impact on the economy of these countries, because they don't have the time and resources to take energy-saving measures.

Some countries do not have entered the column group list

There are a number of central and Eastern European countries (such as Bulgaria and Romania) in the middle position second and third groups. Although Gazprom to these countries preferential gas sales, sales price lower than the price of Western European countries, but the reason for this is the price in a part of the arrival of transit freight.

EU enlargement

Many observers believe that, shortly before the occurrence of the natural gas crisis between Russia and Ukraine have some connection with Russia tried to continue to maintain control of the nearby countries Ukraine, Belarus and Moldova, who may join the European Union. But unlike the Soviet era, these countries are now not in Russia's republics, but there is an independent sovereign state, they have the right to choose their own destiny. The former Soviet Union eight republics have joined the EU in 2004; some of the other former Soviet republics also formally submitted an application to join the EU. In addition, most of these new EU members hope to join the European Monetary Union. These have increased the worry for Russia on the loss of traditional sphere of influence and a buffer between himself and Western Europe.[14]

Energy policy

Due to a series of reasons, the EU will not at any time to take a unified energy policy. First, as we mentioned above, different members of the European Union dependence on imports of Russian natural gas is different. Second, at any time, even in the most complex during the cold war, Russia exports to Western Europe are not subject to control. Third, after the first oil crisis in 1974, individual EU Member States began alone decided to choose their own energy security. For example, when France also had resisted the development of nuclear energy.

The new EU Member States dependence on Russian gas unabated. In Austria and Greece, from the Russian natural gas share of their total gas demand in 73% and 87%.[15]

The German company BASF and E.ON AG not only set up a joint venture WINGAS with Gazprom, but also make a cooperation on the Baltic gas pipeline project. The project can make the Russian natural gas to Germany and other countries of Western Europe, directly into or through Poland and other Eastern European country's territory.

The decision of the European Union

Solution to Europe's dependence on Russian gas will make economic and political issues much complicate. So the standard &Poor's believes that we can try tension caused by reduced from several aspects. One, in consultation with the EU Member States to establish mutual support mechanism. It is intended, as a member of natural gas supply interruptions, from other countries to fill the supply gap appears. Second, solve and signed by 49 European countries in 1994 and to determine the correlation within Europe energy transport and sales regulations of the Energy Charter protocol problem. Thirdly, to improve and Gazprom and other either in Russia or in its overseas Multi-National Corporation cooperation depth. Fourth, the EU Member States to consider the import of liquefied natural gas and to develop alternative supply routes.

The impact of shale gas on Russian gas market

Global shale gas resource is rich. Shale gas revolution by the American successful incentive, the multinational heat in shale gas. This in part three the weak control of Russian gas to the international market. Russia pay more attention to the far east market, thereby helping to promote natural gas cooperation between China

and Russia. [16]

Shale gas resources around the world

According to the U.S. energy information administration in the United States and the other 14 regions (excluding Russia, central Asia, the Middle East, southeast Asia, etc.), a total of 36 countries of shale gas resource evaluation as a result, these countries recoverable resource of 18.74 billion cubic meters of shale gas technology (top 20 countries are showed in table 1), it almost can comparable to the global proven recoverable reserves of natural gas.

Tab 2the shale gas resources in the top 20 countries in 2011

The country name	Ranking	The shale gas, TCM	The natural gas in 2011		
			Proven recoverable reserves, TCM	Yield, BCM	Consumption, BCM
Russia			44.6	6070	4246
China	1	36.1	3.1	1025	1307
America	2	24.4	8.5	6512	6901
Argentina	3	21.9	0.3	388	465
Mexico	4	19.3	0.4	525	689
South Africa	5	13.7	—	—	—
Australia	6	11.2	3.8	450	256
Canada	7	10.98	2.0	1605	1048
Libya	8	8.2	1.5	41	—
Algeria	9	6.5	4.5	780	280
Brazil	10	6.4	0.5	167	267
Poland	11	5.3	0.1	42	154

France	12	5.1	—	—	403
Norway	13	2.3	2.1	1014	40
Chile	14	1.81	0.1	14	52
India	15	1.78	1.2	461	611
Paraguay	16	1.75	0	0	0
Pakistan	17	1.44	0.8	392	392
Bolivia	18	1.36	0.3	154	28
Ukraine	19	1.19	0.9	182	527
Sweden	20	1.16	0	0	11
Total		187.4	208.4	32762	32229

From:①EIA. World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States.

②BP. The 2012 world energy statistic yearbook.

Analyzing the distribution of shale gas resources from all over the world has the following characteristics.

The first, natural gas importer or the potential power, their conventional natural gas resources are insufficient, but their unconventional gas resources is very rich. Such as China, the United States, India, Brazil and so on. China imports nearly 30 billion cubic meters of natural gas in 2011, imports in the future 5~8 years will be more than 100 billion cubic meters a year. Less than 7% of Russia's natural gas proved reserves in China, but the shale gas technical recoverable resource of 36.1 trillion cubic meters, ranks the first in the world. Brazil imported 10 billion cubic meters of natural gas in 2011, the future import growth will accelerate.[17] He has proven reserves of 0.5 trillion cubic meters of natural gas , it is a low data. But shale gas recoverable resource of 6.4 trillion cubic meters, ranks 10th in the world.

The second, some have been dependent on Russia natural gas supply of the commonwealth of independent states and the European countries out of conventional natural gas resources, but their unconventional gas resources are rich. For example Ukraine, Poland, France, etc. Ukraine imports of Russia gas 34.5 billion cubic meters in 2011. He proved reserve of natural gas are 0.9 trillion cubic meters, shale gas technical recoverable resource of 1.19 trillion cubic meters, ranks 19th in the world.

The third, some natural gas exporting countries with abundant resource, also their shale gas resource is rich. In 2011, Canada's exports are 55.7 billion cubic meters of natural gas. He is proved reserves of natural gas are more 2 trillion cubic meters, also the technical recoverable of shale gas resource is rich, up to 10.98 trillion cubic meters, ranks seventh in the world.

Although the shale gas resources in Russia is not evaluation, but his resource is must not less. Because Russia has a very rich conventional natural gas resources, so now, do not need to expend energy to develop unconventional oil and gas resources. But Shale gas revolution by the American successful incentive, the multinational heat in shale gas.

The shale gas revolution in America

The United States is the world's shale gas exploration and development of the most successful countries at the earliest. American dug the first shale gas well in 1821. In 1880s, Eastern USA shale gas has a certain scale of production capacity, but since then the industry has not been active. Until the late 1970s, with the international market of high oil prices and the rise of the concept of

unconventional oil and gas, shale gas research has been attached with great importance.[18]

With the impetus of the shale gas production, the natural gas production of the United States---624 billion cubic meters, is the first time more than Russia---582 billion cubic meters, as the world's largest producer of natural gas in 2009. According to the EIA forecast that, by 2035,46%of America's natural gas supply will come from shale gas.

The changing structure of world natural gas supply

In 2007, around 2008, the world's natural gas supply situation is nervous, the Russia used natural gas as the weapon to Ukraine has carried out two rounds of sanctions, and trigger the European natural gas supplies. It made European countries been pained.[19]

Shale gas increased global gas supply, which makes the original flow of liquefied natural gas (LNG) in the USA can more to Europe and Asia-pacific region. Which makes the European countries on Russian gas imports to reduce, and reduce on Russian gas imports are expected in the Asia-pacific region.[20] For example, Gazprom, due to the problem of the gas price encountered many litigation and forced to reduce prices. Gas price increase the next tree years, the terms of reconsideration again, also by the European commission's investigation. This is clearly a reflection of the Russian energy influence is weakened.

Inhibition of Russia's control of the international price of natural gas

The growth of shale gas production in the U.S. and Canada has weakened the Russia and the Persian gulf countries natural gas price controls on exports to the European countries. Since 2005, exports to Russia in the international market average natural gas pipeline have experienced a polish style change process.

Shale gas potential in China

Many scholars and institutions that shale gas resources are rich in our country, geological resource of 86 trillion ~ 86 trillion cubic meters, technical recoverable resource of 1 billion ~ 36.1 trillion cubic meters, shale gas that is more than the United States.[21]

According to our country shale gas "twelfth five-year" plan, 2015 proved geological reserves of 6 trillion cubic meters, the production of 6.5 billion cubic meters. By 2020, shale gas production for 60 billion~100 billion cubic meters.

In recent years, a batch of shale gas pilot experiment well drilling in succession and breakthrough, preliminary shows the shale gas good development prospect in our country. In explore shale gas exploration and development process, China suffered geological poor, backward technology, drilling cost is high, the western water difficult problems, but these problems didn't become a fundamental obstacle in the field of our country enter the shale gas. In order to intensify development of shale gas, the government adopted a series of measures: to shale gas as a single new minerals; Have preferential policies; geared to the needs of domestic and international public bidding, vigorously the introduction of foreign capital and what, etc. These measures will continue to have an effect, the future

after 5 ~ 10 years of research, deepen the geological understanding and strengthening basic geological research and pilot experiment to construction work, the country's "12th five-year" shale gas planning goals and vision can be reached in 2020.[22]

China's rich reserves of shale gas and shale gas momentum will have a positive impact on natural gas cooperation between China and Russia. The first with the increase of shale gas production in our country, will narrow the domestic market supply and demand gap, thus reducing the introduction of Russian gas urgent expectation. The second of the world's natural gas supply and demand balance improve helps to weaken Russia's gas price leverage. The third shale gas in China will increase the world's natural gas supply, and will speed up the international natural gas price, the high price of Russian gas times gone.

1.4 Analysis the energy market in China

At the beginning of the founding of new China due to the limitation of economic conditions and natural gas exploration and development technology of low, China's natural gas industry is very backward. And the urgent need of the construction of the new China, to speed up the exploration and development are is advocated and encouraged by the state. Under the guidance of the policy, attaches great importance to the oil, ignore the natural gas was a nationwide unified thought, oil and gas resources exploration and development in the extreme imbalance, cause a long period of the subordinate status of oil gas, by 1952 China is only 26 million cubic meters of natural gas production

At the present stage of China's natural gas industry

Proven in recent years, China's natural gas geological reserves to grow, "85" less than 0.6 trillion cubic meters, before "85r" period up to 0.7 trillion cubic meters, "95" period up to 1.2 trillion cubic meters. In "15" period, also broke through 2 trillion cubic meters, 2.5 trillion cubic meters. At present, China's natural gas reserves in the period of rapid growth, the average annual growth at a speed of 40 billion cubic meters. Is expected to reach 5.4 trillion by 2020 cubic meters. [23]

Tab 3 The natural new atmosphere gas proven reserves statistics /BCM

The company	In 2004		In 2005		In 2006	
	Geological reserves	Recoverable reserves	Geological reserves	Recoverable reserves	Geological reserves	Recoverable reserves
CNPC	2008.77	1344.74	3583.33	1983.52	3598.65	22939.79
Sinoprec	2961.45	166.63	1909.6	1287.46	9639.06	5550.74
CNOOC	138.16	81.46	227.59	131.35	4563.04	3042.88
Region	---	---	---	---	170.51	102.31
Nationwide	5108.38	3093.83	5720.52	3402.33	5035.92	31635.72

From: China's natural gas report for 2005

Characteristics of China's natural gas reserves

Reserves of natural gas resources in our country has the following main features: the first resource distribution and regional economic. Densely populated

and economically developed eastern areas have less than 20% of the natural gas resources, and more than 69% of the resource distribution in the sparsely populated, economy is relatively backward, the western region; The second most of resource distribution in poor natural conditions where - desert, mountains, waters, etc; The third gas resources reserves buried depth, geological condition is bad. These characteristics brought China's natural gas exploration and development of a larger difficulty, is the objective factors which restrict the development of the fast China natural gas industry.

China's natural gas production

In recent years, China's natural gas production is growth faster. The output of 1979 was 10 billion cubic meters, the output of 2000 was 27.7 billion cubic meters, growth in 2004 to 400 cubic meters, is further increased to nearly 50 billion cubic meters in 2005. In 2007 China's natural gas production is 69.31 billion cubic meters, increased by 23.1% than in 2006. In 2008, China has reached 76.082 billion cubic meters of natural gas production increased by 12.3% compared with the previous year.[24]

China's success in natural gas exploration and development in recent years, the annual gas production increase of around 18%, China's natural gas production countries in the world is ranked ninth. , in the top 10 countries: Russia、 the United Stated、 Canada、 Algeria、 Norway、 Iran、 Holland、 Britain、 China and Indonesia.

In recent 20 years the rapid development of economy of our country caused the soaring demand for energy. The current natural gas in China one-time share of energy demand is small. But our country is gradually into the large-scale use of

Tab 4 China's natural gas production (1978~2010)

Year	Production /BCM	Share of natural gas in energy production (%)	Share of natural gas in energy demand (%)
1978	137.3	2.9	3.2
1980	142.3	3.0	3.1
1985	129.3	2.0	2.2
1990	153.0	2.0	2.1
1991	160.7	2.0	2.0
1992	157.9	2.0	1.9
1993	167.7	2.0	1.9
1994	175.6	1.9	1.9
1995	179.5	1.9	1.8
1996	201.1	2.0	1.8
1997	227.0	2.0	1.8
1998	232.8	2.5	2.2
1999	252.0	3.1	2.2
2000	277.3	3.4	2.5
2005	400.0	3.7	5.0
2010	500.0~700.0	6.2	7.0

China's natural gas demand and shortages supply

Although natural gas consumption in China increased faster, this to improve the environment and improve the quality of people's living standard is a must, at the same time, also with China's commitments to the world energy conservation

and emissions reduction goal perfectly, however, China's natural gas resources are relatively limited. Evaluation according to the international energy association, China by 2010, the demand for natural gas increased to 100 billion cubic meters, the shortage of domestic natural gas volume is 50 billion cubic meters, in 2015 China's natural gas demand will reach 160 billion cubic meters, supply of 40 billion cubic meters;[26] By 2020, China's natural gas supply will rise to 80 billion cubic meters. According to the needs of economic development, China's natural gas resources can basically meet the need of the recent development, but in the long term strategic consideration, imports of foreign resources is imperative.

Tab 5China’s natural gas gap/BCM

Year	The natural gas demand	Domestic production	Gas supply gap
2000	283	277	0.6
2005	500	400	100
2010	1000	500~700	300~500

Thus, China's natural gas supply gap should not be ignored. Aimed at this situation, our government has identified three main directions to meet the domestic market growing demand for natural gas: first increase their own gas; Second infrastructure construction of natural gas to form gas demand market, mainly in the eastern part of the domestic region; Third imported large enough to cover the shortage of quantity of natural gas, both pipeline gas, and liquefied natural gas (LNG) to import.[27]

The problems of China's natural gas industry

China's natural gas industry develops very fast after reform and opening up, on the management system, management system has carried on the deep reform. China increased efforts on natural gas exploration, development, production has a remarkable improvement. But in addition to natural gas price is far lower than the international prevailing prices, for now, although the geological reserves of natural gas in a steady growth in our country, but low reserves abundance, the quality is not ideal, uneven distribution. A bad geological condition on the one hand, increased the difficulty of exploration and development, but also increase the cost of natural gas production. The situation of the development of China's natural gas has brought certain difficulties.

In addition, China's natural gas production and consumption structure is not reasonable. Coal in our energy consumption accounts for about 70%, oil accounts for about 21%, water accounts for about 5%, nuclear power accounted for about 1%, while the proportion of natural gas as a clean energy consumption is small, only accounts for less than 3%.[28]

China, with the natural gas resources is rich countries, but due to the large population, per capita natural gas is very limited, China's per capita natural gas consumption only ranks 95th in the world.

Infrastructure configuration is not reasonable for China's natural gas industry and natural gas industry in the developed countries compared to the lack of another. China natural gas industry infrastructure on layout is mature, but far from forming a national website layout.[29] At present except Tibet region in China, more than 200 cities began to different levels of use of natural gas, penetration rate

reached 60%, but the popularity of small cities and vast rural areas is a long-term and arduous task.

China's natural gas trade

The 21st century, with the improvement of the Chinese people's living standard, people put forward higher request to the requirement of environmental quality. In order to meet the rapid growth of the domestic gas market demand, and to improve the environment, reduce carbon emissions, gas imports accelerated step by step in our country. Signed import contract with foreign large gas producers. Imports of liquefied natural gas and natural gas pipeline and gas both simultaneously.[30]

The import of LNG

As a form of natural gas, liquefied natural gas solves the problems of gaseous natural gas is bad for long distance transportation. It not only in quantity, but also widened the natural gas market in geography. To help the importer get rid of the dependence on adjacent energy superpower.[31] Due to the supply of liquefied natural gas is not restricted by geographical and transportation distance, can choose according to different situations: the seller and the buyer is not involved in transit transport problems, so that you can avoid by political problems. China's natural gas trade is the import of liquefied natural gas direction of breakthrough and success in the first place.

Tab 6 China's import of LNG contract conditions

Time	The buyer	The seller	Annual supply (10000 tons)	The supply of time (year)
12.2009	Sinopec	Exxon Mobil	200	20
8.2009	CNPC	Exxon Mobil	225	20
5.2009	CNOOC	British Gas	360	20
11.2008	CNPC	RADSA	100	20
6.2008	CNOOC	Total FR-FP	300	>15
4.2008	CNPC	QPI+RADSA	300	25
4.2008	CNOOC	QPI+RADSA	200	25
12.2007	CNPC	Iran	300	---
2007	CNPC	BP+ the Odyssey	400	---
2006	CNOOC	PETRONAS	300	25
2006	CNOOC	Indonesia	260	25
5.2002	CNOOC	The Odyssey	260	25

From: the economic report in the 21st century. 2010(1)

The import of pipeline gas

Compared with the maritime transport, by importing natural gas pipeline from the road, is a more safe, save and reliable way. But because the pipeline gas trade involves complex problems, such as geopolitics, so in addition to laying pipes need huge investment, the construction need a lot of artificial, commercial factors, such as natural gas trade negotiations also contains areas along the pipelines are factors such as environmental protection, national energy security. So the pipeline gas trade than liquefied natural gas is more complex, also more long.

On May 21, 2014, the Russian natural gas corporation signed a natural gas supply agreement with CNPC, the deadline for 30 years, supply of 38 billion cubic meters a year. This shows that China's pipeline gas imports has already formed the scale.

Chinese energy situation and Challenges

Since man entered the industrialization society, disposable energy consumption so far is still mainly of fossil energy, with the energy resources exploration and transformation of technological progress, on the one hand, the rapid growth of energy consumption; on the other hand, from eighteenth Century to the end of this century, in the economic and environmental pollution under the pressure of energy began to change, mainly from coal to oil and natural gas as fuel. By 2006, the world of disposable fuel accounted for the total energy supply 87.9%.

The status of primary energy sources in the world

The first half of the twenty-first Century, oil is still one of the main fuel, with the continuous development and application of more than a century, oil reserves declined gradually, with the amount of the reduced, prices will be rising, part of them will be replaced by unconventional oil in 2020. Unconventional oil components for heavy hydrocarbon ratio of hydrogen to carbon and sulfur, low nitrogen compounds, because of its high processing fees, the price is not competitive in the current. At this stage, China energy enterprises must accept the challenge, the developed reservoir carding, tap potential, as far as possible to enhance oil recovery, but to do so is the premise of raising the level of science and

technology, by the geophysical prospecting of cutting-edge technology and advanced and perfect service to successfully reach the expected purpose, they find new development space, challenges and opportunities coexist in the process. Natural gas is an important part of energy, is an important material of economic construction and national defense. The world's natural gas resources are very rich, in environmental protection and improve the quality of life of humans. Application of natural gas has attracted more and more attention. With the development of exploration technology continues to improve, proven natural gas reserves continue to increase; large gas fields have been discovered. After 2040, the proportion of natural gas in energy will be more than oil; in the energy application function will be clearer.

The status quo of China's energy

At present, China already is the world's second largest energy consumer. China oil production while ranking fifth in the world, but the oil and gas resources is in a backward position. About 3.5 tones of China 2007 oil consumption, which produced 1.9 tons, year-on-year increase of 1.6%; imports 1.6 tons, year-on-year increase of 14.7%; foreign dependence has reached 46%. Although our country in recent years through the active mediation diplomacy, strive to expand import more oil and gas from the energy resources in the country, and deep into the upstream resources to master some of the resources through investment and shares manner of mining rights, but in the current international political pattern of geopolitics, inlet and go out to the development of overseas oil and gas resources the more difficult. We have reason to judge, China keep the growth of self-produced and

imported crude oil in 2007 is not possible. Oil and gas supply has become a major problem affecting China's economic and social development for a long period, mainly related to the industry for the transportation and chemical industry.

The energy structure in the Chinese, coal accounts for 72% of the primary energy, of which six for power generation. In 2006 China consumption of raw coal of about 24 tons, accounting for 38.6% of the world. In 2007 China installed power has exceeded 700000000 kilowatts, annual consumption of nearly 3 trillion degrees. To achieve the "well-off" according to per capita electricity 1 kilowatt meter, installed in 2020 will reach 1500000000 kilowatts, compared to 2007 increased one times. By then, even if all of the uses of supercritical technology, carbon dioxide emissions will also for the world greenhouse gas emission reduction of the "Bali Island road map" will not be. Not to mention the about 4000000000 tons / year of coal mining, transportation challenges.

Optimize the energy structure

Since the reform and opening up, China energy industry has made great achievements, from 1979 to 2006 Chinese energy consumption grew 5.4%, while GDP increased by an average of 9.7%. The realization of the basic energy consumption doubled the total economy, support the goal of quadrupling the GNP. At the same time, Chinese energy development also appears some deep-seated contradictions and problems. For example, the energy structure with coal as the main body, clean and high quality energy is relatively low. Over the years, China's coal accounted for the total primary energy production ratio has been maintained at a high of 70% to about 75%, far higher than the international average level. At

the same time, because of uneven distribution of resources in the region, Chinese coal with an overall pattern of transporting the coal from north to south, increasing the pressure on Railway transportation. Power structure also showed the characteristics of coal based, about 78% of the electricity with coal as fuel for thermal power unit, power on coal, a high degree of dependence. More serious is the consumption due to a large number of coal mining,, brought about the damage to the ecological environment and the pollution of water resources, to respond to global climate change is also increasing pressure, all of the China economic development has brought new challenges. We are faced with the task of planning must re-examine and energy structure and economic structure of our country to Scientific Outlook on Development, can not only see the immediate interests, to account for the Chinese future, all business activities must be put an end to the barbaric act style, follow the guideline of sustainable development, unity of thinking, full participation, insist for a long time until it becomes conscious habit.

Building energy system

In twenty-first Century our country structural system on half of energy sustainable development mainly in five aspects as follows: one is to continue to play an important role in coal; two is to protect the oil and gas supply; three is the full development of hydropower and nuclear power; four is a large-scale development of non hydro renewable energy; five is to support the future development model research energy. If able to co-ordinate the development of the above five aspects, will make the 2050 China's energy supply to ensure a reliable, and lay a good foundation for the establishment of sustainable development of

energy system in the future.

The measures

To construct the ideal system must take the following measures: one is gradually reduced coal use quantity, increase renewable energy and nuclear energy in the energy mix in the proportion of renewable energy; two is the development of non hydro research work and achievements in the short term; the three is dedicated to the research and development of new nuclear energy and promote the use of. Planning in the completion of the above at the same time, must take measures to limit emissions of carbon dioxide effectively.

Market reforms

Although our country has done the marketability reform attempt some natural gas companies, but the pace of progress is still far from enough, deepen the reform of the influence of natural gas enterprises and long-term development of a series of deep-seated contradictions and problems have not been solved. Natural gas industry is still highly monopolistic business; there are still quite a few problems, market order, market competition main body function, pricing mechanism. To promote the natural gas business to market reform, must reduce administrative intervention by the government, the establishment of a modern regulatory system perfect and effective, break the monopoly, relax market access, introducing competition mechanism, to encourage private enterprises to invest and into the natural gas industry. The reform of the current administrative examination and approval system, gradually replacing the economy with social regulation.

Regulation, the current management system gradually transformed into economic record, social control, the construction of the government under the supervision of the separation of government and enterprise, fair competition, open and orderly, healthy development of the natural gas management system.

Change the way and structure

To improve the energy efficiency is one of China's energy development strategy task. And to increase energy efficiency needs through the transformation of the mode of economic growth, upgrading and adjustment of industrial structure, promote scientific and technological progress and innovation, the development of circular economy to realize the.

In the industrial structure of our country in the proportion of the second industry is large, but this situation would keep for a long time. High energy consumption is the prominent representation of this structure. The solution is only one, that is as far as possible to complete the adjustment of industrial structure in a relatively short period of time, in order to achieve high efficiency and energy saving purpose, implementation spans type development.

Setting up the development mode

The development of the world energy industry, change after firewood→ coal→ petroleum and natural gas. In the current energy resources become increasingly scarce circumstances, countries in the world are stepping up to seize the commanding point of new energy development. Proceeding from the specific situation of energy in our country, we should rely on scientific and technological

progress, technological innovation, improve energy efficiency, development of new energy and other measures, the establishment of energy development mode in line with China's national conditions.

Because our country energy exploitation and use of the technology is relatively backward, resulting in low efficiency of energy utilization. In technological innovation, to comprehensively improve the energy research and development efforts, appropriate increase in the national research and development investment in energy research and development ratio and the proportion of government research and development budget input energy research and development, and form an effective incentive mechanism innovation, promote the close cooperation of all kinds of domestic and foreign resources.

Energy development mode of different countries, we in and learn from foreign advanced experience at the same time, must be combined with China's specific national conditions, adhere to our country's energy structure with coal as the main body, power center, oil and gas and new energy strategy of all-round development. Of course, China's energy structure optimization is not the proportion of coal is bigger is better, the optimization of energy structure is also not to engage in "oil and gas", reduce oil proportion is the structure optimization, the development of new energy and renewable energy, increase the proportion of nuclear energy, wind energy, solar energy utilization is also to optimize the energy structure.

Adjust and optimize the energy structure, is the requirement of the objective needs and strategy of China's energy and environment, the coordinated development of the economy, is a long-term and arduous historical mission, facing a series of challenges, we should actively create new energy development concept

and mode. Change the energy management mode, promoting China's energy development to saving, clean type and safe direction transformation, the transformation from relying mainly on disposable energy to actively develop new energy and renewable energy direction, by the unilateral emphasis on energy supply, both to the transformation of energy supply and demand management direction. By mainly relying on resource development, to rely on scientific and technological progress, and promote the transformation of energy development direction with new technology. To further strengthen international cooperation, and strive to explore a China characteristic energy development road, make our job to ensure global energy security.

2. CHINA-RUSSIA OIL AND GAS TRADE INFLUENCE FACTORS ANALYSIS

2.1 Economic factors

Geographical location adjacent to the two countries, has the world's longest common boundary, and is the development of the two powers in the world economy. Since 1992, although the China-Russia oil and gas trade volume increased year by year, and continue to improve the trade structure between the two countries, but still can't will increase the volume of trade between the two countries to a higher level. In the process of the development of oil and gas trade between the two countries, have some positive factors in promoting the growth of trade between the two countries, there are some negative factors in the hinder the two countries' trade development.

Level of economic development

Gross domestic product (GDP) is one of the important parameters to measure the country's economic development level, according to the traditional international trade theory, a country's economic development level and its import and export is positive correlation, namely the increase of GDP, the country's income will increase, and disposable income will increase, thus the actual purchasing power level will be improved; Instead, reducing GDP, the country's national income is reduced, thus reduce the level of purchasing power. At the same time, the country's production capacity drops, reduces imports, thus the size of the country's import and export will narrow. The figure below shows the changes in China's GDP growth and the growth of oil and gas trade volume between China and Russia changed from 1992 to 2013.[33]

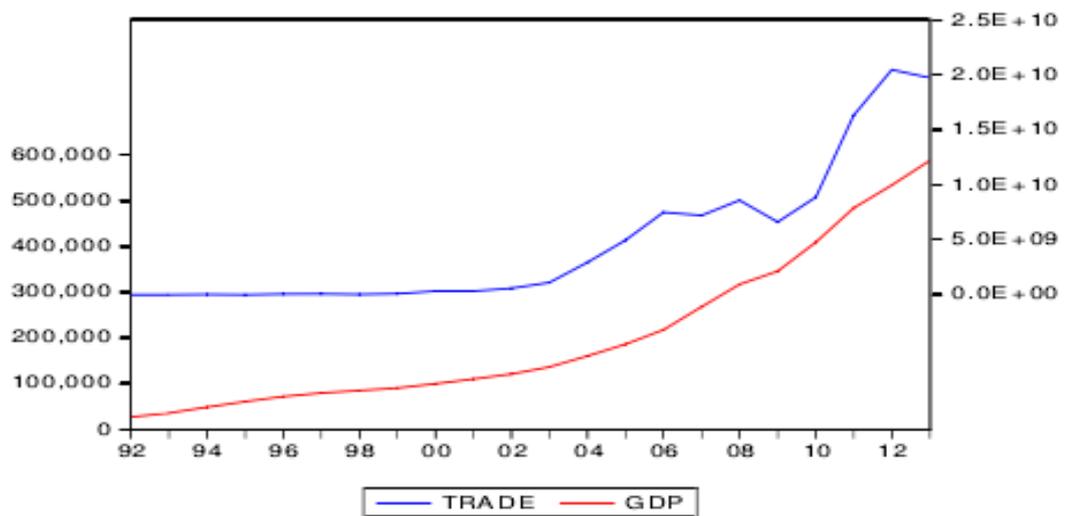


Fig 8 Change of China's GDP and trade volume between China and Russia

. Can be seen from the diagram above, China's gross domestic product (GDP) has been rising gradually since 1992, the trend of rising from 2.78 trillion Yuan in 1992 to 50.88 trillion Yuan, 15 years growth reached 1700%. At the same time, oil and gas trade between China and Russia are rising year by year, from 65.8 billion Yuan in 1992 rose to 1.9742 trillion Yuan. Although since 2008, the us subprime mortgage crisis caused by the global financial crisis, the oil and gas trade between China and Russia fell in 2009, but the international situation after the financial crisis is better, trade volume and quick recovery. China's overall economic growth, will pull function on the oil and gas trade between China and Russia have a certain degree. [34]

Per capita income levels

Besides the GDP this factor, the population is considered an important factor, also some scholars insist that population variables need to be replaced by per capita GNP, because per capita GNP includes not only the basic situation of population size, also represents the level of demand, and so on. In general, the more similar the per capita income level, the greater the demand structure of cross section, the more likely they are

to strengthen trade cooperation between the two countries. So, trade scale and the per capita income is positive correlation, raising the level of per capita income will also stimulate the effective demand of consumers. Since 1992 our country economy sustained growth and per capita income level is rising, at the same time, the slow growth of Russian economy prompted per capita gap between China and Russia is more and more small, more step also stimulated the demand for oil and gas in our country. Repeat part of the structure of consumer demand, all of these to the development of oil and gas trade between China and Russia by a positive role in promoting. The figure below shows the change of per capita GNP and the change of the growth of import and export trade volume between China and Russia in 1992 and 2013.[35]

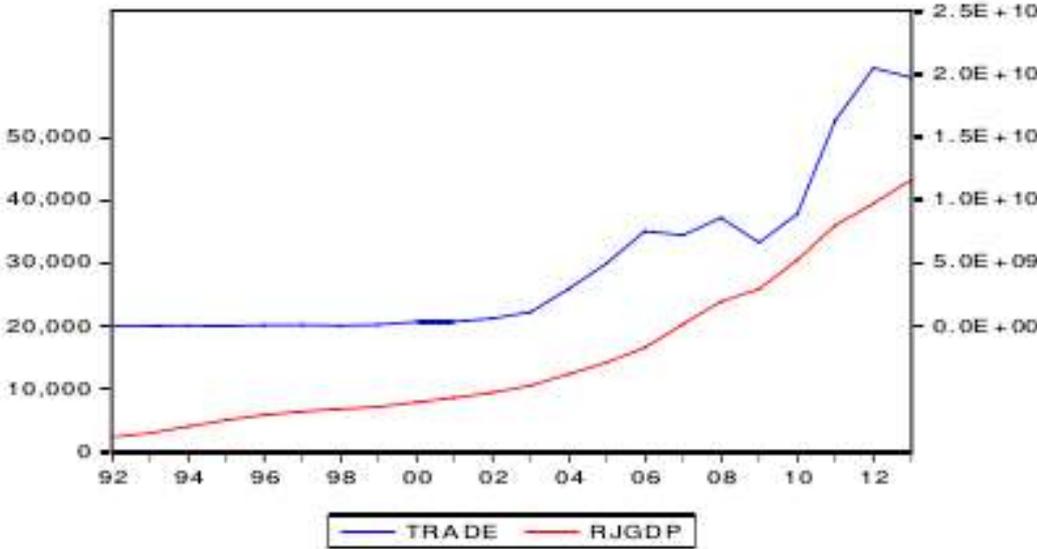


Fig 9 Change of China's GNP and trade volume between China and Russia

Through the above, we can see that China's oil and gas consumption accounted for the proportion of production with oil and gas trade between China and Russia are basically identical. In 2000, oil and gas consumption accounted for 132% of the proportion of energy output to rise to 197% by 2013, our country a value greater than 1 and showed a trend of increase gradually, means that the domestic oil and gas

production in our country cannot meet consumer demand, need to be imported from abroad to make up for the domestic oil and gas gap. So China's oil and gas consumption accounted for the proportion of production to the developing direction of oil and gas trade between China and Russia has a very important role.

2.2 The not economical factor

Political factors

Between China and Russia as political friendly country, the trade between the two countries to a large extent influenced by political factors, good trade diplomacy is a necessary condition, so the oil and gas trade between the two countries smoothly and explore more trade space must be based on the good political relations.

First of all, Russia is tense relationship with a number of countries. The Crimean "referendum" into the event for both sides to Ukraine, Russia has strained relations, Ukraine eventually tend to the European Union. Ukraine has very important strategic position for Russia, Ukraine's geographical location is located in the intersection of the Eurasian geopolitics, Russian oil to natural gas exports to eastern and central European countries, the pipeline will be via Ukraine. And the Crimean "off" on the black sea coast will spark anger in Ukraine, so in the future the Ukrainian government is likely to change attitude towards Russia, this to a certain extent can change the situation in the whole of Europe. Russia will put more effort on stability in order to cope with the surrounding and the transformation of international environment, and accelerate the pace of adjustment of international strategy, to strengthen and emerging powers such as China, India,

Brazil and Argentina and other countries economic cooperation, the pace of oil and gas cooperation steady progress. And Russia's relations with the EU as the Kosovo issue there is a conflict between Russia and Georgia, once fall, Russia's relations is not ideal. Russia and the United States have not recognized that Russia may not become America's Allies, which makes the U.S.-Russian relations have been in a "frozen" state. The Russian government approved in October 2008, 2020 years ago, the ministry of foreign trade strategy, focus on trade object positioning the Eurasian economic community, China and India and other Asian countries, and foreign economic focus to Asian countries. In 2011, Mr. Putin's visit to China when it is pointed out that, as an energy exporter, Russia ready to export target moving from Europe to China, Japan and South Korea and other Asian markets. At present, the European economy continues to slump, the U.S. economy is not yet out of the mire of the financial crisis is still very unstable, and our country has gradually grow into the world political and economic power.

At the same time, Russia's interest group complex. Russia has a lot of interests, conflict of interests of various interest groups exist very big, difficult to reach an agreement, it will restrict the government and the countermeasures of energy cooperation in China, holding the government to make the right decisions, give a lot of resistance to oil and gas trade between China and Russia. Though Japan's opposition has been blocking, but there is no completion "Ann line" is the root cause of disputes from interest groups. Because "Anna line" within the territory of Russia's length is longer than "Ann big line", the construction company can get more money, passing through the region will also get more income, improve the employment rate, so the government of Siberia and the far

east on the exclusion of "Ann big line" attitude, and demanded that Russia give up "line", thus make the China-Russia oil pipeline construction delay, progress has been lagging, slow down the pace of oil and gas trade between China and Russia.

Second, our country does not have a special energy management department, and also the lack of long-term cooperation strategy of oil and gas trade between China and Russia. In China's oil and gas strategic oil mainly imports from the Middle East, Russia only as second choice of our country's oil imports. China's energy cooperation with Russia since 1992, a lot of trade cooperation projects are put forward the general scheme, but there is no corresponding progress in practice, the passive situation causes our country missed the chance to be a lot of oil and gas trade with Russia. It is because of the lack of long-term strategic decisions, whenever the supply cannot meet demand in China would think of Russian oil and gas resources are rich. Moreover, China's oil companies until 2001, when implementing the strategy of "going out" really made abroad, and before that our country has been at domestic oil and gas development limited. In comparison with other countries, the development of oil and gas market of our country still stay at the early stage, the national government has not improver's emphasis on energy, no energy sector, but with the national energy commission, bureau of energy, the national development and reform commission, the ministry of land and resources, such as more than 10 departments spread the function of energy policy, leading to the current energy policy function can't focus, this will be particularly highlighted in the process of policy-making functions dispersed disadvantages. Therefore, department functions overlap, conflicting situation often occurs when making policy, leading to a development goal of oil and gas development strategy

formulation always stagnant, also make to keep pace with the international strategic situation changes in the footsteps of oil and gas in our country. In 2002 the development strategy of China's foreign countries such as Europe and the United States and consolidate the day's trading, while strengthening cooperation with Russia. China and Russia to their respective international strategy to further strengthen the trade between Russia and China. At the same time, Russia's foreign economic development has entered a new stage after the WTO accession, the European and American countries are rubbing their hands ready to grab the Russian market. Large-scale into Russia, Europe will can and hope to improve the political and economic relations with Russia. While many American companies are required to cancel the trade between Russia and limitations, in order to better jockeying for position in the market. The strategy of European and American countries will undoubtedly bring great influence trade between China and Russia.

Geopolitical factors

The historical process of world economic geography development tells us that as long as the two countries in the normal state relations, then the two neighboring countries will inevitably driven by economic interests, thus to regional economic cooperation, so the two countries have this special geographical relationship will be better able to accelerate the process of both sides of the oil and gas trade cooperation.

As China's largest neighbors around, has more than 4300 km of the common boundary between the two countries, in northeast China and Russia are closely linked, has been has a fine tradition of energy trade and cooperation. It is closely

combined with east Asian countries at the same time, the geographical advantage of not only help our country established trade relations with Russia, and cohesion and promote the trade between Russia and countries in east Asia. At the same time, the two countries has the advantages of very convenient in transportation, railway transport and pipeline transport can be to reduce the transportation cost at the same time reduce the risk of transportation, and has a good operability. When taking the railway transport, for example, does not need to change the mode of transportation can be completed only by changing rail transportation between China and Russia goods or passengers, the congenital advantage helps to easy trade links.

Social and cultural factors

On the way of thinking and cultural life, the two peoples have their own characteristics. At present, the two countries' people's lack of understanding of each other for the history, culture and reality. The representative of the Chinese ideology and culture is Confucianism, with "harmony" as the core of Chinese culture, want to make peace with the other countries, and seek common development. And Russia across the Eurasian continent, is a blend of east and west in the national personality character, because of its political, economic and cultural center in Europe, so the integration of European culture in the culture is more, and in the modern civilization has been the leading western countries, so the Russians in psychological more inclined to western countries, and is not agree with our culture idea, ignore the communication with Oriental countries, all of this makes it hard to really pay attention to communicate with our country's trade, will

spread the "China threat theory", to prevent the rapid our country's economic development

The Chinese are pragmatic, Russians are generous, different customs and way of expression is likely to lead to conflict, and thus lose the possible trade opportunities, not conducive to the development of oil and gas trade between China and Russia, therefore also in the cultural exchanges between China and Russia have made many efforts. In recent years, China and Russia to strengthen the communication between the higher education, students learn each other's advanced experience and culture, to further strengthen the cultural exchanges between the two countries, deepen mutual understanding and friendship between the two countries people, for the healthy and stable development of oil and gas trade between China and Russia to lay the social culture foundation.

Markets competitive factors

Oil and gas resources are the need of all countries in the world and are a very important strategic energy, it is essential for economic development, oil and gas resources are needed for every oil and gas consumption power extremely. Our oil and gas trade cooperation with Russia, there are many competitors, such as the United States and Japan, it will affect the smooth progress of oil and gas trade between China and Russia.

On the one hand, the United States as the world's largest consumer and importer of oil and gas, oil and gas is one of the most concern of the government for a long time, and the problem of energy security and homeland security issues in the equally important position. In the early 90 s, the United States had entered

the Russian oil and gas market. From BP world energy statistics yearbook 2012, America's oil reserves of 4.2 billion tons, the consumption of 819.9 million tons, the output is only 394.9 million tons, so the United States must import oil from other countries to meet the needs of a large number of. Amount of oil in order to meet the requirements of domestic economic development, the United States from many aspects, not only take a variety of ways to ensure oil supply in the Middle East, and continuously strengthen cooperation with Russia, guaranteed to get the stable oil supply from Russia, so the United States to strengthen bilateral energy cooperation between the United States and Russia. Since our country early oil and gas trade with Russia, the United States have been concerned about China's rising of oil and gas imports from Russia would threaten its domestic imports from Russia's oil and gas, so as to affect its economic development. Russia also need to get the money and American oil and gas trade to the country's energy industry revival. China's economic development over the years, have replaced Japan as the world's second largest economy, it has aroused the vigilance and attention, in the United States worried about China pose a threat to its.[36] The United States believes that oil and gas trade between Russia and China is the great obstacle for implement the strategy of oil and gas, and attempt to through large-scale oil and gas trade between the United States and Russia to strengthen Russia's strategic relationship to curb the purpose of our country. The deepening of the United States and Russia energy cooperation in a certain extent weakened the oil and gas trade cooperation between China and Russia, brought in a certain pressure, and weakened the position in the structure of the international energy in our country.

On the other hand, Japan is also in a certain extent, affect China's oil and gas trade with Russia. Japan is island in the region economy, but also is a country with a relative lack of energy; the energy problem is restricting the Japanese economy, rapid and sound development of an important factor. Since 2012, BP world energy statistical yearbook data, Japan's annual oil consumption of 218.2 million tons, behind the United States and China, to become the world's third largest oil consumer, and the oil output accounts for the proportion of consumption is only 0.3%. Faced with such serious energy supply and demand imbalance, Japan has been in constant development and energy trading between the world's oil exporters. In Japan's oil imports, imports from the Middle East accounted for 80%, in order to ensure energy security and stability, Japan has been trying to develop trade relations with other regional oil exporters. Energy and trade cooperation with Russia, Japan, also has the geographical advantages, so Japan hope through the "yen diplomacy" energy cooperation with Russia, to provide stable energy supply to Japan, thus reducing dependence on Middle East degree ensure domestic energy security. In 2003, China and Russia began to seek to build "Ann big line".[37] Japan is also involved with China for the Russian far east oil pipeline. They put forward by the Japanese invest large sums of money to build "Anna line". Because China and Japan in "Anna line" and "Ann big line" competition, Russia finally chose "Anna line", so as to grasp the initiative. By means of energy in China and Japan, and Russia's own energy advantage occupies advantageous position in northeast Asia.

Of market forecasting difference factors

The oil and gas trade cooperation between China and Russia there are many influence factors, the outlook for the market differences in the process of trade in our country have to face some problems more difficult and hard to reach a consensus. With natural gas as an example, at present, China's demand for natural gas market for Russian cooperation up to overcome the problem is still a lot of, but ignore the natural gas market in China is a big loss. According to a report released by the customs general administration, China's domestic natural gas supply and demand unbalanced situation is expanded year by year, the gas gap this year is expected to more than 40 billion cubic meters, and the gap will gradually increase. Especially the west-east gas pipeline in our country is enabled, the growth of domestic consumption of natural gas in our country presents a blowout, this is largely accelerated the pace of Russia into the natural gas market in China. By the consumption of natural gas market in China in recent years, our country's natural gas market in the future will have very big development space.

But this is only for the future potential of natural gas market in China is analyzed, at the same time must recognize that there are some potential threats in the future of natural gas market in China, such as the mass informal purchase of LNG gas, natural gas distribution infrastructure is not sound and so on, these unfavorable factors will make Russia skeptical about the prospect of gas market in China, it is Russia's problems on the development of natural gas trade between China and Russia on the ambiguous, stagnant. Different with Russia, for the natural gas market in China and the use of natural gas and so on situation more clearly. First of all, from the perspective of the energy consumption structure has

long been China's primary energy consumption mainly fossil fuels such as coal and oil, the environmental pollution problem are more serious.[38] Under the background of the entire world to promote environmental protection, China's top priority is to consider adjust the structure of energy consumption, increase the intensity of clean energy promotion, from the perspective of feasibility and environmental protection, the natural gas is suitable for our country the first selection of clean energy. But America's shale gas has been successfully developed, LNG liquefied natural gas (LNG) are also acclimatize the need of the situation a large number of supply, thus to adjust the structure of energy consumption in China would have a better choice. Secondly, on the energy strategy security side, although our country urgently needs to be "energy imports diversification", to speed up the pace of Russian gas trade cooperation for China's energy security has important significance. But according to a 2011 national work conference on energy content, by 2015, about 260 billion cubic meters of natural gas consumption in our country, including the feed quantity can reach more than 150 billion cubic meters, and can be imported from other international 109 billion cubic meters of natural gas, so overall, the supply of domestic and imported natural gas supply can meet the domestic demand.[39]

To sum up, in the process of energy trade development between China and Russia, both to promote the development of bilateral trade, non-economic factors have non-economic factors hindering the development of it again. But these factors are not decisive, in Sino-Russian energy trade, occupy the important position is the influence factors of economic factors.

3. PROOF OF SINO-RUSSIAN TRADE INFLUENCE FACTORS OF OIL AND GAS

3.1 The research methods

It is a combination of qualitative analysis and quantitative analysis method. In this article, through the combination of qualitative analysis and quantitative analysis method to study the influence factors of Sino-Russian energy trade problems, first of all to the point of view of qualitative analyses the non-economic and economic factors, and then to the Sino-Russian trade based on the related economical factor data of oil and gas, economic impact on the quantifiable factors in the quantitative analysis.

The second is theoretical research and empirical research method of combining the. This paper mainly through the theoretical research and empirical research method of combining the analysis of the determinants of the oil and gas trade between China and Russia, first using the theory of factor endowments, such as regional integration theory are analyzed in theory, then has carried on the empirical analysis to the corresponding data, and combining the two, and fully analyzes the influence factors of oil and gas trade between China and Russia. On the research methods, the trade gravity model to a certain degree of development, the newly established model more in line with the trade characteristics of the two countries. Although the trade gravity model is frequently used as empirical tools, but most of them are according to its original meaning construction, and based on the selected based on the major factors that affect the oil and gas trade between China and Russia, combined with the feature of trade between the two countries, with per capita income level indicators to replace the original amount of the trade gravity model index; Some factors affecting trade (trade openness) to carry on the

scientific index, apply to the trade gravity model, and according to the actual need to add a new variable (exchange rate, China's consumption of oil and gas production proportion), end up with a convincing, practical and suitable for the actual characteristics of the oil and gas trade between China and Russia.

Introduces the VAR model

Into the 90s, with the international financial market has become increasingly standardized, and the competition between financial institutions also there has been a fundamental change, especially financial product innovation, make financial institutions from the past resource exploration into the internal management and the way of innovation of competition, which leads to the operation and management of financial institutions, profound changes have taken place in the developed countries of the major Banks, securities companies and other financial institutions are actively involved in the innovation of the financial products (tools) and trading, financial risk management problems become the foundation of modern financial institutions and the core.

Traditional assets and liabilities management relying on financial statement analysis, the lack of timeliness, asset pricing model cannot be intermingled with new varieties of financial derivatives, and the use of variance and the beta coefficient to measure the risk only reflects the volatility of the market. The traditional method is difficult to accurately define and measures the financial risk of financial institutions exist. In 1993, G30 group on the basis of the derived varieties released report of the derivatives of practices and rules, put forward to measure the market Risk of the VAR model, later by JP. Morgan introduced Risk Metrics Risk control model to calculate the VAR. On the basis of some, and

introduced a Credit Metrics TM risk control model to calculate the VAR, the former is used to measure market risk; . JP Morgan public Credit metrics TM technology has successfully applied the standard VAR model extended to the assessment of Credit Risk, the development of the Credit Risk valuation "Value at Risk (Credit) model, the calculation of Credit Risk assessment model, of course, is more complicated than the market Risk valuation model. At present, based on VAR to measure the financial risk has become the most widely used in financial institutions abroad method to measure the size of the financial risk.

VAR model provides a measure of the size of the market risk and credit risk, is not only beneficial to the risk management for financial institutions, but also help regulators effective regulation.

In the risk management methods, the VAR method is most remarkable. VAR is attractive because it the entire bank's asset portfolio risk summarized as a simple Numbers, and unit of measurement in dollars to represent the core of risk management - the potential losses. VAR is actually to answer in given probability, bank portfolio value in the next most likely losses on the stage.

At a certain confidence level and a certain period, a financial instrument or its portfolio in the future the biggest losses under the asset price fluctuations. JP Morgan is defined as: VAR was established positions being neutralized or revaluation may occur before the market value of the maximum loss estimates

3.2 Explain the variable

According to the previous theoretical discussion, can infer the oil and gas

trade between China and Russia is a function of many factors. According to the factors of scalability, and data can be collected, this paper finally choose five independent variables are economic development level, per capita income level, exchange rate, trade openness and China's oil and gas consumption accounted for the proportion of production, variables are data from 2000-2013, and on this basis to measure analysis of oil and gas trade between China and Russia:

G - On behalf of the China's economic development level

M - Represents China's per capita national income level

T - Trade openness

R- China's oil and gas consumption accounted for the proportion of production.

3.3 The stationary test data

As a result of the selected data for time series, so we need to test its stability before modeling. With unit root test to test the stability of time series is an effective method to test unit root method is ADF (Automatic Direction Finder) test here. Use Envies software to test each variable, based on the principle of minimum value of AIC and SC to automatically determine the ADF test variable lag. In order to eliminate abnormal data to reduce the variance, variable to logarithmic ADF inspection results are as follows:

Tab 7 ADF test results

variable	Test type (c/t, *)	ADF test value	The critical value	Is stable?
lnG	(t, 2)	-5.097797	-4.008157	Yes
lnM	(c, 0)	-3.263485	-1.982344	Yes

lnT	(c , 0)	-2.704145	-1.970978	Yes
lnR	(t , 0)	-4.11518	-3.175352	Yes

We can be seen from the ADF test results, the variable of ADF values are lower than the critical value of 5% significant level, namely under 5% significance level, use ADF test proved that the sequence has a unit root hypothesis. Therefore, lnM, lnT and lnR is zero order single whole, lnG is the second order list the whole sequence. So the time series by the unit root test, so you can establish VAR model to detect the relationship of these variables

The empirical analysis

Vector autoregressive model is usually used in multiple variables to establish the model of setting random disturbance and dynamic effect analysis of the variables. To be more clear analysis of the influence mechanism between the variables and the size of the impact, we need to use the VAR model impulse response function and variance decomposition.

The VAR model

Because each sequence is stationary series, therefore we can directly through the various variables VAR model is established to study its internal relations. Lag order selection is a very important in the process of the establishment of the model. In order to determine reasonable lag periods, the following use AIC and SC information rules to determine, shown in the following table.

Tab 8 AIC, SC value

Lag	LogL	LR	FPE	AIC	SC	HQ
0	72.63631	NA	3.05e-10	-10.55943	-10.38560	-10.59516
1	154.7602	101.0756*	1.38e-14*	-20.73234*	-19.86319*	-20.91099*

In the above table, each offer minimum lag is represented with "*". Thus it can be seen that the minimum order is 1 that can build lag VAR models for first order. But we need to further verify the model with stability. If the established VAR model is stable, so there must be all roots of reciprocal value within the unit circle, otherwise this model is not stable. The following is testing the stability of the VAR model depend on the characteristics of the VAR model distribution.

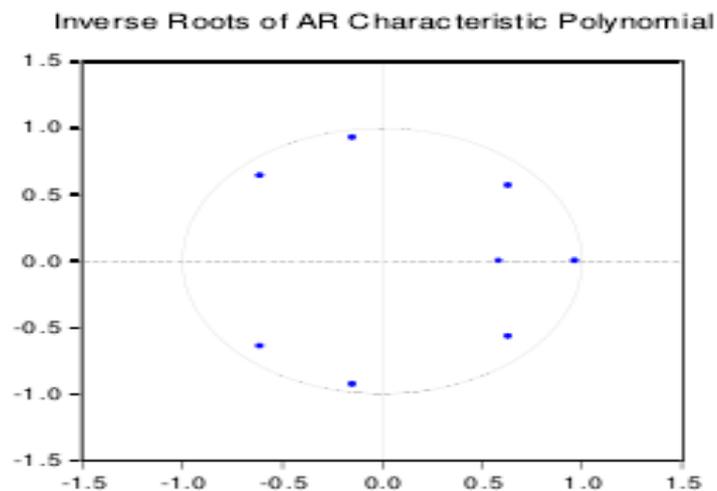


Fig 10 Inverse Roots of AR Characteristic Polynomial

By above knowable, established the VAR model equation of the characteristics of the root of all reciprocal value less than 1, it shows that the established VAR model has stability, that is to say the established equation is set up. Therefore, we can use the impulse response and variance decomposition to detect the level of economic development (G), (M), China's per capita income levels of Russia's trade openness (T), China's oil and gas consumption accounted for the proportion of production (R) of oil and gas trade between China and

Russia (E) mechanism and the influence of the size.

Impulse response analysis

We can use impulse response function is analyzed in order to accurately describe the impact of endogenous variables when there is a error response. In order to determine the dynamic relationship between variables, we need places one standard deviation on the random error term information aftershocks, the size of the current value and future value of the endogenous variables. In the above analysis of the first order of the VAR model is established through the inspection, the structure is stable, so the next stage is to further validate the influence factors on the influence degree of the Sino-Russian trade volume change of oil and gas and action time, impulse response function can get a G, M, T, R response to the impact of the E and E shown in the table below:

Tab 9G, M, T, R response to the impact of the E

Period	LNG	LNМ	LNT	LNR
1	0.193834	0.096520	0.161216	0.109132
2	0.159655	0.179390	0.170783	0.274658
3	0.129414	0.149816	0.091258	0.288879
4	0,087859	0.087576	0.004830	0.256556
5	0,058366	0.046621	- 0.053688	0.220578
6	0.044652	0.032554	-0.079826	0.190902
7	0.044153	0.031893	-0.083278	0.167247
8	0.050430	0.033429	-0.076106	0.147712
9	0.057400	0.033123	- 0.067053	0.130939
10	0.061356	0.031195	-0.060386	0.116207

From the above calculation results can be found that the oil and gas trade between China and Russia for the impulse response mode to G and M, E T and R

a lot of differences, E G for the average impulse response in the impulse response of 1-9 Mid-terms to lower than G, M and R. In order to more clearly see that China's gross domestic product (GDP) G M, per capita national income level, China's trade openness T of Russia and China's oil and gas consumption accounted for the proportion of output pulse response of the R, respectively make impulse response chart is as follows:

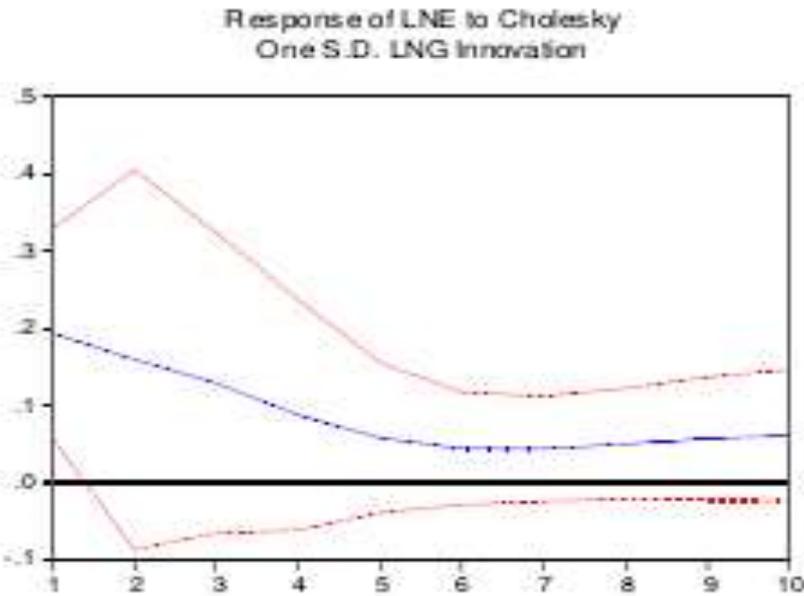


Fig 11 Response of LNE to Cholesky One S.D. LNG innovation

Can be seen from the results of the figure, the Russian oil and gas of trade is a unit of our country economy level positive impact, the trade volume rapid reaction, starting from 1) bring obvious positive influence, to the fifth period began to keep for a long time in low positive level. This shows that the response of the Sino-Russian trade volume of China's economic development level of oil and gas play a certain role in promoting.

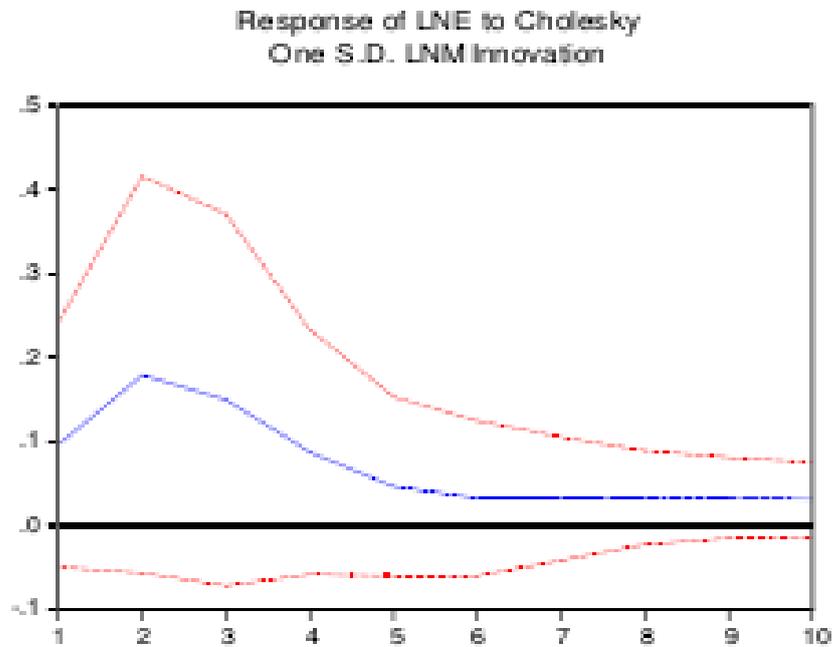


Fig 12 Response of LNE to Cholesky One S.D. LNM innovation

This image shows the Sino-Russian trade volume of oil and gas is a unit of China's per capita income level positive impact, the volume of trade has a faster response, obvious positive influence from the first period began to appear, to slow down after 2 a peak, and then to keep a low positive influence on until the last. This shows that the response of the Sino-Russian trade volume of China's per capita income level of oil and gas is a long time.

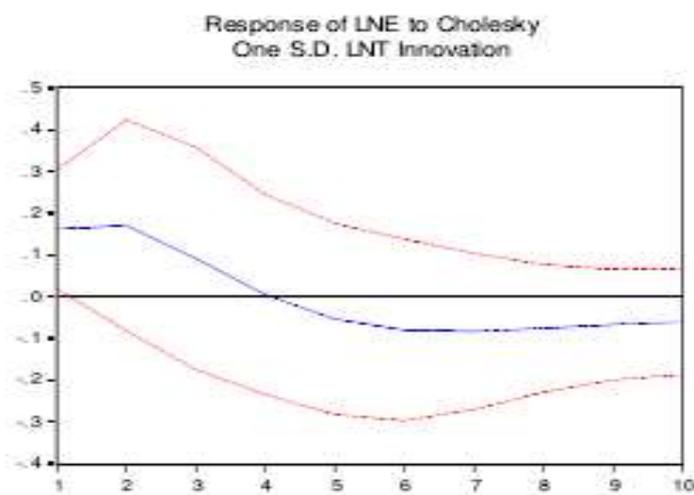


Fig 13 Response of LNE to Cholesky One S.D. LNT innovation

This picture tells us that the Russian oil and gas trade by trade openness of

positive impact, a unit of volume of trade has rapid response; amplitude is relatively obvious positive influence from the first period began to appear, starts from 4 to negative influence, and maintain this state until the last. It shows that oil and gas trade between China and Russia for the promotion of China's trade openness response from short-term to long-term effect.

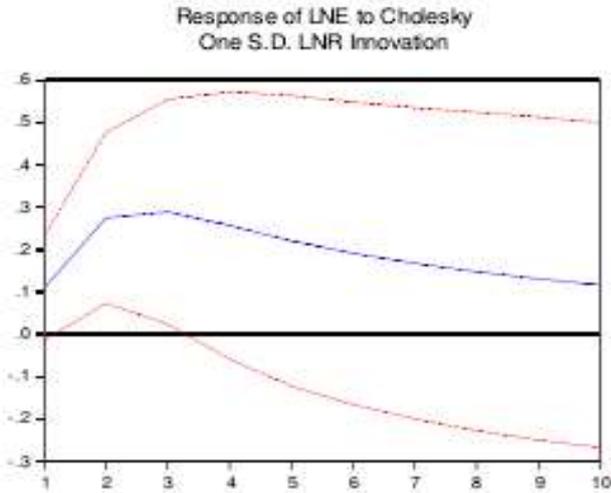


Fig 14 Response of LNE to Cholesky One S.D. LNR innovation

Can be seen from the results of the figure, the Russian oil and gas of trade by China's consumption of oil and gas production proportion of positive impact, a unit of volume reaction faster, from the beginning has obvious positive influence, to the highest point (3) after slow down, and then maintain a relatively high positive influence on until the last. This suggests that the Sino-Russian trade volume of China's consumption of oil and gas production proportion of the response is a long time.

Variance decomposition

Tab 10 Variance decomposition results

Period	S.E.	LNM	LNR	LNG	LNT
1	0.009285	24.81995	50.02346	7.155604	6.505982

2	0.017725	20.05523	65.34333	5.127666	6.818218
3	0.027084	16.27549	64.32662	13.14742	4.309896
4	0.038790	15.23680	64.48227	14.04324	4.083949
5	0.051601	15.30154	65.24600	13.59949	3.801793
6	0.063326	15.30262	65.50856	13.68911	3.554883
7	0.073590	15.21506	65.48097	13.93072	3.443488
8	0.082573	15.22912	65.47572	13.96969	3.395201
9	0.090256	15.28880	65.45914	13.98601	3.347963
10	0.096717	15.32885	65.40258	14.04677	3.310723

The table shows that China's oil and gas consumption accounted for the proportion of production is the dominant factor affecting the oil and gas trade between China and Russia, both in the long and the short term, it is the important factors that affect trade, contribution rate reached more than half, basic shows that oil and gas trade between China and Russia is influenced by the proportion is larger. Second, China's economic development level and per capita income level's influence on the oil and gas trade between China and Russia also not allow to ignore, contribution rate can reach more than 10%; Finally, China's trade openness to Russia has contributed a minimum of oil and gas trade between China and Russia, short-term contribution rate is only 6.5%, fell to 3.3% for a long time, so China's trade openness of Russia's influence on oil and gas trade between China and Russia are not obvious.

Results analysis

First, China's consumption of oil and gas production proportion is the main influence factors of oil and gas trade between China and Russia, and the effect is a longer duration. It shows that oil and gas production in our country is far lower than the domestic demand, the oil and gas demand gap expands unceasingly, therefore, the

oil and gas trade between China and Russia is largely in order to meet the domestic supply of oil and gas in our country.

Second, China's economic development level and per capita national income to the positive correlation of oil and gas trade between China and Russia, though its influence degree is less than oil and gas consumption accounted for the proportion of production factors, but also cannot be ignored.

Finally, China of Russia's trade openness and no significant correlation between the oil and gas trade between China and Russia. Because China through the oil and gas imports diversification, deepen and the supply of oil and gas cooperation, expanding trade areas to ensure the safety of national oil and gas supply, so China's dependence on Russian oil and gas trade degree is not so obvious.

4. CHINA-RUSSIA ENERGY COOPERATION STRATEGY

4.1 Actively developing China-Russia energy cooperation partnership

Energy cooperation between China and Russia has a great complementarity and geographical advantages, and continuously expand and deepen the energy cooperation between the two countries, shows the broad prospects of Sino-Russian energy cooperation in the future. At the same time, the energy cooperation between China and Russia will also face energy landscape, geopolitical, power relations, the influence of various factors such as the world economic situation and the restriction. As long as the two countries, however, the principle of equality and mutual benefit and win-win cooperation, continuous development and improve the mechanism of the energy cooperation between China and Russia, can guarantee the stability of China-Russia energy cooperation partnership, healthy and sustainable development.

From Russia to China gas pipeline engineering origin dates back to 1994. Duly noted in April 1996 on the schedule of work between departments, between the two countries and between China and Russia signed the "about common development energy cooperation agreement between the government, to set up between the two countries in stages laid the legal basis of necessary energy infrastructure, determines the future cooperation in the field of fuel power between China and Russia's basic direction.[38]

On November 9, 1997-11, a former Russian President Boris Yeltsin to visit China. During his visit, the two countries related business department in Beijing

signed the "China-Russia about Russia laid east Siberia to China's natural gas pipeline and the development of Russia's basic principles of the Russian natural gas condensate field project memorandum of understanding". According to the design scheme, after the completion of the project, Russia will sending 20 billion cubic meters of natural gas to China every year, of which 10 billion cubic meters of natural gas supplies to China, another 10 billion cubic meters of natural gas supply to third countries. Gas supply time not less than 30 years.[39]

In February of 1999, China's former prime minister Zhu Rongji during his visit to Russia, Russia LUXI oil company and China national petroleum corporation signed the "about drafting to China purchasing department technical and economic argumentation of Vick gold gas agreement".

At present, the international energy market is undergoing dramatic changes. The speeding up of the Energy Market Financialization; The world balance of power in the field of energy is to realize the transfer of power from multinational corporations to resource countries;[40] Represented by China to strengthen the growth in demand for energy in emerging economies and so on the international energy market will have a long-term and profound influence.

Natural gas cooperation project between China and Russia will also take a while to have as a result, do not rule out will have a new project. The oil, gas and other related interests bind energy, is becoming a new trend of Russia's "energy diplomacy" strategy.

Today, the foreign natural gas is subject to international geopolitical factors, "gas war" between Russia and transit countries, also greatly damaged the image of Russia as a reliable energy supplier in Europe. In the European Union is trying to

get rid of the dependence on Russian oil and gas pressure, conveniently for Russia, its energy exports focus gradually towards the east. Mr. Putin has repeatedly said that Russia will strive to expand their energy transport network, reduce our dependence on energy transit countries, so that the energy directly to the consumer.[41]

In a word, the natural gas cooperation between Russia and China both each other's real needs, also have both countries in economic and political development strategy is consistent, common interests pursuit is the foundation of both sides to develop natural gas trade between China and Russia.[42] Although too much natural gas cooperation between China and Russia have had setbacks, but the future is also hard to avoid can appear all sorts of friction and variable, but the two sides hold good current overall direction for the development of the bilateral relations and the positive factors, natural gas trade between China and Russia can more on a new step.

Conference on interaction and confidence-building measures in Asia in 2014, the fourth summit of leaders of the two countries between China and Russia has published about the China-Russia comprehensive strategic partnership of coordination a new phase of the joint statement, building a comprehensive energy partnership between China and Russia are put forward. Which regulates the Sino-Russian energy cooperation in the field of targets and tasks, mainly for the following four aspects: first, deepening cooperation package of oil field; Second, the pipeline natural gas cooperation; Third, expand cooperation in the field of coal, the Russian coal mine, the combined mining development in transport infrastructure; Fourth, the construction of new power generation facilities in

Russia cooperation, expand the Russian electricity exports to China. In Russia by western boycott of the difficulties, overcome various difficulties and obstacles, the two countries actively carry out comprehensive cooperation in the energy sector, implements the positive effect of mutual benefit and win-win results. For Russia, it proves to the west, sanctions will not have huge impact on Russia's economy.

The European Union to reduce number of on Russian energy imports does not fundamentally threaten Russia's energy security. For China, Russia's Asia-pacific energy strategy will create a historic opportunity for energy cooperation between China and Russia. China should seize the favorable opportunity to deepen energy cooperation between China and Russia, expand China on Russian energy industry upstream, middle link of investment cooperation. Russia in recent years, mining, transportation and energy resources consumption equipment depreciation elimination trend obviously, a lot of backward equipment dismount. In 2003, 52.6% of the fixed assets phase fuel industry, power industry is 60.8%, and transport is as high as 70.3%, "One of the key directions of Russia's innovation and development strategy is to achieve energy industrial economic transformation." [44] In the west to Russia under the circumstances of blockade capital energy technology and equipment, to deepen the financial and energy technology cooperation between China and Russia has provided the opportunity; China can offer Russia's resources, energy, and machinery and energy technology services. Now, energy cooperation between China and Russia involves the petroleum, natural gas, coal, electricity, nuclear energy development and so on a wide range. Energy cooperation between China and Russia also from energy trade to the joint investment in energy resource

exploration, mining, processing, the respect such as service, continuously expand and deepen, make energy co-operation between China and Russia has formed a close partnership.

4.2 Common problems in dealing with the energy cooperation between China and Russia

To jointly cope with the issues of cooperation, does not mean that the oil cooperation between the two countries will be smooth sailing, the factors influencing oil cooperation between the two countries is also cannot be ignored, for the further development of the China-Russia oil cooperation will block effect, how to continue to deepen cooperation in the field of oil is still the key issues of energy cooperation between the two countries.

International oil prices plunged in 2014, Russia in the hope of the organization of the petroleum exporting countries (OPEC) to make production decisions, stable oil prices, but the members of the organization of petroleum exporting countries, led by Saudi Arabia, in order to retain market share, don't consider the interests of Russia and other independent energy exporter, make Russia suffered huge economic losses, the country's economic recession.[45] Worsening in the short term, Russia's economy, the establishment of the comprehensive energy strategic partnership between China and Russia to a certain extent, reduce the Chinese into the threshold of the Russian energy upstream industry, but Russia's macroeconomic situation and the investment environment is

getting worse and worse, the unstable factors in the increase of social and political environment, the Russian policy has a lot of uncertainty. Also should pay attention to due to western sanctions, China's enterprises and sanction of Russian oil companies cooperate may recoil by western sanctions. The two countries need to deepen mutual cooperation, improve the energy cooperation system. The China-Russia oil pipeline operation, soon broke out "oil expense dispute", it is not happenstance.

This incident shows that energy cooperation between China and Russia directly bilateral agreement content is not complete, lack of the content of the agreement on energy pipeline transportation cost. From the practice of China-Russia energy cooperation, pipeline transport cooperation will be the most important content in its energy cooperation, but so far, China and Russia has not yet reached any a agreement about the pipeline transport. In view of the past experience of energy cooperation, also deal with related energy cooperation project between China and Russia signed bilateral tax agreements. For the two countries, the only clear energy investment tax treaty, establish energy investment preferential taxation content to ensure the smooth progress of energy cooperation, make the energy cooperation from "who need more" subjective level. In addition, the Sino-Russian energy deals without the content of the ecological environmental protection, more do not include energy of low carbon environmental protection policy adjustment and coordination action of the concrete implementation measures, it also for the future energy security. Energy cooperation between China and Russia have from upstream energy exploration, mining, middle reaches of the energy transport, energy downstream processing and sales, but with the link of

mutual contact and mutual lack of legal constraints. Cooperation and dispute settlement, and a series of major issues due to the lack of dispute processing mechanism, cooperation between the two countries lack of sustainability. Practice proved that, the perfect bilateral cooperation agreement to solve the problem of overall and strategic energy cooperation has decisive role, this is the key to deepen the energy cooperation between the two countries. Energy cooperation is an important part of bilateral pragmatic cooperation, is also a comprehensive strategic partnership between China and Russia the important of high level. Under the background of global economic turmoil, the international energy market from a seller's market to buyer's market, Russian energy strong position in the fall, China's leverage in the negotiations on the increase. Energy comprehensive strategic partnership between China and Russia should play a role in the regional cooperation, not only is the promotion of bilateral energy relationship, should also play a role in building the multilateral energy cooperation platform. This is not only beneficial to energy security in northeast Asia, also accord with the long-term interests of our country. To comprehensively promote the northeast Asian region of China's energy cooperation should be the open stance, in the northeast Asia region energy cooperation "positive energy" of our country. Promote the construction of community of northeast Asia region energy cooperation will be conducive to maintain energy security and promote economic development and prosperity in northeast Asia, maintain regional peace and stability.

4.3 Promote the establishment of the Sino-Russian energy cooperation coordination mechanism

With the improvement of energy cooperation between China and Russia, energy cooperation is not simple demand driven, but to establish and improve the mechanism of the energy cooperation between China and Russia, to guarantee the stability of China-Russia energy cooperation and sustainable development. The two governments have established between China and Russia energy cooperation committee, vice premier level deputy prime minister, the two countries will hold a regular meeting every year, for talks on energy cooperation between China and Russia. China-Russia energy cooperation committee in 2008, the then vice premier Wang Qishan, energy cooperation between China and Russia has proposed three principles: "is a comprehensive long-term cooperative principles, including oil and gas, nuclear energy, electric power, etc; the second is the market principle, according to international practice to promote cooperation; 3 it is mutually beneficial and win-win principle, fully take care of each other's concerns." [46] Establish and improve the mechanism of the Sino-Russian energy cooperation, coordination of energy policy, energy trade, promote energy cooperation, will be conducive to ensure energy cooperation between China and Russia the deepening and development. Based on the energy cooperation between the two countries history and future prospects of Sino-Russian energy cooperation mechanism should be in continuous development and improvement of three aspects:

First, improve the autonomous coordination mechanism. Cooperation coordination mechanism, the so-called autonomy refers to the participants of the interests of the cooperation basis, has the cooperation intention, affect the information is symmetrical partner strategy choice. Autonomous coordination mechanism from the transfer of state power, the influence of factors such as subjective intends to change the political elite. Lower the sensitivity of the international environment has the strong ability of self coordination. Cooperation is the best choice for all parties, the current cooperation coordination mechanism between China and Russia basic belong to this type. Mechanisms of perfect all parties need to strengthen communication, communication, improve the understanding of the importance and strategic significance of cooperation. Increase mutual trust, set up a regular consultation mechanism of different levels of the information exchange system and will be the important measures to promote cooperation. Energy dialogue between China and Russia, the deputy prime minister met regularly to promote energy cooperation between China and Russia has played an important role. However, in the future energy cooperation between China and Russia, but should also in energy development, energy, transportation, renewable energy, environmental protection, pollution control, strengthen coordination, perfect the corresponding mechanism. These coordination mechanisms are generally does not need to be mandatory constraint force, mechanism of operation based on the partner cooperation practices can be continued for a long time, has strong stability.

Second, improve the cooperative coordination mechanism. So-called cooperative coordination mechanism is the correlation between partners has certain interests, but there are contradictions of profit distribution, the cooperation strategy of information choice is not always symmetric. But for partners, forming a system or total coordination mechanism is helpful to realize their own interests. Energy cooperation is based on achieving interest after all. Collaborative regulating mechanism is designed with the principle of cooperation and usually exists in the form of cooperation agreement.[47] China-Russia energy cooperation is not only realized the diversified energy development goal, the two countries and promote the process of regionalization of world energy, and fundamentally change the world energy pattern, make it to the diversified pattern of energy development. But in the final analysis is the most important areas of the economy energy strategic cooperation, one-way type industry cooperation makes the lack of a wide range of interests. Developing cooperative coordination mechanism, first need to establish a set of can promote bilateral investment, talent and technology balanced flow mechanism, ease the contradiction of unequal trade relations of cooperation; Second, should establish a set of links to open markets and feasible mode of industrial development, and establish the two countries to jointly develop new industrial cooperation pattern in the global market, to strengthen industrial complementarily between the two countries, avoid vicious competition disorder; Third, establish a set of regulations and system coordination mechanism between the two countries, reduce the opacity of hidden rules as far as possible, to rule out companies in each other's market obstacle, and promote the bilateral economic and trade interests for medium enterprise benefits; Fourth, the ongoing dialogue

and policy coordination, establish a high-level strategic economic dialogue between the two countries and the policy coordination mechanism.

Third, we will improve the mechanism of harmonious cooperation. China-Russia energy interests are interdependent and influence each other and restraining each other, the two countries to achieve the goal of overall energy and enhanced the overall strength and only through the cooperation between each other to achieve, the process of cooperation is the process of mutual coordination between the two countries agreed interest. After full implementation of oil, natural gas pipeline agreement, the two countries in the field of energy cooperation is not a simple energy trade, but has the global influence of strategic cooperation, will have a huge impact on the world energy pattern. Under the background of abiding by the rules of international trade, both sides creatively set up the mode of cooperation, appealing to conform to the interests of both countries to keep energy cooperation between the two countries normalized development. Crude oil trade contracts and pipeline construction investment integration cooperation pattern to make the "oil for loan" agreement between China and Russia has great vitality. With the support of the Chinese capital, Russia in eastern Siberia - Pacific rapidly the oil pipeline operation. Crude oil increase supply agreement again in 2013, the Chinese capital to expansion and operation of the pipeline protection has played a positive role.[48] In the pipeline natural gas cooperation projects, under the impetus of the leaders of the two countries to overcome the obstacles to cooperation between China and Russia the price barrier for many years, eventually the dust settled. Under the background of western sanctions against Russia, the cooperation agreement is beyond the value of the project itself, no

matter what the economic benefits of enterprises, the cooperation project will fundamentally change the pattern of energy cooperation in the Asia-pacific region, the diversified development of energy strategy between China and Russia closer to the goal. Establish a community of china-Russia energy cooperation is conducive to properly handle the contradictions in the future energy cooperation between the two countries and the possible problems, ultimately achieve the goal of mutual benefit and win-win cooperation. Future in energy cooperation between the two countries under the condition of scale expands unceasingly, can from the national energy security, energy community commercial interests to the company, to the operation of the specific project implementation plan as a whole, the mechanism of affordable will appear more important, as well as the most critical energy cooperation "software" construction of a ring.

4.4 Cooperation with complementary measures

The current implementation of "loans for oil" agreement between China and Russia, for Russia, the biggest advantage is that agreement itself does not add any political terms, in addition to ease Russian oil company and the Russian oil pipeline transportation company capital dried up, and the development of Russian oil industry whole no destructive effect. For China, through this agreement in advance to lock the 300 million tons of oil supply, the next 20 years will be the last to agreement on the mode of oil trade constraints, has played an important role for alleviating China's oil supply gap. However, China and Russia in the cooperation in the oil trade between the two countries should not be with the

signing of the agreement to a fixed pattern, but shall continue to play a complementary advantage, on the basis of cooperation and the breadth and depth of further pushed forward.

At the macro level, continue to consolidate the foundation of the oil trade cooperation between the two countries and platforms

Between China and Russia are strategic partnerships, in the international share broad common interests in major political and economic activities. Especially in the oil trade, Russia in the US-led NATO countries in recent years, under the suppression of political survival space gradually narrowing, Georgia, Ukraine and other traditional Allies are being assimilated into one by one. Therefore, within the context of economic interests in the service of political interests, Russia to get rid of the traditional dependence on oil consumption market in Europe, push forward the oil export diversification strategy and the east. At the same time, the rapid development of China's national economy lead to the dependence of the consumer of oil and other energy continuously strengthen, in the face of political and economic situation of the region's instability and the reality of the main oil transportation route is controlled by other countries, and puts forward the strategy of diversifying oil import. Two major strategic oil between the two countries there is a high degree of overlap in many problems, namely the strategy of diversifying Russian oil exports cannot leave China one of the world's second-largest energy consumer markets, and China's oil imports diversification strategy is also inseparable from the one of the world's second largest oil producer in Russia. , therefore, should be on the basis of the existing

cooperation, the two countries to further deepen the cooperation and innovation cooperation mode, with two of the world's second cooperation jointly affect the price of international petroleum market, strive for a bigger say.

At the micro level continues to increase the scope and strength of the oil trade cooperation between the two countries

Although Russia's oil reserves are more abundant, but the major oil companies in the process of long-term development, facing the equipment aging, insufficient funds, labor costs rise in aspects of adverse factors. This caused the Russian oil exploration, exploitation, production cost is high, seriously weakened the Russian oil in the international petroleum market competition ability. In contrast with China, Such as Sinopec, Petro China has the advantageous superiority in the oil company therefore, combines the advantage of both countries, increase the intensity of cooperative development of oil resources, common to take part in oil exploration and exploitation of Russia.

To further expand west pipeline gas cooperation project between China and Russia

China-Russia cooperation in the field of natural gas pipeline direction can be divided into the eastern and western two projects. At present is in a state of construction is the eastern Siberia power, the west gas camp road "Altai pipeline construction projects in the frozen state,"[49] but it is still in the gas company plans, but I do not know when, and where to implement the plan. In collaboration with Russia, it is imperative that the eastern cooperation scheme for China,

because the natural gas imports from eastern can directly make up for a lack of gas over broad swaths of eastern and central China. However, the two sides should not be confined to a project, the west there are broad prospects for cooperation. First, Altai cooperation mining cost far less than the eastern route project, because the gas field is located in the western Siberia area of Russia's gas field development. Secondly, according to China's national development and reform commission plan, by 2020 China's gas demand tripled, external dependency will also rise. Russia and central Asian countries, therefore, common to the competition between western China gases would reduce import prices of natural gas and to China and Russia have diversified target, provide a lot of help. In addition, about Altai project cooperation can reduce dependence on expensive import of liquefied natural gas (LNG). Through the implementation of the project, Russia also can reduce its dependence on exports to European countries.[50]

Strengthen China-Russia cooperation in financial, monetary, equipment, etc, to ease the negative impact of western sanctions on Russia

System of plant in the negative impact: hard to attract foreign investment, to the external financing and difficult to acquire foreign technology. In this case, China's investment becomes almost the only source for Russia to attract capital. In domestic investment and complex environment, the international major rating agencies will Russia's foreign currency rating to junk level, under the condition of the ruble exchange rate instability, the Russian government must use new methods to attract foreign capital. This method may be: to foreign investors and businesses to reduce tax. Process equipment exemption rights value tax and import duties,

etc. 2 2

At the same time, western oil and gas equipment can be replaced produced in China is similar to the machinery. Experts believe that China's equipment cost 20% cheaper than in the west. Another way is through the overseas partner provided by the machine, equipment, technology for response of raw materials and semi-finished products. At the same time are likely to repeat in eastern Siberia - tapping experience of mixed transportation pipeline (ESPO): at that time the Chinese side for the Russian company issued a \$2.5 billion loan amount to secure oil supplies. If China refused to this choice, is about to consider long-term loans from the bank of China. The two sides can also through the study of the energy trading of its currency payment way of reducing the cost of the project.

Introducing China's labor and technical force Russia to solve the problem of labor shortage in Russia

Is the main part of the natural gas pipeline through Russia, sparsely populated region and complex terrain and climate conditions (minus 50 °, the winter temperature reaches 300 meters above sea level). Therefore has a high requirement on the gas pipeline, including quality and technical requirements of pipeline itself. In this case, the need to develop new technology between China and Russia, but also in the future in the construction of effective use of it. 2

In addition, for the development of the field will need a lot of human resources, engineering technical personnel, employees, welder, fitter, electrician, hinge, bulldozers, cranes, etc. Russia Yakutat republic has begun large-scale attract workers in other parts of the Russian, and set up special training center, in order to

train their staff work in difficult conditions. In this case, the appeal to Chinese labor and engineer, will solve the problem of shortage of labor in Russia, and reduce the cost of Europe to attract labor from Russia.

Play to the government's financial support and regulation, reduce because of lower energy prices and make the energy projects between China and Russia unprofitable

Although the confidentiality of this project is very strict, but some of the news was spread. After the contract signing, Mr. Putin said in a statement that the project is the price of natural gas, like European countries, with petroleum products. Energy prices on world markets, combined with the project investment of \$55 billion, will lead to freeze for projects unprofitable. In this regard, the author believes that this kind of cooperation should be regarded as a social engineering. Main value of natural gas pipeline is not the business of Gazprom, waters, but can provide multiplier effect, in order to eastern Siberia and the far east regions and less developed areas, to create new jobs and development gasification manufacturing and infrastructure and so on. This kind of circumstance, want to play to the government's financial support and supervision. This support is on to from the bank of internal economic (state-owned Russian bank, its aim to promote the economic development of nations) is given priority to implement low-interest loans. From the funds through bond mechanism of national welfare fund allocation, etc.

To adapt to China's infrastructure, improve the domestic gas prices

China is now actively developing field, provide relatively cheap gas to the domestic market. However, the existing production cannot meet the demand of continuously raised long, China's imports increased year by year. Thus formed in the domestic market, a lot of import and domestic market sales price difference. The Chinese government proper let go of the feet step on gas prices, to let it formed on the basis of the price in the market competition. In this case, the natural gas producers will be conducive to expanding domestic production, and will not be the difference between the internal and external price losses. China also have to take some measures to improve the infrastructure of the domestic natural gas. Western gas resources are rich in our country, the development of low cost, but to most of the major causes of west to east gas pipeline in our country is the east market demand is big. The demand of market in this type of construction has become a decisive factor. The Siberian power scheme after eyebrow move, eastern region will receive gas directly. In order for them to accept such a large gas flow, must make corresponding preparation, namely the construction of the north and east gas pipeline system, the construction of a large number of gas storage, LPG stations, and other equipment. Electric current for the system is based on coal energy, and this kind of cheap electricity. This case, the government should take some necessary measures in order to speed up the process of natural gas instead of coal. These measures include: to natural gas as fuel, offering tax breaks, increases the coal rate, etc.

CONCLUSION

This paper expounded from the aspects of political, cultural and geopolitical non-economic factors affecting the oil and gas trade between China and Russia; Then from the level of economic development, per capita income level, exchange rate and China's trade openness and so on the economic factors that affect oil and gas trade between China and Russia. And through the establishment of trade gravity model qualitative to analyze the influencing factors of oil and gas trade between China and Russia, and further check out the contribution degree of various factors on the oil and gas trade between China and Russia, the dominant factors affecting oil and gas trade between China and Russia.

For the first time, the systematic study of Sino-Russian trade influence factors of oil and gas, embodies the research content of the new, new Angle of view. Previous literature usually focus on the oil or natural gas trade between China and Russia unilaterally, or research energy and trade cooperation between China and Russia from the perspective of the overall energy status quo, existing problems and prospects for cooperation. This article mainly from the point of view, on the analysis of the Sino-Russian trade development present situation and the influence factors of oil and gas, on the basis of the influence factors of oil and gas trade between China and Russia for the quantitative analysis, and these factors as the subject for research.

On the research methods, the trade gravity model to a certain degree of development, the newly established model more in line with the trade characteristics of the two countries. Although the trade gravity model is frequently used as empirical tools, but most of them are according to its original meaning construction, and based on the selected based on the major factors that affect the oil and gas trade between China and

Russia, combined with the feature of trade between the two countries, with per capita income level indicators to replace the original amount of the trade gravity model index; Will some trade influence factors in the ninth-five planning of science, apply to the trade gravity model, and according to the actual need to add a new variable, finally get a persuasive, practical and the factors influencing the accord with the actual characteristics of oil and gas trade between China and Russia.

At present, the international energy market is undergoing dramatic changes. The speeding up of the Energy Market Financialization; The world balance of power in the field of energy is to realize the transfer of power from multinational corporations to resource countries; Represented by China to strengthen the growth in demand for energy in emerging economies and so on the international energy market will have a long-term and profound influence.

Energy cooperation project between China and Russia will also take a while to have as a result, do not rule out will have a new project. The oil, gas and other related interests bind energy, is becoming a new trend of Russia's "energy diplomacy" strategy.

Today, the foreign natural gas is subject to international geopolitical factors, "energy war" between Russia and transit countries, also greatly damaged the image of Russia as a reliable energy supplier in Europe. In the European Union is trying to get rid of the dependence on Russian oil and gas pressure, conveniently for Russia, its energy exports focus gradually towards the east. Mr. Putin has repeatedly said that Russia will strive to expand their energy transport network, reduce our dependence on energy transit countries, so that the energy directly to the consumer.

In a word, the energy cooperation between Russia and China both each other's real needs, also have both countries in economic and political development strategy is

consistent, common interest's pursuit is the foundation of both sides to develop natural gas trade between China and Russia. Although too much energy cooperation between China and Russia have had setbacks, but the future is also hard to avoid can appear all sorts of friction and variable, but the two sides hold good current overall direction for the development of the bilateral relations and the positive factors, energy trade between China and Russia can more on a new step.

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