

# Currency and its Impact on Pricing and Prospects for the Oil and Gas Industry in Asia

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**Abstract**—Nowadays Asia is undergoing large-scale transformations in the oil and gas industry. These transformations affect, in particular, the aspect of contract currency and currency risks in international energy trade. Despite the political background, there is a significant economic component in this process. The purpose of this article is to reveal it and give a general vision of the origin of hydrocarbon prices and the main pricing mechanisms in this area using the Asian market and cooperation between the Russian Federation and China as an example. The benefits of energy trading in national currencies and the main trends in the transition to settlements in national currencies in the field under study in ASEAN and in the multilateral RIC format are also evaluated.

**Keywords**—Russia; China; energy; oil; gas; pricing; currency

## I. INTRODUCTION

World oil and gas markets are the largest commodity markets [1]. On this basis, the currency that dominates these markets has significantly more weight on other commodity markets, due to the fact that in addition to a large volume, energy markets have another important characteristic - they are the markets for the supply of basic resources for a significant part of other industries (for example the production of polymers relies heavily on the oil industry, the chemical industry largely serves the processing of raw materials produced by the oil and gas industry, etc.).

In this regard, fluctuations in energy prices, the main of which, despite the active promotion of alternative energy sources, is still hydrocarbons, have a strong impact on the economy as a whole. In the face of a confrontation between China, one of the largest energy consumers in the world, and the United States, a new oil and gas producer, due to the boom of shale oil and the shale revolution, sanctions against Russia, one of the key players in the oil and gas market and the largest supplier of hydrocarbons to the world market, introduced by the United States and the European Union, fluctuations in prices and volumes of energy supplies to the world market, and especially to dynamically developing markets, have a strong impact on the economies of the countries in question. Since the economy of the Russian Federation and China depends directly on the energy prices, there are growing trends in global risks in the international trade in oil and gas. The currency risk has recently become one of these risks. In the conditions of strained relations between the PRC and the

USA, as well as the readiness of the Russian Federation for cooperation in the energy sector and the “eastward” policy pursued due to the sanctions, it became possible to form a new mechanism of trade and pricing in the Asian hydrocarbon market.

## II. METHODOLOGY

The authors consider the issue of value contracts in the oil and gas sector using the following methodology. First, the stages of cooperation between the Russian Federation and China in this area are considered. Cooperation is distinguished at the stages of upstream, midstream and downstream. Secondly, at each stage, characteristics of the main agreements between the two countries are given and the theoretical benefit of using national currencies is determined. Thirdly, a general recommendation is given on the further development of this area of cooperation. In practical terms, Russian oil exports to the PRC are considered and the cross-rate of the renminbi to the ruble through the dollar is calculated using the example of oil and gas contracts for a year. Then the cross rate is compared with the direct exchange rate of the currency pair and based on these data conclusions are drawn about the benefits and losses of the Russian Federation from energy exports in dollars. Based on the data obtained, an analysis is made of the state of the Asian credit market of international financial institutions, which allows us to assess the state of the RMB market in Asia.

## III. RUSSIAN-CHINESE ENERGY PARTNERSHIP

Pricing in the framework of the Russian-Chinese energy dialogue can be divided into several stages described below.

- Upstream – the active investment of Chinese companies in the Russian oil and gas industry, in particular, the construction of joint ventures (Yamal-LNG [2]) leads to an increase in the export opportunities of the Russian Federation and deeper integration of China into the oil and gas global value chains. In turn, this contributes to the development of Chinese technologies in the field of horizontal drilling, cracking, offshore oil production, as well as the chemical industry as a whole. All of the above leads to cheaper oil and gas production, which is reflected in their export price in the EAEU countries, where the political factor is less significant when trading in

energy resources. Moreover, this facilitates the conclusion of contracts for the supply of oil and gas to China at a more favorable price for the Chinese side [3]. At the same time, due to the continuity of financial flow, currency risks associated with the investments made in national currencies (especially taking into account the newly signed agreements on mutual settlements in national currencies) are significantly reduced compared to investments in dollars and euros.

- Midstream – the construction of oil pipelines of the Eastern Siberia - Pacific Ocean (ESPO-1 and ESPO-2) and the pipeline "Power of Siberia" promotes the growth of energy exports to China from Russia. Growth in supply and relatively stable growth in energy demand lead to the fact that commodity circulation in this field between the Russian Federation and China is increasing [4, 5]. As part of the pairing of the EAEU and the OPOP, an agreement was reached on mutual settlements in national currencies, which is planned to be expanded to oil and gas exports of the Russian Federation. An assessment of the effect of this agreement will be given below.
- Downstream – one of the largest Chinese oil refineries – Daqing Oil Refineries, located in close proximity to the Russian border, which contributes to an increase in the efficiency of oil processing of Russian hydrocarbons in China in general. At the same time, there is a tendency to export oil products from China to the Russian Federation; a close partnership is being formed in the border regions, such as, for example, in Belarus at the Oil Refinery in Mazyr. At the same time, the price of oil refining in China is slightly lower than the cost of transporting oil products from large Siberian oil refineries (for example, the same Irkutsk oil refinery) in the Far East, in particular, the Khabarovsk Krai and Sakhalin Island [6]. The proximity of Chinese refineries to the Russian border helps reduce transaction costs for the construction of crude oil pipelines on the territory of the PRC, which also helps to reduce the final cost of oil products for Chinese corporate consumers. In addition, Chinese hydrocarbon trading instruments are developing; in particular, the Chinese oil future market plays a large role in this [7]. It is worth noting that despite the positive impact of cross-border trade and, accordingly, industrial development of border areas on the trade turnover of the Russian Federation and China, it is vital for Russia to create its own oil refining facilities.

Thus, direct trade without an intermediary currency contributes to a significant reduction in the cost of oil refining end products in China and the Far East. Given the volume of Russian oil left in China (about 1.5 million barrels per day) [8] with the average cost of the Urals oil in the first half of 2019 at \$ 66.34 per barrel [9], the total volume of Chinese imports of Russian oil amounted to \$ 17.912 trillion. In order to evaluate the effect of trading in national currencies, it is necessary to calculate the cross-rate of the renminbi to the ruble against the dollar for the same period and the direct rate of the yuan / ruble (Table 1).

TABLE I. CALCULATION OF THE CROSS RATE OF THE YUAN-RUBLE CURRENCY PAIR FOR THE FIRST HALF OF 2019 (AUTHORS' CALCULATIONS)

Currency pair	Rate	Import value in quoted currency (trillion units)	Import value in base currency (trillion units)
USD/¥	7.1176 [10]	127.4904	17.912
USD/₽	65.42 [11]	1171.803	17.912
¥/₽	9.1913	1171.803	127.4904

At the same time, the direct exchange rate of the ¥ / ₽ currency pair is 9.54 [12]. Based on the above calculations, it turns out that the direct exchange rate is more profitable for the Russian Federation as an exporter of hydrocarbons, and it is also beneficial for the PRC in terms of promoting the yuan to the world currency market, since today, being one of the reserve currencies, the yuan does not correspond to this status in terms of volume of transactions with it. Using the same data, we calculate the net losses of the Russian Federation to China from oil exports with the dollar contract currency for the first half of 2019 (Table 2).

TABLE II. AMOUNT OF OIL EXPORTS DEPENDING ON THE CURRENCY TERMS OF THE CONTRACT (AUTHORS' CALCULATIONS)

Cross Export Amount	Direct export amount	Net losses from exports for c.-k.
1171.803	1216.2589	44.4559

Thus, the net income of the Russian Federation from the transition to settlements in national currencies from China will amount to 44.5 trillion rubles in the oil and gas sector alone. In this context, it is worth considering gas contracts only in the long term, since today the majority of gas contracts in the Russian Federation and China exceeds the horizon of five years.

#### IV. DISCUSSION

Russian-Chinese relations in the field of valuation of energy transactions have been studied above, but the sluggish nature of the development of this sphere of cooperation between the two countries cannot be ignored. To accelerate the signing of agreements and the real development of events, it is necessary to involve other Asian countries and monetary and financial institutions in the process of trade development.

It is worth noting that in Asia as a whole, a rather controversial situation is developing with the value of transactions in the energy sector [13–15]. This is due to the fact that despite the overwhelming influence of the hydrocarbon market on the energy industry, a new area is being formed - alternative energy (green energy). It is worth noting that, unlike hydrocarbons, the price of electricity is formed mainly through the prism of the cost of its generation, i.e. depreciation of fixed assets of a generating company; investments in public funds play a significant role as well. Asian development banks, along with Chinese TNBs, play a significant role in financing green energy projects. According to statistics, most of the loans of the Asian Infrastructure Investment Bank are issued in RMB [16], which makes the renminbi stability one of the factors in the development of green energy in Asia. At the same time, the PRC occupies a very serious niche in this sphere, both in terms of investment and in terms of developing products for green energy.

It is also worth considering the prospects for the development of settlements in national currencies in Asia. Today, the most promising in this sense is ASEAN and the trilateral format Russia-India-China. Energy dialogue in ASEAN is mostly located at the free trade in energy level, so it has limited prospects. Moreover, it is safe to say that ASEAN, from the point of view of energy in Asia, is and will continue to be a net consumer of energy resources, including Chinese shale oil, if it is to be successfully developed [17].

The RIC format is much more interesting in this context. It includes the 2 largest and most dynamically developing energy markets in Asia, as well as 2 foreign exchange markets with interesting development prospects - the yuan and rupee markets. It is worth noting that financial instruments in the oil and gas sector also play an important role in pricing - usually in countries with their own trading floors; hydrocarbon price volatility is reduced due to the possibility of trading them on the national market in national currency, whose volatility is largely determined by domestic rather than external factors. Thus, the RIC can become a platform not only for political and economic dialogue, but also for energy cooperation and the spread of the pricing mechanism for energy resources with a lesser political component promoted by Russia and China in recent years [18].

## V. CONCLUSION

Nowadays the US dollar dominates the energy market in terms of the contract currency. This, obviously, creates a number of advantages for the United States, but slows down the development of the Asian countries, especially in the context of a gap in the GVDC between the United States and China in the context of the trade war and Russia and Western countries under the conditions of sanctions. This situation creates the prerequisites for the redistribution of spheres of influence in the energy market, and creates opportunities for the most dynamically developing economies to create their own markets and trading platforms for energy resources.

China is most actively using this opportunity, creating on the basis of the Shanghai Stock Exchange an instrument for trading oil futures, as well as creating and developing a mechanism for replacing the dollar in RMB oil and gas contracts. One of the strategic partners of the PRC in this task is the Russian Federation, which also seeks to reduce the role of the dollar in the global monetary system and to get out of a long period of slowdown by reorienting the economy towards cooperation with the PRC and the joint development of technologies in a number of industries, in particular oil - gas production.

Mutual settlements in national currencies, as well as investment in energy and green energy in RMB, reduce the transaction costs and increase the efficiency of international, especially cross-border, trade. In addition, they help reduce the currency risks.

It is worth noting that the greatest successes in this direction have been achieved by the Russian Federation and the PRC, while basically the energy trade in Asia is still conducted in dollars. Also, it should be noted that the main investments in the region are also made in dollars, although there is a tendency to increase the share of RMB.

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