Robert Triffin International

# THE TRIFFIN DILEMMA ON A RUSSIAN PERSPECTIVE

## THE FIXING OF OIL PRICE: DOLLAR, EURO, RUBLE OR SDR

November 2017



CENTRO STUDI SUL FEDERALISMO

# Robert Triffin International

*A watch on the international financial and monetary system*

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RTI aims to preserve the intellectual heritage of the Belgian economist Robert Triffin (1911-1993) with the creation of a documentation centre and continuing his action directed to the reform of the international monetary system.

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RTI Paper no. 7

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## Foreword

In 1960 Robert Triffin, during a hearing in front of the United States Congress, stated that an international monetary system based on a currency issued from a single state – such as the dollar – could not function in the medium-long term. In order to ensure the necessary liquidity to the world economic system, the issuing country needed to have a deficit in the payment balance but if the deficit was too much the trust in the currency would erode: the "dilemma".

The Bretton Woods system, however, avoided the "Triffin dilemma" since the dollar was convertible into gold at the price of $ 35 an ounce (today the price fluctuates around 1,300 dollars!). Triffin had predicted that it would be impossible to keep the promise and that the dollar was therefore not convertible, as President Nixon then announced in his famous statement of August 15th, 1971.

In the meantime, Robert Triffin promoted the reform of the IMF, in particular with the creation, in 1967, of the Special Drawing Rights (SDR), which should have become the main source of international liquidity.

In 1975 the OPEC – after the turmoil that had characterized the dollar – was in favour of quoting the price of oil in SDR. This intention did not realize, as with the following agreement between the United States and Saudi Arabia, the price of oil continued to be anchored to the dollar.

Continued fluctuations in the dollar caused sharp fluctuations in the price of oil – not always due to the trend in demand and supply – but to the attempts of producers to maintain the real value of their exports: as the research by Valentina Tosolini shows, there is a strong reverse correlation between the exchange rate of the dollar and the price of oil, which would be less volatile if fixed in euros, or even more stable in SDR. In the period examined (2000-2017), the oil price rises from $ 18 up to $ 140 and then collapses to around $ 50.

It may be considered that, for exporters of oil and other energy sources, an increase of the price, due to currency movements, has positive effects. But, as it is shown in the research for the case of Russia, in the phases of rising nominal price of oil, it is necessary to re-evaluate the ruble in order to contain the inflationary effects arising from the liquidity inflow: the maneuver equals to an attempt to set the price of oil in rubles, at least for the domestic economy.

The need to carry out a revaluation of the ruble has an impact on the other sectors of the economy, especially on sectors open to international competition, but above all slows down the process of diversification: it is in the interest of a big and important country like Russia – and even more so of the Eurasian Economic Cooperation Organization – to strengthen its productive capacity and integrate itself in new areas of the world economy. Not surprisingly, the recent historic meeting between Russia and Saudi Arabia has been focused on the diversification of their economies (including renewable energy sources).

Anchoring its currency to the SDR – as it has been done by China over the last few years – can, not only strengthen the diversification of the economy, but also foster the development of a banking and financial system capable of operating in the international market – as it was the case in the Seventies and Eighties for the European banks with the introduction of the ECU – and can also lay down the premises for the inclusion of the ruble itself in the SDR basket.

In the multi-currency monetary system that is emerging – first with the come up of the ECU/Euro beside the dollar and, more recently, of the Chinese renminbi – an SDR that includes currencies from emerging countries such as the ruble, the Indian rupee, the Brazilian real can strengthen its role as anchor of the system.

The SDR was born in 1967 as a basket of 16 currencies, including the Saudi Arabian currency. The subsequent reduction of component currencies was aimed at facilitating the use of SDR by the international market but the inclusion of representative currencies in the new international context will not be an obstacle to this process.

The ECU's experience shows that as soon as the SDR market reaches a considerable size, it becomes possible to activate a clearing system that allows it to operate as a basket only on the balances: but also for those amounts it will not be necessary to unbundle in the component currencies thanks to the liquidity provided by the clearing.

The cases of oil, as well as of wheat and other raw materials indicate that it is possible to create the conditions to fully fulfill the IMF reform of 1969 and make the SDR the main source of international liquidity.

***Elena Flor***

*Secretary General, Robert Triffin International*

# The fixing of oil price: dollar, euro, ruble or SDR

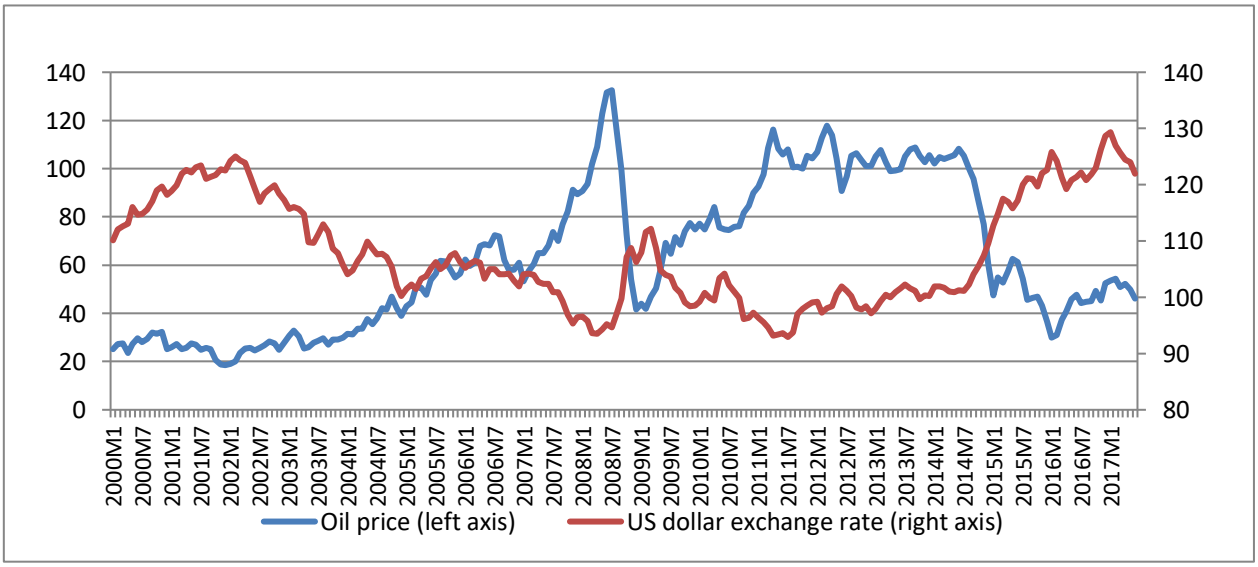
*Valentina Tosolini**

## 1. Russia, oil price, dollar and SDR

Commodities are currently quoted in US dollars. Their prices move accordingly to a wide range of variables linked to the real economy (demand and supply). The existence of big and liquid future commodity markets also plays an important role in the formation of commodity prices, driven by general macroeconomic outlook rather than commodity-specific factors. On top of this, the fact that commodities are priced in US dollars makes the exchange rate of the US currency a variable that affects the price of commodities itself.

For example, in general, since 2000 onwards an appreciation of the US dollar has been accompanied by a fall in the oil price. On the contrary, a devaluation of the dollar usually tends to reduce the price of crude oil in consumer countries. This, however, leads to an increase in real income and demand, hence, even if delayed, in prices.

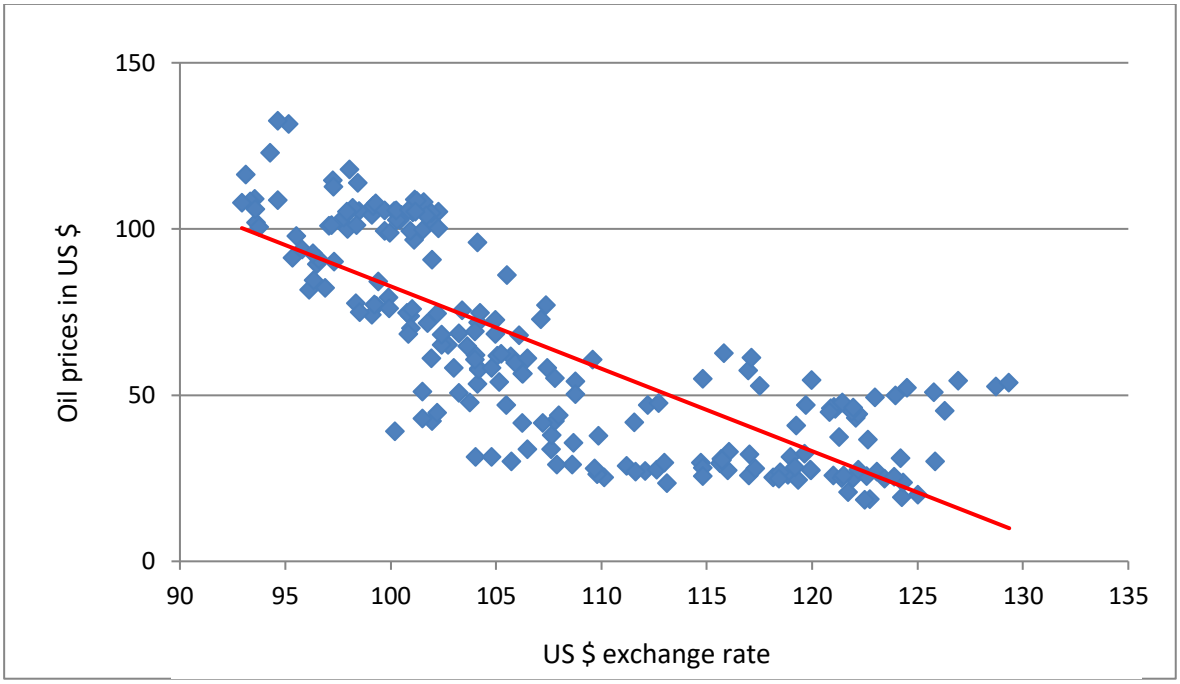
**1: Oil price and US dollar exchange rate (2000-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

* Valentina Tosolini collaborates with the Centro Studi sul Federalismo since 2013. She currently works for Eni Deutschland

**2: Oil price and US dollar exchange rate: Linear regression (2000-2017)**



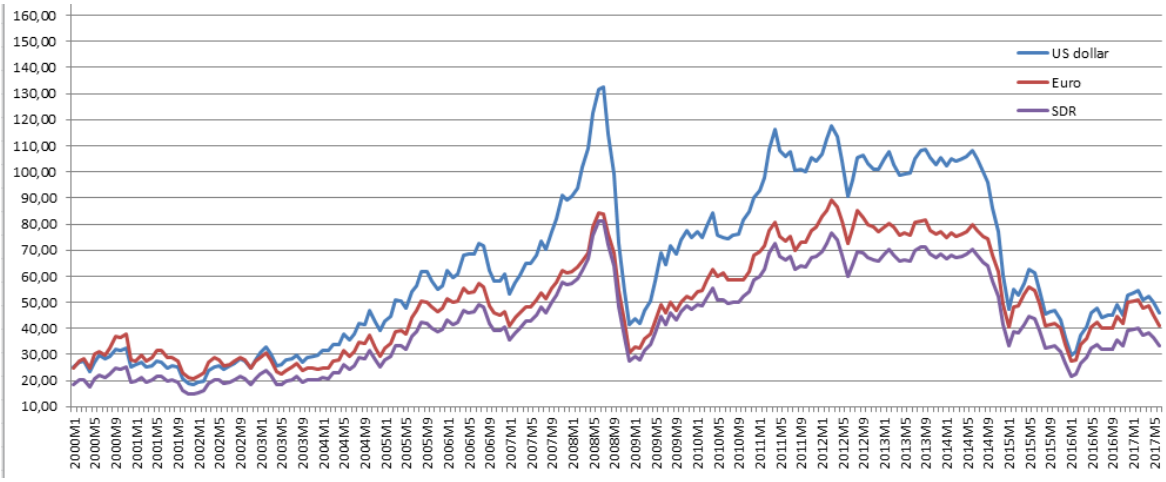

Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

The Figures 1 and 2, which take into account the 2000-2017 data, suggest a negative correlation between the dollar exchange rate and oil prices, confirming what stated above: if the value of the dollar declines, the oil price goes up.

This paper analyses the evolution of oil prices, in the period 2000-2017, if they were to be priced in different currencies, namely the US dollar, the euro and the SDR (Special Drawing Rights).

As Figures 3 and 4 show quoting primary commodities in a supranational currency, such as the SDR, would reduce market speculation and a discontinuous trend in prices. Primary commodities prices in SDR would have been more stable since the SDR, with a defined value in terms of the major currencies, diversifies exchange risks.

**3: Trend in crude oil prices per barrel in US Dollar, Euro and SDR (2000-2017)**




The price for crude oil (petroleum) in US dollars is the simple average of three spot prices: Dated Brent, West Texas Intermediate and the Dubai Fateh. *Source: IMF*
For an effective comparison, the price of an oil barrel expressed in USD has been converted into euro and SDR, using the monthly rate. *Source: IMF and European Commission.*

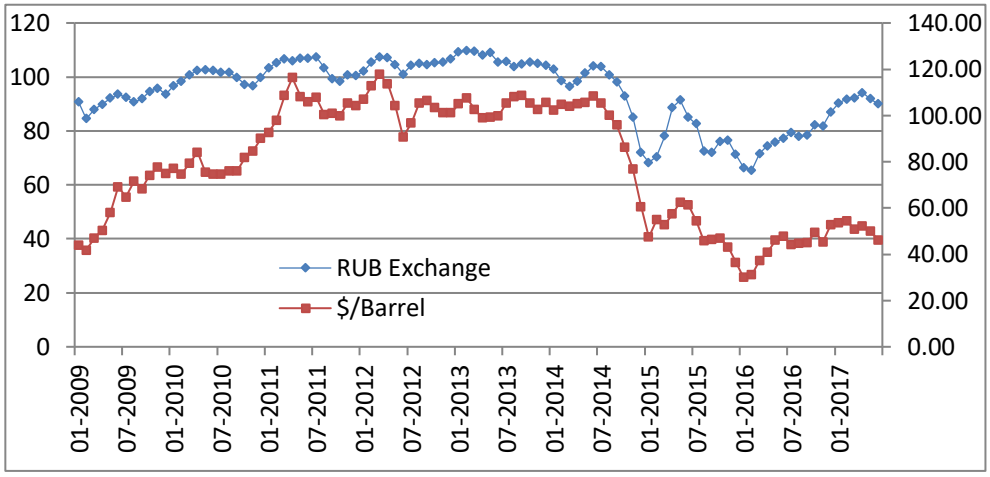
Considering that Russia is one of the biggest oil exporter in the world, what happens when the oil price goes down? What kind of consequences have a dollar depreciation on the Russian's economy?

The effects of macroeconomic volatility in energy and commodities exporting countries are an important impediment to sustained growth and development. Compared to other countries, these countries are particularly vulnerable to sharp swings in commodity prices, natural disasters, and variable external financing flows—as the ensuing high output, price, and fiscal volatility imposes large growth and welfare costs.

We can observe that, in the long run, high oil prices do not necessary mean positive economic outlook. For Russia for example, the high foreign trade surpluses generated by an increase in oil prices have supported the domestic currency. People were able to afford expensive Western goods, but the ruble strength also led to less competitive Russian goods and exports.

Since the economy of Russia is strongly dependent on oil exports, a weak oil price leads to a weak ruble which results, even if with delay, in inflation. There is a positive correlation between oil prices and the exchange rate of the ruble: if the oil price goes down also the effective exchange rate of ruble diminishes. The value of the ruble has more than halved as a result of the fall in oil prices. In 2016 the oil price has reached its lowest value since 12 years. For the first time one US Dollar was worth more than 80 rubles. For every one dollar reduction in the price of oil, Russia suffers a staggering two billion dollar loss in its revenue.

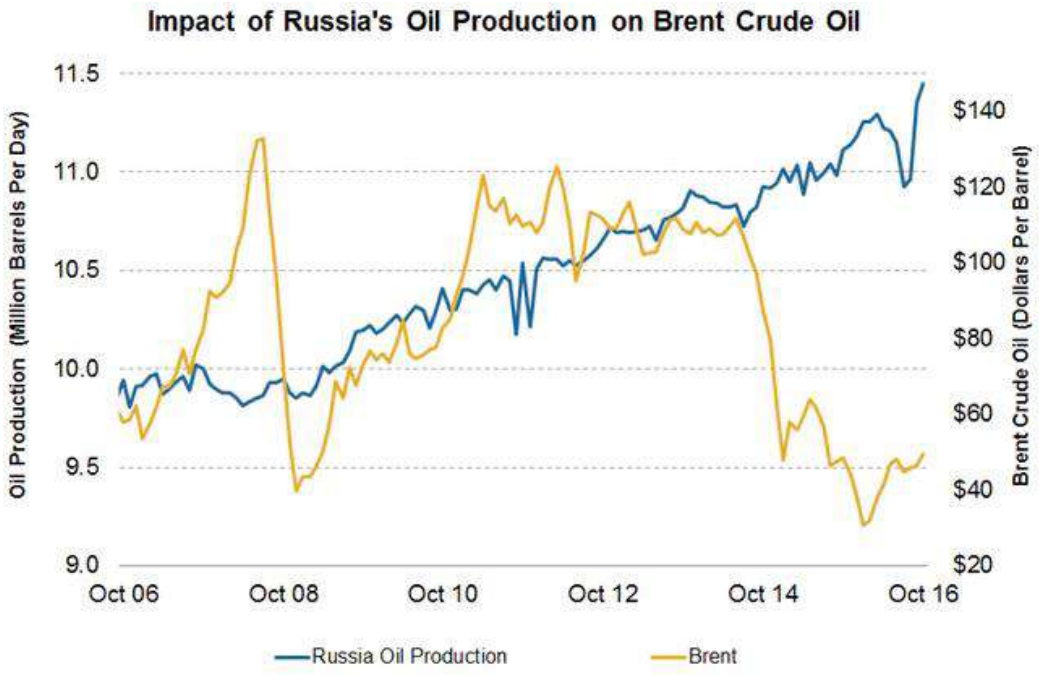
**4: Oil prices and RUB exchange rate (2009-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate for RUB, CPI based; 2010=100. Source: BIS Statistics

Yet the Russian production in 2016 touched a post-Soviet era high. Despite its ability to adapt to low prices, Russia has pledged to contribute a 300,000 barrel cut in production following the agreement reached in Vienna on November 30th, 2016.

The secret of its success appears to be a combination of tax measures, the dollar value and the advantage of low-cost production.




Source: marketrealist.com - eia.gov

For Russia to increase its production is simply a matter of choice. That can be explained by the fact that Russia's oil production is not a high-cost venture. Instead, the typical Russian barrel of oil resides far down the cost curve, generating economic value even at oil prices below $20 per barrel.

Russia's oil tax regime (explicitly) and the free-floating ruble (in effect) are tied to the price of oil. The combination of an automatically-adjusting tax burden and ruble work to act as effective cushioning mechanism for wellhead operating margins.

On the other hand, the abundant oil revenues are invoiced in US dollars, which means that if the dollar falls or the ruble rises, government revenues from the ruble-based oil business will drop.

China's and Russia's immediate response to a foreseeable dollar weakening and rise of the SDR is to buy gold (it's not yet possible to diversify heavily into SDR-denominated assets because there are limited SDR assets available). Russia has acquired over 1,000 tons of gold in the past seven years, and China has acquired over 3,000 tons of gold in the same time period.

Combined Russian and Chinese gold purchases are over 10% of all the official gold in the world.

Foreign currency reserves are vital to a nation's economic well-being. Without adequate reserves the country may be unable to pay for critical imports or service its external debt. But the key to a sustainable portfolio of reserves is diversification.

In November 2016 the Russian government raised its gold reserves by 72 tons. In February they added other 9.3 tons, reaching a total gold reserve of 1650 tons, the highest level since the collapse of the Soviet Union. The purchase of gold is made by selling US bonds following the same lead as of China which also sold massive amount of dollar securities.

The trend is clear: the big world economies want to get away from the dollar hegemony by diversifying their reserves. Gold seems to be a good alternative because it can be seen as a currency without a government.

It is the Triffin Dilemma of the 20th century: we know that the shortage of dollars that had characterized the years immediately after the war was the result of a situation in which the dollar that flew out of the United States exceeded broadly the total disbursements in that currency by foreign countries.

A continuing deficit in the US balance of payments is needed to provide the system with the international liquidity it needs, but more liquidity also means growing deficits and loss of credibility in the dollar currency, resulting in possible depreciation. Moscow first step to protect its oil market from US dollar instability is to offer oil-futures in ruble.

Today, with an oil price still 60 percent below the value of 2016 and due to Western sanctions, the international capital market has been harder for Russia to access and this is leading to a lack of money and liquidity.

Quoting primary commodities such as oil in a supranational currency such as the SDR, would reduce market speculation and a discontinuous trend in prices. Primary commodities prices would be more stable since the SDR, with a defined value in terms of the major currencies, diversifies exchange risks.

As of March 2016, 204.1 billion SDRs (equivalent to about $285 billion) were created and allocated to members. The value of the SDR is now based on a basket of five major currencies — the US dollar, the euro, the Chinese renminbi (RMB), the Japanese yen, and pound sterling — as of October 1st, 2016. The respective weights of these currencies are 41.73 percent, 30.93 percent, 10.92 percent, 8.33 percent, and 8.09 percent.

In 2017 only 60 percent of Russia foreign debt was in dollar, the lowest level since 2014. In June 2017 Russia reduced its US governments bonds by 5.8 Billion US dollar. By doing so the country is now the 14th bigger holder of US debt securities with a total of 101.9 billion US dollar.

The fact that the Chinese renminbi is now in the SDR basket opens a wide discussion about the need for a real supranational currency that is not affected by the limit of the well-known "Triffin dilemma".

The next basket review is scheduled to take place by September 30, 2021 and it would be a great opportunity to include also currencies of countries such as India, Brazil and Russia, shifting at least 5 % of quotas and letting the SDR represent the real global economic power distribution and becoming a valid alternative to the US dollar.

This paper is trying to support those conclusions studying the pre-crisis period (2000-2008) and the post-crisis one (2009-2017).

## 2. Oil price evolution

Both the price of commodities and the dollar exchange rate are economic variables that influence the evolution and development of the global economy. Their changes have effects on international trade and economic activities in all countries. It is interesting then to study what is the link between these two variables and how the introduction of the SDR for pricing the main commodities would affect the global market.

As stated before, all commodities are priced in US dollars. Let's consider two types of goods: manufactured goods and commodities. Regarding the former, prices are determined by the cost of production in the country of origin and are denominated in the local currency. The prices of primary commodities such as oil or grains are determined by supply and demand in a real supra-national market and are expressed in US dollars.

If dollar prices of commodities and the national currency prices of manufacturing do not change, then any change in the valuation of the dollar affects the terms of trade between the United States and other countries; in particular, the higher the proportion of assets whose value is expressed in dollars, the higher the influence of the exchange rates.

For this reason, changes in exchange rates also have an impact on income distribution. Theoretically, if oil prices were almost fixed or hard to modify, i.e. "sticky prices", a devaluation of the dollar would lead to a reduction in drilling activities in the oil-producing countries, the costs of which are expressed in local currency; their dollar revenues when converted to local currency

would not be sufficient to cover all costs. For this reason, these countries would have to face a reduction in their purchasing power. At the same time there would be an increase in the demand for oil from countries with appreciated currencies resulting in a significant pressure on prices.

Oil trade is denominated in dollars, therefore it is clear that a change in the dollar exchange rate affects the price of raw materials with consequences for countries outside of the United States in particular.

As for the effects on demand, a devaluation of the dollar reduces the oil price in domestic currency for consumer countries with floating exchange rate regimes such as Europe or Japan resulting in an increase in their real income and oil demand. The effect is neutral for countries that have pegged their currency to the dollar as China did till July 2005[1].

As for the effects of a change in the dollar exchange rate on the supply side, it must be kept in mind that oil companies use domestic currency to pay their employees, taxes and all production costs. These domestic currencies are often pegged to the dollar because of the fixed exchange rate regime adopted by the majority of producer countries. The effect on the producers is therefore less perceived. Nonetheless, a dollar depreciation can generate inflation and a decrease in purchasing power of producer countries also reducing the income available for drilling and ultimately the oil supply.

In the short term, the devaluation of the dollar has no effect on supply and demand, which are inelastic to prices, given on the one hand production capacity constraints and a low marginal production cost and, on the other hand, the difficulty in finding substitutes for oil.

In this situation speculation and investment in oil futures markets take place: when the dollar loses its value, commodities, including oil and grains, attract investors. Investing in futures becomes a way of protection against the weakening of the dollar, an investment that can generate considerable profits.

In the long run, there are two possible scenarios depending on the monopoly power. Net commodity exporters will seek to increase the export prices as much as they can to remedy the currency devaluation. In theory, if their market power is strong enough, they may even try to raise prices more than the value of the devaluation. If their oligopolistic power is low, a devaluation will instead imply a reduction in the production of the commodity in question, reducing its supply and increasing its price.

Supply and demand become more elastic because it is possible to invest in an increase in production capacity and search for alternatives to oil.

The inverse relationship can also be noted meaning that changes in oil prices can affect the dollar exchange rate. The reason can be explained using Faruqee's model[2] according to which if a country accumulates foreign assets, its exchange rate appreciates without influencing its balance of payments. This is because the capital gain offsets the loss of trade caused by the reduced competitiveness.

[1] During the Asian financial crisis, the trading band was narrow and the exchange rate of 8.28 RMB/USD was maintained until 2005. In July 2005 the Chinese government adopted a managed float exchange rate based on market supply and demand with reference to a basket of currencies where the US dollar had the largest weight and other currencies such as the euro, the Japanese yen, the pound sterling and even emerging market currencies were all given appropriate weights. At end-December 2015, outstanding foreign exchange reserves reached US$3.33 trillion, and the RMB exchange rate was 6.4936 yuan per US dollar.

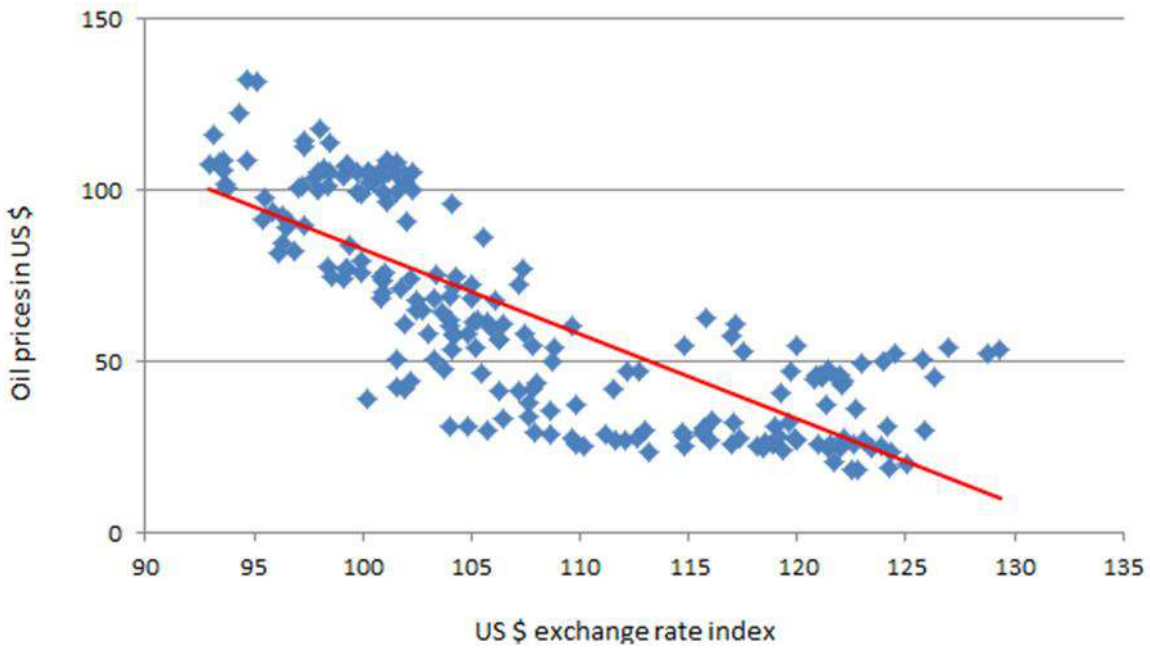
[2] Faruqee, Hamid, "Long-Run Determinants of the Real Exchange Rate: A Stock-Flow Perspective", IMF Staff Papers, Vol. 42, Issue 1, 1995, pp. 80-107

The continued growth in crude oil prices indirectly contributes to the decline of the dollar because oil import costs grow, widening the deficit in the US balance of payments.

Examining the relationship between oil prices and the dollar exchange rate, the possible influencing factors include the need for producer countries outside the United States to stabilize their purchasing power and the increasing activity in oil futures and options. Also financial investors' risk-taking attitude and flight to safety episodes can play a role. If the US dollar is perceived as a safe haven, currency investors might be influenced to exit from oil as an asset class. The growing oil "financialisation" which began in the early 2000 might be at the heart of a change in the direction of the correlation between oil prices and US dollar exchange rates (which was positive until 2000 and negative from then on).

On average then, *ceteribus paribus*, a devaluation of the dollar generally tends to reduce the price of crude oil in consumer countries. This, however, leads to an increase in real income and demand and in turn to an increase, even if delayed, in prices.

**6: Oil prices and US dollar exchange rate (2000-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

Figure 6, which takes into account the 2000-2017 data, suggests a negative correlation between the dollar exchange rate and oil prices, confirming what stated above: if the value of the dollar declines, the price of oil goes up.

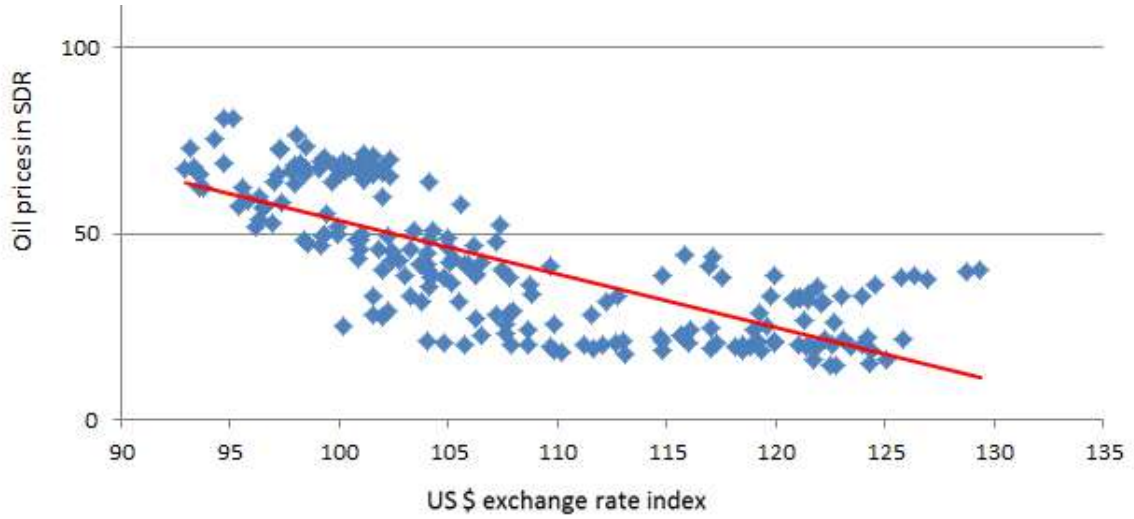
In this figure, the linear coefficient of the tendency line is -2.41 showing a strong negative correlation between the reaction of oil prices and the devaluation of the dollar.

If oil and major commodities were listed in a supranational currency, such as the SDR, it would be possible to solve part of the problem of price instability because, being the SDR a basket currency, its exchange rate is, by definition, more stable than its single components. Furthermore, speculators, who tend to invest in oil through the use of futures contracts, would not be able to gain on exchange rate volatility.

In 2008, in fact, the increased number of market operators resulting in higher positions both long and very short term, was responsible for a strong speculation that led to a rise in the price of various commodities, including oil.

When measuring the correlation between oil prices denominated (artificially for this exercise) in SDR and US dollar exchange rate, a flattening of the tendency line would certainly occur, showing a linear coefficient of -3.84.

**7: Oil prices in SDR and US dollar exchange rate (2000-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF. The price was converted in SDR using IMF SDR monthly data.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

There are many trends which make us think that invoicing commodities such as oil in a supranational currency would be possible: IMF's support for SDRs, Russian and Chinese support for gold, and Saudi Arabia's search for a new benchmark for oil. Gold, yuan, and SDRs all have one thing in common: they are alternatives to the dollar. As momentum toward these alternatives grows, the role of dollars as a reserve currency could diminish quite quickly — like sterling's role between 1914 and 1944. The result for dollar holders will be exactly the same as the result for sterling holders: inflation and lost wealth.

We are facing the Triffin Dilemma 2.0 about the sustainability of a monetary system in which the currency used as the international reserve currency is the same domestic currency issued by a single central bank. The solution to this problem would be the implementation of the role of the SDR both in the official and in the private sector.

## 3. The oil price evolution 2000-2008

Since the oil market is global, with its price virtually identical in all parts of the world, the price reflects both total world demand and the supply of all producing countries. The primary demand for oil concerns transport, followed by the use for heating, energy and inputs for the petrochemical industry.

The growth in the demand for oil from all countries and, in particular, from those showing a strong economic development such as China and India, has been, and will continue to be, an important factor that pushes up the price of global crude oil.

In 2000 the OPEC increased four times its production quotas and reached the record level of 29.5 million barrels per day. Due to a good global economic stimulus and a high demand, oil prices grew into a new upward trend, finally leveling out above 30 dollars. It was only in December 2000 that prices fell back sharply.

This trend continued for two years, as a consequence of the bursting of the new economy bubble and the terror attack in New York.

In March 2002 crude oil prices were listed again within the desired OPEC range of 22-28 dollars / barrel and during the summer months were driven also by the threat of war between the US and Iraq.

The OPEC kept its production quotas extremely low; however, the oil production in autumn 2002 was almost 10 to 15% above the target rate. At the end of the year, an oil workers' strike in the OPEC member Venezuela caused a rise in oil prices. Moreover, after the decision of the Federal Reserve to lower rates almost to zero, the weakness of the dollar led to an increase in oil as well as wheat prices.

The year 2004 started with the lowest US stock figures for crude oil. The refineries supplied at the lowest limit. The premature austerity measures initiated by the OPEC in the first quarter led to a sustainable increase in oil prices. The Iraqi oil supplies remained low due to continuing acts of sabotage. At the same time the world oil consumption rose unexpectedly. In China, the demand for oil became huge. The US oil consumption rose to a new record level, as a consequence of the increasing demand also driven by low interest rates.

In June 2004, the Federal Reserve decided in June 2004 to raise by a quarter percentage point its target for a key short-term interest rate, the first increase in nearly four years. A move which marked the end of super-low rates in the United States.

In October, through massive oil contract purchases, funds and speculators were pushing prices of crude oil up to new all-time high level of above 50 dollars per barrel.

In the first six months of 2006, oil prices reached in a level of 55 dollars per barrel, well above the OPEC target.

Investors feared the weakness of the dollar and started investing and speculating in commodities. In November 2007, the oil price reached a peak of 90 dollars per barrel.

The year 2008 began with the fear of an imminent recession, especially for the US economy. This led to a crash of the equity markets in mid-January. Investors fled from the dollar to the seemingly recession-proof crude oil which reached the record value of 146 dollars per barrel.

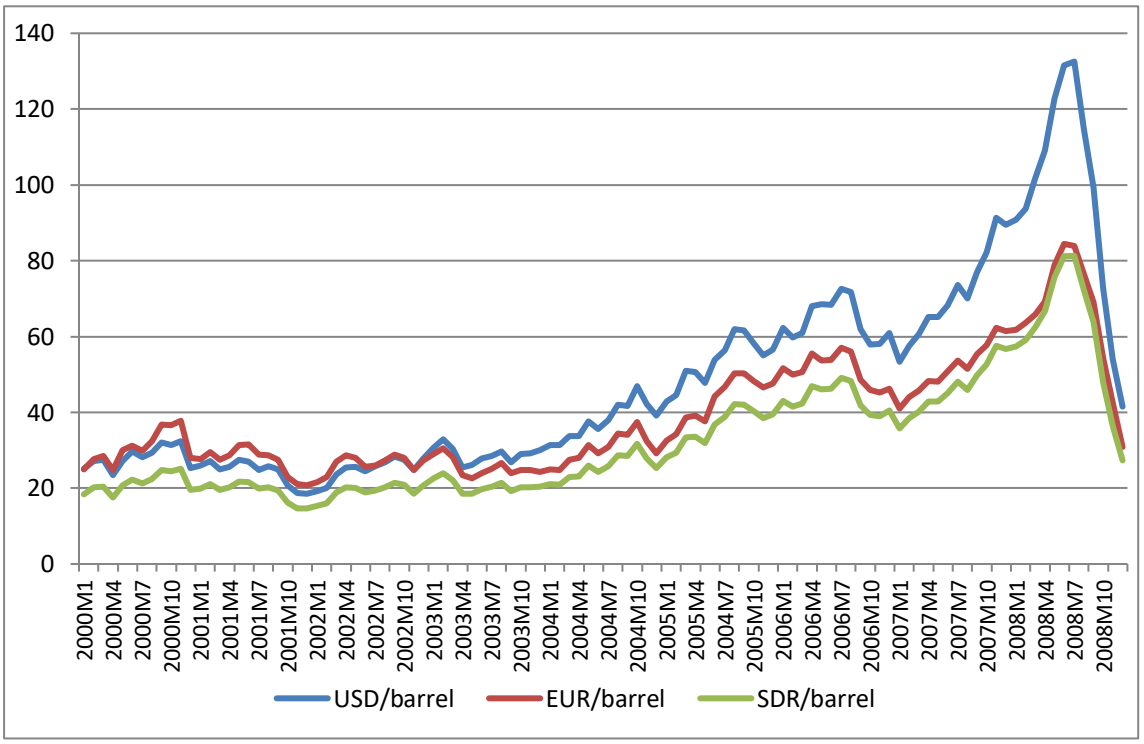
The US dollar exchange rate reached its lowest level in July with a value of EUR/USD of 1.578.

The oil price bubble burst in the summer of 2008. The overpriced oil increasingly slowed the world economy. With the crash of US banks in September, oil prices fell back to 100 dollars per barrel. The banking crisis spread to Europe and Asia. Global recession fears increased worldwide and from July to December of the same year, crude oil prices fell by 73 percent and ended the year at 40 dollars per barrel.

On December 24rd a weak dollar sold for 0.7093 euro went along with an oil price of 37.5 dollars per barrel.

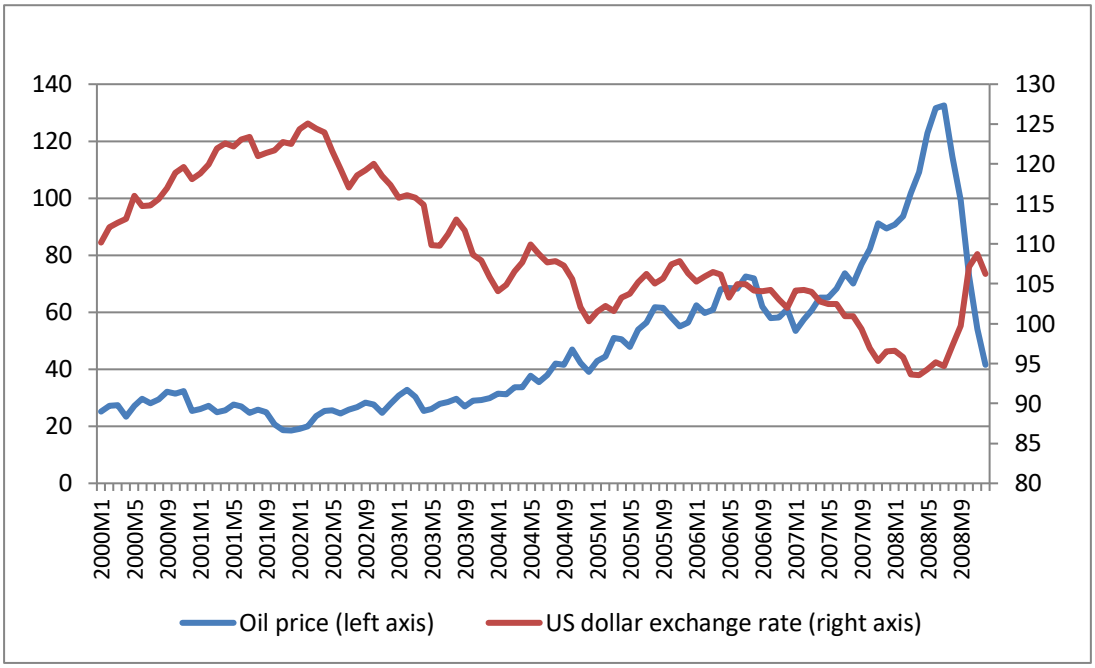
In the US, low demand coupled with high available stock held oil prices down.

**8: Oil prices per barrel (2000-2008)**




The price for crude oil (petroleum) in US dollars is the simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, Source: IMF
For an effective comparison, the price of an oil barrel expressed into USD$ has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

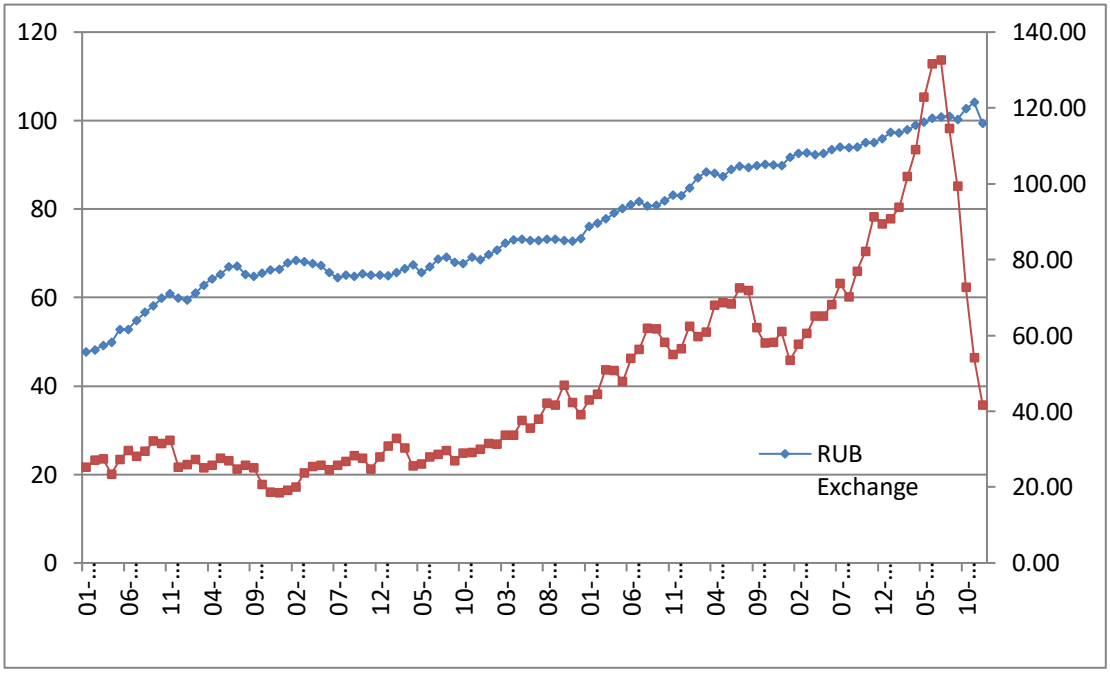
**9: Oil prices and US dollar exchange rate (2000-2008)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

Since the economy of Russia is strongly dependent on oil exports, an increase in oil prices leads to a strong Ruble with positive consequences, even if with delay, on the inflation rate an on the balance of payments.

**10: Oil prices and RUB exchange rate (2000-2008)**

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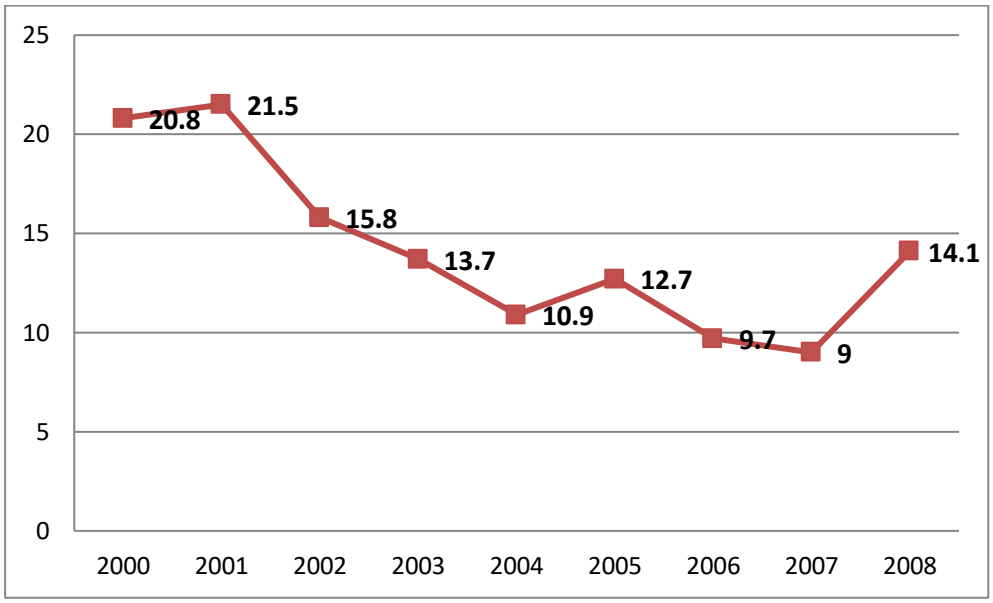
Real effective exchange rate for RUB, CPI based; 2010=100. Source: BIS Statistics

**11: Russia Inflation rate, average consumer prices (Annual percent change)**

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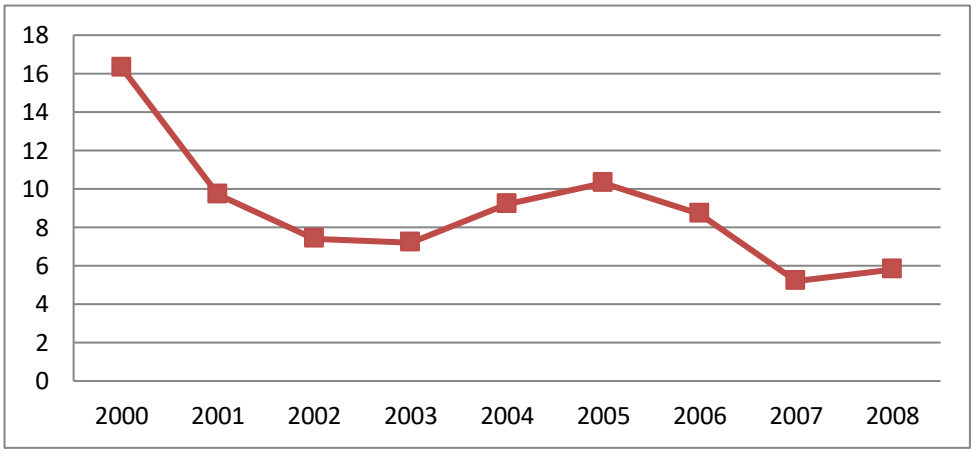
**12: Russia Current account balance, (Percent of GDP)**

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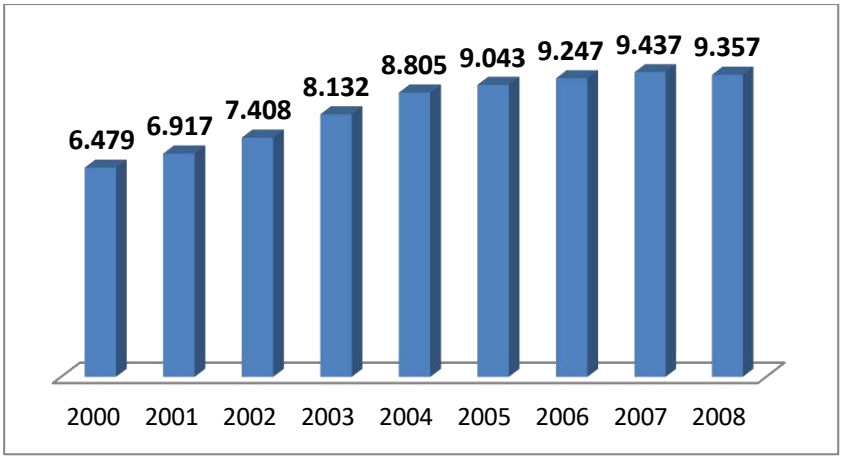
It is important to remember that from July 2006, Russian authorities have abolished all the limitations to capital movements. That was one of the first steps toward the full convertibility of the ruble. In 2006 the GDP growth rate of Russia was 7.4% and in 2008 was 8.1%.

In 2007, also thanks to the negotiations for entering the WTO (which became effective on August 2012), Fitch and Standard & Poors have increased the Russian sovereign rating from BBB to BBB+.

The production of crude oil reached in 2008 9,7 thousand barrel per day, +45 percent compared to the year 2000. The billions of surplus from the sale of raw materials flow into a reserve fund in order to serve foreign debts and to create a cushion in case of crisis. Doing so Russia's national debt fell from just under 60 percent to 7.5 percent in 2008.

Again a single currency, namely the US dollar has been used as a reserve currency, taking the risks that a dollar devaluation could pose.

**13: Russian Federation crude oil production per (thousand barrels per day)**




United States Energy Information Administration

## 4. The oil price evolution 2009-2017

During the spring months of 2009, the economic optimism prevailed and in autumn oil prices returned to 70 dollars per barrel.

The year 2010 was dominated by three major themes: the relaunch of the global economy after the 2008 banking crisis; China as an economic engine; the sovereign debt crisis in the EU.

Greece and Ireland were saved from state bankruptcy by the European Union. This subsequently led to a depreciation of the euro against the US dollar. In early June the exchange rate EUR/USD was 1.194. As a consequence, oil became more expensive for Europe. China shone as a world economic power and became the driving force for the global economy being the best market for EU exports and for the German economy. Crude oil prices reached 90 dollars per barrel.

The Russian economy has recovered at a moderate pace from the global crisis. In 2010, the gross domestic product grew by 4.0 percent. This is mainly due to the recovering raw material prices, which continue to play a decisive role in the development of the Russian economy. The crude oil price not only directly affects the balance of trade, but also has repercussions on capital flows and public finance. The Russian central bank lowered the benchmark interest rate from 13.0 percent to 7.75 percent between April 2009 and June 2010 and raised it again to 8.25 percent at the end of February 2011, always having as goal the exchange rate against euro and dollar.

The year 2011 started dramatically for the oil market due to riots and revolts in the Arab world.

The world economy enjoyed a robust recovery, with China and Germany playing the role of economic locomotives. In the summer of the same year, the massive European debt crisis emerged. The IMF had to rescue Greece from the sovereign default. Portugal, Spain and Italy as well had to witness a downgrade of their rating.

Also in the US it was necessary to set a limit to the increasingly growing public debt. In autumn fears of a new recession re-emerged and the global stock markets were also hit. In December, the euro reached its lower value of the year with an exchange rate EUR/USD of 1.2889.

In December the nuclear crisis with Iran, under the threat of sanctions and a possible war, was a strong issue for the oil world market.

When oil regions such as Iran cut back production, the relative price of oil rises, improving the terms of trade of oil producers. Output falls in the United States and Europe because oil is an intermediate input in the production of manufactured goods. This shows that oil price increases are leading indicators of US recessions.

In 2012 the oil price confirmed its growth and remained expensive.

The Western countries acted against the nuclear threat from Tehran with sanctions and an oil embargo, so that in spring Iran ran into considerable difficulties in selling oil.

The debt crisis in the Eurozone was still unsolved. Throughout the entire year a special effort was asked to Greece and Spain with more drastic savings packages, as a prerequisite for further support loans from the Eurozone – i.e. rescue funds.

China's economic engine lost speed. The key emerging markets of Brazil and India experienced a growth slowdown.

In the US, unconventional drilling and oil production technologies were supposed to make the US independent from any crude oil imports thanks to the implementation of the so-called hydraulic fracking in five years. This is also the reason why the US WTI crude oil was traded up to 20 dollars per barrel lower, against the leading variety BRENT. The US was expected to overtake Russia and even Saudi Arabia in oil production.

The first months of 2013 were quite dramatic in the US because the US government threatened insolvency (fiscal cliff). In March the euro crisis emerged again, this time with the national bankruptcy of the small island of Cyprus. That hardly reached bailout was strongly criticised and pushed down the euro exchange rate to EUR/USD 1.28.

In February, crude oil prices climbed to their highest level in the past 10 months, with a value of 98 dollars per barrel and then turned into a clear downward trend. The main reason for the glut of crude oil can be searched in the United States: shale oil in conjunction with the fracking, as new successful mining technology, encouraged the new oil boom in the US. The oil and gas sector gave the US economy a significant impulse for a new growth in the second half of 2013.

In June of the same year the world economy was worried about when the Fed would begin to scale back its expansionary monetary policy. This happened first in December with the decrease in bond purchases.

In China, the exaggerated economic growth slowed to a more solid and probably more sustainable growth.

July and August 2013 were characterized by a price rise reaching a 16-month high. From September on, oil prices begun to fall. In October, the global geopolitical situation relaxed and also in the Middle East and North Africa the geopolitical tensions calmed down, so that the risk premiums on crude oil futures contracts were reduced from more than 10 to less than 5 dollars per barrel.

In November and December, crude oil values increased again supported by the economic performances of the US experiencing a decreasing unemployment rate.

For Russia the year 2013 meant the integration of East Asia in the export of oil and gas business. China, South Korea and Japan also showed interest in Russia: they began investing in raw materials projects, primarily in East Siberia. Large infrastructure projects, primarily in the energy and transportation sectors, fueled investment growth, while low inflation and improving confidence supported private consumption.

In 2014 the US provided the world market with a good oil offer.

In March the Ukraine-conflict occurred. There was a danger of an uncontrolled spiral of sanctions of the West against Russia and vice versa. In September and October the crisis situation eased. However, by the end of the year the economic and financial problems in Russia increased.

In June, the ISIS conquered large parts of Iraq and some cities in North and East Syria.

Oil prices reached a high level, but then subsequently experienced an unexpected but massive and sustained fall. The oil boom in the US had significantly oversupplied the world oil market.

However, the OPEC did not take austerity measures. Therefore, during the summer period crude oil prices fell sharply from 110 dollars per barrel to only 80 dollars per barrel in October. In December the oil quotation fell below 60 dollars per barrel.

When assessing the demand for oil, the influence of the demand for increasing reserves is not taken into enough account. It is known that the demand for reserves has been a major component of the total demand in 2011-14 and its absence one of the major determinants of the price collapse in the fourth quarter of 2014.

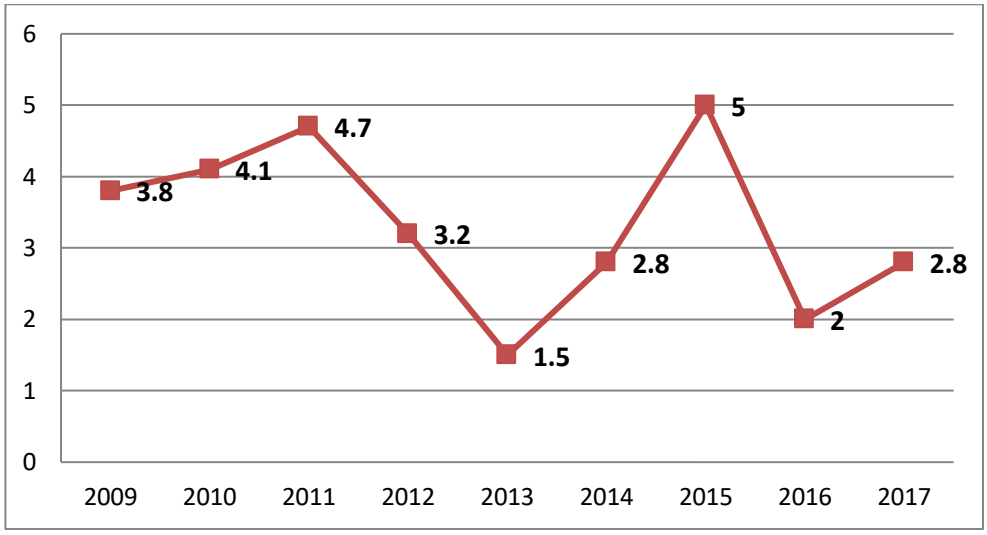
In 2015, despite persisting geopolitical tensions in the Middle East, a number of factors weighted in oil prices: sustained oil production in OPEC members, subdued aggregate demand growth and the lift of US export ban.

The US dollar was strong throughout the year, anticipating expectations of an interest rate increase for the first time since 2006, which eventually materialized at the end of the year.

Russia´s recession deepened in the first half of 2015 with a severe impact on households. Oil and gas prices remained low through the first half of 2015, further underscoring Russia´s vulnerability to volatile global commodity markets.

Persistently low commodity prices caused growth prospects for commodity exporters and commodity importers to diverge sharply. Higher income volatility is a typical feature of oil-exporters: while periods of high oil prices lead to large cumulative terms of trade gains, in time of oil price drops the terms of trade losses dwarf the slowdown in GDP.

14: Russia Current account balance, (Percent of GDP)

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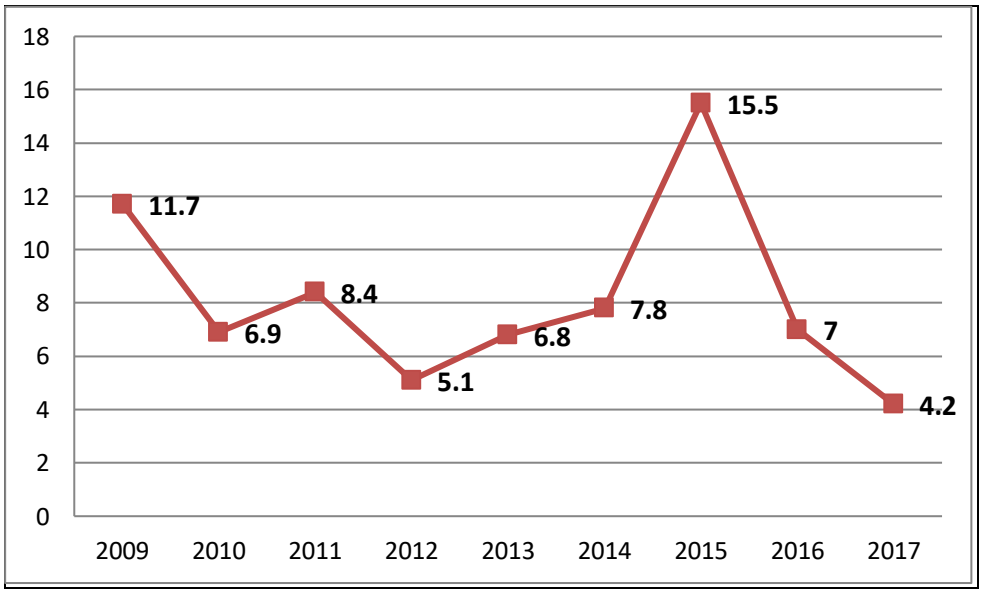
15: Russia Inflation rate, average consumer prices (Annual percent change)

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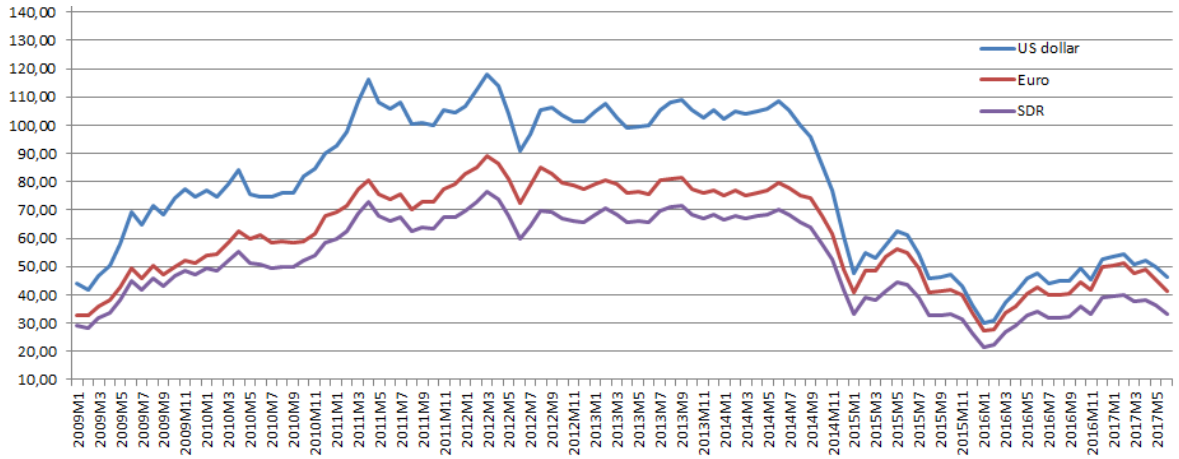
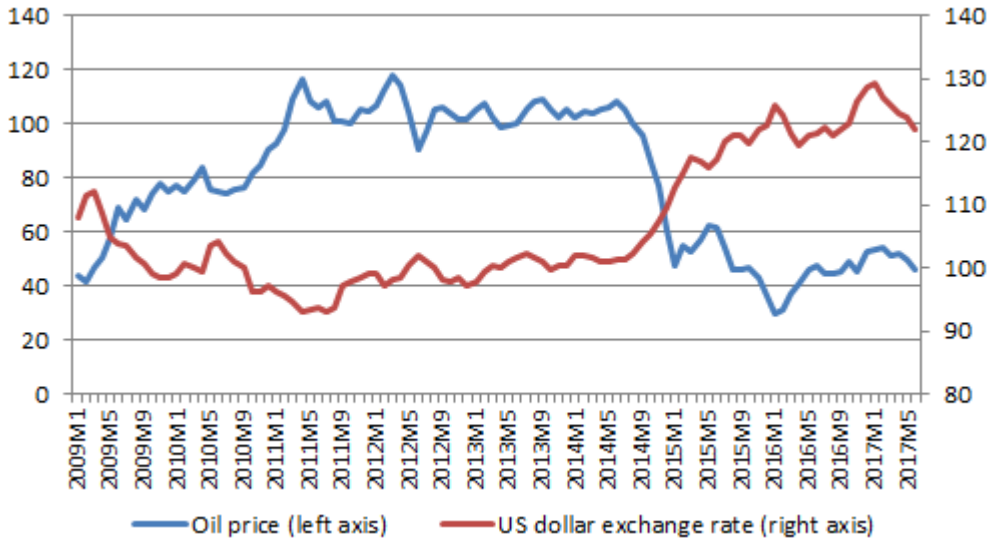
In December 2015, the monthly average oil price was 36.6 US dollars per barrel and the reduction continued in early 2016.

**16: Oil prices per barrel (2009-2017)**




The price for crude oil (petroleum) in US dollars is the simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, Source: IMF
For an effective comparison, the price of an oil barrel expressed into USD$ has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

**17: Oil prices and US Dollar exchange rate (2009-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

In early 2016, crude oil prices fell further from 37 dollars to below 30 dollars per barrel. In mid-January, Iran confirmed its compliance with the nuclear deal, so that after many years of embargo, Iranian oil was able to come again into the world market. Tehran has accordingly taken all measures to speed up its export volumes. This significantly reduced the existing over-supply of the oil world market, but clearly decreased to less than one million barrels/t. The world economy slowed down especially due to China's economy which lost its pace.

From February to April the oil-producing countries were struggling to freeze oil supplies at the January level. In April, the "Freeze" meeting, which was held in Doha, failed due to Saudi Arabia's veto. Surprisingly, oil quotation was not the so called "bear" one. Oil prices did instead increase. Many market analysts saw this rapid price rise as premature because there was still much speculation at play and oil prices were not rational.

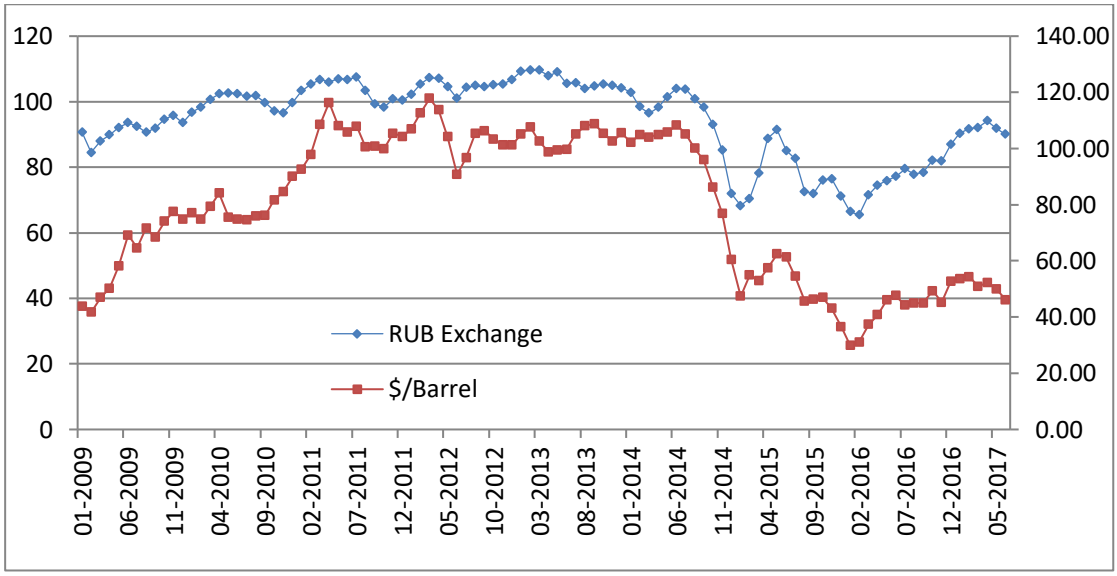
In May, the situation changed unexpectedly. Several major oil producing countries, such as Nigeria, Iraq, Venezuela, Canada and Libya, reported production losses. As a result, overproduction was quickly withdrawn from the table and crude oil quotations tested the price level of 45 / 50 dollars per barrel.

In June, the number of active oil drilling points in the USA rose again and in July there was a sharp price drop from $ 50 to $ 44 / barrel. The US oil producers secured against this price decline by hedging the futures contracts. This meant that the oil that would be produced over the next 12 months had already been sold through contracts on the oil stock exchanges, thus securing its revenues.

By the end of September a surprise came from the OPEC. In the Algiers, the oil cartel decided to limit the future oil production volumes. At the OPEC meeting of November 30th, it was agreed a cut in production (from January and for at least six months) for the first time since 2008 in order to address the global supply glut and lift prices, coordinated with other key non-OPEC producers including Russia.

In 2016, the Russian economy showed positive signs of overcoming the recession it entered in the second half of 2014. For Russia the effects of oil price shocks on growth happened earlier than for many oil exporters, reflecting the impact of economic sanctions and the high inflation associated with the introduction of a floating exchange-rate regime. A weakening of the current account was matched by strengthening of the financial account and consequent net capital outflows. International reserves increased by 9 billion $ compared to end-2015. This increase largely reflected price changes and repayments of foreign currency loans by large banks to the Bank of Russia. The central bank´s reserves also increased in 2017 as a backup in case of a devaluation of the US dollar.

**18: Oil prices and RUB exchange rate (2009-2017)**




Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US$ per barrel. Source: IMF.
Real effective exchange rate for RUB, CPI based; 2010=100. Source: BIS Statistics

The year 2017 for the oil market started quietly. The OPEC countries were able to implement their agreed target in February by cutting their production. Saudi Arabia cut even more than the agreed 486 tb/d quota. However, Russia reacted with a strong delay and reached the goal (-600tb/d) by the end of April 2017. The year 2017 for the oil market started quietly.

Russia and the OPEC countries decided to keep this path until the beginning of 2018 as a necessary step to reduce the oil stocks in the market and bring it back to a normal level.

The Unites States of America decided to act in the opposite direction increasing their production to 9.8 Mio barrels/day by the end of 2017. As a result, the expected effects on prices were not reached.

Also Nigeria and, above all, Libya increased their oil production, so that even during a period of weak global demand there was no stock reduction.

The oil prices fell in June 2017 on the lowest level since six months. However, the strong increase of the global demand in summer brought the oil prices again above 50 dollars.

At the end of August hurricane “Harvey” appeared in the Gulf of Mexico. The oil richest US state of Texas was extremely affected by floods. The economic life in the Houston metropolitan area came to a standstill for days. Harvey damaged several refiners in Texas and Louisiana, which pushed the US's total freight rate down to 78% in early September. The following hurricane “Irma” caused a sharp drop in fuel storage. This led to 'bullish' prospects and the oil prices in September 2017 climbed back to the level at the beginning of the year.

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