Chapter 28

Global Oil Market Developments and Their Consequences for Russia

Andrey A. Konoplyanik

Introduction

This chapter discusses the place and role of the Russian oil economy within the broader context of global oil market developments. This is why the latter has been given major analysis in the chapter. If people think about Russian energy, most of them bear in mind nowadays gas rather than oil. So the natural question arises: why only oil and not both oil and gas as the subject of analysis in this chapter? First, because it is the author's definite conviction that international oil and gas markets have been developing along common paths with some time lag, which means that it is the oil market which paves the way for the gas market's developments internationally, though, of course, key regional specificities of the latter do exist. Second, gas is a regional export good for Russia, being destined almost exclusively today and at least in the near future for Europe, through pipelines existing since Soviet times and new pipeline network, while oil is a global commodity being exported from Russia more and more by marine transportation. Moreover, even at the regional EU market, which is key for Russian exports, gas was valued in 2010, according to Eurostat, only at 9% of EU imports from Russia while oil was valued at 64% (DG Energy 2011). So oil is still a more important export good for Russia in value compared to gas. Third, the high and to a large extent artificial attention to Russian gas is mostly politically inspired, especially in Europe, after the two Russia-Ukraine gas transit and export crises in January 2006 and January 2009, and the current gas oversupply in Europe due to the economic crisis and the "silent US shale gas revolution" which resulted, inter alia, in an increased gap between lower spot gas prices and higher contract gas prices, especially of Russian gas whose contract prices have been traditionally indexed to petroleum products (Konoplyanik 2012e). Finally, the space of the chapter is limited, which means that analyses of both energies would be inevitably more superficial due to space constraints.

Russia may be an important oil producer but it effectively is and would stay as a rule/price-taker (not rule/price-maker) when it comes to global oil. This can be traced back to oil market developments and the consequences they had/have for Russia. In order to understand Russia's role in global oil, we need to understand how international markets have been developing, where they stand today, and who is responsible for that.

The Handbook of Global Energy Policy, First Edition. Edited by Andreas Goldthau.

The global oil market has been transformed from a market consisting of one single segment of physical energy (where the price movement has reflected the search for supply-demand balance in physical oil) to a market consisting of a flexible combination of two segments: both physical oil and paper oil markets. The latter segment has been quickly expanding in value and has begun to dominate over the physical oil segment. It consists of mostly oil-related financial derivatives, and oil price fluctuations nowadays reflect, in this author's view, the search for supply-demand balance in oil-related financial derivatives, and not in physical oil.

This is why Russia needs to confront the challenge of the global financial, including derivatives, markets. Since the role of Russia in the global financial market is currently close to the value of a statistical discrepancy, within the current state of global oil market development, consisting of both physical and paper segments, the role of Russia is less important today than it was in the period of existence of only a physical oil market. This is why the task of diminishing dependency on the oil sector and thus on oil price fluctuations is more essential today for Russia than in the past. And of course all political speculations like Russia becoming an energy superpower should be forgotten once and for all since they indicate wrong aims and lines for action.

The country needs to embrace a different fiscal paradigm and get away from an inefficient state-dominated production coupled with unproductive consumption and an inefficient use of its oil revenues. The major challenge for Russia in this regard is how to diminish its high and increasing exploration and production costs for oil, especially bearing in mind continuous worsening of natural conditions in new Russian oil provinces. This task becomes additionally challenging with the coming development of Russian Arctic offshore oil and gas. There is no other way for this except introducing multi-dimensional revolutionary breakthroughs in Russian oil, which can only be done by bringing innovations into all aspects of the Russian oil economy (technology, corporate management, state energy policy, investment climate, etc.). It is only capital that brings technological innovations, so the improvement of the domestic investment climate in Russian energy is badly needed as the first step. This author has been arguing for multiple investment regimes for Russian subsoil use (Konoplyanik 2012d), including legal stability and differentiated oil taxation as its necessary means.

In view of the above, the structure of this chapter is as follows. It starts with the description of the general trends of oil market development which, from this author's view, can be explained by an economics-based interpretation of Hubbert's curves. The author argues that we have been living within the left-upward wing of Hubbert's curve which explains the particularities of an oil market evolving from physical to paper oil. Five major periods of this evolution of international oil markets since 1928 till nowadays are classified. Next, the chapter describes who has determined the oil price throughout these periods, from the "Seven Sisters" to OPEC to non-oil speculators. It explains why non-oil speculators began to play the key role in the paper oil market and describes the role of the US in recent damage and expected repairs to global oil futures/commodities markets. After that, the chapter analyzes economic limits of oil price fluctuations (floor and ceiling benchmarks) and, finally, draws historical conclusions for Russia and Russian energy policy.

Hubbert's Curves and Oil Market Structures

General trends of oil market development can be explained, in the author's view, by Hubbert's well-known curve. As an energy economist, I consider that the peak of

Hubbert's curve for all non-renewable energies, incuding. oil and gas, is not a fixed parameter within the time-scale but is "a moving target." It has been moving in an upward-right direction. In regard to oil, new liquid fuels have been added to the economically justified volumes of production capacities due to progress in geology (expansion of resource base of individual liquid energies due to better knowledge of the subsoil), technology (increase in technically recoverable reserves of different liquid energies and expanding possibilities for conversion into liquid fuels of non-liquid energies), and economics (decrease in costs at all the steps of investment cycle/value chain thus increasing proved recoverable reserves and/or available quantities of prospective supplies of liquid fuels). As a result, former unconventional energies become conventional ones and the cycle of added reserves (from unconventional to conventional) has been repeated constantly due to human intellect and continuous demand for energy. Hubbert's peak in liquid fuels thus is a moving upward-right target due to conversion into conventional liquids, in addition to conventional oil, of both unconventional liquid fuels (such as, historically, offshore and Arctic, heavy oil, bituminous sands, shale oil, natural gas liquids, including from shale gas, etc.) and conversion into liquids of other energies, like "gas-to-liquids" or "coal-to-liquids" technologies (see Figure 28.1).

This is why I consider that at least within the next two global investment (technological) cycles, each one equal to 15–20 years or even more, the world will not reach the Hubbert's peak in oil, in gas, or in other non-renewable energies. The first mentioned "technological cycle" is presented by available energy technologies at every stage of the energy value chain, whose commercial implementation has been financed already and whose corresponding capital expenditures (CAPEX) need to be recouped within the current economic cycle. The second "technological cycle" would be presented by already known technologies whose large-scale commercialization has not been financed yet since they are now at the stage of R&D only, and which will succeed the existing technologies after the CAPEX in the technologies of the previous investment cycle are paid back.

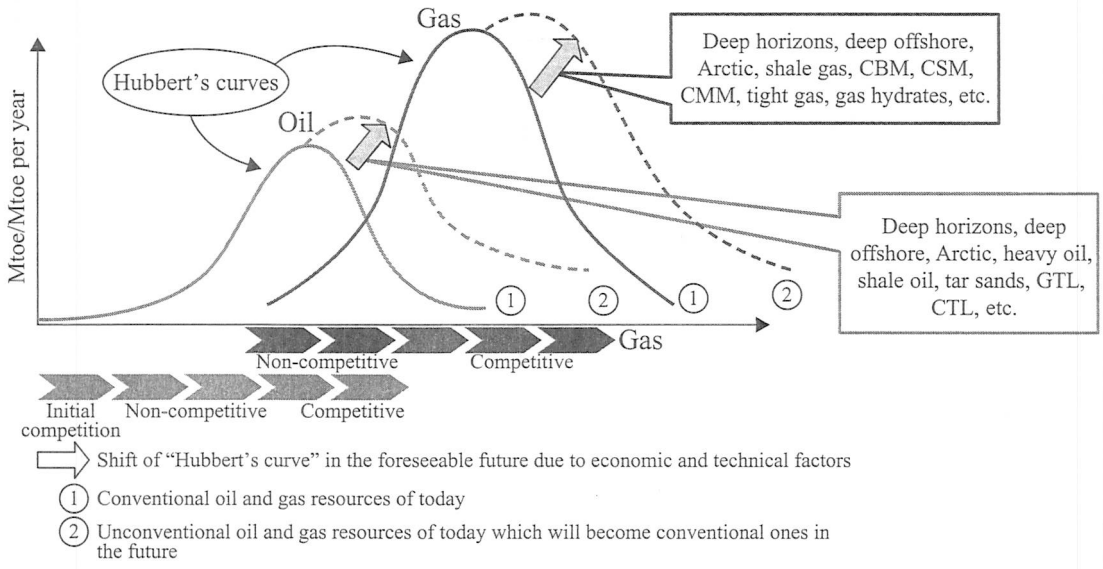

Figure 28.1 Oil and gas Hubbert's curves: upward-right supply peak movements. CBM = coalbed methane (from unmined rock), CSM = coalseam methane (from active coal mines), CMM = coalmine methane (from abandoned coal mines), GTL = gas-to-liquids, CTL = coal-to-liquids. Source: Data from Konoplyanik (2004); Dickel *et al.* (2007: 53).

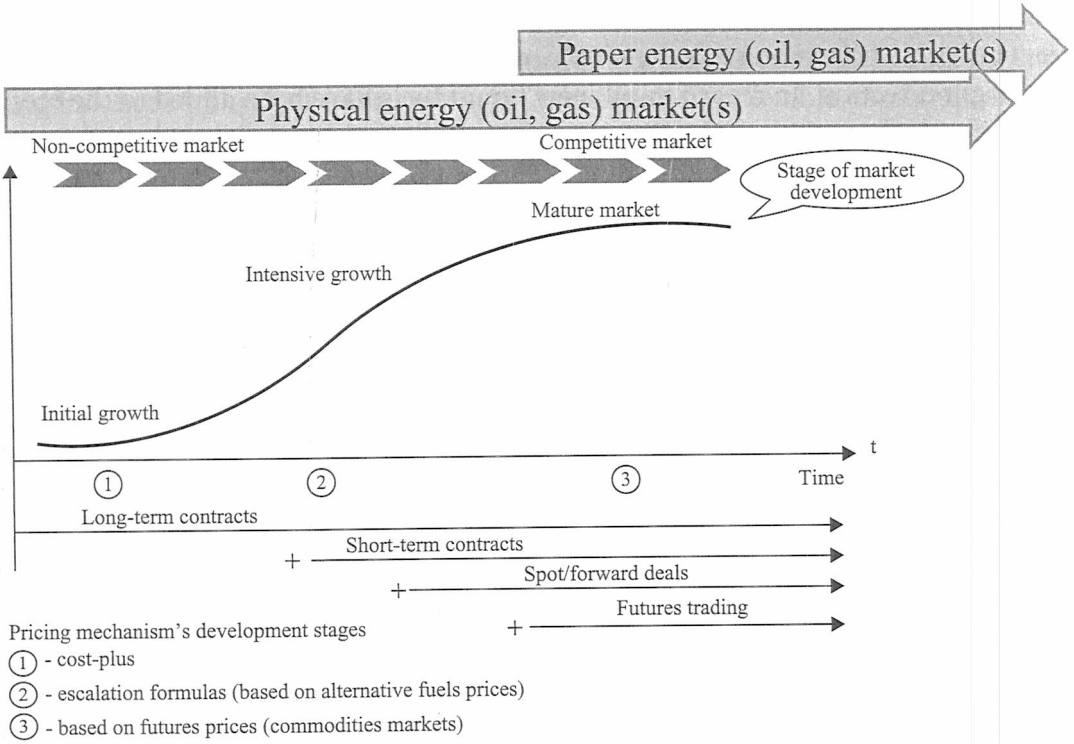

Figure 28.2 Evolution of oil and gas markets: correlations of development stages, contractual structures, and pricing mechanisms on the left (up-going) wing of Hubbert's curve.
Source: Based on Konoplyanik (2004: Fig. 28); Dickel *et al.* (2007: 60).

This is why for at least the next half century the world will continue to face energy development within the left (up-going) wing of Hubbert's oil curve.

The evolution of energy markets within the left (up-going) wing of the Hubbert's curve has its long-term tendencies and objective trends, notably (see Figure 28.2):

- Development from less competitive to more competitive energy markets,
- Development from vertical integration to term contracts and then to liquid market-places,
- Evolution of contractual structures from long-term to medium- and short-term, then to spot, then to futures trading (with U-curve development of contractual durations within the time-frame, e.g., shortening duration of the transactions at the physical market and increasing duration of the transactions at the paper market as the general trends (see Figure 28.3),
- Evolution of pricing mechanisms from "cost-plus" to "net-back replacement-value-based" and to "exchange-based" (and finally – a hypothesis – to financial derivatives-based) energy pricing.

"Competition" here means not only an increase in a number of market participants due to energy development, but a multi-faceted competition in all aspects of energy markets' functioning and development, like more competitive energy mix (no longer one single dominant fuel in the future energy balance like in the past), multiplicity/coexistence of different contractual structures and pricing mechanisms within one single economic space (on a global, regional, or a single big country level), etc. The general rule thus is: new market instruments are not implemented instead of, but in addition to incumbent ones which means that new dynamic balance needs to be reached between the new, more

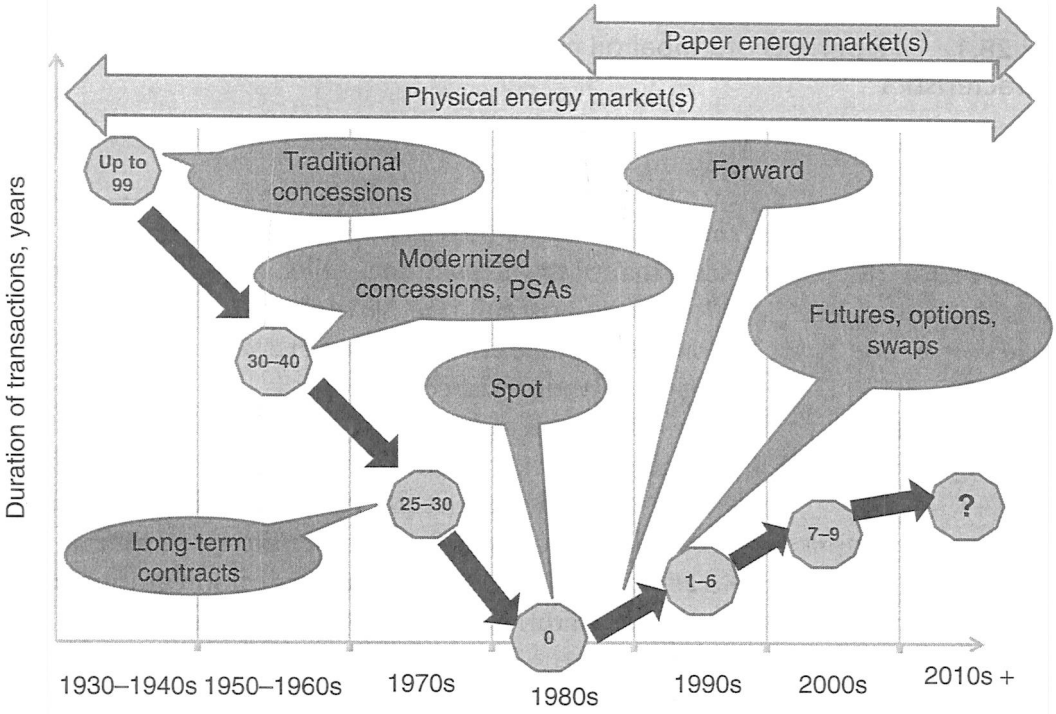

Figure 28.3 Evolution of duration of oil transactions within the time-frame.
Source: Based on Konoplyanik (2011b).

competitive combination of energies and their market instruments at each stage of energy development, at each stage of evolution of the energy markets.

Left-Upward Wing of Hubbert's Curve: Evolution from Physical to Paper Oil Markets

International oil market development through the left-upward wing of Hubbert's curve has been evolving from physical to paper oil markets (see Figure 28.2). The modern contractual structure of the global oil market and its pricing mechanisms have been developing over the past 80 years as part of the Anglo-Saxon model of open, competitive, liquid, self-regulating global markets. Within the last 20–25 years the global oil market has become an integral part of the much broader global financial market, with all key characteristics of the latter now being transferred to the world of oil deals.

Box 28.1 identifies five major periods in the evolution of international oil markets, if oil pricing mechanisms, contractual structures, and organization of market space are taken into consideration (Chevalier 1975; Dickel *et al.* 2007: 56; Konoplyanik 2000, 2004: 105, 2009–2012).

I believe that 1901 should be considered as the starting point of this process at the interregional level, when the first actually working oil concession ("D'Arcy concession") was signed in the Middle East. That was the beginning of the period of the dominance of "vertical integration" in international oil which continued until the early 1970s (see Figure 28.4). At the end of this period about 70% of international oil trade originated from concessionary agreements of the international oil companies (so-called "Seven Sisters" or "International Oil Cartel") with developing countries (mostly OPEC member states since 1960). That was the period of dominance of the major international companies in the physical oil market (a paper oil market did not exist at that time).

Box 28.1 Five periods of global oil market development and their major characteristics.

Periods	*Characteristics of the Period*
1928–1947 **(first period)**	- non-competitive physical oil market - dominance of International Oil Cartel (7 companies) - "one-base pricing" (real/virtual cost-plus) - transfer pricing/prices within vertical integration and long-term traditional concessions
1947–1969/1973 **(second period)**	- non-competitive physical oil market - dominance of International Oil Cartel (7 companies) - "two-base pricing" (real/virtual cost-plus in crude, net-back replacement value in petroleum products) - transfer pricing/prices within vertical integration and long-term traditional & modernized concessions & PSAs - 1969–1973 transition period from monopoly of 7 companies to monopoly of 13 states
1973–1985/6 **(third period)**	- non-competitive physical oil market - dominance of OPEC (cartel of 13 states) - contractual and spot pricing/prices - official selling prices (cost-plus/net-forward) within long/medium/short-term contractual structures mostly linked to spot quotations - fundamentals as key pricing factors (supply-demand balance on physical oil) - key players: participants of physical oil market - 1985–1986 transition period from net-forward to net-back crude pricing based first on net-back from petroleum products basket price at the importer's market, afterward to oil price futures quotations on key petroleum exchanges/market-places
1986–mid 2000s (approx. 2004) **(fourth period)**	- competitive combination of mature physical plus growing paper oil markets - commoditization of the oil market - pricing established at oil market-places mostly driven by oil hedgers - net-back from futures oil quotations - formation of the global paper oil market and its institutes based on the institutes of financial markets (instruments and institutions imported to paper oil market by financial managers from financial markets)

Periods	*Characteristics of the Period*
	- transition from physical to paper market predetermined unstable, relatively low, and volatile prices which has led to underinvestment of global oil industry, which created material preconditions for later growth of costs and prices - hedgers as key players (participants at both physical and paper oil market) - fundamentals still as key pricing factors
Mid 2000s+ (approx. post-2004) **(fifth period)**	- competitive combination of both physical and paper mature oil markets - further movement from commoditization to financialization of oil market - paper market dominates in volumes of trade - global institutions of paper oil market are formed which enable paper oil market to work in 7 × 24 regime - globalization, IT-technologies, broad spectrum of financial products converted crude oil into global financial asset available (accessible) to every category of professional and non-professional investors (effect of financial "vacuum sweeper") - paper oil market is an insignificant segment of global financial market - key players are non-oil speculators who have been bulling the market and have manipulated it (investment banks and their affiliated oil traders) - pricing established outside oil market-places (at non-oil financial markets) mostly by non-oil speculators - net-back from futures oil quotations & oil financial derivatives - key pricing factors are mostly financial: supply-demand balance for oil-related financial derivatives within short time-horizon

The period of dominance of the Seven Sisters in international oil was based on the Achnacarry Agreement of 1928 (Chevalier 1975; Yergin 1991) which, in my view, was a genuine managerial invention of the major oil companies, who converted their previous severe competition into long-term effective cooperation based on so-called "one-base pricing" (1928–1947) and "two-base-pricing" (1947–1969/1973) mechanisms. The ruling principles of Achnacarry effectively (from the companies' viewpoint) governed the international oil market for more than 40 years. At that period the average and marginal exploration and production (E&P) costs for oil and gas were rather low and steadily declining, since new additions to reserves (commercial discoveries) were generally provided by large and extra-large fields (economy of scale effect) located in favorable

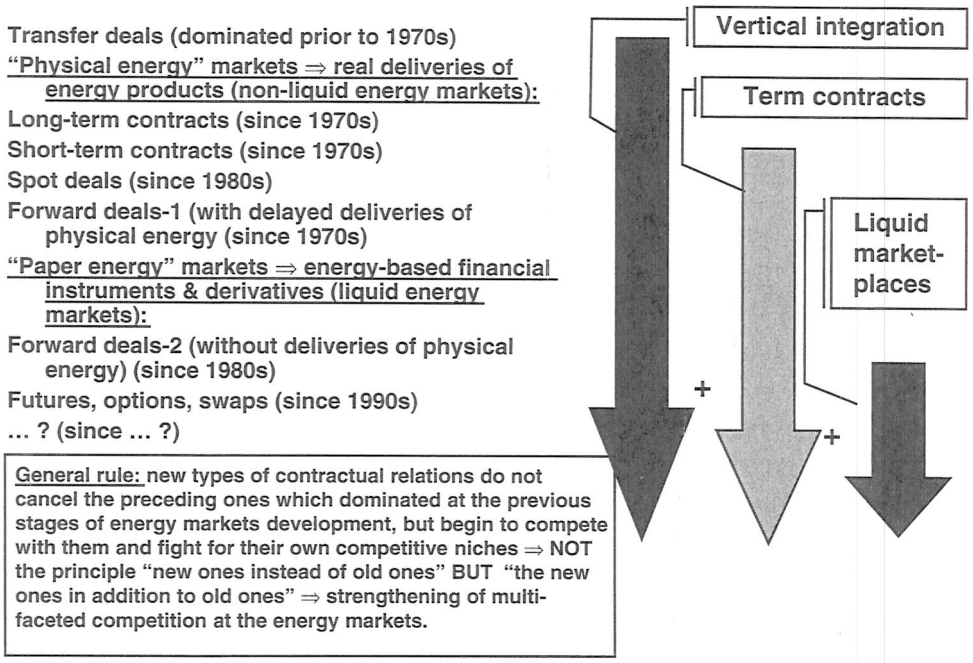

Figure 28.4 Historical evolution of contractual structure of the global oil market and its correlation with key organizational forms of market space.
Source: Based on Konoplyanik (2008a).

natural conditions and close to export marine terminals, while transportation costs to major markets (US, Western Europe, Japan) were not high and also declining due to increase in oil tankers' deadweight (another economy of scale effect). This enabled the Seven Sisters to hold prices for long at a low and stable level which stimulated an increase in oil demand while giving them (through increasing gap between falling costs and stable prices) incremental oil profits (Chevalier 1975). This was largely the "energy basis" for the Western world's post-World War II growth, especially in the "golden decade" of the 1960s.

The second genuine invention of the Seven Sisters was the introduction of the net-back replacement-value-based pricing principle in relation to the basket of petroleum products which significantly expanded demand for petroleum products and thus for oil. When Middle East oil was supplied to Western Europe it had no alternative (competitive) energies to its gasoline, diesel, jet fuel, etc. derivatives in all transportation sectors, but was facing severe competition in industry (boilers) and electricity generation from residual fuel oil (RFO) from domestic (mostly German) coal. Oil conversion rates at that time were rather low. Thus large amounts of RFO were produced which were to be utilized (marketed) in competitive segments of the market (competing with coal) in order to provide the physical possibility to produce and to market light transportation fuels (which faced no competition in their respective sectors). The genuine solution was found in implementing a replacement-value-based pricing principle in regard to RFO, linking its price by a flexible formula to levels slightly below the price of coal. Prices of light petroleum products would have been thus relatively increased so the balance price of the basket of petroleum products produced from a barrel of crude oil at the refineries of the companies of the Oil Cartel would have provided them with a necessary margin.

Subsequently, transfer deals within vertically integrated structures of the international oil companies were replaced by long-term contracts between legally independent business

entities. At first, this was due to the penetration of new production companies (so-called "independents") of industrialized nations into the markets of emerging economies, access to whose subsoil was earlier blocked by the majors. Later, it was the result of nationalization of the production assets of the Vertically Integrated Oil Companies (VIOCs) in these resource-rich developing (mostly OPEC) states and the setting up of National Oil Companies (NOCs) on the basis of upstream assets of the majors; at that time NOCs did not possess their own refining capacities abroad (Chevalier 1975; Yergin 1991).

These processes coincided with the failure of the Bretton Woods System, the abolition of the gold standard and fixed dollar rate, and the start of the growth of marginal and average E&P costs in the international oil market (due to development of marginal and non-OPEC oil reserves), which eventually made it impossible to further maintain fixed prices for oil and resulted in rapid price increases.

As the range and frequency of price fluctuations increased, and the average size of the reserves additions (new commercial discoveries) were diminishing, long-term contracts were being replaced with shorter ones. A logical end to this process was the wide use of spot transactions – at first with prompt deliveries. After that (as is usually the case in the economy) the pendulum moved in the opposite direction, and the contractual mix has further evolved from spot contracts to futures transactions, which can be considered as term-deals but of a different nature to initial long-term contracts.

At this stage of physical oil market development (third period in Box 28.1) the market was governed by a monopoly of producer states united in OPEC. In the 1970s spot quotations were the drivers for OPEC official selling prices, and spot prices were driven upward by the fears of traders for lack of production capacities and/or repetition of the oil shortages, including by embargoes (like in 1973) or due to revolutions/military conflicts (like in 1979). At this time CAPEX into diversification of international oil production and related infrastructure had not yet materialized in the creation of significant non-OPEC capacities, nor was there a decline of energy (oil) intensity in the economies of the major energy-consuming and oil-importing nations or creation of adequate commercial stocks and/or other rather time-consuming and capital-intensive measures aimed at diminishing dependence on OPEC oil. International oil trade in the 1970s was still dependent (high inertia of oil industry due to its high capital intensity) on the material structure of the market organization developed earlier by the international majors, though they had lost ownership of their producing assets abroad, which became the producing assets of the NOCs.

At this stage of evolution of the oil market's contractual structure, one producer was no longer linked to one consumer "forever" (whether within one single VIOC structure, or based on long-term contractual relations between independent business entities), as used to be the case earlier. Diversification of the infrastructure of the international oil supply system allowed buyers to count on guaranteed receipt of required volumes of crude oil even without having their own production facilities and relying only on "segmented" international chains of oil trade, which were controlled by different agents and jurisdictions, and not by the unified power of the "Seven Sisters," as was the case before the early 1970s.

The first new instruments to appear were spot contracts with deferred delivery of actual goods, secured by adequate volumes of such goods in commercial stocks (forward deals-1), followed by forward transactions under which observance of this condition was not required (forward deals-2) (see Figure 28.4). This predetermined the appearance of futures and options, which do not assume the trade in actual goods (material assets), but the trade in liabilities to sell/buy them. That gave the birth to the paper oil market.

As new instruments to buy and sell oil emerged, the contractual structure of the international oil market has been constantly changing and becoming more sophisticated and more competitive. In the course of "physical" oil market development, the term of later types of contractual deals was usually shorter than for the earlier ones, evolving from concessions (up to 99 years) to long-term contracts (from an initial 15/20/30 years to just few years) to spot deals with immediate delivery (and one month for payments). The "paper" oil market developed the other way around. Terms of futures contracts grew longer, now reaching 9 years at NYMEX for the West Texas Intermediate marker (WTI) futures trade (however 80–85% of all futures mature within the first few months). Thus, the geography expanded and the set of instruments to arrange international market space grew as well: from transfer deals (within vertical integration) via term contracts to liquid market-places.

As international oil trade developed, the gap between volume of trade and volume of physical supply grew as well. On the "physical" oil market (under term contracts), the sales volume corresponded to the volume of actual supplies. Due to the continuing switch to spot transactions and abolition of the ban on arbitrage operations in long-term contracts (such as destination clauses), buyers were able to resell specific commercial batches. As a result, so-called "daisy chains" emerged which created a gap, which expanded as forward transactions developed, in the physical market between the volumes of oil traded and physical supply volumes. Trade liquidity at this stage was limited by a small number of oil tanker sizes/deadweights. Consequently, more universal trade instruments were needed, so at this point, standardized contracts started to dominate the market.

Along with evolution of the contractual structure of the oil market, the prevailing pricing system also changed. Virtual "posted" prices (the key element of transfer pricing within the concession system of "Seven Sisters" companies with corresponding host states), which were needed to optimize tax allocation of international transactions and to transfer the profit center to the mother countries of the VIOCs, and which dominated in the international oil trade until the early 1970s, were replaced in the 1970s with official selling prices (OSP) of OPEC member-states. At first OSPs were fixed, and then they appeared to be pegged to spot quotations. They were to make up a major part of the economic (price) rent in the producing states. After that, spot quotations (selling prices on the one-off deals market) became, in effect, the only and determining price benchmark. OSPs were not linked to production costs anymore (as were earlier posted prices), but rather to growing spot quotations. This aimed to compensate OPEC countries for their lost portion of economic (resource) rent that was at the previous stages of oil market development extracted by the Seven Sisters and evacuated to their centers of profits in their mother countries.

Later on, as financial managers from international financial markets came to the oil market to create and develop its paper segments, they formed a new framework of paper oil transactions similar to transactions in international financial markets. Since then, futures quotations from key petroleum exchanges (market-places) were established as price indicators for physical trade in all contractual structures, including spot, short-term, and long-term deals.

Today, pricing under all types of contractual transactions is pegged to the price levels established at the exchange – that is to quotations for marker oil grades which give prices for other grades via a differentials system. These quotations provide for the level of net-back wellhead (or net-back to delivery point) competitive prices for individual producers. This reference is utilized both in long-term contracts, which are widely used for supplies

of crude from OPEC states and other producers via pipelines and by tankers, and in the spot transactions, which are usually made using maritime transportation.

Who Determines the Oil Price? From Seven Sisters to OPEC to Non-Oil Speculators

At the first and second stages of international oil market development, oil price in importing states was calculated by the companies of the International Oil Cartel as net-forward price, as if it was based on production costs. But it was in fact a fictional price since was based on virtual values. This became possible through the Achnacarry Agreement. The "one-base price" mechanism (1928–1947) determined any CIF price in any importing region worldwide as if oil was produced in the US (where the costs of production were the highest mostly due to dominance of stripper wells and high labor costs) and as if it was delivered from the Mexican Gulf to its final destination worldwide, non-dependent on its actual origin. The "two-base price" mechanism (1947–1969/73) has slightly adapted this formula (Chevalier 1975; Konoplyanik 2004: Figures 34–35) (see Table 28.1).

At the third stage of oil market development OPEC's OSP took the lead in pricing, based on growing (until early 1980s) spot quotations. The period of net-forward pricing ended in 1985 when Saudi Arabia finally lost its patience at being the swing producer within a non-disciplined OPEC. This country had been supporting declining (since mid-1981) oil prices by decreasing its actual production much below its OPEC quota,

Table 28.1 Evolution of pricing mechanisms in the international oil market.

Periods, Who Establishes the Price	*Pricing Formula for Physical Supplies*
(1) 1928–1947: International Oil Cartel (one-base pricing)	Net forward: $P_{CIF} = P_{FOB}$ (Mex. Gulf) + Freight fict. (Mex. Gulf)
(2) 1947–1969/73: International Oil Cartel (two-base pricing)	*To the West of neutral point:* Net forward: $P_{CIF} = P_{FOB}$ (Mex. Gulf) + Freight real (Mex. Gulf)
	To the East of neutral point: Net forward: $P_{CIF} = P_{FOB}$ (Mex. Gulf) + Freight real (Pers. Gulf)
(3) 1973–1986: OPEC	Net forward: $P_{CIF} = P_{FOB}$ (OPEC OSP) + Freight real (OPEC)
(4) 1986–mid-2000s: oil exchange 1 (hedgers → oil speculators)	Net back: $P_{FOB} = P_{CIF}$/exchange – Freight real P_{CIF} = *Exchange quotations (oil paper market)*
(5) Mid-2000s +: oil exchange 2 (non-oil speculators)	Net back: $P_{FOB} = P_{CIF}$/exchange – Freight real P_{CIF} = *Exchange quotations (non-oil non-commodities paper markets)*

P_{CIF} (net forward) – price CIF (at importer end) calculated as cost-plus; P_{FOB} (Mex. Gulf) – price FOB (at supplier end) in the Mexican Gulf area; Freight fict. (Mex. Gulf) – freight rates for fictitious oil deliveries from Mexican Gulf area to importers; Freight real (Mex. Gulf), Freight real (Pers. Gulf) – freight rates for real oil deliveries from Mexican and Persian Gulf areas; P_{FOB} (OPEC OSP) – OPEC official selling prices FOB; Freight real (OPEC) – freight rates for real oil deliveries from OPEC member-states to importers; P_{FOB} (netback) – price FOB, calculated as netback price (price CIF less transportations costs); P_{CIF} (exchange) – price CIF as exchange quotations (at consumer end); Freight real – freight rates for real oil deliveries to importers from production areas.
Source: Based on Chevalier (1975); Konoplyanik (2004, 2011c).

Table 28.2 Characteristics of spot, forward, futures, and options deals.

	Spot	*Forward*	*Futures*	*Options*
Trading	OTC	OTC	exchange	OTC/exchange
Derivatives	no	yes	yes	yes
Delivery	yes	(yes)	(no)	(no)

Source: Dickel *et al.* (2007: 81).

while other OPEC members were benefiting from violating their own quotas by regularly and increasingly exceeding them. At the end of 1985 Saudi Arabia in one step increased its production to its actual OPEC quota and netted-back its crude price to the price of the petroleum products basket at the consumer end of the chain (NYMEX). Having the lowest production costs, this country further protected its market share. This switch from net-forward to net-back pricing signaled the beginning of a new era in oil pricing based on quotations from the market-places, and quick development of a paper oil market (Table 28.2).

Till the mid-2000s the paper oil market was subordinate and linked to physical deliveries; hedgers dominated over speculators, and financial instruments were used for hedging price risks at the physical oil market. The oil price in the paper oil market was formed via trade in oil contracts. Since the mid-2000s the picture has changed: the paper oil market is now dominant and is de-linked from physical deliveries, speculators dominate, including from non-oil sectors of the global financial market. The oil price is formed today by financial instruments at non-oil paper markets via oil-related financial derivatives (Konoplyanik 2008–2012). How did it become possible?

Paper Oil Market: Non-Oil Speculators Begin to Play the Key Role

Since the late 1980s (starting with the fourth stage), the global oil market first developed as a commodities market, and only after that has it developed into a financial derivatives market. It provides today multiple options for trade both in physical goods aimed at actual delivery of liquid fuels as well as in its financial derivatives, aimed at earning profits from financial transactions without delivery of physical energy (see Table 28.2). The key roles are played by two groups of players having opposing interests: hedgers and speculators (*Oil Tabloid* 2010).

Hedgers are usually producers/consumers of physical goods who use financial markets to mitigate price risks. They appeared at the market with the reopening of futures trading in liquid fuels after almost a century since exchange trade was dominant at the very beginning of US oil production in the 1860s (Tarbell 1904). Futures trading in liquid fuels started at NYMEX with light fuel oil (LFO) in 1978 and with WTI in 1983. In 1988 futures trading started at IPE (London) with Brent crude which today represents the reference crude of approximately two thirds of internationally traded oil.

Oil hedgers are usually pegged to the "paper" oil market but they are not mobile (since they are linked to their physical assets) and do not tend to migrate outside the oil market (its "physical" and/or "paper" segments), except the cases when they go to financial market to raise debt (project) financing. Thus "paper" oil is much less important for them compared to "physical" oil.

Oil speculators (since the 1990s) are the players aiming to earn their profit from price fluctuations without physical deliveries/purchases. They work mostly within the paper oil market without major horizontal capital flows to other non-oil financial markets.

Non-oil speculators (since mid-2000s) are also aimed at pure monetary results but they work within the whole spectrum of global financial markets. They can enter the paper oil market from non-oil and non-commodities financial markets.

For two decades (mid-1980s to mid-2000s) oil futures markets were playgrounds for physical market players such as energy companies and major users of petroleum products (airline and maritime transport, utilities), seeking to hedge price risk in their own business (physical deliveries/purchases). Since the mid-2000s these markets started to attract a growing number of financial market traders such as banks and investment, hedge, or pension funds. They are completely foreign to the physical oil market, except for the cases when their affiliated oil-trading companies add synergy to their operations both with paper and physical oil.

The speculators' money usually consists of highly liquid financial resources (the measurement of liquidity, the so-called "churn" ratio, exceeds 2000 in oil futures trading both at NYMEX with WTI and at London's Inter-Continental Exchange (ICE: successor to IPE) with Brent crude), which are highly mobile and tend to migrate rapidly to those segments that ensure the highest returns at the moment. Thus today's speculators as a group of market players usually are not strongly linked to particular segments of financial markets, the paper oil market being just one of such segments to maximize returns in their global financial portfolios.

With regard to oil futures markets one should distinguish between regulated (petroleum exchanges) and non-regulated markets (over the counter or OTC). At regulated oil futures markets (NYMEX, ICE) contracts are standardized in terms of quality, quantity, date, and place of delivery, detailed data is available, and their operations are governed by the US Commodity Futures Trading Commission (CFTC) rules overseeing futures markets. Non-regulated OTC markets present non-standardized bilateral contracts. No CFTC rules are applied in OTC transactions. OTC markets are assumed to be much bigger than regulated oil trade markets, though they are not precisely measurable. But trades usually migrate to less regulated markets, when possible, to obtain undue advantage from the lack of restrictive regulation on traders (while the latter is a means of protection from too risky operations).

Hedgers represent a relatively stable group in terms of size and structure. Speculators are characterized by changing and unstable size and structure of players depending on changes in the oil and macroeconomic environments. Usually, in a relatively calm oil environment, the ratio of speculators to hedgers is 25–30:70–75. When the market grows their share can increase, and vice versa. According to the CFTC, the ratio between commercial (hedgers) and non-commercial (speculators) has changed from 75:15 in 2000 to 55:45 in 2007 (Konoplyanik 2011c). The dynamics of this process are "wavelike" depending on the inflow/outflow of new players from other segments of the global financial market to the paper oil market. In this case, both inflow and outflow of speculative capital can be of an explosive nature. This also explains, in my view, the nature of the 2008 price hike (see Figure 28.5).

Why do the 2000s represent a new stage in oil pricing? In my view (Konoplyanik 2012a), this can be explained by a number of consecutive developments. Underinvestment in the 1990s (when the oil price fluctuated between US $10 and $25/bbl) has led to cost increase since early 2000s and to decrease in spare production capacities worldwide, especially in the Middle East. Then China, India, etc. accelerated demand growth since 2003, while some major consumers (US, China) started building strategic petroleum reserves. The US Commodity Futures Modernization Act (CFMA) adopted in December 2000 triggered an inflow of a huge amount of relatively cheap money to the oil paper

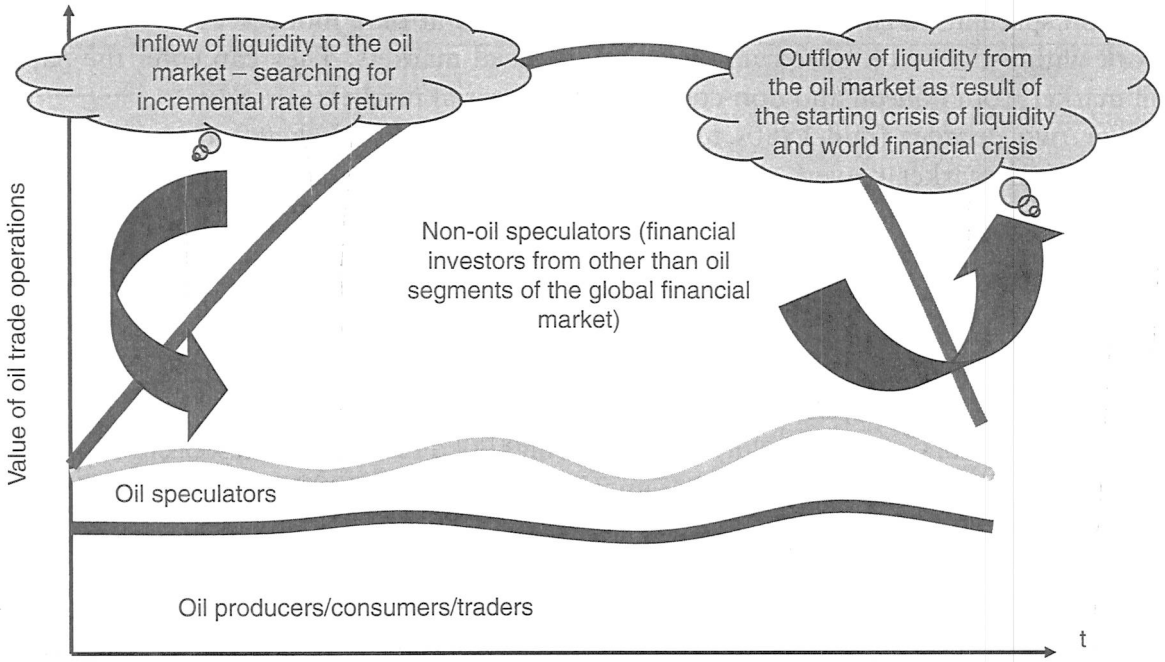

Figure 28.5 Role of non-oil speculators (global "financial investors") in forming a "price bubble" in the global oil market, 2007–2008 (principal scheme).
Source: Konoplyanik (2009b, 2010, 2011b, c, d, 2012a, b, c).

market, stemming from US pension funds and insurance companies who were prohibited earlier from investing in risky segments such as paper oil.

At the same time evolution of commodities (exchange, futures) trade has triggered a change in quality and character of the exchange. Internet and IT developments have transformed trading floors into electronic marketplaces (ICE, the former IPE, was the first to end voice floor trading). This has also led to "robotization" of electronic trading, an increase in amount of traders, and significantly eased market entry for new players.

The decrease of USD exchange rate (stimulated by increase of US oil imports leading to increase in trade and budget deficit) has led to the appearance of index oil funds, which have expanded possibilities for financial investments in oil-related instruments to hedge against fall in USD exchange rate. Paper oil markets began to be considered a safe haven against a falling USD. Globalization of financial operations has eased horizontal financial flows from/to financial (non-oil) sectors into/from the paper oil market. This ease of financial investments into the oil market (multiplicity of oil-related financial products creating a chain of derivatives on derivatives) simplified access to paper oil for the middle-income and non-professional financial investors. The "Belgian dentist" has appeared as a key private (non-institutional) financial investor on the paper oil market.

Oil-linked derivatives of index funds became a new class of financial assets aimed at compensating, inter alia, the fall in USD exchange rate. Finally, this led to switch of oil pricing from the physical market (based on supply/demand of physical oil) to the paper market (based on supply/demand of oil-related financial derivatives). This, in my view, explains why the oil-price bubble was so quickly blown up in 2007–2008, and not less abruptly blown down in 2008–2009.

US Role in Damaging and Repairing Global Oil Futures/Commodities Markets

A special word needs to be said on the US role in the turbulence of the global oil market in the 2000s. In my view (Konoplyanik 2011c), this role is two-fold. On the one hand,

I see a "damaging" role in the past: the approval of the CFMA in December 2000 left commodity transactions largely outside the reach of the CFTC and thus left companies with minimal (much lower than beforehand) regulatory obligations from too risky operations. On the other hand, I envisage a future "repairing" role of the US, alleviating its own earlier (destructive in their material results for paper oil market) actions: the Wall Street Transparency and Accountability Act (Dodd-Frank Act) enacted by US Congress (with effect from July 14, 2011) effectively replaces CFMA and makes it illegal for producers to execute trades outside forthcoming and more restrictive CFTC rules.

What were the major consequences of the adoption of the CFMA? It upgraded "excessive" speculative activity (which according to some expert estimates (Stowers 2011) could inflate oil prices up to 30%) and price manipulation in bypassing the CFTC and its regulatory reach. This led to an increase in the amount of speculators in the oil market (from 20% to 50–80%) compared to hedgers and to growth in quantity of contracts not covered by the anti-speculative limitations of the CFTC. The latter was possible due to derogation from the Commodity Exchange Act (CEA) and CFTC jurisdiction of US contracts at foreign exchanges/market-places (so-called "London loophole") and swaps (so-called "swap loophole": contracts on price differentials). CFMA stimulated increase in OTC trade in oil derivatives, outside the reach/control of the CFTC. It led to downgrading of barriers for key holders of long relatively cheap money (e.g., pensions and insurance funds) on investing into risky financial instruments (Medlock and Jaffe 2009). Finally, bidirectional growth in speculative activities (increase in "amount of speculators" multiplied by increase in "amount of available instruments for speculations") has moved speculators from "price-takers" into "price-makers" in paper oil.

What are the expected consequences of adoption of the Dodd-Frank Act? Every trade is now likely to fall under jurisdiction of the CFTC and should be evaluated to determine if it has Dodd-Frank regulatory obligations. All swap transactions must be cleared with only a few exceptions, while definition of "swaps" under Dodd-Frank is expansive: generally, "swaps" are financial products that exchange fixed for floating prices, and floating for fixed prices, but the CFTC takes a much wider view of swaps to include just about any transaction that has a price or event contingency, so under Dodd-Frank, if a producer cannot actually deliver a product, it is considered a swap and must be cleared. Any trade market players enter into may have Dodd-Frank implications. According to one of the authors of the law, (former) US Senator Chris Dodd, "we obviously needed transparency in the OTC derivatives market to restore consumer confidence and investor confidence... If we tried to pass this bill today, it wouldn't happen. It literally took the events of 2007 and 2008 to get it done. In the absence of such a crisis, the bill wouldn't have passed" (Allott 2011; Stowers 2011).

The Dodd-Frank Act can diminish speculation and decrease its inflating effect on oil prices, but the very fact of existence of the paper oil market as a tiny part of global financial markets (a "rule of thumb" comparison of volumes of global trade in physical oil, paper oil, commodities, and financial markets can be estimated as 1:3:10+:100+ (Konoplyanik 2009b, etc.), though in reality the gaps can be even bigger) and the global character of financial transactions within a computerized world still leaves the global oil market operating within a time of high price volatility. The natural question arises: but at what levels?

Economic Limits of Oil Price Fluctuations (Floor and Ceiling Benchmarks)

It is possible to identify, at least in theory, a corridor of economically justified fluctuations of oil prices. The floor level would be determined, in my view, by the upper of the two flexible parameters: (a) the long-run marginal costs (LRMC) of liquid fuels, i.e., long-run

costs of currently producing fields and of those that should compensate for their natural decline and for demand growth in liquid fuels, and/or (b) break-even price of non-deficit budget of Saudi Arabia (Konoplyanik 2011a, d). The ceiling level would be determined by the lower of the two flexible parameters: (c) replacement values at the consumer end of the alternatives to liquid fuels (competitiveness of liquid fuels with other energy sources), and/or (d) purchasing power of the world economy for energy in general and oil in particular (competitiveness of energy/liquid fuels with other production factors – labor, capital, etc.).

There are a number of studies on the current production costs worldwide (e.g., Takin 2008) which calculate the current level of production costs. In my view, the bottom line for oil quotations (not the point-wise lower limit, but the average for the period determined by the payback period of an oil production project) should not be lower than the LRMC for existing and prospective reserves adequate to cover prospective demand for liquid fuels during such investment cycle period. And the spread in estimates of such costs is rather large. Moreover, such estimates are quite controversial (Konoplyanik 2009a, b, 2011a). IEA (2008) estimates LRMC for liquid fuels at US $110/bbl (calculations based on 580 major fields with cumulative reserves of 10 trillion bbl). CSM/PUCC/IIASA estimate such LRMC at $35/bbl ($ based to 2006) through 937 discovered and undiscovered oil and gas provinces with cumulative reserves of 32 trillion bbl (Aguilera *et al.* 2009). UK Energy Research Centre estimates LRMC at $90/bbl ($ based to 2000) for cumulative reserves of 19 trillion bbl (Sorrell *et al.* 2009).

The controversy over these figures is based on the fact that the general trend, existing before the end of the 1960s/early 1970, when average and marginal E&P costs were going down, has changed to its opposite since the beginning of the 1970s (Chevalier 1975; Kurenkov and Konoplyanik 1985). This means that the broader the spectrum and the higher the volume of reserves involved in LRMC assessment, the higher should be the level of LRMC, which is not the case if the three above-mentioned studies are compared with the three times difference ($35 vs. $110/bbl) between the marginal scenarios.

Moreover, not all lower-cost reserves could be involved in commercial exploitation since a number of such low-cost oil producers have been carrying out a policy of restricted access to their natural resources (though this is their sovereign right according to UNGA Resolution N 1803 as of December 14, 1962 on "Permanent Sovereignty over Natural Resources" and Art. 18 "Sovereignty over energy resources" of the Energy Charter Treaty). This means that LRMC will be even higher that just their technical assessment shows (see Figure 28.6).

But an acceptable threshold for diminution of oil price is different for the companies and the producing states: while it is LRMC for the companies, for the states it is a break-even price for their non-deficit budgets. In my view, it was the recent break in correlation between actual oil price and break-even oil price of Saudi Arabia that gave birth to the debate on the "fair oil price" and appeals about its growing level. I consider that it is the Saudi Arabian non-deficit budget break-even price that began to play the role of bottom line in international oil price fluctuations.

According to the London-based Centre for Global Energy Studies (CGES 2011; Drollas 2011), the OPEC basket price that was needed by Saudi Arabia to cover its planned expenditures has been growing steadily in line with but at levels much below the actual oil price from the early 2000s until 2009, since when the Saudi break-even price continued to grow but the actual oil price has sharply fallen below this break-even level, which was equal to US $59/bbl in 2008 (see Figure 28.7). And it was since 2009 that Saudi oil minister Al-Naimi began to repeat that a "fair" oil price (or its "optimal diapason") should be first US $60–70, then $70–80/bbl – clearly at levels higher than the non-deficit

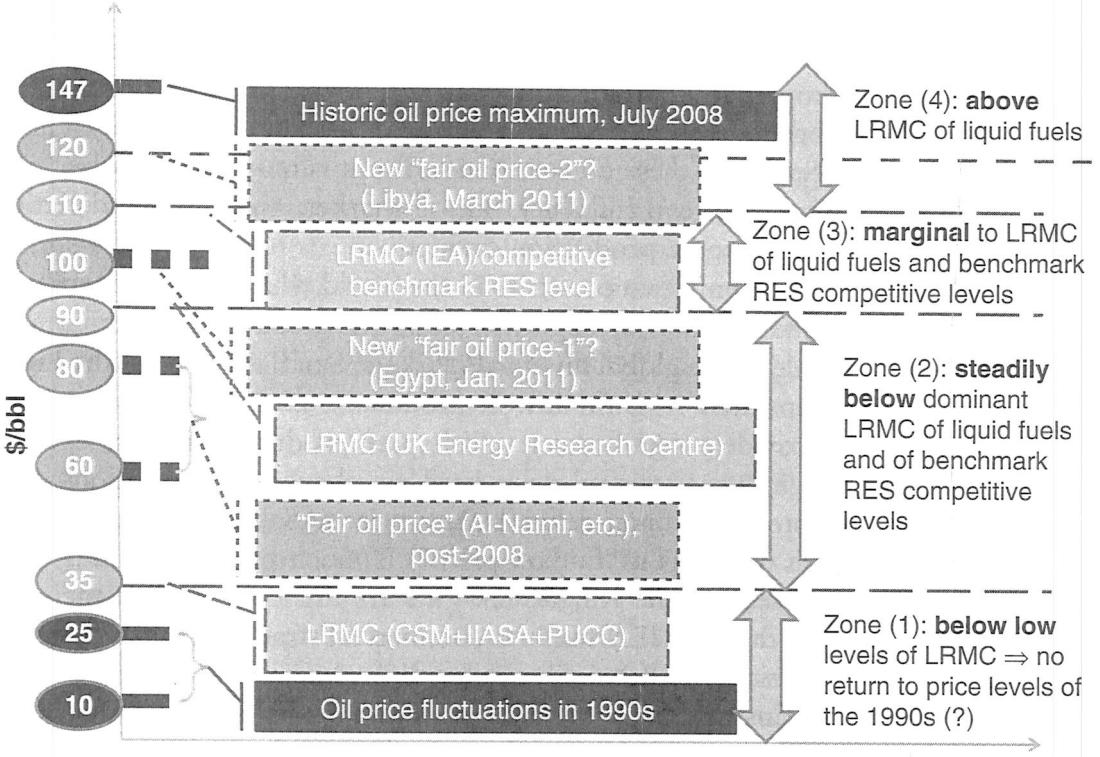

Figure 28.6 Crude oil: prices and costs, expectations and facts. LRMC = Long run marginal production costs of liquid fuels, RES = renewable energy sources.

break-even oil price and much higher than the actual oil price at that time. That has a definite influence on the market.

As Noe van Hulst, former Secretary General of the International Energy Forum (IEF), said in his presentation at the Global Commodities Forum in Geneva in January 2011, "when Saudi Arabia speaks, market listen." And the oil market not only has listened, but has been repeating the views of Al-Naimi and others at different forums, making them step by step a general view of the market participants, like at the St Petersburg Economic Forum in June 2009, when an opinion poll of senior managers of Russian and international oil companies in the presence of the President of Russia showed their almost unanimous support of the corridor US $60–70/70–80/bbl, which was in fact Al-Naimi view. In 2011 CGES has calculated the break-even price of Saudi oil first to be

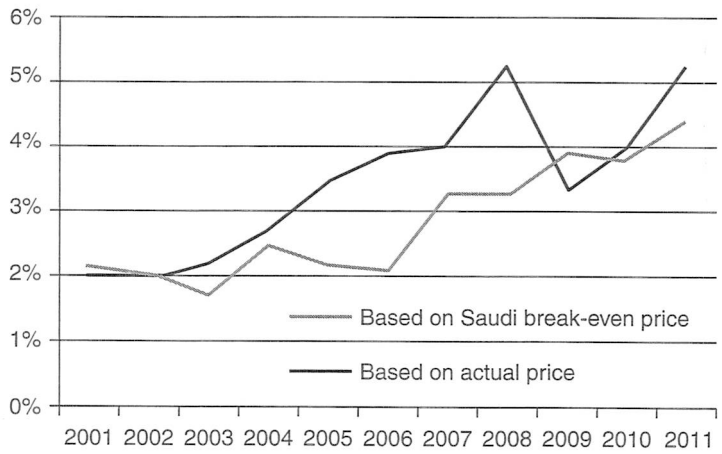

Figure 28.7 The share of crude oil in global GDP based on actual price and on break-even price for Saudi Arabian non-deficit budget.
Source: CGES (2011).

around US $83/bbl, then upgraded it to $90/bbl as result of "Arab Spring" events (and assumed that it might even be higher up to $100/bbl), while other OPEC members needed even higher prices (Konoplyanik 2011a); and since the Arab Spring these break-even prices should be inflated even further in the medium term by the intention not to permit a widening of the Arab Spring in these oil economies. But it is only Saudi Arabia, alone among other OPEC states, that can influence the oil market, and in both directions, with its production levels and spare production capacities.

Moreover, today there are only two countries in the world which can really influence the global oil market: Saudi Arabia, through its role in the global physical oil market, and the US, through its role in the global financial markets. Saudi Arabia has the highest level of oil production capacities with the lowest production costs worldwide and it is the only state that can provide a significant level of spare production capacities whose artificial fluctuations can influence the oil price level via changing expectations of the market players. And the break-even non-deficit budget price of Saudi Arabian oil (which has been presented to the world as a "fair oil price") is much higher than this state's oil production costs, thus leaving the Kingdom with a robust lever for influencing the market. I do not consider that the IEA with its commercial/strategic stocks policy has collective power at the physical market similar to Saudi Arabia's.

The US and its financial institutions has similar power on the paper oil market through a multiple number of instruments due to the US role in the world economy and financial system: since the trilateral US-UK-France agreement of 1936, oil pricing is set in USD and thus most of the oil-related financial derivatives are also priced in USD. Since the US has the monopoly on dollar emission, it is de facto controlling the global recycling of petrodollars. And this stands on the fundament of US economic power: while the country accounts for 25% of global GDP and for 30% in global financial assets, the US exchanges cover 60% of global capital stock turnover and more than 50% in global derivatives markets; the dollar accounts for two thirds of global foreign exchange reserves (Mirkin 2011). According to the Center for Energy Studies, Institute of World Economy and International Relations of the Russian Academy of Sciences, 95% of the derivatives market is controlled by four major US investment banks: JP Morgan Chase, Citibank, Bank of America, and Goldman Sachs (Zhukov 2011). Moreover, as was further argued by the Center (Zhukov 2012), the US benefits from high oil prices rather than from low oil prices, which nowadays influence negatively its economy. According to this logic, two major players at neighboring segments of the global oil market are interested in supporting relatively high, rather than low, oil prices. But below which level?

On the one hand, the upper level of oil price fluctuations does not need to exceed in the long run the evolving level of production costs of oil alternatives in the end-user segment. LRMC of oil alternatives (its replacement fuels) is considered to be equal to US $110–120/bbl (IEA 2008; Kanygin 2010). On the other hand, oil price growth cannot overcome purchasing power of the consumers, their readiness to pay for oil (energy costs to income). According to Bashmakov (2006, 2007), "sustainable variations of energy costs to GDP ratios are limited to 8–10% for the US and 9–11% for the OECD... After the upper limit is reached or exceeded (1949–1952, 1973–1985, and starting from 2005), the ratio drops, and after the lower limit is approached (1998–1999), it, on the contrary, grows." Taking into consideration evolution of structure and efficiency of energy consumption and dynamics of energy prices this means that an acceptable level of oil cost to global GDP should be within 5% limits. At the modern stages of the oil market's evolutionary changes within the period of exchange pricing, the oil cost to global GDP ratio was below 3% within the fourth period and 3–5% within the fifth period.

According to Renaissance Capital (2011), in constant 2010 USD, the average price of oil in 2008 ($98.5/bbl) corresponded to the price of oil in 1980 ($97.5/bbl), but oil burden (nominal cost of oil/nominal GDP) in 2008 (5%) was much lower than in 1980, when it exceeded 7% (the result of intensive structural changes of the world economy toward partial evacuation away from oil and due to overall increase in energy efficiency).

In the given circumstances how one can assess the speculative oil price bubbles and extremely high (in comparative terms) LRMC estimates by the IEA? Can they be considered as preparation for the period of even more costly oil than today – or for the departure away from oil? At the 20th World Petroleum Congress (December 2011, Doha, Qatar) Maria van der Hoeven, IEA Executive Director, indicated an oil price equal to $120/bbl in real terms by 2035. This figure is higher than today's LRMC estimates of non-conventional liquid fuels according to the IEA itself and LRMC of "traditional" (already commercialized) renewable energy sources ($110/bbl). This looks like an unspoken alliance of the IEA and oil speculators.

Why such an assumption? IEA forecasts de facto argue for a non-speculative character of the 2008 price peak; as such they have been placing a theoretical base under expectations of the stable high oil price. Speculators, playing bullish, have been in practice preparing the world economy for a new stage of development by bringing the world to a cross-roads: whether to continue with expensive oil or whether to deviate from the oil economy. But is the latter really possible, taking into account the huge amount of all related costs? What does a three-digit level of oil prices mean for the world, holding global oil burden within the 5–7% corridor? Today's 5% means expensive oil but a continuation of the oil era. If the price will go higher toward the 7% oil burden, that might mean the beginning of the end of the oil era. As Sheikh Yamani used to say, the Stone Age ended not because the stones ended. So I would not foresee in the long run a growth in oil price to the figures bringing the oil burden (nominal cost of oil/nominal GDP) to the critical 7% level. The interest of all market participants will be to hold oil price in the low part of zone (3) or at the edge of zones (3) and (4) in Figure 28.6.

Historical Conclusions for Russia

What consequences does the above discussion have for Russia? In the 1960s the USSR restarted large-scale oil exports to the West. In the 1970s, when oil prices increased significantly, the USSR saddled up this growth. The growing oil rent went mostly to support military parity with the West, it was not invested in R&D aimed at revolutionary technological progress outside military industries. Growing dependence on oil revenues resulted in the impossibility of overcoming the collapse in oil prices in the mid-1980s. To substitute diminished oil revenues from external markets (and lost revenues from the internal market as a result of the "dry law" campaign) and to support the "perestroika and uskoreniye" policies with simultaneous intent to support military parity with the West, the USSR began raising more and more foreign loans, resulting in deep state debt. The country became bankrupt. And finally the USSR was dissolved.

It seems that the story of the 1970s has been repeated in Russia in the 2000s to some extent. Moreover, it seems that today's role of Russia in the global oil market (combined physical plus paper market) is less significant than it was in the past, prior to the development of the paper oil market which creates additional problems (Konoplyanik 2012c).

In the past, during the second and third stages of oil market development (period of sole existence of the physical oil market), USSR oil production volumes did not play

a major role in international oil trade and the state of the market. The USSR at that time was not a price-maker, but a price-taker on the international oil market. That was due to a number of objective reasons which diminished the comparative competitiveness of Soviet oil. The USSR oil provinces were unfortunately located far away from the major importing states which predetermined long-distance pipeline transportation to the markets; production costs were high due to harsh conditions in the oil-producing regions; the USSR lacked reserve production capacities, but even in case of their availability there were no possibilities within the centrally planned economy for conjunctural price-forming maneuvers with these capacities.

Today, at the fourth and fifth stages of oil market development (within the periods of dominance of paper oil markets), Russian oil production still does not play a role in defining the state of the oil market. Russia is again the price-taker and not a price-maker in global oil. In this regard it cannot be considered (and it is not necessary to try to do so), as an "energy superpower." All the factors valid earlier for the USSR (geography, costs, lack of reserve capacities) are valid today for Russia, coupled with – which is most important in the period of paper oil markets – an underdevelopment of the domestic financial system.

Russia is almost not present in the global derivatives market (including markets of oil financial derivatives). Can it play any significant role there today due to the state of development of its domestic financial market? The country is characterized by an absence of domestic oil exchanges (commodities market) due to its high level of monopolization of domestic physical oil transactions (long-term result of privatization model), an imperfection and infancy of the financial system, a long-term absence of the "quality bank" for oil, etc. International experience (including from global oil markets) shows that there is a specific sequence of actions to be taken with the aim to develop a paper market: first an effective financial system needs to be created which will be the basis for development of exchange/futures trading, and not vice versa.

When in 2009 Saudi Arabia began to promote internationally the concept of "fair oil price" (supporting the price level which was needed to provide a non-deficit budget for the Kingdom), a number of states supported this campaign, especially those where the price of non-deficit budget oil was also as high or even higher than in Saudi Arabia. Russia was among those countries. When the oil price began to grow at the beginning of the 2000s, Russia, being a price-taker and not a price-maker, found itself in the position of a free-rider on the wave of such growth. At the beginning of that decade my country carried out a rather conservative budgetary policy, holding the export non-deficit budget oil price at about US $20/bbl, within the range of price fluctuations in the previous decade of the 1990s. But later on Russia has rather quickly saddled up this growth and the level of its non-deficit budget has rocketed up, accelerating the actual oil price increases. Within four years the non-deficit Russian budget oil price increased twice and reached $40/ bbl in 2007, and then in one year it made the same jump as in the previous four years, up to $60/bbl (see Figure 28.8).

This inertia was rather difficult to stop and the avalanche-like deficit-free-budget price increase has continued up until now. According to the estimates of O. Buklemishev and N. Orlova (even though they may be slightly different in details) Russia's deficit-free budget oil export price has been constantly exceeding the actual export price since 2009. And there is definitely something similar between this long-lasting trend in Russia (in the fact that the deficit-free budget oil price exceeds the factual export price) and the situation that Saudi Arabia had faced only once in 2009 when the country's deficit-free budget price became lower than the actual export price (see Figure 28.7). But here is where all the similarities between Russia and Saudi Arabia end. The main difference is

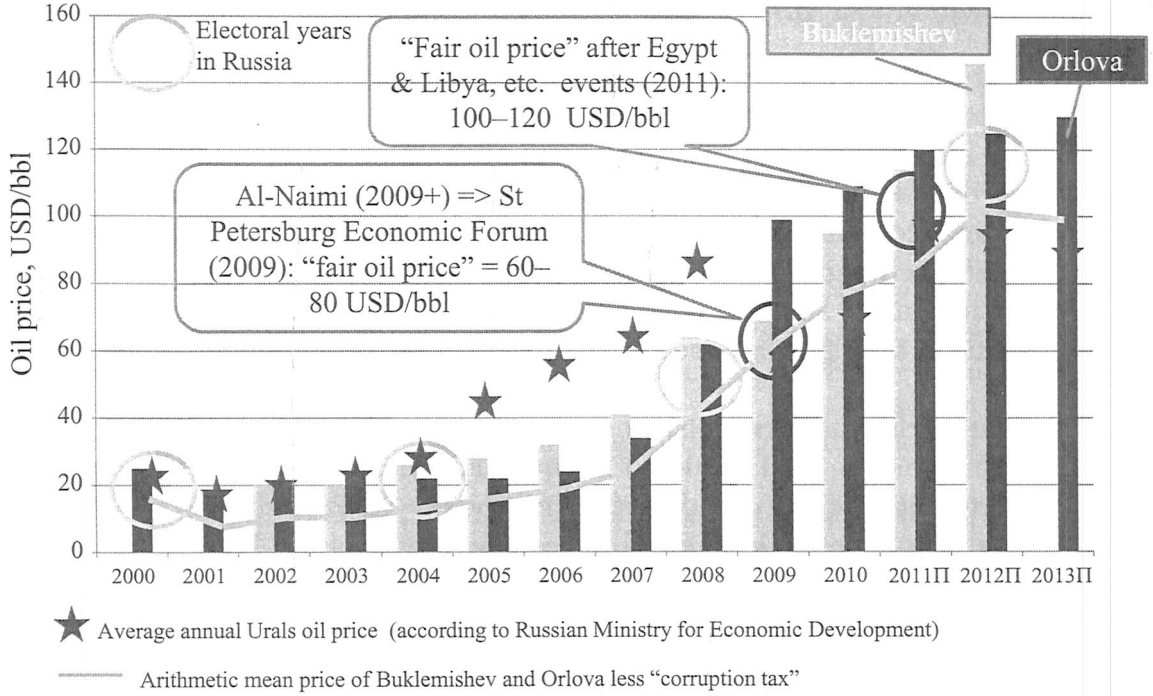

Figure 28.8 Oil price balancing the Russian budget (with and without "corruption tax") and "fair oil price."
Source: Konoplyanik (2011a). Figure created by the author based on data from presentations of O. Buklemishev and N. Orlova at the conference "20 Years after the USSR. What's Next?" (Moscow, June 9, 2011), who have kindly provided their data to the author.

that Saudi Arabia disposes of leverage to influence the world oil market (by its policy of maintaining oil production capacity reserves) while Russia doesn't (and not only because of its lack of capacity reserves).

More than that, easy life spoils people: the price growth makes them accustomed to a stable income from oil export which in turn creates inefficient national production, unproductive consumption, and inefficient usage of the resources from oil export that exceed in fact this growth. Russia has been suffering from this disease for so long that it may as well be considered chronic. And I don't think the situation has changed for the better, especially regarding the state procurement programs. The past Russian President (D. Medvedev) in desperate anger laid open to the public the figures of corruption/stealing in the country: more than 1 trillion rubles per year out of 5 trillion rubles per year in government purchases for public services, which is equivalent to a 20% "corruption tax" (Konoplyanik 2011a).

It is obvious that the deficit-free oil price correlates with the electoral cycle, i.e., in the years when the elections are held it happens to be a little higher than the trend. This is how it was in 2000, 2004, and 2008 (see Figure 28.8). But, as shown by O. Buklemishev and N. Orlova, whose figures are used in this chart, during this electoral cycle the country has been living beyond its means with the deficit-free budget price being too high. And it is expected that in 2012, which happens to be electoral as well, it will jump even further.

Supposing that the corruption tax in all the government sector does not exceed the "modest" 20% level and that it is possible to eliminate it, the deficit-free budget oil price will be 20% lower (as average in Buklemishev and Orlova's estimates). Nevertheless, this means that within the present electoral cycle the price on non-deficit Russian budget oil will still be higher compared to the level of actual Urals oil export prices (see Figure 28.8).

Russian Energy Policy: Adaptation Is Needed

It seems that the Arab Spring events happened to be extremely timely in the context of accelerated growth of the non-deficit budget petroleum price in Russia (Figures 28.6 and 28.8). But the efforts of Saudi Arabia to maintain the so-called "fair" petroleum price on a higher level than the Kingdom's non-deficit budget price are still not enough to balance Russia's budget. According to Renaissance Capital (2011), to get the share of oil in world GDP to the extremely high 7% level of the 1980s, crude prices in 2010 should have been US $152/bbl instead of $80/bbl, i.e., exceeding by only 3–4% the non-deficit budget price for Russia in the electoral year 2012 as in Buklemishev's estimate ($145–147/bbl, Figure 28.8).

The current world crude prices that correspond to the "new" deficit-free budget price of Saudi Arabian oil for 2011 ($90/bbl) are quite acceptable to the world economy as they fit perfectly into the 5% corridor of the oil costs in GDP. But the world economy won't be able to survive the level of oil prices that would ensure Russia a deficit-free budget in its electoral year.

Any country can influence the deficit-free budget oil price level by its government expenditures policy, making it increase (by raising government expenditures, building up the government share in the economy, and boosting the inefficiency of petrodollar usage by the so-called "corruption tax") or decrease (cutting government expenditures, mostly by lessening the government share in the economy and raising the efficiency of public funding, inter alia, by reducing the level of corruption).

By a well-thought investment policy the host state can influence downward the marginal costs level, stimulating investment activities of the oil companies. Capital is the carrier of innovations. That is why only direct investments (implementing the most modern and efficient technologies) can ensure control of the increase or decrease of current and marginal costs in the long term. This makes it possible for the companies to survive a decrease in oil price without critical losses, as with the help of a well-thought state tax policy (which must be flexible and adaptable in the first place), the oil companies will make profits regardless of the oil price level as long as it is maintained higher than its absolute bottom level.

A few concluding points can be mentioned in this regard. The current low efficiency in petrodollar use creates excessive demand pressure on the oil economy. It is currently combined with a non-optimal fiscal-oriented investment climate in the subsoil use, based on flat-rate mineral resource production tax and export customs duty. An optimal investment climate requires a combination of legal stability and a flexible and adaptable tax regime which has nothing to do with individual concessions given to individual projects by individual decisions of the state authorities in a "handy" manner. Moreover, oil and gas should be considered as the sixth innovative cluster of the Russian economy. But that's the subject for another story, whose major elements the author has been presenting in his other writings (Konoplyanik 2012d, etc.), available at his website at www.konoplyanik.ru.

References

Aguilera, R. F., R. G. Eggert, C. C. Lagos, and J. E. Tilton. 2009. Depletion and the Future Availability of Petroleum Resources. *The Energy Journal* 30, 1: 141–174.

Allott, Gordon. 2011. Welcome to Wall Street's Briar Patch. *Oil & Gas Financial Journal*, June: 6, 8–9.

Bashmakov, Igor. 2006. Цены на нефть: пределы роста и глубины падения [Oil prices: limits of growth and the depth of fall]. Вопросы экономики [*Economic Questions*], 3.

Bashmakov, Igor. 2007. Three Laws of Energy Transition. *Energy Policy* 35: 3583–3594.

CGES. 2011. *Arab Spring Will Impact Oil Prices in the Long Term*. London: Centre for Global Energy Studies, Monthly Oil Report, August.

Chevalier, Jean-Marie. 1975. Нефтяной кризис [Oil crisis], transl. into Russian, Москва: Мысль [Moscow: Mysl].

Dickel, Ralf, Tim Gould, Gurbuz Gunul, *et al.* 2007. *Putting a Price on Energy: International Pricing Mechanisms for Oil and Gas*. Brussels: Energy Charter Secretariat.

DG Energy. 2011. *EU-Russian relations: The Role of Gas*. Brussels: European Commission, Directorate-General for Energy (1st meeting of EU-Russia Gas Advisory Council, Vienna, 17 October 2011).

Drollas, Leo. 2011. *Saudi Arabia's Target Oil Price in 2011*. London: Centre for Global Energy Studies.

IEA. 2008. *World Energy Outlook 2008*. Paris: International Energy Agency.

Kanygin, Petr S. 2010. Экономика освоения альтернативных источников энергии (на примере ЕС) [Economic development of alternative sources of energy (case-study of the EU)]. Dissertation for Doctor of Economic Sciences, Moscow, Institute of Europe, Russian Academy of Science, 2010.

Konoplyanik, Andrey. 2000. Мировой рынок нефти: возврат эпохи низких цен? (последствия для России) [The world oil market: return of the era of low prices? (Consequences for Russia)]. Moscow: INP, Russian Academy of Science.

Konoplyanik, Andrey. 2004. Россия на формирующемся Евроазиатском энергетическом пространстве: проблемы конкурентоспособности [Russia in the emerging Eurasian energy space: problems of competitiveness]. Moscow: Nestor Academic Publishers.

Konoplyanik, Andrey. 2008a. Повышение конкурентоспособности России на мировых энергетических рынках через инструменты Энергетической Хартии [Improving the competitiveness of Russia on world energy markets through instruments of the Energy Charter Treaty]. Speech at plenary session "Global Energy Security" 8th St Petersburg International Energy Forum, April 8–10.

Konoplyanik, Andrey. 2008b. Нефтяной рынок необходимо реформировать [The oil market needs to be reformed]. *Vremia Novostey*, December 12.]

Konoplyanik, Andrey. 2009a. О причинах взлета и падения нефтяных цен [On the causes of the rise and fall of oil prices]. Нефть и газ [Oil and Gas (Ukraine)] 2: 2–4, 6–8, 10–11.

Konoplyanik, Andrey. 2009b. Кто определяет цену нефти? Ответ на этот вопрос позволяет прогнозировать будущее рынка ≪черного золота≫ [Who determines the price of oil? The answer to this question allows predicting the future market of "black gold"]. Нефть России [Oil of Russia] 3: 7–12; 4: 7–11.

Konoplyanik, Andrey. 2010. *Who Set International Oil Price? A View From Russia*. Dundee: Centre for Energy, Petroleum & Mineral Law & Policy (CEPMLP), University of Dundee. Reprinted in *Oil, Gas and Energy Law* 9, 1, January 2011.

Konoplyanik, Andrey. 2011a. В поисках ≪справедливости≫. Существует ли обоснованная цена на ≪черное золото≫ и каков может быть ее уровень? [In search of "justice." Whether there is a reasonable price of "black gold" and what may be its level?]. Нефть России [Oil of Russia] 10: 42–45; 11: 11–16.

Konoplyanik, Andrey. 2011b. Эволюция механизмов ценообразования на мировом рынке нефти: проблемы и риски движения от рынка физической к рынку бумажной энергии [Evolution of pricing mechanisms in the global oil market: challenges and risks of moving from a physical market to a paper energy market]. Speech and review presentation at plenary session 3, First Russian Petroleum Congress, Moscow, World Trade Center, March 14–16.

Konoplyanik, Andrey. 2011c. Energy Markets, Financial and Monetary Systems. Presentation at the workshop organized by Norwegian Centre for Strategic Studies and Institute of the Oil & Gas Problems, Russian Academy of Sciences, Narvik, Norway, June 24.

Konoplyanik, Andrey. 2011d. Современный мировой рынок нефти: ненефтяные спекулянты правят бал [The contemporary world oil market: non-oil speculators run the show]. Speech at the scientific-practical conference "Oil as a Special Class of Assets – Current Trends and Risks," Gazprombank and Institute of World Economy and International Relations, Moscow, December 13.

Konoplyanik, Andrey. 2012a. Эволюция международных рынков нефти и газа и инструментов защиты/стимулирования инвестиций в энергетику [Evolution of international oil and gas markets, and instruments for the protection of / incentives for investment in the energy sector]. Speech at the first scientific-educational conference "Economics of the Energy Sector as Direction of Research: Frontlines and Everyday Reality," Moscow, MSE MGU, March 23.

Konoplyanik, Andrey. 2012b. Эволюция мирового рынка нефти: закономерности развития vs. устойчивое развитие [Evolution of the global oil market: patterns of development vs. sustainable development]. Presentation at the conference "Sustainable Development in the Energy Sector," organized by NIU HSE and University of Dundee, Perm, April 17–19.

Konoplyanik, Andrey. 2012c. Эволюция контрактной структуры и механизмов ценообразования на мировом рынке нефти: кто определяет цену нефти? [Evolution of contractual structures and pricing mechanisms in the global oil market: Who determines the price of oil?] Speech at the round table "Topical Questions of Pricing Global Hydrocarbon Markets," Institute of Energy Strategy, Moscow, May 16.

Konoplyanik, Andrey. 2012d. Шестой инновационный кластер. Такую роль в российской экономике могут сыграть нефть и газ [Sixth innovation cluster. This is the role oil and gas could play in the Russian economy]. Нефть России [Oil of Russia] 4: 6–11; 5: 9–15.

Konoplyanik, Andrey. 2012e. Russian Gas in Europe: Why Adaptation Is Inevitable. *Energy Strategy Reviews* 1, 1: 42–56.

Kurenkov, Yuri, and Andrey Konoplyanik. 1985. Динамика издержек производства, цен и рентабельности в мировой нефтяной промышленности [Dynamics of production costs, prices and profitability in the global oil industry]. Мировая экономика и международные отношения [*World Economy and International Relations*] 2: 59–73.

Medlock III, Kenneth B., and Amy M. Jaffe. 2009. *Who Is in the Oil Futures Market and How Has It Changed?* Houston, TX: Rice University, James A. Baker III Institute for Public Policy.

Mirkin, Jakov M. 2011. Финансовый механизм формирования цен на нефть [Financial mechanism of forming oil prices]. Speech at seminar "Volatility of World Oil Prices – Threat to the Budgetary Process," IMEMO, Russian Academy of Sciences, June 22.

Oil Tabloid. 2010. ENI quarterly 10 (June).

Renaissance Capital. 2011. The Revolutionary Nature of Growth. Renaissance Capital, Frontier and Emerging Markets. Update, Economics and Strategy Research, June 22.

Sorrell, Steve, Jamie Speirs, Roger Bentley, *et al.* 2009. *Global Oil Depletion: An Assessment of the Evidence for a Near-Term Peak in Global Oil Production*. London: UK Energy Research Centre.

Stowers, Don. 2011. Dodd-Frank to impact producers. *Oil & Gas Financial Journal*, June: 5.

Takin, Manouchehr. 2008. *Upstream Costs and the Price of Oil*. London: Centre for Global Energy Studies.

Tarbell, Ida. 1904. *The History of the Standard Oil Company*. New York: McClure, Phillips.

Yergin, Dan. 1991. *The Prize: The Epic Quest for Oil, Money & Power*. New York: Simon & Schuster.

Zhukov, Stanislav V. 2011. Нефть как финансовый актив [Oil as a financial asset]. Speech at the scientific-practical conference "Oil as a Special Class of Assets – Current Trends and Risks," Gazprombank and Institute of World Economy and International Relations, Moscow, December 13.

Zhukov, Stanislav V. 2012. Интеграция нефтяного и финансового рынков [Integration of oil and financial markets]. Speech at the 128th session of the continuing open seminar "Economic Problems of the Energy Complex" (seminar A. N. Nekrasov), Russian Academy of Science, Moscow, March 27.