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FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION
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SUMMARY OF DOCTORAL THESIS:
ORGANIZATION OF THE PETROLEUM EXPORTING
COUNTRIES

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Keywords: Organization of Petroleum Exporting Countries, the cartel, energy, hydrocarbons, oil, strategic resource, war, the International Energy Agency, energy efficiency, renewable resources, oil exporting countries, oil-importing countries, oil companies, cartels, oil price, futures contracts, oil shocks, strategic stocks, geopolitics.

Introduction

Motivation. PhD thesis "Organization of Petroleum Exporting Countries" is the result of intellectual curiosity and challenge. Intellectual curiosity was formed and developed in previous levels of studies: Degree in International Economic Transactions - Faculty of Economics and Business Administration and Master in Management of International Relations - Institute of History, both in the Babes-Bolyai University in Cluj-Napoca.

Concepts acquired in the two levels of education have made us to come closer to realist theory of international relations, whose fundamental precept is that states are justified in their actions primarily by power and security interests rather than ideals.

The strongest development of the realist theory of international relations takes place perhaps in the resources area, of which the energy resources play a huge role. Energy security has become an essential component of national security and national interest, and the competition for energy resources, along with those in other fields, gives a very important economic dimension to the international relations.

Going from general to particular, oil is the most important energy source for the world economy and the actor engaged in continuous focus on the global market of oil is the Organization of Petroleum Exporting Countries (OPEC).

Based on these considerations, we wanted to undertake a research according to the academic criteria on the role, place and importance of OPEC in the global oil market, and therefore in the global economy.

Regarding the second component of motivation, challenge, it occurred in the days immediately following admission to PhD, in an attempt to choose between two or three possible research topics, including OPEC. At first search for the bibliographic sources, we found that Romanian language literature on OPEC can be found with relative difficulty, or is "diluted" in the broader global contemporary economic and political issues. So we felt the challenge to provide a work dedicated to the Organization of the Petroleum Exporting Countries in order to help by our

possibilities to enrich the Romanian language bibliography on this subject. But we do not claim that by our work we opened a new road and we managed to achieve an exhaustive research.

Methodology. In terms of methodology, we approached the subject of research from three angles, from three perspectives, which overlap and complement each other throughout the paper. These are the economic perspective, the historical perspective and geopolitical perspective. Economic perspective is the most consistent of the three and is based on the presentation and analysis of data on oil reserves, production, consumption, prices, fundamental economic data of OPEC member countries and macro-economic implications of oil price developments.

Structure. From the structural point of view, we have organized work in five chapters.

Chapter 1 contains the period between 1857 (the beginning of the modern oil industry) and 1960, OPEC founding year.

Chapter 2 is dedicated to the first 20 years of existence of OPEC, 1960-1980.

Chapter 3 covers the period from 1980 to 2010.

In Chapter 4 we will try to intuit the coordinates that will lead the future of OPEC.

Chapter 5 is a chapter that examines the issue of oil price, with a case study on the turbulent year 2008.

Chapter 1. Exploitation of oil and international oil trade before the foundations of OPEC

Romania is the first country that entered into international statistics as oil producer, with a production of 257 tons in 1857, achieved in Rafov village, near Ploiești. Two years later, in the United States of America (USA) has oil has been discovered in the Titusville town of Pennsylvania.

In coming decades, they have made discoveries of oil deposits in other parts of the world: Russia (1870), Indonesia (late nineteenth century), Mexico (early twentieth century), Venezuela (1920).

At first, oil was used for lighting, replacing the whale fat oil. After the introduction of electric lighting, oil has found a new purpose, giving birth to movement, with the invention of the automobile. Subsequently, the uses of oil have been diversified with the development of petrochemistry.

In these years the big oil companies were founded. The first major oil company and one of the world's first multinational company was Standard Oil. The company was founded in 1870 in the U.S. and after "conquering" the U.S. market it has expanded its operations in Europe, China and South Africa. Placed under U.S. antitrust law, it was dissolved in 1911 in several companies. Two of the largest oil companies in the world today, ExxonMobil and Chevron, have their roots in Standard Oil.

In the late nineteenth century, Royal Dutch Shell was founded, one of the strongest competitors of Standard Oil. The company was formed through the merger of the Dutch Royal Dutch Petroleum Company and the British Shell Transport and Trading Company. Royal Dutch Shell competed Standard in India and China and was one of the most important foreign investors in the oil industry in Romania, Russia, Venezuela and Mexico.

Another major company was the Anglo-Persian Oil Company, founded after the First World War to exploit newly discovered oil in Iran. The company has become one of the most important oil suppliers to the European market, acquiring oil and concessions in South America. Later it was called British Petroleum, and today its name is BP.

An important milestone in this period is the First World War. This was the first major conflict fought by of mechanized and motor combat means, whose move in the theaters of operations was provided by oil. States that had access to oil resources had a key strategic advantage in this conflict. Oil has got so a strategic importance, after having previously mainly an economic and commercial importance. Ensuring access to oil resources has become a key foreign policy strategies of large and small powers, and oil will play after this period an increasingly important role in the geopolitical calculations of governments.

In the first decades of the twentieth century, they discovered major oil deposits in the Middle East. In Iran (1901), Iraq (1921), Kuwait and Saudi Arabia (1938) were made important discoveries by Western oil companies and the Middle East proved to be the most important deposit of oil resources around the globe. In this way, the center of gravity of the oil industry moved from the Western Hemisphere (U.S., Latin America) in the Eastern Hemisphere (Middle East).

Oil companies have acquired licenses for exploitation of oil in Middle East countries, benefitting by the diplomatic and political support of the governments of their countries of origin.

Countries that were holding the were have the status of colonies or parts of empires, so their opportunities to take advantage of having oil resources were limited by weak administrative capacity and political situation. This has allowed Western oil companies and oil-consuming states to benefit from important strategic advantages in the negotiations on oil exploitation.

International oil market until the 60s of the twentieth century was therefore a market where oil companies and consuming countries were the main players, owners and oil-producing states holding a rather passive role.

Chapter 2. The creation of OPEC. 1973/1974 and 1979/1980 oil shocks

OPEC founding was the result of a favorable context, marked by events with far and near development.

Overall situation of the international oil market was marked by sustained demand for oil after the Second World War, while moving the center of gravity of the oil production from the Western Hemisphere in the Middle East. Increased demand in the U.S. and great needs of energy to rebuild war-torn economies of Europe (assisted, among others, by the Marshall Plan) and Japan made the demand for oil from the Middle East to grow at a sustained pace.

In terms of near action, three events are to be mentioned: the nationalization of Iranian oil, the Suez crisis and price reductions made by the major oil companies.

In Iran, oil was operated under a concession agreement signed between the government and Anglo-Iranian Oil Company Company - AIOC (now British Petroleum), having as one of the shareholder the British Government.

Compared with AIOC profits, the royalties from the exploitation of oil received by the Iranian form of royalties were small. This was the main reason that caused the Iranian government to seek changes in the concession agreements, to increase royalties paid by the British company. Negotiating positions were impossible to reconcile, and after three years of discussions, the government nationalized the oil industry in May 1951.

At the British Government initiative, Iranian oil was subjected to international boycott, which was attended by U.S. companies present in the Middle East. With U.S. support, the British succeeded in changing the Iranian government in 1954. Although oil nationalization failed, in 1957 the Iranian Parliament passed a law on oil, which stated that the subsoil is state property and that any concession contract will be

concluded on the principle of equally sharing the benefits, both in production and selling the oil.

Suez Canal was nationalized by Egypt in 1956, an action that caused the armed reaction of England, France and Israel. The conflict caused blocking the traffic through the channel and so the vessels bringing oil in Europe had to be directed to the Cape of Good Hope, which caused delays of supply. European countries have had for several weeks to rationalize consumption and to call for the American oil reserves. Suez crisis is an important moment because it was the first time that an event occurring outside an oil-producing country led to a coalition of the oil exporting Arab states. They have imposed the first oil embargo for England and France.

But the decisive contribution towards the coalition of Petroleum Exporting Countries have been reductions in oil prices made by oil companies since 1947. Forced by the existence of a bigger supply than demand and confronting with the intense competition from the USSR and smaller independent companies, major oil companies have reduced the selling price of oil from \$ 2.22 per barrel in 1947 to 1.78 dollars per barrel in 1960, with a minimum of \$ 1.60 per barrel recorded in 1953. In this way, the revenues of oil exporting countries have suffered.

This sequence of events led to the idea of convening a congress of oil ministers from oil exporting countries. Congress was held in Baghdad in September 1960, and its result was the establishment of the Organization of the Petroleum Exporting Countries (OPEC).

The founding members of OPEC are Saudi Arabia, Iran, Iraq, Kuwait and Venezuela. Subsequently, other countries joined to the Organization: Qatar (1961), Libya (1962), United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973) and Angola (2007). These twelve countries are current members of OPEC.

The Organization is led by the Ministerial Conference, attended by oil ministers of member countries. At these meetings is determined, inter alia, the price for the oil offered by OPEC. OPEC Secretariat's executive body is headed by a Secretary General appointed by the Conference. Other organs and organisms are OPEC Governing Council, Economic Commission, OPEC Fund for International Development, each with specific responsibilities set out in the Organization's Statute. In its first ten years of existence, the only major achievement of OPEC was to prevent further cuts in oil prices.

The decade 1970 - 1980 represents the period of the absolute glory of the Organization. This was the decade of the first oil shocks.

Taking advantage of a favorable context of increasing global demand for oil, the decline in U.S. oil production, OPEC increasing share of global supply and the trigger on 7 October 1973 of the fourth Arab - Israeli war, OPEC states have managed to impose continuous increases in oil prices. To this end, the Arab States of the Organization have resorted to imposing an embargo on oil deliveries to Western importing countries that supported Israel.

The outbreak of war, with the inherent atmosphere of uncertainty, Arab embargo and the lack of alternative supply (since the United States and other producers outside OPEC were operating at full capacity) have caused an energy crisis in consumer countries. Thus OPEC managed to impose an oil price of \$ 5.12 / barrel in October 1973 and \$ 11.65 / barrel in January 1974, compared to the \$ 2.18 / barrel recorded in February 1971. \$ 11.65 per barrel price became effective in January 1974 and marks **the first oil shock**.

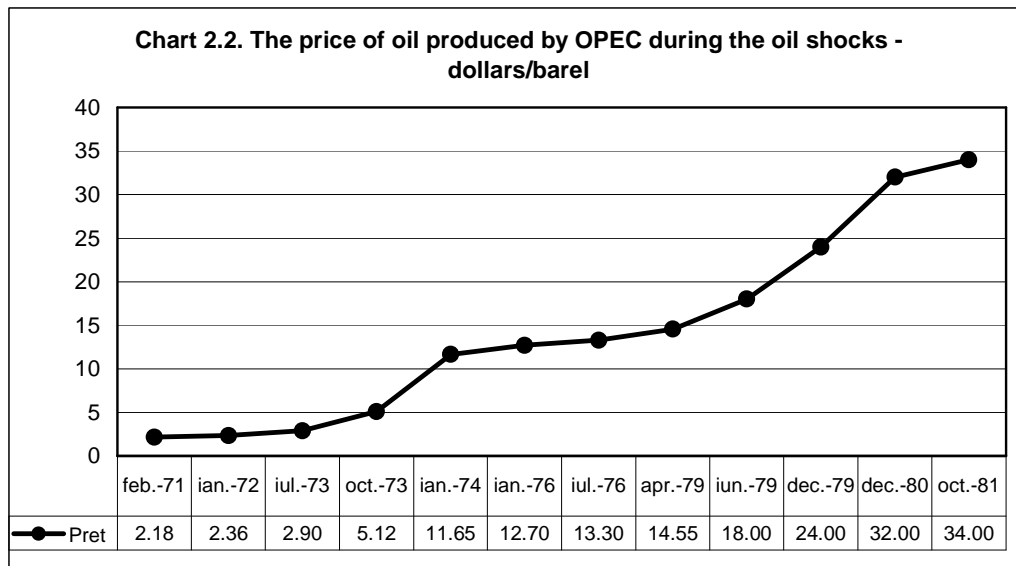
During the eighth decade of last century, the depreciation of the dollar, the currency in which oil is sold, resulted in OPEC countries to follow constantly rising in oil prices. In December 1978, the price designed for the end of 1979 was \$13.54 / barrel. OPEC attempts to raise the price have received a significant support in the years 1979 and 1980, with the onset of the Islamic Revolution in Iran and the war between Iraq and Iran.

Iranian revolution reduced the country's oil exports to a level close to zero, equivalent to a loss of 3.5 million barrels per day for the international oil market. Strikes from oil exploitation have caused a decline in daily production from 5 million barrels in September 1978 to 100,000 barrels in December the same year.

Taking advantage of crisis and of favorable supply-demand ratio due to reduced exports of Iran, at the Conference in Geneva held in March 1979, OPEC members changed the agreed previous price for the late 1979 and have set a new price, of \$ 14.55 / barrel, in force since 1 April 1979.

Meanwhile, the world market fell into total disarray. Despite increased production by Saudi Arabia by two million barrels daily to offset the reduction in Iran's exports, the spot price reached 40 dollars / barrel. In June 1979, amid uncertainty about the situation in Iran and its effects on the Gulf countries, OPEC price was raised to \$ 18 / barrel.

On September 22, 1980, Iraq attacked Iran, starting a war that would last until 1988. Armed confrontations have caused damage to production and transportation capacities, which immediately resulted in a sudden reduction in production by almost 4 million barrels per day (15% of daily OPEC production and 8% of oil production outside the communist world). In December 1980, OPEC's official price was set at \$ 32 / barrel; in October 1981 Member States adopted a price of \$34 / barrel. The sequence of events in 1979 and 1980 marks **the second oil shock**. Briefly, the oil price during the two oil shocks is shown in the chart below.



The oil shocks phenomena, beyond their economic significance of shocks on the supply, fully deserves this name. Until 1973, in the Western consumer's psychology oil was an abundant and cheap commodity. Suddenly, due to the embargo by Arab members of OPEC, the oil was not abundant or cheap anymore.

Oil shocks had significant effects on the global economy. A brief overview of these effects presents the impact of rising oil prices on OPEC Member States and on oil-importing countries.

Regarding **the OPEC member states**, the direct effects of oil shocks have resulted in increasing revenues from oil exports and, based on these revenues, increased foreign reserves. We present these two effects in the next tables.

Table 2.2. OPEC revenues from oil exports, in millions of dollars (unless otherwise specified)

Country	Revenues from oil exports	
	1973	1979
Algeria	987,7	7.000
Saudi Arabia	4.340	19.651
United Arab Emirates	900	11.500
Ecuador	128,8	800
Gabon (for the year 1974)	172,7	900
Indonesia (billions rupii)	303,9	7.200
Iran	21.443,4	20.500
Iraki	1.840	19.200
Kuweit (millions of dinars)	506	11.735,4
Libya (for the year 1974)	5.999	13.000
Nigeria (millions of naira)	1.368,6	15.900
Qatar	463,1	3.100
Venezuela (million of bolivari)	13.037	37.995

Table 2.3. Increase of the reserves of OPEC member countries between 1974 and 1981

Country	Forex reserves in million SDR			
	1974	1976	1979	1981 (august)
Algeria (millions of dollars)	1.379	1.711	2.213	3.360
Saudi Arabia	11.667	23.261	14.791	25.649
United Arab Emirates	370	1.660	1.108	2.348
Indonesia	1.219	1.290	3.093	5.332
Iran	6.848	7.603	11.682	-
Iraki	2.673	3.960	-	-
Kuweit	1.143	1.660	2.268	3.343
Libya	2.953	2.759	4.902	10.466
Nigeria	4.596	4.478	4.235	6.873
Qatar	59	118	228	-
Venezuela	5.319	7.364	5.958	7.517

There were also indirect effects of increased oil prices on OPEC members.

Thus, oil revenues have allowed OPEC member states to develop investments programs in their national economies. These investments have targeted several objectives: construct their own fleet of vessels oil, diversification of economic activities to reduce dependence on oil exports and create the foundations for sustained economic growth, and also improving social development indicators (life expectancy, reducing the illiteracy rate, reducing child mortality, improving per capita calorie consumption, improve the education of women).

Among the indirect effects are, however, two negative effects: the effect of "Dutch disease" and the emergence of frictions on the pricing policy of the Organization.

The term "Dutch disease" refers to the negative consequences caused by the increased revenue of a country, being associated primarily with the discovery of natural resources. Symptom occurs when foreign currency inflows causes national currency rate increases, leading to lower exports (more expensive by appreciating currency) and increased imports (cheaper by currency appreciation). The result is that prosperity of the sectors based on the exploitation of new found resources affect other areas of the economy, that face lower activity and unemployment.

The phenomenon of "Dutch disease" has acted as an obstacle to economic diversification projects in the OPEC countries. Between 1971 and 1979, the rate of oil exports in total exports increased, in some cases very much, which deepened the Member States' dependence on oil exports.

Successive increases in oil prices has revealed frictions between the two largest producers in the Persian Gulf, Iran and Saudi Arabia, on OPEC's pricing policy. Iran has consistently campaigned for a high price. At a fundamental level, the country's position was determined by the relative position of its oil reserves, significantly lower than those of some of its neighbors (Saudi Arabia, Iraq, Kuwait). So the policy pursued by Iran was to take immediate advantage of high oil prices. Postponing the moment of the price increase would have meant cancellation of Iran's potential future benefits, as its reserves may already be exhausted.

On the other hand, Saudi Arabia sought a policy of long-term recovery of oil, given its huge reserves. Saudis feared that higher prices for consumers and formation of expectations about future price increases could trigger a move away from oil through conservation and developing alternative energy sources, which could hasten the end of oil era, even in the existence of high reserves.

Subsequently, these two different views on the pricing of OPEC have contributed to the creation of two camps: the "radicals" (Iran, Iraq, Libya, Venezuela) and "moderates" (Saudi Arabia, UAE, Kuwait).

On **the importing countries**, oil shocks had significant negative effects primarily on trade balances due to rising import bills. The effects varied from country to country. The most affected were the U.S. and Japan, countries where oil imports accounted for significant shares in domestic consumption, while Germany was affected less, because of the access to significant reserves of coal, used as an alternative to oil. Also, importing countries have suffered in terms of rising inflation and slowdown of the economic growth, as can be seen from the table below.

Table 2.7. Oil prices, inflation and growth in G-7 countries over the period 1960-1982

Country	1960-1970			1971-1982		
	Pp	R _i	R _{PIB}	Pp	R _i	R _{PIB}
US	- 4,1	2,7	3,7	30	7,9	2,2
Japan	-6,8	5,6	10,8	26,7	8,2	4,5
Federal Germany	-5,2	2,5	5,6	29,4	5,2	2,3
France	-4,1	4,1	5,8	30,5	10,2	3,1
Italy	-4,8	3,5	5,9	31,0	14,7	3,3
Great Britain	-3,6	3,8	3,0	27,5	13,2	1,7
Canada	-3,3	2,6	3,0	30,4	8,7	3,7

Pp - annual percentage change in oil prices in national currency; *R_i* - average annual inflation, *R_{PIB}* - average GDP growth rate in real terms, expressed in prices of 1985.

The energy crisis triggered by rising oil prices caused a coalition of importing countries, especially industrialized, grouped in the OECD, in order to formulate an organized reaction to the situation arising. Institutional form of this reaction was the International Energy Agency (IEA), founded by OECD countries (except France, Finland and Iceland) in November 1974.

In the IEA frame, Member States have implemented policies to reduce oil dependency by increasing energy efficiency and developing alternative energy sources. Another important point is the establishment of strategic oil stocks designed to cover more than 90 days of consumption and to reduce importing countries' dependence on current production.

Oil shocks led to changes in the global supply of oil. These changes were generally due to the efforts of oil companies and Western industrialized countries to develop alternative sources of oil, in order to reduce the dependence on OPEC oil. The existence of high prices on the market of made profitable exploitation of deposits that were ineffective before 1973.

In the period 1975-1990 there has been a steady increase in oil production outside OPEC, from 29.6 million barrels a day to 41.6 million barrels a day. This is the case of United Kingdom and Norway, which had huge increases in oil production in the North Sea. Other countries with increased oil production were the U.S., USSR and China.

Chapter 3. OPEC on the contemporary oil market

The second oil shock of 1980 -1981, placed OPEC on the dominant position in the world oil market. The organization was in a position to determine its sale price in the world and Member States have achieved unprecedented foreign exchange receipts from oil exports.

Thereafter, until the end of the ninth decade of the twentieth century, OPEC has seen a downward trend of power and income, a situation determined by the following main factors: **a.** global economic downturn after 1980; **b.** energy conservation measures adopted by the consuming countries; **c.** wider use of alternative energy sources (coal, natural gas, nuclear) and search for renewable sources (solar, wind); **d.** development of oil production in areas outside OPEC; **e.** introduction, since 1983, of the oil futures exchanges in New York, London and Singapore.

The first three factors have led to lower demand for oil in general. Development of oil production in areas outside OPEC (Alaska, Mexico, North Sea) was facilitated by rising oil prices, which made possible the hurdle of production costs, higher than the average costs in OPEC member countries, causing loss of market share by the Organization.

The introduction of futures contracts meant the end of administered price system for oil, initiated by U.S. producers in the nineteenth century, continued by Western oil companies until 1960, then settled by negotiations between them and OPEC and finally imposed by OPEC after 1973. After 1983, the oil market has become a mature market, entering into an open, impersonal era, with different participants: producers,

traders, speculators. OPEC has become a player among many others, its power consisting now only in the control of its total supply.

Strategy adopted by the OPEC action was influenced by the of dilemma in which the Organization was in the new conditions. On the one hand, if member states were given freedom of production in a competitive market, everyone's desire to sell as much oil would eventually lead to lower prices, which would affect export earnings of all members and their economic and political influence. On the other hand, maintaining the official price set so that export earnings to ensure satisfaction to member governments, could be done only by reducing the total production of OPEC. A lesser production would have meant lower market share of the Organization and loss of its market benchmark statute.

Finally, OPEC was forced to adopt a specific action of a cartel: production regulation by allocating quotas for each member state. In other words, the Organization has established rules to strengthen production / price discipline of the member countries.

During the 90s of the twentieth century, the evolution of prices has been less dramatic than in previous periods. In general, the period was dominated by low prices, after the end of the Gulf War (1991); towards the end of the decade, the economic crisis in Southeast Asia (1997) and mild winter of 1998-1999 led to downturn oil consumption, so that prices have reached the low levels of 1986-1990.

But early this century marked a comeback of OPEC. Essential factor of this recovery is the strong growth in global demand for oil, especially from developing countries, of which China stands out. If from 1990 to 2010 oil consumption increased by 31.4%, the Asia - Pacific region increased by 97.3%, while China's consumption has registered an increase of 290%.

In 2008, OPEC has produced the most oil of its history, 35.7 million barrels per day. Data for 2010 shows that OPEC has an overwhelming share of proven oil reserves on Earth, 77.2%, provides 41.5% of the world production and achieves 57.5% of world exports. These figures indicate that OPEC is the leading provider for oil of the contemporary global market.

This situation becomes even more relevant if we consider forecasts of future market developments (the next 20-30 years). The steady growth in oil demand, growing dependence on imported oil in the biggest consuming countries, the downward trend of exports from Africa, Latin America and Russia since 2010, puts OPEC and in

particular the Member States of the Middle East on a favorable strategic position by their available reserves and production capabilities.

Chapter 4. The Future of OPEC

We believe that there are two key milestones that will influence the future of OPEC: the future of oil as an energy source for the world economy and geopolitical games in the Persian Gulf, the region where is the structural core of the Organization.

The future of oil as the dominant energy source in turn will be influenced mainly by four factors: geological, technological, economic and political.

Geological factors refer to the endowment of the planet with oil resources. Of the total resources of oil, only a certain fraction can be extracted and converted into proven oil reserves, that is quantities available for consumption. The reserves / resources ratio is called recovery factor and its global average value is about 30%.

Taking into consideration the conventional proven oil reserves at the end of 2010, of 1383.2 billion barrels, and the value of the extraction factor, we can estimate the conventional oil endowment of the the planet at about 4,610 billion barrels.

The role of technological factors is to increase the recovery factor. In terms of technology, oil extraction is done in three phases. The primary phase uses existing natural reservoir pressure provided by water and natural gas that exists together with oil. In the second phase the natural pressure is replaced by artificial pressure by pumping water and injecting gas into the reservoir. Finally, the tertiary phase uses the most advanced extraction methods, which include various thermal, miscible (to mix different substances in the oil reservoir) or chemical processes, attempting to extract maximum of the oil remaining after application of primary and secondary methods.

The recovery factor for current production of oil is mainly ensured by using primary and secondary methods. For future growth of the recovery factor, the primary role will belong to tertiary extraction methods.

A simulation of the impact of growth in the recovery factor on proven reserves and the life of conventional oil is provided in the following table. An increase of 1% of the recovery factor would increase the conventional oil reserves by about 45 billion barrels, enough to replace nearly two years of world production at a production rate of 28.3 billion barrels per year.

Table 4.4. The effect of growth in the recovery factor on conventional oil reserves

Conventional oil resources (billion barrels)	Recovery factor	Proven reserves (billion barrels)	Yearly production 2009 (billion barrels)	Life of the conventional oil (years)
4,443.67	30%	1,333.1	28.3	47
4,443.67	31%	1,377.5	28.3	49
4,443.67	35%	1,555.3	28.3	55
4,443.67	40%	1,777.5	28.3	63
4,443.67	45%	1,999.7	28.3	71
4,443.67	50%	2,221.8	28,3	79
4,443.67	60%	2,666.2	28.3	94
4,443.67	70%	3,110.6	28.3	110

But it is not enough that oil to be in the ground and to be accessible from a technical standpoint. It is necessary for productive activity to be profitable, and for this the essential element is the selling price of oil.

Current estimates indicate that oil prices will see an increasing trend in the decades to come. This trend will be maintained on the one hand by the increasing production costs, given the increasingly advanced technology requirements to ensure production and, on the other hand, by the sustained growth of global oil demand. In the global oil industry, marginal costs have increased significantly since 2003, the level in 2008 being estimated at \$60-70 dollars / barrel.

International Energy Agency estimates for the next 20 years show that oil demand will see an average growth rate of 1% per year, from 84.7 million barrels per day in 2008 to 105.2 barrels per day 2030. The trend will be sustained by demand from non-OECD countries whose average annual demand growth will be 2.2% per year, while estimates for the OECD show a negative growth rate of -0.3% per year.

Given the marginal cost considerations in oil production and demand forecasts, it is unlikely that the future will give us, as long-term trend, oil prices below \$ 75-85 per barrel.

If the factors analyzed so far can be considered as having generally positive influence on the future of oil, the fourth category, political factors, will seek to limit oil consumption and develop alternative energy sources.

Political factors refer to those initiatives taken within the international institutions that aim to limit the use of fossil fuels. The main reason is related to environmental protection, given that fossil fuels are responsible for 57% of carbon dioxide emissions.

These initiatives aim that by 2050, CO₂ emissions to decrease by 50% compared to 2000. To do this, there will be needed deep and rapid transformation of how energy is produced and consumed, and also in industrial processes, agricultural practices and forest exploitation. Innovation will become the watchword in all sectors of economic activity.

Considering these aspects as well as financial transfers between countries caused by carbon trading, it is estimated that global GDP will be lower by 0.1-0.2% in 2020 and 0.9 to 1.6% in 2030 compared to the forecast in the absence of such initiatives.

Because of these changes in economic activity, demand for oil will grow by an annual average rate of only 0.2% (versus 1% in the baseline) to reach to 88.5 million barrels a day in 2030 (compared with 105.2 million barrels a day in the baseline scenario).

For the second coordinate that will influence the future of OPEC, we used the generic name of geopolitical games in the Persian Gulf region.

Persian Gulf littoral states and members of OPEC (Saudi Arabia, UAE, Kuwait, Iran, Iraq and Qatar) are marked by deep rivalries between them, rivalries that have historical, political, religious and ethnic roots.

Of these countries, Iran harbors the largest geopolitical ambitions, as a state that aspires to the role of dominant power in the Persian Gulf region. Such a situation has the potential to fracture OPEC cohesion, because of at least two reasons.

First, this would be a challenge to the leadership of the Organization represented by Saudi Arabia and its allies, Kuwait and UAE.

Secondly, could lead to pressure to change OPEC price policy, given that Iran is one of those member states of the Organization which advocates the aggressive pricing policy, an attitude conflicting with the vision of Saudi Arabia, of large deliveries and moderate prices.

In addition, it is expected that the reaction of oil-consuming Western powers not to be moderate at all; this reaction may take a military form. Thus, the cohesion of OPEC would suffer even more, given the close political relations between Saudi Arabia, Kuwait, UAE and Western powers, USA and the United Kingdom.

Based on these considerations, we believe that challenges in the future of OPEC will not stem from the subsoil, but rather from the surface.

Chapter 5. The oil price

Over time, oil prices had many ways of forming, depending on economic and historical context, especially depending on market power relationships.

Until the foundation of OPEC in 1960, the market was dominated by Western oil companies which, although were constantly in competition, have resorted to secret agreements in order to control the production and the price. After its formation, OPEC gained control of the market. If during the 60s the Organization managed to prevent price reductions, during the oil shocks OPEC was able to impose its will in the formation of the selling price of oil.

A key milestone in the formation of oil prices is the introduction of futures trading of oil in New York Stock Exchange in 1983. Bringing the oil on the stock market has meant the transformation of oil price formation mechanisms, making them impersonal, open and competitive.

Currently, oil prices are formed in the following types of transactions: spot transactions, forward transactions and derivatives transactions (futures, options).

On the formation of oil price several factors are acting, which our research has grouped into two main categories, each with its subcategories:

I. Factors intrinsic to oil market

1. fundamental factors: a supply/demand ratio b. oil stocks
2. additional factors: a. the refineries utilization rate; b. futures market conditions

II. Factors extrinsic to oil market

1. monetary factors: a. the interest rate; b dollar exchange rate.
2. geopolitical factors
3. psychological factors

Regarding the time action of these factors, fundamental factors are acting on the long term (over 1 year), while the action of other factors is manifested in the short term (less than 1 year, even several days or in a single day, e.g. futures transactions).

Of these factors of influence, the most visible may have become the futures market conditions. Some data are shown in this case:

- daily consumption of oil in 2010 was about 85 million barrels;
- daily transactions in oil futures markets in the same year totaled 1.4 billion barrels (a significant increase of 280 million barrels in 2003);
- non-commercial operators (speculators) share growth was observed in trading futures: from 20% in 2000 to 40% in 2008.

Attracted huge amounts in futures transactions at certain times can cause “decoupling” the price from the fundamentals.

In the case study of this chapter we intend to offer an explanation and rationale for the evolution of oil prices in the turbulent year 2008.

In the first half, futures price in New York Mercantile Exchanges experienced continuous growth, from \$ 92.9 per barrel in January to \$ 133.82 a barrel in July, with a maximum of \$145 per barrel in early July . This despite of the decrease in consumption and a comfortable situation of the stocks.

We found the explanation for this paradoxical situation in the existence in the oil market of two opposing, competing dynamics. The first dynamic was represented by the fundamentals, and the second by additional factors (futures transactions) and extrinsic oil market.

In the first part of the year, the "competition" was won by the second dynamics: the dollar depreciation caused the penetration of capital in the commodities futures markets in general and oil in particular (recorded net buying positions increase), forming a virtual demand that has caused growing price increases. The trend has been further driven by geopolitical factors (tensions between Iran and US / Israel on behalf of the Iranian nuclear program), and psychological factors.

In the second half of the year, the price was back in line with fundamentals and negative data about the global economy have caused oil prices to fall sharply to \$42 per barrel in December.

The effects of oil price increases on the world economy are significant. There are differences in expression, according to the groups of countries taken in the analysis: developed countries, developing countries, poor and indebted countries, OPEC member countries.

In the case of the developed countries for data year 2004, an increase of \$10 per barrel in oil prices generate the following effects:

Table 5.7. OECD's macroeconomic indicators for sustained growth of \$ 10/barrel in oil prices (base year - 2003)

	2004	2005
GDP - %	-0,4	-0,4
Consumer price index - %	0,5	0,6
unemployment rate - %	0,1	0,1
Current Account - \$ billion	-32	-42

In a 2011 study, OECD Economic Department estimates that if the increase of \$25 per barrel due to popular uprisings in Tunisia in early 2011 continues, then the OECD's GDP could be reduced by 0.5% by 2012, while inflation could rise by 0.75%. Regarding the emerging economies, the effects of soaring oil prices are differentiated, whereas in this category are oil-exporting countries (Russia, Brazil, Mexico).

Table 5.10. Estimated effects on large emerging economies' growth after 1 year increase with \$ 5 pe barrel in oil prices

Regiunea	Real GDP	Inflation	Current account
	%	%	% din PIB
Latin America	-0,1	0,6	0,0
ASIA	-0,4	0,7	-0,5
Emerging Europe and Africa	0,2	0,3	0,3

Most affected by rising oil prices are the poorest and heavily indebted countries:

Table 5.11. The direct effect of oil price rise by \$5 per barrel on the current account balance of the poor and heavily indebted countries

	% of GDP	Million \$
Heavily indebted poor countries	-0.8	-653.3

Regarding OPEC member states, we analyzed the effect of \$ 5 per barrel increase in oil prices based on data on GDP, oil exports and trade balances contained in the OPEC Statistical Bulletin for 2009. This analysis shows that such an increase in the price of oil brings to OPEC members a surplus in the aggregate trade balance of over 40 billion dollars, equivalent to about 2% of aggregate GDP of the Organization. The effect is larger for those countries where the share of oil exports in GDP is higher.

Table 5.12. The immediate effect of increasing by 5 \$ per barrel in oil prices on trade balances of OPEC Member

Country	% oil exports in GDP	The immediate effect on trade balance	
		million \$	% of GDP
Algeria	13.83	1,363.27	1.03
Angola	62.78	3,230,.25	4.70
Saudi Arabia	41.08	11,439.10	3.09
Ecuador	13.05	600.42	1.17
UAE	21.32	3,564.22	1.55
Iraki	33.44	3,478.45	2.55
Iran	16.18	4,073.40	1.23
Kuweit	30.67	2,460.10	2.33
Libya	42.25	2,135.25	3.18
Nigeria	32.41	3,942.00	2.37
Qatar	18.96	1,180.77	1.41
Venezuela	10.60	2,934.60	0.87
TOTAL		40,401.85	1.94

Conclusions

If the twentieth century was the century of oil, the beginning of this century increasingly brings into question the alternative energy sources, mainly "green energy". As the data examined, these alternative energy sources will begin to have a significant share in the energy mix over about 30-40 years.

In the medium term (until the years 2030 to 2040), our research has identified three main options that the world economy has to provide the necessary energy: fossil fuels, nuclear energy and energy efficiency.

Based on research conducted on the evolution of OPEC from its formation until now, we believe that the organization has two major achievements and two great failures.

The first major achievement is the objective set at the founding of the Organization to exercise a significant influence on oil prices in order to ensure satisfactory income for the member countries. During the oil shocks period OPEC held absolute power in this respect; after 1983 this power became relative power. Currently, OPEC exerts indirectly its influence on the global price of oil by controlling the total supply of member states (through production quotas).

The second major achievement of OPEC member states is the development of national economies based on revenues from oil exports. Even if there are visible differences among member countries, it is undisputed that the OPEC economies look very different than 50 years ago, and this is largely due to oil.

Regarding the failures, the first is the low level of economic diversification of the OPEC member states. They remain significantly dependent on oil exports, making them vulnerable to price fall. Moreover, as the exhaustion of reserves, some countries are likely to return to the levels of economic development before getting oil exporting status. Exceptions to this are the United Arab Emirates and Venezuela. It is worth to note Iran's efforts to reduce dependence on oil by developing a nuclear program, but the intent faces strong opposition from the international community.

A second incompleteness is that the organization as a common platform of action of member states, did not help to alleviate major frictions (political, historical) between member countries. Although the common pragmatic interest prevailed in most cases, it disappeared during periods of low prices of oil and thus low revenues for member countries. Furthermore, these deep frictions sometimes erupted as armed conflicts. Also, in terms of attitudes towards pricing in OPEC kept splitting into two camps, the radicals and moderates.

However, we believe that the overall balance of OPEC is positive, appreciated by two criteria: in terms of member countries and in terms of global oil market.

For the member countries, the joint action under OPEC allowed successfully promoting their own interests, and gaining influence over oil prices has provided substantial revenues and further economic development.

OPEC is also a strategic success for the Arab states in dealing with western countries. In this confrontation, Arab states have used an unconventional weapon, the oil weapon.

In terms of global oil market, we believe that OPEC ensures a balance of power between exporting and importing countries of oil. The fact that oil-exporting countries were able to promote their interests through joint action contributed in reducing the frustration of individual relationships, on unequal positions, with major oil-importing countries. In this way, the divergent oil exporters – oil importers relationship was brought to the negotiating table. In the absence of OPEC, maybe we witnessed more wars for oil and more oil shocks.

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