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**MODERN CHALLENGES
OF OIL PRODUCING COUNTRIES AND
THE WAYS FOR ESTABLISHING
A NON-OIL DEPENDENT
ECONOMY IN AZERBAIJAN
(Comparative approach)**

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Abbreviations

ADB- Asian Development Bank

AIDS - Acquired Immunodeficiency Syndrome

AZN - Azerbaijani Manat (currency of Azerbaijan)

bb/d - Barrels per Day

bln- Billion

CIS - The Commonwealth of Independent States

CNOOC - China National Offshore Oil Corporation

CNPC - China National Petroleum Corporation

ESR – Entrepreneurship Support Fund

EITI - The Extractive Industries Transparency Initiative

EU- European Union

FSU – Former Soviet Union

GDP - Gross Domestic Product

GNI- Gross National Income

HDI - Human Development Index

HR- Human Resources

IBM – International Business Machine

ICT - Information and Communications Technology

IMF - The International Monetary Fund

IPEC -The International Programme on the Elimination of Child Labour

LAC – Latin American Countries

NGL – Natural Gas Liquids

NHGDP – Non-Hydrogen Gross Domestic Product

OECD - The Organisation for Economic Co-operation and
Development

OGJ – Oil and Gas Journal

OPEC – The Organization of the Petroleum Exporting Countries

ORV – Oil Revenue Volatility

PSA – Production Sharing Agreement

PFMC- Public Finance Monitoring Centre
R&D- Research and Development
SMART (farmers) - Stimulating Markets for Farmers,
SME - Small and Medium Enterprise
SOFAZ - State Oil Fund of the Republic of Azerbaijan
SOF – Sovereign Oil Fund
SWF - Sovereign Wealth Fund
Tcf - Trillion Cubic Feet
UEFA- The Union of European Football Associations
UK- The United Kingdom
UNDP - The United Nations Development Programme
UN - The United Nations
USA - The United States of America
USD - The US Dollar
USSR - The Union of Soviet Socialist Republics

Abstract

This paper deeply analyses Azerbaijan's oil business and the level of its hydrocarbon dependence. It examines the ways and methods of reducing oil dependence in Azerbaijan's economy and analyses the modern challenges of oil producing nations in their oil business. Many comparisons and determinations are shown out of the oil producing countries' practices for restructuring their economy to diminish the hydrocarbon dependence. The comparisons statistically examine the economic, financial and other fiscal indications. There is also an examination of the institutions related to this oil business as OPEC (The Organization of the Petroleum Exporting Countries), Sovereign Wealth Fund (SWF), State Oil Company of Azerbaijan (SOCAR) and other authorities. The purpose of this research is to show the practical reasons and the ways to smoothly shift Azerbaijan from economic oil dependence into a prosperous and non-oil dependent nation. The study is in essence a comparative analysis of the oil-rich countries' economic dependency on oil and the implied methods by the countries for shifting these nations into long-term economic prosperity. It also takes a look at the economic and socio-political situation of the economic structures whose import and export balances are regulated mainly by the oil business.

Research Question

To what extent and by which socio-economic, political, financial (fiscal) methods implemented by the Azerbaijan Government can oil dependence be reduced for establishing a non-oil dependent country in an oil-depletion led economy? To what extent can these measures be successful while considering individual factors in each national economy?

Limitations

The main limitation encountered was that of abundance of materials, specifically on the economy of the most oil producing countries rather than Azerbaijan.

Unfortunately, sometimes the details and statistics given on a range of cases do not exactly match with the real cases, leading to confusion. Despite its history, as well as its successful results from ongoing attempts at regional integration, Azerbaijan has not made a conspicuous development in reducing oil dependency yet. This situation has attracted much interest from scholars on the topic of regional integration. This lack of publication presented a significant challenge to this research.

The lack of specific proper online databases of journals and other scholarly materials somehow limited the depth to which this research could have gone since the research method required access to materials that could be used to substantiate the research.

Book Structure

By its structure, the paper consists of an introduction, body (comprising 4 paragraphs and subsequent subtitles related to them), conclusion, and list of reference literature.

Introduction

The introduction to the research includes a summary of the problem, background information about the topic, a detailed description, and methods that will be undertaken to acquire data. It extensively analyses the oil history of Azerbaijan.

Chapter 1

This chapter consists of multiple views and challenges of the problem of “oil dependence.” It gives many statistical analyses referring to the oil business of oil producing countries. It also investigates the problem of management of oil revenues.

Chapter 2

This chapter explains how the advent of oil dependence is measured which has created major occurrences and continuities in the practices of oil-producing nations. The main direction of analysis is focused on application of Porter’s Diamond Model for measuring Azerbaijan’s hydrocarbon dependence and its perspectives. It makes in-depth factor and demand analyses of the oil dependence, the related and supporting industries and highlights the importance of the role of government in setting measures.

Chapter 3

Here the concept of comparative analyses of oil-dependence is examined and the economic nature of oil dependence is revealed. The highlights are mainly focused on the socio-economic commonalities and similitude of Azerbaijan and Norway while the views and are raised and discussed in context of these countries' advantageous and disadvantageous positions in the world.

Chapter 4

This section discusses the economic, socio-political and financial measures for minimizing oil dependence and gives some useful and viable recommendations for decreasing Azerbaijan's oil dependence through diversification.

Conclusion

The paper briefly summarizes chapters and puts forward some ideas, such as considering all factors and conditions including the volatility of oil prices, population, fiscal policy, the demand conditions and requirements, and the will of the government to maintain the correct track for diminishing the hydrocarbon dependency.

Introduction

a) General overview of the research

From the history of the oil-producing countries we find various measures decreasing oil dependency which are usually tailored to the individual characteristics of the socio-economic structures of these nations. These measures are usually implemented on different stages of oil business in order to use this national advantage resourcefully. This research is designed to investigate the oil history of Azerbaijan and find out optimal ways of reducing the country's oil dependence through comparative analyses of practices existing in the experience of oil rich nations.

The research methodology is exploratory with a view to making tentative findings at the end but ultimately with a view to pursuing further and deeper research in this area in the future. The research employs the use of both primary (content analyses and comparisons of the economies) and secondary (statistical analyses and description, illustrations, modeling, tabling) sources of data.

The primary source of information for this research is application of the Diamond Proposal for measuring the level of oil dependence, and as well as the factor and demand analyses related to this. The contents of this model form part of the body of this research.

The secondary sources of information include books, articles and other sources of information relative to the practical measures for shifting Azerbaijan's oil-dependent economic development into a non-oil dependent structure, as well as publications on the topic of

characteristics of an oil boom. The information from these forms a substantial part of the body of this research.

The background information about the topic is quite high, as it touches on the key problems of humanity referring to energy sources and survival of humanity. Some authors, Somerville (United Kingdom -UK), Gilbert, R. and A. Perl¹, M Vanderschuren, R Jobanputra and T Lane (University of Cape Town)², Write. L and W.Hook³, Ciferri, L.⁴ and Deffeyes, K. S. (the United States of America (USA))⁵, Luke Patey⁶, Vugar Bayramov⁷ (Azerbaijan-Centre for Economic and Social Development (CESD), Alan Gleb⁸ and many other researchers from Commonwealth of Independent States (CIS) and other countries have made this problem the subject of their scientific concern.

¹ Gilbert, R. and A. Perl (2008), *Transport revolutions: moving people and freight without oil*, Earthscan, ISBN number: 9781844072484 (Book);

² M Vanderschuren, R Jobanputra and T Lane: *Abstract Potential Transportation Measures to Reduce South Africa's Dependency on Crude Oil, USA* (http://www.cfts-uct.org/publication/diminishing-global-oil-supply-potential-measures-to-redress-the-transport-impacts/wppa_open/)

³ Write L. and W. Hook (2007), *Bus Rapid Transit Planning Guide*, 3rd edition, Institute for Transportation and Development Policy, New York (US)

⁴ Ciferri, L. (2005), *Diesel momentum to peak by 2010*, *Automotive News*, 21 March 2005 (Online)

⁵ Deffeyes, K. S. (2005), *Beyond Oil*, Hill and Wang, ISBN number: 9780809029563, New York (Book)

⁶ Luke Patey has published the Review book of, "The New Kings of Crude: China, India, and the Global Struggle for Oil in Sudan and South Sudan", (London: Hurst and Company, 2014, pp.357)

⁷ Vugar Bayramov, "Ending dependency: How is oil revenues effectively used in Azerbaijan?", CESD (Editor), ISBN 978 - 9952 - 8131 - 0 - 4, 96 pages

⁸ Alan Gelb and Associates, 1988. "Oil Windfalls, Blessing or Curse?", Oxford University Press, 1988, 369 pages

Despite the abundance of literature referring to the interrelationship of economic advantages of oil and economic growth of the states, there is still a great deal of room for further research as each country needs a specific approach and comprehensive measures to be adopted for revealing the correct means of harmonization of the socio-economic and financial processes. For this reason, the choice of topic has a great deal of importance because the comparisons and analytical reviews of various cases, and the case of Azerbaijan in particular, need further investigation. The recommendations given on reducing Azerbaijan's hydrocarbon dependence may serve as a good example for use in the country's oil policy and in university lectures. The scientific nuances of the work are:

- To avail the case analyses of reduction of the oil dependency of Azerbaijan by using the Diamond Model;
- To make wider analyses of the modern challenges of oil-producing countries and the modern status of their oil business;
- To investigate a wide range of online and hard copy materials to illustrate the updated trends of the oil share in generating the oil producing country's Gross Domestic product (GDP);
- To propose convincing recommendations referring to the significance of diminishing oil dependency.

Having analyzed a set of models for guaranteeing the successful shift of Azerbaijan's economy into a long term and sustainable path, we came to the conclusion that the Diamond Model of proposal will be suitable for our purposes because it includes both quantitative and qualitative indicators for assessment. The

Diamond Model was first developed by a scholar of Harvard Business School, Professor Michael Porter. In his book "The Competitive Advantage of Nations" (1990) he offered this model to be used by countries with national advantages of natural resources.

It is quite clear that the unexpected fluctuations in the oil industry may completely deteriorate the economic conditions when an oil producing state does not take proactive measures. It is justifiably confirmed that "resource abundance may lead to a shift away from competitive manufacturing, with a consequent loss of growth-inducing externalities"¹ because without creating the sound economic, social, industrial, technical, technological and innovative bases for future development the continuous exploration of resources may lead the country to catastrophic economic failures.

But how should we measure the results of the oil initiatives of oil countries? There exist a number of ways to fathom the versatility of oil policy pursued by the oil producing countries for winning the endgame of oil. We may conditionally divide these trends into two categories:

1. The countries which postpone the full-capacity exploration of the oil and gas fields for the period of hundreds of years later, and by that time gradually creating a pre-requisite policy for survival;

¹ Olav Bjerkholt and Irene Niculescu: Fiscal Rules for Economies with Nonrenewable Resources: Norway and Venezuela, p164 http://www.uio.no/studier/emner/sv/oekonomi/ECON4925//undervisningsmateriale/IMF_book_ch.11.pdf

2. The others like Azerbaijan, Arab Gulf Countries and some African states which have started exploiting the fields and simultaneously adopting comprehensive or incomprehensive measures to provide the continuity or discontinuity of oil benefits. From this view, we will try to describe Azerbaijan's oil initiatives through Porter's Diamond Project for clarifying the economically competitive nature of certain states. "While the diamond model is most frequently used by analysts looking at specific established markets, it can also be useful to predict the future direction of emerging markets and industries. As such, it may play a role in business strategy and marketing. This proposal is visualized as a diamond shape formed by four points which influence and are influenced by every other point of the diamond, considering factor conditions, demand conditions, related and supporting industries and the firm strategy, structure and competitiveness or rivalry"¹.

By the nature of the Diamond Model, two additional factors lie outside the diamond, but exert a direct influence on it. One is government, which can intervene at any level to affect any number of key criteria, exerting a positive or negative effect on the whole project. For example, it can stimulate application of industrial innovations raising the quality by high performances and executions. It may also negatively impact the prospective oil advantages, either by its passivity or incorrect decisions (for instance, late legislations, unsuitable laws, etc.) or by overly controlling and centralized administrations on the management systems. In this case the national advantage may linger or hinder

¹ Definition - What does Porter's Diamond mean?

<http://www.investopedia.com/terms/p/porter-diamond.asp>

the whole progress of the business, while pushing the country into the cradle of a burdened economy.

The other factor which lies outside the diamond is chance (including land, skilled labor, size of population, technology, knowledge base, and state support, cultural or psychological peculiarities). All these factors are closely interrelated because any element of this content serves for the progress or regress of the other side or vice-versa.

b) Historical overview of oil business in Azerbaijan¹

From the history of Soviet times, before those years and during post-Soviet periods, the mining industry and exploitation of natural resources have assumed great significance for developing the Azerbaijani economy. It may be because Azerbaijan's richness with all types of natural resources, such as iron, copper, gold, all kinds of minerals and other varieties of luxurious elements gave a rocketing rise to all facets of its economy. However, as a matter of fact, this country is mainly famous for its hydrocarbon resources. Interestingly, the greatest part of Azerbaijan's hydrocarbon resources is located in the Azerbaijani sector of the Caspian Sea, i.e. in the offshore sites. This sector is a unique inner continental basin with its 379,000 square km area of water surface. Evidently,

¹ For writing this section the author mainly used the recent source book published in Azerbaijan, illustrating Azerbaijan's Oil History. (See: Azerbaijan's Filed Industry, Baku, 2005, Co-authors: Himayat Rizvan gizi, Sabit Bagirov, professor Ingilab Ahmadov, Fuad Rasulov and others, "Yeni Nesil" Publishing House, @Fredrik Ebert Fund and Azerbaijan Non-Governmental Organization "Boosting Transparency" pp.208)

the predicted hydrocarbon reserves of the Caspian Sea are estimated by hundreds of billion tons.

Besides this, 67 oil and gas fields have been discovered during the development of the oil industry in Azerbaijan. Currently, there are about 40 fields which are being exploited in land and more than 20 oil fields in the sea or offshore sites. Up to the present time, no less than 1.4 billion tons of oil and 450 billion cubic meters of gas have already been produced from these sites. The level of onshore exploration development of oil reserves is 87 % and the offshore share is only 59 %. Despite the disproportion between the potential volume of onshore and offshore sites, both locations are becoming more and more productive as they undergo extensive explorations.

It should be noted that, thanks to the strong will of Azerbaijan's all-nation leader Heydar Aliyev, on September 20, 1994, the "Contract of the Century" was signed with the leading world oil companies. This historical event opened the new phase in the oil industry of Azerbaijan. Up to the present time, approximately 100 onshore and offshore Production Sharing Agreements (PSA) have been signed with more than 30 companies and representing tens of foreign countries. According to these contracts, the foreign oil companies made commitments to invest more than \$ 60 billion for exploring the seabed in the Azerbaijani sector of the Caspian Sea initially.

Starting oil business in the Caspian basin in close cooperation with the advanced western countries required taking many risks: first, it

was necessary to find out logical substantiation and optimal decisions for the first and following steps to provide the continuity of the “fragile oil deal”.

1. Modern Economic Challenges of oil producing countries

1.1. Problem of “oil dependency”: views and challenges

Oil countries significantly vary from each other in the extent of dependency. For some countries, oil accounts for the vast majority of fiscal revenue and exports are extremely important for revival, whereas it is less important for the economy of some other countries. On the other hand, oil sectors and financial situations are also different for the oil developers. Some of them possess a big share of financial assets, while the others are more concerned about public debt. Thus, the likely situation raises various options in the response requirements of reducing oil dependency in each country. It also impacts the determined measures of oil countries in neutralizing the negative effects of oil price fluctuations.

Today there are 115 oil-producing countries in the world, and the developmental trend of oil production has varied over different periods. **Chart 1**¹ clearly shows the uneven nature (but general increase) of this tendency.

Nevertheless, the 10 top oil producers, as shown on **Chart 2**,² are different in quantifying the volume of output product.

¹ US Department of Energy, Energy Information Administration - Energy Information Administration / Annual Energy Review 2006

² Vladimir Basov, “Top 10 oil and gas producing countries in 2012” Mining Com., June 14, 2013

Chart 1 developmenttal trend of oil production in the world

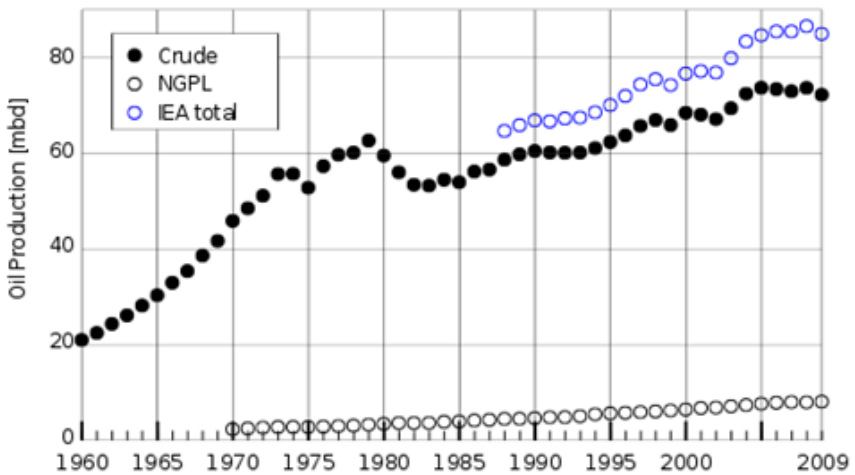
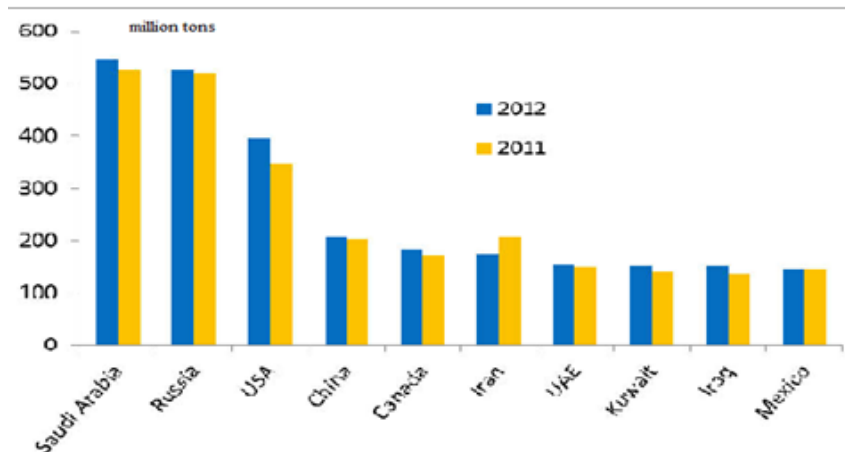


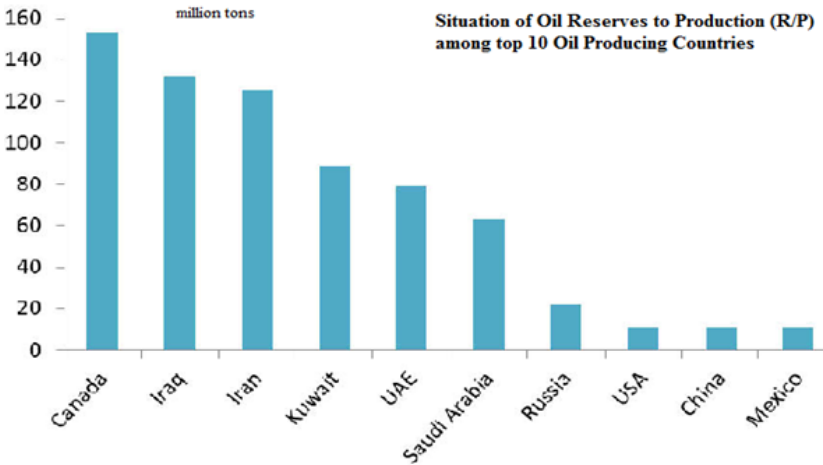
Chart 2 Dispositions of Top 10 Oil Producers



The total volume of the world oil reserves is not clear to anybody; however, the world's supply will eventually be depleted if we do not find alternative sources of energy in the coming decades.

Chart 3 shows “the reserves-to-production (R/P) ratio depicting the “burning rate” of proven oil reserves in-situ for any given country when applying current levels of domestic oil production”.¹

Chart 3 Oil Reserves to Production of Top 10 Oil producing Countries



Consequently, the presence of an “oil depletion led” economy creates many problems for all of humanity and urges scientists to find alternative models of energy and eliminate oil dependency.

Such policy is crucially important. From one side, it (a) may create more effective economic growth of the countries involved in oil business, (b) may open the ways of more intellectualizing their industry, and (c) facilitate reduction or minimization of the environmental pollution of the entire universe. Only then, the

¹Vladimir Basov, “Top 10 oil and gas producing countries in 2012” Mining Com., June 14, 2013

major ecological problems and all types of pollution can significantly be decreased.

There are also other complications related to oil production. Some oil-producing countries have already faced the cases when many factors like misappropriation of public funds (corruption) and poor administration of oil revenues brought them to failure in the prosperity of the oil business. From this viewpoint, each country has its own way to develop its oil business, while considering many economic, social and political realities. However, it does not exclude the existing commonalities for all oil dependent countries. Of course, it is a much wider issue needing an individual and in-depth analysis. These commonalities create some prerequisites for individual challenges for each unique country.

Undoubtedly, without relying on sound facts, making some hypothetical assumptions may not lead us to success. For example, in 2012 Konrad-Adenauer-Stiftung organization, Jordan, represented by Dr. Martin Beck and Simone Huser identified and recommended 6 major challenges to oil-producing countries:

1. Strengthen democratic institutions;
2. Strengthen human security;
3. Strengthen civil society;
4. Strengthen the private sector;
5. Combat corruption, and
6. Strengthen international cooperation.¹

They also proposed the rent theory policy as the first element to help oil rich countries. By their opinion, the amount of hydrocar-

¹ Opportunities, Problems, and Challenges of Oil-Producing Countries: Lessons learned from Rent Theory and Empirical Cases ,01 Feb., 2012, by Dr.Martin Beck and Simone Huser, Salahaddin University, Erbil, Iraq
http://www.kas.de/wf/doc/kas_30925-1522-2-30.pdf?120503141748, p.3

bon resources consists of rents, where income is not balanced by investment or labor. The existing huge gap between the oil price and the capital and labor invested to produce oil creates an uptake of immediate activities by these individual countries in order to more comprehensively harmonizing the economic processes. “As François Seznec (2008 in Middle East Policy) calculated, the production costs of one barrel in the Gulf region are between 1.5 and 8 United States Dollar (USD).”¹ Davis et al² mainly underlined the fiscal policy to be the foremost for oil-producing countries to eliminate their oil dependency.

Another tremendous difference is related to the type of ownership. For instance, in Venezuela and Mexico, the oil sector is dominated by a state-owned producer as in Azerbaijan. But we know that private ownership is also found in the world practices.

Mr. Fuad Al-Zayer, Head of the Data Services Department at the Organization of OPEC Secretariat³ noted the increasing trend of the world oil and gas production to 2030 as an average of 1,4% per year, and to make up around 36,5% of the world energy mix by 2030 or about 120 mbpd, according to the OPEC reference scenario. By the opinion of OPEC representative, “the techno-

¹ Opportunities, Problems, and Challenges of Oil-Producing Countries: Lessons learned from Rent Theory and Empirical Cases ,01 Feb., 2012, by Dr.Martin Beck and Simone Huser, Salahaddin University, Erbil, Iraq
http://www.kas.de/wf/doc/kas_30925-1522-2-30.pdf?120503141748, p.3

² Davis, J. M., Ossowski, R., and Fedilino et al, A., Fiscal Challenges in Oil-Producing Countries: An Overview, in Fiscal Policy Formulation and Implementation in Oil Producing Countries (Davis, J.M., Ossowski, R., and Fedilino, A., (eds.) Washington D.C.: IMF 2003)

³ "World National Oil Companies Congress", London, U.K., 25-26 April, 2007

logical development and innovation” are the immediate challenges for all these countries.

The next challenge that comes is related to (a) environmental problems caused by oil operation following the (b) uncertainties of oil and gas demands of the world. It should be mentioned that there also exist two major signals coming from consumers. The first one is connected with the security of oil and gas supplies of the countries and the next is the reluctance of the users to further utilize fossil fuel. Analyses of the likely tendency are much justified because of cost-effectiveness and the environmentally friendly nature of the alternative energy. “For example, the US (the United States) Government has launched its “Twenty in Ten” initiative, which aims at reducing gasoline consumption in the United States by 20% over the next decade”¹. As we see, modern challenges of oil producing countries vary from country to country, putting forward various market demands.

1.2. The problem of management of oil revenues: statistics & requirements

Today there exist completely different opinions in management of oil revenues, while most recommend centralization of oil revenues as the preferred solution. Researchers have also considered using oil funds and oil risk markets to promote better fiscal manage-

¹ The future of oil and gas and the resultant challenges and opportunities for NOCs. Keynote address by Mr. Fuad Al-Zayer, Head, Data Services Dept. at the OPEC Secretariat, to the "World National Oil Companies Congress, London, U.K., 25-26 April, 2007. http://www.opec.org/opec_web/en/press_room/864.htm

ment. However, econometric evidence and country experiences raise questions about the effectiveness of oil funds.

If the economy of any oil-producing nation intends to have a continuous and stable growth, and exclude long-term economic disruptions or declinations, then oil and tax revenues, as well as foreign exchange income or bonus from oil and gas revenues need to be replaced or to be shifted into the non-oil industry or economy. However, it is not as simple as it looks. In fact, this will need a set of socio-economic, legislative, political and innovative measures in order to provide a long lasting and self-sustaining economy at the same time.

Another important challenge is increasing manufacturing which teaches the ways of independence and henceforth a range of non-oil activities may appear to be under state ownership. Commodity production may open the door not only to bringing out new national skills, but also to harmonizing the proportion of import and export of the oil-producing nations.

Countries with oil exporting industries have varying challenges and practices in the development of their management activities. “According to the U.S. Energy Information Administration, the top five exporters of petroleum oil in 2009 were **Canada, Mexico, Nigeria, Saudi Arabia and Venezuela**. Most countries import oil in order to meet their needs, making them dependent on exporters who can limit petroleum sales as well as raise oil prices.”¹

¹ The Benefits & Disadvantages of Oil, by Steve Johnson, e How Contributor, August 28, 2014: http://www.ehow.com/list_6371814_benefits-disadvantages-oil.html

Another important challenge is connected to the growing tendency of transformation in export structures. This refers to the major industrial powers as **China, Korea, India, Brazil, Malaysia, Vietnam, Indonesia** and **Mexico**. Nowadays these nations are deeply integrated into the global production networks through a wide range of sectors. “The other countries are more or less free in their exports. About 35 countries are dependent on hydrocarbons and new producers like Ghana and Uganda are coming on stream.”¹

Oil policy openness, investment and expenditures play an irreplaceable role in the management of oil revenues. Referring to this, a recent United Nations (UN) Report says: “Economic openness explains the fact that an economy may be vulnerable to external economic shocks (as reflected by losses in export revenues and growth slowdowns), but the scale of impact depends largely on the degree of concentration of a country’s export portfolio. Since economic openness is measured as the ratio of international trade to Gross Domestic Product (GDP), the transmission channels by which economic openness impact vulnerability can be import- or export-related”². It further states that the “data on the share of exports in GDP indicates that, for developing countries, exports have been growing in relative importance to production for domestic consumption.”³ The proportion of oil and gas production

¹ Alan Gelb: Economic diversification in Resource Rich Countries..., p.2.

² Development/Towards Human Resilience/Towards Sustaining MDGProgress_Chapter1.pdf
[http://www.undp.org/content/dam/undp/library/Povert Reduction/Inclusive](http://www.undp.org/content/dam/undp/library/Povert%20Reduction/Inclusive)

³ Development/Towards Human Resilience/Towards Sustaining MDGProgress_Chapter1.pdf
[http://www.undp.org/content/dam/undp/library/Povert Reduction/Inclusive](http://www.undp.org/content/dam/undp/library/Povert%20Reduction/Inclusive)

and consumption was also different in Azerbaijan until 2000. **Charts 4 and 5**¹ may vividly illustrate that how the case looked in the earlier stages.

Chart 4 Azeri Natural Gas Production & Consumption, 1992-2000

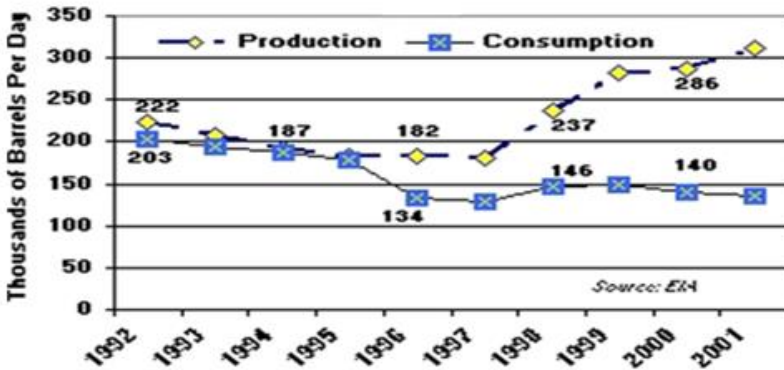
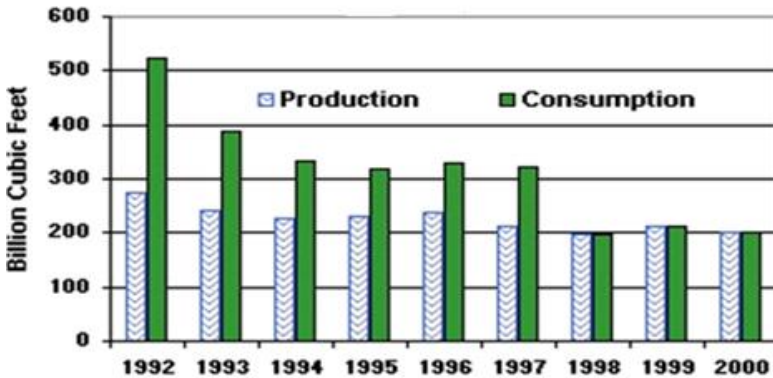


Chart 5 Azeri Oil Production & Consumption, 1992-2000



¹ Economic overview of Azerbaijan. Quarterly bulletin of TACSIS 2001, April-June

Let us say a few words about the **Arab Gulf States** as Bahrain, **Kuwait, Oman, Qatar**, Saudi Arabia and the **United Arab Emirates** which have some common characteristic features: high percentage of oil share in GDP proportion amounting to some 75 percent. They have some 45 percent of the world oil reserves and are capable of supplying approximately 25 percent of the world oil output. This creates the new situation of insufficiency of labor force to work in the oil and gas sector. Actually, as we will analyze it later, availability of resources is the major element of factor analyses in Diamond Proposal. For this reason, they are obliged to import foreign labor from different countries. It puts forward the necessity of reducing oil's share in generation of national GDP.

Adversely, the situation in Azerbaijan is quite controversial. Data analyses confirm the fact of increasing dependency of the economy on export concentration ratio in the Commonwealth of Independent States (CIS) in 1995-2009.

In contrast to this, in Latin American Countries (LAC), Asian and Pacific oil producing countries, oil dependency is quite erratic, but highly growing. It is because the “dependence on a narrow range of exports gives rise to risks associated with the lack of diversification, thereby exacerbating (these countries’) vulnerability to economic shocks. Export diversification aims at mitigating these risks, including the volatility and instability in export earnings—which in turn have adverse macro-economic effects on growth, employment, investment planning, export capacity, foreign

exchange reserves, inflation, capital flight and, inter alia, debt repayment.”¹

Another important challenge is trying to identify the types of goods are needed to be exported. For example, a country exporting oil may have shifts and can export oil facilities, oil and safety equipment instead. In fact, it is a very desirable trend to make a comprehensive change in the export industry of Azerbaijan as well, as **China, India** and others are very engaged now.

Let us look at the other side of the coin-**Indonesia, Malaysia** and Norway, where production is already on a plateau or declining,” which is why they “have achieved diverse economies and sustainable growth paths; **Algeria**, where a shift from oil to gas dependence cannot long postpone a transition to alternative sources of growth; Saudi Arabia, **Iran** and Kuwait, which are long-term oil exporters but will soon need to develop supplementary sources of growth; Nigeria and **Kazakhstan**, whose production can be extended beyond the next decade; **Angola**, Azerbaijan and **Timor-Leste**, whose economies have been transformed by recent oil developments and are in the early stages of depletion-driven development .”²

Next, a number of oil producing states’ oil income is tremendously bound to various components of taxes. It may include **Bahrain**,

¹ Economic overview of Azerbaijan. Quarterly bulletin of TACSIS 2001, April-June

² Ending Dependence. Hard Choices for Oil-Exporting States, A Chatham House Report by John V. Mitchell and Paul Stevens, UK, London, www.chathamhouse.org.uk, © Royal Institute of International Affairs, 2008, 42 pages., pp.9-10, ISBN 978 1 86203 205 7

and some other **Gulf countries**. Nevertheless, whilst hydrocarbon revenues gradually decline, a possible expansion of taxation and indexation policy is quite logical. As the non-oil revenue is smaller, the current state expenditures are usually covered by oil incomes. This is now peculiar for Azerbaijan as well because the country is not very industrialized yet, which could have allowed her to be free from oil dependence. However, there is a close relationship between diminishing oil reserves and oil revenues; here one is affected by the dwindling share of the other. For example, to better meet these requirements, Bahrain has set a prospective goal of increasing its domestic product by 5%-6% over the next few years.

The situation with **Norway** is quite challenging though the country had relatively new experience in oil drilling, it has paved a tremendous way in decreasing its oil dependency. “The latest investment figure for 2014 was revised slightly up to 231,7 billion from 223,7 billion crowns, partly due to higher exploration spending. Norway's oil production peaked in 2000, and current output is less than half that year's level.”¹ Value creation of petroleum resources and competitive production in oil and gas industry in Norway are results of concerted efforts possible due to close interaction between authorities, oil companies, research institutions and universities. The petroleum industry of Norway has *know-how* and required expertise to make optimum utilization

¹ Business Recorder, “Norway’s Oil Investments to fall in 2015, weigh of economy. 12 June, 2014
<http://www.brecorder.com/markets/energy/europe/178349-norways-oil-investments-to-fall-in-2015-weigh-on-economy.html>

of petroleum resources in a safe way. Experience, skill-sets and technological advances developed on Norwegian continental shelf are used by the global oil and gas industry.”¹ For example, “with per capita GDP around \$100,000 the Norwegian lifestyle has become such that the work week averages less than 33 hours, one of the lowest in the world, and while unemployment is low, there is large underemployment, made possible by benefits.”²

The case with **Nigeria** is relatively different. In fact “for the past three decades, crude oil has been a major source of revenue, energy and foreign exchange for the Nigerian economy. Reportedly, 80 percent of Nigeria’s energy revenues flow to the government, 16 percent covers operational costs, and the remaining 4 percent go to investors.”³ Actually, this shows high-level dependence of the country’s economy not only on oil, but on the socio-economic policy pursued by the country as well (the practice has shown that the latter is less comprehensive). That is why the United Nations-sponsored National Millennium Goals for Nigeria for 2000 to 2015 recommends this country “to be committed to achieve a wide range of ambitious objectives involving poverty

¹ Economy Watch, 29 June, 2010, “Norway Oil and Gas Industry”:
<http://www.economywatch.com/world-industries/oil/norway-oil-gas.html>

² Reuters: “End of oil boom threatens Norway's welfare model”, by Balazs Koranyi, Oslo, May 8, 2014 <http://www.reuters.com/article/2014/05/08/us-norway-economy-insight-idUSBREA4703Z20140508>

³ Gbadebo Olusegun: ODULARU:”CRUDE OIL AND THE NIGERIAN ECONOMIC PERFORMANCE”, Department of Economics and Development Studies, College of Business and Social Sciences, Covenant University, Oil and Gas Business, 2007
http://ogbus.ru/eng/authors/Odularo/Odularo_1.pdf

reduction, education, gender equality, health, the environment, and international development cooperation.”¹

“The ascendancy of oil to the prime position in Nigeria and the neglect of all other non-oil sector gave Nigeria a mono-cultural economy or a one legged economy. Despite being the 8th largest producer of crude oil, what we have in the country to show the world is unprecedented level of unemployment. Nigeria today is one of the poorest countries of the world as measured by the United Nations Development Programme (UNDP) Human Development Index (HDI).”² Obviously, it is a bitter reality of the oil metamorphosis or national advantage of resources, i.e. negative example of oil advantage.

The following **Table 1** shows the major indicators of oil business in Nigeria, where exporting of oil remains the leading focus of the country.

Though there is a big difference in the balance of oil and gas import and export between the developed and poor countries, the oil dependency is still also largely retained in the **USA and UK** trades where “oil dependency, and the allure generated of great wealth through government contracts, spawned other economic distortions. The country's high propensity to import means roughly 80% of government expenditures is recycled into foreign ex-

¹ Gbadebo Olusegun: ODULARU:”CRUDE OIL AND THE NIGERIAN ECONOMIC PERFORMANCE”...

² Issues and Challenges, “Crude Oil Exploration, Exploitation and Production in Nigeria.” <http://environmentalsynergy.wordpress.com/2012/07/01/issues-and-challenges-crude-oil-exploration>

change.”¹ As we see, a mere shift of the oil import and export balance cannot immediately lead to the economic prosperity of a country.

Table 1² Labor (L), Capital (K), Real Gross Domestic Product (RGDP), Domestic Crude Oil Consumption (DC) and Crude Oil Export (E) in Nigeria, 1995 – 2005 (Adapted)

Year	L	K	RGDP	DC	E
1995	39,46	30903	533736	98,500.00	616,900.00
1996	40,63	33872	555791	91,500.00	648,690.00
1997	41,83	48570	571854	86,370.00	673,340.00
1998	43,04	39380	587954	88,620.00	687,390.00
1999	44,26	41613	594975	112,410.00	666,490.0
2000	45,49	43797	624072	688,080	109,800.00
2001	46,84	34470	653512	142,220.00	674,930.00
2002	48,19	42793	683786	164,250.00	490,810.00
2003	49,56	69841	749202	164,250.00	490,810.00
2004	50,94	105239	798496	164,200.00	736,400.00
2005	n/a	34164	848219	73,105.90	846,179.70

Next, another challenge for oil-exporting countries is connected with the rate of population growth. This is especially applicable for oil-producing countries, such as China, India, **Russia**, and some others. Despite existence of oil fields, India and China are seemingly much restrained to explore its oil fields now rather than

¹ Gbadebo Olusegun: ODULARU: “CRUDE OIL AND THE NIGERIAN ECONOMIC PERFORMANCE”...

² Business Standard, “India, China and crude politics.” by Aman Sethi, 5 August 5, 2014. http://www.business-standard.com/article/opinion/india-china-and-crude-politics-114080501855_1.html

postpone it for future. “In 2013, India imported 3,86 million barrels per day of crude oil, overtaking Japan as the world's third largest importer. While Indian investment in Africa pales in comparison with China's ever-expanding engagement, the continent accounted for 16 per cent of India's oil imports last year. India is now the biggest buyer of Nigerian oil, and...has acquired exploration blocks in Nigeria, Libya, and a stake in **Mozambique's** recently discovered natural gas deposits.”¹

In **Russia**, the situation is complex due to recent political developments around Ukraine and trade sanctions imposed by the West on Russia's selective areas. The major Russian giant Rosneft's approach to oil cooperation is increasingly intent on exporting to Asia. Oil from this region is destined mainly for exports to Mongolia, China, and the Asia Pacific region and is said to support the Shanghai Treaty. Another reason for targeting this region is related to the higher oil prices in these markets. The latest information is that though these routes are not so profitable for Russia, “exporting oil to Asia, however, was an absolutely right decision.”²

Evidently, the recent socio-political changes of forces in the world arena are also mirrored in oil import and exports. Interestingly, the countries importing less oil from **Iran** also remained untouched in the new sanctions imposed by the USA on the import of Iranian

¹ Patey, Luke. THE NEW KINGS OF CRUDE China, India, and the Global Struggle for Oil in Sudan and South Sudan. HarperCollins.
http://www.business-standard.com/article/opinion/india-china-and-crude-politics-114080501855_1.html

²Russian oil exports shift east: Kira Egorova, 3 March, 2014. Source: Russia Beyond the Headlines;
http://rbth.com/business/2014/03/03/russian_oil_exports_shift_east_34729.html

oil. Countries with negligible volumes of Iranian oil, such as China, India, the Republic of Korea, **Turkey, and Taiwan**, have again qualified for an exemption to sanctions.¹ Growing dependence on re-current spending and lack of transparency are the old habits for some oil countries. This is especially peculiar for the developing or poorly developed oil states.

From this view, Luke Patey's² recent publication of the Review book "The New Kings of Crude: China, India, and the Global Struggle for Oil in Sudan and South Sudan" is quite noteworthy. It depicts the Chinese and Indian fight for oil in South Sudan and Sudan. "It is a very weighty work that meticulously researched and mixing knowledge and in-depth analysis of the oil industry in both Sudan's, the context in the countries' conflicts and sheds a fascinating light on the Chinese and Indian quest for oil concessions as part of their wider economic and energy ambitions."³ With South Sudan no longer exporting oil, it no longer receives the oil revenue that once accounted for 98 percent of the government's budget. "For almost a year and a half, its economy has stayed afloat, courtesy of a combination of loans from China,

¹ Business Line, "US exempts India, China from sanctions on Iranian oil." 30 November, 2013.

<http://www.thehindubusinessline.com/news/international/us-exempts-india-china-from-sanctions-on-iranian-oil/article5407920.ece>

² Luke Patey is a project researcher at the Danish Institute for International Studies. He is involved in researching the rise of Asian national oil companies from China, India, and Malaysia, and their investment in Sudan.

³ "Petrol and Power in the Sudans – the Chinese and Indian fight for oil in South Sudan and Sudan." 30 March, 2014, Review of Luke Patey, *The New Kings of Crude: China, India, and the Global Struggle for Oil in Sudan and South Sudan*, London: Hurst and Company, 2014. Keith Somerville <http://africajournalismtheworld.com/2014/03/30/petrol-and-power-in-the-sudans-the-chinese-and-indian-fight-for-oil-in-south-sudan-and-sudan/>

Qatar, and other bilateral donors.”¹ According to the agreement between Sudan and South Sudan, the latter takes approximately more than four times more profit than the first one in oil business (\$9 billion vs. \$2 billion).

Paradoxically, South Sudan urban areas cannot become self-sustainable if they withdraw oil dependency, resulting in government advisors firmly recommending investment in more efficient transportation systems. These include embracing a long-term workout to shift to the newest transport system, as hybrid or electronic vehicles.

1.3. Azerbaijan: case analyses of oil business and measures for decreasing oil dependence

“Azerbaijan's share in global oil production last year totaled 1.1%”² and “oil consumption in the country increased by 5.4% in 2012.”³ The following **Chart 6**⁴ shows the statistical figures of fluctuating volume of Azerbaijan’s oil production forecast.

Chart 6 Oil Production Forecast in Azerbaijan

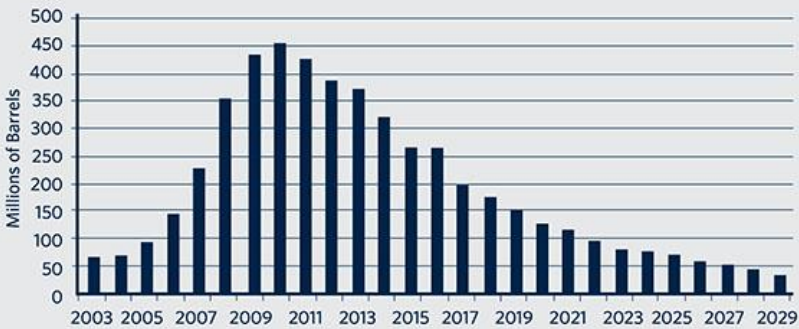
¹ The Middle East Channel, , “Sudan, South Sudan Oil Deal has its limits.” By Richard Niel, 17 November, 2013. http://mideastafrica.foreignpolicy.com/posts/2013/04/17/sudan_south_sudan_oil_deal_has_its_limits

² “Azerbaijan’s oil production decreases in 2012: Statistics Committee.” *Azernews*. By Aynur Jafarova, 14 June, 2013.

³ SOCAR, Economics and Statistics, <http://new.socar.az/socar/en/economics-and-statistics/economics-and-statistics/oil-production>

⁴ Thomas de Waal, Article, 7 October, 2013, Carnegie Endowment for International Peace. <http://carnegieendowment.org/2013/10/07/what-lies-ahead-for-azerbaijan>

Figure 1: Oil Production Forecasts in Azerbaijan



Source: Center for Economic and Social Development, Baku, April 2011

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Assuming a range of measures that vary from time to time, the current Azerbaijan government's economic strategy is under review, and the liberalization of inward investment is taken as key issue to lessen the oil dependence. Here, the main purposes of Azerbaijan's government are:

- diversifying the economy and national income, which will be pursued through developing small- and medium-scale industries;
- encouraging the services sector, notably commercial services;
- developing off-shore banking and tourism by removing obstacles to foreign investment;
- encouraging the contribution of the private sector to economic development.

Table 2 shows the statistics of Azerbaijan's growing economy in all facets of its socio-economic development. The table shows the dynamism of major trends of developments in oil-related areas.

Table 2 Statistics of growing economy of Azerbaijan for 2000-2013

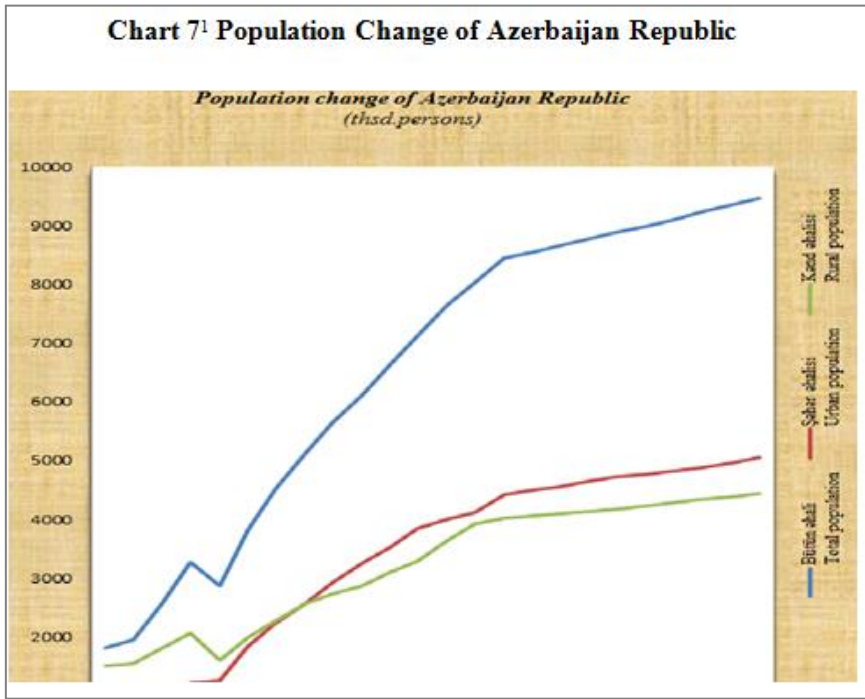
	00	01	02	03	04	05	06	07	08	09	10	11	12	13
Number of acting enterprises - total, unit	58	72	63	66	59	63	80	83	83	82	81	82	86	107
Volume of industrial products (works, services), at factual prices, million manat	1,6	1,8	1,9	2,3	2,9	5 673	10 537	16 364	22 581	16,417	20,7	26,737	25,4	24,5
Index of actual volume of industrial products relative to previous year, at percentage	101	105,9	102,4	100,3	100,8	142,3	144,7	129,1	105,3	112,5	101,2	90,5	95,9	100,9
Share of field in total volume in industrial products produced in the country, at percentage	53,3	58,6	59,3	56,6	57	60,9	67,8	72,7	75,8	72,7	74,1	76,3	7,7	72,4

As previously mentioned, the population number also makes sense with the adoption of socio-economic measures to eliminate the country's dependence on hydrocarbon resources and draft the long-, mid-, and short-term economic growth. According to recent statistics, the population of Azerbaijan is increasingly growing. "If population grows at 3% per year, the per capita contribution of a constant resource sector will halve in 24 years. Long-run prosperity and social stability will require the productive employment of growing factors of production, including labor."¹ Between 2005 and 2014, the Azerbaijan population has grown approximately 2 million.

¹ "Economic Diversification in Resource Rich Countries Center for Global Development." By Alan Greb, Center for Global Development. Seminar on Natural resources, finance, and development: Confronting Old and New Challenges, Central Bank of Algeria & IMF Institute in Algiers, 4-5 November 2010. <http://www.imf.org/external/np/seminars/eng/2010/afrfin/pdf/gelb2.pdf>

Chart 7 shows a dramatic change in the total number of population. From the beginning of the year number of country population increased by 75.4 thousand person or 0.8% and for the state of 1 September, 2014 reached to 9552.5 thousand person. 49.7 % of population consists of men, 50.3% women. 22.4% of population aged 0-14, 71.8 % - aged 15-64, 5.8% - aged 65 and over. At the moment there are 1000 women per 1011 men.¹

Now we will shift our focus to the oil business and its indicators in Azerbaijan because of its uniqueness to be exemplary in a gradual release from oil dependency. Azerbaijan’s model is similar to the Norwegian one. In order to more efficiently use the gained oil profits and oil and gas projects as the whole, on December 29,



1999 the President of the Republic of Azerbaijan signed a decree to establish SOFAZ “to ensure collection and effective management of foreign currency and other assets that are generated from the implementation of agreements signed in the field of oil and gas exploration, and development.”¹

While analyzing the history of oil-producing countries, such as Kazakhstan, Turkmenistan, Iraq, Bahrain, Saudi Arabia, Angola, Nigeria, Norway and other OPEC and International Petroleum Exporting Countries (IPEC), we observe the existence of a structure for properly managing oil revenues. While reviewing the annual reports of SOFAZ for the most recent 10 years, we find very interesting facts about its increasing importance. The **Chart 8**² shows the information about the difference between SOFAZ’s actual expenditures and reserves over 10 years.

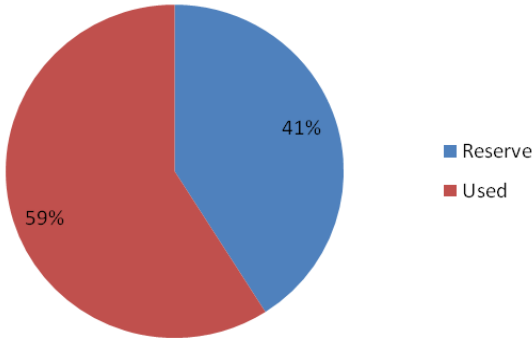
Due to the comprehensive policy of the Azerbaijan President, the State Oil Company of the Republic could realize the growth in all spheres of economy during the recent oil boom. “It accelerated to 5,8% in 2013 from 2,2% a year earlier, reflecting recovery in the oil sector and continued growth in the rest of the economy. Declining oil prices squeezed export earnings and narrowed the current account surplus to 16,7% of gross domestic product.

¹ Sovereign Wealth Funds (SWF) (New challenges for Caspian countries), Revenue Watch Institute, Baku, 2011, 160 pages, p.74

² Sovereign Wealth Funds (SWF) (New challenges for Caspian countries), Revenue Watch Institute, Baku, 2011, 160 pages, p.74

Growth is projected to moderate to 4%-5% in 2014 and 2015 as industry grows more slowly.”¹

Chart 8 Fund's Reserve Level (2001-2012-USD million)



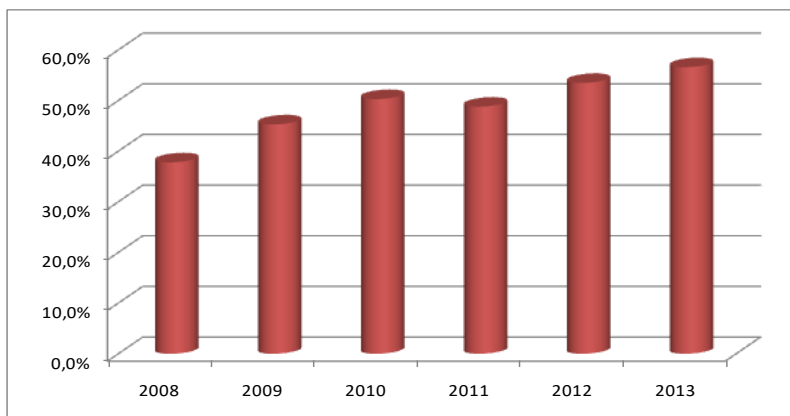
Similar to 2012, the non-oil sector also dominated the 2013 GDP structure. Resulting from the economic diversification policy, the non-oil sector showed a double-digit growth rate with the relative share reaching 56,6% of the overall GDP. Moreover, after two years of decline, oil production began to stabilize and value added in the oil sector was 1%. In the light of oil production contraction observed last year, 3,9% decline in industrial production has been replaced by 1.2% increase in the reporting year.”² (See: **Chart 9**)³

¹ Asian Development Bank, Economy, Manila, 2014.
<http://www.adb.org/countries/azerbaijan/economy>

² Annual Report 2013, (SOFAZ, Baku ,24 Neftchilar Avenue, Dalga Plaza, p104

³ Ibid

Chart 9 Share of Non-Oil Sector in Azerbaijan

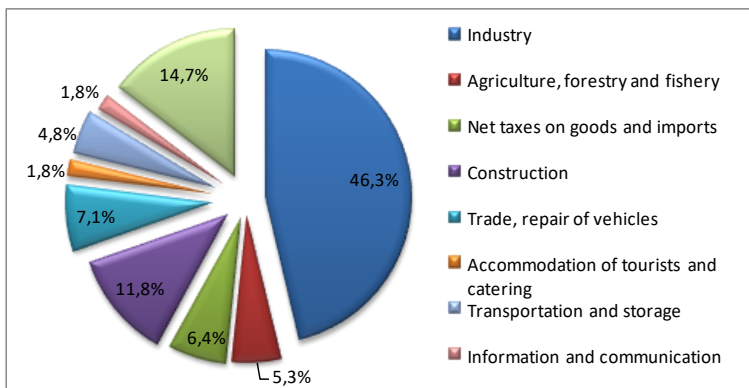


In the GDP structure, the ratio between goods, services and net taxes on goods and imports maintained at level similar to 2012. Production of goods accounted for 63,4% of GDP, production of services for 30,2%, and net taxes on goods and imports accounted for the remaining 6,4%. Share of industrial production in GDP has slightly decreased, while agriculture and construction sectors' relative shares have recorded an increase. In 2013, services sector grew at an increased rate compared to the previous year. Among the non-oil sectors of the economy, the construction sector has performed particularly well. The breakdown of the GDP by sector and their growth dynamics are provided in the **Chart 10**.

At the result of effective usage and exportation of Azerbaijan's carbon and hydrogen reserves, the country became a new international center in the region while simultaneously possessing the principal position in the Black Sea-Caspian Basin; it stimulated opening the door to the creation of East-West Power

Corridor.¹ Following this, Azerbaijan also continued realization of its next challenge while updating its legislation to the worlds’ standards by fixing the “legislative gaps.”

Chart 10 Breakdown of GDP by sector



Despite the complex measures for keeping the prosperity of the country facilitated by oil revenues, the state allocations for the development of ownership remained as the key field of economic policy. “The investments made to the Azerbaijan economy within the framework of ‘The Contract of the Century,’ encouraged the growth in non-oil sector. The fundamental progress observed in all fields of Azerbaijan economy during the recent years can be deemed to the results of that. Note that, during the last five years, the amount of the gross domestic product of Azerbaijan increased by 10% per year. Besides it, if 10 years ago the inflation rate in the republic was 1600%, today it is only 2% and less.”²

¹ I Annual Report 2013, (SOFAZ, Baku ,24 Neftchilar Avenue, Dalga Plaza, p104

²....“New Oil Policy and Economic Development in Azerbaijan”, p.189

Assets amounting to 800 million dollars have accumulated in the State Oil Fund, which created opportunities for investment in the non-oil sector of our economy. It enabled the country to be more powerful when the “growth accelerated to 5,8% from 2,2% in 2012, driven mainly by a 10% expansion in the 52% of the economy not directly connected with oil.

Table 3¹ Major economic indexes in 2014 and the predicted figures for 2015.

Selected Economic Indicators (%) - Azerbaijan	2014	2015
GDP Growth	5,0	4,8
Inflation	4,0	3,5
Current Account Balance (share of GDP)	16,0	15,0

The following **Table 3** clearly indicates the rapid growth of the major economic indexes in 2014 and the predicted figures for 2015.

Economic prospects that are calculated for further attempts to make the budget less dependent on oil revenues may cut public investments in coming years, possibly slowing growth more than currently projected. But what are the main non-oil areas? The non-oil sector of Azerbaijan economy embraces those groups of

¹ Asian Development Bank, Economy, Manila, 2014.
<http://www.adb.org/countries/azerbaijan/economy>

activities that are developed outside the petroleum and gas industry or it has not a direct link to these sectors. These mainly are the areas of services as telecommunication, finance (banking and insurance), tourism, trade, (wholesale and retail), public health, exporting trade, agriculture, minerals, power (conventional and renewable energy), manufacturing, ecology and environment, including waste management and recycling, research and development (R&D), ICT, etc. Some purposeful measures pursued by the government to stimulate the non-oil sectors are underway. A set of laws has been adopted to more rigorously subsidize the non-oil spheres.

Table 4 Rate of confirmed world oil resources

The rate of confirmed world oil resources			
Regions	bln. barrels	bln. tons	%
Near East	654	89,6	59,7
North America	87,7	12	8
Latin America	68,0	68	68
Africa	56,9	7,8	5,2
Asia	45,1	6,2	4,1
Europe (without CIS)	18,5	2,5	1,7
CIS	165,5	22,7	15,1
Russia	136,5	22,7	15,1
Caspian Region	29	4,0	2,6
Total	1095,7	150,1	100

However, a remaining major challenge of oil exports is closely connected with increasing manufacturing industry. The following **Table 4**¹ shows the estimates of existing misbalanced proportions in the distribution of oil resources. It is sufficient to say that “77% of the world oil supply comes from OPEC countries”.² The statistics of this distribution may vary from country to country, as well as from year to year.

¹ Asian Development Bank, Economy, Manila, 2014.

<http://www.adb.org/countries/azerbaijan/economy>

² Ibid

2. Porter's Diamond Model for measuring Azerbaijan's oil dependence.

2.1. Azerbaijan's hydrocarbon dependence and its perspectives

There are many ways in which oil money can destabilize the economy, as have been mentioned. "However, many remedies fail or cannot be implemented at all due to the lack of institutional capacity, traditions of bottom-up control and system of checks and balances"¹, and other measures.

The legacy of a centralized economy does not help much to develop these important prerequisites of reforming the public resource management. That is why reducing the oil-dependency, and simultaneously shifting the economic growth to non-oil dependency is one of the essential tasks for Azerbaijan's economy. On the one hand, the economy of Azerbaijan has a huge influx of petrodollars, but on the other hand, implementing organizations do not have enough capacity to absorb these amounts. This situation causes a lack of transparency and public participation and opens the door to mismanagement and corrupt practices. Of course, cultural values and old habits also assume great significance. Under these conditions, the government of Azerbaijan needs to solve the problems related to: (1) the effective management of oil funds, (2)

¹ Vugar Bayramov (CESD), "Ending dependency: How is oil revenues effectively used in Azerbaijan", p.4

elimination of oil dependency, (3) behaviour of the country's economy when there is no oil.

There are also a number of stochastic (having a random probability distribution or pattern that may be analyzed statistically but may not be predicted precisely) methods for measuring oil dependency. This is an early attempt to show that growth is directly related to savings and indirectly related to the capital/output ratio. According to the Harod-Domar equation, growth rate g can be described as a function of the saving rate s and capital-output ratio ν

$$g = F(s, \nu)$$

In another proposal, in Solow's model, the economic growth is based on the premise that output in an economy is produced by a combination of labour (L) and capital (K), under constant returns, so that doubling input results in doubling output. Contemporary versions distinguish between physical and human capital. Thus, the quantity of output (Y) is also determined by the efficiency (A) with which capital and labour is used. Or mathematically:

$$Y = A f(L, K).$$

Here "the growth in output per worker among others, is a function of initial output per worker, the saving rate, initial level of technology, rate of technological progress, the rate of depreciation, and the growth rate of the workforce. In the model, higher savings will cause a higher growth of output per worker whereas an indication growth rate of the labor force (adjusted for depreciation and technological process) has the opposite effect on growth. In the Solow growth model, a measure for human capital is added as

an additional determinant of growth”¹. In other words, according to this model, growth of the output is the result of the growth of capital, labor and efficiency. Accumulation of capital directly related to investments, usually assumed equal to savings, and finally, savings themselves depend on output and propensity to save. This model describes the general tendency and regularities.

In every country, depending on its history, behavioral patterns, state of economy, and so on, we will have some deviations in regularities. Over recent years, especially at the end of the 90s and beginning of the 21st century, infrastructure development and replacement of the outdated physical capital in key industries were the prioritized areas of investments in Azerbaijan. Actually, this is like the situation of accelerated depreciation, and in such a situation, due to the high depreciation rate of the physical capital, we have less opportunity for the capital growth where we have $K = I - \delta K$. Due to these circumstances, the expected growth rate was significantly less than expected.

All country infrastructures needed huge investments for rehabilitation at the time of 90th for Azerbaijan; that is why great oil revenue savings were not likely option in the economy. Thus, G-growth was expected to be less than the total volume of S–savings, and R-Reinvestments. As we see, these savings are directly connected to incremental capital which in its turn was not

¹ Heiko Hesse: Export Diversification and Economic Growth, Working paper No. 21, The International Bank for Reconstruction and Development, the USA, Washington, 2008, 25 pages, p.10

an immediate process, as the reserves were not incremental. When oil prices are rising, changes in the primary fiscal balance may be a poor measure of changes in the fiscal position. For this reason, it is very appropriate to use a multiple indicator approach for calculating the oil dependence and all these factors should be considered. We make several assumptions referring to this state.

Assumption 1: The country with a national advantage of oil and gas resources can export a high amount of oil and get higher revenues which may cause an increase of internal demands for hydrocarbon resources. Then, it will look like:

Increased Growth $G \rightarrow$ Increased Revenues $R \rightarrow$ Increased Internal Demand D

Assumption 2: The initial balance in an OPC (oil-producing country) can be connected with a fiscal impulse, and in this circumstance fiscal economic deterioration is possible if the increase in oil revenue is temporary. The fiscal situation may seemingly be improving, but in fact a sharp reversal of oil prices may prompt painful expenditure cuts. Azerbaijan, along with a number of countries (Algeria, Iraq, Nigeria, Trinidad and Tobago, Venezuela, and Yemen), used the recent oil windfall (unexpected rise) to increase public sector wages. Unfortunately, it could not stop the eventual increase of some prices to harmonize the fiscal balance.

Assumption 3: As these new spending programs become gradually entrenched, it may become difficult to curtail them when oil revenues drop sharply or dry out. In countries with “high levels of statutory outlays”... (different from Azerbaijan), “fiscal conso-

lidation is often effected by cutting more productive spending categories, such as infrastructure investment and maintenance, with a possible adverse impact on growth.”¹

Assumption 4: For hydrogen to replace fossil fuels, extremely large-scale programs of solar power, wind power, fission, or fusion must be developed for production. This situation is more characteristic to developed countries. For instance, by 2012 the USA had planned to reduce its oil dependence by producing and replacing 25 percent of its energy requirements through renewable energy sources. Today, this giant country has a 15 percent reduction in oil dependency between 2005 and 2011 (it has been reduced from 60 percent to 45 percent). It is illustrative that over the course of 7 years this country could only reduce 15 percent of its oil dependency. Of course, doing so requires a fundamental shift in energy policy.

Renewable energy can provide a substitute for oil. Interestingly, just 3% of wind resources could provide 30% of global energy needs. Solar power and wind energy have the potential to provide a similarly limitless capacity.

The investigations show that, three factors exist that are usually impeding this trend to grow faster. The first one is related to changing official thinking. The second problem is connected to already shaped incentives of the local and international oil com-

¹ Paulo Medas and Daria Zakharova “A Primer on Fiscal Analysis in Oil-Producing Countries”, IMF WP/09/56, March, 2009 (<http://www.imf.org/external/pubs/ft/wp/2009/wp0956.pdf>)

panies' opinion that in order to shift the economy into non-oil dependence, the country has a high need for a transition strategy. The third obstacle is inefficiency of the innovative policy or, in fact, its absence. Part 4.2 of the Development concept "Azerbaijan-2020: The Vision for the Future" is dedicated to "improving the structure of the economy and developing the non-oil sector. Along with the rapid development of the non-oil sector, the promotion of innovation activities will create favorable conditions for the emergence of a knowledge-based economy"¹. These factors are closely interrelated, but for a proper transition strategy in Azerbaijan, changes in mentality must precede all else. **Table 5** also shows some discrepancies between official and public mentalities.

Unfortunately, until now the oil dependency in Azerbaijan has remained quite high. The Research Reports note that oil products constituted 92 percent of the total exports for the first half of 2012. Apart from this, the areas of non-conventional energy sources, such as hydroelectricity, nuclear energy, concentrated solar thermal energy, wind power, geothermal energy and solar cells, should more rigorously be used in order to cultivate "preparedness of public consciousness." For example, solar energy is not yet very cost efficient, and wind energy is highly dependent on weather conditions (Azerbaijan is developing this innovation in

¹ Development concept "Azerbaijan-20120: The Vision of the Future"
http://www.undp.org/content/dam/azerbaijan/docs/sustain_development/AZ_Vision2020_government_draft_en.pdf

some experimental zones which are much windier than other areas), and tidal power does seem to be very unreliable for its destructive force and costly maintenance (to our knowledge the government has no projects in this area yet). Although these technologies are improving, they are nowhere near strong enough to replace our current oil and gas power supplies. As we see, it not easy to replace these energies with other renewable types in 2-3 years.

Table 5 Discrepancy in Statistics

Main Economic Figures	Gov. Report	CESD (Centre for Economic and Social Development) Report
GDP Growth	0,3 %	- 0,5 %
Non-oil GDP Growth	7,7 %	5,2 %
Agriculture	5,3 %	3,0 %
Inflation Rate	3,1 %	4,7 %
Industrial Production	- 0,3 %	- 1,2 %
Unemployment Rate	5,5%	18,0 %
Currency Reserve	\$43 billion	No Independent Calculation is Available
Monthly Salary	\$ 515	\$ 680
Revenues of citizens Increase	% 14,0	% 12,0
Poverty Line	7,6 %	17,5 %
Exports	\$ 5,84 billion	No Independent Calculation Available
Imports	\$ 2,05 billion	# \$3,0 billion

2.2. Factors' analyses (skills, workforce, raw materials and technologies)

The first point of Diamond discusses the factor conditions. These are related to (a) the presence of oil resources, and (b) oil skills in the country of Azerbaijan. By the time 90s when oil business assumed international character, Azerbaijan already had a large

skilled labor force ready to be used in onshore and offshore sites. Starting from the late 1990s, Azerbaijan began using surface and drillings by the help of local engineers. It had accumulated a critical mass of oil extraction experience used in operations. However, the questions of safety and infrastructural facilities remained primitive, i.e. drilling and logging, especially in offshore sites, needed development. The general “workforce numbered 2.7 million individuals in 1992, and the industrial sector, the oil, chemical, and textile industries were major employers.”¹

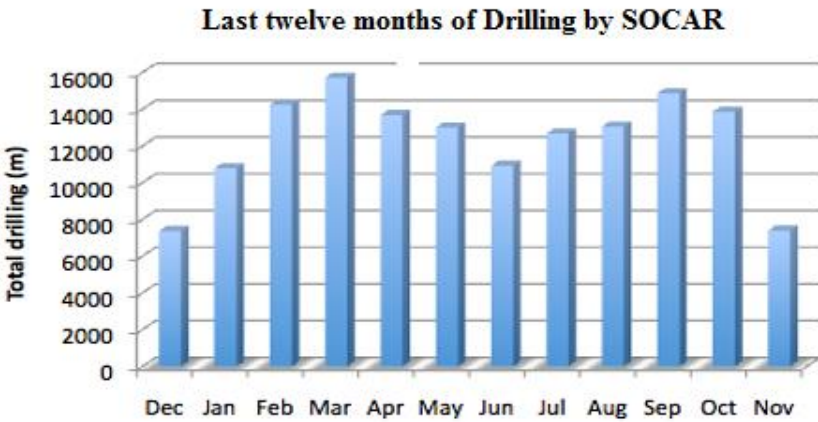
The factor analysis of Azerbaijani oil also covers the new technologies used in drilling and production. In fact, despite the underdeveloped character of the innovative technology, thanks to international partners we have the newest technological processes and tools in the oil and gas sectors. Regular Oil and Gas Exhibitions and Conferences also contribute to this process of improvement.

The next important element of the factor analysis is related to the level of the workforce’s upgrade of skill and resources and its deployment. Towards the end of 2013, Azerbaijan’s non-oil industry increased 3 percent. Consequently, oil and gas spheres also rose 2.9%; however, the oil sector slipped 0.3%. Though this is not a big figure, it still assumes great significance because the

¹ Azerbaijan: the country studies-Economy.
<http://countrystudies.us/azerbaijan/24.htm>

perfecting of skills have a share in these operations. **Chart 11**¹ shows the concrete deployment results of SOCAR technologies during 2011, “while SOCAR explains that this is the result of introducing additional safety measures following the Deepwater Horizon event, and for scheduled maintenance, the number seems a little large for such a cause”².

Chart 11 Statistics of Drilling by SOCAR in 2011



The general situation is convincing because in drilling by utilizing the upgraded method and deployment of new technologies, SOCAR has advanced statistics for July 2014, where it “conducted 8993 metres of drilling work in July 2014. In general, during January-July 2014, SOCAR (excluding Joint Ventures and Operating Companies) carried out 81123 metres of drilling works including 79495 meters of development drilling and 1628 metres

¹ OGPSS - Looking at Azerbaijan’s future fuel production , December 132011: <http://bittooth.blogspot.com, /2011/12/ogpss-looking-at-azerbaijan-future-fuel.html>

² Ibid

of exploration drilling.”¹ These statistics were achieved thanks to application of new technological innovations in the drilling industry.

The third factor of the Diamond proposal is directly related to abundance or shortage of the work force, scarcity of raw materials, methods, and training of the workforce. It is sufficient to say that in 2014, SOCAR and BP signed two major agreements to enhance their cooperation in the training and development of 100 national workers specializing in the oil and gas industry-related disciplines and in the human resources area. These agreements are designed to develop the number of trained force who will be upgraded to the modern standards of oil and gas workers. This process is continuously developing, which speedily transmits the international oil and gas training standards into the national ownership of Azerbaijan.

2.3. Demand conditions

Local markets’ demand for oil and gas in Azerbaijan is smaller than the foreign markets, though there is still high local interest in this energy type, especially after refining to use it in the various fields of transport and industry. As there is less demand in the local markets, this does not entirely lead to a change. In order to enhance a more demanding local market, Azerbaijan has built gas

¹ OGPSS - Looking at Azerbaijan’s future fuel production , December 132011:
<http://bittooth.blogspot.com,>
[/2011/12/ogpss-looking-at-azerbaijan-future-fuel.html](http://2011/12/ogpss-looking-at-azerbaijan-future-fuel.html)

stations in some neighboring and other European countries under its brand name. These trend-setting local markets abroad help local firms function according to the global trend's expectations.

2.4. Related and Supporting Industries

Today, State Oil Company of Azerbaijan (SOCAR), as a leading global oil company of the world, has taken on a major sponsorship deal for the Union of European Football Associations (UEFA) EURO 2016 and European Qualifiers. Local supportive industries, renovated refineries, and project supports are good examples of this. It has also made plans to develop a supporting industry built by SOCAR & Turcas Aegean Refinery. "One of the main projects in the refining/oil chemistry/energy/logistics integration chain in the process of realization by SOCAR-Turcas will be the largest private investment in this field in the history of Turkey. The refinery.... in the Petkim Aliaga Complex Area will have the capacity of 10 million tons of crude oil per year"¹. This supporting industry will provide supply security for raw materials of Petkim and will also create an integrated chain between refining and oil chemistry, and will possess clean technologies for production of environmentally-friendly products.² In addition, its service areas are enlarged in Georgia, Ukraine, and Romania and in some other regions. Thanks to the supportive industries, it has become one of the strongest competitors among oil-and gas companies in the world.

¹ SOCAR, New Projects, AEGEAN REFINERY:
<http://new.socar.az/socar/en/new-projects/menu/aegean-refinery>

² Ibid

2.5. Firm Strategy, Structure, and Rivalry

Unlike some European countries such as Italy and Germany where the oil structures are divided into smaller agencies, Azerbaijan and Norway have similarities in centralizing their oil revenues under the Oil Fund. For example, economists usually call Norway's economy one of the best-performing in Europe, especially as its budget is composed under the motto of "growth and welfare." Similarly, there is less local rivalry in Azerbaijan's Oil Fund, and for the reason there are also a small number of global rivalries. Until 2020 Azerbaijan will remain an exporting country in its activities. Unlike Norway and Azerbaijan, Britain is more clearly regarded as not having oil exporting, but a financial services economy. In contrast, Norway and Azerbaijan are seen as oil economies. The public poll conducted in both countries increasingly underlined that the "oil wealth in these countries is squandered."¹ Now, Norway's expenditures are too focused on domestic infrastructure and investments in industrial production, which may damage the small local economy and create the risks of inflation.

In this area there is also much resemblance between the two economies, although the economic levers used by the Azerbaijan government still can keep the inflation on a lower level. As there is low local rivalry in the Azerbaijan oil industry, the innovations

¹ See, for example, the Norwegian case: <http://www.washingtontimes.com/news/2013/dec/25/vitenberg-norways-mythical-oil-wealth/> and for Azerbaijan case: Vugar Bayramov (CESD), "Ending dependency: How are oil revenues effectively used in Azerbaijan", p.17-28

are not very highly developed. Negligence or non rivalry for a short period of time may not be very harmful for the local economy in Azerbaijan, but its absence for the longer term hinders the technological processes and innovative applications. From this viewpoint, Norwegian oil and the related industry are much more developed than Azerbaijan's. By the Diamond system, if Azerbaijan does not set up a system of local competition in the country, then it will not be so easy to make innovative activities become a real national advantage.

Next, the diamond also has a self-reinforcement capacity and if there is less local rivalry, subsequently specialization at the cost of local science will not be a national endowment, i.e., the economy usually lags behind in specialization in specific areas. This is crucially important for an oil-dependent economy because along with oil, the production of oil facilities would also have helped Azerbaijan to more rigorously shift its economy from oil-dependency. Unfortunately, these risks and shortcomings are still retained in Azerbaijan's oil business.

2.6. The Role of Government

Despite the existing dichotomy, the Azerbaijan government has taken a number of measures in order to adapt to the modern non-oil industry, such as car production, some agricultural and chemical fields, etc. Other new non-oil areas of industry as also include non-renewable energy, solar plates, windmills, hydro-power systems, defense technology and more. Nanotechnology and fundamental sciences are underdeveloped and much work

remains in the development of high computer technologies. Beside this, many activities remain to be carried out in the improvement of legislation, establishing the national satellite system, infrastructure building, job openings, etc. "...If technical improvements in the field of alternative energy indeed continue, and if forecasts of an imminent and substantial drop in demand for oil are correct, the consequences can be catastrophic; domestic product (GDP), today concentrated on oil and its derivatives, could collapse with current massive levels of public-sector spending, the important ratio of public debt to GDP, etc."¹

The questions of how smoothly to adapt spending and management of oil wealth or revenues to the country's fiscal rules, investigate the situation when Oil Fund transfers will be limited, etc. are future tasks of the Azerbaijan government. As we see, these are all a range of measures aiming to reduce the dependency of the country's economy on oil through direct and indirect pathways.

¹ Washington Times, by Jerome Vitenberg: "Here's a warning to America: Even a rich nation can be bled dry ... by pandering to those who won't work" December 25, 201. Also: Norway's shame: How a nation squandered its oil riches.
<http://www.washingtontimes.com/news/2013/dec/25/vitenberg-norways-mythical-oil-wealth/>

3. Comparative analyses of oil dependence in oil-rich countries

3.1. Economic nature of oil dependence

The economic notion of “*hydrocarbon dependence*” is related to two major deficiencies. The first is connected to the situation when the government does not compensate for its expenditures with incomes brought out of the hydrocarbon industry. The second is when foreign exchange created by the non-hydrocarbon exports does not have enough capacity and weight to cover the imports to these sectors. In the last case, the government is obliged to import goods and services on behalf of hydrocarbon revenues. As John V. Mitchell and Paul Stevens note: “The ratios of the deficits to government expenditure and imports respectively are measures of the dependence of the countries on hydro-carbon revenues”¹ This is a common problem for most oil and gas exporting countries. Basing on the existing literature and our common logical assumptions which are deduced out of the abundance of related literature, in this chapter we will try to make some comparative economic analyses about Azerbaijan’s and Norway’s dependence on hydrocarbon resources and identify the future trends and measures taken to provide economic stability. The following **Table 6**² indicates some statistics of dependence among 11 hydrocarbon rich

¹ Ending Dependence: Hard Choices for Oil-Exporting States, A Chatham House Report by John V. Mitchell and Paul Stevens, UK, London, www.chathamhouse.org.uk, © Royal Institute of International Affairs, 2008, 42 pages., p.11, ISBN 978 1 86203 205 7.

²Ibid, p.11

countries in the world in 2006. Clearly, Azerbaijan is more dependent on oil than Norway. According to the statistics provided by the Extractive Industries Transparency Initiative (EITI), “Azerbaijan's export of oil and gas receipts account for over 70% and nearly 50% for its budget revenues.”

Table 6 Dependence on hydrocarbon (comparative table)

Non-hydrocarbon fiscal balance as % NHGDP, 2006	Non-hydrocarbon current account balance as NHGDP, 2006
Norway -4	-9
Kazakhstan -4	-58
Indonesia -8	1
Malaysia -13	8
Iran -27	-25
Azerbaijan -29	-30
Nigeria -35	-13
Algeria -42	-82
Saudi Arabia 51	-57
Angola -69	-30
Kuwait -84	-28

3.2. Azerbaijan and Norway: Economic Similitude and Difference

Azerbaijan's proven crude oil reserves are estimated at 7 billion barrels and oil production amounts to more than 1 million

bbl/day”¹. Of course, another prevailing figure in this is changing oil prices because when oil revenues surge ahead, an oil-producing country usually gets the chance to build its investment abroad. This is a common feature for Norway and Azerbaijan, as both of them have State Oil Funds which collaborate with a Sovereign Wealth Fund (SWF) in investing their foreign exchange reserves.

Oil richness inherits controversial developmental trends depending on political will and implementation purposes of the projects. Easy oil cash entrenches corrupt establishments, discourages sound long-term economic planning, and is almost never channeled in ways that promote development”². High capacity of economic development usually ranks up the overall capacity of the country’s economy. In 2013 the total value of Oil Exports in Azerbaijan was more than 28 billion USD, which makes Azerbaijan No. 25 in the world rankings, and in 2014 this figure will be 2.53% less than the previous year.

By the arguments of John V. Mitchell and Paul Stevens, Norway is a “Near sustainable (without oil)” country among 11 oil producing giants, whereas Azerbaijan is included into the rank of the countries with “Early dependence ,”³ which is a depletion-led

¹Extractive Industries Transparency Initiative, Azerbaijan, Extractive Industries, 16 February 2009 <http://eiti.org/Azerbaijan>

² Daniel Gross: Avoiding the Oil Curse: BBC documentary, “What Norway can teach Iraq”. Business and Finance, Oct 29, 2004. http://www.slate.com/articles/business/moneybox/2004/10/avoiding_the_oil_curse.html

³ See: Ending Dependence. Hard Choices for Oil-Exporting States...., p26-27

structure of oil resources. We can easily see this in **Table 7¹** which shows the Decreasing Value of Oil Exports for Azerbaijan.

Table 7 Value of Oil Exports for Azerbaijan

Year	US\$ Billions
2018	25.873
2017	25.282
2016	25.17
2015	26.209
2014	27.501
2013	28.216
2012	29.6
2011	32.871
2010	25.108
2009	19.97
2008	29.143
2007	20.19
2006	12.075
2005	6.883
2004	3.232
2003	2.25
2002	2.046
2001	1.841
2000	1.519
1999	0.801
1998	0.45

¹Economy Watch , Azerbaijan Value of Oil Exports for year 2013, Statistics: USA, IMF http://www.economywatch.com/economic-statistics/Azerbaijan/Value_Oil_Exports/#otheryears

1997	0.454
1996	0.402
1995	0.257
1994	0.208

Next, **Table 8** depicts the high dependence of Azerbaijan’s economy on oil resources, whereas Norway is highly competitive. Despite these, “Azerbaijan’s rating is supported by strong and sustainable economic growth, low government and external debt ratios and a large current account surplus, underpinned by rapidly rising oil and gas production.”¹

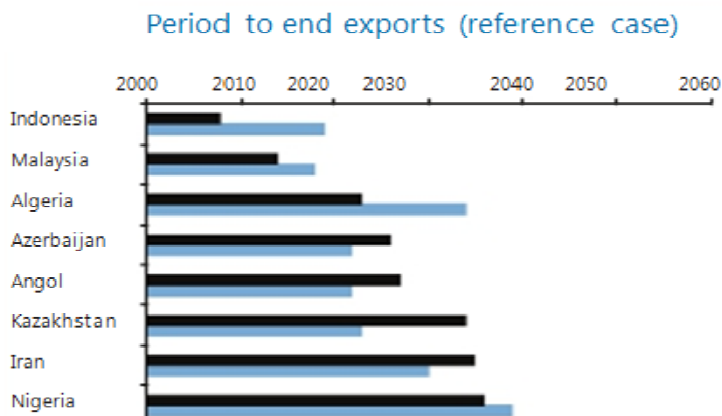
Azerbaijan economic revenues still remain very high in terms of GDP, thanks to the continuous measures adopted by the government, though there was approximately a 3 percent decrease from 2012 to 2013. It is crucially important, especially for Azerbaijan, to keep the GDP rating balance while simultaneously decreasing the share of oil export revenues in the total weight of fiscal expenses. **Table 9** is a vivid example for the perspective planning of GDP balance in Azerbaijan.

Without doubt, there are some similarities and differences among the economic oil dependences of oil rich countries. In this case we have chosen the case analyses of Norway and Azerbaijan for in-depth analyses of their hydrocarbon dependence and offer some practical recommendations for guaranteeing economic stability.

¹ Peter Hagen. “Avoiding the resource curse on Azerbaijan. The Strange Case of Azerbaijan And Its Resource Blessing/Curse”, September 15, 2011- <http://futurechallenges.org/local/the-strange-case-of-azerbaijan-and-its-resource-blessingcurse/>

Together with this, there is still high dependence on oil. As it is stated, “oil and oil products made up 92,0 % of Azerbaijan’s export by results in January-April, 2012. According to sources in the State Customs Committee, in the reporting period, crude oil made up 86,29 % of Azerbaijan’s export and oil products made up 5,0%. According to the State Committee reports, oil and oil products made up 92,0% of Azerbaijan’s export in 2011, too. Only 8% of export were non-oil products.”¹ In comparison with Norway, Azerbaijan will phase out its oil export by 2030 because of depletion of resources. **Chart 12**² shows that Norway may continue its exports up to 2060 because: (a) it has restrained intensive exploration, and (b) it uses the substitution of oil (alternative energy sources).

Chart 12 Period to end Exports of Oil and Gas (2000-2060)



¹ Oil keeps dominant position in Azeri export as 92% of total export, CESD, May 28, 2012, <http://cesd.az/new/2012/05/oil-keeps-dominant-position-in-azeri-export-as-92-of-total-export-2/>

² Ending Dependence. Hard Choices for Oil-Exporting States...p. 16

There are some commonalities between the two economies:

- Adaptation of spending and management of oil revenues to fiscal rule;
- Population is growing fast;
- New inflation level is stable;
- New gradual pull out from oil dependency;
- In both countries the major player is the State Oil Fund;
- Limitation of transfers from Oil Fund to state budget;
- Lowering the share of non- budget deficit over non-oil GDP (short, mid and long terms);
- Course taken for diversification of economy;
- Increasing value of Oil Assets;
- New gas fields are to be identified;
- Both are high cost countries;
- A large number of eligible work force in Norway and Azerbaijan are outside the labor force, in Norway because of sufficiency of welfare and pension issues, but in Azerbaijan because of desire for better salaries and life;
- The inflation rate in both countries is lower than the majority of the other European oil producing states;
- The petroleum business in both countries has been the biggest impetus in developing the major sectors of mechanical engineering and associated services;
- The conditions of PSA in both countries have ensured that international oil companies make it mandatory to transfer skills and competence to local staff;

- As with the majority of oil producing states, both countries consider access to petroleum resources as a bargaining tool to be used in the international arena;
- Both countries have attained the possibility that oil does not have to be an obstacle to stability and prospective prosperity.

Table 8¹ Competitiveness, development and dependence indicators

Country	Competitiveness ranking (out of 133 countries)	HDI (Human Development Index) ranking (out of 133 countries)	Infant mortality (per 1000 live births)	Literacy rate (% of population aged 15 and above)	Fiscal dependence on hydrocarbons (2006)
Norway	16	2	3	n/a	4
Malaysia	21	63	10	88	-13
Kuwait	30	33	9	93	-84
Saudi Arabia	35	61	21	78	-51
Indonesia	54	107	28	90	-8
Kazakhstan	61	73	63	99	-4
Azerbaijan	66	98	74	99	-29
Algeria	81	104	34	70	-42
Nigeria	95	158	100	69	-35
Timor Leste	127	150	52	n/a	n/a
Angoal	n/a	162	154	67	-69
Iran	n/a	94	31	82	-27

¹ See: Ending Dependence. Hard Choices for Oil-Exporting States...., p.25

**Table 9¹ General government revenue (% of GDP)
for Azerbaijan**

Year	%
2018	32,65
2017	33,2
2016	32,96
2015	33,926
2014	35,046
2013	37,242
2012	40,654
2011	45,53
2010	45,652
2009	40,357
2008	51,113
2007	28,232
2006	28,019
2005	25,101
2004	26,826
2003	26,753
2002	27,304
2001	18,667
2000	21,219

Now, let us speak about the individual features of both economies.

The differences existing in the countries' economic development:

- In Norway the oil boom is over, but in Azerbaijan it is still ongoing;

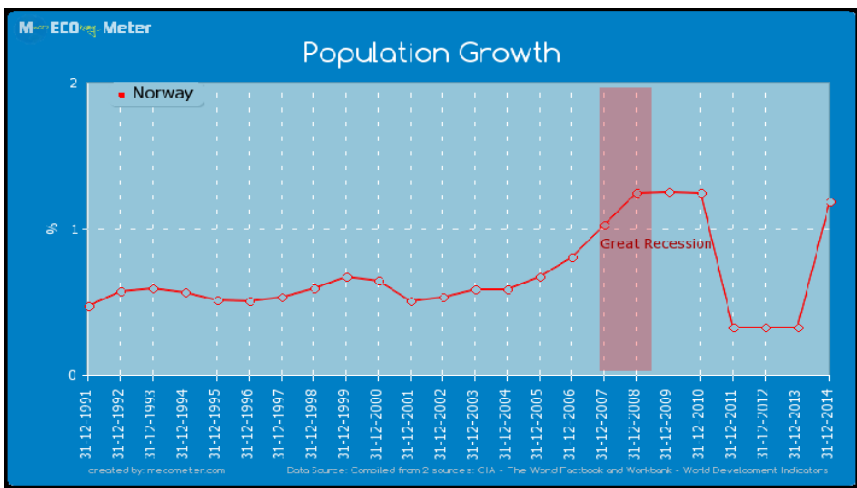
¹ Ending Dependence. Hard Choices for Oil-Exporting States...,p.25

- Related industry sick leaves in Norway are larger than in Azerbaijan;
- With per capita GDP around \$100,000, the Norwegian lifestyle has become such that the work week averages less than 33 hours, one of the lowest in the world (while in Azerbaijan, it is more than 40 hours), and while unemployment is low, there is much underemployment, made possible by benefits (in contrast, in Azerbaijan the unemployment is relatively high)¹;
- Norway needs to limit wage increases to productivity, limit oil cost growth, and cut taxes but Azerbaijan does not yet need to do these because of various reasons such as the government's will, eventual defense expenses, etc;
- Energy companies in Norway are cutting some of their most innovative projects, but Azerbaijan has just raised investment in innovative projects and will continue to do so in the future;
- The Norwegian costs have risen a bit more than elsewhere, while Azerbaijan's costs still remain higher than the costs in Norway;
- Norway relies on a single, nationalized operator isolating itself from international experience, while Azerbaijan's doors are still open for international competence;
- After the oil era Norway may face a structural crisis because of absence of necessary adjustments, but Azerbaijan is regularly implementing structural changes in Human Resources (HR) and technology;

¹ Reuters, "End of oil boom threatens Norway's welfare model" by Balazs Koranyi, May 8, 2014 <http://news.yahoo.com/end-oil-boom-threatens-norways-welfare-model-053548286--sector.html>

- Norway has cut down active discussions around oil, but Azerbaijan is still active in them;
- There is a significant decrease of oil production in Azerbaijan (51 million ton in 2010 and approximately estimated 44 million tons in 2014), whereas this is more or less stable in Norway;
- Intensity of labor immigration to Norway is much higher than to Azerbaijan because of high salaries (Average hourly salary rates in the main trading partner countries in the (EU) were US\$30 in 2012, while the Norwegian hourly rate was US\$61 according to Eurostat);

Chart 13¹ Demographic Indications of Norway 1900-2000



The birth rate in Azerbaijan is rapidly increasing, but in Norway, as shown in **Chart 13**, it is erratic though “the population of

¹Basic demographics of Norway 1900-2000. PNG
<http://en.wikipedia.org/wiki/Norway#mediaviewer/>

Norway is projected to rise considerably in the period 2010 to 2060. The most important reason for this is continued high immigration. Slightly higher fertility and life expectancy is expected than in the previous projections, Statistics Norway reports. The population is going to be much older in the long run. The number of people aged 67 and over will increase fast, from 625 000 in 2010 to around 1.5 million in 2060 – or more than twice the current level”¹.

- For over 30 years the Norwegian economy has been developing in the line of economic diversification², whereas Azerbaijan is relatively new in this field.

These are some immediate and logical deductions made by referring to the oil business in these two countries. Nevertheless, we do not pretend that these parallels are exhaustive and believe that as time passes the situation may change.

Nowadays, “petroleum industries account for about 17 percent of Norwegian GDP and a hefty 45 percent of exports. But the rapid growth of the fund means Norway will not greatly suffer if the oil market suddenly tanks or if production starts to dwindle. (In 30 years, Norway has pumped about 29 percent of its total reser-

¹ Barents Observer, “Norway: Continued high population growth” by Trude Pettersen, June 16, 2010
<http://barentsobserver.com/en/sections/topics/norway-continued-high-population-growth>

²Institute for Global Energy Research. “Norway: Economic diversification and the petroleum industry”
<http://www.gasandoil.com/news/europe/4bf43ac3ccac510c3420522d9f088f59>

ves)¹". Besides this, "Norway had the foresight to put aside a massive \$860 billion rainy-day cash pile, or \$170,000 per man, woman and child. It also has huge budget surpluses, a top-notch AAA (bond rating, preferred stock, Standard and Poor's, Standard and Poor's ratings, Moody's ratings, investment security, credit rating and low unemployment, so tangible decline is not imminent."². All these success features make Norway much stronger in the world market, whereas Azerbaijan is living through the period of boosting its economic prestige in the world arena. The following **Chart 14**³ indicates the status of GDP in kind developed by Norway.

Finally, despite the abundance of oil wealth, Norway is faced with the problem of feeding 40% of the population aged 67 percent and above, which will double in the coming decades. It put forward proposals to make the necessary and urgent fiscal, or more precisely pension, reform in the oil industry and in the country's economy as a whole. "On this basis, the Norwegian authorities currently estimate a long-term fiscal gap, defined as the difference between the structural non-oil deficit and the expected return on the Government Pension Fund Global, of about 6% of main GDP in 2060. In other words, by 2060, fiscal measures to increase revenues or reduce expenditures in the amount of 6% of GDP are

¹ Daniel Gross: Avoiding the Oil Curse: BBC documentary, "What Norway can teach Iraq". Business and Finance, Oct 29, 2004 .

http://www.slate.com/articles/business/moneybox/2004/10/avoiding_the_oil_curse.html

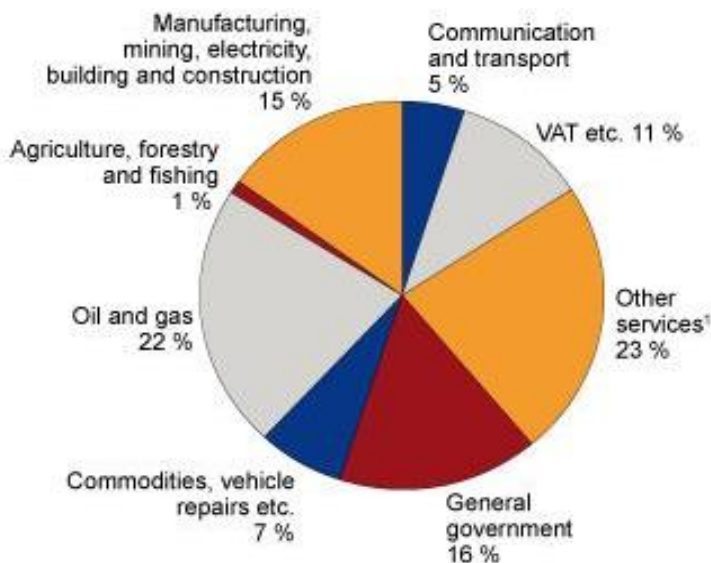
² <http://news.yahoo.com/end-oil-boom-threatens-norways-welfare-model-053548286--sector.html>

³ OECD, Economic Survey of Norway 2010

<http://www.oecd.org/norway/economicsurveyofnorway2010.htm>

needed to secure the sustainability of public finances.”¹ In my opinion, considering the large size of the elderly population, Norway should extend the undiscovered potentials of cheaper public or municipal services in the field of health, education and tax expenditures. Fortunately, this is not extremely urgent for Azerbaijan now, though the statistics say that in the near future Azerbaijan should more rigorously implement a comprehensive pension policy. In addition, a very rigid bank lending policy should be reinforced.

Chart 14 GDP growth by main activities in Norway in 2009



¹ OECD, Economic Survey of Norway 2010
<http://www.oecd.org/norway/economicsurveyofnorway2010.htm>

4. Recommendations for decreasing Azerbaijan's oil dependence

4.1. Diversification of Economy

Azerbaijan has recently made huge efforts to shift the country from an oil driven economy and employment into the industrial and service economy. These efforts primarily covered: (a) the successful transition to an innovative economy, (b) investment, (c) diversification of economy, (d) incentivizing the areas of the private sector, (e) development of SMEs, (f) service (tourism, banking, commerce, etc.) and (k) industry.

There are several reasons why the economy should go through the line of export diversification. First, a shift from oil export to manufacturing makes the country more sustainable. Second, oil exports are not usually stable enough to rely on. As it has been mentioned, “commodity products are often subject to very volatile market prices so that the countries which are dependent on these commodities may suffer from export instability. Export diversification could therefore help to stabilize export earnings in the long run.”¹ Besides this, it also facilitates an increasing effect on per capita income. The following **Table 10**² indicates that in the most industrialized countries where the country economy has pulled out from oil dependence, the per capita income is quite

¹ Heiko Hesse: Export Diversification and Economic Growth..., p.2

² Ending Dependence. Hard Choices for Oil-Exporting States..., p.28.

high. In comparison with the advanced European countries, Gross National Income

Table 10 Statistics of GNI (*Adapted*)

Country	Population (m)	GNI (US\$ per capita)	GNI PPP (US\$ per capita)
Algeria	33.4	3,030	5,940
Angola	16.6	1,970	3,890
Azerbaijan	8.5	1,840	5,430
Indonesia	223.0	1,420	3,310
Iran	70.1	2,930	9,800
Kazakhstan	15.3	3,870	8,700
Kuwait	2.6	30,630	48,310
Malaysia	26.1	5,620	12,160
Nigeria	144.7	620	1,410
Norway	4.7	68,440	50,070
Saudi Arabia	23.7	13,980	22,300
Timor-Leste	1.0	840	5100

Source: World Bank Development Indicators 2008.

(GNI) in Azerbaijan is not very high, as the country economy is not effectively diversified yet. The decreasing transport costs and specialization in goods production are also diversification-led paths to the economic development. The reduced transport prices lead to a diminished number of locally produced goods and subsequently open the way to specialization. In its turn, the latter gives much impulse to developing some non-oil specific areas of national ownership.

As soon as Azerbaijan takes faster steps to make its way to a diversified economy, it will appreciably grow in terms of improving its population's welfare. It may also make its economic structure more sustainable, less risky and more tolerant to oil "irregularities."

4.2. Economic, socio-political and financial measures for minimizing oil dependency

The "Resource Curse" (sometimes termed the "paradox of plenty") refers to the theory that natural resource wealth and a high degree of dependency on natural resources can sometimes paradoxically create negative development outcomes in producing countries, due to weakened governmental institutions, neglect of other key sectors of the economy, corruption, high income inequality and other factors. According to "Social Watch-2014 Report, Azerbaijan needs a comprehensive policy for long-term social and economic development. Nevertheless, opinions vary among the scholars and experts in terms of immediate economic and socio-economic measures to be taken by the Azerbaijan government to minimize the dependency of the economy on hydrocarbon resources. For example, Kenan Aslanli from Public Finance Monitoring Centre (PFMC) thinks that those measures mainly include the following three:

1. To increase the availability and widen the distribution of basic life-sustaining goods such as food, shelter, health and protection;
2. To raise levels of living, including, in addition to higher incomes, the provision of more jobs, better education, and

greater attention to cultural and human values, all of which will serve not only to enhance material well-being but also to generate greater individual and national self-esteem;

3. To expand the range of economic and social choices available to individuals and nations by freeing them from servitude and dependence not only in relations to other people and nation-states but also to the forces of ignorance and human misery.¹

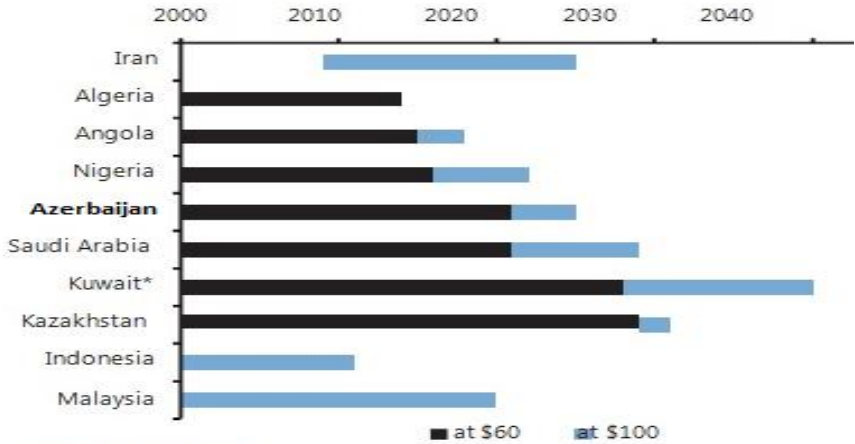
In our opinion, first, these measures are more “result driven” than “causative”. Second, the concept does not show the measures taken in the correct sequential order to attain the strategy. Besides, their characters are more declarative rather than socio-economically and politically logical. Accordingly, we can talk about measures which can be all-embracing and interrelated.

The IMF simulations in Chart 15 assume the timeline of fiscal surplus for reducing the oil dependency which is estimated for the period up to 2010. The estimations for 2000-2015 are such that most countries will have a 6 percent growth of non-oil economy. The reference case scenario is given so that the oil prices change between 60 and 100 USD for a barrel in 2000-2040. (Interestingly, in its internal calculation scenario, Norway has targeted an average 4 percent growth in the non-oil sector for each year). This table shows the time remaining before hydro-carbon revenues will fail to cover the fiscal deficit on the hydrocarbon economy under

¹ Kenan Aslanli: Long-run policies towards social and economic development, Azerbaijan, National Report, 2014. <http://www.socialwatch.org/node/15848>

the price assumptions of 60 and 100 USD/oil barrel. Evidently, the individuality of each country is crucially significant to consider.

Chart 15¹ Time to end of fiscal surplus



Source: Model results.

* Before contributions to the Fund for Future Generations. Budget deficits, after that contribution, would begin in 2025.

Summarizing various opinions and reviewing literature on the set of measures for Azerbaijan to more speedily minimize dependency of the country’s economy on oil and gas, we can offer the following areas to be considered as priorities in Azerbaijan’s economy. The methodological division of these priorities is based on 5 major groupings which are essential for the growth of the economy. These are: legislative, organizational, financial, socio-cultural and other measures of stimulating the growth of non-oil dependent economy.

¹ Ending Dependence. Hard Choices for Oil-Exporting States..., p.19

I. Legislative measures of decreasing oil dependency in Azerbaijan's economy

- a. Improvement of investment policy
- b. Upgrading the legislative rules referring to development and entrepreneurship
- c. Adopting new laws on security of local and foreign investment
- d. Legislative incentivizing of the local capital flow into the country's industrial development

II. Organizational measures of decreasing oil dependency in Azerbaijan's economy

- a. Improving infrastructure
- b. Provide energy security terms
- c. Optimal investment strategies and risk management
- d. Increasing the role of the tourism sector in promoting inclusive growth
- e. Development of Small and Medium Enterprises (SMEs) and entrepreneurship
- f. Stimulating markets for farmers, (SMART) farmers
- g. Opening the new small processing factories (in the urban areas as well)
- h. Prioritized development of agricultural sector

III. Financial or budgetary measures of decreasing oil dependency in Azerbaijan's economy

- a. Building human capital
- b. Increase of strategic currency reserve
- c. Securing fiscal sustainability

- d. Diminishing the rate of oil-backed loans
- e. Incentivizing the financial provision and budgetary structures in industrial development of alternative fuels and propulsion systems

IV. Socio-cultural measures of decreasing oil dependency in Azerbaijan's economy

- a. Providing transparency and accountability in the oil sector
- b. Improving education, and paying greater attention to cultural and human values
- c. Harmonizing the relations between words and deeds
- d. Expanding the pluralistic measures of decision making in strategic directions of oil and gas
- e. Freeing population from servitude and dependence in relations to other people, and nation-states
- f. Learning and applying the social and cultural values, habits, etc. more rigorously, while also preserving the country's best socio-cultural practices
- g. Avoiding the artificial transfers of cultural values, but instead preparing long-term perspectives of socio-cultural interchange with the advanced European countries (here, the International Humanitarian and Cultural Forums arranged and hosted by Azerbaijan should be noted as the best initiations which are enhancing the multiculturalism trends among nations)

V. Other measures which may arise due to passage of time or emerge under special circumstances (political, emergencies, etc.)

The Azerbaijan government is consistent in its decision to make agriculture an area of priority to be developed. Agriculture, manufacturing, telecommunications, and tourism all have potential for growth. However, the agricultural sector's share in the GDP constituted only 5,2% in 2010. In contrast to this, the share of the oil sector, which only employs less than 1% of the able-bodied population in the country, constituted more than half of Azerbaijan's GDP, with exports of oil products constituting more than 92% of the entire exports in 2010.

Conclusion

The problem of “oil dependency” is a significant question to deal with in the economic development of oil producing countries. Undoubtedly, the impacts of the determined social, economic, political and fiscal measures by these states assume special importance in neutralizing the negative effects of oil price fluctuations. Depending on the efficiency of the implemented measures, an oil producing country may more effectively provide its economic growth, intellectualize its industry, and finally facilitate prevention or decrease of environmental pollution. Along with these, comprehensive spending of public funds and resourceful administration of oil funds may also bring fruitful results in the oil business. Despite the spectral differences in economy, there exist some common challenges to oil-producing countries, such as strengthening in-country democratic institutions, human security, civil society, private sectors, international cooperation and combating corruption, which may harmonize the economic processes.

Problems caused by uncertainties of the world’s oil resources and oil operations also serve as push factors for oil-rich countries. That is why they become very inclined to think about cost effective means to further industrial development. These states need to improve their socio-economic, legislative, political and innovative measures in order to provide a long lasting and self-sustainable economy.

In light of this cause and effect chain, starting from 2009, Azerbaijan has launched its program to decrease the total volume

of its oil production, and it is planned that by the end of 2030 Azerbaijan will diminish the petroleum share in its economic growth by at least 10 times. There are two major sets of measures taken by the government of Azerbaijan to reduce its hydrocarbon dependence. One is postponing or reducing the scale of extractions, and the other is shifting the economy toward a more innovative and intellectualized economy. Under these conditions the government of Azerbaijan needs to solve the problems related to the effective management of oil funds to eliminate oil dependency and simultaneously solve the problems related to the behavior of the country's economy when there is no oil.

Once the Diamond Project proposal was applied to Azerbaijan's hydrocarbon dependence and its prospects, we found out that the key steps to elimination of oil dependence are diversifying the economy and national income, which will be pursued through developing small-and medium-scale industries; encouraging the services sector, notably commercial services; developing off-shore banking and tourism by removing obstacles to foreign investment; and encouraging the contribution of the private sector to economic development. We believe that timely socio-economic and political measures by the relevant structures can also conspicuously reduce the country's dependence on oil. Nevertheless, this is not a mechanical process; the force or weight of the influence of each edge of the Diamond needs to be more precisely calculated. All factors and conditions including the volatility of oil prices, population, fiscal policy, and the demand conditions must be considered.

Depending on its history, culture, and socio-economic sustainability, each country behaves differently while facing some deviations in regularities caused by fluctuations of oil prices. At the end of the 90s and beginning of the 21st century, infrastructure development and replacement of the outdated physical capital in key industries were the prioritized areas of investments in Azerbaijan, which looked much like the situation of accelerated depreciation where, while having a high depreciation rate of the physical capital, we also had less opportunity for capital growth. Due to these circumstances, the expected growth rate was significantly less than expected.

Nowadays three major impediments still need to be overcome in reducing oil dependence in Azerbaijan. If the first two are more subjective by nature (related to changing official thinking and determination of local and international oil companies' opinions to shift the Azerbaijan economy into non-oil dependence), the third one is more technological because the third obstacle is inefficiency of the innovative policy or, in fact, its absence. Today, apart from the use of restorable energy as bio fuel, space-based solar power, wind power, geothermal power, hydropower, biomass, ethanol fuel, hydrogen, compressed natural gas, and nuclear power, there are also some comprehensive measures for reducing Azerbaijan's economic dependence on oil. Some of these may refer to managing oil revenue volatility, gradual (immediate is impossible and it is even not in the agenda of any oil-producing country) delinking of expenditure decisions from oil revenue volatility, improving budget flexibility, broadening fiscal coverage and

reducing quasi-fiscal activity, improving fiscal institutions, and coordinating fiscal and monetary policies.

Azerbaijan may gain great success in economic growth if it keeps increasing its non-oil industry. By the end of 2013, this sector had only a 3 percent increase. Despite the insignificance of this figure, the tendency is still crucially important because this ascending trend has direct connections with the skills' perfection in these operations. This plays a decisive role in factor analyses of the Diamond project, along with presence of oil resources, abundance of the work force and raw materials, and richness of methods in training of the workforce.

To establishing the necessary demand in the local market, Azerbaijan has already erected major supplementary stations in some neighboring and European countries to become more widely known under its brand name.

Unfortunately, there is a small rivalry in the local economy in Azerbaijan which has not been conspicuously felt for a short period. Nevertheless, in the long term, this shortcoming may become a major hindrance to economic growth, development of technological processes and innovative applications. Once compared with Azerbaijani industry, we see that Norwegian oil and the related industry have significantly made progress to eliminate a "vacuum of competition." By the Diamond system, if Azerbaijan does not set up a system of local competition in the country, then it will not be easy to make innovative activities become a real national advantage.

Further, the research highlights that it is necessary to consider the individual economic features and social structures of each country while implementing the measures for establishment of a non-oil independent economy in oil-depletion driven developments, because “high energy prices will cause recessions, destroying demand. Then, reduced demand will lead to partial relaxations of energy prices. Temporarily lowered prices will stimulate economic recovery and hence renewed demand, which will again be constrained by declining rates of oil extraction, leading to more recessions, and so on. In other words, as demand begins to exceed supply, expect increasing price volatility, with a general upward and steepening underlying price trend”¹.

The research work has concluded that diversification of the economy is an important device for reducing oil dependency in an oil depletion led economy. Some legislative, organizational, financial, socio-cultural and other measures have also been suggested for stimulating the growth of a non-oil dependent economy.

¹ The Consequences of Oil Dependency, by Richard Heinberg, originally published by ODAC / The Santa Rosa Press Democrat , Oct 6, 2004; <http://www.resilience.org/stories/2004-10-06/consequences-oil-dependency>

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