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A practical approach to oil wealth management: Application to the case of Kazakhstan

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ABSTRACT

This study presents a practical approach to oil wealth management by bringing together various dimensions (oil production and sustainability of oil reserves, impact on the economy and the balance of trade, and the impact on the fiscal balance, government debt, and the national oil fund) within a long-term planning framework. The study provides a quantitative depiction of the above dimensions to 2050 for the case of Kazakhstan where the country's oil output has grown from about 0.6 million barrels/day (mb/d) in the late 1990s to 1.8 (mb/d) in 2013, and it is expected to reach a peak of 3.5 mb/d by 2035. The analysis of this study indicates that within the limits of proven oil reserves, Kazakhstan's oil production capacity would collapse to negligible amounts after the peak period of 2035. This envisaged scenario will have undesirable impacts on the economy, balance of trade and fiscal balance both prior and after 2035. To avoid these erratic impacts, the study examines an alternative "conservative" production scenario that would enable the country to maintain its level of oil production until 2050, and to manage better the transition to a non-oil economy.

1. Context and objective of this study

Kazakhstan's economy experienced a rather glorious period during the years of 2001–2007 when the gross domestic product (GDP) grew at an average of 10 percent per annum (p.a.) transforming the country into an upper middle income country. Other economic and social indicators performed as well. The share of the population living below the official poverty line declined from 44.5 percent in 2002 to 12 percent by 2007. The unemployment rate declined from an estimated 13 percent in 2000 to less than 7 percent in 2007. At the same time the government took a prudent approach to fiscal management. Despite the increases in the oil revenue, the government kept the total spending stable at around 22 percent of GDP. This approach enabled the government to maintain a relatively low rate of inflation, and to accumulate significant savings in the national oil fund, which reached $27 billion (21 percent of GDP) by the end of 2008. The accumulation of the savings in the national fund was also aimed at preventing excessive appreciation of the real exchange rate (preventing the Dutch disease). This objective was achieved during 2001–2005 when exchange rate appreciated only by 2 percent but was jeopardized during 2006–2008 when exchange rate appreciated by 18 percent. These latter years (2006–2008) were indeed the period in which the economy overheated by massive inflows of capital, booming construction sector, soaring real estate prices and a generally easy access to financial resources.

The financial crisis of 2008–2009 was as unexpected to Kazakhstan as it was to the rest of the world. The main reasons for the crisis, i.e., excessive risk taking and an explosive financial bubble, were also the same as in the rest of the world. However, the case in Kazakhstan was different in: (a) the unfortunate fact that the collapse of international oil prices resulted in a sharp decline in export revenues, and (b) the fortunate fact that the government had adopted in the prior years a prudent fiscal policy allowing the country to build up a sizable fiscal buffer. The government was then able to implement a fiscal stimulus program of $21 billion to bail out the failing banking sector, to support the recovery of other economic sectors, and to safeguard critical social benefits. The government's anti-crisis program has been evaluated by the International Monetary Fund (IMF) and the World Bank and viewed as a well-designed and successful case compared with those of other countries.

Kazakhstan's economy has performed rather well in the post-crisis years of 2010–2013. Recovery of oil prices coupled with an increase in oil output provided substantial financial resources which have been managed in a balanced manner while providing a measured injection into the economy. The average GDP growth was 6 percent p.a., the accumulation in the National Fund increased from $42 billion to $67 billion, and the share of the population living in poverty went down from 6.1 percent in 2010 to 3.2 percent in 2013.

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Looking forward, Kazakhstan's development objective of joining the rank of the top 30 most developed countries by 2050 will require a balanced and more inclusive economic progress which would hinge on ensuring a sustainable public and private sector path to growth. This in turn would require a comprehensive approach to the long-term utilization of oil revenue in a sustainable manner. To this end, the authors of this paper carried out for the consideration of the government of Kazakhstan an internal study to examine the impact of envisioned oil production strategies on sustainability of oil reserves as well as on the economy and the government's fiscal balance. The present paper provides a summary of the results of the study. The paper is organized in seven sections. Section 2 provides a brief description of the methodology of the study. Section 3 reviews Kazakhstan's present oil production policy. Section 4 defines the scenarios of aggressive and conservative oil production strategy. Section 5 examines the impact of these scenarios on the growth and structure of the economy and the balance of trade. Section 6 considers the likely trends for the government revenues and expenditures and the role of the national oil fund in ensuring fiscal balance. Section 7 presents the major recommendations of the study.

2. Analytical framework of the study

Economic theory suggests that a country's oil production decision should be viewed in the broad context of managing the nation's assets. The value of the nation's assets at any point in time would consist of the value of the stock of the accumulated capital (mostly physical infrastructure and human capital), the value of the accumulated financial assets, and the value of the remaining oil reserves in the ground. The trade-offs among these three forms of assets have been studied by many economists within the framework of exhaustible natural resources starting with Hotelling's model (Hotelling, 1931) in which he formulated a dynamic optimization process for the efficient lifetime utilization of these resources. Hotelling's work went unnoticed until the 1970s when the quadrupling of crude oil prices raised the attention of politicians as well as academicians about the issue of energy resources' exhaustibility. Numerous papers were published on the subject matter among which the papers by Nordhaus (1974) provided a practical methodology for studying oil resource exhaustibility. Numerous empirical applications of the theory of resource exhaustion have been published in the last three decades.[1]

Hotelling's rule and the subsequent research provide a conceptual framework for deriving an optimal trajectory of extracting an exhaustible resource. However, in practice the analysis of oil production strategy would need to take account of various constraints and considerations. For example, The Ministry of Petroleum needs to remain committed to the existing contractual agreements and to the maintenance of an attractive business environment. The Ministry of Finance needs to ensure fiscal sustainability. The Central Bank needs to manage the balance of trade, and the Ministry of Economic (or Planning) Affairs needs to ensure the stability and diversification of economic growth. Thus, while the Hotelling's model provides a conceptual framework for a country's oil wealth management, the applied analysis should take account of the aforementioned constraints and considerations. The present study attempts to respond to these practical considerations while evaluating the envisioned scenarios of oil extraction. The analytical framework of the study is depicted in Table 1.

Table 1
Summary of research methodology.

Focus of analysis	Analytical steps
Sustainability of oil production	–Develop an oil production profile. –Project the domestic demand for oil. –Calculate the oil export volume. –Examine the impact on sustainability of oil reserves.
Impact on the economy	–Derive the emerging trends in oil and non-oil GDP. –Examine the impact on the rate and structure of economic growth. –Project the impact on the balance of trade. –Assess the investment requirements of economic diversification and infrastructure development.
Impact on the fiscal balance	–Project the government oil and non-oil revenues. –Develop a profile for government current and capital expenditures. –Calculate the budget deficit/surplus. –Examine the accumulation of government debt. –Project the accumulation of financial assets in the National Oil Fund. –Examine the impact of various fiscal rules (annual transfers from National Oil Fund to the government budget).
Policy recommendations	–Formulate policy recommendations based on the analysis of Kazak parameters and consideration of the international experience.

3. Kazakhstan's oil production strategy

Kazakhstan's oil output started to grow in the late 1990s and has shown a three-fold increase over the last 15 years. Total oil production was about 1.8 million barrels per day (mb/d) in 2013 of which about 1.5 mb/d was exported to the world markets by pipelines to the Black Sea via Russia; by barge and pipeline to the Mediterranean via Azerbaijan and Turkey; by barge and rail to Batumi, Georgia on the Black Sea; and by pipeline to China. The major importers of Kazakhstan's oil included China, Italy, the Netherlands, France, and Austria.

The rapid increase in oil production in the second half of the 1990s became questionable on the account of insufficiency of oil reserves. The sharp increase in new discoveries, however, resulted in a five-fold jump in oil reserves and a clear support for the expansion of oil output (Fig. 1).

Presently the government is revisiting its plans for further expansion of oil production capacity while considering the results of this study. Nevertheless, the previously envisioned strategy (Eckardt et al., 2012, IEA, 2012, IMF 2013c, World Bank, 2013) indicated a sustained increase in oil production capacity reaching a peak of 3.5 mb/d by 2035. Fig. 2 shows the forecasted oil production to 2035 and the impact on oil reserves. The critical question is what will happen after 2035. Assuming Kazakhstan will not wish to become an oil importer in any foreseeable future, the country should leave sufficient reserves to meet its domestic demand for oil. The analysis of this study indicates that the domestic oil consumption will grow from 265,000 b/d in 2012 to 516,000 b/d by 2050. Therefore, the production profile should be devised so that it will not fall below the required level for domestic use. On this basis and within the limits of proven oil reserves the production profile is derived as shown in Fig. 2(c). As portrayed in this figure and Fig. 2(d), oil exports and oil revenues collapse to negligible amounts after the peak period of 2035.

The projection of a rapid increase in oil production implies there is continued interest by foreign investors in Kazakhstan's oil sector, and it is important to ensure this interest remains strong by providing a business environment conducive to upstream activities. The impact of the projected oil production on the currently proven remaining reserves, however, sounds a policy alarm. It is therefore crucial that the government manages the pace of oil depletion by considering a scenario to slow down oil depletion.

4. Aggressive versus conservative oil production strategy

The question about extracting or keeping the oil in the ground is not a “one or the other” option but it is an enquiry about the tradeoff between a more aggressive versus a more conservative speed of

[1] For a review see Dasgupta P. and G.M. Heal, Economic Theory and Exhaustible Resources, Cambridge University Press, 1979, and Gaudet (2007). “Natural Resource Economics under the Rule of Hotelling.” Canadian Journal of Economics 40 (4): 1033–1059.