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journal homepage: [www.elsevier.com/locate/euras](http://www.elsevier.com/locate/euras)The effect of fiscal policy on oil revenue fund: The case of Kazakhstan<sup>☆</sup>

Dina Azhgaliyeva\*

Department of Economics, University of Essex, Wivenhoe Park, Colchester, Essex, CO4 3SQ, UK

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## ABSTRACT

Setting an optimal fiscal policy in oil-producing countries is challenging, due to the exhaustibility of oil resources and unpredictability of oil prices. Recently it has become popular among oil-producing countries to establish oil revenue funds, which are believed to stabilize the economy and provide inter-generational redistribution of oil wealth. The effectiveness of oil revenue funds and their design have received considerable attention from researchers and policymakers recently. Using empirical model, it is found that an oil revenue fund in Kazakhstan stabilized the government expenditure, but did not stabilize real effective exchange rates.

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\* Present address: CPS, Nazarbayev University, 53 Kabanbay Batyr avenue, Astana, 010000, Kazakhstan. Tel.: +77172705987.

E-mail address: [d.azhgaliyeva@ucl.ac.uk](mailto:d.azhgaliyeva@ucl.ac.uk).

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## 1. Introduction

Oil-producing countries often face the “Resource curse” coming from the volatility, exhaustibility and uncertainty of resources. Some countries create an oil revenue fund (fund) as a mechanism to reduce the impact of volatile revenue on the government and the economy (Davis, Ossowski, Daniel, & Barnett, 2001). There is an opinion that oil revenue funds can help oil-producing countries avoid the “Resource curse”.

Controversy exists in the literature about the impact of funds, which discuss whether the creation of funds have a positive effect on economy. The results of Davis et al. (2001) show no significant effect of the creation of funds on government expenditure. Results of Shabsigh and Ilahi (2007) show a significant effect of funds on inflation, broad money volatility and price volatility.

The existing literature studies only the effect of the existence of funds, but not the role of fiscal policy. The creation of funds may not be enough for oil-producing economies to avoid volatility and achieve higher growth. The creation of funds is not always an easy or appropriate solution to problems arising in oil-producing economies. Whether the

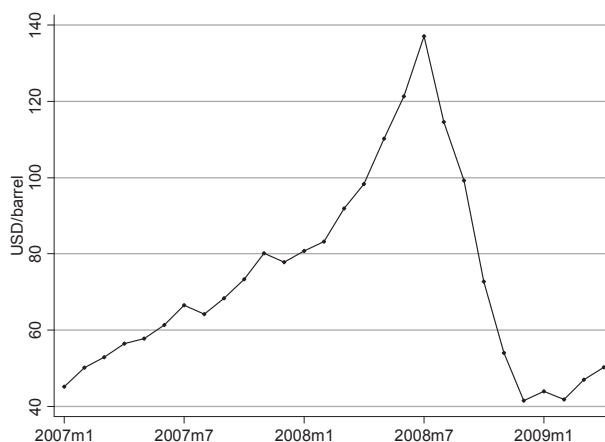


Fig. 1. World oil prices. Data source: The Energy Information Administration, available at [www.eia.doe.gov](http://www.eia.doe.gov).

establishment of funds contributes to the economy may depend on whether the appropriate fiscal policies are in place. Recent volatility in oil prices has made this question far more relevant to many oil-dependent countries (Fig. 1).

This paper attempts to answer the question “How does fiscal policy affect oil revenue fund in Kazakhstan and how effective is this fund?”. In this paper, the term fiscal policy is narrowed down to include only taxation of oil, the existence of a fund and its size. Taxation of resources is a combination of per unit, per revenue and lump sum taxes. An appropriate design of fiscal policy is significant to avoid high volatility of oil revenue: per-revenue tax allows for higher revenue when the resource price is high; per unit tax allows a country to secure resource revenue even when resource price is low; and lump sum tax allows a country to receive revenue even when the level of oil production is low. Countries set different taxes on resources and change them over time.

The theoretical model and the empirical model for the effect of taxation of resources (value-added tax, tax on oil exports and significant changes in oil taxation in 2004 and 2009) on its production are developed in this paper. To support the theoretical model the effects of fiscal policy on oil production, the fund’s revenue and gross international reserves (GIR) in Kazakhstan were estimated using data for Kazakhstan over the period January 1994–July 2013. The effect of the establishment of a fund and changes in its accumulation and withdrawal rules and its impact on stabilization of government expenditure and REER were shown using data for Kazakhstan over the period January 1994–July 2013.

This paper is structured as follows. Section 2 provides a review of existing literature studying the effect of taxation on oil production and oil exploration (Section 2.1) and the effect of oil revenue funds on the economy (Section 2.2). Section 3 describes fiscal policy in Kazakhstan. A theoretical model showing the effect of constant, price-dependent and quantity-dependent ad valorem taxes on oil production and oil exploration assuming variable oil prices is developed in Section 4. Empirical models showing the effect of taxes on oil production and exploration and showing the effect of oil revenue funds on government expenditure and REER are developed in Section 5. Conclusions are in Section 6. The main contributions of this chapter are in Sections 4.2.3 and 5.

## 2. Literature review

### 2.1. The effect of taxation on oil production and oil exploration

Research on the taxation of oil for most oil-producing countries, such as the OPEC nations, the Gulf countries, Mexico, Norway, UK, and the USA, is abundant. Research in this area for Kazakhstan is lacking.

In order to understand the model of how taxes affect oil production and oil exploration, it is important to understand the main principles of oil taxation. [Boadway and Flatters \(1993\)](#) provide principles and policy issues for taxation of both renewable and nonrenewable natural resources. They provide policy issues of different taxes on natural resources such as export taxes, production taxes, royalties, and property taxes. The authors argue that export taxes discriminate between the domestic resource market and the world resource market and are frequently used by developing countries as a source of revenue. If the portion of resources consumed domestically is too small compared to the amount exported, which is the case in many countries, there is no additional efficiency for the domestic market due to this discrimination. The authors note that many countries have tended to eliminate export taxes on natural resources in favor of other more general taxes. [Boadway and Flatters \(1993\)](#) predict that “Even in cases where the resource-exporting country might have a long term comparative advantage in further processing, the use of export taxes to speed up process can be very costly.” ([Boadway & Flatters, 1993](#), p. 49). They provide principles of taxation of nonrenewable natural resources, including export tax, and provides intuition of their implementation. According to the paper, taxes on oil can have a different effect on oil production depending on whether the tax rate is per unit or ad valorem. Also, tax rates can be constant or variable with price, quantity or quality of oil. Literature that provides analysis of the tax effect on oil production exists. One such study is that of [Conrad and Hool \(1984\)](#), which comes up with a model measuring the effect of taxes on intertemporal extraction of mineral resources. The authors build models showing effects of different types of taxes on

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