



ELSEVIER

Contents lists available at ScienceDirect

## Energy Policy

journal homepage: [www.elsevier.com/locate/enpol](http://www.elsevier.com/locate/enpol)

# Resource rent taxes and sustainable development: A Mongolian case study



Dodo J. Thampapillai<sup>a,\*</sup>, Jan Hansen<sup>b</sup>, Aigerim Bolat<sup>a</sup>

<sup>a</sup> Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore, Singapore

<sup>b</sup> Mongolia Resident Mission, Asian Development Bank, Ulan Bator, Mongolia

## HIGHLIGHTS

- We estimate resource rents owed to the state from energy resource extraction.
- We show that mining revenues are over-stated when the depreciation of mineral assets are ignored.
- We show that the investment of resource rents offers avenues for sustaining the flow of income.
- We argue that the state can grant custody of the rents to mining firms for the management of investments.

## ARTICLE INFO

### Article history:

Received 27 November 2013

Received in revised form

26 February 2014

Accepted 5 April 2014

Available online 17 May 2014

### Keywords:

Resource rent tax

Depreciation of mineral assets

Macroeconomic performance

## ABSTRACT

Economies rich in mineral resources, need to evaluate the merits of investing rents earned from resource extraction in other income generating activities to sustain the flow of income. It is hence important to estimate and assess the potential uses of the resource rent tax (RRT). This paper illustrates how the reinvestment of the RRT and other government revenue from mining can reduce the depreciation of the mine. This illustration is made with reference to a coal deposit in the Tavan-Tolgoi region of Mongolia. The paper also illustrates impact of mining on the macroeconomic performance of Mongolia. Standard macroeconomic frameworks that ignore the depreciation of mineral assets overstate economic performance. The paper also reviews the political issues and constraints that surround the implementation of the RRT. One option canvassed here is the granting of qualified custodial rights of the RRT to the mining firm. Such qualified rights are pertinent given that the RRT is legally the income owed to the State and investments in ventures such as human capital development can yield returns as high as 10% per annum. This study illustrates that even an investment option yielding an annual 3% return can make a significant difference.

© 2014 Elsevier Ltd. All rights reserved.

## 1. Introduction

Mongolia is the home of a diverse set of minerals that command significant global demand. These include coal, copper, gold, silver, molybdenum, rare earths and uranium. In this paper, we consider the management issues surrounding the extraction of coal. Mongolia's Southern Gobi Region carries one of the world's largest high quality coal deposits. For illustrative purposes, we develop a quasi-hypothetical case study on a mining project in one of the Tavan Tolgoi (T-T) deposits. The project considered is one concerning a deposit of 3 billion tonnes of coal and driven by Erdenes MGL—a government owned corporation. It is quasi hypothetical because for

our purposes we limit the duration of the project to 20 years and hence assume that only a subset of the total deposit is mined.

The approach to natural resource management in this paper rests on the premise that the natural endowments of a nation represent an interconnected stock of environmental capital (KN) that contributes to economic performance. Such performance is traditionally measured by changes in gross domestic product (GDP). Hence, this paper reconciles two aspects of natural resource management. The first is the examination of the management of coal extraction in a T-T deposit as illustrated by the case study below. The second is the evaluation of the impact of such management on the broader a macroeconomic performance of the economy. For illustrating the latter, we employ an Environmental Macroeconomic framework for the Mongolian economy. As indicated below, this framework permits the depreciation of coal resource assets to be explicitly included in the assessment of macroeconomic performance.

\* Corresponding author. Tel.: +65 6516 4844; fax: +65 6778 1020.

E-mail address: [spptj@nus.edu.sg](mailto:spptj@nus.edu.sg) (D.J. Thampapillai).

The basis for the macroeconomic analyses stems from at least two sets of concerns. The first is that symptoms reminiscent of the “Dutch Disease” have emerged in Mongolia in the wake of the rapid minerals sector expansion. The second pertains to the overstatement of mining revenues especially in the context of foreign investment and the lack of reference to the depreciation of mineral assets. We address in detail the second concern and defer detailed analyses of the Dutch Disease to subsequent analyses beyond this paper.

The paper is structured as follows. The next section deals with an over-view of the Mongolian economy with reference to the country’s recent performance. This is followed by a description of the case study chosen for this study. The conceptual basis for estimating the depreciation mineral resource stocks is presented in Section 4. This conceptual framework is then empirically illustrated in Section 5. The illustration involves the estimation of mining revenues and the RRTs that are payable to the Mongolian government with reference to the chosen case study. This is followed by an illustration of the macroeconomic impacts of the RRTs in Section 6. Although the benefits of the RRT can be conceptually validated as our display in Section 6, its implementation is surrounded by constraints controversy. In Section 7, we review these and suggest a way forward.

## 2. The Mongolian economy

Mongolia is one of the fastest growing economies in East Asia. Between 2008 and 2011, the Mongolian economy grew at a real rate of 8% per annum. This is a significant performance compared to other economies in the region. However, the main driver of this GDP growth has been the surge in mining investments and the rapid expansion of minerals output. For example, between 2010 and the first half of 2011 alone, the expansion in foreign direct investment in mining was 127% (Aminov, 2011). Data from the Asian Development Bank (ADB) (2012) suggests that significant investors came largely from China, Russia and South Korea. There were also smaller investors from countries such as Japan, France and Singapore.

Historically, agriculture has been Mongolia’s dominant sector of production. However, since 2002, mining has emerged as an equally dominant sector and since 2010, mining sector output has been in excess of agricultural sector output (Fig. 1). The relative and absolute contraction of the agricultural sector is indicative of the possible emergence of the Dutch Disease. However, further analysis on the competitiveness of this sector is warranted. As we indicate below the nominal exchange rate has depreciated. That is, the volume of Mongolian Tugriks (MNT) per the United States Dollar (USD) has increased and this might in fact render the agricultural sector to be competitive.

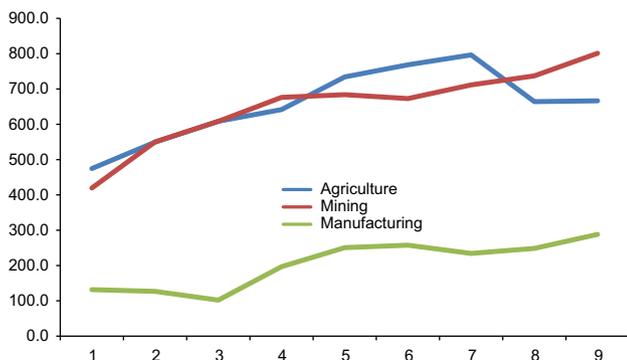


Fig. 1. Mongolian sector performances (2002–2011) (Constant billion tugriks). Source: Asian Development Bank (ADB) (2012) key indicators.

Given Mongolia’s plans for the future and the provision of various incentives for investments in the mining sector, it appears that dominance of mining is likely to stay at least for the next few decades. One specific resource that has witnessed significant expansion is coal—a resource, which Mongolia is endowed with in significant amounts. Mongolia’s coal endowments include both coking and thermal coal and both are deemed to be of high quality.

In 2003, coal production was barely 5 million tonnes, of which less than 10% was exported. However, by 2011, the production of coal was in excess of 30 million tonnes with nearly two-thirds of it being exported. Projected plans were to have annual production to exceed 60 million tonnes by this year (2013). The development of the coal mines, in the T-T region contribute significantly towards this end.

However, the rapid expansion of the mining sector has not been without costs. At least three of these are noteworthy:

- The surge in inflation has been significant. The difference between the real and nominal rates of economic growth (Fig. 2) supports this observation.
- Between 2002 and 2011, exchange rates have depreciated from 800 to nearly 1400 MNT per US dollar. This might have been partly caused by the enforced expansion of investments (imports) to build up the mining sector, beside the high inflation differentials compared with trading partners. In the past years, until very recently the current account deficit has been financed by foreign direct investment.
- The current account deficit has been exceptionally high, indicating lack of savings in the economy and recently has been associated with increasing pressures on the exchange rate (Fig. 3).

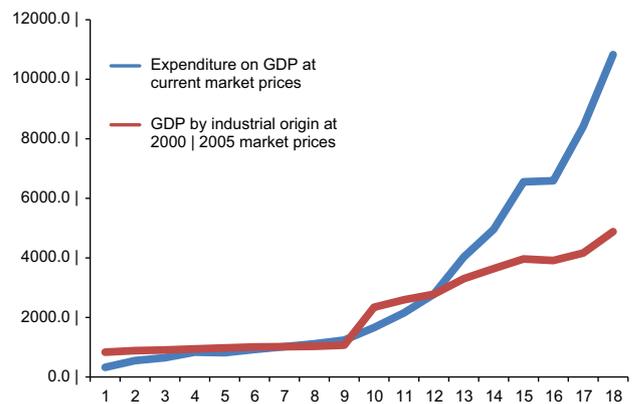


Fig. 2. Nominal Vs. real GDP (1995–2011). Source: Asian Development Bank (ADB) (2012) key indicators.



Fig. 3. Trade balance (1995–2011). Source: Asian Development Bank (ADB) (2012) key indicators.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات