

The economy-wide impact of controlling energy consumption in Indonesia: An analysis using a Social Accounting Matrix framework

Djoni Hartono^a, Budy P. Resosudarmo^{b,*}

^a*Department of Economics, University of Indonesia, Indonesia*

^b*Indonesian Project, Economics Division, Research School of Pacific and Asian Studies, The Australian National University, Canberra, ACT 0200, Australia*

Received 3 July 2007; accepted 11 December 2007

Available online 31 January 2008

Abstract

Escalating oil prices and the need to control carbon emissions sound the alarm for Indonesia to reduce or be more efficient in its energy use. Instead of eliminating the fuel oil subsidy to promote better and more efficient use of energy, the Indonesian government seems to be more in favour of restricting energy use by, for example, requiring all hotels, restaurants, night clubs and other business activities to close down by 1 am. Societies need to understand the full consequences of adopting restricting energy use and more efficient energy use strategies toward their incomes. This paper aims to analyse the impact on the economy of energy policies aiming to reduce and to improve the efficiency of energy use, particularly on the income of various household groups. This paper will, first, construct a Social Accounting Matrix for Indonesia with detailed energy sectors and, second, utilise various multiplier analyses to observe and understand the impact of these energy policies.

© 2007 Elsevier Ltd. All rights reserved.

Keywords: Energy economics; Technological change; Social Accounting Matrix

1. Introduction

Oil has played an important role as Indonesia's main energy source. In the last 10 years, approximately 65.5 percent of Indonesia's total energy consumption has come from crude oil (Center of Data and Information—Ministry of Energy and Mineral Resources, 2005). Furthermore, crude oil has long been an important source of government revenue. Nowadays, however, more and more people are questioning whether Indonesia can continue to depend on oil as its main source of energy and as one of its main sources of revenue. Fig. 1 shows that Indonesian oil production has been declining in the last several years; domestic demand for oil has increased significantly in spite of the increase in price. That Indonesia depends too much on oil is one of the energy-related concerns.

The second energy-related concern is the government energy subsidy. The government has always controlled the price of domestic oil products—fuel oils—such as gasoline,

automotive diesel oil and kerosene, so as to be lower than the world price, by providing a subsidy to Pertamina, the only oil processor and distributor of fuel oils in the country. The government also controls the price of electricity at a lower than production cost by subsidising the national electricity company.

In recent years, the increasing demand for fuel oils has forced Indonesia to increase the amount of crude oil imported, while the world price of crude oil has increased. Demand for electricity has also increased. Hence, overall, the government spends a significant amount of its budget on energy subsidies (Table 1).

The third concern is energy intensity, which has not improved. Energy Information Administration (EIA) reported that, in the last two decades, energy intensity in several East Asian countries, particularly China, has improved significantly, and developed countries around the world have been able to keep their level low, while Indonesia's has worsened at a rate of 1.94 percent annually.¹ This situation indicates, though not precisely,

*Corresponding author. Tel.: +61 2 6125 2244; fax: +61 2 6125 3700.

E-mail address: budy.resosudarmo@anu.edu.au (B.P. Resosudarmo).

¹<http://www.eia.doe.gov>

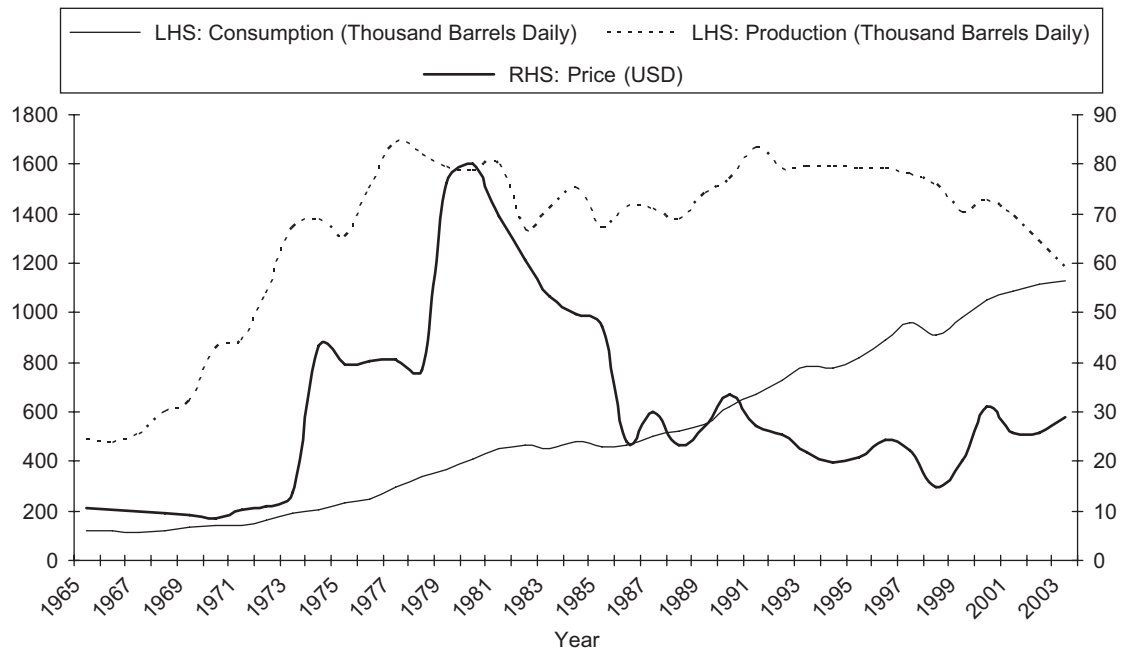


Fig. 1. International crude oil price and Indonesian crude oil consumption. *Source:* Center of Data and Information—Ministry of Energy and Mineral Resources (2005).

Table 1
Fuel and electricity subsidies, 1994–2004 (Billion Rupiah)

| Fiscal year | Fuel subsidy | % of fuel subsidy to state budget | Electricity subsidy | % of electricity subsidy to state budget |
|-------------------------|--------------|-----------------------------------|---------------------|--|
| 1994/1995 ^P | 686.8 | 1.10 | 0.0 | 0.00 |
| 1995/1996 ^P | 0.0 | 0.00 | 0.0 | 0.00 |
| 1996/1997 ^P | 1416.1 | 1.72 | 0.0 | 0.00 |
| 1997/1998 ^P | 9814.3 | 8.98 | 0.0 | 0.00 |
| 1998/1999 ^P | 28,606.6 | 16.57 | 1929.9 | 1.12 |
| 1999/2000 ^{aP} | 40,923.4 | 17.65 | 4551.6 | 1.96 |
| 2000 ^{bP} | 51,135.2 | 23.09 | 3928.0 | 1.77 |
| 2001 ^P | 68,380.8 | 20.02 | 4618.1 | 1.35 |
| 2002 ^P | 31,161.7 | 9.67 | 4102.7 | 1.27 |
| 2003 ^P | 30,037.9 | 7.98 | 3759.3 | 1.00 |
| 2004 ^c | 69,024.5 | 15.82 | 3309.5 | 0.76 |

Source: Fiscal Policy Office—Ministry of Finance.

Notes: p states budget calculation.

^aReal budget until March 31, 2000.

^bPhase April 1–December 31, 2000 (9 months).

^cEstimates for the 2004 phase.

that there has been an increasing trend towards inefficiency in primary energy use in Indonesia. Hence, there has been growing pressure on Indonesia to improve its efficiency in using primary energy.

The fourth concern is negative externalities to the environment, both at local and global levels. At the local level, environmental problems related to energy use are generally human health problems caused by emissions from vehicles and industrial activities. At the global level, the main concerns are global climate change and global warming due to increasing emissions of greenhouse gases. The energy sector, through its production and exploitation

activities, is considered to be the main contributor of greenhouse gases. EIA reported that the CO₂ emission intensity of Indonesia has been worsening at a rate of 4.1% annually during the 1990s and early 2000s.

With the above-mentioned problems in mind, the Indonesian government must develop various programs to promote better and more efficient use of energy. Eliminating the fuel oil subsidy; i.e., increasing the price of fuel oil, is the most common measure suggested as a way to encourage households and industries to be more efficient in using energy (or to save energy). Instead, the Indonesian government seems to be more in favour of restricting

متن کامل مقاله

دریافت فوری ←

ISIArticles

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