Household Welfare Impact of Electricity Subsidy Regime Shift in Indonesia

1.1 Introduction

To eliminate the burden of increasing oil prices to the poor, the government of Indonesia has been giving oil subsidies for a long time, especially for kerosene which accounted for approximately half of the total oil subsidies, and gasoline and diesel each represent roughly one quarter of the said oil subsidies (Mourougane, 2010). That includes the oil subsidies to the PLN for generating electricity. Meanwhile, for the same purpose of giving oil subsidies, the government also has been giving direct electricity subsidies to the residential electric power consumers, so that the poor can have more equal chances to access to the electricity. Hence, the electricity subsidy comprised the direct subsidy to the PLN, and indirect subsidy through the provision of oil products at subsidized prices. In general, the electricity subsidy is measured as the difference between the regulated retail price and the production cost based on a price-gap method.

Indonesia has experienced three main electricity subsidy mechanisms; up to 2001, the government issued lifeline subsidy which were provided to all customers with a consumption level below a minimum threshold considered necessary for meeting basic needs. This is based on the common knowledge that households with low consumption levels are likely to be poor, and some intervention is warranted to enable them to meet their basic needs at an affordable cost. From 2002 to 2004, the government started implementing a targeted subsidy (TS) scheme. Then in 2005, the
government again shifted the subsidy scheme from TS to the Public Service Obligation (PSO) by providing electricity to all customer categories with tariff set by the government. The PSO subsidy scheme aims at promoting equality and poverty alleviation with a high cost by the government budget. According to the World Bank, subsidies to the electricity sector accounted for 28 percent of total subsidies in 2006 (World Bank, 2008). From 2008, the previous policy was changed that the government no longer provided the indirect oil subsidy to the PLN; therefore, the PLN started to purchase the oil fuel from the oil company at market price. In other words, instead of providing direct oil subsidies, the PLN receives only direct subsidy based on the difference between the sales revenue and the production cost.

1.2 Research objectives

Electricity subsidy in household sectors is very interesting topics to study, particularly when there is shifting from targeted subsidy (TS) regime become public service obligation regime (PSO) in response of international oil price increase. There are main objectives in this dissertation;

- To estimate distribution of electricity subsidy in each tariff blocks and each households under two electricity subsidy regimes; targeted subsidy and PSO
- To estimate the impact on household’s welfare with and without subsidy

Since the existences of un-subscribers are high; the first analytical chapter is going to identify un-subscribers and to classify households in tariff blocks. After we successfully classify households, then we want to describe the characteristics of un-subscribers.

1.3 Analytical chapter 1: Identifying Residential Electricity Un-subscribers Under Two Electricity Subsidy Regimes in Indonesia

Abstract

Residential electricity un-subscription is a form of electricity theft in Indonesia. The problem of illegal un-subscription is neither widely acknowledged nor is discussed in detail in the recent literature. To enable deep discussions regarding issues of electricity fraud in Indonesia, this study aims to firstly identify the electricity un-subscribers, and then classify the un-subscribers by different tariff blocks based on the SUSENAS survey data. By comparing the un-subscriber structure over two electricity subsidy regimes, the results suggest that although with a regressive trend, the un-subscribers still make up a dominant proportion to the total electrified households. Furthermore, evidence from the classification of un-subscribers by tariff block tells that despite the number of un-subscribers largely shrank among the low tariff blocks, it surged among the high tariff blocks. In summary, being able to identify un-subscribers and classify un-subscribers by tariff block paves the foundation for more in-depth studies on social and economic impacts of un-subscribers in the future.
1.4 Analytical chapter 2: A Study on Characteristics of Household Electricity Un-subscribers in Indonesia

Abstract

Household electricity un-subscribers (HEUS) cause losses for the state owned electricity company or Perusahaan Listrik Negara (PLN) which is an exclusively operating electricity sector in Indonesia. With the results of study on identification of HEUS under both periods of the targeted subsidy (TS) scheme in 2004 and the public service obligation subsidy (PSO) scheme in 2008, this study tries to estimate potential losses for the PLN caused by the HEUSs. Moreover, this paper also aims at further improving the understandings on the characteristics of the HEUS from the aspects of their economic, demographical and geographical location attributes. The results of comparing the HEUSs under different electricity subsidy regimes shows that they share many common characteristics. Furthermore, the results also reflect that more HEUS are located outside Java Island and particularly in rural areas, where the PLN services are regarded not very efficient and electricity laws are not strictly enforced. All the findings suggest an urgent need for stricter law enforcement and electricity connection regulations to eliminate the HEUSs in a hope to improve the PLN’s revenue in the future.

1.5 Analytical chapter 3: Distribution of Electricity Subsidy under Targeted Subsidy and Public Service Obligation

Abstract

This paper tried to estimate distribution of electricity subsidy to households in two different electricity subsidy regimes; targeted subsidy (TS) and Public Service Obligation (PSO). Several questions can be addressed; how much amount of subsidy received by tariff blocks and households? What is the difference between TS and PSO…? The Households survey data (SUSENAS core) in 2004 and electricity data from PLN was employed to assess TS, while SUSENAS module 2008 is used to analyze PSO subsidy. Total subsidies per Kwh delivered to the lower tariff block are higher than upper tariff blocks. Even though the lowest and the lower block received higher subsidy per Kwh, but they received lesser subsidy per households. The higher tariff blocks receive more subsidy than lower tariff blocks. The finding also shows that TS is not really different with PSO.
1.6 Analytical chapter 4: Household financial burdens under Targeted Subsidy and Public Service Obligation Regimes

Abstract

Due to oil price fluctuation, especially in 2005, government of Indonesia has switched electricity mechanism from targeted subsidy (TS) become public service obligation (PSO). This paper tried to investigate both of those subsidy mechanisms; did the subsidy mitigate the burden of electricity expenditure? The analysis is only focused on households electricity expenditure. Households survey data (SUSENAS) and Electricity Company data from stated electricity company (PLN) was employed to assess electricity consumption, and electricity subsidy. The results show that subsidy work to mitigate oil price increase, especially to help low income groups. However, higher tariff blocks still can access cheaper electricity price. If we compare electricity expenditure without subsidy in total expenditure between 2004 and 2008 shows that share of electricity expenditure in 2004 an 2008 is almost same. The share of electricity expenditure without subsidy in 2004 is 8.26 %, while in 2008 is 8.77 %. It indicates that cost of production (electricity expenditure without subsidy) in both years is almost same with constant price.

1.7 Conclusion and Policy Recommendation

The distribution of electricity subsidy under TS shows that total subsidies per Kwh delivered to the lower tariff block are higher than upper tariff blocks. Even though the lowest and the lower block received higher subsidy per Kwh, but they received lesser subsidy per households. The distribution under PSO shows that the higher tariff blocks receive more subsidy than lower tariff blocks. Under PSO regime, electricity subsidy distributed to higher tariff blocks is much higher than the lower tariff blocks. Compare to TS, electricity subsidy under PSO regime is much more than TS regime.

In order to mitigate the impact of oil price increase, electricity subsidy was given. The subsidy can reduce the burden for households especially in lower income tariff blocks. However, higher tariff blocks still can access cheaper electricity price. The share of electricity expenditure without subsidy in 2004 is 8.26 %, while in 2008 is 8.77 %. It indicates that cost of production (electricity expenditure without subsidy) in both years is almost same with constant price. It indicates that cost of production is very sensitive for every increasing input such as oil price increase or other source of energy. Adjustment for electricity price to follow increasing input of energy is needed to minimize amount of subsidy. Lower tariff blocks are still given electricity subsidy to help poor households, while the higher tariff blocks should be minimized the amount of subsidy.

This study is the first attempt ever to make contribution in providing methodology for identifying the hidden un-subscribers and proposing their potential connected tariff blocks. This study also has significant contributions, especially assessing loss of PLN caused by un-subscribers using SUSENAS data combining with information from PLN in each tariff blocks.

Remark: The summary of the dissertation should be written on A4-size pages and should not exceed 4,000 Japanese characters. When written in English, it should not exceed 1,500 words.