



Easing the traffic: The effects of Indonesia's fuel subsidy reforms on toll-road travel



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ABSTRACT

Indonesia has serious traffic jams. This study uses data from 19 Indonesian toll roads over 2008–2015 to calculate the effects of Indonesia's historic recent fuel subsidy reforms on motor vehicle travel. The timing of the reforms was determined by budgetary and political factors, providing a suitable setting for estimating a causal effect. We control for a broad set of other factors potentially influencing traffic flows. Estimates using monthly data suggest an immediate fuel price elasticity of motor vehicle flows on the roads in our study of -0.1 , increasing to -0.2 when responses over a year are considered. We estimate that Indonesia's fuel subsidy reforms of 2013 and 2014 had reduced traffic pressure on these roads in the second half of 2015 by around 10% relative to the counterfactual without reform. A move to an adequate fuel excise system could contribute to more free-flowing traffic, while generating revenue for infrastructure and other investment.

1. Introduction

Indonesia, the world's fourth-most populous country, has for years been fiscally burdened by subsidies for oil consumption, principally for road transport. As of November 2012, Indonesia's subsidized gasoline price was only 4500 Indonesian rupiah (IDR) per liter, or US 47 cents. This was well below even the world crude oil price of 69 cents per liter (GIZ, 2014). Losses on sales of gasoline and diesel by the state-owned oil company, Pertamina, were paid for from Indonesia's central budget. Indonesia was ranked as the world's fourth-largest subsidizer of oil use by the International Energy Agency (2015). Fig. 1 compares Indonesia's pump price for gasoline with selected neighboring countries and the United States (US).

Since 2013, Indonesia has implemented ambitious reforms to its fuel subsidy arrangements. These commenced on 22 June 2013, when President Susilo Bambang Yudhoyono announced overnight increases in Indonesia's administered gasoline and diesel prices of 44% and 22%. On 18 November 2014 new President Joko Widodo increased these prices by a further 31% and 36%. This took the gasoline price to 8500 IDR per liter. This level was short-lived, however: at the end of December 2014 the gasoline price was reduced to 6700 IDR per liter as the world oil price fell. At this time it was also announced that the gasoline subsidy had been eliminated, although in practice some subsidies have continued. A fixed subsidy of 1000 IDR per liter was continued for diesel (reduced to 500 IDR per liter in July 2016).

As of the start of 2015 a system of occasional price review and adjustment was also implemented, with the notional aim of ensuring that pump prices are updated to reflect changes in input costs. Under this system, fuel prices were increased in March 2015. The gasoline price was then unchanged for the remainder of 2015. Indonesia's subsidized gasoline and diesel prices over our study

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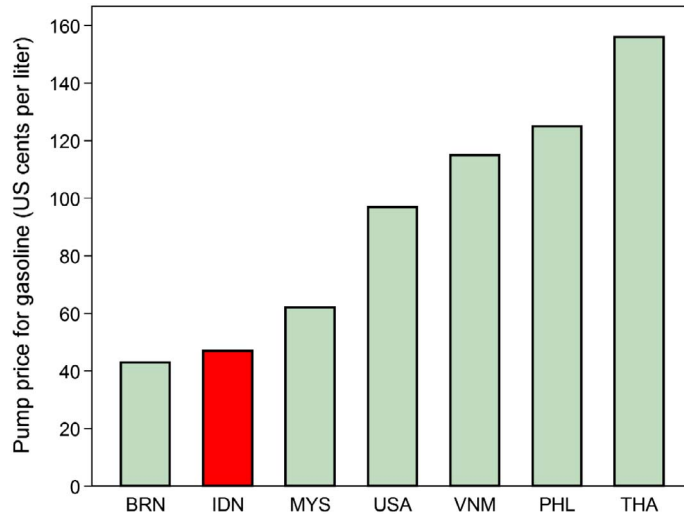


Fig. 1. Gasoline pump prices, 2012, selected countries. BRN = Brunei Darussalam; IDN = Indonesia; MYS = Malaysia; USA = United States; VNM = Vietnam; PHL = Philippines; THA = Thailand. Data are for November, and for the most widely sold grade of gasoline in each country. Source: World Bank (2017)

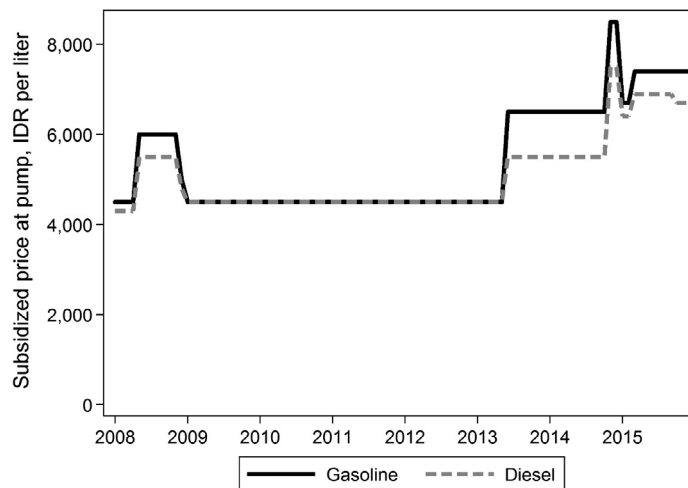


Fig. 2. Indonesia's subsidized gasoline and diesel prices, 2008–2015. Source: CEIC (2016). Gasoline is Premium (RON 88). RON = research octane number. Data are as at the end of each month. Prices are in nominal terms. "Premium" is the name given to the fuel; it does not mean high quality.

period are shown in Fig. 2.

Indonesia's fuel price increases since 2013, coupled with the decline in the world oil price, have allowed a large reduction in the country's expenditure on oil subsidies (Fig. 3). Nominal expenditure on oil subsidies in 2015 was more than 70% lower than it was in 2012. The reforms have constituted one of the most important fuel subsidy reform episodes anywhere in the world (Ross et al., 2017). Phasing out fossil fuel subsidies is a key goal of the international community, as pledged by the G20 and Asia-Pacific Economic Cooperation (APEC) in 2009.

In this study we investigate the effects of Indonesia's fuel subsidy reforms on road traffic. Indonesia has some of the world's most notorious traffic jams, causing large costs for commuters and the economy more broadly. Many road trips are slowed, delayed, or forgone altogether, and many commuters spend hours per day on the road. Traffic pressure is heaviest in Greater Jakarta – the second-most populous urban area in the world, after Greater Tokyo (Demographia, 2016) – but is also serious in other cities (Castrol, 2015; Waze, 2015). Indonesia's traffic jams are a function of high population density, underinvestment in mass transport options, and various other root causes, likely including Indonesia's subsidization of fuel use. By reducing the incentive to take trips of relatively low economic value, fuel subsidy reductions should provide a reasonably efficient means of reducing vehicle traffic.

Our analysis uses data on road use for a panel of 19 toll roads over 2008–2015. Aggregated monthly, the data represent 9 billion

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