ESSAYS ON DISTRIBUTIONAL CONSEQUENCIES OF FUEL TAXATION IN KENYA

By

JOHN MUTWII MUTUA

Thesis Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Doctor of Philosophy in Economics of the University of Nairobi, Kenya.

October 2013.
ABSTRACT

This thesis outlines three topics on residential energy demand, distributional consequences of fuel taxation and welfare impacts of price increases for five regulated fuels in Kenya. The thesis provides a comprehensive framework to analyse factors that drive energy demand and computes the price elasticities of household demand for fuels; analyses distributional consequences of fuel taxes and estimates welfare losses due to fuel price increases; and it attempts to provide regulatory policy options for reducing fuel consumption, distributional consequences and mitigations against welfare losses.

The models of demand for fuels are based on the Linear Approximate-Almost Ideal Demand System (LA-AIDS) in which fuel budget shares are used as dependent variables. The distributional effects are estimated by use of budget shares and Suit Index while, the welfare losses are estimated using the Compensating Variation (CV) method. The data is obtained from the National Energy Survey of 2009 and other national data sets by the Kenya National Bureau of Statistics (KNBS).

The demand analysis shows that own prices, price of substitutes, household expenditure, location of household, size of household, gender, education and type of occupation of the household head are some of the key factors that drive fuel consumption. For elasticity analyses, own price elasticities were negative, while the cross price elasticities had mixed results depending on whether a fuel is a substitute or complement. By use of budget shares and the Suit Index, this study establishes that electricity and kerosene are regressive in taxes, meaning the low income deciles bear a higher burden compared to the high income ones. A tax on Liquefied Petroleum Gas (LPG) is however progressive. With regard to transport fuels, a tax increase is progressive so that the tax burden is higher for the high income group than low income ones, contrary to what is widely held. The study recommends tax reduction for regressive fuels, while sustaining or increasing current taxes on progressive fuels.

As for to compensating variation, low income households would require higher compensation to go back to the same level of utility they were before the price increases were experienced. With regard to welfare measures by expenditure deciles, the analysis shows that lower expenditure deciles require more compensation than high income deciles. Interestingly, higher income deciles require more compensation than the low ones for transport fuels, because they directly pay more given their motorization behaviour which is captive towards private transport and car ownership. In conclusion, although the Government of Kenya is committed to deregulation, some level of welfare compensation is required, particularly for low income households.