

Abstract

A water supply tariff is a powerful water management tool that can be used to promote a number of economic, environmental and social-political objectives. In South Africa, increasing block tariffs are deemed to satisfy the domestic tariff regulations of the Water Services Act of 1997. The regulations require that the tariff supports the viability and sustainability of water supply services to the poor and discourages wasteful or inefficient water use.

The application of increasing block tariff structures presents a number of problems. The main issue being the size and price of each block. Ramsey pricing proposes that consumer welfare is maximised when the mark-up in price above cost of a good is proportional to the price elasticity of demand of the good. This principle was applied in setting the block prices of an increasing block water tariff. The sizes of the blocks were based on the average water consumption of low, middle and high income consumers.

The water demand characteristic of low, middle and high income households from a sample of domestic consumers in Durban were investigated. The water demand functions and price elasticity of demand for the three groups were estimated using econometric models. Two tariff structures based on Ramsey pricing principles were proposed and compared with the current increasing block tariff applied in Durban.

The frequency distribution of demand of each of the three consumer groups were applied in a model to ensure the proposed tariffs met a certain revenue target. The water demand functions of each of the consumer groups were used to model how the proposed tariff structures impacted consumer surplus and water demand.

The investigation found that increasing block tariffs designed with Ramsey pricing principles have a positive impact on social welfare, provide sufficient revenue for water service providers and support the conservation of water resources.