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Entitled

PRICE ELASTICITY AND DETERMINANTS OF RESIDENTIAL WATER CONSUMPTION IN AL AIN CITY

by

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Abstract

This thesis is concerned with the effect of water price on residential water consumption in Al Ain city, UAE. Water pricing is considered one of the important tools to reduce residential water consumption. However, the impact of pricing on consumption rates should not be investigated without considering other water demand determinants. This study includes a detailed review of the UAE's policies with respect to water demand management. Besides, it includes an intensive review of research studies concerned with the price elasticity of demand in the residential sector. The review showed that price, income, and weather characteristics have been considered significant in most previous research. An investigation into the determinants of water consumption in Al Ain, UAE was conducted. 400 households in Al Ain city were selected. Water consumption data and other household characteristics were collected for a two-year period (2016-2017) to evaluate the effectiveness of the new pricing tariff (implemented at the start of 2017). Data for the pricing structure, consumer characteristics, property characteristics, and weather characteristics have been collected from governmental authorities. Data gaps were identified, and a questionnaire was designed to collect missing data for the different determinants. Results of the questionnaire show that there are 2 to 3 males and females per household in the majority number of the sample. Further, 68.1% of the household sample have an income range from 11 to 30 thousand AED. Data collected was transformed and used to construct a representative balanced panel data. Using econometric techniques, a semi-log model was developed to identify the effect of different significant determinants on residential water consumption. The study results show that the significant determinants include: water price, income level, average temperature, number of adults, children, and elderly, and the existence of swimming pool, garden, and water-saving device. The coefficients of time-invariant variables were estimated using OLS and RE estimation techniques. The price elasticity of demand was found to be inelastic at values ranging between 0.231 to 0.364 using different estimation techniques. This study is envisioned to help in evaluating the effects of a price change on water consumption. The results of this study could help in incorporating the impact of pricing strategies on existing water demand forecasting models. The outcomes of this study can be of benefit to decision-makers and stakeholders in the UAE and other similar nations.

Keywords: Water demand management, Water consumption, Price elasticity of demand, Determinants, Regression model, Econometric techniques, Panel Data.