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Beer Excise Tax in Kenya:
An Assessment

Abstract

In Kenya, the excise tax on beer contributes a significant share to government revenue. The government is therefore interested in establishing the optimal excise tax rates for the different types of beer lagers and stouts. The optimal tax rate means that the government maximizes revenue from beer taxation. This paper estimates the revenue-maximizing tax rate in the beer sub sector in Kenya. The study uses two methodological approaches to derive the price elasticities necessary for computing the revenue-maximizing tax rate. The first approach is the partial adjustment model. While this model has been found to provide fairly satisfactory estimates of demand elasticities, it does not take into account persistence in consumer behaviour. The second approach takes this factor into account and hypothesizes that consumers have a strong memory in their consumption adjustment process. The study underpins the importance of a time horizon in evaluating revenue-maximizing tax rates and confirms the argument that short-run price elasticities are not appropriate for making policy choices. This is because the study finds that beer is price inelastic in the short run but not in the long run and that the excise tax rate is imposed on the basis of price inelasticity of demand. The study also demonstrates that the assumption about the shape of the demand curve has important implications for a revenue-maximizing tax rate. The conclusion is that beer taxation in the country needs to be carefully evaluated. The study results suggest that lowering the taxes on beer is likely to increase the level of production with subsequent increase in tax revenue.

Objective

In Kenya, the excise tax on beer contributes a significant share to government revenue. Furthermore, the relative importance of excise revenue from beer has increased over time. In 1990, excise revenue from beer and spirits accounted for 14.2% of non-oil excise duty revenues. By 1998, this figure had increased to 58.1%. The brewing industry is also important in the economy as a major employer and a source of other government revenue from value-added and corporation profit taxes. For a government that has a limited tax base, revenue from beer taxation is highly valued. The government would therefore be interested in establishing tax rates that maximize revenue from beer. The objective of the paper is therefore to analise and assess the excise tax rates and tax revenue to establish a critical threshold that will maximize this tax revenue. This is important both as an empirical question and as a policy issue.

Methodology

The task of determining revenue-maximizing excise tax rates involves estimating the statistical relationship between beer demand and tax revenue. From economic theory, the demand for a good depends on the price of that good, the price of related goods and consumer income. Estimating this statistical relationship for the determinants of beer demand provides elasticities that are important in determining the effect that changing taxes would have on beer demand and hence revenues. That is, the elasticities reflect the responsiveness of beer demand with respect to changing prices, these changes being generated by changing tax rates on beer. The price elasticities that are obtained from the estimated demand model are then used to compute the revenue-maximizing tax rates. By treating lager and stout beers as substitutes, the paper estimates separate models for the demand for each.

Once these price elasticities are estimated, the link between them and revenues is straightforward. If the demand for beer is price elastic, then a small increase in the price of beer translates into a proportionately larger decline in the demand for beer. To the extent that excise taxes result in increased prices, then a change in taxes would have an inverse effect on revenues (that is, an increase in tax rates results in lower revenues and vice versa). On the other hand, if the demand is price inelastic, an increase in the price translates into a proportionately smaller

decline in the demand for beer. Consequently, tax changes would have a positive effect on revenues (increases in tax rates resulting in increases in revenue and vice versa). This idea has been used in generating tax revenues from this class of goods, considered to have price-inelastic demand.

In evaluating the revenue-maximizing tax rates, it is important to take into account the time element: of short run versus long run. In the short run, price changes may little influence the quantity of a good consumed. But as time progresses, consumers are able to make the necessary adjustments so that they substitute away from relatively more expensive goods. In the long run, a good with no substitutes may acquire close substitutes, thus changing its demand profile. The short-run price elasticities are therefore not appropriate for making policy choices. In this study, long-run price elasticities are used to compute the revenue-maximizing tax rates.

The study uses two methodological approaches to estimate the demand for lagers and stouts. The first method is the partial adjustment model, which also replicates studies done in Kenya. While this model has been found to provide fairly satisfactory estimates of demand elasticities, it does not take into account persistence in consumer behaviour and thus it imposes a restriction on the adjustment process. The second method takes into account persistence in consumer behaviour and hypothesizes that current beer consumption is dependent on present and past prices of beer, cross prices of other beers and the level of income. That is, consumer memory is strong.

In establishing the revenue-maximizing tax rates, it is important to keep in mind the assumed functional form of the demand function. Two extreme cases can be considered: a linear demand curve and a constant-elasticity demand curve. Both these curves may be viewed as extreme cases with the relevant demand curve somewhere between the two but never known. The assumption about the shape of the demand curve has important implications for the results.

Empirical estimates of the revenue-maximizing tax rates

Currently, lager beer attracts an excise tax at the rate of 85%. The results from this study show that, assuming constant elasticity of demand, the partial adjustment model yields a revenue-maximizing rate of 89.3% while the dynamic model gives a revenue-maximizing tax rate of 62.5%. This evidence suggests that the revenue-maximizing tax rate is between 62.5% and 89.3%. Theoretically, the dynamic model does not impose any restrictions on the adjustment process, and it takes into account persistence in consumer behaviour. Therefore, it is more plausible than the partial adjustment model.

The partial adjustment model, as the name suggests, imposes some restrictions on how adjustments should take place. Thus it seems that the revenue-maximizing rate may be much closer to 62.5% than 89.3%.

Conclusion

The evidence emerging from this study suggests that beer taxation needs to be carefully evaluated. This is because the assumption of price-inelastic demand may not be valid in the long run, although it is the basis for imposing excise tax revenue on this class of consumer products. The empirical results from this study seem to show that beer is price inelastic in the short run but price elastic in the long run.

Policy should be based not on short-run parameters but on long-run structural parameters. It thus appears that the current excise tax rate on beer surpasses the threshold at which tax revenue would be maximized. The evidence provided suggests that lowering the taxes on beer is likely to increase the level of production with subsequent increase in tax revenue. The study also suggests that the country's tax structure of taking a general equilibrium approach should be carefully evaluated, taking revenue, employment and production effects into account. This may be formulated as the long-term goal of effective taxation in Kenya.

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