Competition and Welfare Effects of Differentiated Taxation: Evidence from the Irish Automobile Market

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KEYWORDS: Ad valorem taxation, cross-tax elasticity, differentiated and homogeneous taxation, differentiated products, imperfect price competition, welfare analysis.

BACKGROUND

- In recent years, policy makers in developed countries have adopted new taxation systems in an attempt to curb consumers' behavior away from a harmful lifestyle.
- Both the increase in the tax rate for unhealthy products, and a more general overhaul in the taxation regime have now become standard tools in the implementation of economic policies that aim to influence consumer behaviour.
- But once a taxation system that discriminates according to product characteristics is introduced, what are the implications for competition and consumer welfare?

METHODOLOGY

- We first develop a theoretical model to disentangle the effects on competition and welfare of the adoption of an ad valorem tax that varies according to product characteristics (quality) in an imperfectly competitive market.
- Next, as example of a market where taxation varies by product attributes, we use product-level yearly data on the Irish automobile market between 2004-2008, and a structural econometric approach is adopted to validate our theory and quantify the effects generated by such a form of taxation.
- Finally, in a counterfactual, we study the redistribution of resources in the system if the taxation had been homogeneous.

KEY FINDINGS

- A regime change that imposes a higher tax rate on goods of higher quality (i.e. cars having a low CO_2 emissions rate) leads to divergent equilibrium net prices. Opposite conclusions are reached when both high and low quality products are taxed at the same rate, with net prices converging to the common unique equilibrium level.
- In the context of the Irish automobile market, the differentiated taxation system, which taxes bigger engines more, did not lead to a significant shift in sales structure, as was its objective. Rather, it shifted profits and consumer surplus away from bigger and towards smaller engines, as a result of a tax-induced strategic change in the nature of short run price competition.
- Our analysis provides an understanding on the changes in short run price competition, submarket sales and welfare structure, in a way that one can expect from taxing an environmentally unfriendly aspect of a product.

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POLICY ISSUES

- Taking the Irish automobile market as an example, when the government set the goal of imposing higher taxes on cars with bigger engines, the differentiated tax regime generated higher net prices for high quality cars (i.e. those with low CO2 emissions) and lower net prices for lower quality ones (i.e. polluting cars), shifting rents towards the latter car segment because of demand expansion. While, during the sample period, the sale volumes by engine size remained broadly unchanged, in the long-run, the presence of such a tax is expected to influence the nature of investment in quality.
- Increased tax revenues and profits could be used to develop more carbon efficient automobiles, particularly for small engine sizes. Hence, small engine cars can avoid carbon taxation and protect their market share via innovation in product quality, rather than by increasing prices.

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