

Market Concentration and Nonlinear Pricing: An Empirical Investigation

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Abstract

By one definition, a firm's pricing is said to be discriminatory if it sells units of output at different prices when marginal costs do not differ correspondingly. In perfectly competitive markets price must always equal marginal cost, so price discrimination can not occur. Price discrimination (PD) therefore requires market power. Indeed, a well-developed literature points out numerous ways in which a monopolist firm can practice PD. Empirical researchers have exploited the divergence in behavior between perfectly competitive firms and monopolists in order to detect market power. The idea is simple enough: if a firm can price discriminate, it must have market power. In practice, however, there are few monopolies, so the idea has also been widely applied to oligopolistic industries. Researchers often interpreted the degree of PD as a proxy for the extent of market power: the larger the degree of PD, the greater the market power enjoyed by firms. This interpretation was not based on theory but seemed like a natural extrapolation of the relationship in the two polar cases of competition and monopoly.

Recent theoretical advances in the analysis of PD in oligopolistic industries have shown that the relationship between PD and market power is not necessarily monotonic; that is, increased competition may lead to an increase in the degree of PD. Early empirical work has produced evidence that this may often be the case. Our research aims to contribute to this literature by exploiting a unique and highly detailed dataset obtained from AC Nielsen. We have collected information on the market for detergents in five countries (Netherlands, Poland, Czech Republic, Egypt, Saudi Arabia). In each market we have bimonthly observations of the price and quantity sold of every package of every product of every firm that was active during a four-year period. This allows us to construct the nonlinear pricing schedule for each product. Some products are sold in as many as ten package sizes, hence the pricing schedule is very informative. Our sales data enable us to construct accurate market shares at the product level, as well as several concentration measures that can be used to capture the degree of competition.

The variable to be explained is the degree of PD. We use a number of different measures of PD; from simple ones, such as the maximum discount being offered, to more complicated ones that aim to measure the concavity of the nonlinear pricing schedule. The explanatory variable of interest is a measure of concentration. To this point we have run some preliminary regressions on the Egyptian and Saudi data. Contrary to the above-cited studies, we obtain a strong positive relationship between concentration and PD. This would suggest that competition tends to flatten the price schedule. The results are preliminary and there are endogeneity issues we have not yet dealt with. On the other hand, we have only begun to scratch the surface of an extremely rich dataset. The initial evidence is promising and we are hopeful that more interesting findings are in store.