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Endogenous market structure and competition in the 19th century American brewing industry

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Abstract

This study examines market structure and competition in the brewing industry in American frontier states around 1880. Although comprehensive firm-level data are unavailable, available data provide information about the presence of firms in western frontier markets and characteristics of those markets. The analysis uses these data in a discrete dependent variable econometric model to estimate the size of a market needed to support a certain number of breweries and the impact of market characteristics on market structure. In addition, the estimated market sizes needed to sustain different numbers of firms provide information about the competitive effects of entry in the early brewing industry. The results indicate that the presence of second and third brewing firms significantly increased competition in a market implying that duopoly markets were not perfectly competitive. Moreover, these findings suggest that brewing firms were not engaged in collusive behavior.

JEL classification: L13; L66; N81

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1. Introduction

A longstanding issue in industrial organization concerns the relationship between market structure and market outcomes. Many conventional models hold

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that prices tend to the competitive level as the number of firms grows, although the rate of convergence depends on numerous factors such as the elasticity of demand. On the other hand, the theory of contestable markets (Baumol et al., 1982) predicts that the threat of entry is sufficient to discipline incumbents so that the actual effect of additional firms will be minimal. Still other scenarios can be constructed in which, for example, firms are able to successfully maintain a cartel following entry, thereby preventing price–cost margins from falling with increases in the number of firms.

Beginning with Bain (1956) and continuing through, for example, Weiss (1989), a large body of research has examined correlations between measures of market performance, such as prices or price–cost margins, and measures of market structure, such as concentration ratios or counts of active firms. However, this structure–conduct–performance approach has been subject to a number of criticisms. The frequent use of price–cost margins and other variables culled from accounting data raises doubts about the ability of these studies to accurately measure market performance. A more fundamental criticism lies in the endogeneity of market structure. An observed market structure is the outcome of the profit-maximizing decisions of numerous actual and potential firms. When making entry decisions, these agents take into account numerous market conditions including the severity of barriers to entry, the nature of post-entry price competition, and the optimal entry decisions of other firms in the market. Thus, the simultaneous causal link between structure, conduct and performance confounds attempts to draw clear conclusions from this line of research.

A number of recent studies have developed techniques to address these problems.[1] In particular, Bresnahan and Reiss (1990) and Berry (1992) construct and estimate discrete dependent variable econometric models that explicitly confront the endogeneity problem by addressing the relationship between market structure and the entry decisions of firms. Studies such as Reiss and Spiller (1989); Stavins (1995); Downes and Greenstein (1996); Berry and Waldfogel (1999); Mazzeo (1999) and Abraham et al. (2000) have employed variants of this approach to examine market structure in a range of different industries. Another line of research, surveyed in Bresnahan (1989), endeavors to draw inferences about competition in the absence of direct measures of market performance such as price–cost margins.

Bresnahan and Reiss (1991) propose a link between models of endogenous market structure and those examining market competition. Lacking information on price–cost margins, they develop tests based on estimates of entry thresholds or, in

[1] The work of Sutton (1991, 1998) provides additional studies in this vein. However, his research deals more with uncovering empirical regularities across industries than with examining the impact of entry and market structure in any single industry.