Competing models of firm profitability ☆

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Abstract

In this paper, I look at four models of firm profitability: two taken from Industrial Organization, one from Finance, and one from the Economics of Exhaustible Resources. Only one predicts that there will be a positive relationship between firm profitability and the structure of the market in which the firm operates, and only that one views high profits as an indication of monopoly power. Nevertheless, most antitrust authorities base their policies on a belief in those relationships. Using panel data from 14 nonferrous-metal mining and refining markets, I find strong empirical support only for the market-structure model.
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1. Introduction

Virtually all branches of economics embrace the notion that firms attempt to maximize profits. Nevertheless, although some firms are substantially more profitable than others, most earn only a competitive rate of return. Given those facts, it is not surprising that economists from various subdisciplines have developed models that predict which firms will earn high rates of return and how those rates can be sustained in a world in which profits attract entry.

In this paper, I summarize four such models: two that originate in the field of industrial organization (IO), one that comes from financial economics, and one that has its origins in

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the economics of exhaustible resources. Each singles out a different factor as the principal determinant of profitability. In particular, the first emphasizes the structure of the market in which the firm operates, the second points to the firm's share of that market, the third focuses on the firm's risk class, and the last emphasizes resource scarcity and intertemporal arbitrage.

The four models of firm profitability originate in traditions that view the economic world in very different lights. Nevertheless, although some are better characterized as searches for empirical regularities, all can be rationalized by economic theory. Only the first, however, predicts a causal relationship between industry concentration and firm profitability. Furthermore, only the first interprets the existence of high profits as evidence of monopoly power.

Nevertheless, antitrust agencies in most Western countries implicitly assume that a profits/concentration connection exists. In particular, most agencies require that product and geographic markets be defined and indices of concentration be calculated before any monopolization or merger case can be brought forward.[1] This practice is adhered to in spite of the fact that it is not only impossible to prove unambiguously that a causal relationship links profits to concentration,[2] but also many theories attribute high profits to superior efficiency, not market power.

Given an abundance of theories and predictions, it is natural to turn to data in an attempt to disentangle and assess predicted effects. This exercise is not new. Rather, it is a very old tradition in IO that has fallen out of fashion.[3] One reason for the fall from fashion is that it is difficult to move beyond mere correlation to a determination of causality. This difficulty arises because most of the variables that have been used in empirical tests are potentially endogenous.

Rather than attempting to determine causality, I take a descriptive approach.[4] In particular, I look at equilibrium rather than causal relationships. Those relationships are evaluated by calculating the principal components of a matrix of endogenous variables, interpreting the components that have the highest explanatory power, and assessing how the original variables are related to those components. In other words, I seek to uncover the important relationships—those that explain a large fraction of the cross-sectional and time-series variation in the data.

This technique is applied to data from nonferrous-metal mining and refining industries. Those industries produce homogeneous commodities that have well defined product and geographic markets. In particular, 14 commodity markets are examined in the application. The data consist of an unbalanced panel of the principal mining and refining firms and include the production of each of those firms in each market.[5]

The industries were chosen because they satisfy the assumptions that underlie the theoretical models. In other words, the theories are examined in a context in which the

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[1] Many other sorts of antitrust cases also rely heavily on concentration indices.

[2] In particular, under some assumptions, one can demonstrate that no such connection exists.

[3] The empirical IO literature has moved from an examination of many markets using the same model to an emphasis on case studies that are fine tuned to fit particular markets and are much more data intensive.

[4] The exercise that is performed here is most closely related to the work of Schmalensee (1985).

[5] The panel is unbalanced due to mergers and acquisitions.