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# Empirical tools and competition analysis: Past progress and current problems☆

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I review a subset of the empirical tools available for competition analysis. The tools discussed are those needed for the empirical analysis of; demand, production efficiency, product repositioning, and the evolution of market structure. Where relevant I start with a brief review of tools developed in the 1990s that have recently been incorporated into the analysis of actual policy. The focus is on providing an overview of new developments; both those that are easy to implement, and those that are not quite at that stage yet show promise.



## 1. Introduction

This paper reviews a set of tools that have been developed to enable us to empirically analyze market outcomes, focusing on their possible use in formulating and executing competition policy. I will be more detailed on developments that seem to be less broadly known by the antitrust community (often because they have only been recently

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introduced), and will emphasize problems that are current roadblocks to expanding the purview of empirical analysis of market outcomes further.

The common thread in the recent developments has been a focus on incorporating the institutional background into our empirical models that is needed to make sense of the data used in analyzing the issues of interest. In large part this was a response to prior developments in Industrial Organization theory which used simplified structures to illustrate how different phenomena could occur. The empirical literature tries to use data and institutional knowledge to narrow the set of possible responses to environmental or policy changes (or the interpretations of past responses to such changes). The last two decades of the twentieth century saw the field moving from a description of responses that could occur, to those that were "likely" to occur given what the data could tell us about appropriate functional forms, behavioral assumptions, and environmental conditions.

In pretty much every setting this required incorporating

- heterogeneity of various forms into our empirical models,

and, when analyzing market responses it required

- use of equilibrium conditions to solve for variables that firms could change in response to the environmental change being analyzed.

The difficulties encountered in incorporating sufficient heterogeneity and/or using equilibrium conditions differed between what was traditionally viewed as "static" and "dynamic" models. The textbook distinction between these two was that: (i) static models analyze price (or quantity) setting equilibria and solve for the resultant profits conditional on state variables, and (ii) dynamics analyzes the evolution of those state variables (and through that the evolution of market structure). The phrase "state variables" typically referred to properties of the market that could only be changed in the medium to long run: the characteristics of the products marketed, the determinants of costs, the distribution of consumer characteristics, any regulatory or other rules the agents must abide by, and so on.

This distinction has been blurred recently by several authors who note that there are a number of industries in which products of firms already in the market can be "repositioned" (can change one or more characteristic) as easily (or almost as easily) as firms can change prices. The authors then show that in these industries static analysis of an environmental change that does not take into account this repositioning is likely to be misleading, even in the very short run. The product repositioning literature also employs different empirical tools than have been used to date, and the tools are relatively easy for competition analysis to access and use. So between the static and dynamic sections I will include a section on "product repositioning" in which; (iii) incumbents are allowed to reposition characteristics of the products they market.

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