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# Are prices ‘sticky’ online? Market structure effects and asymmetric responses to cost shocks in online mortgage markets

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## Abstract

We analyze daily mortgage rates posted by online lenders at the price comparison site, *Microsurf*. While cost shocks occurred almost daily in our sample, quoted mortgage rates are surprisingly rigid: Only 16% of the posted rates represent changes. However, firms that adjusted rates in response to cost shocks did so quite rapidly; about 98% of a cost shock was passed through within 2 days of the cost shock. Duration analysis reveals that the observed rigidity in rates systematically depends on market structure: Online mortgage rates are 30% to 40% more durable in concentrated markets than in markets where there are many competitors. We also find that rates posted online tend to exhibit downward stickiness; rate adjustments in response to cost increases are about twice the corresponding adjustments for cost decreases.

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## 1. Introduction

Economists comparing the competitiveness of electronic and traditional market environments often argue that electronic commerce entails lower transaction costs. On the demand side, the cost to consumers of becoming informed in e-retail settings is low due to readily available online information and superior search capabilities.<sup>2</sup> These lower transaction costs and the globalization of markets may enhance competition and result in prices that more closely match the external economic environment. On the other hand, the fact that these new technologies permit firms to monitor rival's prices and to adjust prices in real time may lead to higher prices due to collusion.<sup>3</sup>

While a number of papers have documented that the Internet has yet to eliminate price dispersion (see Bakos (2001) and Smith et al. (2000) for surveys, and Baye et al. (2004) for an analysis of the impact of market structure on price dispersion), relatively little is known about the economic forces that induce firms competing in online markets to adjust their prices. Since it is arguably easier for firms to change online prices than to change price tags at brick-and-mortar outlets, one might expect prices posted in online markets to change very frequently in response to changes in marginal cost and other economic factors.

To examine price adjustment patterns in online markets, we assembled firm-level panel data consisting of daily observations on the rates charged by different online lenders for 30-year fixed-rate mortgages. The data were obtained from *Microsurf*, which is a price comparison site for mortgages. Mortgage providers submit their mortgage rate quotes, and terms and conditions for loan origination to *Microsurf* in real time. *Microsurf* publishes these rates along with other characteristics of loans and lenders on its web site, and consumers may access this information free of charge. The data, which consist of firms' pricing decisions over the period April 30, 1998 through July 22, 1998, reveal considerable price dispersion. The range in interest rates charged – the difference between the maximum and minimum rate – exceeds 0.25 on all but one date in the sample. These price differences are not transient in nature—they are observed over time and do not “converge” to zero during the sample period. In short, dispersion in mortgage rates appears to be an equilibrium phenomenon among online lenders. As we discuss in the next section, these observations are consistent with a variety of theoretical models of online price dispersion, as well as levels of dispersion documented in online markets for books and electronic products.<sup>4</sup>

Since the persistence of price dispersion in online markets is well-documented in the recent literature, our aim in the present paper is to identify factors that influence firms to adjust their prices. This focus is motivated, in part, by the considerable variation observed in online lenders' decisions to adjust the mortgage rates posted at *Microsurf*. For instance,

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<sup>2</sup> The order in which search results are presented to potential buyers online is also an important determinant of market competitiveness (see Arbatskaya, 2004). For an empirical analysis of consumer behavior on the Internet, see Brynjolfsson and Smith (2000a).

<sup>3</sup> The availability of information and short detection lags are some of the requirements for maintaining a cartel agreement.

<sup>4</sup> See, for example, Baye and Morgan (2001), Baye et al. (2004), and Brynjolfsson and Smith (2000b) among others.

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