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Market share and price rigidity ☆

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ABSTRACT

Survey evidence shows that the main reason why firms keep prices stable is that they are concerned about losing customers or market share. We construct a general equilibrium model in which firms care about the size of their customer base. Firms and customers form long-term relationships because consumers incur costs to switch sellers. In an environment with sectoral productivity shocks, we show that cost pass-through is a non-monotonic function of the size of switching costs. Specifically, prices tend to become more stable as the fraction of repeat customers increases and the elasticity of the customer base falls.

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1. Introduction

Macroeconomists have a strong interest in understanding why prices are not more flexible. We focus on the following phenomenon: pass-through from marginal cost to prices is often incomplete. The most obvious example of "incomplete pass-through" is the relatively small impact of exchange rate changes on the retail price of imported goods. There is also evidence of incomplete pass-through both from wholesale to retail prices and in aggregate time-series data.[1] These observations are inconsistent with the predictions of the standard monopolistic competition model. Our objective is to account for this behavior by introducing a real rigidity which we argue is closely related to firms' actual price-setting practices.

Over the last few years, considerable effort has been made by macroeconomists to identify stylized facts from micro price datasets with the hope of testing price rigidity mechanisms commonly used in macro models.[2] In addition, some researchers have taken to the task of asking firms directly about their price-setting strategies. In surveys, firms report that

[1] For references, see Burstein et al. (2005) and Campa and Goldberg (2005) on import prices; Besanko et al. (2005) on the relationship between wholesale and retail prices; Neumark and Sharpe (1992) for interest rates; and Peltzman (2000) for a variety of sectors. Using aggregate data, Bils (1987), Rotemberg and Woodford (1999) and Altig et al. (2005) argue that prices are less volatile than marginal cost.

[2] For empirical evidence, see Bils and Klenow (2004) and Nakamura and Steinsson (2007). There are many theoretical reasons proposed as to why prices are more stable than marginal cost. See for example Ball and Romer (1990) and the references therein, modern DSGE models with nominal rigidities

the main reason they wish to keep prices stable is that they are concerned about losing customers or market share (Blinder et al., 1998; Fabiani et al., 2005). In contrast, firms give much less weight to factors such as menu costs and costly information which are often emphasized as theoretical explanations for price rigidity. There is also evidence that the degree of price rigidity is related to customer base concerns (Amirault et al., 2006) and that firms with a higher proportion of repeat customers tend to have more rigid prices (Aucremanne and Druant, 2005; Hall et al., 1997). Yet, the interaction between firms and customers has received surprisingly little attention in the macroeconomic literature.[3] Our contribution is to take a step toward bridging this gap by embedding within a standard macro model the concept of customer base or market share. We show how the addition of this feature alters relative price dynamics yet retains the inherent tractability of the Dixit and Stiglitz (1977) framework.

In our model, profit-maximizing firms care about the size of their customer base because this base determines future sales. Consumers decide how much of a product to consume and which firm to buy it from, creating a distinction between the extensive margin of sales (the number of customers) and the intensive margin (the quantity sold per customer). Firms and customers form long-term relationships because consumers incur costs to switch sellers. In this environment, firms view customers as long-lived assets. Consequently, they face an intertemporal tradeoff between increasing current profits and building market share for the future.

Our model of imperfect competition is embedded into a general equilibrium framework where firms are buffeted by sectoral marginal cost shocks. In this environment, pass-through is incomplete and a function of the persistence of cost shocks. More importantly, we show that there is a non-monotonic relationship between the size of switching costs and the rate of pass-through. When switching costs are low, customers are likely to leave in the future and are therefore of little value to the firm. Consequently, firms pass-through a large fraction of marginal cost changes into their prices. As switching costs increase, customers become more attached and valuable, and pass-through falls. However, when switching costs are so high that customers never switch, the extensive margin is irrelevant and prices move one for one with marginal costs.

This novel result implies that there is interesting heterogeneity in the price response across industries following marginal cost shocks. We argue that the model's predictions are in line with the available empirical evidence. Price-setting surveys show that firms which are most concerned about customer relations and with the highest proportion of repeat customers report more stable prices.

Our results are of interest to macroeconomists for at least two reasons. First, to understand how firms respond to non-aggregate shocks is inherently interesting given the prevalence of such shocks (Golosov and Lucas, 2007). Second, it is well known that nominal frictions must be combined with real rigidities in order for nominal shocks to have significant and persistent real effects.

The outline of the paper is as follows. Section 2 describes the economic environment as well as the maximization problems faced by households and firms. Section 3 presents our findings for the dynamic environment and explains the intuition behind the results. Section 4 concludes.

2. A macro model with market share dynamics

In this section we develop a tractable model based on micro foundations in which profit-maximizing firms are rationally concerned about their market share position. Our model builds on the work of Ball and Romer (1990) and extends it to a dynamic version based on the standard imperfect competition framework.[4] The central mechanism is related to the customer market literature (e.g. Phelps and Winter, 1970; Okun, 1981) under imperfect information (see Stiglitz, 1979).

The environment is comprised of households who consume and provide labor, and firms who produce consumption products. However, unlike a standard model, the consumption decision here is two-dimensional: households decide not only how much of a particular product to consume, but also which firm to buy it from. The decision to switch supplier is a function of the relative price and a switching cost. The ensuing customer base dynamics render the firm's problem intertemporal.

2.1. Households

There is a unit mass of infinitely lived households denoted by *j*. Each household derives disutility from labor l^j and utility from a basket of products $\tilde{c}^j$, and solves the following problem:

$$V_t^j = \max E_t^j \sum_{\tau=t}^{\infty} \beta^{\tau-t} \left[\frac{(\tilde{c}_\tau^j)^{1-\sigma}}{1-\sigma} - \eta \frac{(h_\tau^j)^{1+\varepsilon}}{1+\varepsilon} \right] \tag{1}$$