MARKET ADJUSTMENT AND IMPERFECT COMPETITION: ENTREPRENEURIAL RESPONSES TO EQUILIBRIUM AND DISEQUILIBRIUM IN MARKETS FOR HETEROGENEOUS GOODS

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ABSTRACT

The present paper applies a market-clearing analysis to the neoclassical model of imperfect competition in which firms may produce differentiated products, and for which long run equilibrium is described as ATC = P > MC. Most textbooks describe the disequilibrating impact of product differentiation, and the eventual return to long run market equilibrium, in terms of comparative statics, with little or no discussion of the adjustment process and the role of entrepreneurship in that process. This paper models the process of market adjustment in imperfectly competitive markets by incorporating a product-differentiating or Schumpeterian view of entrepreneurs who create changes to which price-adjusting entrepreneurs may respond. This paper describes the ***process*** *by which entrepreneurs move imperfectly competitive markets from equilibrium to disequilibrium, and eventually to a new long run equilibrium. To that end it employs the graphic tools of neoclassical economics.*

INTRODUCTION

Undergraduate courses in economics rarely provide more than superficial mention of entrepreneurial responses in explaining the market-clearing process.

Brief references to entrepreneurs making price changes are sometimes incorporated in textbook chapters presenting the supply and demand model, and virtually no references are to be found in discussions of imperfect competition to the role of entrepreneurs in coordinating market activity.

Research previously published in this journal (Foshee, Heath, and Balic, 2003) has provided a useful methodology for explaining the important role entrepreneurs play in the market-clearing process under purely competitive conditions where firms produce a homogeneous product, market entry is free, and long run equilibrium is described as P = MC = ATC. That analysis is limited to the case of **price-adjusting e**ntrepreneurs who are alert to the opportunity to make gains by changing their price**s** in the face of a market surplus or shortage. Entrepreneurial gains come in the form of producer surplus obtained by selling (or, on the consumer side of the market, buying) at a price which differs from the price of other producers of the same product. The credibility and usefulness of the pure competition model (and the supply and demand analysis which issues from it) are significantly enhanced by this analysis. The present paper applies a similar market-clearing analysis to the neoclassical model of imperfect competition in which firms may produce differentiated products, and for which long run equilibrium is described as ATC = P > MC.

ENTREPRENEURIAL ACTION IN THE MODEL OF IMPERFECT COMPETITION

Entrepreneurs in imperfectly competitive markets can exercise a greater range of responses to disequilibrium conditions than in the model of pure competition. These responses include product differentiation through innovation, a form of competition disallowed (by assumption) in the model of pure competition. Most textbooks describe the disequilibrating impact of product differentiation, and the eventual return to long run market equilibrium, in terms of comparative statics, with little or no discussion of the adjustment process and the role of entrepreneurship in that process. This paper models the process of market adjustment in imperfectly competitive markets by incorporating a product-differentiating or Schumpeterian view of entrepreneurs who create changes to which price-adjusting entrepreneurs may respond.

We consider two types of entrepreneurial action: price adjusting and product differentiation. Firms producing a differentiated product can also employ a price-adjustment response to competition, just as firms producing a homogeneous good do in the familiar neoclassical model of "*cartel cheating.*" In the cartel model, each

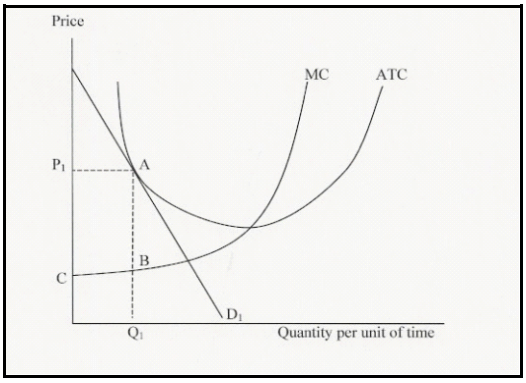
cartel member perceives two demand curves: a less elastic demand curve jointly faced by cartel members when they maintain their collusive behavior, and a more elastic demand curve perceived by an individual entrepreneur who is alert to new opportunities for making gains by acting alone. The entrepreneurial cartel member weighs the possibilities of making gains by "secretly" cutting price while the rest of the cartel maintains the accepted cartel price.

In a similar fashion, the entrepreneurial imperfect competitor weighs the possibilities of making gains by *product differentiation,* as well as the possibility of "secretly" cutting price, while other less entrepreneurial competitors maintain their current product characteristics and/or prices. In both cases less-than-perfect market coordination is the underlying condition for the entrepreneurial activity. In the cartel case, the entrepreneur is the "cheater" who breaks ranks with cartel pricing. In the case of imperfect competition, market coordination is temporarily disrupted by the competitive behavior of a (Schumpeterian) product differentiating entrepreneur who introduces new or additional product differentiation in hopes of earning greater rewards by better satisfying consumer tastes. The rewards come about in two ways: initially, through greater consumer demand, as buyers are attracted to the differentiated product; and subsequently, through entrepreneurial price changes which are potentially profitable as other producers emulate the successful product differentiation. Price "cheating" follows product differentiation.

ENTREPRENEURIAL PRODUCT DIFFERENTIATION

As noted earlier, our purpose is to analyze the ***process*** by which entrepreneurs move imperfectly competitive markets from equilibrium to disequilibrium, and eventually to a new long run equilibrium. To that end we employ the graphic tools of neoclassical economics. **Figure 1** depicts a representative firm in an imperfectly competitive market which is in long-run equilibrium where MR = MC and P = ATC. Economic profit is zero and producer surplus is equal to the area defined by points P_1ABC. At this equilibrium, there are no price changes for a price-adjusting entrepreneur to make, because both demanders and suppliers are able to execute their plans successfully at the price P_1. Of course there remains the possibility of creating opportunities for gains through product differentiation, a type of Schumpeterian entrepreneurship.

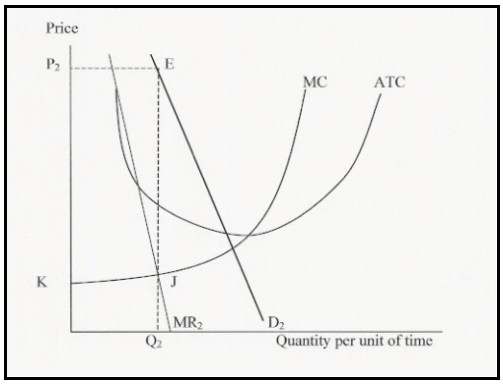
Figure 1.



D_1—Initial Equilibrium and Long-Run Equilibrium:
Producer surplus = P_1ABC

Suppose an entrepreneur is able to capture a larger share of the market through product differentiation. Graphically, this development is shown in **Figure 2**. Note that the entrepreneurial firm's new demand curve, D_2, lies to the right of D_1 and is steeper as well—reflecting an additional influence on elasticity, namely that the products of other firms are now *less substitutable* in the minds of buyers. (Mathematically, a parallel shift of the demand curve would reduce the price elasticity coefficient. Increasing slope depicts a further reduction in elasticity.) Price is at P_2, and the intersection for the demand curve and the P_2 price line is point E. We do not distinguish here between more elastic and less elastic demand curves for the innovating firm at P_2, because the distinction between the individual firm's demand and the collective demand is not yet relevant. In other words, D_2 is not a collective demand curve, as the other firms have not yet responded. The innovating firm is capturing greater producer surplus (defined by P_2EJK) and above-normal profits and, by the same token, other firms are experiencing smaller producer surplus and below-normal profits (suffering economic losses). As they lose sales to the successful innovating entrepreneur, their revenues fall short of covering average total costs of production.

Figure 2.

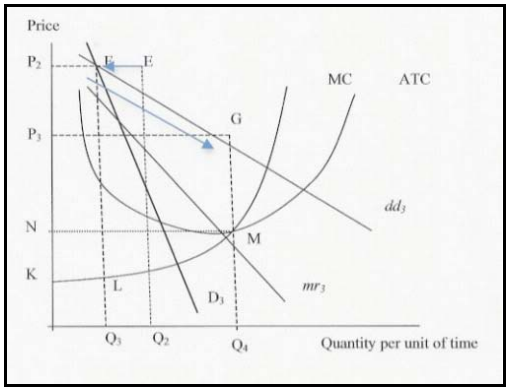


D_2—E (P_1, Q1): Disequilibrium resulting from Schumpeterian entrepreneurial response (product differentiation), other entrepreneurs have not yet imitated (heterogeneous products).

Producer surplus = P_2EJK (>P_1ABC)

In the model of pure competition, barriers to entry are assumed to be nonexistent, making entry essentially "free." When profit opportunities arise, competition from entrepreneurs who are already operating within the market will cause some erosion of profits. Subsequently, new firms enter the market and remaining profit is rather swiftly competed away. For a number of reasons, not the least being legal barriers in the form of patent laws and copyright protection, entry is hardly "free" for imperfectly competitive firms. Nevertheless, eventually entry does occur – in this case, entry into the market for the differentiated product as firms earning economic losses begin to respond competitively to the innovating firm. The losers are *compelled* to act, and the perceptive among them will have been "shown the way" to compete, by embodying imitative characteristics in their own products. As these followers come forth with products that are "substitutable" in the minds of consumers, the original innovator finds its position in the market beginning to weaken. Graphically, the firm is taken to a point off its demand curve, to point F (for example) in **Figure 3**.

Figure 3.



Point E→F: other entrepreneurs now imitating product differentiation.
(F→G), P_3 Entrepreneurial price cutting
Producer surplus = P_3GMN (>P_2FLK)

Not only has demand weakened for the product of the original innovator, it has also become more elastic. There are essentially three reasons for this. The first is mathematical (see Note #3). The second reason is that the availability of substitutes is now greater. The third reason for greater elasticity at point F relates to the analysis of cartels (Baird, 1982). As with a cartel, we expect that when the number of firms in the market is small, they are likely to change price together because there is too much to lose by not responding to events such as a change in market demand and the subsequent change in the market share. However, with a larger number of rivals, the impact on other firms *is very small* when one firm changes its price. The firm is therefore more likely to change price alone – "to cheat" – in the large numbers case. Thus the number of competing firms (which now has increased) determines both the position of the individual firm's demand curve and its price elasticity. The third of these three reasons gives relevance to an individual firm's demand curve, as distinguished from the collective demand curve.

The original innovating firm finds itself in a sort of "good news / bad news" situation at point F. The bad news is the loss of product uniqueness, and consequently the loss of market share, profit and producer surplus, which is now defined by P_2FLK. The good news is—perhaps paradoxically—that another

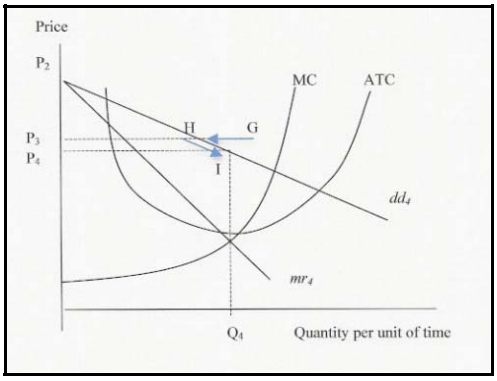
entrepreneurial opportunity has been created with a larger number of firms in the market. Specifically, a price reduction by the firm *acting alone* will result in significantly increased sales and greater producer surplus—temporarily, at least.

ENTREPRENEURIAL PRICE ADJUSTING

Returning to **Figure 3**, we may now explicitly describe the *single* firm's demand as dd_3, a "*ceteris paribus*" curve in that it depicts the demand faced by a single firm when all rivals leave their prices unchanged. The collective demand is D_3. The new surplus-maximizing price is P_3 and the point of intersection for curve dd_3 and the P_3 price line is point G. The firm's producer surplus, defined by P_3GMN, is larger than at price P_2 (E), and the increase has come at the expense of others in the market who failed to recognize the new opportunity to make gains by being the first to lower price.

The gains to the firm at point G are, as suggested earlier, only temporary. When other firms finally recognize the first entrepreneur's competitive price cuts, they follow with price cutting of their own. Consequently the first entrepreneur is bumped off dd_3, the "*ceteris paribus*" demand curve, and is moved from point G to some point to the left of G, as shown by point H in **Figure 4**. Assume now that all of the firms are charging the same price, P_3. From there, one or more firms will perceive the opportunity for gain through further price cutting ("cheating"), along the new dd_4 to Point I, taking the price to P_4. This process continues in this manner as long as entrepreneurs see gains to reducing price. The competitive price cutting (which was initiated in the wake of the original product differentiation) would eventually come to an end. At some point, price will no longer exceed the ATC of these firms and further price cutting will then cease. The entrepreneurial process in imperfectly competitive markets moves the market towards the familiar long run equilibrium where P = ATC.

Figure 4.



G→H: other entrepreneurs matching price cuts,
(H → I), P_4 Entrepreneurial price cutting

SUMMARY AND CONCLUSION

This paper has sought to show that the familiar graphical tools of neoclassical theory can be used to describe the processes by which Schumpeterian and price-adjusting entrepreneurs drive imperfectly competitive markets from equilibrium to disequilibrium and eventually to a new equilibrium. The pursuit of producer surplus is fundamental; it provides a useful way to conceptualize entrepreneurial behavior within the familiar framework of neoclassical price theory. It is an important matter, for without a theory of entrepreneurship, theory of the firm reduces to comparative statics, which is something less than a theory of economic behavior.

REFERENCES

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