

Barter for price discrimination

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Received 14 March 2002; received in revised form 12 February 2003; accepted 30 September 2003

Abstract

We study barter as a discriminatory instrument in oligopoly with asymmetric information. Buyers (producers of final goods) differ in the quality of their products. Sellers (producers of inputs) use barter as a screening device: the higher quality buyers pay in cash while the lower quality ones pay in kind. Barter, identified with non-monetary contracts that give a seller control over a buyer's output, emerges in equilibrium even in the absence of financial constraints.

There is a positive relationship between market concentration and the level of barter. Barter disappears as the market becomes more competitive. Barter and no-barter equilibria coexist for a range of market structures.

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JEL classification: D43; L13; P42

Keywords: Barter; Price discrimination; Oligopoly

1. Introduction

Monetary economics predicts that money should crowd out barter as a medium of exchange. The superiority of money is established in various general equilibrium settings with asymmetric information and/or random matching (e.g. [Kiyotaki and Wright, 1989](#); [Banerjee and Maskin, 1996](#)). However, barter continues to be used in the trade between OECD and developing economies ([Marin and Schnitzer, 1999](#)) and is growing within OECD economies. The barter exchanges in the US reached a value of 10 billion dollars in 1998 ([Economist, 2000](#)). Moreover, in several transition economies, barter has effectively overtaken money as the major means of exchange in the second half of 1990s; barter

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accounted for 30% to 70% of inter-firm transactions in Russia (Aukutzionek, 1998; Seabright, 2000).¹

The International Reciprocal Trade Association, the leading association of barter companies in OECD countries, offers (IRTA, 2001) two common sense explanations of barter: (i) financial constraints: ‘barter is a relatively inexpensive method of finance’, and (ii) spare capacity: ‘to take advantage of barter, a firm must have slow-moving or non-performing assets to exchange, or spare capacity to take on additional sales’. The former argument is quite intuitive, the latter is less so. If a firm sells some of its goods for cash and the rest for barter at different relative prices, then the firm effectively engages in price discrimination. It is not clear, however, why in order to discriminate firm has to use barter rather than cash contracts (e.g. discounts on ‘slowly moving’ goods).

The paper presents a model of imperfect competition in which barter contracts indeed enhance firm’s ability to price discriminate. The argument is based on asymmetric information: the quality of the good involved in barter payments is better known to its producer. Barter contracts may, therefore, be used as a screening device. The firms that produce output of higher quality prefer to keep it and pay the supplier in cash while the firms with low quality output keep cash and pay in kind. This self-selection, in turn, allows the supplier to benefit from barter. Were there no barter, the volume of trade would be inefficiently low due to imperfect competition; some customers willing to pay a price above the marginal cost would not be served. Barter allows serving the lower quality customers without sacrificing the profits from the high quality ones who prefer to pay in cash.

The issue of barter as a price discriminatory device has been addressed in the literature. Caves (1974) and Caves and Marin (1992) show that the price discrimination is responsible for the widespread use of countertrade in trade between OECD and developing countries.² The model of Caves (1974), however, is applicable only to international trade when customers are exogenously separated and first or third-degree price discrimination is possible. In contrast, this paper develops a model of second-degree price discrimination.

Prendergast and Stole (1998, 1999) Ellingsen (1998) and Marin and Schnitzer (1999) show, in different settings, that barter emerges as a means of segmenting markets in the presence of asymmetric information or contractual incompleteness, (bilateral) monopoly, and liquidity constraints. The presence of liquidity constraints is crucial to all these models. Ellingsen (1998) shows that barter helps to separate buyers whenever liquidity constraints do not allow firms to discriminate through money. Prendergast and Stole (1998) prove that in their setting, barter emerges only in the presence of liquidity constraints. Marin and Schnitzer (1999) explicitly refer to liquidity constraints as to one of the two major building blocks of their model.

Our contribution to the existing literature is two-fold. First, we show that barter may emerge as a means of price discrimination even if there are no liquidity constraints.

¹ In the work of Banerjee and Maskin (1996), barter may prevail in an equilibrium with high inflation. In Russia, however, the growth of barter was observed after the inflation was brought down.

² Ellingsen and Stole (1996) suggest that international barter may act as a commitment device not to engage in unilateral imports. Magenheim and Murrell (1988) put forward yet another reason to use barter for price discrimination: in a repeated game, barter helps not to reveal the seller’s type to future customers.

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