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MILANO

Dottorato di ricerca in Economia e Finanza dell'Amministrazione

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**DIRECT PRICE DISCRIMINATION AND PRODUCT
DIFFERENTIATION IN THE HOTELLING
FRAMEWORK**

Tesi di Dottorato di: STEFANO COLOMBO

Matricola: 3406127

Anno Accademico 2007 – 2008



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Introduction

Price discrimination is a business practice which has received a lot of attention by economists. However, the analysis has been addressed for a long time toward monopoly price discrimination. Only from the second half of the Eighties, the implications of price discrimination have been investigated in oligopolistic settings. Notwithstanding the progress in this field, many interactions of price discrimination in oligopolistic markets are still to be understood. The aim of this thesis is to contribute from a theoretical point of view to the economic understanding of price discrimination in spatial oligopolies.

The thesis is composed by three chapters. In Chapter 1, we provide a selective survey of the main contributions regarding price discrimination and product differentiation in the Hotelling framework. The contributions surveyed in Chapter 1 can be classified into two broad categories: a group of papers studies the implications of price discrimination in spatial oligopoly, while another group of papers studies the relationship between product differentiation and sustainability of collusion. The first group of contributions emphasizes that: i) price discrimination tends to decrease equilibrium prices with respect to uniform price regime; ii) firms are usually trapped into a Prisoner Dilemma, since the dominant strategy for each firm is to price discriminate, but the equilibrium profits are lower than under uniform pricing. The second chapter of this thesis investigates further on these issues. The second group of contributions shows that collusion is easier to sustain the more the firms are differentiated. In general, these papers do not allow for price discrimination: in the third chapter of this thesis we consider the case of price discrimination.

In Chapter 2, by using the Hotelling duopoly, we study the firms' incentive to price discriminate when the product differentiation degree is endogenous. Two different versions of a three-stage game are considered. In the first version, firms first simultaneously choose which variety to produce, then they choose whether to price discriminate or not, then they set the price schedules. The Prisoner Dilemma arises: firms price discriminate and profits are lower than under uniform pricing. In the second version of the game, firms first choose the pricing policy and then they choose the variety. Interestingly, in this case the equilibrium is characterized by uniform pricing and no Prisoner Dilemma exists. This is due to the emerging of a *product differentiation*

effect: the possibility to price discriminate induces a lower product differentiation degree, which in turn increases the competition between firms and makes price discrimination less attractive for each firm.

In Chapter 3, we extend the traditional analysis of the relationship between product differentiation and sustainability of collusion within the Hotelling framework to the case in which firms may price discriminate. Three different collusive schemes are studied: optimal collusion on discriminatory prices, optimal collusion on a uniform price, and collusion not to discriminate. The analysis yields the following results. The sustainability of the first and the third collusive scheme does not depend on the product differentiation degree. Instead, contrary to the traditional findings, the sustainability of the second collusive scheme depends *negatively* on the product differentiation degree. We consider also the possibility that firms collude on a suboptimal discriminatory price schedule and on a suboptimal uniform price. In both cases if optimal collusion is not sustainable, suboptimal collusion is not sustainable too¹.

¹ Chapter 2 of this thesis has been presented in preliminary versions at the Universities of Montpellier, Milano-Bicocca, Milano Cattolica, Siena, Torino (Collegio Carlo Alberto) and Pavia. I'm indebted with seminar participants for helpful comments and suggestions. All remaining errors are my own. All chapters have been written under the supervision of Michele Grillo, which helped me with suggestions, criticisms, and encouragement. Again, all remaining errors are my own.