Financial Structure, Product Market Decisions and Default Risk in an Asymmetric Duopoly

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Abstract. Financial and output market decisions are crucial to the success or failure of an organization. In this paper we analyze the equilibrium default risk in a two-stage duopoly model with an uncertain environment, where firms decide their financial structure in the first stage of the game and decide their quantities in the second stage of the game. Using numerical analysis, we analyze the impact of changing the asymmetry in the two firms' marginal costs on the equilibrium default risk. Our results show that as a firm becomes less efficient it is optimal to reduce its debt level and the quantity produced. The reverse is true for the more efficient firm. This behavior implies that although higher marginal cost leads to lower profits, the less efficient firm reduces its default probability due to a more cautious behavior in the financial and product market.

Keywords: Capital structure, Product market competition, Default risk JEL classification, D43, G32, G33.

1 Introduction

Over the last decades, the financial literature has addressed the issue of default and bankruptcy risk. Considering its negative social and economic impact on the economy, it is not surprising that the existing literature has focused mainly on the best form to predict default and bankruptcy risk (for a survey of the empirical literature see Balcaen and Ooghe, 2006). However, in spite of the vast empirical literature, there is a lack of theoretical models aimed at understanding the factors that influence the default probability. The main objective of this paper is to provide a contribution in this direction.

The paper examines analytically and numerically, how the market structure influences financial decisions and product market decisions and, consequently, the default risk. Our objective is to study the impact of changes in the asymmetry between the firms' marginal production costs on the equilibrium default risk.

Brander and Lewis (1986) were the first to examine the relationship between financial decisions and output market competition. They consider a two stage Cournot duopoly model with an uncertain environment. In the first stage, each

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