Available online at www.sciencedirect.com

ScienceDirect

ELSEVIER Journal of Economic Dynamics & Control 32 (2008) 1701–1720

JOURNAL OF
Economic
Dynamics
& Control

www.elsevier.com/locate/jedc

Optimal and strategic timing of mergers and acquisitions motivated by synergies and risk diversification

Jacco J.J. Thijssen

Department of Economics, Trinity College Dublin, Dublin 2, Ireland

Received 6 April 2006; accepted 7 June 2007
Available online 19 August 2007

Abstract

This paper analyses a real options model of mergers and takeovers between two firms experiencing different, but correlated, uncertainty. It is assumed that mergers do not just lead to efficiency gains, but are also an act of diversification. Due to the latter assumption the region where a merger is optimal is a bounded interval and not a half-space as in most real options models. It is shown that if the roles of the bidder and the target are determined endogenously the option value of the mergers vanishes completely, implying that, in equilibrium, the mergers occur sooner than when these roles are exogenously given. It is also shown that mergers can be optimal even if synergies are negative.
© 2007 Elsevier B.V. All rights reserved.

JEL classification: C61; G31; G34

Keywords: Real options; Optimal stopping; Mergers

---

1. Introduction

In recent years, several papers have used the real options approach to analyse various aspects of merger and acquisition (M&A) activity. This approach views the

---

E-mail address: thijssej@tcd.ie

0165-1889/$ - see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.jedc.2007.06.016

possibility of M&A as an option comparable to a perpetual American call option. In the generic real option model, a firm's uncertain profit stream takes the place of the underlying asset in the standard no-arbitrage theory of (financial) options.

In this paper, a two-factor model with two firms is considered. Both firms maximise expected profits and face different, but correlated, risk. Profits for both firms as well as the merged entity consist of a deterministic part and a diffusion. There are positive synergies to the merger if the resulting deterministic profit is larger than the sum of the deterministic profits of the constituent firms. The possibility of negative synergies, however, is not ruled out *a priori*.

In addition to the synergy effect, the diffusion shock of the merged firm is taken to be an iso-elastic transformation of the diffusions of the constituent firms. This reflects the possibility that the merger makes the firms less vulnerable to random shocks, because they are more flexible to react to different market conditions. As an example, consider the recent merger between Air France and KLM Royal Dutch Airlines. Because both airlines can now pool resources in, say, buying aircraft and oil derivatives they become less exposed to the risks posed in their respective markets. This is called the diversification effect. Furthermore, the chosen functional form enables us to view the resulting optimal stopping problem as essentially one-dimensional, thereby simplifying the analysis.

Two M&A scenarios are studied. In the first scenario, one exogenously determined firm (the 'bidder') has the option to take over the other firm (the 'target'). In the second scenario, the roles of bidder and target are determined endogenously. Throughout it is assumed that the bidder offers the shareholders of the target a share in the new company, which makes them indifferent between accepting and rejecting the bid. This is a different assumption than the one made in several recent papers on M&A activity, like, for example, Lambrecht (2004), Morellec and Zhdanov (2005), and Lambrecht and Myers (2007). In those papers the terms of the merger are determined by both the bidder and the target simultaneously in a Pareto optimal way.

When the firm roles are exogenously given, the option to acquire the target is simply an exchange option to the bidder, as was already pointed out by Margrabe (1978). Indeed, the option is to exchange the stand-alone profit stream for a share of the profit stream of the merged firm. It is shown that the optimal time to make a bid for the target is when the ratio of the two underlying diffusions hits a certain bounded interval for the first time. This implies that mergers can take place both during economic upturns as well as downturns. A similar result has been obtained by Alvarez and Keppo (2002) and Alvarez and Stenbacka (2004) in settings different from M&A activity.

In the case of endogenous roles, both firms can make a bid for the other firm at any time. It is assumed that if both make a bid simultaneously, they agree to a merger. In that case they use the Nash bargaining solution to determine how the merger surplus is divided. So, in this paper, there is a fundamental difference between takeovers and mergers. It is shown that there exists a subgame perfect equilibrium where (hostile) takeovers never occur. Interestingly, this region is independent of the bargaining power of each firm.

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات