International Review of Economics and Finance 51 (2017) 342–353

Contents lists available at ScienceDirect

International Review of Economics and Finance

journal homepage: www.elsevier.com/locate/iref

Merge to be too big to fail: A real option approach

Jiaqing Zhu[a], Guangzhong Li[a], Jie Li[b,*]

[a] Sun Yat-Sen Business School, Sun Yat-Sen University, Guangzhou, PR China
[b] Institute of Industrial Organization and Regulation & Institute of Industrial Economics, Jinan University, Guangzhou, PR China

ARTICLE INFO

JEL classification:
G34
G13
G21
G28

Keywords:
Merger
Too-big-to-fail
Real option
Economies of scale

ABSTRACT

We develop a real option model to analyze the timing of bank mergers motivated by the incentive to obtain too-big-to-fail (TBTF) status from the government. We show that mergers may occur even in the absence of scale economies, which is different from Lambrecht (2004). Moreover, the TBTF incentive lowers the threshold required for bank mergers, and the degree of scale diseconomies that the merging entities can tolerate increases as the probability of obtaining the TBTF status becomes higher. Our findings thus provide a theoretical explanation for the lack of scale economies in bank mergers identified in prior literature.

> *For years the Federal Reserve was concerned about the ever-growing size of our largest financial institutions. Federal Reserve research had been unable to find economies of scale in banking beyond a modest size.*
>
> Alan Greenspan (2010)

1. Introduction

The global banking system has experienced a significant consolidating trend since 1980s and is continuing to face further restructuring in the aftermath of the recent stock market debacle of 2008–2009. The number of banks has declined significantly in recent years and the surviving ones are larger, more diversified, and operate in more places than ever before. However, empirical evidence on the post-merger performance of the banks is best characterized as mixed as the results are sensitive to the choices of sample period, model specification, and estimation techniques.[1] Huge banks may no longer experience scale economies, they are no doubt difficult to manage effectively, and huge size may yield few additional risk diversification benefits (Demirgüç-Kunt & Huizinga, 2013).

The fact that previous studies found little evidence of performance improvements has encouraged researchers to seek alternative explanations for the consolidation phenomenon. One potential explanation is that large banks may seek growth-by-acquisition in order to attain the status of a "too-big-to-fail" (TBTF) bank, which will provide them with the opportunity to exploit safety net subsidies. Using data from the merger boom of 1991–2004, Brewer and Jagtiani (2013) estimate the value of the too-big-to-fail (TBTF) subsidy and find

---

* Corresponding author.

E-mail addresses: leany1@126.com (J. Zhu), liguangzhong@mail.sysu.edu.cn (G. Li), eflijie@jnu.edu.cn (J. Li).

[1] See DeYoung et al. (2009) for a survey.

http://dx.doi.org/10.1016/j.iref.2017.06.008
Received 2 May 2017; Received in revised form 24 June 2017; Accepted 26 June 2017
Available online 28 June 2017
1059-0560/© 2017 Elsevier Inc. All rights reserved.

the added premiums to be at least $15 billion for the eight merger deals that brought the organizations to over $100 billion in assets. However, while a handful of studies have found evidence that the TBTF subsidies are likely to be substantial, there exists little conclusive evidence on the potential benefits and costs associated with it, due to the difficulty in measuring the TBTF effect (Ennis & Malek, 2005). Hughes and Mester (2013) find large scale economies for large banks, which are not driven by TBTF considerations. Ongena and Penas (2009) and Penas and Unal (2004) investigate merger-related bondholder gains and find that TBTF is one of the determinants of such gains. While on the other hand, Davies and Tracey (2014) examine whether TBTF factors affect estimates of scale economies for large banks, and after controlling for TBTF factors with their novel techniques, they no longer find evidence of scale economies for the sample of large banks.

The main aim of this paper is to provide a theoretical explanation for the lack of scale economies in bank mergers identified in prior empirical literature. We focus on the case of bank mergers motivated by the incentive to attain the TBTF status. Finding an appropriate way to model the TBTF incentive in merger decisions is demanding, and perhaps this is the reason why the theoretical part of the TBTF literature still remains silent. Our model draws on the seminal work of Lambrecht (2004) which builds a real option model to analyze the timing and terms of mergers motivated by economies of scale. In his model, each firm's payoff through merging resembles an option and the decision to merge resembles the exercise of this option since both firms have the right, but not the obligation to merge. Firms forgo higher profits by not merging. These act as the incentive to exercise this option, while the (at least partially) irreversible nature of the merger acts as an incentive to delay. The optimal merger timing strikes a balance between the above two effects. Our model differs from Lambrecht (2004) in that we further incorporate a component representing the TBTF status banks may attain when the merger is completed. This TBTF component resembles a put option and this put-option-like characteristic is well documented in previous literature. For instance, Mehran and Stulz (2007) argue that large banks are arguably more likely than small banks to be rescued by the government if things go wrong, so that by increasing their size, banks acquire a valuable put option from the government. The “deposit insurance put-option-enhancing” hypothesis can also be found in Benston, Hunter, and Wall (1995) and Demirgüç-Kunt and Huizinga (2013).

Our model is simple and appealing and it allows us to explore the direct effect of TBTF on the timing of bank mergers and the economic consequences. The key to our paper is that the probability of obtaining the TBTF status is assumed to be an increasing function of bank size after the merger. This is supported by both empirical and anecdotal evidence that the government will offer deposit insurance to help avoid bank failures when the size of the bank is big enough to be treated as TBTF (e.g., O'hara & Shaw, 1990; Morgan & Stiroh, 2005; Oliveira, Schiozer, and Barros, 2015; also see Völz & Wedow (2011) for a review). By doing this, we introduce a tradeoff between the gains from obtaining the TBTF status and the loss from diseconomies of scale through increasing the bank size when the merger displays scale diseconomies. We find that banks have the incentive to merge even in the absence of economies of scale, and the degree of scale diseconomies that the merging entities can tolerate increases as the probability of obtaining the TBTF status becomes higher. Moreover, we also extend the discussion to the oligopoly case and find that when the merging entities can gain market power through merger, the degree of scale diseconomies that the merging entities can tolerate increases.

Our model has the potential to explain the consolidation trend among banks during the financial crises. Previous literature attempting to explain merger waves has identified several important driving factors. For example, Shleifer and Vishny (2001) argue that merger waves occur because of stock market misevaluation. Firms have the incentive to get their equity overvalued, so that they can make acquisitions with stock. Lambrecht (2004) proves that mergers motivated by economies of scale should optimally happen in a rising product market. The finding in his model is also consistent with the hypothesis in Mitchell and Mulherin (1996) that merger waves are driven by shocks to the economy, such as major technological innovations. Harford (2005) also points to the importance of fundamentals in triggering merger waves. However, none of the above factors can explain the consolidation trend among banks during the financial crises. Our model indicates that during a crisis, the value of the TBTF put option will increase, thus banks that are most likely to obtain TBTF status will have a strong incentive to conduct merger activities.

Our study contributes to the literature by lending theoretical support to the lack of scale economies in large banks identified in prior literature. Although the literature has already identified TBTF as a non-profit maximization motive for bank mergers, the impact of TBTF on post-merger performance is still inconclusive (DeYoung, Evanoff, & Molyneux, 2009). Thus, our study provides conclusive theoretical findings that banks may pursue mergers in order to attain the TBTF status, even in the absence of scale economies.

The structure of the paper runs as follows. Section 2 outlines the main model assumptions and endogenizes the surplus arising from mergers motivated by the TBTF incentive; section 3 derives the optimal merger timing in the case of perfect competition; section 4 extends the discussion to an oligopoly case; some conclusions then follow in section 5.

2. Model assumptions and restructuring gains

The model assumptions draw on Lambrecht (2004) and are given as follows:

Assumption 1. Merger decisions are made with the objective of maximizing shareholder value.

Assumption 2. Both banks and all investors have complete information with respect to all parameters in the model.

Assumption 3. There are two banks ($j = 1, 2$) which combine to give a merged bank ($j = m$), and the merger is irreversible.

Assumption 4. The banks' instantaneous profit function before ($j = 1, 2$) and after ($j = m$) the merger is given by

$$p_t L_j^a K_j^b - w_L L_j \tag{1}$$

Download English Version:

https://daneshyari.com/en/article/5083035

Download Persian Version:

https://daneshyari.com/article/5083035

Daneshyari.com