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Pacific-Basin Finance Journal 12 (2004) 525–540
PACIFIC-BASIN FINANCE JOURNAL
www.elsevier.com/locate/econbase

Diffusion of off-balance-sheet financial innovations: Information complementarity and market competition

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Received 10 August 2002; accepted 18 December 2003
Available online 27 March 2004

Abstract

By studying the Hong Kong banking industry, the objective of this study is to examine the role of information complementarity and market competition in governing the diffusion of off-balance-sheet (OBS) financial innovations. Specifically, two OBS financial innovations are information complementary if the adoption of one lowers the uncertainty of adopting another. In addition, market competition may speed up the diffusion of OBS financial innovations because competitive firms are able to capture the full profit potential from successful innovations. A simultaneous equation model is devised to estimate the impacts of information complementarity, market competition, and a number of other factors on the diffusion of OBS financial innovations. Results of estimation suggest that information complementarity and market competition are the primary driving forces behind the diffusion process.

JEL classification: G21; O31; C23
Keywords: Banking; Off-balance-sheet activities; Financial innovation; Diffusion

1. Introduction

Over the past two decades, there has been a massive increase in the development of new financial instruments, many of which have been off-balance-sheet (OBS) financial innovations. OBS financial innovations arise from forward, swap and option transactions

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0927-538X/$ - see front matter
doi:10.1016/j.pacfin.2003.12.001

undertaken in the foreign exchange, interest rate and equity markets. A wave of financial innovation in the banking sector has swept through Hong Kong's financial markets in recent years. One of the most important strategic developments has been the move by banks into new areas of OBS activities. The interest in the process of financial innovation stems from the significant impact it can have on the practice and characteristics of financial institutions and markets. OBS activities have both risk-increasing and risk-reducing attributes. Increased OBS earnings can potentially compensate for increased OBS risk exposure. In addition, incomes from OBS activities provide a key source of noninterest income for many banks, especially the largest and most creditworthy ones. Recent growth in financial innovation has transformed the Hong Kong banking industry.

Interestingly, the empirical pattern of adopting OBS financial innovations by banks is very much similar to that of adopting technological innovations; adoptions are usually delayed and nonsynchronous. Previous research on the diffusion of financial innovations has emphasized the importance of firm size and creditworthiness (see, e.g., Jagtiani et al., 1995a,b). By studying the Hong Kong banking industry, the objective of this study is to examine the role information complementarity and market competition in governing the diffusion of OBS financial innovations.

The risk of adopting any innovations is the uncertainty about potential costs and benefits. Two financial innovations are information complementary if the adoption of one lowers the uncertainty of adopting another. The adoptions of some innovations may lower the risk and uncertainty of adopting others because the adopting banks are able to collect useful information about the profitability of other nonadopted financial innovations. For instance, information complementarity might arise from sharing customer information as different types of OBS products are often offered to the same pool of customers. As such, different types of OBS financial innovations are able to share a common customer base with reputable credit relationship with banks.

Based on a *static* production function, Jagtiani et al. (1995a) find no conclusive evidence for cost complementarity between different types of financial products. In this study, we propose that the diffusion process of financial innovations with information complementarity is essentially a *dynamic* process of learning and information sharing, in which the adoption of some innovations will stimulate the adoption of others. This study investigates the diffusion process of OBS financial innovations by incorporating this dynamic nature of information complementarity into the diffusion model. Evidenced by the empirical results from this study, information complementarity acts as a major driving force behind the diffusion process.

Market competition is another factor governing the diffusion of OBS financial innovations. According to Arrow (1962), firms engaging in neck-to-neck competition are more innovative than monopolist because the former can extract the full profit potential from innovations, while the latter is already making abnormal profit in the preinnovation period. We will call this 'Arrow effect' throughout the rest of this article. Schumpeter (1934, 1942) holds an opposite view; that is, large firms with market power are proportionately more innovative than small firms because the former are more able to finance a large number of parallel R&D projects to reduce uncertainty and to benefit from economies of scale and scope. We will call this 'Schumpeterian effect' throughout the rest of this article. However, the Schumpeterian effect is supposed to be insignificant in the case of financial innovations