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The effect of bank capital requirements on bank off-balance sheet financial innovations

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Abstract

A popular explanation for the explosive growth in banks' off-balance sheet (OBS) activities is the avoidance of capital adequacy requirements. Several studies have examined this and other motivations behind bank OBS activities with mixed results. We shed further light on the issue of OBS growth by modelling OBS products as financial innovations subject to a logistic diffusion adoption pattern. Our data also allows us to investigate the impact of important changes in capital adequacy regulations on OBS diffusion rates. We find that changes in capital requirements have had no consistent impact on the speed of diffusion across OBS activities.

Keywords: Banking; Off-balance sheet activities; Financial innovation; Capital adequacy requirements

JEL classification: G21; G28; C25

1. Introduction

A number of studies have examined the key motivations behind bank OBS activities; however, the results have been mixed. Pavel and Phillis (1987) and Baer and Pavel (1987) suggest that banks engage in loan securitization and standby letters of credit (SLCs) in order to reduce regulatory taxes, such as capital adequacy requirements. In contrast, Benveniste and Berger (1987) and Koppen-

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haver (1989) find that the bindingness of capital constraints are not an important factor in banks' decisions to engage in OBS activities. Moreover, Avery and Berger (1991) and Jagtiani (1995) find that better performing and more creditworthy banks tend to issue more OBS commitments and swaps – a finding that appears inconsistent with the capital avoidance hypotheses. The purpose of this paper is to revisit the issue of capital requirements and OBS activities by modelling each OBS activity as an innovation whose adoption follows a diffusion pattern specific to that activity. It has been shown that the adoption patterns of real innovations often follow a logistic time curve (see Davies, 1979; Griliches, 1957; and Mansfield, 1961). We model the diffusion of bank OBS activities: interest rate swaps, SLCs, loan securitization, interest rate options, and interest rate futures and forwards, in a similar fashion. That is, OBS financial innovations (FIOBS) are expected to grow over time as OBS financial technology is diffused among banks.

Within the context of a diffusion model, we examine various factors that may be important in determining OBS growth. These factors include several important changes in capital requirements (see Table 1). Arguably, the 1985 increase in U.S. banks' capital requirements, based only on bank on-balance sheet assets, may have induced banks to undertake greater OBS activities, causing the OBS growth rate to exceed that predicted by the 'pure' diffusion model. Conversely, risk-based capital (RBC) requirements, which were approved in July 1988 and based on OBS as well as on-balance sheet activities may have discouraged OBS growth. Our analysis includes both an examination of capital regulation on FIOBS for the *industry* as a whole and for *individual* banks. The latter allows us to explore the effects of factors that are specific to individual banks.

2. The data

This paper utilizes quarterly data from the Report of Income and Condition (Call Report) during the period January 1984 to September 1991 (31 quarters). Banks were required to report their FIOBS activities for the first time in September 1983 (except for swaps which were reported for the first time in June 1985). Consequently, our analysis begins in June 1985 for swaps and January 1984 for all other activities. The sample includes 86 large banks. [1]

The definitions of swaps, options, futures and forwards, loan sales, and SLCs used in this paper are the notional dollar amounts reported in the Call Report. It can be argued that some FIOBS are substitutable among themselves. That is, banks may shift from one OBS activity to another as prices, costs, or capital

[1] This study uses the same sample as Jagtiani et al. (1994), but excludes Citibank South Dakota and combines all of the First Interstate banks together (see their appendix).