

# The underinvestment hypothesis and off-balance sheet direct credit substitutes

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## Abstract

Prior tests of the underinvestment hypothesis, as an explanation of why banks use off-balance sheet direct credit substitutes, are deficient in econometric technique and in their use of U.S. data which is likely to be strongly distorted by regulation. In contrast we test the hypothesis on Australian data which is relatively free of the regulatory distortions affecting prior studies and examine two types of off-balance sheet direct credit substitutes, namely standby letters of credit and bill endorsements. The empirical results lend support to the underinvestment hypothesis. © 1997 Elsevier Science B.V.

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## 1. Introduction

Off-balance sheet direct credit substitutes, such as assets sold with recourse, standby letters of credit, guarantees, bill endorsements, and written put options acting as direct credit substitutes play an important role in Australian banking <sup>1</sup>. At June 1990 the nominal value of Australian banks' direct credit substitutes was

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<sup>1</sup> An asset sold with recourse is 'an obligation by the bank to a party which has purchased an asset from it, to compensate that party for a loss of value on the asset'. Standby letters of credit are 'irrevocable obligations to make a payment to a designated beneficiary if a bank's customer fails to meet a particular financial obligation' (see (Reserve Bank of Australia, 1991)).

17% of their on-balance sheet loans, advances and bills held, though by June 1993 this had fallen to 9%<sup>2</sup>.

Traditional explanations of why banks utilize these off-balance sheet direct credit substitutes rather than on-balance sheet funding have focused on regulatory tax effects associated with bank capital adequacy and cash reserve requirements (see (Greenbaum and Thakor, 1987; Pavel and Phillis, 1987; Pennacchi, 1988)), and on the moral hazard problem associated with fixed rate deposit insurance (Benveniste and Berger, 1986, 1987; James, 1989). While bank regulation certainly contributed to the rapid growth of off-balance sheet direct credit substitutes in the early and mid 1980s it is, at best, a partial explanation of why banks are involved in this form of financing. While the idea of applying minimum capital guidelines on all banks entered policy debates in the 1980s, banks had off-balance sheet positions before then. Indeed, off-balance sheet banking was a feature of banking in the Colonial era in Australia when banks operated in a laissez faire environment (Reserve Bank of Australia, 1991, p. 11).

A further problem with the regulatory explanations in the Australian context is that Australian banks are paid a market based return on their required cash reserves at the central bank, the Reserve Bank of Australia (RBA), while the risk-based capital requirements have assigned off-balance sheet direct credit substitutes a 100% risk conversion factor from late 1988 (see (Hogan and Sharpe, 1990b)). For these reasons the regulatory explanations for the use of off-balance sheet direct credit substitutes would appear less appropriate in the Australian context than in the U.S. Nevertheless, off-balance sheet direct credit substitutes have remained an important element of Australian banking business.

In view of the limitations of the regulatory hypothesis it is not surprising that a number of non-regulatory motives have been advanced to explain banks' use of off-balance sheet direct credit substitutes. Thus, researchers have recently shown how asymmetric information (Greenbaum and Thakor, 1987), the allocation of risk-sharing among debtholders and depositors (Benveniste and Berger, 1987), and the underinvestment problem arising from agency costs in the presence of risky debt (James, 1988, 1989) may influence banks' choice of on-balance sheet or off-balance sheet funding. Interestingly, the latter two approaches yield the common prediction that the incentive to use off-balance sheet direct credit substitutes is directly related to bank risk.

Support for the underinvestment hypothesis is available in the U.S. context where Ellis and Flannery (1992) and Cook and Spellman (1994) find that premiums on explicitly insured bank issued certificates of deposit (CDs) contain a premium for default and/or repudiation risk while Benveniste and Berger (1987) and James (1988) find that standby letter of credit usage varies directly with the premium on bank CDs. However, a problem with the Benveniste and Berger and

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<sup>2</sup> See the Reserve Bank of Australia, *Bulletin*, various issues.

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