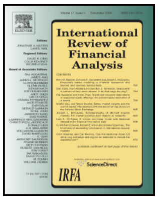
International Review of Financial Analysis xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

International Review of Financial Analysis



In good times and in bad: Bank capital ratios and lending rates☆

Matthew Osborne [a], Ana-Maria Fuertes [b,*], Alistair Milne [c]

[a] Bank of England, United Kingdom
[b] Cass Business School, City University London, United Kingdom
[c] Loughborough University, School of Business and Economics, United Kingdom

ARTICLE INFO

Available online xxxx

JEL classification:
G01
G18
G28
G32
G38

Keywords:
Bank capital
Interest margins
Bank regulation
Capital requirements

ABSTRACT

This paper investigates the relationship between bank capital ratios and lending rates using data from 1998 to 2012 for 13 large banks accounting for 75% of total UK lending. We document a substantial change in the coefficient of the Tier 1 capital ratio in reduced-form regressions for secured household lending rates; the coefficient changes from positive pre-crisis to negative in crisis. Significant changes are also detected in the relationship for unsecured household and corporate lending. Such instability is difficult to reconcile with many well-established theories of financial intermediation but is consistent with the relatively recent theories of bank portfolio decisions emphasising cyclical variation in bank leverage and risk-appetite.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

This paper examines the relationship between bank capital and loan interest rates for a panel of UK banks covering altogether about three quarters of the UK lending market. Our focus is on the cyclicality or state-dependence of this relationship during the period from October 1998 to December 2012, i.e. the possibility that it differs between episodes of rapid credit expansion (when times are 'good', before the global credit crisis) and periods of crisis and moderate credit growth (the 'bad' times, or subsequent years).

There are limits to the conclusions that can be drawn from an exercise of this nature. Bank capital decisions are endogenously determined alongside loan supply and interest rate decisions, and influenced also by loan demand. Our estimated coefficients cannot be reliably interpreted as representing the impact of an exogenous policy change such as an increase in the level of bank regulatory capital requirements. Nonetheless, even though the estimations we report are based on reduced-form models, they do provide some insights into a key question: what theory provides an adequate and consistent account of the portfolio and loan rate decisions of UK banks before and after the crisis?

The reason that even a reduced-form estimation strategy may be informative is that the most well-established theories prior to the crisis share one common feature: they adopt modelling frameworks in which bank portfolio choices are driven by bank specific factors such as capitalisation, liquidity and market power in deposit and lending markets. Cyclicality can appear in these models but only exogenously through changes in various explanatory model variables. Therefore these models predict that, once fully controlling for bank-specific and macroeconomic factors affecting loan supply and loan demand, then one should observe stable relationships between bank capital and the different dimensions of the bank portfolio decision such as the volume of bank loans and bank loan interest rates.

Our estimation results and tests clearly reject this prediction, suggesting instead that the association between bank capital ratios and lending rates alters substantially from the pre-crisis (or 'good times') period to the crisis (or 'bad times') period. For total bank lending, the coefficient on the Tier 1 capital ratio is significantly positive pre-crisis (October 1998–June 2007) and significantly negative in the period comprising the crisis (July 2007–December 2012). The corresponding coefficient in regressions for secured household lending (residential mortgages) is significantly positive prior to the crisis and significantly

---

☆ We thank the Bank of England for the permission to use the data. Views expressed in this paper are those of the authors and do not necessarily reflect the official views of the Bank of England. We are grateful to the editor and two anonymous referees for their useful recommendations. We also acknowledge the comments of Max Bruche, Manthos Delis, Claudia Girardone, Zulma González-Espinola, Ian Marsh, Peter Sinclair, Ron Smith, Sheida Teimouri, David VanHoose and John Wilson, as well as the participants at the 2015 INFINITI conference, the International Atlantic Economic Society Annual Conference, the Financial Engineering and Banking Society Annual Conference, ESCP Business School London, Quantitative and Qualitative Analysis in the Social Sciences Conference, Brunel University London, the IBEFA sessions at the Western Economic Association annual meeting, and the seminar participants at Cass Business School and the Bank of England.

[*] Corresponding author at: Cass Business School, 106 Bunhill Row, London EC1Y 8TZ, United Kingdom.

http://dx.doi.org/10.1016/j.irfa.2016.02.005
1057-5219/© 2016 Elsevier Inc. All rights reserved.

Please cite this article as: Osborne, M., et al., In good times and in bad: Bank capital ratios and lending rates, *International Review of Financial Analysis* (2016), http://dx.doi.org/10.1016/j.irfa.2016.02.005

negative in the crisis period. For unsecured household lending we find instead a positive association in both the pre-crisis and crisis sub-periods, but a significant change in magnitude from relatively strong to weak. Finally, for corporate loans we find a significant negative association pre-crisis and no association in the crisis period.

These findings are robust to various specification tests that include: (*i*) formulating the panel model in 'error correction' form to capture the short-run dynamics of loan rates, (*ii*) estimating the panel model using rates on new business lending only, (*iii*) using data sampled at the quarterly rather than monthly frequency, (*iv*) explicitly controlling for bank- and time-varying regulatory capital requirements, and (*v*) allowing not only for bank fixed effects but also time fixed effects so as to ensure that all (observed and unobserved) aggregate common factors influencing bank loan rate decisions are controlled for.

As we have stated, many well-established theories of bank decision-making are not consistent with this finding of pronounced cyclical instability in the relationship between bank capital and lending rates. One example are those models in which bank capital provides banks with the incentive to apply effort to loan screening and monitoring. This theory predicts that banks with higher capital will make greater monitoring effort, lending more and offering lower rates of interest, but provides no obvious explanation for cyclical changes in the relationship between bank capital and loan interest rates. The same is true of the extensive theoretical literature that focuses on bank risk–return decisions. This literature provides a variety of predictions about relationships between bank capital and many dimensions of bank decision-making including lending rates, but, again, it provides no easy explanation for cyclical variation in those relationships.

Our finding of cyclical instability in the relationship between bank capital and lending rates is though consistent with theoretical perspectives on bank decision-making that have emerged since the crisis, exploring endogenous variation in bank leverage and risk appetite. This recent literature offers various rationales for changes in bank's willingness to accept risk exposure, between periods of rapid credit expansion – when, for example, the bank and its investors are optimistic about returns or perceive risks are relatively low – and periods of slow credit expansion or contraction – when they may hold opposite views, becoming pessimistic about returns or perceiving risks as being relatively high.

The paper is structured as follows. Section 2 reviews some of the relevant theoretical and empirical literature. Section 3 describes our data and methodology. Section 4 presents the estimation results and a battery of robustness tests. Section 5 concludes.

2. Prior literature

2.1. Theoretical perspectives

This section reviews theories about the relationship between bank capital and other bank decisions (including lending rates), starting with those theories that allow for a disciplinary role of capital or for the interaction of capital structure and risk–return decisions.[1]

One branch of theory, epitomised by the work of Holmström and Tirole (1997), emphasises the role of capital as a disciplining device ensuring that banks have sufficient 'skin in the game' to put the necessary effort into loan monitoring.[2] It predicts that higher bank capital is associated with higher lending volume and lower lending rates. Other models highlighting the disciplinary role of short-term wholesale funding (e.g., Diamond & Rajan 2000) suggest the contrasting prediction that a substitution of short-term debt funding for bank capital will result in higher lending volume and lower lending rates.

A much larger body of theory incorporates risk and the role of bank capital structure in bank risk–return decisions. The seminal contribution of Merton (1977) shows how deposit insurance provides bank shareholders with a put-option on bank returns. Lower bank capital can increase the magnitude of this put option (as it moves 'into the money') and increase the bank's incentives for risk-taking. This analysis of bank 'moral hazard' can be extended to accommodate bank franchise value or charter value lost in the event of failure (Marcus 1984; Keeley 1990). Under-capitalised banks may then seek to reduce their risk-exposure so as to protect their charter value (if this incentive outweighs the put option offered by the bank safety net).

These models of bank portfolio risk are further developed in the bank capital, competition and risk-taking literature; e.g., in Hellmann, Murdock, and Stiglitz (2000) greater competition in deposit markets can reduce charter value and lead to increased risk-taking. In Boyd and De Nicoló (2005), greater competition lowers the interest rates paid by bank borrowers in turn ameliorating agency costs in loan contracts and reducing bank portfolio risk.

These models of bank risk–return decisions make ambiguous predictions about the relation between risk exposure, the quantity of bank lending and loan interest rates. A bank could increase its risk exposure either by lowering loan interest rates and hence, increasing its lending volume along a standard loan demand; or through a portfolio reallocation towards higher-risk assets that offer higher rates of return. In both scenarios, the bank's overall risk exposure is increased but the promised return, that is, the interest rate, can be either lower (in the first scenario) or higher (in the second scenario).

The common denominator of all these theories is that bank lending and portfolio decisions are determined by a range of bank-specific and aggregate factors. Once these factors are controlled for, one should observe a stable relationship between capital and loan interest rates (and other dimensions of bank portfolio decisions such as bank lending).

This is not the prediction of more recent (since the global financial crisis) contributions to the literature that emphasise the cyclicality of both bank leverage and bank willingness to accept risk ('risk-appetite'). Prominent contributions are those provided by Geanakoplos (2010) (this is per se not an analysis of banking but his models of leverage can be applied to banks), Adrian and Shin (2011) and Borio and Zhu (2012).

Various rationales have been provided for why this cyclical variation might happen; for a review, see Gambacorta and Marquez-Ibañez (2011). The 'leverage cycle' in Geanakoplos (2010) arises from the interaction of heterogeneity in beliefs and constraints on borrowing. In expansionary periods optimistic investors are willing to pay high prices for assets which can generate a positive feedback – rising prices increase the access of these borrowers to funding which further increases asset prices.

A second rationale hinges on asset price volatility, notably in Brunnermeier and Pedersen (2009) where value-at-risk constraints determine access to leverage. This predicts multiple equilibria with the possibility of periods of low volatility, high asset prices and (by implication) high levels of lending; or high volatility, low asset prices and low lending levels.

A third rationale is behavioural, with reference to potential investor and intermediary irrationality. Periods of low interest rates and rapid growth may lead investors and bankers to underestimate risks. In

---

[1] For brevity, we focus on theoretical perspectives that provide relatively fully worked out models of the relationship between bank capital and bank lending volumes and/or interest rates. These are just one part of the broader literature exploring the reasons for departure from the Modigliani–Miller propositions for banks; for comprehensive reviews, see Miller (1995), and Berger, Herring, and Szegö (1995). Nor do we attempt any review of the theory on the 'bank lending channel' initiated by Bernanke and Blinder (1988, 1992), in which better capitalised banks are predicted to respond less to changes in central bank reserves because they can substitute alternative market funding for reserved deposits.

[2] This approach incorporates bank capital into the extensive earlier literature on bank monitoring and screening, originating with Leland and Pyle (1977) and Diamond (1984).

Please cite this article as: Osborne, M., et al., In good times and in bad: Bank capital ratios and lending rates, *International Review of Financial Analysis* (2016), http://dx.doi.org/10.1016/j.irfa.2016.02.005

Download English Version:

https://daneshyari.com/en/article/5084382

Download Persian Version:

https://daneshyari.com/article/5084382

Daneshyari.com