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“Low-For-Long” interest rates and banks’ interest margins and profitability: Cross-country evidence[☆]

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ABSTRACT

Interest rates in many advanced economies have been low for almost a decade now and are often expected to remain so. This creates challenges for banks. Using a sample of 3385 banks from 47 countries from 2005 to 2013, we find a one percentage point interest rate drop implies an 8 basis points lower net interest margin, with this effect greater (20 basis points) at low rates. Low rates also adversely affect bank profitability, but with more variation. And for each additional year of “low-for-long”, margins and profitability fall by another 9 and 6 basis points, respectively.

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1. Introduction

Interest rates in many advanced economies have been low for almost a decade, since the global financial crisis (GFC), and in many cases are expected to remain low for considerably longer. Low interest rates can help economies recover and enhance banks’ balance sheets and performance by leading to capital gains, supporting asset prices and reducing non-performing loans. But persistently low interest rates – low-for-long – may also erode the profitability and franchise value of banks, because low rates are typically associated with lower net interest margins (NIMs). Banks will often be reluctant to (quickly) lower deposit rates as interest rates decline, especially for retail depositors. On the other hand, banks must often still pass the lower rates on to existing and new loans based on contractual repricing and competition induced by borrowers who have other financing choices. As a result, when interest rates decline, pass-through of policy rates to various market rates may be imperfect, which could impede monetary policy transmission. And as bank margins tend to compress, this, in turn,

may adversely affect banks’ ability to lend as it erodes their capital positions. Both of these implications represent potentially adverse economic consequences and financial stability risks.

Some advanced economies’ central banks are indeed facing challenges in monetary policy transmission and some of their banks are facing profitability challenges in part related to low rates and consequently lower NIMs. While bank profitability, measured by return on assets (ROA), in some advanced economies has recovered from the worst of the GFC, many advanced economies’ banks have reported relatively weak profitability in recent years. Concurrently, banks in many countries with low rates have low market valuations, often with price-to-book ratios very much below one. While differences in profitability and valuations also reflect structural differences in balance sheet compositions, these declines in profitability and market valuation are in the eyes of some observers in part related to the lower interest rates. But how strong is the link between interest rates, NIMs, and profitability? And is this relationship different in low interest rate environments, i.e., are very low rates worse for margins and profitability? To date, answers to these questions are largely elusive.

This paper investigates the relationship between changes in interest rates, NIMs, and profitability for a large sample of banks in a wide spectrum of countries over for a long period. Our large cross-country and relatively long panel allows us to analyze banks operating across various countries and in different interest rate environments in the same country, important for the identification of a differential effect when interest rates are low, while controlling for bank specific characteristics. The cross-country and time-series

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panel also provides us with a strong way to isolate the effect of a low(-for-long) interest rate through the erosion of banks' NIMs and profitability from other concurrent factors, such as overall competition in the respective banking system or other economic and financial developments. To our knowledge, the literature has not investigated this issue much and no other paper has attempted to answer this question with a time-series panel of banks for a large sample of countries.

Overall, our new empirical analysis shows that a low level of interest rates matters for NIMs in three ways: (1) declines in rates contribute to lower NIMs, as interest expenses fall less than interest income; (2) there is an adverse effect that is materially larger when interest rates are low, as they are currently in many advanced economies; and (3) the longer the rates are low, the more adversely NIMs are affected. We also find that there is a materially larger adverse effect from a falling spread between long- and short-term interest rates on profitability when rates are low. And profitability is more adversely affected the longer interest rates are low. These results hold controlling for general economic conditions and bank-specific balance sheet variables, including using bank fixed-effects. Additionally, results are robust to various econometric robustness tests, such as excluding outliers and dropping countries, and specifying different cutoffs for what constitutes a "low" interest rate environment.

While this paper identifies an adverse effect of low interest rates on banks' NIMs and profitability, the analysis does not provide an overall assessment of how low interest rates may affect banking systems. Besides leading to valuation gains on securities held by banks and other financial benefits, much of the overall effects will depend on the effects of low interest rates on the aggregate economy. If low (for long) interest rates stimulate the economy and thereby improve the quality of loans and the environment for lending and provision of other financial services, low interest rates could through such and other channels lead to an increase in a bank's overall capitalization, longer-term profitability and franchise value.

At the same time, besides the negative effects of low interest rates on banks' margins and profitability, there can be adverse effects on bank risk taking. While this paper does not address whether low interest rates lead to unhealthy reach for yield by banks, this has been a concern among many supervisors and policy makers, and has been a subject of research (see [Adrian and Liang, 2014](#), and [Dell'Ariccia and Marquez, 2013](#), for literature reviews of the links between interest rates and risk taking). The negative consequences of low (for long) rates on bank profitability and capitalization are additionally important to consider as analysis has suggested that the incentives for (excessive) risk-taking depend not just on the level of interest rate but also on the capitalization and franchise value of the bank ([Dell'Ariccia et al., 2014](#)). By adversely affecting over time the capital position of banks, low rates could furthermore adversely affect banks' willingness to lend. And a limited pass-through of policy rates, combined with the adverse effects on banks of low rates, could hamper monetary policy transmission and disrupt the transmission channel of interest rates to lending (the bank lending channel, e.g., [Kashyap and Stein, 1995, 2000](#)). More generally, low interest rates may adversely affect banks in a number of ways (see further [Shin, 2016](#) for a discussion, and the model of [Brunnermeier and Koby, 2016](#), with specific reference to negative interest rates; and the model of [Begenau, 2015](#), with reference to the demand for safe assets). While this paper does not review these channels, the adverse effects we find of low interest rates for banks point to these possibilities.

The remainder of this paper proceeds as follows: [Section 2](#) motivates the paper and reviews the literature on the effects of low interest rates on banks' NIMs and profitability, [Section 3](#) outlines

our data and sample, [Section 4](#) discusses our empirical framework and results, as well as some robustness tests, and [Section 5](#) concludes.

2. Motivation and related literature

2.1. Motivation

How changes in interest rates affect banks' performance has been a subject of much practical and some academic research. Obviously, bank shareholders and other investors are keenly interested in how changes on interest rates affect the income and profitability of banks (e.g., see banking and investment textbooks such as [Mishkin, 2015](#)). Clearly effects will vary by bank, depending on their interest rate exposures, in turn a function of their degree of maturity transformation and use of risk management techniques, including derivatives (e.g., following the seminal contribution of [Ho and Saunders, 1981](#)). Relatively little focus has been given to the question of how low interest rates impact banks' NIMs and profitability differentially. Analytics (and most existing empirical findings, further reviewed below) suggest, however, that, controlling for other factors, banks' NIMs are lower when interest rates are low. The reasons typically mentioned are as follows.

Low short-term interest rates can depress bank margins, because for many types of deposits and some other liabilities, banks are reluctant to lower rates. In part, this is because of an effective lower bound, as depositors and other creditors can switch to cash-forms of savings. Banks may also fear losing clientele when their lower rates too much, clientele which are important to the banks' business in other ways than just funding. There is evidence, for example, that banks derive value from cross-selling products like consumer credit and mortgage to their depositors (e.g., [Berger et al., 1993](#); see further [Mester, 2008](#)). Indeed, the franchise value derived from a deposit is high enough to justify banks paying for acquiring a deposit, with premiums for core deposits historically of 1 to 2 percent. Both the lower bound and reluctance to lose clients reasons are especially large when interest rates fall below zero, as has recently happened in Japan and several European countries. While there is anecdotal evidence that some banks are passing negative rates onto corporate customers in select cases, banks have been reluctant to pass negative policy rates on to retail depositors (e.g., [Bech and Malkohozov, 2016](#)).

With deposit rates facing a floor, as interest rates decline, bank margins will compress if banks must still pass on lower rates on the asset-side of their balance sheet. The latter is likely to happen based on contractual repricing terms, e.g., on floating rate loans, or because there is an incentive to do so for those borrowers that have other financing choices, e.g., from corporate bond markets or other banks.¹ Apart from the de-facto zero-lower-bound effects on deposit rates, effects of interest rates on NIMs are furthermore likely to be larger in a low-yield environment if, ceteris paribus, the spreads on loans over deposit rates increase with the level of the rate. This can be expected when spreads compensate for default and other risks that are otherwise interest-insensitive. More generally, as [Appendix A](#) models more formally, it is likely that the relationship between NIMs and interest rate is non-linear. As such,

¹ The degree and speed of pass through will in part vary in line with maturities of existing assets and liabilities, which are mainly determined by contractual reasons. Banks will also vary their borrowing and lending contracts of course in response to changes in interest rates considering competitive conditions. For example, [Cohen et al. \(2016\)](#) show that relationship between monetary policy rates and borrowing costs has become more tenuous in the markets for syndicated corporate term loans during the period of low interest rate than in the past, in particular in the United States, due to the use of floors by banks in response to desire from non-bank lenders for income protection.

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