In this paper, the authors explore the link between monetary policy and bank profitability, focusing precisely on the relationship between the interest rate structure and bank performance. They analyse the link based on a large set of international banks and all the main components of banks’ balance sheets, drawing on a data set that covers 109 large international banks headquartered in 14 advanced economies for the period 1995-2012, looking at net interest income, non-interest income, loan loss provisions and overall return on assets (ROA).

According to the paper, there are good reasons to believe that both the level of interest rates and the slope of the yield curve are associated with higher net interest income. This relationship is likely to be especially strong at very low levels of nominal interest rates and to fade as interest rates move higher. In the case of the level of interest rates, at least four mechanisms are relevant: a retail deposits endowment effect, a capital endowment effect, a quantity effect that counterbalances the price effect, and the dynamics of transition between equilibria, including repricing lags and credit-loss accounting.

The retail deposits endowment effect derives from the fact that bank deposits are typically priced as a markdown on market. If the markdown becomes smaller as interest rates decline, then monetary policy tightening will increase net interest income. As the deposit rate cannot fall below zero, at least to any significant extent, the markdown is compressed when the policy rate is reduced to very low levels. This means that the relationship between net interest income and interest rates is non-linear.

The capital endowment effect is, functionally, an extreme case of the retail deposit endowment effect. As interest rates fall, the return on assets covered by capital mechanically declines. Quantitatively, this effect is generally smaller than that for deposits because capital is a smaller share of total assets, but operates at all interest rate levels.

Changes in the level of market rates will also have quantity effects, notably influencing the volume of bank loans and deposits. To the extent that, on balance, the demand for loans is more responsive (elastic) to interest rates than that for deposits, at some point higher interest rates would erode profitability.

Dynamic effects in the transmission of the level of interest rates to net interest income take two forms. The first relates to lags in price (rate) adjustments while the second form relates to accounting practices. Any interest margin on new loans also covers expected losses. However, extending new loans raises profitability temporarily, since losses normally materialise only a few years later, at which point loans also become non-performing, eroding the interest margin. This also means that if lower market rates induce more lending, they will temporarily boost net interest margins. The strength of this effect will depend on background economic conditions.

The slope of the yield curve should also influence net interest income. The permanent component of the effect of the yield curve on net interest income can exceed the term premium only if banks enjoy oligopolistic power in some funding segment, such as retail deposits, allowing them to charge a markdown over market rates. Changes in the slope

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of the yield curve will also have quantity effects, notably influencing the volume of banks' fixed-rate mortgages. The demand for mortgages is more responsive (elastic) to changes in the slope than that for medium-term deposits; at some point a higher level of the slope would erode profitability.

Higher interest rates could lead to lower non-interest income and therefore offset (at least partially) the positive effects discussed above. Three components of non-interest income are relevant: valuation effects on securities, hedging through derivatives, and fees and commissions. Higher interest rates should generate losses on banks' securities portfolios. The impact on the profit and loss account will depend on accounting conventions. The losses will feed directly into the income statement if the securities are marked to, will bypass it entirely and go straight into equity if they are treated as available for sale, and have an impact only when realised if the securities are treated as held to maturity. Importantly, any such effect is only temporary: it is related to the change in the interest rate and disappears once the change is over.

For their empirical analysis, the authors use bank-level consolidated balance sheet statements, in line with the view that an internationally active bank takes strategic decisions on its worldwide consolidated assets and liabilities. All major international banks are included. The sample covers annual data for 18 years from 1995 to 2012.

The authors find that the correlations between the level of interest rates, and the steepness of the yield curve and ROA, respectively, are positive. The effect on net interest income more than offsets that on non-interest income and provisions. They also find significant non-linearities in the link between the interest rate structure and bank profitability. This reflects a reduction of the deposit endowment effect on bank profitability when interest rates are low. Non-linear effects are also found for the relationship between bank profitability and the slope of the yield curve, likely reflecting non-linearities arising from demand for long-term loans and bank services, and from provisions. The result holds controlling for different business cycle conditions and bank-specific characteristics such as size, liquidity, capitalisation and incidence of market funding.

These findings have implications for the possible unintended side effects of unusually accommodative monetary policy, designed to keep both short-term and long-term rates very low for very long periods. For given macroeconomic conditions, bank profitability tends to suffer from unusually low, possibly zero or lightly negative, short-term interest rates, combined with a very flat yield curve, possibly alongside negative term premia. Moreover, under those conditions, some of the profitability may be artificially high, such as that owing to evergreening practices. And it is also likely to be temporary, as valuation gains only have a one-off impact on profitability. The overall effect of monetary policy on bank profits will also depend on the impact of monetary policy on macroeconomic conditions. In particular, it will crucially hinge on the efficacy of monetary policy in boosting aggregate demand at the zero lower bound and in adverse balance sheet conditions.

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