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Research Report

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Impact of a Policy Rate Cut on Bank Profitability and Financial Stability

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* Adapted and excerpted from Hwang, Sunjoo, *Interest Rate Risk, Bank Profitability, Financial Stability and Financial Consumer Welfare*, Research Monograph 2019-10, Korea Development Institute, 2019 (forthcoming) (in Korean).

Summary

- Concerns prevail that a policy rate cut could weaken bank profitability and trigger financial instability.
- However, banks can sustain relatively high net interest margins with little fluctuation despite a rate cut owing to their dominant position in the deposit market and ability to adjust loan maturity.
 - By virtue of their market dominance, banks set their deposit rates below the base rate by a fixed percentage, and as such, the former falls within a narrower range than the latter.
 - Because deposit rates are little exposed to base rate fluctuations, banks are able to increase their share of long-term loans which are unaffected by short-term rate changes. This means that lending rates also fall by a smaller margin.
 - An empirical analysis found that a 1%p change in the call rate, which moves in line with the base rate, adjusts the deposit and lending rates by 0.53%p and 0.58%p, respectively, indicating that the fluctuation (0.05%p) in the net interest margin is statistically insignificant.
- Therefore, the possibility of financial instability due to a deterioration in bank profitability on a rate cut by the central bank should not be deemed as a constraint.

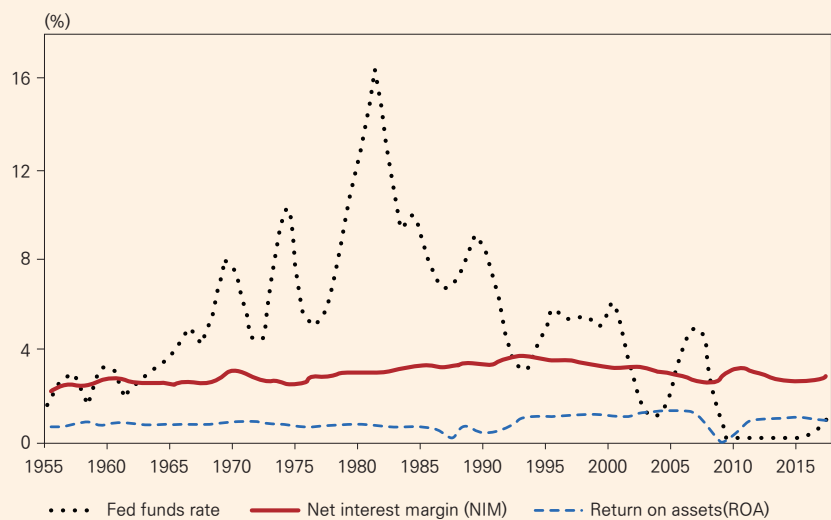
1

Concerns over Bank Profitability

- The Bank of Korea recently lowered its base rate, raising concerns over profitability.
 - As the pandemic-induced crisis intensifies in the midst of structural slow growth, the base rate is expected to remain low until the economy makes a sufficient recovery.
 - There is increasing unease about the possibility that a base rate cut will curtail the net interest margin of domestic banks (S&P, 2020).
- A sharp fall in the profitability of banks—the backbone of the financial system—could take a huge toll on financial stability.
 - If bank profitability took a marked downturn, the ensuing instability in the banking system could trigger a severe financial crisis.
 - Thus, even under conditions such as slow growth, low inflation and recession, the central bank may not be able to sufficiently reduce the policy rate.
 - According to the ECB, the possibility of financial instability due to a decline in bank profitability is a major constraint on monetary policy (Praet, 2016).

- However, whether a base rate cut absolutely weakens bank profitability is unclear.
 - According to conventional theories on monetary finance, lowering the base rate in actuality improves the profitability of banks (Boivin *et al.*, 2010).
 - While a base rate cut immediately lowers the rate of deposit accounts—an ultra short-term financial product—the rates of loans with longer maturities will not exhibit volatility in the short-term.
 - Thus, in the short-term, a base rate cut will raise the net interest margins (lending rate - deposit rate) of banks.
 - However, a recent study in the US (Drechsler *et al.*, 2018) finds that bank profitability and policy rate changes are unrelated (Figure 1).
 - Despite the volatility of the Fed funds rate, which is on par with the base rate, during the past six decades, there has been little change in the net interest margins (NIM) and return on assets (ROA) of US banks.
 - The same can be said for Korea: no positive relationships have been observed between the NIM and ROA and call rate, which stays almost the same as the base rate, for the past two decades (Figure 2).

[Figure 1] Relationship between the US' Bank Profitability and Base Rate



Note: 'Fed funds rate' is a short-term interest rate which stays almost the same as the US policy rate. Both net interest margins (NIM, net interest income/total assets) and return on assets (ROA) here are on an average basis.
 Source: Drechsler *et al.* (2018).

2

Banks' Market Dominance and Ability to Determine Loan Maturity Defend Against Profit Loss due to a Base Rate Cut

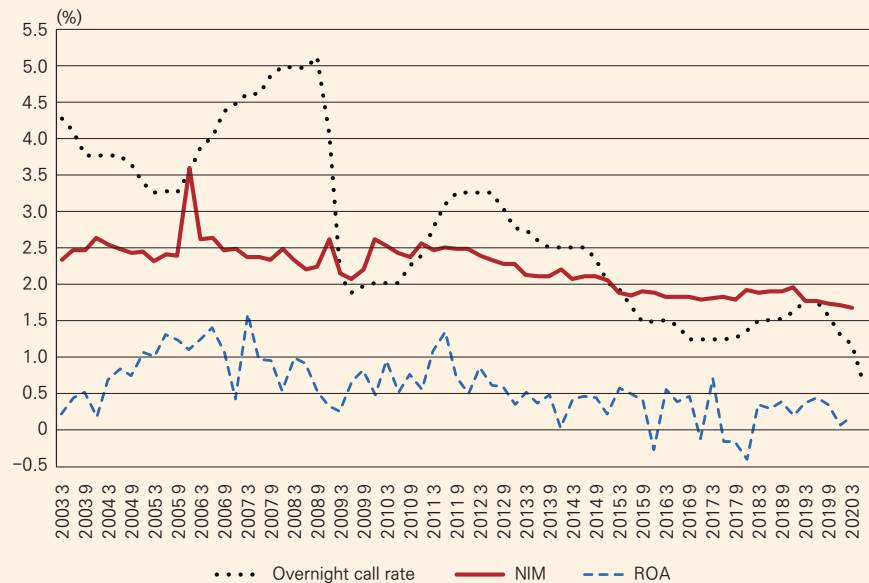
¹ In literature on anti-trust policy, 'market dominance' refers to the ability to set a non-competitive price in a near monopoly market, while 'market power' refers to the ability to set a non-competitive price in an oligopolistic market. Considering that the deposit market is oligopolistic, 'market power' is a more accurate terminology. Nevertheless, this study uses 'market dominance,' which is more widely known.

² Banks considered in this study include commercial banks, local banks and specialized banks (excl. Korea Eximbank which does not take deposits) that play a key role in the financial system. However, mutual financial institutions and savings banks were excluded since they have little significance within the entire system.

³ Or fixed rate loan.

⁴ Or floating rate loan.

[Figure 2] Relationship between Korea's Deposit Bank Profitability and Base Rate



Note: 'Overnight call rate' refers to the short-term market rate which stays almost the same as the base rate. Both NIM and ROA here are on an average basis. The NIM was calculated (net interest income/total asset) using the method from Drechsler *et al.* (2018).

Source: Author's calculation based on raw data (1Q 2003-1Q 2020) from the Financial Supervisory Service's Financial Statistics Information System and Bank of Korea's Economic Statistics System.

■ (Theoretical finding) Owing to their dominance¹⁾ in the deposit market and ability to determine loan maturity, banks²⁾ are able to secure relatively high net interest margins with little fluctuation in profitability even when the base rate is lowered.

- Banks hold a dominant position in the market for demand deposits.
 - Demand deposits are a financial service essential to daily life.
 - * As of 2018, demand deposits account for about 46% of the total deposits in the won.
 - They are handled by only a small number of government-chartered banks.
 - * K Bank, Inc. was the first market entrant in 24 years to become licensed in 2016.
 - * The top five banks hold 75% of the deposit market as of 2018.
- Deposit rates are less sensitive to base rate cuts because banks can set them lower by a fixed percentage.
 - E.g. deposit rate = base rate x 0.5
- With the deposit rate rarely exposed to the volatility risks of the base rate, banks can further secure funding stability through deposits and increase their share of long-term loans which are unaffected by short-term volatility. This implies that lending rates also have a low sensitivity to the base rate.
 - (Case 1: Deposit rate = base rate) On a 1%p increase in the base rate, the lending rate will have to be immediately raised 1%p for banks to be able to pay interest to their depositors which is not possible for long-term loans³⁾ with maturities of over one year.
 - (Case 2: Deposit rate x 50% = base rate) On a 1%p increase in the base rate, the lending rate will increase by up to 0.5%p, which will allow banks to pay their depositors. This, however, is only possible when the ratio for long-term and ultra short-term loans⁴⁾ in the lending portfolio is 5:5.

3

Empirically, a Base Rate Cut Does Not Deteriorate Bank Profitability.

- In this context, the sensitivity of the deposit rate equals that of the lending rate, meaning bank profitability is not affected by the fluctuations in the policy rate.
 - Banks with strong market dominance may set the deposit rate at, for example, 30% of the base rate and revise their lending portfolio to include more profitable long-term loans and less short-term loans (7:3). In this way, their lending rate sensitivity to the base rate is adjusted to 30%.
 - In contrast, less dominant banks may set the deposit rate at, for example, 80%, and revise their portfolio of long- and short-term loans to 2:8. As above, their lending rate sensitivity to the base rate is therefore adjusted to 80%.

■ (Empirical finding) The deposit and lending rates decrease by a relatively small margin when the base rate is lowered which largely maintains the spread between both rates. Accordingly, there are no statistically significant changes in banks' net interest margins.

- The changes in the deposit and lending rates and net interest margin when the call rate increases by 1%p were estimated using bank-level panel data (2002-2019).*

* Law data from the Financial Supervisory Service's Financial Statistics Information System and Bank of Korea's Economic Statistics System.

- A 1%p rise/fall in the call rate is associated with a mere 0.53%p increase/decrease in the deposit rate, which implies that banks exercise considerable market power in setting the latter (Table 1).
 - Meanwhile, banks with larger market shares exhibit an even smaller change, indicating that stronger market dominance leads to a lower deposit rate (Table 2).
- The less sensitive a bank's deposit rate is to the call rate, the less sensitive the lending rate is, presumably because the share of long-term loans to total loans is larger (Figure 3).
- That is, banks adjust their deposit and lending rates in line with the call rate to almost the same ratio (1:1), leaving no room for any significant changes to profitability.
 - When the call rate rises/falls 1%p, the net interest margin increases/decreases to almost a statistically insignificant degree of 0.05%p (Table 1).^{5, 6)}

<Table 1> Sensitivity of Each Variable to the Call Rate

Variable	Deposit rate	Lending rate	Net interest margin
Sensitivity to a 1%p increase in the call rate (%p)	0.53***	0.58***	0.05
Control of relevant variables	Yes	Yes	Yes
Presence of a cointegration relationship	Yes	Yes	Yes
Adjusted R-squared	0.89	0.85	0.78
Number of samples	1,097	1,108	1,108

Note: 1) Estimated using the panel dynamic OLS.

2) *** denotes statistical significance at 1%.

3)'Deposit rate' is the ratio of total interest cost to total assets (deposits), and 'lending rate' is the ratio of total interest income to total assets. The 'net interest margin' refers to the gap between the lending and deposit rates.

4)'Relevant variables' include inflation rate, deposits, loans, etc. These variables were selected since they are regarded as being closely related to the cointegration relationship between the deposit/lending rates and call rate.

Source: Author's calculation based on raw data (1Q 2002-1Q 2019) from the Financial Supervisory Service's Financial Statistics Information System and Bank of Korea's Economic Statistics System.

5 In a simple model that does not consider various control variables, a 1%p increase in the call rate leads to a 0.15%p increase in the net interest margin which is similar to what many practitioners expect.

6 The additional analysis found that fluctuations in the call rate have no statistical significance for the ROA and ROE.

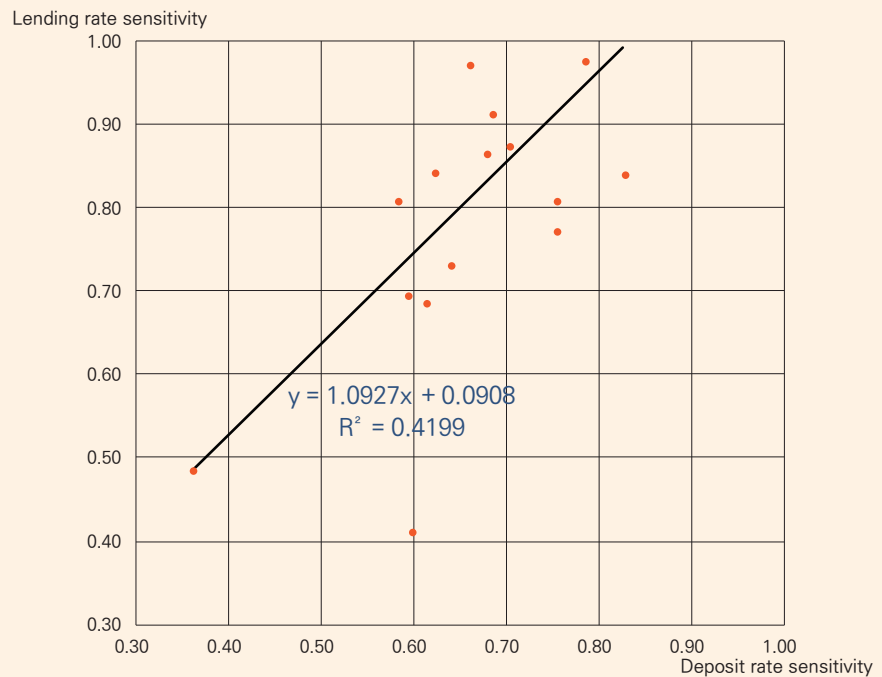
<Table 2> Correlation between Market Share and the Deposit Rate's Sensitivity to the Call Rate

Category	Market share in the deposit market (banking sector only)	Market share in the deposit market (Broader financial sector)
Commercial banks	-0.453	-0.521
Local banks	-0.678	-0.726
Specialized banks	-0.957	.

Note: 'Market share in the deposit market (banking sector only)' is the average market share (avg. quarterly market share in 1Q 2002-4Q 2018) of respective banks in the banking sector's deposit market, while 'Market share in the deposit market (broader financial sector)' is the average market share (avg. quarterly market share in 2H 2012-2H 2018) of respective banks in the overall financial sector's deposit market including banks, mutual finance (MG Community Credit Cooperatives were excluded due to data limitations), and savings banks.

Source: *Ibid.*

[Figure 3] Relationship between the Sensitivity of Deposit and Lending Rates to the Call Rate



Note: Dots represent the ordered pair of each bank's sensitivity of deposit and lending rates to the call rate. The estimated coefficient, 1.0927, in the linear regression equation ($y=1.0927x+0.0908$) is statistically significant at the 1% level.

Source: *Ibid.*

4

Policy Implications

- (Implications for monetary policy) The likelihood that an expansionary monetary stance will damage bank profitability, and hence, incur financial instability is low.
- There is growing demand for monetary easing amid the recent slow growth and COVID-19 crisis. But, it appears unnecessary to take into account financial instability due to falling bank profitability as a constraint in determining the base rate.
 - The analysis found that the fall in banks' net interest margin due to a cut in the base rate is statistically insignificant.
 - Even if the margin does contract, low rates will increase the amount of lending, and as such, will prevent banks' interest income (net interest margin x amount of lending) from falling.

- Meanwhile, as increased lending could have a negative effect on banks' financial soundness, prudent supervision should be strengthened.
 - This analysis assumes that the base rate is no less than zero, and thus, the results should not be directly applied to negative-rate situations.
 - Additionally, financial stability could be impacted by other variables, such as household debt and foreign exchange liabilities, but the channel of bank profitability is the sole focus of this study.
- (Implications for financial policy) Completely separating the deposit and lending functions during the process of subdividing banking license categories to facilitate competition could have certain side effects.
- There have been recent arguments that banking license categories should be subdivided (small banking license) to bolster competition and drive the establishment of diverse fintech companies that provide specialized financial services.
 - The US and Switzerland issue a restrictive banking license that forbids the handling of deposit accounts (Financial Services Commission, 2019).
 - Cochrane (2014) argues that, in order to secure financial stability, 'deposit banks' should only be allowed to invest in safe assets such as government bonds using funds raised through deposits while 'loan banks' issue loans using only their own capital.
 - However, this study reveals that such a separation could significantly reduce monetary flows into the real economy.
 - The amount of funds that loan banks can procure using only their own capital is limited. As such, there will be difficulties in providing sufficient lending to the real economy.
 - On the other hand, banks handling both deposit and lending accounts can serve as a steady source of large monetary funds to the real economy without raising much concern over the risk of rate fluctuations.

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