NIGERIAN JOURNAL OF PUBLIC SECTOR MANAGEMENT (NJPSM)

Negative Interest Rate Effectiveness and Its Implications for Banks

[1]Ogbonna, Chukwuma, PhD., [2]Eze, Emeka , PhD., [3]Chukwuma-Ogbonna, Joyce & [4]Nwachukwu Edwin Udochukwu

[1,2&3]Department of Economics Michael Okpara University of Agriculture, Umudike, Abia state

[4]Department of Economics, Nnamdi Azikiwe University Awka

Corresponding Author: chuksgabriel40@yahoo.com

Abstract

The adoption of a negative interest rate by some central banks has provoked many reactions and raises many questions about its effectiveness. While there are conflicting opinion on the effect of NIRP on banks, evidence from empirical literatures reviewed indicate that its total effect on banks depends on the funding structure of the bank. Banks with high deposit ratio are found to be more at risk under NIRPs. Also, most of the studies reviewed agreed that, NIRP decreases net interest income of banks, encourage high risk lending and reduces the market value of Banks. Banks respond by increasing non-interest income, increasing fees and charges on deposit account, reducing personnel cost and reduction in lending. In total the effect of NIRP on bank profitability was found to be insignificant. In terms of its effectiveness, we found evidence that NIRP had positive effect on credit supply especially in Europe and likely stimulated economic growth and inflation in the process. However, in Japan there were no evidence of improved macroeconomic environment following the implementation of NIRP

Keywords: Negative interest rate, Effectiveness, Implementation & Banks

Introduction

Economists have long used economic tools and policies to solve economic issues in order to stabilize the economy, but this approach is not very strict. This is accurate since economic issues don't always manifest in a clear-cut way. Because economic problems are typically dynamic, diverse, and varied, they frequently call for a variety of unconventional but targeted approaches. The negative interest rate is one such unorthodox strategy. The apex bank uses negative interest rates, an unconventional monetary policy, to address persistently challenging economic conditions that may have been challenging to address with a conventional approach.

According to Boungou (2019), many central banks have used a variety of unconventional monetary tools, such as forward guidance and large-scale asset purchases, to address low inflation and economic growth since the Global Financial Crisis (GFC) of 2008–2009. Since 2012, the Bank of Japan and six European central banks—Bulgaria, Denmark, the Euro Area, Hungary, Sweden, and Switzerland—have progressively implemented the negative interest rates policy (NIRP). Coeuré (2016) claims that by taxing banks' excess reserves at the central bank, negative rates were implemented with the goal of expanding the supply of credit. This should result in lower financing costs for banks and borrowers, which will raise loan supply and demand and boost economic growth. Angrick & Nemoto (2017) state that different economies had different reasons for adopting and implementing an NIRP.

The exchange rate was a key factor in many other economies, while price stability was a major concern in Japan and the euro area.

Large interbank liquidity balances, which resulted from quantitative easing policies (particularly in the euro area and Japan) or foreign financial inflows (Switzerland, for example), were usually the foundation for the implementation of NIRPs. The economies that adopted NIRPs typically used some kind of interest rate corridor, with a deposit rate applied to reserves banks hold with the central bank at the lower end and a lending rate applied at the upper end when banks borrow from the central bank. In order to implement NIRPs in this situation, the central bank deposit rate was lowered into negative territory. Other policy rates were then adjusted downward until the interbank overnight rate reached the targeted negative level.

However, it is unclear how this unconventional monetary policy approach has addressed the problems facing the economies and why it should take the place of the conventional monetary policy approach of positive interest rates, given that some economies, particularly the developed economies, have adopted the practice of negative interest rates to boost economic growth. In light of this, this study explores the efficacy of negative interest rates and looks at how they impact bank profitability. The study will use the desk review approach to achieve this, and as a result, recommendations will be made based on the study's revealed findings.

The remaining parts of the study is organized into 2 sections: Literature review (conceptual, theoretical and empirical) and conclusion. We start with the review of related literature.

Review of Related Literature

Conceptual Review

In the literature, the idea of a negative interest rate has never been unclear. Central banks employ this unconventional monetary strategy to counteract persistently challenging economic conditions. Angrick & Nemoto (2017) noted that negative interest rate policies (NIRPs) are implemented through central bank policy rates, which impact interbank rates, money market rates, and ultimately, according to theory, retail rates, much like interest rate changes in positive territory.

Although central banks have different underlying motivations for implementing NIRP, Arteta, Kose, Stocker, and Taskin (2016) note that their transmission channels to activity and inflation are conceptually similar to those of traditional monetary policy. In particular, it is anticipated that the interest rate, credit, portfolio, and exchange rate channels will be the primary means of transmitting NIRP. However, there are issues with these channels under NIRP that may reduce the efficacy of policy.

Interest Rate Channel

Cutting policy rates slightly below zero should lower the rates at which financial intermediaries engage in lending and borrowing, much like rate cuts in positive territory. Money market rates and bond yields at the short end of the maturity spectrum are particularly likely to decline when rates are cut in negative territory. Because investors arbitrage

differences in risk-adjusted expected returns across debt securities of various maturities, a policy-induced decline in short-term nominal interest rates should lead to lower longer-term nominal interest rates.

Credit Channel

Monetary policy is expected to affect the amount of credit available to households and firms by changing their external finance premium (balance sheet channel or broad credit channel), and by changing banks' incentive for extending loans (bank lending channel or narrow credit channel) (Brown, 2020). The credit channel facilitates an amplification mechanism. NIRP effectively amounts to a tax on liquidity hoarding by banks, which should encourage them to use excess reserves to increase lending. However, there could be an adverse impact on credit growth if banks charge higher lending rates to cover their likely losses associated with negative interest rates or if lower profitability and diminished capital base make them more reluctant to lend.

Portfolio Channel

The demand for higher-yielding assets, like stocks, should be supported by a policy-induced drop in short-term interest rates. Increased asset values can lead to wealth effects, which in turn encourage investment and, eventually, growth. Expectations of higher growth linked to further monetary policy easing could strengthen the positive impact. Although the transmission mechanism under NIRP should be essentially the same, if it is maintained over an extended period of time, NIRP, like other unconventional monetary policies, may distort asset valuations and increase the risk of asset price bubbles. This theory is supported by a study conducted in 2018 by Ampudia & Van den Heuvel.

Exchange Rate Channel

Currency adjustments are another way that a policy-induced drop in short-term interest rates affects open economies. The domestic currency is predicted to weaken in order to equalize risk-adjusted real returns on different debt instruments when domestic interest rates fall in comparison to foreign rates. Therefore, it is reasonable to assume that growing interest rate differences linked to NIRP will discourage capital inflows, encourage net exports, and contribute to the depreciation of the domestic currency. However, beggar-thy-neighbor policies of competitive devaluations may result if numerous nations engage in NIRP at the same time to boost exports.

Empirical

We organized the empirical review of literature in two segments: one, as it relates to the effect of negative interest rate on banks; and two, as it relates to the effectiveness of negative interest rate in stimulating economic growth.

Effect of Negative Interest Rate on Banks

Numerous empirical studies have looked at how NIRPs affect banks' net interest margins. In a study of European banks, Carbó-Valverde et al. (2021) discovered that the interest rate margins of banks impacted by negative interest rate policies decreased by 17.4%

when compared to banks operating in European territories without such policies. In a similar vein, Lopez-Penabad (2022) discovered that the implementation of negative interest rates resulted in a marginally smaller decrease in interest rate margin. The study, which used a sample of 2134 banks, discovered that banks operating in the EU had reduced their interest rate margin by 14.5 basis points and their return on assets by 18.5 basis points. In particular, both studies found that the effect of NIRP on net interest margin was heterogeneous across banks depending on the funding structure of the bank. Banks with high deposit ratio were the most hit. Evidence of a reduced net interest income was also confirmed by Boungou (2020) and Basten and Mariathasan (2018)

Although banks experience a reduction in net interest income under NIRPs, the overall effect of the policy on banks net income is actually negligible. Lopez et al (2020) used data on 5200 banks from the European union, Switzerland and Japan to establish this finding. The study observed a decline in net interest income especially among high deposit banks. However, they emphasized that the overall effect on total bank income is negligible as banks tend to increase their non interest income, lower deposit expenses and increase fees and capital gains. Ulate and Lofton, (2021) observed that banks reduce personnel cost in a bid to mitigate the impact of NIRPs on banks profit.

There is proof that banks participate in risky practices under NIRPs. For example, Heider, Saidi, and Schepens (2021) discovered that banks with large deposit funding take more risks and lend less when policy rates are negative. The zero lower bound on retail deposit rates and the reduced elasticity of the cost of funding in relation to the policy rate for a bank that depends on deposits rather than wholesale market funding are fundamental to the mechanism. Prior research by Heider, Saidi, and Schepens (2019) showed that when negative monetary policy rates are implemented, high-deposit banks lower overall syndicated lending. This suggests that high-deposit banks take risk by concentrating their lending on risky firms, and potentially rationing other borrowers. Eggertsson et al. (2020) document a similar contractionary effect using bank-level data from Sweden. Similar conclusion was reached by Acre et al. (2020) and Nakashima and Takahashi (2021) using data on Spanish Banks and Japanese Banks respectively. They found that banks lower credit, increase loan rate and engage in risky lending.

Negative interest rate has also been found to decrease the market value of banks. Studies by Heider, Saidi & Schepens (2019) and Ampudia & Van den Heuvel (2018) Shows that NIRPs have a negative effect on stock prices of banks in the Euro Area. In particular, Heider, Saidi & Schepens (2019) observed that the effect depends on the structure of the banks funding with banks heavily reliant on deposit funding at more risk of losing market value. According to Ampudia & Van den Heuvel (2018) Banks stock prices drop by about 2% following a 25 basis point cut in negative territory. In a separate study, Nucera et al. (2021) observed that the risk of undercapitalization is moderate under negative policy rates. Using a sample of 111 banks in the Euro-area, the study found that the risk is higher among banks that rely majorly on deposit funding.

Effectiveness of Negative Interest Rate

Since the policy's introduction, there has been much discussion about the efficacy of NIRPs. Stronger credit growth, higher noninterest income, higher asset prices, lower funding costs, and ultimately stronger aggregate demand are all reasons why proponents of the policy contend that NIRPs will have an overall positive impact (Blanke and Krogstrup, 2016; Jobst and Lin, 2016). Although supporters acknowledge that there may be some negative effects on bank profitability, they contend that these effects will be outweighed by the benefits of NIRPs (Coeuré, 2014).

The Office of the Comptroller of Currency (OCC) reported in 2021 that NIRP in Denmark, Sweden, and Switzerland did contribute to the prevention of further rapid currency appreciation. Even though the three countries' economies grew, the policy did not reduce inflation. According to the report, Japan's macroeconomic dynamics were not significantly improved by the combination of negative policy rates, quantitative easing, and increases in government spending. According to the report, the policy's efficacy was constrained by banks' incapacity to transfer costs to retail deposits.

In a study conducted in Japan, Nakashima and Takahashi (2021) discovered that loans from banks with larger reserves are considerably impacted negatively by the Bank of Japan's implementation of the NIRP. Additionally, the negative interest rate caused heterogeneous credit allocation effects, meaning that banks with lower capitalization made more loans to companies that were more likely to default or to be risky. Furthermore, nonfinancial companies reduced their fixed investments when they borrowed from banks that were highly exposed to the negative interest rate.

Research indicates that NIRPs are effectively transmitted in Europe through the bank credit supply channel. Similar to cuts in positive territory, Inhoffen (2021) discovered that policy rate reductions in negative territory enhanced the macroeconomic environment and increased the credit supply. The study also discovered that, contrary to what many had previously believed, the policy had no detrimental effects on bank profitability. The study came to the conclusion that NIRPs are successful in expanding the availability of credit. NIRPs are successful in boosting bank lending, according to other studies like Heider et al. (2019) and Schelling and Towbin (2018). This suggests that under NIRPs, the credit supply channel is efficient.

Ulate (2021) found that NIRPs have positive effect on economic growth but not as much as monetary policy in positive interest rate territories. Using a new DSGE model, a study by found that NIRPs is effective in the range of 60-90% compared to monetary policy in positive policy rate territory. Grandi and Guille (2018) investigated the transmission of NIRPs in France and the Euro area. Evidence from the study indicate that negative rates are effective in stimulating the economy when nominal interest rates hit the zero lower bound, via an increase in bank lending. This effect is stronger for banks more reliant on retail deposits and comes at the price of greater risk taking.

However, Onofri et al. (2021) discovered that when there is a zero lower bound on the interest rate of household deposits—the only source of bank funding and household

savings—a NIRP can have a contractionary effect on the economy. According to the study, when households have a diverse portfolio and banks have a variety of funding sources, particularly bank bonds, the contractionary effects vanish and the NIRP becomes expansionary.

Conclusion

Some central banks have adopted negative interest rates, which have sparked a variety of responses and raised concerns about their efficacy. Although opinions on how NIRP affects banks vary, evidence from the reviewed empirical literature suggests that the overall impact of NIRP on banks depends on the bank's funding structure. Under NIRPs, banks with high deposit ratios are found to be more vulnerable. Additionally, the majority of the reviewed studies concurred that NIRP lowers banks' net interest income, promotes high-risk lending, and lowers banks' market value. In response, banks raise non-interest revenue, raise deposit account fees and charges, cut staff costs, and decrease lending. In total the effect of NIRP on bank profitability was found to be insignificant.

In terms of its effectiveness, we found evidence that NIRP had positive effect on credit supply especially in Europe and likely stimulated economic growth and inflation in the process. However, in Japan there were no evidence of improved macroeconomic environment following the implementation of NIRP.

References

Angrick, S. & Nemoto, N. (2017) "central banking below zero: the implementation of negative interest rates in Europe and Japan", ADBI Working Paper 740, Asia Development Bank Institute, available at: https://www.adb.org/publications/central-banking-below-zero-negative-interest-rate-policies-europe-japan

Arce, O. M., García-Posada, S., Mayordomo, and Ongena S. (2020) "Adapting lending policies in a "negative-for-long" scenario." Banco de España Working Paper No. 1832.

Arteta, C; Kose, M.A; Stocker, M. & Taskin, T. (2016) "Negative interest rate policies: sources and implications", World Bank Group, Policy Research Working Paper 7791

Bech, Morten, and Malkhozov, Aytek. (2016) *How have central banks implemented negative policy rates?* (BIS Quarterly Review No. March 2016). Basel: Bank for International Settlements.

Bittner, Christian, Diana Bonfim, Florian Heider, Farzad Saidi, Glenn Schepens, and Carla Soares (2020) "Why so negative? the effect of monetary policy on bank credit supply across the euro area." Unpublished working paper.

Blanke, J. and Krogstrup, S. (2016) "negative interest rates: absolutely everything you need to know. Available at: https://www.weforum.org/agenda/2016/11/negative-interest-rates-absolutely-everything-you-need-to-know/

Boungou, W. (2019) "negative interest rates, banks profitability and risk-taking", Science Po OFCE Working Paper, available at: www.ofce.sciences-po.fr/pdf/dtravail/WP2019-10.pdf

Caruana, J. (2016) "Persistent ultra-low interest rates: the challenges ahead. Available at: http://www.bis.org/speeches/sp160114.pdf

Cette, G.; Fernald, J. and Mojon, B. (2016). *The pre-great recession slowdown in productivity* (Document de Travail No. 586). Paris: Banque de France

Coeuré B., (2016). Assessing the implication of negative interest rate. Speech at the Yale Financial Crisis Forum in New Haven. July 28, 2016.

Coeuré, B. (2014) "Life below Zero – Learning about negative interest rates. Available at: http://www.bis.org/review/ r140911a.htm

Danthine, J. (2016). "*Negative interest rates in switzerland: what have we learned?"* Presented at the Asian Development Bank Institute 19th Annual Conference: Implications of Ultra-Low and Negative Interest Rates for Asia, Asian Development Bank Institute.

Domanski, D.; Shin, H. S, and Sushko, V. (2015). "The hunt for duration: not waving but drowning?*"* (BIS Working Papers No. 519). Basel: Bank for International Settlements.

Eggertsson, G. B., Ragnar E. J., Lawrence H. S, and Ella G. W. (2020) "Negative Nominal Interest Rates and the Bank Lending Channel." NBER Working Paper No. 25416.

Fukase, A. (2016) "Negative rates hit mizuho earnings", available at: http://www.wsj.com/articles/negative-rates-hit-mizuho-earnings-1469984739

Goodhart, C., Bartsch, E., and Ashworth, J. (2016) "Central banks and credit creation: the transmission channel via the banks matters. *Sveriges Riksbank Economic Review*, Vol. *3*.

Hannoun, H. (2015). Ultra low or negative interest rates: what they mean for financial stability and growth.available at: http://www.bis.org/speeches/sp150424.pdf

Heider, F., Saidi, F and Schepens, G. (2021). Banks and negative interest rates. ECB Working Paper Series No 2549. 1-

Heider, F.; Saidi, F. & Schepens, G. (2019) "Life below zero: bank lending under negative policy rates" Review of Financial Studies, Vol. 32 (10)

Heider, F.; Saidi, F. & Schepens, G. (2021) "Banks and negative interest rates", European Central Bank Working Paper Series No 2549

Jobst, A and Lin, H. (2016) negative interest rate policy (NIRP): implications for monetary transmission and bank profitability in the euro area (Working Paper No. WP/16/172). Washington, DC: International Monetary Fund.

Juselius, M.; Borio, C.; Disyatat, P. and Drehmann, M. (2016) Monetary policy, the financial cycle and ultra-low interest rates (BIS Working Papers No. 569). Basel: Bank for International Settlements.

Lopez-Penabad, C. M., Iglesias-Casal, A. and Neto, S.F.J. (2022). Effects of a negative interest rate policy on bank profitability and risk taking: Evidence from European banks. *Research in International Business and Finance 60 (2022) 101597*. https://doi.org/10.1016/j.ribaf.2021.101597.

Lopez, A. J., and Rose, A.K., and Mark M. Spiegel, M.M.(2020) Why have negative nominal interest rates had such a small effect on bank performance? Cross country evidence. European Economic Review. 124,

Martin Brown (2020) Negative interest rates and bank lending. CESifo Forum. 21, 18-23.

Nakashima, K and Takahashi, K. (2021). Credit allocation and real effects of negative interest rates: New Micro-Evidence from Japan (April 18, 2021). Available at:

SSRN: https://ssrn.com/abstract=3828900 or http://dx.doi.org/10.2139/ssrn.3828900

Nucera, F., Lucas, A., Schaumburg, J and Schwaab, B. (2017). Do negative interest rates make banks less safe. ECB Working paper 2098.

Office of the Comptroller of the Currency (2021). Do negative interest rate policies actually work? (And at What Cost?) On Point Economic and policy insight from the OCC.

Shirai, S. (2017) mission incomplete: reflating Japan's economy. Tokyo: Asian Development Bank.

Ulate, M. (2021. Going negative at the zero lower bound: the effects of negative nominal interest rates. *American Economic Review*, 111 (1): 1-40**.**DOI: 10.1257/aer.20190848

Ulate, M and Lofton, O.(2021). How do low and negative interest rates affect banks? FRBSF Economic Letter 2021-23. Research from Federal Reserve Bank of San Francisco