

## Are We There Yet? Implications of Negative Interest Rates for Monetary Transmission and Bank Profitability

More than two years ago, seeking to revive a moribund economy, the ECB embarked on a new monetary policy measure – charging interest on excess liquidity that banks held at the central bank. The move in June 2014 complemented a series of other (non-standard) easing measures aimed at bringing inflation back to the ECB's price stability objective of below, but close to, two percent over the medium term, such as a sizeable asset purchase program (which started late in the year) and offering banks more flexible access to central bank liquidity through wider collateral eligibility and expanded refinancing operations.

### The concept of negative policy rates makes sense

The concept of negative policy rates makes sense. When commercial banks are charged (rather than remunerated) to deposit their excess liquidity at the ECB, they should be more inclined to lend to consumers and companies. If banks hold excess reserves, cuts to the central bank deposit rate (as the marginal policy rate) can effectively lower the interbank and other interest rates, encouraging banks to take greater risks and facilitating portfolio rebalancing. Consumers would then buy more goods, and companies would invest in new productive capacity. Faster economic growth and rising productivity would help prevent inflation from sinking too low – or even becoming negative – which is a sign of economic stagnation.

For a long time, many economists and policy-makers believed that central banks could not cut the policy rate below zero. If they did, the argument went, commercial banks would have to respond by charging their own customers for deposits. As a result, companies and households would

start withdrawing cash and stash it under the proverbial mattress (Bech and Malkhozov, 2016). But when inflation was too low not going below zero percent meant that so-called real interest rates – nominal rates minus inflation – could not fall further. And too high real interest rates would hold back investment and consumption.

In the euro area, real rates in June 2014 were (and likely still are) well above the rate required to raise output to its potential level at a stable rate of inflation (technically, the "natural" rate of interest). So to push real rates lower, the ECB had to move the marginal policy rate into negative territory; this helped the real rate adjust

downward, compensating for inflation below the inflation target (Exhibit 1).<sup>1)</sup> If the decline in the nominal rate also lowers its real rate component, it allows inflation expectations to rise, boosting aggregate demand; however, if both nominal and real interest rates are shifted down, a widening gap leads to deflation pressure.

### The track record of the ECB's negative rate policy

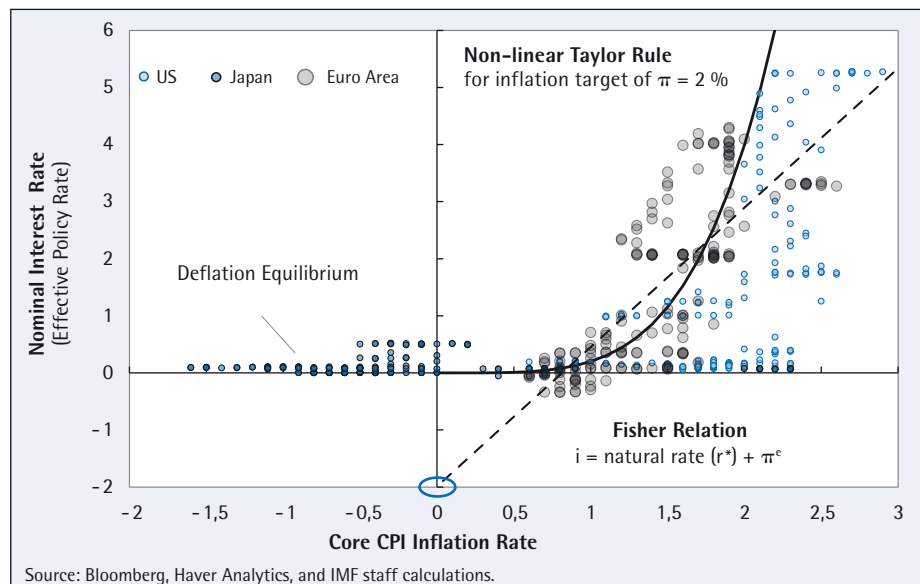
What has been the track record of the ECB's negative rate policy – also adopted by other central banks, notably in Japan and Switzerland – after more than two years? Rate cuts have eased financial conditions, reducing the cost of borrowing for both banks and their customers (ECB, 2016; Heider and others, 2016). Lower funding costs for banks have also strengthened the ECB's "forward guidance", meaning its commitment to keep rates low for an extended period. Lower borrowing rates for both households and firms have also contributed to a modest credit expansion – favorable to growth and inflation. Finally, ECB's deposit rate cuts have helped amplify the impact of its asset purchases, which are intended to spur markets and the economy. That is because banks have reduced their cash balances and instead invested it in riskier, but higher-yielding, assets.

However, there are unique challenges to the implementation of negative rates in the euro area. Since the ECB charges interest only on excess liquidity, the charge is greater in those countries where banks hold large excess reserves. These are generally countries with substantial current account surpluses vis-à-vis other members of the monetary union. At the same time, banks' ability to generate interest revenues for each euro of assets has suffered be-

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*Von den Grundüberlegungen her macht die unkonventionelle Geldpolitik der EZB für die beiden Autoren durchaus Sinn. Bei der Prüfung ihrer Wirksamkeit nach rund zwei Jahren betonen sie aber auch die schwierigen Herausforderungen angesichts der recht unterschiedlichen Bedingungen in der europäischen (Kredit-)Wirtschaft. So verweisen sie beispielsweise auf das Dilemma vieler Banken, unter den nicht zuletzt durch die Notenbankpolitik geschaffenen Marktbedingungen überhaupt die notwendige Rentabilität und die geforderte Eigenkapitalausstattung sicherzustellen. Mit Blick auf die künftige Geldpolitik der EZB befürchten sie bei weiteren Zinssenkungen eine Schwächung der Wirksamkeit der Geldpolitik und tendieren zur Schaffung von besseren Finanzierungsbedingungen für die Realwirtschaft eher zu einem weiteren Ankauf von Assets. (Red.)*

**Exhibit 1. Inflation and Interest Rates, January 2002 – September 2016**  
(Percent, monthly)



cause their reliance on a wide deposit base has prevented them from cutting the amount they pay for customer deposits as much as that they charge for loans resulting in compressed lending margins. Thus, the so-called “stickiness” of deposits becomes the distinguishing element of monetary transmission under NIRP (see Box).<sup>2)</sup> And in several large economies, these pricing frictions on deposits are amplified by a high interest rate pass-

through. For instance, in Italy and Spain, loans are typically indexed to the policy rate (so-called “variable rate loans”). Banks in these countries face reduced margins not just on new lending, but also on existing loans, as discussed in the IMF’s April issue of the GFSR (Exhibit 3, Figure 1).

To some extent banks have been able to mitigate the squeeze on profitability with higher lending volumes, lower interest ex-

penses, capital gains from investments, lower risk provisioning, small increases in fees and commissions, as well as savings from cost cutting (Rostagno and others, 2016). But there are clearly limits to such mitigation measures.

**European Banks: structural challenges to sustainable profitability**

In addition, many European banks already face a number of interrelated cyclical and structural challenges to sustainable profitability. These include long term macroeconomic headwinds such as low potential growth and low inflation, a flattening yield curve compressing margins, and weak diversification of business models that are highly reliant on the growth outlook. These factors have adversely impacted banks’ profit and loss accounts and capital needs. Even if demand for credit were to be lifted from its currently subdued levels, banks’ capacity and willingness to lend are likely to remain modest, particularly as needed provisioning could continue to exert notable downward pressure on profitability going forward. At the same time, many banks, face cost challenges. As sustainable profitability becomes more difficult to achieve, capital-constrained banks become more likely to reduce lending despite declining rates.

For most banks, current profitability is not sufficient to sustain current levels of capitalization. The market expectation of bank profitability is critically influenced by regulatory leverage implied by the capital adequacy ratio (CAR) and the underlying risk-weighting of bank exposures. If risk weights and capital are low, banks can apply higher leverage to returns in order to meet investor expectations based on the return on equity (Exhibit 2). Conversely, lower regulatory leverage entails a higher level of profitability to maintain a given return on equity. Applying this logic to a cross-section of large commercial banks suggests that the profitability of euro area banks is far too low in order to maintain current (and rising) capital requirements, especially when compared to U.S. peers.

There is also considerable heterogeneity across banks in the large euro area economies, with Italian banks, and more recently, German banks coming under more profitability pressure. Strikingly, many banks

**Exhibit 2. Euro Area – Return on Assets Deficiency („RoA Gap“), 2010 – 2016**  
(Percent)

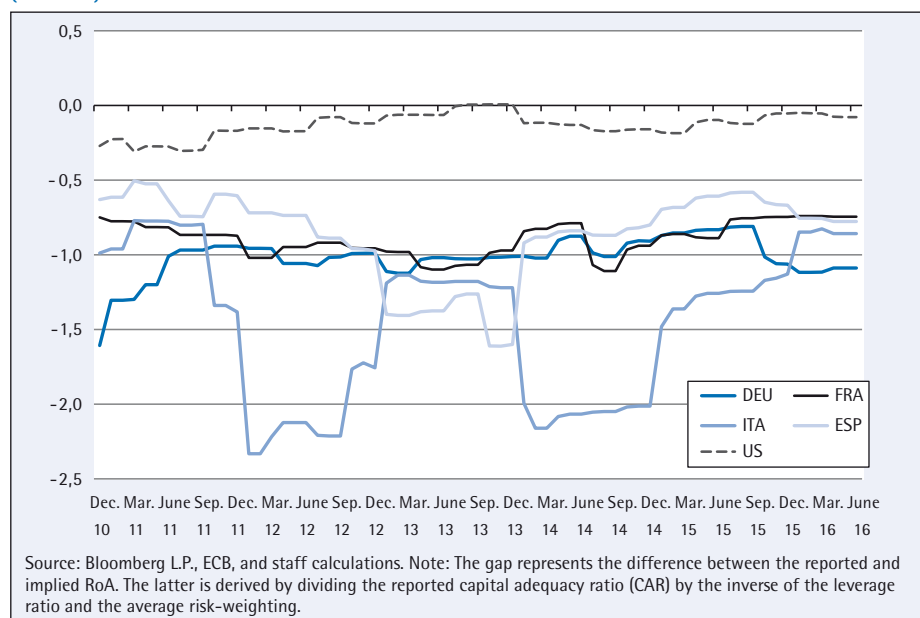
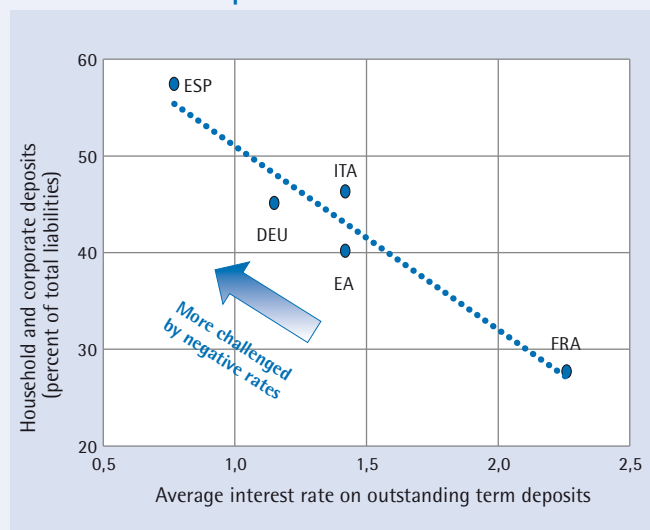


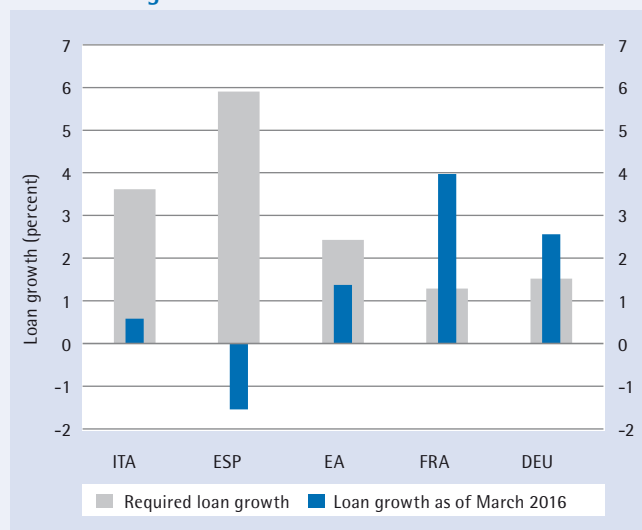
Exhibit 3. Figures 1 to 4

**Figures 1. Deposits as a Share of Total Liabilities and Interest Rates on Deposits**



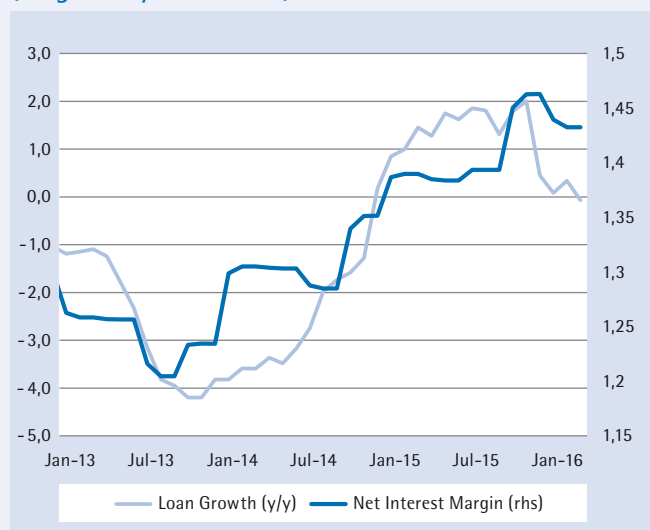
Sources: Bloomberg L.P., Haver, and IMF staff calculations.  
 Note: Deposits from non-monetary financial institutions, as of January 2016; deposit rates are based on households and non-financial corporations.

**Figures 2. Annual Loan Growth Required to Maintain Net Interest Margin as of end-2015**



Sources: Bloomberg L.P., EBA Transparency Exercise (2015), ECB, SNL, and IMF staff calculations.  
 Note: based on the historical pass-through of policy rates and the elasticity of net interest margins to changes in term premia between Jan. 2010 and Feb. 2016; total mortgage and corporate loans at end-2015 to EA residents; scenario assumes an increase of monthly asset purchases (until Sept. 2017) by the ECB and a reduction of the deposit rate by 10bps (as per ECB decision on March 10).

**Figures 3. Average Net Interest Margin and Credit Growth (weighted by bank assets)**



Sources: Bloomberg, L.P.; and author's calculations.

**Figures 4. Average Price-to-Book Value and Credit Growth (weighted by bank assets)**



Sources: Bloomberg, L.P.; and IMF staff calculations.

have for a long time been able to generate sufficiently high leveraged returns (and, thus, shielding themselves from profitability pressures) – despite rising capital requirements – by de-risking (i.e., reducing risk weights) over time. Thus, German (and to some extent French) banks need to be less profitable to maintain capital adequacy

due to low risk weights relative to U.S. peers.

**Limited room for further substantial rate cuts**

Overall, the ECB has limited room for further substantial rate cuts without hurting

the profitability of banks. As outlined in Jobst and Lin (2016) and the IMF staff report on the euro area the prospect of prolonged low policy rates has clouded the earnings outlook for most banks, suggesting that the benefits from NIRP might diminish over time while future lending growth may be insufficient to offset de-

clining interest margins in some countries (Exhibit 3, Figure 2). Further policy rate cuts could bring into focus the potential trade-off between effective monetary transmission and bank profitability. Lower

bank profitability and equity prices could pressure banks with slender capital buffers to reduce lending, especially those with high levels of troubled loans (Exhibit 3, Figures 3 and 4).

Therefore, looking ahead, the ECB may need to rely more on purchases of assets. Additional rate cuts could weaken the effectiveness of monetary policy if lending rates fail to adjust or customers withdraw cash from banks. Focusing on asset purchases instead would raise asset prices and aggregate demand, while also supporting bank lending. This would also facilitate the pass-through of improved bank funding conditions to the real economy.

### Box: Monetary Transmission under NIRP

We assess the impact of negative rates on bank profitability and its implications for monetary transmission when deposit rates become sticky using a general equilibrium specification. We adapt the dynamic stochastic general equilibrium (DSGE model) by Gerali and others (2010) using euro area data at end-2015. In the model, banks behave monopolistically in intermediating funds between savers and borrowers and setting rates on loans and deposits subject to adjustment costs as a proxy for pricing frictions. A higher cost implies lower adjustment for a given shock, and, thus, the rates are more "sticky." The modeled banking sector comprises two retail branches, which are responsible for lending and deposit-taking, while the wholesale unit manages the capital position of the banking group subject to a simple solvency constraint, and, in addition, provides wholesale loans and raises wholesale funding. Banks can substitute some cheaper wholesale funding for deposit funding.

However, other potentially mitigating changes to banks' profitability are not considered. While higher asset prices boost investment income, lower funding costs, and decrease provisioning expenses, these benefits weaken over time relative to the adverse effect of compressed interest margins where the pass-through of policy rates is high and credit demand is low.

"Sticky deposits" seem to either diminish bank profitability or weaken monetary transmission. We examine three different scenarios reflecting banks' response to a policy rate cut of 1.0 percentage point (text chart above) (Exhibit 4). In the first case (blue line), we assume that monetary transmission remains intact. Banks reduce both the deposit and lending rates, and their profitability increases over time as output and inflation outturns improve. In the second case (green

dotted line), price-setting banks face (artificially) higher adjustment costs in setting deposit rates (i.e., deposits become "sticky"). Banks optimally choose to lower lending rates and boost lending – and risk exhausting their capital buffers; their profitability declines as additional lending is initially insufficient to offset the compression of lending margins due to sticky deposit rates. In the third case (red line), banks' solvency constraint is strictly enforced for the second scenario of sticky deposits. Here, monetary transmission breaks down as banks (initially) increase lending rates but reduce lending volumes given the limited substitution of wholesale funding (due to a large deposit base). However, the impact on output is still positive, although smaller over the short term, as the wealth and substitution effects (from lower discount rates) pushes up loan demand, supporting consumption and investment.

Under all three scenarios, the simulation results suggest a positive aggregate impact of NIRP, confirming that the economic lower bound of negative policy rates is far below the nominal zero lower bound (ZLB). However, pressures on bank profitability rise significantly over the short term if banks are capital-constrained and deposit rates become "sticky". A comparative statics exercise of the results above reveals a significantly higher impact of "stickier" deposits on profits for weaker banks (but diminishes over time) (Exhibit 5). However, the impact of pricing frictions in loan markets (i.e., lower pass-through of lending rates due to lack of banking competition) seems to dominate the impact of "sticky deposits" on bank profitability.

**Exhibits 4 and 5 can be downloaded free of charge from the homepage of ZfgK ([www.kreditwesen.de](http://www.kreditwesen.de)); Keyword Jobst/Lin**

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#### Footnotes

- 1) Already subdued interest rate expectations limit any additional support provided by forward guidance on policy rates, with slowing growth challenging the credibility of commitments to anchor inflation expectations.
- 2) The downward stickiness of deposit rates could result in a difficult trade-off between effective monetary transmission and bank profitability. If negative policy rates are transmitted to lower lending rates (and term premia), banks are likely to see their interest earnings decline unless they either impose negative rates (or commensurate fees) on deposits or substitute more wholesale funding (at lower money market rates) for deposits. But retail deposit rates tend to be downward sticky since (i) households and small businesses do not face the same set-up cost as banks and corporations in storing cash, and (ii) a zero percent interest rate could be a psychological threshold.

Alle Abbildungen zu diesem Beitrag können in der Farbversion kostenlos auf der Homepage der ZfgK unter Eingabe von Titel und/oder Autorennamen abgerufen werden: [www.kreditwesen.de](http://www.kreditwesen.de)