

Benoît Cœuré: Life below zero – learning about negative interest rates

Speech by Mr Benoît Cœuré, Member of the Executive Board of the European Central Bank, at the annual dinner of the ECB's Money Market Contact Group, Frankfurt am Main, 9 September 2014.

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Accompanying slides can be found here: <http://www.ecb.europa.eu/press/key/date/2014/html/sp140909.en.pdf>

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Ladies and Gentlemen (Slide 1),

It is a pleasure to be here with you tonight. The Money Market Contact Group plays a key role in informing the ECB's decision making process. As a tribute to your collective foresight, I would like to recall that in your meeting on 25 June 2012, you were among the first to discuss the operational consequences of lowering the ECB's Deposit Facility Rate (DFR) to zero or below zero. This will be the topic of my remarks tonight.¹

A few months ago, on 5 June, the ECB lowered the main refinancing rate to 0.15%, the marginal lending rate to 0.40%, and – maybe most noteworthy – the Deposit Facility Rate to minus 0.10%. Last week, on 4 September, these rates were cut to 0.05%, 0.30% and – 0.20% respectively, and it was stated that the lower bound had now been reached. The ECB also decided in June to remunerate current account balances in excess of the minimum reserve requirements at the deposit facility rate as opposed to zero as was the case previously. With these measures, we entered practically uncharted territory.

When Gregory Mankiw in 2009 stated in the New York Times that “it may be time [...] to go negative”, he revived an idea that may seem odd at first. If lowering interest rates stimulates the economy and policy rates are already very low or even zero, then why not keep cutting rates and have negative interest rates? The idea of negative rates, that is, lending 100 and getting back say 95, may seem absurd “but remember this: Early mathematicians thought the idea of a negative number was absurd [too]”.²

In fact, the idea of negative interest rates, or “taxing money”, goes back to the late nineteenth century, to Silvio Gesell, the German founder of “Freiwirtschaft”. The historic academic opinion on Gesell is divided. Irving Fisher supported him and John Maynard Keynes called him “a strange, unduly neglected prophet”, others a “typical monetary crank”.³

So where do we stand in the euro area? I would like to answer this question today by addressing the following points:

- What does it mean to have one of our policy rates, the deposit facility rate, below zero?
- Why did we go negative?

¹ ECB DG Market Operations, 2012, Summary of the discussion of the Money Market Contact Group, 25 June 2012, available on the ECB website. For an early discussion, see also Cœuré, B., 2012. “Central banks and the challenges of the lower bound”. Intervention at the Meeting on the Financial Crisis hosted by the Initiative on Global Markets, at the University of Chicago Booth School of Business, Miami, 19 February.

² Mankiw, G., 2009, “It may be time for the Fed to go negative”, New York Time (April 19). See also W. Buiter, 2009. “Negative interest rates: when are they coming to a central bank near you?”, May 2009.

³ See Ilgmann, C. and M. Menner, 2011, “Negative nominal rates: history and current proposals”, International Economics and Economic Policy, 8, 383–405. See also Gesell, S., 1958. The Natural Economic Order. London: Peter Owen Ltd., and Fisher, I., 1933. Stamp Script. New York: Adelphi.

- What are in principle the benefits and costs of such a move?
- And, with the benefit of some hindsight since June, what is the initial assessment?

To begin with, it is important to point out that the deposit facility rate has a specific, narrow meaning: under a negative DFR, banks that have more funds in their account with the ECB than what they need to fulfil their reserve requirement lose some money. Suppose, for instance, that a bank has €100 million of excess reserves continuously for one year, then at an interest rate of -0.20% it receives back € 99.8 million, so the cost of depositing funds with the ECB for a full year is € 200,000.

Why do banks accept such a cost of depositing excess reserves with the central bank? The answer is that the alternatives to depositing excess reserves are also costly. In fact, the cost of using alternatives to central bank deposits determines to what extent the rate on excess reserves can go negative in practice.

Banks can always choose to hold physical currency instead of electronic money in their accounts with the ECB. Since physical currency has a zero nominal rate of return, there is what I would call an “economic lower bound” for the rate on excess reserves. It is difficult to identify but it is not zero because the effective rate of return on currency is negative. One does not even need to impose a demurrage rate or regular stamping on banknotes, as Irving Fischer has proposed based on Gesell’s ideas.⁴ There is a cost of storing, holding, and more importantly, using physical currency.⁵ This involves the cost of renting, maintaining and securing storage facilities such as vaults as well as the cost of shipping currency around in a safe and timely manner. A recent ECB study estimated the private cost of cash payments to be 1.1% of GDP on average in the participating countries.⁶ The unit *social* cost was estimated at 2.3 cents per euro of transaction. This is substantially higher than the unit social cost of a credit transfer or other non-cash means of payments per euro of transaction. Because the overnight unsecured money market alone currently involves hundreds of banks with an aggregate transaction volume of around € 40–50 billion every day, replicating this scale of transacting with physical money would be a formidable and costly task, both privately and socially.

I would not go as far as Kenneth Rogoff and conclude that having only electronic money, by pushing down the economic lower bound, would recreate room for manoeuvre for central banks in a protracted low inflation environment.⁷ The ECB is committed to bringing euro area inflation back at a level below but close to 2%, in line with its mandate.

But what is then the rationale for a negative rate on the deposit facility? Why impose a cost on banks’ excess reserves?

One should view the negative rate in the context of the ECB’s aim to provide further monetary policy accommodation *inter alia* by lowering policy rates without impairing market intermediation.⁸ There are a number of reasons why it is desirable to keep a certain distance

⁴ Stamping of banknotes was famously tried in the city of Wörgl, Austria, in 1932. Bills were introduced with a devaluation rate of 1% per month unless holders would buy stamps to extend their nominal value. See Champ, B., 2008. Stamp script: Money people paid to use. Economic Commentary, Federal Reserve Bank of Cleveland, April.

⁵ Beyond the direct opportunity cost, moving the deposit rate into deeply negative territory may involve indirect costs, depending on the ability of banks to pass it to their customers, in particular retail ones.

⁶ Schmiedel, H., Kostova, G., and W. Ruttenberg, 2012. “The social and private costs of retail payment instruments. A European perspective”, ECB Occasional Papers Series , No. 137.

⁷ Rogoff, K., 2014, “Costs and benefits to phasing out paper currency”, NBER Working Paper 20126

⁸ For an early explicit analysis of this rationale in a New-Keynesian model, see Buiter, W. and N. Panigirtzoglou, 2003, “Overcoming the zero bound on nominal interest rates with negative interest on currency: Gesell’s solution”, *The Economic Journal*, 113, 723–746.

between the main refinancing and the deposit rates. The relative difference between the cost of borrowing from the ECB and the benefit of depositing with the ECB determines the incentive to lend in the interbank market. Having an active interbank market is important to obtain price signals about the transmission of policy rates into the economy. It is also important to reduce bank excessive reliance on central bank money, which has been a key factor of resilience in the post-crisis environment.

In the words of Michael Woodford, “the demand for [overnight funds] is a function of the location of the overnight rate relative to the lending rate and the deposit rate, but independent of the absolute level of any of these interest rates.”⁹

To see the role of the relative difference, consider the following thought experiment. For the sake of the argument, let me abstract from credit risk in the overnight market and assume that there is enough eligible collateral to borrow from the ECB. Hence, there would be no material difference between very short-term secured and unsecured borrowing and lending. Banks with excess reserves would only lend in the interbank market at a rate that is above the deposit rate. Banks with a shortage of reserves would only borrow in the interbank market at a rate that is below the main refinancing rate. Suppose now the main refinancing rate is equal to the deposit rate. Then there is no rate at which trade is possible. Hence, it is important to keep a spread between the main refinancing and the deposit rate in order to support market activity.

Another benefit of lowering the deposit rate together with the main refinancing rate is that in the current situation with excess liquidity, short-term interest rates such as EONIA track the deposit rate more closely than the main refinancing rate.¹⁰ The banking system as a whole has excess liquidity, which currently stands at around € 130 billion. When the excess liquidity increases, rates fall since less must be borrowed in the interbank market (the demand curve shifts down). In order to make sure that the monetary policy accommodation is passed on to the interbank market under fixed-rate full allotment and excess liquidity, it is therefore not enough to lower just the main refinancing rate. In fact, the deposit rate may be the most important policy rate of a central bank in an environment of excess liquidity.

The decision to lower rates, which was accompanied by a number of other measures to stimulate credit to the economy such as “targeted” long-term operations (to induce banks to lend more to the real sector) and an announcement of purchases of asset-backed securities and covered bonds based on claims on the euro area real economy, is also fully in line with the ECB’s forward guidance. Forward guidance implies that interest rates remain at present or lower levels for an extended period of time conditional on an assessment of the economic outlook.

Following the June decision, the lower policy rates were transmitted well to the money market and, in line with forward guidance, market uncertainty about the expected path of policy rates fell. EONIA forwards curves flattened and shifted down (Slide 2). In addition, the volatility of EONIA rates as well as the option-implied volatility of short-term interest rates dropped. The lower policy rates were also transmitted to longer maturities and to market segments other than the unsecured money market. EURIBOR rates and rates implied by EURIBOR futures fell after the June decision and again after the September decision (Slide 3 and 4). Unsecured money market interest rates are now negative for a maturity of up to two weeks. Besides, the General Collateral (GC) pooling repo curve as well as yields on euro area Treasury bills and notes have further adjusted.

⁹ Woodford, M., 2001, “Monetary policy in the information economy”, Paper presented at the Federal Reserve Bank of Kansas City Economic Symposium at Jackson Hole (30 August–1 September).

¹⁰ For a review of the impact of non-standard monetary policy on money market functioning, see Monnet, C. and M. Bech, 2013, “The impact of unconventional monetary policy on the overnight interbank market”, Reserve Bank of Australia 2013 Annual Conference Volume on “Liquidity and Funding Markets”.

The EONIA has regularly been set in negative territory since 28 August together with stable trading volumes (the average daily EONIA volume from January to June 2014 was € 26.1 billion and was € 28.9 billion since June) (Slide 5) and homogenous transmission to closely substitutable market segments, such as GC pooling repo, are evidence that a large fraction of unsecured money market transactions can take place at negative rates without hampering market functioning. This reflects an effective and well-coordinated preparation of market participants since the ECB first mentioned the possibility of bringing the DFR below zero.

The fact that money market trading volumes did not fall (they actually rose) is remarkable given the fears some observers had expressed, informed by the Japanese experience of the 1990s, on the potential impact on market functioning of a negative DFR and of very low policy rates more generally.

Will the transmission of lower short-term rates to a lower cost of credit for the real economy be as smooth? While bank lending rates have come down in the past in line with lower policy rates, there is a limit to how cheap bank lending can be. The mark-up that banks add to the cost of obtaining funding from the central bank compensates for credit risk, term premia and the cost of originating, screening and monitoring loans. The need for such compensation does not necessarily fall when policy rates are lowered. If anything, a central bank lowers rates when the economy needs stimulus, which is precisely when it is difficult for banks to find good loan making opportunities. It remains to be seen whether and to what extent the recent monetary policy accommodation translates into cheaper bank lending.¹¹

Another concern with lowering rates is that it may contribute to the instability of the financial sector. While this can be a valid concern, in practice, a causal chain is difficult to establish. Do low rates really lead to instability (e.g., through an excess search for yield) or are rates low because there has been instability in the financial system and the economy is in need of stimulus?¹² That said, reducing excessive risk aversion in financial markets has been a welcome (side) effect of central bank policies during the crisis. The question is whether risk-taking in the financial sector has now already gone too far, contributing to growing financial imbalances, frothy asset price valuations and too loose credit standards. Irrespective of the answer to this question, given the low inflation environment, it is clear that monetary policy cannot currently assume the role of addressing such concerns for the euro area. It is therefore the task of macro-prudential policies to deal with potential financial imbalances. The supervisory set-up in Europe has undergone significant improvements that will help to ensure the soundness of the financial system. As we enter an extended period of low interest rates, we must stand ready to use to their full extent the new macro-prudential instruments that the national competent authorities and the ECB are now entrusted with.

An important aspect of lowering policy rates was that it also reaffirmed our forward guidance and helped to clarify the ECB's commitment to ensure that the monetary policy stance remains appropriate to the needs of the euro area economy. This is reflected in the EONIA-OIS curve being now flat and in negative territory for a maturity of up to three years, reflecting market expectations of negative EONIA fixings well into 2017 (Slide 6), and in a widening gap between the expected path of US and euro area interest rates. (Slide 7).

A negative deposit rate can, however, also have adverse consequences. For a start, it imposes a cost on banks with excess reserves and could therefore reduce their profitability.

¹¹ For a recent review of the bank lending channel of monetary policy transmission with a special focus on the crisis experience, see Gambacorta, L. and D. Marques-Ibanez, 2011, "The bank lending channel: Lessons from the crisis", BIS Working Paper No. 345.

¹² For causal evidence that lower interest rates lead to more risk-taking by banks, see Jimenez, G., Peydro, J., Ongena, S. and J. Saurina, 2012, "Hazardous time for monetary policy: What do 23 million loans say about the impact of monetary policy on credit risk-taking?", *Econometrica*, forthcoming.

Note, however, that this applies to any reduction of the deposit rate and not just to those that make the rate negative. For sure, lower bank profitability could hamper economic recovery, especially in times when banks have to deleverage owing to stricter regulation and enhanced market scrutiny. But whether bank profitability really falls when policy rates are lowered depends more generally on the slope of the yield curve (as banks' funding costs may also fall), on banks' investment policies (as there is scope for them to diversify their cash investment both along the curve and across the credit universe) and on factors driving non-interest income.¹³ More fundamentally, banks are profitable in a healthy economy where households and companies strive to finance their projects, which is what our accommodative monetary policy aims to achieve in the first place.

In fact, both ensuring a smooth transmission of our low policy rates to the cost of credit to the economy and supporting the profitability of banks will ultimately depend on whether economic policies at the euro area and at the country level are successful in putting euro area economies back on a path of strong and stable growth, by mobilising both supply-side and, where available, demand-side instruments. A prudent, well-capitalised banking system is needed in any case, and the ECB's Comprehensive Assessment together with the start of the Single Supervisory Mechanism are key in this respect.

In order to avoid the cost of excess reserves, banks may also, decide to borrow less from the ECB. This would reduce excess liquidity in the banking system and put upward pressure on interest rates in the interbank and bond market, which could counteract the reduction of policy rates. But this is not what we have seen so far.

Despite the discussion on the adverse consequences of a negative deposit rate, there was no significant impact on the functioning of money markets. I already mentioned the smooth transmission of rates and the stable trading volume in EONIA. Similarly, the level of excess liquidity or the amount of deposits with the ECB (Slide 8) has been largely unaffected.

However, one possible reason for the stable level of the money market function could be the declining, but still existing fragmentation of the money markets. While a lot has been achieved, for example TARGET2 imbalances have fallen by nearly half since their peak in mid-2012 (at € 572bn on 3 September, € 541bn below their peak level reached in July 2012), market fragmentation in the euro area is still present.¹⁴

If banks with excess reserves are predominately highly profitable banks located in non-stressed countries, then a potential adverse effect on bank profitability may be less of a concern from the financial stability perspective. Similarly, if banks have good reason to borrow from the ECB, for instance when other sources of funding are not available, and if those banks that borrow are not necessarily the same as those that deposit with the ECB, then excess liquidity in the banking system may not fall.

What about the impact of negative rates on market fragmentation in the euro area? Evidence from actual money market transactions shows that fragmentation still significantly hampers the smooth transmission of lower rates across the euro area. Banks located in non-stressed countries can now borrow in the overnight unsecured market at negative rates. Rates for borrowers located in stressed countries are mostly positive and the distribution of rates is wide, ranging from slightly negative to slightly above the main refinancing rate.

That said, there is some evidence that lower rates have reduced fragmentation in secured markets. The search for yield in the low rate environment has increased the demand for

¹³ There is evidence that the lower interest rate environment in the United States adversely affects money market funds, see Kacperczyk, M. and M Di Maggio, 2014, "The unintended consequences of the zero lower bound policy", Working Paper, Columbia Business School. This is, however, less of a concern in Europe where money market funds are not central to the financial system.

¹⁴ For more information, see the ECB Report "Financial Integration in Europe" (April 2014).

higher yielding, but still safe products such as repo or sovereign bonds, including those of non-core countries.¹⁵ The higher demand has pushed down and thus compressed interest rates in secured markets.

Let me conclude. Given the theoretical arguments for and against lowering some policy rates into negative territory, and given the practical experience so far, what is the verdict? Or, coming back to the opinions on Gesell: should he be considered a prophet or monetary crank?

While the final verdict is certainly still out, based on the presented evidence so far, it seems fair to say that the lowering of policy rates, with the deposit rate moving into negative territory, has provided an appropriate monetary policy stimulus to the euro area economy, comforted the forward guidance of the ECB, and contributed to some reduction in market fragmentation, without having an adverse impact on the functioning of money markets.

As the money market settles in negative territory, and other market segments start experiencing negative yields, we now have to make sure that the broader market community is prepared to cope with this new environment.

Thank you for your attention.

¹⁵ According to the latest ICMA survey of 4 September, the repo market size increased by 3.3% during the last 6 months from EUR 5,499 billion to EUR 5,782 billion.