MONETARY POLICY AT THE ZERO LOWER BOUND

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Abstract

Both interest rates and inflation rates in the Euro area have reached levels dangerously close to zero. By the strategy of quantitative easing the ECB has been providing ample liquidity – yet without lasting success. Several asymmetries in policy transmission and monetary policy have been acknowledged when interest rates hit the zero bound. This paper starts with a short review of these asymmetries. Afterwards it turns to the issues of credibility and commitment. It is argued that the inflation forecasts of the ECB are central for the communication strategy. In the current situation they should signal the willingness to stick to low interest rates. Yet the ECB is shown to be rather more optimistic than other forecasters when the prevailing threats of deflation are concerned.

Keywords: Monetary Policy, Deflation, Term Structure, Expectations, Liquidity Trap

JEL classification: E31, E52, E58, E61

Introduction

Since the beginning of the financial crisis, the ECB has been lowering interest rates - first in order to ease the outright effects of the crisis, later to cope with continuing disinflation in the countries of the currency union and finally to beat the risk of deflation itself. The deposit facility touched the zero bound in July 2012 and even has been negative since June 2014. Monetary policy in Europe is currently being conducted at the zero bound. Inflation in the Euro area – the principle goal of the ECB - has been on a downward trend since the beginning of 2011. Forecasters – the ECB itself among them – continue to emphasize that lately headline inflation has been very low while core inflation has started to pick up again. While there is no debating the fact that the sharp drop in oil prices in 2014 has aggravated the disinflationary process, doubts remain as to the question if the risk of deflation itself has been banned.

For many years the academic discussion about monetary policy at the zero lower bound mainly focused on the situation in Japan (e.g. Ito/Mishkin 2004). At the beginning of the millennium it was first the US who faced sharp decreases in inflation rates. Monetary policy in Europe concentrated on fighting inflation, banning the thought of deflation more or less from the policy strategy - and from all official statements. The Bundesbank even went so far as to setting only an upper limit to inflation, while the ECB considers inflation rates below (but close to) two percent as price stability. Nevertheless, it seems that for many years monetary policy making gave different weights to the risks of inflation as opposed to deflation. Obviously these asymmetries have had a counterpart in the research on monetary policy transmission. It was mainly the Keynesian liquidity trap that addressed the nonlinearity in transmission when interest rates hit the zero bound. And for quite some time there seemed to be a fairly strong belief that the concept had lost its practical relevance (Krugman 1998).

So the question arises as to other nonlinearities in the transmission of monetary policy at the zero bound: Do they or should they lead to asymmetries in monetary policy in times of inflation as opposed to deflation? (e.g. Bernanke et al. 2004, Jannsen et al. 2015, Coenen et al. 2003)

This paper focuses on the current situation of the ECB and addresses the question of potential asymmetries when fighting disinflation instead of inflation. Because of the prevailing situation in Europe the operational level of monetary policy is considered more prominent than the question of policy targets. The paper starts with a short review of the credit channel and the asset price channel of policy transmission. Common wisdom holds that the underlying mechanisms of these channels do not qualify as intermediate targets in normal times. It has been suggested that a deflationary situation might change this assessment (Eggertson 2003). Subsequently, the main focus in this paper is on the interest rate channel. The ECB can be said to be following the Keynesian proposal to use the fiscal channel in a liquidity trap, putting downward pressure on long term interest rates. But monetary policy is also transmitted via interest rate expectations. It is argued that the role of expectations in the interest rate channel played a strong role in the conduct of monetary policy in the 80s and 90s, when monetary policy makers focused strongly on rules and commitment. In the current situation the role of communication appears to have been weakened: The ECB has not fully adapted its communication strategy to the threats of deflation – it is behaving asymmetrically. To stress the argument, one of the main tools of monetary policy communication is analyzed: the publication and discussion of inflation forecasts. Finally possible reasons for this asymmetric behaviour are discussed.

Monetary policy transmission under deflation

While the interest rate channel still can be seen as the central part of monetary policy transmission, the growing complexity of financial and credit markets has given rise to other mechanisms that link monetary policy to the real economy. The main instrument of monetary policy is the overnight rate in the money market. Effects of changes in the overnight rate on longer term interest rates and inflation rates in the Euro area have reached levels dangerously close to zero. By the strategy of quantitative easing the ECB has been providing ample liquidity – yet without lasting success. Several asymmetries in policy transmission and monetary policy have been acknowledged when interest rates hit the zero bound. This paper starts with a short review of these asymmetries. Afterwards it turns to the issues of credibility and commitment. It is argued that the inflation forecasts of the ECB are central for the communication strategy. In the current situation they should signal the willingness to stick to low interest rates. Yet the ECB is shown to be rather more optimistic than other forecasters when the prevailing threats of deflation are concerned.

The asset price channel of monetary transmission is the one that is least considered to be of any practical use to policy makers. The communication ties between financial markets and the central bank are much too close to use asset prices as intermediate targets of monetary policy (Mishkin 2004). What is more, in the current situation of zero interest rates the perfect substitutability between money and assets makes any links between asset prices and the real economy even less reliable than they would be in normal times (Bernanke et al. 2004). So it has to be assumed that apart from being useless in the official strategy of a central bank, the normal transmission via asset prices is limited in the current situation of the ECB.

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A notable exception to this general assessment might be the exchange rate channel. Its relevance in the transmission mechanism is undebated even in times of deflation or disinflation. Its effectiveness has been established for small economies like Switzerland (Svensson 2001, 2003). For larger economies the beggar-thy-neighbour effects of currency depreciations put a decisive limit to their role in monetary policy. Nevertheless, the increasing worries about the outlook for Europe, and the implications this might have for the world economy, have brought this mechanism back into focus even for the ECB. It seems that in the current situation the depreciation of the Euro might be tolerated for a limited time. It might be crucial in this context, that the ECB itself has classified this depreciation as an accidental and unexpected by-effect of other measures (ECB 2015)

Credit channel

The credit channel of policy transmission comprises both the balance sheet and the bank lending channel. They emphasize that monetary policy transmission is boosted by the effects of interest rates on assets and liabilities of private companies and commercial banks, respectively. The effects of both channels are more relevant the higher the leverage ratios of banks and companies: A strong reliance on external financing increases the risk of a liquidity crunch. The drop in asset prices makes further extension of credits impossible for banks – or access to credits impossible for companies. Therefore the overall effect of this channel is assumed to be stronger the more relevant SMEs are in an economy (Bernanke/Gertler 1995; Kashyap/Stein 1994; Angeloni et al. 2003)

While the traditional channels of policy transmission emphasize the role of credit demand for monetary growth, the credit channel focuses on supply side restrictions: Potential credit demand by private companies is not being satisfied for reasons of securitization either on the part of companies or of the banking sector. Empirical studies on the magnitude of this effect focus on the existence of credit crunches that are particularly relevant when interest rates are high. So the credit channel obviously is about nonlinearities in policy transmission. But it emphasizes effects that can be expected in times of high and rising interest rates. How about a situation in which interest rates reach the zero lower bound?

The asset price effect of decreasing interest rates improves the balance sheets of commercial banks as well as private companies. Hence, as long as interest rates are decreasing, the bank lending channel is strengthening the effects of monetary policy in the same way as it is when interest rates are rising. In a situation where interest rates touch the zero bound this effect will come to an end. Research by other authors suggests that the credit channel is more relevant when asset prices are still falling than at later stages of a crisis (Jannsen et al 2015).

Obviously, in a situation where credit supply is generally limited by balance sheet effects this will affect the monetary expansion – even though the limitation might not be caused by monetary policy. Possible reasons could be related to the requirements of banking supervision, which may reduce credit availability in times of economic recession. But this is not a matter of monetary policy: Potential conflict of interest between banking supervision and monetary policy goals has led to a rather strict separation of the two in Europe. Therefore the hands of the ECB are somewhat tied in this matter - at least as far as a potential binding impact of balance sheets is concerned.

Nevertheless, since the beginning of the crisis the ECB has been taking some effort to improve credit availability on a more general level, the most prominent being the large increase in the availability of central bank money to the banking sector. The result of this strategy of "quantitative easing" has been an over-liquidity in the money market. This and the extensive use of the deposit facility by the banking sector have given rise to worries about the resulting inflationary threats.

The second effort is the bank lending survey that is being conducted on a regular basis by the ECB and that is giving evidence on potential shortfalls in credit supply as they are gauged by the banking sector. Having been established when the ECB first started to exist, and when monetary policy was still expected to be fighting inflation instead of deflation, it is still in place and is giving no indication that a credit crunch might be at work at the time being (ECB 2014, 2015).

After this short discussion of possible credit crunch effects we are left with the notion that the current threat of deflation looks more like a demand side than a supply side phenomenon in the credit markets. What is more, the credit channel does not seem to offer special risks in a situation of zero interest rates.

Interest rate channel at the zero bound

The interest rate channel states that monetary policy is transmitted first by reactions in the term structure of interest rates and subsequently by savings and investment decisions of both firms and private households. According to the classical hypothesis, long term interest rates equal average expected short term rates, possibly augmented by risk-premia on the longer maturities. Concerning the transmission of interest rate changes to the real sector, the relation between nominal and real rates is central. According to the Fisher hypothesis the difference between the two are (expected) inflation rates.

The oldest analysis of the interest rate channel in a deflationary situation is the Keynesian liquidity trap. In this situation money and bonds become perfect substitutes. Hence an additional supply of liquidity does not feed into lower interest on all maturities, as banks and private households prefer to hold cash. This situation is most likely to occur at zero – or very low – interest rates. This is why some authors call the current situation of interest rates hitting the zero bound a liquidity trap (Krugman 1998).

The threat of this situation is that monetary policy becomes completely ineffective when both interest rates reach the zero bound and inflation rates become zero or even negative. Both are currently true in the Euro zone. As it is well known, the Keynesian remedy in this situation is to use fiscal policy measures with accommodating monetary policy instead of monetary policy alone. Some authors refer to this as the fiscal channel of monetary policy transmission. The main effect of this Keynesian policy tool is a direct influence on longer maturities, so that the Central Bank can influence the whole term structure. It has also been stressed, that this mechanism can only be effective if the Central Bank is credible in signaling its willingness to stick to very low interest rates until the threat of deflation has been banned (Auerbach/Obstfeld 2004, Bernanke et al. 2004, Eggertson/Woodford 2003).

Obviously, the massive purchases of bonds by the ECB can be considered as a strategy that follows this Keynesian recommendation. The effect on longer term interest rates has been confirmed by many commentators – even though the ECB has hinted at its willingness to neutralize the liquidity effects when the time comes, which means that in this situation of deflationary threats the ECB still hints at its willingness to fight inflation. It is supported in that risk assessment by the BIS, for instance (Hannoun 2012).
What else can be done to affect the whole term structure and not only short term interest rates? As has been mentioned above, the main link between the two are expectations concerning the future path of interest rates. The fact that expected interest rates play a powerful part in monetary policy transmission has been acknowledged since the seminal papers by Kydland/ Prescott (1977) and Barro/ Gordon (1983). Both papers were written considering the threats of increasing instead of decreasing inflation rates. Both argue that if monetary policy does not only focus on inflation but also on economic growth, the temptation to lower interest rates beyond what has been expected by the public might endanger price stability. And worse, the fact that the public knows about these temptations will bias interest rate expectations downwards and hence give rise to a potentially vicious circle.

The resulting importance of credibility has influenced monetary policy making ever since. The discussion of rules versus discretion led central banks to disclose great parts of their decision making processes. This can be accomplished by sticking to a limited and well explained set of indicators, as the Bundesbank and later the ECB did. The Bundesbank’s concept of targeting M3 as an intermediate goal was probably closest to a rule based strategy. The two pillar strategy of the ECB somewhat loosened this concept. An alternative strategy is being followed by the Fed and the Bank of England by publishing their minutes (and the communication skills of the former Fed Chairman Alan Greenspan). The two different approaches are also related to differing policy goals: While the Bundesbank and the ECB focus solely on inflation, both the Fed and the Bank of England have committed to targeting economic growth as well as inflation rates.

Credibility at the zero bound

Because of the assumed inflationary bias of monetary policy the notion of credibility has always centered on the question of how to fight inflation (instead of deflation) without affecting real growth too strongly. Maintaining low inflation rates in this scenario equals a prisoner’s dilemma situation between the central bank and the public, where both parties do best if they stick to a low inflation scenario at all times. In this situation the question of threats becomes relevant. In the European context a strong component of threats on the part of the central bank has always been to be very “conservative” about the intentions of monetary policy (Rogoff 1985). On the operational level of monetary policy, “conservativeness” can be proved by the assessment of inflationary risks by the central bank as opposed to other forecasters. And more: By the manifested willingness to react strongly to perceived upward risks in the inflation outlook - no matter how that might affect economic growth.

What becomes of these credibility issues in a deflationary situation? In this situation the challenge for the Central Bank is to credibly inflate the economy (Eggertson 2003). In order to do so it must make sure, that interest rates are low over the whole term structure. Some authors have stressed, that when approaching the zero bound, the decrease in interest rates has to be very aggressive. The reason is much the same as in a situation with an inflationary bias: Anticipation of the zero bound amplifies the magnitude of adverse shocks (Adam/ Billi 2004). The mechanisms by which credibility may be established in times of disinflation have been discussed in the literature: Most commentators favor the concept of forward guidance that is currently being followed by the ECB (Filardo/Hofmann 2014, Woodford 2012).

This concept can be seen as an adaption of the old rules’ concept: By tying one’s hands, it is argued, the public will be more willing to believe that interest rates will stay low until the risk of deflation is banned. In order to establish this guidance, calendar based as opposed to state contingent strategies are discussed. Uncertainties – and public knowledge about these uncertainties – make state contingent concepts more attractive. The indicators that seem appropriate in this context are the ones that can be deducted from the policy strategy – and are used in normal times as well.

So the relevance of the rules principle seems to apply when fighting inflation as well as when fighting deflation.

The second part of the credibility issue concerns the more informal communication – the “threats”. In the communication of their monetary policy stance it is common practice for Central Banks to mirror their assessment of the economic and especially the inflation outlook to that of other forecasters. For the United States the relevance of the Central Bank forecast for expectations formation has been proven (Romer/Romer 2000). In order to prove their conservativeness the Bundesbank and later the ECB have always made a point of being rather pessimistic about its inflation outlook – so as to signal their willingness to combat any threats to price stability. Most of the time inflation forecasts would lie on the top of the prevailing range. If this communication channel is taken seriously in the current situation, the ECB should be more pessimistic than the average forecaster about the risks of deflation. So the ECB outlook should be lower than the average forecast. Just as in times of too high inflation rates this could signal the willingness to stick to the appropriate path of monetary policy longer than it would be expected in “normal” times. This would comply with a policy stance that has been suggested in the literature: to be rather dauntless in loosening policy conditions.

If the ECB is making use of this communication channel can easily be checked by comparing forecasts since the risk of a disinflationary process has been visible. In order to do so we have to compare the ECB inflation outlook with that of others. Here we consider the European Commission, the OECD and the Institut für Weltwirtschaft in Kiel – who have a strong focus on monetary policy and are known for a rather conservative view as far as monetary policy making is concerned. The time period begins at the beginning of 2011, the year in which inflation rates began to fall. Forecasts for the current and for the respective next year are considered in turn.

The ECB publishes standard deviations of their forecast along with the forecast itself. So it is possible to construct approximate confidence bands using the standard normal distribution. In the pictures below 90% bands of the ECB forecast are given together with the forecasts of each of the other institutions in turn. The current year forecasts are:
Figure 1: Current year inflation forecasts of ECB and OECD, own calculations

Figure 2: Current year inflation forecasts of ECB and European Commission, own calculations

Figure 3: Current year inflation forecasts of ECB and IFW, own calculations

While the forecasts of each of the other institutions lies mostly within the 90% interval of the ECB forecast it becomes visible that the external forecasts lie closer to the lower than to the upper bound. This effect is stronger as inflation rates decrease.
For the next year the outlooks look as follows:

**Figure 4:** Next year inflation forecasts of ECB and European Commission, own calculations

**Figure 5:** Next year inflation forecasts of ECB and IFW, own calculations

**Figure 6:** Next year inflation forecasts of ECB and OECD, own calculations

In these cases the effect is even stronger: in two of the three cases the ECB forecasts are significantly higher than those of the external forecasters. Having in mind, that the time lag between interest rate changes and their effect on the inflation rate is assumed
to be more than a year, the outlook for the next year is the one that is important for the future stance of monetary policy. The current year forecast can be considered to lie beyond any Central Bank influence.

The results are confirmed by T-Tests on the difference of the average forecasts. The table below gives the significance levels of the tests.

**Current year forecasts:**

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<th>Central Bank</th>
<th>Significance Level</th>
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<td>ECB-European Commission</td>
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</tr>
<tr>
<td>ECB-OECD</td>
<td>0.4</td>
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<tr>
<td>ECB-IFW</td>
<td>0.2</td>
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**Next year forecasts:**

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<tr>
<th>Central Bank</th>
<th>Significance Level</th>
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</tr>
<tr>
<td>ECB-OECD</td>
<td>0.003</td>
</tr>
<tr>
<td>ECB-IFW</td>
<td>0.075</td>
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While on average there is no significant deviation of ECB forecasts from other forecasters, all following year deviations are significant at the 10% level, that from the OECD forecast even at the 5% level.

It can be concluded that currently the ECB is not making use of their inflation forecasts as a tool for forward guidance. More to the contrary, the forecasts signal that the ECB is rather more optimistic than other forecasters. The stronger the disinflation pressures become, the higher the relative position of the ECB forecast gets. It has already been mentioned that the analysis of other transmission channels has led to the conclusion that monetary policy should fight disinflation rather more aggressively than inflation. As far as the issue of credibility is concerned the ECB is doing just the opposite.

So the question arises why this is happening. One obvious reason could be the transmission process form real interest rates to private savings and investments. Clearly raising inflation expectations lowers the expected real interest rate when nominal rates are given. So there might be a tradeoff between lowering expectations concerning the future path of nominal rates on the one hand and raising expected real rates on the other. But there are several arguments why the ECB should target long term nominal rates instead of real rates. Firstly, the effect of the Central Bank inflation forecast on interest rate expectations has at least been proven for the US (Romer/Romer 2000). Secondly, the tradeoff faced by the Central Bank is just the same when inflation rates are high: By raising inflation expectations in a situation of high inflation the ECB lowers the real interest rate and stimulates the economy. In the past the greater weight was obviously given to steering expectations of future interest rates.

As far as other channels of policy transmission are concerned: Interest rate expectations play no prominent part in the credit channel. Yet they do in the exchange rate channel, which might play a role in the current situation, as has been mentioned before. But the impact of this transmission channel would also profit rather than loose if interest rate expectations were lowered by the ECB.

To sum up: There seem to be no obvious reasons for the current forecasting strategy of the ECB. It has to be questioned why the ECB is not making use of this tool to give forward guidance to the markets. The case becomes stronger as other instruments become less powerful when inflation rates continue to be very low.

**Conclusion**

Many studies have come to the conclusion that the framework of monetary policy is, or should be asymmetric in times of inflation and deflation. Apart from the liquidity trap this applies to the quantitative range of optimal inflation targets and to the aggressiveness with which interest rates should be lowered when disinflation occurs. Also the optimal roles of different channels in the transmission mechanism differ in times of inflation and deflation.

This paper has investigated the role of Central Bank credibility when interest rates are bounded at zero. The main conclusion is that channels of monetary communication that have been used actively in the past seem to be of no relevance to the ECB in the current situation: While the liquidity management of the ECB focuses on fighting deflation, communication still sticks to the rules of inflationary situations. So the ECB is actually behaving asymmetrically. This becomes very obvious when comparing ECB inflation outlooks with those of other forecasters. It is argued, that less optimistic inflation outlooks might be an effective way of keeping interest expectations low.

**References**

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Das Paper widmet sich den veränderten Rahmenbedingungen der geldpolitischen Transmission. Im Zentrum stehen potentielle Asymmetrien, die sowohl die relative Bedeutung als auch die Funktionsweise der einzelnen Transmissionsmechanismen betreffen können. Dabei werden der Kreditkanal, der Vermögenspreiskanal, sowie der Zinskanal und der im Rahmen der keynesianischen Liquiditätsfalle relevante „Fiskalkanal“ betrachtet. Zentrales Augenmerk liegt schließlich auf der Frage, wie die EZB in dieser Phase das Vertrauen der Märkte erhalten kann, dass die Gefahren abgewehrt werden können. Basis für die Untersuchung sind die Maßnahmen mit denen in der Vergangenheit Glaubwürdigkeit und Commitment unter Beweis gestellt wurden.

Der Vermögenspreiskanal gilt unter normalen Rahmenbedingungen als hoch relevant für die Übertragung geldpolitischer Impulse, aber nicht nutzbar. Erwartungen vor allem kurzfristig anstehender Zinsänderungen haben eine hohe Relevanz für Vermögenspreise. Deshalb würde die Zentralbank schnell Gefahr laufen, sich in die Abhängigkeit der Finanzmärkte zu begeben, würde sie Vermögenspreisen einen expliziten Platz in ihrer geldpolitischen Strategie einräumen. Ähnlich verhält es sich grundsätzlich auch bei den Devisenkursen, die aber vor allem aufgrund der beggar-thy-neighbour Effekte gezielter Abwertungen als Zwischenziel ungeeignet sind. Ungeachtet dieser Probleme werden Abwertungen in der Literatur als mögliche Strategie kleiner Länder diskutiert, wenn Ausnahmesituationen dies erfordern. Auch in der Eurozone tritt durch die starke Abwertung des Euro gegenwärtig eine Entlastung ein – dies allerdings nach eigenem Bekunden unerwartet für die EZB.


¹ Den vollständigen Text des Artikels „Beurteilung der Wirksamkeit und mögliche Risiken der aktuellen Geldpolitik des Eurosystems“ findet der Leser auf der beigefügten CD.
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In der aktuellen Situation sollte das Ziel des Abwendens einer Deflation Vorrang vor der Sorge um einen potentiellen inflationären Bias in der Geldpolitik haben. Mehr noch: Die EZB sollte nach Wegen suchen, die Öffentlichkeit von ihrem Willen konsequent niedrigeren Zinsen zu überzeugen. Wenn man die Rolle der Inflationsprognosen für die Gewinnung von Glaubwürdigkeit voraussetzt, würde dies heißen, dass die Prognosen der EZB relativ niedrig im Vergleich zu denen anderer Prognostiker ausfallen sollten. In dieser Arbeit wurden daher die Prognosen der EZB mit denen ausgewählter anderer Institutionen (Europäische Kommission, OECD, Institut für Weltwirtschaft) verglichen. Dabei hat sich ergeben, dass die Prognosen der


Abschließend liegt es nahe, der EZB zu empfehlen, den eigenen Inflationsprognosen im Rahmen ihrer Kommunikationsstrategie ein stärkeres Gewicht zu geben und den Märkten hiermit zu signalisieren, dass die Risiken anhaltend sehr niedriger Inflationsraten erkannt werden. Dies könnte ein relativ preiswerter Weg sein, die Zinsen über die gesamte Zeitstruktur niedrig zu halten und so in den Bereich der angestrebten Inflationsrate nahe zwei Prozent zurück zu kehren.