



DIRECTORATE-GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT  
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**Impact of a Low Interest Rate Environment**

**Monetary Dialogue  
February 2013**

**COMPILED NOTES**





DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Impact of a Low Interest Rate Environment

Monetary Dialogue 18 February 2013

## COMPILED NOTES

### Abstract

Four economists assessed the impact and evaluated the challenges of the low interest rate environment currently prevailing in major developed economies as a policy response to the economic and financial crisis.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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## CONTENTS

<b>INTRODUCTION</b>	<b>4</b>
<b>EXECUTIVE SUMMARY</b>	<b>5</b>
<b>1. The Challenges of a Low Interest Rate by Charles WYPLOSZ</b>	<b>7</b>
<b>2. Implications of the Low Interest Rate Environment for the Real Economy by Stefan COLLIGNON</b>	<b>19</b>
<b>3. Impact of a Low Interest Rate Environment - Global Liquidity Spillovers and the search-for-yield by Ansgar BELKE</b>	<b>37</b>
<b>4. Impact of a Low Interest Rate Environment by Guillermo DE LA DEHESA</b>	<b>57</b>

## INTRODUCTION

On 10 January 2013 the ECB Governing Council decided '*to keep the key ECB interest rates unchanged*'<sup>1</sup> based on an assessment of a '*contained*' inflationary pressure and a weak economic activity (contraction of real GDP in second and third quarter of 2012).

A few days earlier, on 20 December 2012, the General Board of the European Systemic Risk Board (ESRB) discussed four potential risks for financial stability in the EU in the medium-term. One of the risks identified were the ramifications of the low interest rate environment: '*Third, the General Board highlighted the need to investigate possible implications of a low interest rate environment on the ability of long-term investors, including insurance companies and pension funds, to generate adequate returns.*'<sup>2</sup>

In addition, the IMF stated the following in its latest Global Financial Stability Report: '*The low interest rate environment and unprecedented levels of quantitative easing have been necessary to support credit growth and have kept the crisis from deepening, but they have also weakened the functioning of some markets, potentially with longer-term consequences. Moreover, the protracted crisis intervention measures, mostly in Europe, could be slowing the needed restructuring of their financial sectors.*'<sup>3</sup>

Already a year earlier, the IMF recognised: '*The low interest rate environment in advanced economies since the crisis has not yet pushed investors into riskier investments to enhance yields but may do so if—as expected—interest rates in advanced economies stay low for an extended period.*'<sup>4</sup>

Four economists assess and comment on several aspects of a low interest rate environment, including potential conflicts between monetary policy and financial stability and implications in terms of asset allocation decisions of investors, e.g. on pension/retirement provisions, investment opportunities for retail investors.

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<sup>1</sup> See: ECB, Introductory statement to the press conference, 10 January 2013; <http://www.ecb.int/press/pressconf/2013/html/is130110.en.html>.

<sup>2</sup> See ESRB, Press Release, 20 December 2012; <http://www.esrb.europa.eu/news/pr/2012/html/pr121220.en.html>. For an assessment of the effects of an low interest rate environment on life-insurance see also [http://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Discussion\\_Paper\\_2/2011/2011\\_02\\_08\\_dkp\\_02.pdf?blob=publicationFile](http://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Discussion_Paper_2/2011/2011_02_08_dkp_02.pdf?blob=publicationFile) and IMF, Global Financial Stability Report, Grappling with Crisis Legacies, September 2011; Box. 2.3, *The low interest rate environment and Pension Funds*; <http://www.imf.org/External/Pubs/FT/GFSR/2011/02/pdf/text.pdf>.

<sup>3</sup> IMF, Global Financial Stability Report, Restoring Confidence and Progressing on Reforms, October 2012; <http://www.imf.org/External/Pubs/FT/GFSR/2012/02/pdf/text.pdf>.

<sup>4</sup> See IMF, Global Financial Stability Report, Grappling with Crisis Legacies, September 2011, Chapter 2: Long-Term Investors and Their Asset Allocation: Where are they now?; <http://www.imf.org/External/Pubs/FT/GFSR/2011/02/pdf/text.pdf>.

## EXECUTIVE SUMMARY

Four economists assessed the impact and evaluated the challenges of the low interest rate environment currently prevailing in major developed economies as a policy response to the economic and financial crisis.

According to the experts, the very accommodative monetary policy stance currently prevailing in most developed economies is warranted at least as long as the level of economic activity remains depressed, the labour market displays an unsatisfactory performance and inflation expectations continue to be well-anchored to targets. They also elaborated on a number of other macroeconomic, financial and policy implications of exceptionally low interest rates. Putting it in a nutshell, their assessment can be summarised as follows:

First, it was pointed out that low interest rates over an extended period put long-term investors with defined benefits, such as insurance companies and pension funds, under pressure due to low returns. But, on the other hand, mortgage payers are among the potential winners of a low interest rate environment. Similarly, exporters benefit from a more competitive exchange rate and commercial banks are granted access to cheap money financing induced by the policy of quantitative easing which is currently being adopted by major central banks.

Second, to the extent that sustained monetary accommodation delays the much needed balance sheet adjustment of excessively leveraged sectors, risks of potential financial stability for the overall economic system are increased.

Third, low (real) interest rates for a protracted period may translate into excessive capital accumulation and, therefore, adversely affect the long run growth potential of the economy.

Fourth, in the euro area things are further complicated by the fact that in several distressed Member States real long term interest rates, which are key for spending decisions, are currently detached from the common policy rate and are not uniformly low as they mirror the asymmetric economic situation between surplus and deficit countries. This puts the ECB (monetary policy) in an uncomfortable situation.

Fifth, acknowledging the severe impairment of the monetary transmission mechanism and the ongoing strong preference for liquidity, some experts argued in favour of a more active role of fiscal policy to revive growth. Others, however, pointed out that as a result of tough consolidation measures adopted in some euro area Member States to correct unsustainable budgetary positions the fiscal space available is limited precisely in those countries that need it most.

Sixth, there was a general perception that combining very accommodative monetary policy to stimulate growth with the need to fulfil the price stability mandate and preserve financial stability of the euro area is a daunting task for ECB monetary policy. The financial stability objective requires its own instruments of regulation, supervision and resolution.

## NOTES



DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# The Challenges of a Low Interest Rate

Charles WYPLOSZ

## NOTE

### Abstract

The real long-term interest rate, which matters for the macroeconomic effect of monetary policy, is about zero in some countries, but not very low in others, especially in the euro area crisis countries. Thus monetary policy is not universally accommodative.

Low nominal short-term rates can disrupt financial markets. There are good reasons to be concerned about excessively high stock prices in some countries. Pension funds are under pressure from low returns; even though the situation may remain difficult for a while, this is the time for them to draw on their reserves.

The ECB faces an uncomfortable situation given the asymmetric situation of euro area Member States. It should continue to target its policy to the overall euro area, which faces a large output gap.

Other issues of concern to the ECB, financial stability and the integrity of the euro area must be addressed by the governments.

## CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>9</b>
<b>1. INTRODUCTION</b>	<b>10</b>
<b>2. FACTS</b>	<b>11</b>
<b>3. FINANCIAL MARKETS</b>	<b>13</b>
<b>4. QUESTIONS AND ANSWERS</b>	<b>15</b>
4.1. What should investors do?	15
4.2. What should the ECB do?	15
4.3. What should pension funds do?	17
4.4. What should governments do?	17
<b>5. CONCLUSION</b>	<b>18</b>

## EXECUTIVE SUMMARY

The real long-term interest rate, which matters for the macroeconomic effect of monetary policy, is about zero in some countries, but not very low in others, especially in the euro area crisis countries. Thus monetary policy is not universally accommodative.

If it lasts, a very low nominal short-term rate can disrupt financial markets by encouraging investors to increase risk taking and promoting the emergence of asset price bubbles. In several countries stock prices appear very high.

Investors have few alternative options. Investing in other parts of the world disturbs exchange rates.

The ECB faces an uncomfortable situation given the asymmetric situation of euro area Member States. Given the depth and duration of the depression under way in several countries, it needs not worry about inflation at this stage.

The ECB cannot be asked to deal alone with financial stability and the integrity of the euro area. Governments need to go beyond their underwhelming actions. A full-fledged banking union is needed. They must also deal with the difficulties faced by pension funds, although action is not urgent.

## 1. INTRODUCTION

In comparison with other major central banks, the ECB has been slow to cut its policy interest rate once the global financial crisis started. To a first order approximation, its policy rate is now almost at the zero lower bound and has been there for about four years. Given the sorry state of the euro area economy, no end is in sight, so it looks like we may experience a few more years of near-zero rate. As a result, we seem to live in a different world.

The level of interest rate matters a lot, mainly because it is redistributive. Borrowers gain at the expense of savers and savers include all those who depend on their savings for their daily incomes, especially retired people. For the whole financial industry, the interest rate is the most important variable, with extraordinarily wide effects, including on share prices and risk-taking, which puts taxpayers at risk. The interest rate also affects the exchange rate and therefore income distribution between export-oriented firms (and their employees) and consumers.

These redistributive aspects are usually ignored because monetary policy is looked as a countercyclical macroeconomic instrument. Over a complete cycle, those who benefit and those who lose alternate and the gains and losses about balance out. The current situation seems different because the down phase of the cycle is extraordinarily long. As is often the case, the perception grows that cyclical effects have become permanent. Theories flourish, arguing for many reasons why the interest rates will never return to levels previously considered as normal. These theories are not fully convincing. For interest rates to be significantly different on a permanent basis, we need permanent changes in the balance of savings and investments worldwide. The saving glut, long believed to apply downward pressure on interest rates, is likely to fade away as China deepens its "*rebalancing strategy*" of encouraging domestic demand.

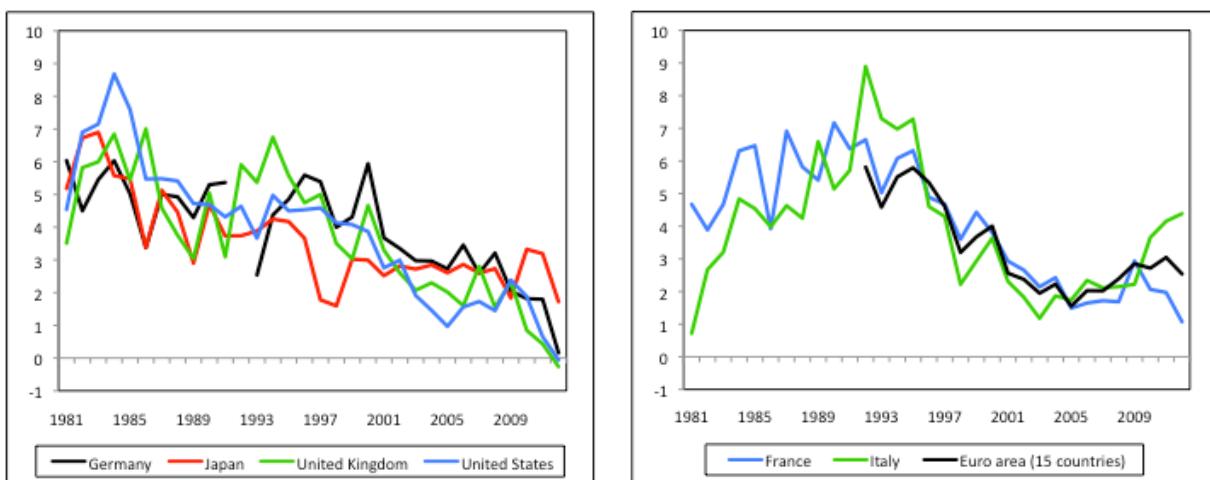
Interest rates may eventually revert to normal levels but the depth of the crisis, especially in the euro area, suggests that this might take quite some time. Meanwhile, very low interest rates create disturbances and challenge central banks. Chapter 2 starts with a discussion of the recent evolution of nominal short-term interest rates, set by central banks and of importance to financial markets, and of long-term real interest rates, which matters for the macroeconomy. Chapter 3 looks at the impact of low nominal rates on financial markets. Chapter 4 looks at four issues. First, what can investors? Second, what are the options for the ECB? Third, what are the implications for pension funds? Fourth, what is now expected from governments in the euro area? The last Chapter wraps the main points.

## 2. FACTS

The striking aspect of the current experience is that the policy interest rate has been brought down to very close to zero, the normal lower bound. Yet, what matters for the macroeconomy is the interest rate at longer maturities, which better reflects the borrowing costs by consumers and firms. More precisely, what matters is the real long-term interest rate, which is obtained by deducting expected inflation from the observed long-term nominal rate. Real long-term (10 years) interest rates are presented in Figure 1, which covers the post-inflation period of the late 1970s when real rates were largely negative. The left hand-side panel displays real interest rates for four major developed countries (Germany, Japan, United Kingdom and the United States). We observe a secular decrease, which accelerated after 2007 when the global financial crisis was under way. By 2012, real interest rates are about zero in three out of the four countries, which has not been seen for over 30 years. The exception is Japan, where the real long-term interest rate has been about 3% since the late 1990s, after the bursting of the housing bubble and the bank crisis.

The right hand-side chart in Figure 1 shows the pattern of real long-term interest rate for France, Italy and the euro area. The chart conveys a very different impression. In France and Italy, the real declined sharply on the way to the establishment of the euro and then steadily rose since the mid 2000s. The euro crisis then pushed up the Italian rate, an evolution mirrored in a number of other euro area countries. This is confirmed by the curve that gives the average real rate in the euro area. The very low real interest rate is not a general feature of the euro area. Part of the reason is that the interest rate used in the charts concerns public bonds. Since private borrowing rates are usually higher than those of the sovereign, the observation remains valid.

**Figure 1: Real long-term interest rates – 1981-2012**



**Note:** Long-term interest rate less observed inflation measured with the GDP deflator.

**Source:** Economic Outlook 92, OECD, December 2012.

This conclusion implies that monetary policy is not unusually tight in a number of euro area countries. In the crisis countries, there is no such thing as a low interest environment, because of large risk premia. Thus, once again, real interest rates are having procyclical effects within the euro area: the countries in a recession face high rates while the rates are low in those countries with a better economic performance. Much the same happened on the late 2000s. The difference is that the roles have been swapped: yesterday's slow-growing countries are now those growing faster while the countries now in a crisis recession were growing fast previously. This confirms one more that, over a complete cycle, income redistribution *via* the interest rate is small. Yet, the fact that low interest

rates and fast growth directly led to crisis, the familiar boom-and-bust financial cycle, justifies concern about the low interest rate environment observed elsewhere, as in Germany, the US and the UK.

### 3. FINANCIAL MARKETS

The fear of renewed financial instability attracts attention back to the nominal short-term interest rate. This rate matters for banks and financial intermediaries, since it is the price at which they borrow much of the liquidity that they need for their lending operation. It also matters for investors. Low interest rates strengthen share prices, because low returns on bonds push investors toward stocks and more generally toward more risk taking. In addition, low interest rates create serious difficulties for regulated pension funds with defined benefits because they are not allowed to seek higher yields through risk taking and face declining revenues while spending remains unchanged. The result is that they must eat into their asset base, which is itself often subject to regulation. Finally, the reduced attractiveness of bonds relative to stocks encourages borrowers to shift from banking finance to market finance.

More risk taking generally plants the seeds of an eventual bust. This can be seen from the evolution of stock prices shown in Figure 2. US, British and German stock market indices are now close to or above levels reached just before previous crises. There is no automaticity in these comparisons but the concern is there, especially since current growth in the US and the UK is low by historical standards, and is projected to remain low. The situation is better in Germany, which may explain the very high level of the DAX.

The distinction between short-term nominal interest rates and long-term real interest rates matters because of the possibility of a disconnection between the financial and real sector of the economy. In principle, long rates reflect expectation of future short rates, which means that there is nothing unusual with the existing term structure: eventually monetary policies will be normalised and the short rates will grow. But long-term rates are also related to expected capital gains on assets like houses or stocks. This can be represented through two symbolic arbitrage relationships:

Long vs. short bonds:

Long-term bond rate = average of present and expected future short bond rates<sup>1</sup>

Bonds vs. stocks (or houses):

Long-term bond rates = average of present and future dividends and capital gains on stock prices

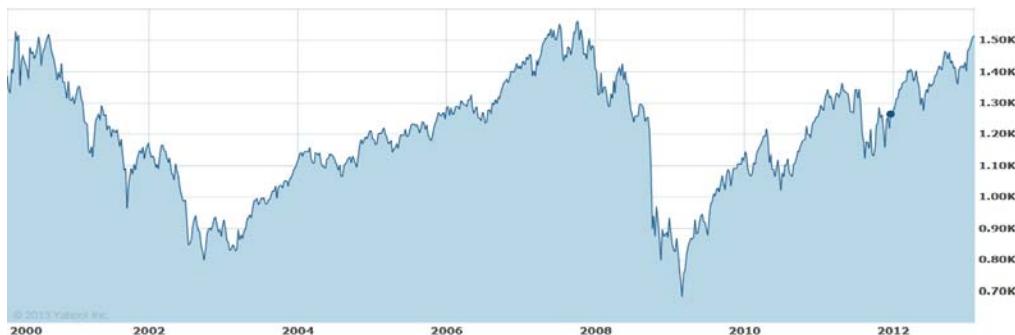
The first relationship justifies fairly high long-term interest rates even though the current rate is low, possibly zero. According to the second relationship, a bubble emerges when asset prices are expected to rise *"for ever"*, at least long enough to justify the second relationship even though dividends are low and expected to remain low. Such bubbles lead to a disconnection between financial markets and the rest of the economy. They arise when investors hold excessively optimistic expectations. But why do very short-term rates crucially matter to trigger bubbles? Because they encourage investors to move out of bonds and into assets subject to bubbles. As asset prices rise, investors may develop unrealistic expectations, which are self-validated by further purchases that push prices higher. Bubbles, however always end up crashing. This is why Figure 2 is worrisome.

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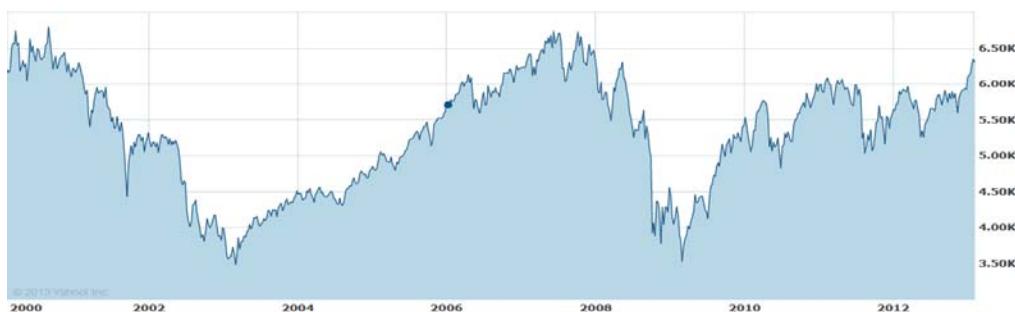
<sup>1</sup> Formally:  $(1 + i_L)^n = (1 + i_1)(1 + i_2) \dots (1 + i_n)$  where  $i_L$  is the n-period interest rate and  $i_1, i_2, \dots, i_n$  are expected short-term rates over the next n periods. A similar, if more complicated, relationship stands behind the next symbolic representation. These arbitrage relationships ignore risk, for simplification.

### Figure 2: Stock prices

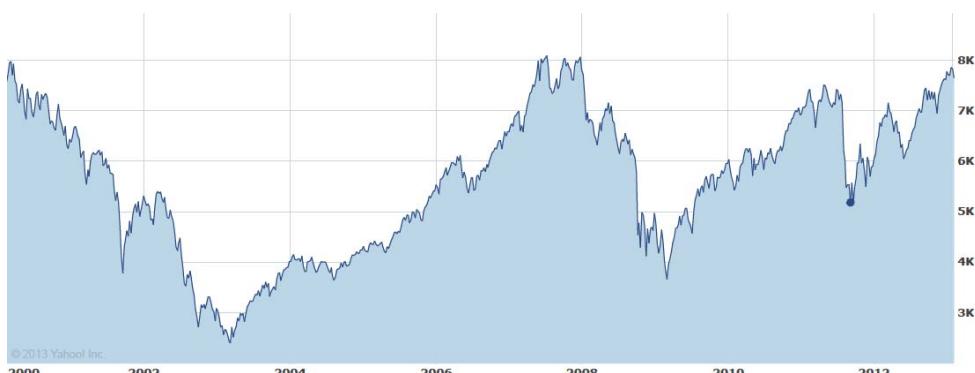
New York – S&P 500



London – FTSE 100



Frankfurt - DAX



**Source:** Yahoo! Finance.

## 4. QUESTIONS AND ANSWERS

### 4.1. What should investors do?

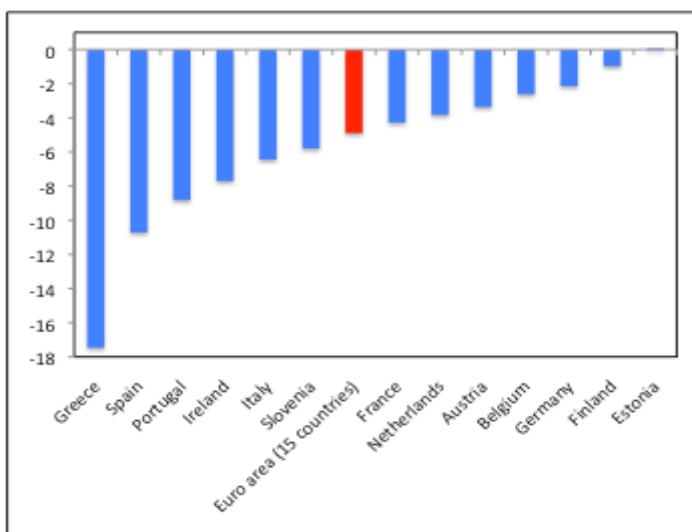
Irrational exuberance is dangerous. The problem is that individual investors may be all fully aware of the riskiness of their actions and yet believe that they will be able to escape before the crash. This may be individually rational but it is collectively impossible. Acting prudently, on the other hand, means staying away from highly-price assets and stick with low-return bonds, whose prices will decline when short-term interest rates start increasing back to normal levels, which is also risky.

In short, investors have nowhere to hide. They can take risks and hope to enjoy good returns, as stockholders did in 2012, or they can accept low bond returns and still take risk. There is simply no good option with US, British and euro area assets. This is why many investors look elsewhere, in developed countries like Australia, Canada and Switzerland, possibly Eastern and Central Europe. Many investors have also "*discovered*" the emerging market countries in Asia and Latin America, which they know. But these are small countries; the amounts of available assets are limited and strong demand quickly translates into exchange rate appreciation and the spectre of "*currency wars*", hence the risk of sharp movements.

### 4.2. What should the ECB do?

Looking at Figure 1 and at the DAX in Figure 2, it is not surprising that some observers fret that the policy interest rates are too low. Yet, the right hand-side chart in Figure 1 and rather depressed stock indices in the euro area crisis countries send the exact opposite message. Once more, we find that the single monetary policy is mission impossible when euro area Member States face highly asymmetric shocks. And, once more, we can only conclude that the only possible solution for the ECB is to look at the euro area as a whole, disregarding individual macroeconomic conditions. The OECD forecasts presented in Figure 3 predict an output gap of 4.9% for the euro area in 2013, expected to remain virtually unchanged at 4.85% in 2014. These are very large gaps. The ECB's own forecast for inflation in 2013 is between 1.3% and 2.5%, nicely balanced around the 2% upper target level. Thus, looking at the overall macroeconomic picture, monetary policy should be as accommodative as possible.

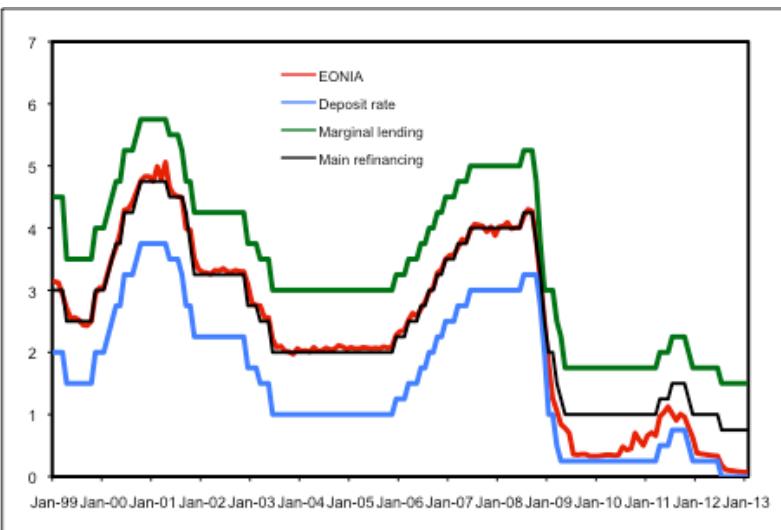
**Figure 3: Output gaps in 2013**



**Source:** Economic Outlook 92, OECD, December 2012.

This is why a number of observers criticise the ECB for keeping its key policy interest rate, the main refinancing rate (currently at 0.75%), above what is observed in other major central banks. Is this other criticism justified? Largely not, but the ECB still faces some hard choices. Two arguments support the ECB. First, the distance between 0.75% and 0.25% as elsewhere is too short to make a significant difference given the large output gap. Second, Figure 4 shows that the market rate, EONIA (Euro OverNight Index Average), currently at 0.07%, has remained close to the deposit rate, which is now zero. Lowering the refinancing rate is likely to have no effect at all on EONIA and other market rates.

**Figure 4: Euro area interest rates**



Source: ECB.

However three arguments suggest the ECB stance is still too restrictive. First, EONIA has lost much of its significance as the interbank market is fragmented. Many euro area banks find it difficult to refinance themselves and certainly not at the EONIA rate. The ECB has recognised this problem. This is why it has expanded its direct lending to unlimited Longer-Term Refinancing Operations (LTROs). The rate applied to LTROs is the refinancing rate, which is therefore more relevant than EONIA for many banks. The fact that many banks have reimbursed their LTROs at the first possible date indicates that the situation has improved, but also that the refinancing rate is considered expansive.

Second, since the beginning of the crisis the euro has remained surprisingly strong. A weaker euro would have certainly helped the crisis countries, albeit with some inflationary impact. One reason for the strong euro is that the ECB is perceived as less accommodative than other major central banks. Even though lowering the refinancing rate might not have much direct effect, it could lead to a lower exchange rate. This may well be the large margin of action left to the ECB.

Finally, Figure 3 shows that the economic situation is highly asymmetric within the euro area. While the ECB has no alternative to dealing with the overall situation when conducting its *macroeconomic* policy, it must concern itself with financial stability and the integrity of the euro area. Based on the forecasts shown in Figure 3, some Member States are now expected to be in deep depression for at least six years (2009-2014) with disastrous implications for their banking systems and dramatic social, and therefore political, impact. This form of tail risk creates a trade-off with the price stability objective. This entails a value judgment – should some inflation risk be taken for some countries to bring depression to an end elsewhere – and political judgment – the consequences of protracted misery. Section 4.4 argues that governments have the leading role to play in these matters.

#### **4.3. What should pension funds do?**

Pension fund regulation often requires pension funds, public or private, to hold only reasonably safe assets. With very low interest rates, this often means insufficient income to match spending, especially when pensions are defined benefits. Should then pensions be changed into defined contributions instead or should the funds be bailed out? Pension funds are normally required to hold sufficient assets of sufficient quality to weather adverse conditions for a "*normal*" time. These times, however, are not normal.

The length of the depression is already above that of traditional cyclical downturns. In addition interest rates are expected to remain at record low levels for the foreseeable future. In principle, this is the time when precautionary reserves should be run down, to be rebuilt in better times. Changing the contract, from defined benefits to defined contributions represents a break of contract, even if it is sometimes argued that no pension system should be defined benefits.

The more challenging issue concerns the possibility that interest rates will remain low forever. In this case, most, if not all, pension funds are likely to be technically bankrupt. It is important to remember, though, that interest rates are low because central banks have adopted unprecedented measures to deal with a historical crisis. The logical implication is that interest rates will return to normal levels once the crisis is over. A counter-argument is that normal interest rates will remain low because world savings have increased – the saving glut hypothesis. Given the huge uncertainty of this prediction, it would seem wise to wait and see.

#### **4.4. What should governments do?**

A key conclusion from Section 4.2 is that the ECB now explicitly faces more than one objective: financial stability and safeguarding the integrity of the euro area must be added to its price stability mandate. This creates a very challenging trade-off, with no good solution. With one instrument, the policy interest rate, the ECB cannot achieve more than one objective. While, in the short run, the flexible inflation targeting strategy allows for some trade-off, this is not a sustainable approach. More instruments are needed.

Financial stability requires its own instruments: regulation, supervision and resolution authority backed by adequate resources. These instruments have been so far in the hands of national governments but the crisis has shown that this is a major source of externalities. The answer is the creation of a full-fledged banking union. Current proposals are totally inadequate. Government failure to create a banking union is the reason why the ECB is now in an impossible situation.

The ECB should be able to conduct its monetary policy without being unduly burdened by structural considerations. It should be able to keep interest rates low for as long as necessary, with the certainty that governments will deal with the implications. Asset price bubbles can be dealt with appropriate regulation of financial markets, including taxation of capital gains. Pension funds are regulated by governments, which can put in place a large number of measures, ranging from a delayed retirement age to switching from defined benefits to defined contributions when and if needed.

## 5. CONCLUSION

This note has made the following points:

- The real long-term interest rate, which matters for the macroeconomic effect of monetary policy, is about zero in some countries, but not very low in others, especially in the euro area crisis countries. Thus monetary policy is not universally accommodative.
- If it lasts, a very low nominal short-term rate can disrupt financial markets by encouraging investors to increase risk taking and promoting the emergence of asset price bubbles. In several countries stock prices appear very high.
- Investors have few alternative options. Investing in other parts of the world disturb exchange rates.
- The ECB faces an uncomfortable situation given the asymmetric situation of euro area Member States. Given the depth and duration of the depression under way in several countries, it needs not worry about inflation at this stage.
- The ECB cannot be asked to deal alone with financial stability and the integrity of the euro area. Governments need to go beyond their underwhelming actions. A full-fledged banking union is needed. They must also deal with the difficulties faced by pension funds, although action is not urgent.



DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Implications of the Low Interest Rate Environment for the Real Economy

Stefan COLLIGNON

## NOTE

### Abstract

As nominal policy interest rates are hitting the lower zero bound in many industrialised countries, questions are raised about possible unintended consequences. This note argues that low interest rates reduce the long run rate of potential economic growth, but exiting “ultra-easy” policies now would be premature.

## CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>21</b>
<b>1. INTRODUCTION</b>	<b>22</b>
<b>2. THE RATIONAL OF LOW INTEREST RATE POLICIES</b>	<b>27</b>
2.1. Changes caused by the financial crisis	29
2.2. The impact of low interest rates on economic growth	30
2.3. Policy implications	34
<b>REFERENCES</b>	<b>35</b>

## EXECUTIVE SUMMARY

"Ultra-easy monetary policies" have been the immediate policy response to the Global Financial Crisis. They must be seen as the endpoint of a downward trend that has marked the last twenty years and which has been accentuated by the necessary policy responses to the current economic crisis. With interest rates close to the lower zero bound, the question is increasingly asked if this situation has unwarranted and unintended consequences.

International organisations have particularly focussed on negative effects for insurance and pension funds and the potential spillover for financial stability, but the implications for the real economy must also not be underestimated. This briefing note concentrates on the link between low interest rates and economic growth.

It first reviews the policy mechanism of lowering interest rates in "normal" circumstances and then discusses the implications of a liquidity trap.

However, an additional argument is made that low interest rates are reducing the equilibrium long run growth rate of the economy's production potential. While the well-known Keynes-Ramsey rule states that in equilibrium the economic growth rate should be equal to the real interest rate, we reframe the argument for a monetary economy and for monetary policy. It is shown that the high liquidity preference in the present crisis is lowering the equilibrium growth rate.

However, because of the disequilibrium ("cyclical") dynamics, a rapid return to higher interest rates is not defendable. Instead, fiscal policy should play a stronger role in the stabilisation of the Euro Area's macroeconomy.

The policy implications are as follows:

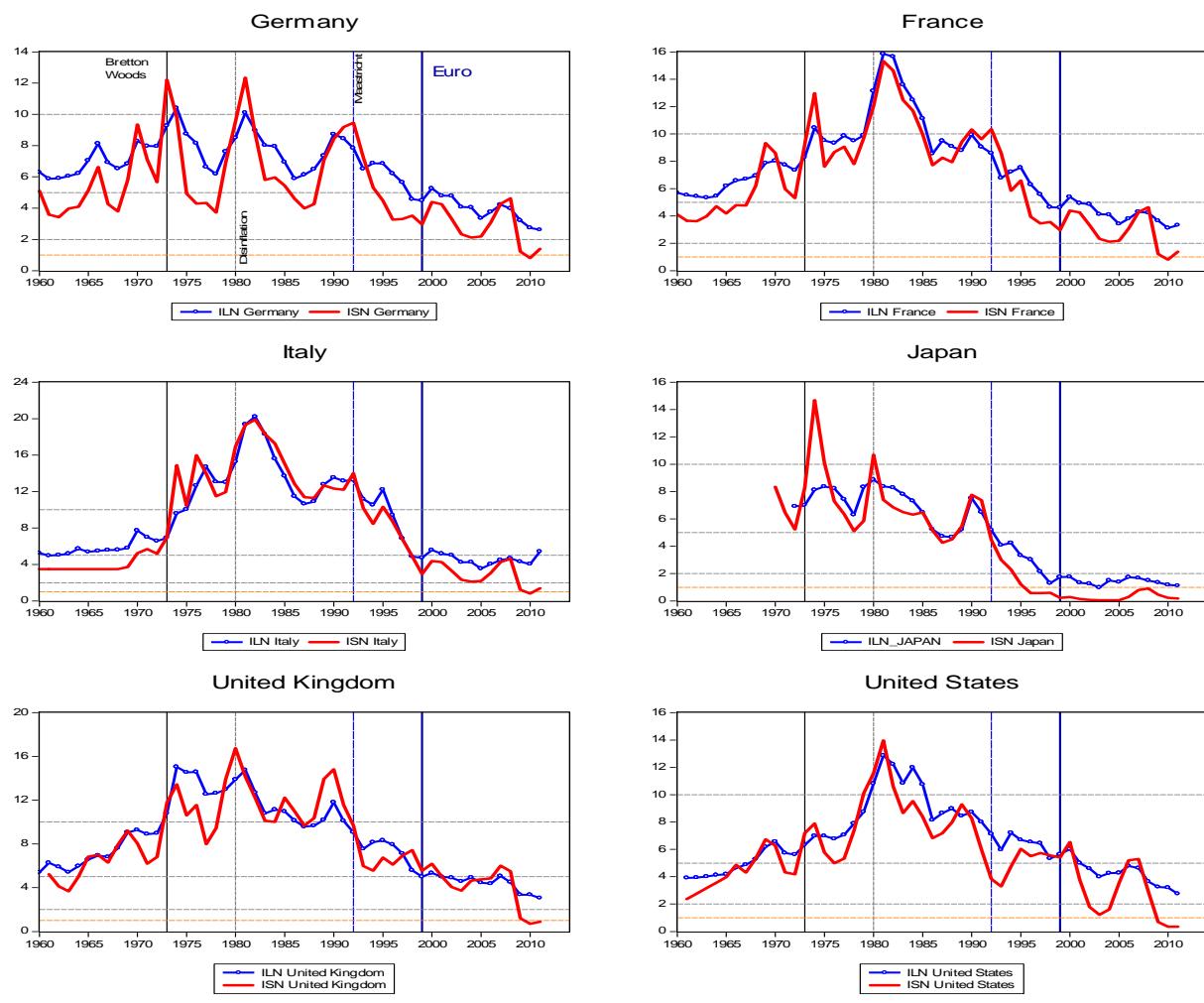
- Significant impulses for growth coming from the ECB are no longer feasible. The bank must continue to reduce tensions in the financial markets by fulfilling its role as lender of last resort.
- In order to manage trust and confidence, it would also be of benefit if individual national central banks would stop questioning the collective actions of the Eurosystem.
- The proposition to raise the inflation target is tempting, but at least in the European context it would provide little improvement.
- It is too early to think of an exit from ultra-easy monetary policy. The short term priority must be to stimulate demand (money spending) in order to close the negative output gap.
- Fiscal policy should be used more aggressively to push Europe back into work by closing the output gap.
- Higher wages in northern surplus countries could also increase aggregate demand in the Euro Area.

## 1. INTRODUCTION

"Ultra-easy monetary policies" (White, 2012) have been the immediate policy response to the Global Financial Crisis. Most central banks have increased their balance sheets dramatically and lowered policy rates effectively to the zero lower bound (Collignon, 2012). However, the current low interest rate levels must also be viewed as "the endpoint of a downward trend that has marked the last twenty years and which has been accentuated by the necessary policy responses to the current economic crisis" (Danthine, 2012). Figure 1 gives a long-run perspective. An important reason for this long term trend was that after 20 years of disinflationary policy the inflation premium in long run interest rates has finally disappeared. This is, by the way, proof how difficult it is to eliminate inflation from expectations, once it has been engrained in the collective consciousness. Against this background, the Global Financial Crisis required drastic action and this has pushed nominal policy interest rates close to the lower zero bound.

**Figure 1:**

### Nominal long (ILN) and short (ISN) interest rates



Source: Ameco

While few people doubt that these measures have prevented the financial crisis from turning into a deep 1930s-like depression,<sup>1</sup> there is an increasing awareness that these policies may also have unintended consequences if they are pursued for too long.

<sup>1</sup> For the underlying rational see Bernanke (2012).

International organisations, such as IMF (2012), OECD (Antolin et alt. 2911), Deutsche Bundesbank (2012) and BIS (2012), have particularly focussed on negative effects for insurance and pension funds and the potential spillover for financial stability, but the implications for the real economy must also not be underestimated. In this briefing note I will concentrate on the link between low interest rates and economic growth, because it is still little understood.

Yet, as the financial crisis has painfully taught us, the two aspects, namely financial stability and real economic developments, interact. For example, while it may be rational to ignore the emergence of asset bubbles in the short run, the accumulation of unsustainable financial and macroeconomic imbalances will ultimately end in a massive correction. Before the financial crisis, mainstream economic consensus seemed to believe that "it is better to pick up the pieces after a bust than to try to prevent the build-up of sometimes difficult-to-detect bubbles" (Blanchard et alt. 2010: 8). In view of the economic and social damage caused by the crisis, such benign neglect is no longer tenable. The need to address risks to financial stability and combining monetary and regulatory tools is therefore an important lesson to be learned from the crisis.

Against this background, two separate arguments are challenging the dominant policy consensus that maintaining low interest rates and providing extraordinary liquidity support are necessary to ensure the proper functioning of credit markets. On the one hand, the massive creation of liquidity is feared to translate into higher inflation. On the other hand, low interest rates may lead to excessive leverage and risk taking by financial investors.

The inflation risk of easy money is regularly addressed by the German Bundesbank. For example its board member Andreas Dombret, responsible for financial stability, has said the European Central Bank's long term loans carry risks that might exacerbate the crisis:

*"Over the medium to long term, continued provision of ample liquidity might, through various channels, de-anchor inflation expectations, which would translate into higher inflation risks. It could also pave the way for new asset bubbles, thereby sowing the seeds of the next crisis."<sup>2</sup>*

With respect to the risks to financial stability, the recent IMF (2012:28) Global Stability Report states:

*"Low rates threaten financial stability if they are prolonged and are not accompanied by balance sheet repair and prudential oversight. In particular, maintaining low real risk-free yields at a time when some credit cycles are shifting into the expansion phase could set the stage for credit excesses while leaving balance sheets vulnerable to a downturn. Although recent economic fragilities may reduce the propensity to take risk, they are also likely to lead to a weakening in credit fundamentals. Finally, with bank balance sheets still in need of repair, low rates may divert credit creation into more opaque channels, such as the shadow banking system."*

An important problem in the wake of the financial crisis is that the collapse of asset prices has damaged balance sheets, so that banks and corporations need high returns to restore sound capital ratios. The experience of Japan with the collapsed asset bubble after 1991 has shown that the clean-up may take at least a decade (Koo, 2002). In this context:

*"The flow of capital away from the low interest rates in advanced economies and toward the brighter growth prospects elsewhere is intensifying the expansion of domestic liquidity, credit, balance sheet leverage, and asset prices in emerging*

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<sup>2</sup> <http://www.bloomberg.com/news/2012-06-12/bundesbank-s-dombret-says-ecb-liquidity-provision-carries-risks.html>.

*market economies. Combined with stimulative domestic policies, these pressures raise the risk of overheating and a buildup of financial imbalances that could erode asset quality even if demand and credit conditions normalize". (IMF, 2012:28).*

The Deutsche Bundesbank (2012) echoes this concern in its own Stability Report when it fears that a substantial worsening of the European sovereign debt crisis could have a "significant adverse impact on German banks and insurers. In addition, low interest rates, high liquidity and potential exaggerations in the German real estate market could pose a future threat to financial stability". Kablau and Wedow (2011) have identified these dangers in the insurance industry and summarise their findings:

*"A low interest rate environment can pose a key risk to the life insurance sector. A deteriorating return on investment holdings jeopardizes the guaranteed return on life insurance contracts. ... A low return on investment can lead to a depletion of the bonus and rebate provisions. As a result, life insurers' resilience may deteriorate."*

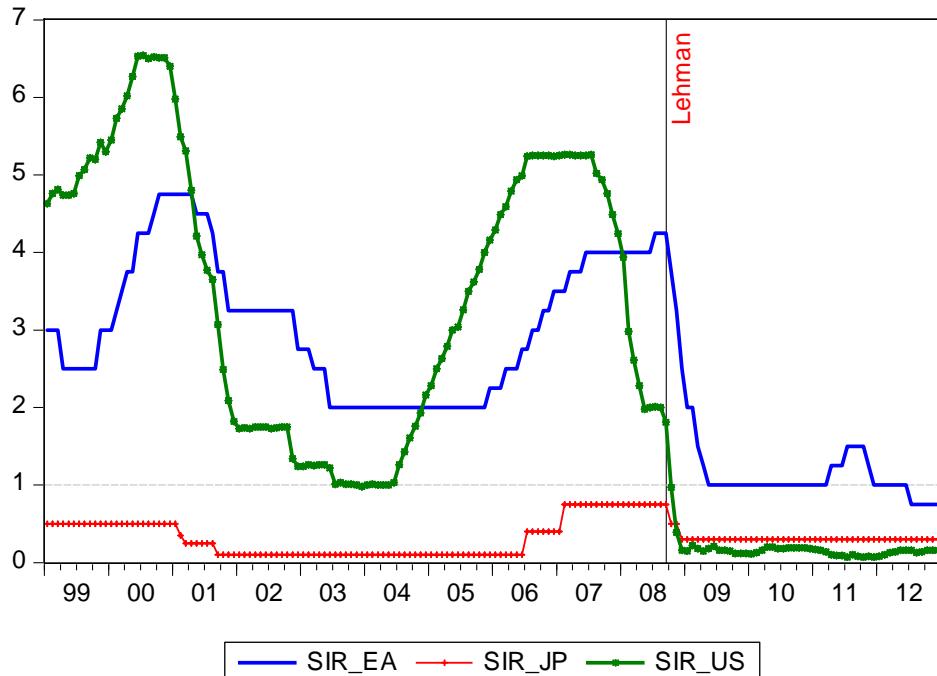
For White (2012:5) the consequences of the low interest rate environment does not only affect the financial sector:

*"Over time, easy monetary policies threaten the health of financial institutions and the functioning of financial markets, which are increasingly intertwined. This provides another negative feedback loop to threaten growth. Further, such policies threaten the 'independence' of central banks, and can encourage imprudent behavior on the part of governments. In effect, easy monetary policies can lead to moral hazard on a grand scale. Further, once on such a path, 'exit' becomes extremely difficult. Finally, easy monetary policy also has distributional effects, favoring debtors over creditors and the senior management of banks in particular. None of these 'unintended consequences' could be remotely described as desirable."*

Despite these warning, all major central banks continue to pursue accommodating monetary policies. Why? One reason may be that there is no clear alternative. As Blanchard et al (2010:10) rightly point out:

*"Identifying the flaws of existing policy is (relatively) easy. Defining a new macroeconomic policy framework is much harder. ... It is important to start by stating the obvious, namely, that the baby should not be thrown out with the bathwater. Most of the elements of the precrisis consensus, including the major conclusions from macroeconomic theory, still hold. Among them, the ultimate targets remain output and inflation stability. The natural rate hypothesis holds, at least to a good enough approximation, and policymakers should not assume that there is a long-term trade-off between inflation and unemployment. Stable inflation must remain one of the major goals of monetary policy."*

At its Board Meeting on 20 December 2012, the ECB decided, in line with most other central banks, to keep its key interest rates unchanged at historically low levels close to the nominal zero bound (Figure 2). The American Federal Reserve Board had already decided a week earlier to condition the low interest rate level explicitly on the level of unemployment.

**Figure 2:****Monetary policy rates by major central banks**

Source: Bloomberg.

The justifications for this policy vary according to the different statutory mandates of central banks. The ECB has the primary objective of preserving price stability and only subject to that must it support economic growth and financial stability. Consequently, ECB President Draghi has justified the decision to maintain policy rates near the lower zero bound by the fact that

*"HICP inflation rates have declined over recent months, as anticipated, and are expected to fall below 2% this year. Over the policy-relevant horizon, inflationary pressures should remain contained. The underlying pace of monetary expansion continues to be subdued. Inflation expectations for the euro area remain firmly anchored in line with our aim of maintaining inflation rates below, but close to, 2% over the medium term. The economic weakness in the euro area is expected to extend into 2013."<sup>3</sup>*

On the other side of the Atlantic, and based on the devastating experience of the Great Depression, but probably also because the American social safety system is less developed than in Europe, the Federal Reserve System (Fed) is obliged to give a larger role to support full employment. On 12 December 2012 the Fed's policy making body explicitly declared that:

*the exceptionally low levels for the federal funds rate are likely to be warranted "at least as long as the unemployment rate remains above 6½ percent, inflation over the period between one and two years ahead is projected to be no more than half a percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored." (Bernanke, 2012b: 3).*

Thus, despite different institutional arrangements, the monetary policies in the world's two largest economies follow in reality very similar orientations.

<sup>3</sup> See: ECB, Introductory statement by Mario Draghi to the press conference, 10 January 2013; <http://www.ecb.int/press/pressconf/2013/html/is130110.en.html>.

Critics of “ultra-easy monetary policy” believe that the crisis has revealed a number of distortions and obstacles which make the conventional monetary policy consensus dysfunctional. In order to assess the reasonableness of this critique, it is necessary to first summarise the conventional arguments for low interest rates (I), then confront it with the changed reality following the financial crisis (II). I will then develop a simple argument for how low interest rates affect long term economic growth (III) and finally draw some policy conclusions (IV).

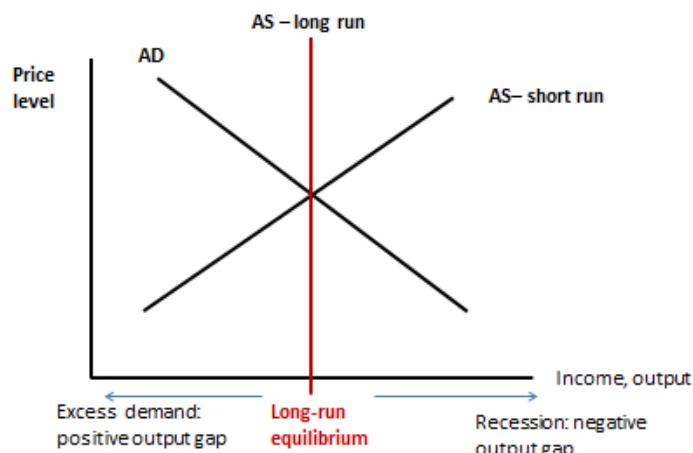
## 2. THE RATIONAL OF LOW INTEREST RATE POLICIES

At the core of modern monetary policy stands the principle that economic activity can be controlled by interest rates. This idea is well enshrined in the *Taylor Rule*, which guides the interest rate decisions of most central banks.<sup>4</sup> According to this rule, central banks react by changing interest rates with the purpose of minimising deviations from their inflation target and the output gap.

The underlying logic is described by standard economic text books of aggregate demand and supply.<sup>5</sup> Macroeconomic equilibrium is attained when aggregate demand (AD) equals aggregate supply (AS). The difference between aggregate demand and supply (AD-AS) is called the output gap. The aggregate demand curve shows the relationship between the price level and the quantity of goods and services *demanded*. Demand is effectively determined by how much money is spent on output. When the AD-curve is drawn for a given quantity of money supply, it is downward sloping, i.e. the higher the price level, the lower the output sold. The aggregate supply curve shows the relation between the price level and goods and services *supplied*. It is assumed that prices are flexible in the short run and sticky in the long run, so that the AS curve is vertical in the long run, but not in the short run. The long run output level depends on the amounts of available capital, labour and technology; it is also called the production potential. In the short run, however, when prices are sticky, firms are willing to sell more goods at higher prices and the short run AS-curve is upward sloping. Because output is produced by labour, this implies that higher demand will increase employment, but if it exceeds the production possibility potential, it will simply create inflation.

**Figure 3:**

### Macroeconomic equilibrium



The purpose of monetary policy is to set interest rates such that the output gap is zero and prices stable. The equilibrium interest rate, at which this is achieved, is sometimes called in reference to Wicksell (1898) the natural interest rate and the corresponding unemployment level the natural rate of unemployment. This theory assigns a significant role to monetary policy and the interest rate. In a simple quantity theory model, aggregate demand is equal

<sup>4</sup> See Taylor 1993. For an evaluation of the Taylor Rule in the monetary policy of the ECB. See Collignon (2011).

<sup>5</sup> See for example Mankiw (2010).

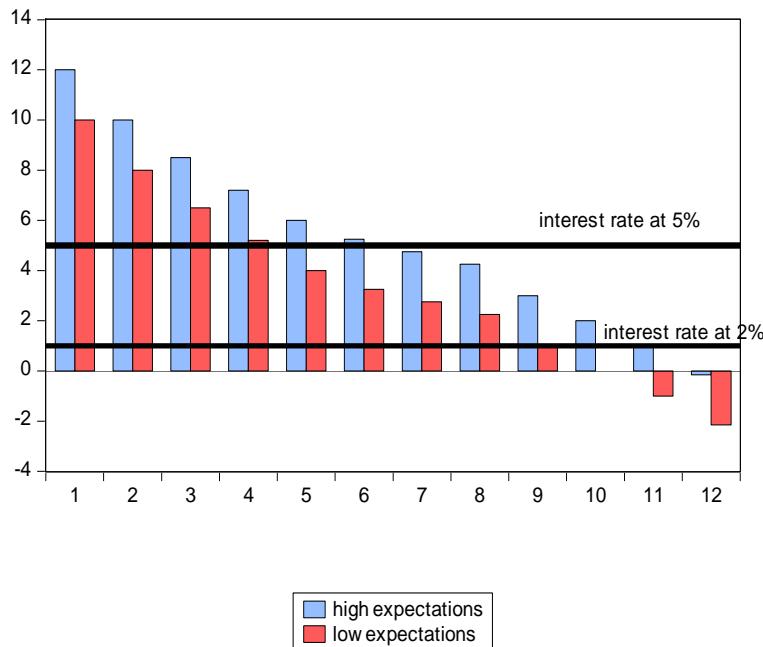
to money supply and monetary policy seeks keeping it in line with the productive capacities. Milton Friedman suggested a fixed growth rate of money supply in order to keep the economy stable. With some important modifications, this explanation is still inspiring the so-called monetary pillar in the ECB's analytic framework.

A more complex explanation is provided by the Keynesian IS-LM model, where IS stands for equilibrium in the goods market and LM for the equilibrium in the money market. Aggregate demand is decomposed into private and government consumption, investment and net exports (the demand for goods from abroad). These demand factors are sensitive to the interest rate, although at different degrees. Consumption mirrors savings decisions. If the interest rate is low, the preference for future consumption is reduced and present expenditure is increased. The same logic applies to investment. Net exports depend on exogenous demand in the rest of the world, but also on the exchange rate which responds to interest rates. In traditional textbooks, government spending is the least interest sensitive demand factor and this is why it can be used as an alternative policy tool when monetary policy loses its efficiency.

The LM-curve traces the relationship between the demand for real money balances and interest rate, given the exogenous money supply from the central bank. The interest rate reflects the opportunity cost of holding money, i.e. it is the price for giving up liquidity. Thus, at low interest rates, there is high demand for money balances, which translates into demand for goods, higher production and employment. Note that in this simplified model there is no role for buying assets other than goods. By simply increasing money supply ("printing money") the central bank can lower the interest rate and thereby stimulate the economy. Tightening money supply has the opposite effect.

Assuming that all assets are linked through arbitrage so that long-run rates were correctly reflecting future short rates and asset prices reflected the risk-adjusted present discounted values of future income streams, the central bank needs to only manipulate the short rate to change the finance conditions and incentives in the economy. This makes monetary policy potentially very powerful.

In Keynesian models an important impulse for aggregate demand comes from investment, which, through the multiplier process, generates income. Thus, if lower interest rates stimulate higher investment, this will generate a multiple income. Keynes modelled the interaction of investment with interest rates by the marginal efficiency of capital schedule. Imagine all possible investment projects can be ranked according to their rates of return, like in Figure 4. The interest rate is then the cut-off rate at which the cost of capital exceeds the return. For example in Figure 4 we see two environments, a boom with high expected returns, and a depressed period with low returns. At an interest rate of 5%, only six projects in good times and 4 projects in bad times will be realised. However, if the rate of interest is cut to 2%, nine projects will be undertaken in bad times and 11 in good times. These investment projects will then generate an increment of income, which is a multiple of the actual investment outlay. If the economy is in the position of a negative output gap, the additional income should help to bring the economy back to equilibrium.

**Figure 4:****Marginal efficiency of capital and interest rates****2.1. Changes caused by the financial crisis**

Although low interest rates are intended to stimulate investment and consumption, they hit a natural barrier: one cannot lower nominal rates below zero. The problem with very low nominal interest rates near zero is described by the liquidity trap. Krugman et al. (1998:141) have defined a liquidity trap "as a situation in which conventional monetary policies have become impotent, because nominal interest rates are at or near zero: injecting monetary base into the economy has no effect, because base and bonds are viewed by the private sector as perfect substitutes." It occurs when risk-averse economic agents are hoarding cash because they expect adverse events such as financial instability and turmoil, deflation, deep recessions, unemployment and other catastrophes. In this case, expanding money supply by the central bank has little or no influence on the interest rate and does not stimulate the economy. As Keynes has first shown, this situation is likely to occur when asset prices are high and yields are low, which is, of course, the case during a financial bubble. Conventional monetary policy is then becoming powerless and other policy tools need to be used in order to stimulate demand. Credit-financed government spending is the most popular alternative.

However, in a climate of general economic uncertainty, the liquidity trap is not the only obstacle for monetary policy stimulating economic activity. As Figure 4 has shown, negative expectations about the future return on investment would reduce firms' willingness to invest. The expectational dimension of future returns is highly dependent on psychological factors and the depth of the crisis. Keynes has emphasised that what matters for investment are the *expected* future returns, which *cannot be known with certainty*. In a deep crisis, the marginal efficiency of capital schedule is falling rapidly and if interest rates are already at the lower bound, it becomes difficult to stimulate investment. Tobin and Brainard (1977) have formulated an investment function, where a generalised risk premium reduces investment.<sup>6</sup> Thus, the higher the uncertainty, the greater the risk of potential

<sup>6</sup> The formula is:  $I = a + b[q - (1 + \rho)]$ , where  $I$  is net investment,  $a$  autonomous investment (e.g. by public authorities),  $q$  is "Tobin's  $q$ " which stands for the return on capital relative to risk-free financial investment and  $\rho$  is the risk premium.

losses and therefore the greater the “option value of waiting”, i.e. for not investing. In the conventional models, the Central bank must then lower interest rates in order to overcome the weakened demand. But when the interest rate is close to its zero bound, the negative effect of uncertainty cannot be compensated by lower interest rates. Monetary policy must then switch to other channels. It must reduce uncertainty in the macroeconomic environment. This is precisely what the ECB has done in recent years, most impressively when President Mario Draghi declared in London last year that the ECB would “do whatever it takes to save the euro” (Collignon, 2012).

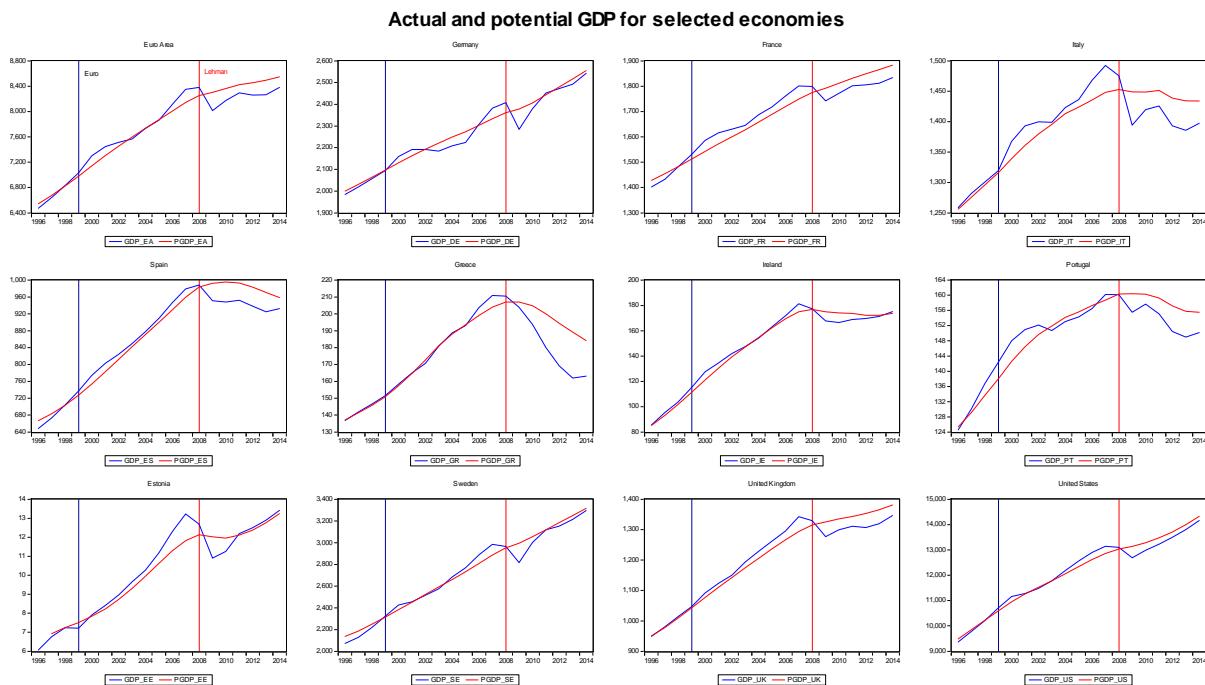
The here described models are the standard workhorses of economic theory. Their focus is on single period analysis, even if the adjustment path from some imbalances may take some time. The purpose of policy is to close the output gap in order to ensure price stability and high employment. However, this perspective ignores the consequences of short-run demand dynamics on the long-run growth of supply. The productive potential or the natural rate of unemployment is taken as exogenously determined by structural factors in the labour market. Hence, monetary policy must minimise deviations from the natural rate, but shifts in the position of the natural rate can only be achieved by structural reforms in the labour market. However, this explanation has two handicaps: first, it ignores the endogenous shifts in the growth potential, which are caused by the crisis. Second, structural reforms, especially of the labour market are equally exogenous. They reflect political preferences and compromises rather than economic adjustment mechanisms. Thus, we witness that political discourses informed by these theories are exhorting reform – and achieve very little. I believe this *reform failure* is less a consequence of lack of will or insufficient implementation, but essentially a result of theories which do not take into account the endogenous dynamics of economic processes. One example is the impact low interest rates will have on long term growth.

## 2.2. The impact of low interest rates on economic growth

One of the most intriguing features of the recent crisis is the slowdown of potential economic growth in the crisis countries. Figure 5 shows actual and potential GDP for some selected economies. The deep output losses caused by the crisis are frightening and only few countries have returned to their earlier potential levels. Especially in the southern crisis member states the lack of demand has pulled down not only the actual but also the potential growth rate. Collignon (2013) presents econometric evidence that this *reduction of potential growth* is a *response to weak aggregate demand* largely because of insufficient investment. From the point of standard economic theory discussed above, economic policy should therefore stimulate demand. However, given the persistence of the crisis, it is clear that the ultra-easy monetary policy does not do the trick, while fiscal austerity prevents governments from acting as a macroeconomic stabiliser. Thus, more attention should be given to effective aggregate demand management in the Euro Area. This is essentially a short run agenda. I will not pursue the demand side argument further in this section of the note, but rather turn to the correlation of potential growth with low interest rates.

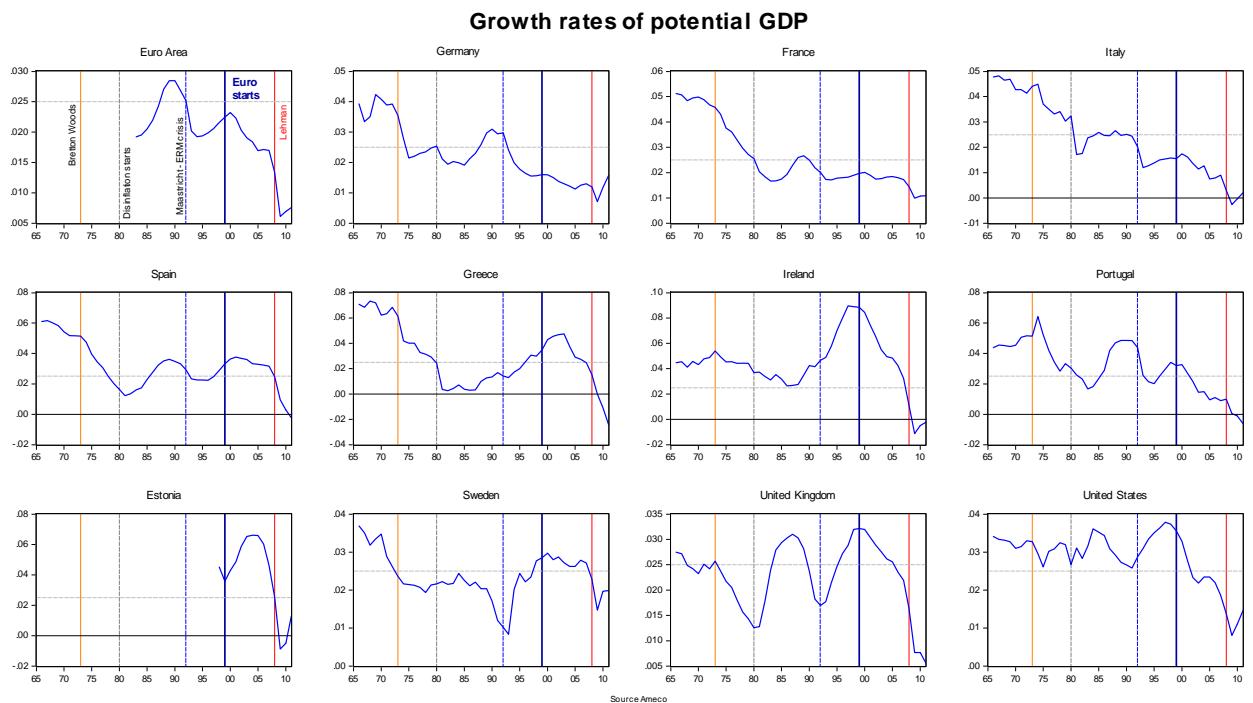
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$\rho$  is the risk premium. It is clear that in the crisis,  $q$  will fall and  $\rho$  will rise, so that investment is squeezed from both sides.

**Figure 5:**

**Source:** AMECO.

To start, Figure 6 shows the growth rates of the economic potential over half a century. We observe a long-run trend for the potential growth rate to slow down, although this trend is interrupted by specific events. First, potential growth was negatively affected by the collapse of the Bretton Woods System, although the impact was much stronger in multi-currency Europe than in the single-currency USA. Second, we note contradictory responses to the global anti-inflationary monetary tightening which kept real interest rates high from 1980 (Volker shock) until the mid-1990s. In most countries the immediate response to tight money was a reduction in potential growth, which is in line with standard demand theory, but then potential growth improved soon after. The late 1980s boom was interrupted by the European Exchange Rate Mechanism (ERM) crisis that followed German unification in 1992-3, just after the signing of the Maastricht Treaty. In member states which devalued against the Deutschmark (Italy, UK, Ireland, Spain, Portugal), the slowdown was less marked than in northern Europe. In the mid-1990s, interest rates started to come down in the global economy and also in Europe. This fall has stimulated growth in the US and southern European member states, but it had little effect in Germany and central Europe where the rate cuts were less pronounced. From the start of European Monetary Union in 1999 on, nearly all member states saw their potential growth rated fall despite historically low interest rates. Because supply and demand factors overlap, it is difficult to identify the long run effect of low interest rates on economic growth from these data. However, we can use a simple theoretical model to draw some conclusions.

**Figure 6:**

### A Keynesian-monetarist model for determining equilibrium growth

An important theoretical benchmark in growth economics is the Ramsey/Cass-Koopmans (RCK) Model, which derives the so-called *Keynes-Ramsey modified golden rule* whereby the real interest rate is determined by the rate of time preference plus population growth. Thus, tastes and population growth determine the real interest rate and technology determines the optimal capital stock and level of output and consumption that is consistent with this rate (See Blanchard and Fischer, 1989: 45). One of the beauties of the model is that the economy adjusts to the interest rate and not the other way round. However, this model has no role for money and monetary policy, because the rate of time preference is derived from consumer tastes for present versus future consumption and not from policy choices. I will now show that the same result can be obtained in an extremely simplified Keynesian-monetarist model.

We start by using the quantity equation in an economy with zero population growth:

$$(1) \quad PY = MV$$

where P stands for the level of goods prices, Y for output, M for money supply and V the velocity of circulation, assumed constant for technical reasons. Next, we assume with standard monetary theory (Bofinger, 2001) that all money is credit. Because credit requires repayment of principal plus interest, the liability of the borrower at the end of period ( $t$ ) is

$$(2) \quad M_t = Cr_t + Cr_{t-1}(1+i) + M_{t-1}(1+i)$$

Where  $Cr$  stands for credit and  $i$  for the nominal interest rate. Putting (2) into (1) and indexing yields

$$(3) \quad P_t Y_t = M_{t-1}(1+i)$$

Taking logs and differencing, we get the growth rates

$$(4) \quad \Delta p + \Delta y = \log(1+i) \approx i$$

In equilibrium, the nominal growth rate of GDP equals the nominal interest rate or by rearranging we obtain that *the economy must grow at the rate of the real interest rate*.<sup>7</sup>

$$(5) \Delta y = i - \Delta p$$

The implication is that in equilibrium, a low interest rate implies low growth of the productive potential, while at high rates economic agents must generate more income to service their debt.

This model is unrealistically simplified as it does not distinguish between credit given by the central bank and credit given by banks to the real economy. We therefore now assume that all credit granted by commercial banks is broad money ( $M3$ ) and carries the interest rate  $i$ . Banks hold reserves  $MB$  at the central bank for which they must pay the policy rate  $b$  and they only provide new credit if they make profit. Hence, the increase in credit and broad money supply is a function of the net profitability of a bank's credit portfolio:  $\text{net profit} = Cr(1 + i) MB(1 + b)$ . The banks' net profits can also be expressed as the rate of return on bank's assets, so that new credit and broad money creation are determined by:

$$(6) \Delta M3 = f[1 + i - 1/m - b/m]$$

In this equation  $m$  stands for the multiplier  $m = \frac{M3}{MB}$ . With rising uncertainty in an economic crisis liquidity preference increases and banks hold a larger share of their assets in liquid central bank reserves. Hence, the money multiplier  $m$  drops, but this also reduces the profitability of banks. Hence banks respond by reducing bank lending and the broad money aggregate shrinks. Aggregate demand falls and a recession occurs. Now, in normal circumstances, the central bank would lower the policy rate  $b$  commensurate to compensate for the fall in  $m$  in order to prevent a recession. However, with the policy rate  $b$  already close to zero, the economy is in the liquidity trap. Conventional monetary policy is no longer possible. Without effective monetary policy action, two things will happen:

- The non-compensated increase in liquidity preference undermines the balance sheets and lending propensity of commercial banks because it lowers the banks' profitability. Thus, a credit crunch occurs.
- Yet, for the economy as a whole, the lower profitability of the banking system translates into a reduced burden of debt service, which therefore requires less additional income to service the debt. Hence, the equilibrium growth rate will be reduced, but this will also close the output gap from above. The final outcome will be a lower steady state growth path with higher structural unemployment.

As these two trends interact, the real economy will first fall into a recession (negative output gap), while simultaneously the equilibrium rate of growth will slow down. This is precisely what we witnessed in many Euro Area member states (Figure 5). Thus our model provides an explanation for the short and long run consequences of the financial crisis and the difficulties monetary policy is confronting in bringing the economy back to normal.

This impairment of economic growth is also important for public debt. If monetary policy has become powerless, fiscal policy must generate the aggregate demand necessary to pull the economy out of the crisis. However, governments' capacities to borrow are constrained by the question of debt sustainability. In Collignon (2012b), I have shown that the Euro Area's fiscal policy rules are necessary and sufficient to ensure debt sustainability, although they could be used more generously. The fundamental rule for long-run debt stability is that the consolidation effort in terms of primary surplus increases must be larger than the growth-adjusted real interest rate. As long as this condition is fulfilled, and assuming no

<sup>7</sup> In essence, this is the same as the Keynes-Ramsey modified Golden Rule.

debt criterion in the excessive deficit procedure, the steady-state debt-GDP ratio will vary with the nominal growth rate. Hence, a permanently lower equilibrium growth rate, say between 1-2 percent would push the long run debt ratio to 75-100%. However, for some member states convergence to this steady state will take a long time and there is a real risk that while on the adjustment path individual member states could hit Irving Fisher's (1933) over-indebtedness trigger point. The problem is that raising interest rates would not necessarily help to improve the situation, as the growth-adjusted interest rate would push up the consolidation threshold. Europe is therefore in a very uncomfortable position: in the long run, the low interest rates undermine growth and increase the debt burden. In the short run, conventional monetary policy has become powerless, so that little stimulus is to be expected from this side. But for a massive fiscal stimulus, at the example of Japan or at least the USA, the margins of manoeuvre are severely constrained, given the debt crisis and communication blunders by European governments over the last few years.

### **2.3. Policy implications**

So, what is to be done? One implication from the logic of this note is that one can no longer hope for significant impulses for growth coming from the ECB. The best the bank can do is to continue reducing tensions in the financial markets by fulfilling its role as lender of last resort. In order to manage trust and confidence, it would also be of benefit if individual national central banks would stop questioning the collective actions of the Eurosystem.

In this context, the proposition made by the IMF (Blanchard et al. 2010) to raise the inflation target is tempting, but at least in the European context it would provide little improvement. Credibility as the only coherently functioning institution in the European Union is the strongest asset the ECB has. Putting this in question would quickly destroy the euro. As Peter Praet (2013) has pointed out, positive real interest rates are a functional and not a tactical criterion of European monetary union.

Most importantly, however, it is too early to think of an exit from ultra-easy monetary policy. While it is true that the low interest rates increase the risks for financial stability and lower the long run potential for economic growth, the short term priority must be to stimulate demand (money spending) in order to close the negative output gap. In other words, before dealing with the long-run equilibrium conditions, fixing the crisis has priority.

Fiscal policy should be used more aggressively to push Europe back into work by closing the output gap. Only after this task has been accomplished can one consider slowly raising interest rate.

If monetary and fiscal policy cannot be used efficiently, income policy must play a role. Higher wages in northern surplus countries could increase aggregate demand in the Euro Area.

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DIRECTORATE GENERAL FOR INTERNAL POLICIES  
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

# Impact of a Low Interest Rate Environment – Global Liquidity Spillovers and the search-for-yield

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## NOTE

### Abstract

On 10 January 2013 the ECB Governing Council decided "*to keep the key ECB interest rates unchanged*" based on an assessment of a '*contained*' inflationary pressure and a weak economic activity, a contraction of real GDP in second and third quarter of 2012 (ECB, 2013). Similar decisions have been taken by other leading central banks around the globe. This note assesses and comments on several aspects of the implied low interest rate environment. It contains some general considerations with respect to the current low interest rate environment in advanced economies. It then deals with potential conflicts between monetary policy and financial stability in a low interest rate environment. Moreover, more practical implications for the necessity of supervision of pension funds and the insurance sector are derived. The note also assesses the investment opportunities for retail investors in such an environment. Finally, we single out examples of main beneficiaries and losers from a low interest rate environment.

## CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>39</b>
<b>1. GENERAL CONSIDERATIONS</b>	<b>40</b>
<b>2. CONFLICTS BETWEEN MONETARY POLICY AND FINANCIAL STABILITY</b>	<b>42</b>
2.1. Global liquidity and the monetary policy dilemma	42
2.2. Global monetary liquidity and spillovers effects	43
2.3. Sustained monetary accommodation hampers comprehensive balance sheet repair	43
2.4. Central banks are risking their independence – operationally and financially	45
<b>3. WIDER IMPLICATIONS FOR THE ECONOMY AND SOCIETIES</b>	<b>47</b>
3.1. Impact on pension funds	47
3.2. Impacts on the insurance sector	48
3.3. Investment opportunities for retail investors	48
<b>4. WHO BENEFITS AND WHO LOSES?</b>	<b>50</b>
4.1. Winners from a low interest rate environment	50
4.2. Losers from a low interest rate environment	52
<b>REFERENCES</b>	<b>54</b>

## EXECUTIVE SUMMARY

On 10 January 2013 the ECB Governing Council decided "*to keep the key ECB interest rates unchanged*" based on an assessment of a '*contained*' inflationary pressure and a weak economic activity, a contraction of real GDP in second and third quarter of 2012 (ECB, 2013). Similar decisions have been taken by other leading central banks around the globe. This note assesses and comments on several aspects of the implied low interest rate environment.

Chapter 1 starts with some general considerations with respect to the current low interest rate environment approaching the zero bound in advanced economies, involving also negative real interest rates.

Chapter 2 deals with potential and already manifest conflicts between monetary policy and financial stability in a low interest rate environment. As a starting point, we introduce and elucidate the phenomenon of global liquidity and the monetary policy dilemma stemming from the co-existence of low interest rates in major advanced economies and huge capital inflows into emerging markets. Either they go for low interest rates – a strategy which will obviously not curb a credit boom – or they head for high interest rates – a safe way to attract global financial or monetary liquidity anew. We further argue that sustained monetary accommodation hampers comprehensive balance sheet repair. Moreover, we infer that global monetary liquidity and its spillovers represent eminent risks for global price and financial stability. Finally, we derive why central banks committed to safeguarding the low interest rate environment are risking their independence – operationally and financially.

In Chapter 3, we derive wider and more practical implications of protracted low interest rates for the economy and societies. The main focus of this exercise is on pension funds and on the insurance sector. We also assess the investment opportunities for retail investors in such an environment. Low rates tend to extend the balance sheets of pension funds and insurance companies alike on both the asset side (fixed-income securities) and the liability side (benefit promises): with falling bond yields, the discount rate used to determine the present value of future corporate pension benefits becomes smaller as well. However, the degree of interest rate dependence hinges on the variability of future cash flows and on the responsiveness of payable future benefits to the "*new normal*" economic environment of lower growth. In order to cope with this interest rate-caused profit squeeze, the affected financial institutions opt for investments in higher-yielding, higher-risk instruments, a reflex which poses significant challenges for supervision.

In Chapter 4, we conclude and try to single out which economic actors benefit and who loses from a low interest rate environment. However, we confine our analysis on first-round effects and a simple partial equilibrium analysis. Among the potential winners of a low interest rate environment are the mortgage payers, exporters, asset holders and banks and – although slightly more debatable – also issuers of corporate debt and those invested in gold and other commodities. Savers, pension funds, consumers and emerging markets in general tend to classify as losers of the low interest rate environment.

## 1. GENERAL CONSIDERATIONS

One distinct feature of the “*new normal*” economy seems to be that **real interest rates are negative** and are expected by some to stay at that level. This pattern has historical precedents, e.g. real rates were negative after World War II and again in the 70s, however, with much higher inflation rates than those prevailing today (Belke and Polleit, 2010a).

Headline inflation rates have been falling recently, *inter alia* due to lower commodity prices in the second half of 2012. Expected inflation seems to be converging towards the ECB’s target of 2 percent Harmonized Index of Consumer Prices (HICP) inflation. At the same time, the probability distribution of expected inflation rates in the euro area tells us that both the share of analysts expecting inflation beyond the target and those predicting deflation is shrinking steadily (Bundesbank, 2012, pp. 44f.).<sup>1</sup> So with inflation in the euro area well-anchored and **short-term rates** close to zero, real rates will stay negative for a while. A similar analysis seems to apply to **long-term rates**, with sovereign bond yields now falling below 2 percent in Germany, the US and the United Kingdom. The respective central banks are targeting an inflation rate of 2 percent (only recently also in the case of the Fed).<sup>2</sup> It directly follows that bond investors now expect to lose money in real terms, whereas for instance the stepwise increase in inflation taken place in the 1970s came quite unexpectedly.

In the economic literature, the **zero bound on nominal interest rates** is seen as a major constraint for monetary policy that wants to keep the economy at full employment (Belke and Polleit, 2010a). The arguments are based on the notion that *the short-term interest rate is the key variable for monetary policy*. The zero bound is seen as a problem when nominal interest rates are low (which in turn is typically the case when long-term inflation is low (Johnson, Small and Tyron, 1999)), because a decline in inflation could push the real short-term interest rate above the level compatible with full employment.

This might trigger a dangerous dynamic, when economic activity is weak, and short-term interest rates hit the zero bound. With actual output falling below potential, inflation might slow down even further, increasing the real rate of interest. If the resulting real interest rate is higher than the real interest rate needed for keeping the economy at full employment, a downward deflationary spiral might be set into motion: declining output, falling prices and an increase in the real interest rate. This issue is related to the experience made in the Great Depression period in the US and is again on the top of the agenda with the financial crisis. The debate gained momentum in the late 1990s, when economic growth in many countries was weak and, at the same time, consumer price inflation (CPI) had reached rather low levels by historical standards (Belke and Polleit, 2010a). The risk and its consequences ascribed to hitting the zero bound are assessed in empirical analyses. Studies of the US economy<sup>3</sup> suggest that the risk associated with zero inflation may be significant, but that inflation of 1 to 3 percent p.a. should be sufficient to alleviate most of that risk<sup>4</sup>.

However, it is hard to imagine that an economy’s *real interest rate* should ever reach zero in equilibrium. As long as human desires are not fully satisfied, there is always something to gain from investing part of current income, thereby increasing future income. As a

<sup>1</sup> In addition, some important business climate indicators such as the ones provided by Ifo, INSEE und ISTAT are turning upwards and monetary conditions in the euro area are currently very accommodative.

<sup>2</sup> Also more generally, market- and survey-based indicators of long-term inflation expectations have remained rather stable and are approaching central banks’ inflation goals. See BIS (2012), Graph IV.10.

<sup>3</sup> See Fuhrer and Madigan (1997), Orphanides and Wieland (1998), Tetlow and Williams (1998) and Reifschneider and Williams (1999).

<sup>4</sup> Fuhrer & Sniderman 2000.

consequence, there should always be a *positive* real interest rate in the medium to long run and this is what we basically should define as a "low interest rate environment".

If the central bank promises to keep inflation at, say, 2 percent p.a., zero nominal market interest rates would suggest that the *central banks' inflation promise is not credible*. Creating positive inflation expectations, however, should be an easy undertaking under a paper money regime: the central bank can increase the stock of money at any time in any quantity desired. The zero bound therefore is a rather unlikely steady-state phenomenon even in today's monetary environment (Belke and Polleit, 2010a). The same is valid for a deflation scenario against which there will be a prohibitively high political resistance and the ECB is capable of extending the monetary base by any preferred amount at any time. The bank could initially buy sovereign and bank bonds and pay with freshly created central bank money. From this perspective, for instance a negative deposit rate would be a *too complex and risky measure* for the more or less *hypothetical* deflation problem.

After all, it appears that the alleged zero bound nominal interest rate problem is perhaps no problem at all, as Ben S. Bernanke noted in 2002: "*Indeed, under a fiat (that is, paper) money system, a government (in practice, the central bank in cooperation with other agencies) should always be able to generate increased nominal spending and inflation, even when the short-term nominal interest rate is at zero.*"

The level of interest rates can be viewed as the price which equilibrates the desire for saving and investment demand. From this point of view, temporarily negative real rates may simply indicate that savers are overall cautious in times of uncertainty, and that entrepreneurs are rather reluctant to invest in new projects. Central banks try to influence this price by setting their "*base*" rates at which they will supply liquidity to banks. They have also been employing "*quantitative easing*" – i.e. employing freshly created central bank money to purchase bonds - with the intention to curb longer-term yields. Their intervention has had some impact, usually measured in terms of a real interest rate equivalent (Belke, 2012).

With respect to the identification of winners and losers from low interest rate policies (see below), it is important to note that their main purpose is to create disincentives to save and strengthen consumer demand and to stifle borrowing of the business sector and enhance labour market performance. "*It is a sign of the weakness of the global economy that central banks have forced nominal interest rates to their lowest levels in history*" (The Economist, 2012).

What exactly is the **macroeconomic impact of a low interest rate environment**? The first thing which comes to mind is that the level of real interest rates should be linked to economic growth, but not via the trivial but often suggested transmission mechanism from lower rates to higher growth. As the example of the current distressed euro area Member States clearly shows, you simply cannot grow out of a current account deficit by definition, especially if you try to rekindle growth through lower interest rates.

Generally speaking, the realized level of the real interest rate defines a threshold against which profitable projects should be assessed. In order to avoid the danger of capital misallocation, the interest rate must not be kept at a not fundamentally determined low level for a too large period. Market participants will then feel tempted to feed speculative real estate price trends instead of financing the erection of new production facilities. The functioning of a market economy and the realization of significant economic growth thus decisively hinges on offering a positive return to suppliers of capital (Belke and Polleit, 2010a, The Economist, 2012).

## 2. CONFLICTS BETWEEN MONETARY POLICY AND FINANCIAL STABILITY

### 2.1. Global liquidity and the monetary policy dilemma

In order to gauge potential conflicts between monetary policy and financial stability in a low interest rate environment, one should first take into account the co-existence of low interest rates in major advanced economies and huge capital inflows into emerging markets. This co-existence causes a **dilemma** for monetary policy actors in emerging and advanced economies alike. Either i) they go for low interest rates – a strategy which will obviously not curb a credit boom – or ii) they head for high interest rates – a safe way to attract (in the case of emerging economies even more) global financial or monetary liquidity.<sup>5</sup> Emerging market economies have traditionally shied away from the second alternative and have chosen the first. A potential way out of the dilemma might be to flank higher interest rates with macro-prudential measures such as, for instance, higher capital ratios or tighter loan-to-value ratios. At least, this toolbox should strengthen the financial system against the impacts of a credit bust (BIS, 2012), given that emerging economies' monetary policies tend to be structurally too lax, as measured by the difference between actual base rates and normative rates such as the Taylor rate (BIS, 2012, Graph IV.6, Taylor, 2013).

In the same vein, the monetary policy strategy of **inflation targeting** (inflation measured in terms of consumer price inflation) which has become popular on a worldwide scale has suffered from a couple of heavy setbacks starting in September 2008, when it became obvious that those central banks relying on these strategies had not been cautionary enough or even had not paid enough attention to asset-price bubbles (Frankel, 2012). Instead, central bankers argued that it would be sufficient to pay attention to developments of housing and equity prices to the extent that they convey pieces of information with respect to consumer price inflation. But the financial crisis showed that asset price developments would have deserved to be paid much more than indirect attention. The main lesson from the recent decade is that protracted monetary easing may lead to significant asset price hikes and accelerating credit growth even in the absence of consumer price inflation (for the exact pattern see Belke, Orth and Setzer, 2010).

Hence, common monetary policy strategies including (consumer price) inflation targeting *must be overhauled and this overhaul should attach sufficient attention to the risks connected with the emergence of financial imbalances*, even if (consumer price) inflation stays moderate and invariable. Especially, monitoring general financial conditions such as volumes and prices on specific asset markets is of overall importance. Another important conclusion is that the scope for and the limitations of a prolongation of monetary easing must be carefully weighed against each other. On the one hand, in the spirit of Milton Friedman and so often persuasively explained by Ben Bernanke, forceful and determined action by central banks in the wake of the global financial crisis could be well defended in order to avoid devastating consequences of monetary policy abstinence and financial meltdown as experienced during and after the Great Depression (BIS, 2012, Graph IV.8). On the other hand, the following deliberations reveal the risks of extending easy monetary conditions are more on the downside.

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<sup>5</sup> For the relationship between monetary and financial market liquidity see ECB (2012), p. 57.

## 2.2. Global monetary liquidity and spillovers effects

Recent research on the impacts of global monetary liquidity corroborates that low interest rates in advanced economies may well lead to **spillover effects in emerging markets**, leading to upward pressure on exchange rates in the latter countries, causing **credit** and **asset bubbles** over there (such as Chinese property bubble) and, until recently, **inflated commodity prices** (Belke, Bordon and Volz, 2013; BIS, 2012, Chapter III; and The Economist, 2012). As a result, these countries cannot pursue their domestic stabilization objectives any more. Moreover, financial imbalances similar to those in advanced economies in the run-up to the crisis and – with an eye on the growing importance of these countries in international investment portfolios - the same negative global repercussions in the case of unwinding may arise.

An important drawback of too easy global monetary policy is that it also causes rises in commodity prices (Belke, Bordon and Volz, 2013, and BIS, 2012, Graph IV.9, left-hand panel). Although **commodity price inflation** took place particularly in emerging markets, it might feed into advanced economies' inflation because emerging market economies are increasingly important in global supply chains. Commodity prices are determined in global auction markets and depend on global demand conditions which are in turn shaped by global monetary balances in the hand of investors (for details see Belke, Orth and Setzer, 2010). The increasing role of financial investors in commodity markets has surely kindled the sensitivity of prices to international monetary conditions and global financial liquidity which is closely correlated with global monetary liquidity (ECB, 2012; and BIS, 2011, Box IV.B.).

The fact that monetary policy spillovers are becoming increasingly significant forces central banks to attach **more importance to the global implications** of their policies. To arrive at lasting price and financial stability in times of ever higher financial globalization, also monetary policy should hold a global perspective (Borio, 2011). Otherwise we will find ourselves in a world in which **currency wars** cannot be excluded any more. As a stylized fact, policy makers in a couple of developed economies such as Japan are currently expressing their concerns about competitive devaluations due to monetary policies by the Fed and the ECB and announced monetary easing at a degree unseen before.

This insight is also impressively backed by recent empirical studies (Taylor, 2013, and Hofmann and Bogdanova, 2012). They show that in the years 2003 to 2005 monetary policies worldwide have found themselves in a "*bad equilibrium*". They come up with the intriguing result that monetary policy deviations in other economies such as the euro area and in Japan – as measured as residuals from an estimated domestically oriented Taylor rule which was valid throughout the Great Moderation – prove to be in close synchronization with that of the US.

## 2.3. Sustained monetary accommodation hampers comprehensive balance sheet repair

The decrease in interest rates lowers financing costs and, hence, may cause borrowers to *connive at the problems* still inherent in their *balance sheets*. As a consequence, balance sheets stay weak and *credit misallocated*. These problems then tend to become structural and any reversion to normal interest rate levels in the future might imply huge damage to these institutions. Hence, an exit from unconventional monetary policies becomes an even more remote option and the current policy stance might become self-sustaining and path-dependent (Belke, 2012a, The Economist, 2012).

What is more, due to over indebted economic agents who are not at all inclined to borrow for spending and an impaired financial system, one needs *an even higher degree of*

*monetary accommodation* than before the financial crisis in order to rekindle growth. This higher monetary stimulus in turn will once more **lower the incentives** for commercial banks **to repair** their **balance sheets** and *for sovereigns to strive to restructure their financial sectors and for reforms to secure sustainable debt burdens* (IMF, 2012, and Belke, Herz and Vogel, 2006). The recent euro area crisis has clearly shown how intertwined banking and sovereign crises are and thus how largely financial stability is dependent on a risk-free status of government debt (BIS, 2012, Chapter V).

Admittedly, monetary policy easing gives banks and governments ample time for balance sheet repair and thus avoids disorderly deleveraging and defaults. Moreover, it is able to lift asset prices and thus output and labour market performance on a higher level in the short run. But in order to be forced to repair their balance sheets commercial banks should receive a bold and credible signal from the central banks that their policies of very low interest rates will be put to an end in the near future; especially with an eye on the fact that banks in many cases depend heavily on central bank funding (Belke, 2012b, and BIS, 2012, Chapter VI). However, unfortunately the opposite is happening right now; central banks like the US-Fed and the Bank of Japan (BoJ) commit themselves to perpetuating monetary policy easing.

What is more, commercial banks are prompted to *overestimate repayment capacity* in a low interest rate environment due to the perceived **low opportunity cost of carrying non-performing loans**. As a result, banks keep extending credit to problematic borrowers; they "evergreen" loans, as defined by Peek and Rosengren (2003). "Evergreening" loans was quite common in Japan during the long period of low nominal interest rates in the 1990s (Caballero, Hoshi and Kashyap, 2008) and was found to be prevailing in the case of Italy after Lehman as well (Albertazzi and Marchetti, 2010). And it seems to be relevant today. At least, this is indicated by the fact that US private households deleverage by means of taking up less new loans instead of unsustainable debt write-offs (BIS, 2012, Chapter III) and that subdued market-to-book ratios for commercial banks coexisted with loan loss provisions that are depressed although macroeconomic conditions are still appearing weak (BIS, 2012, Table VI.1).

The flip-side of the same coin is that commercial banks tend to become *overly optimistic about the ability of borrowers to repay*, and thus do not adequately provide for bad debts. Moreover, commercial banks receive an often neglected *public subsidy* since they are enabled to make "easy money" just by borrowing short-term from the central bank and lending long-term to the government (The Economist, 2012). Quite naturally then, the question emerges for how long this subsidy can be considered to be legitimized from a welfare maximizing view.

Protracted monetary accommodation may also systematically **curb the profitability of commercial banks** (Albertazzi and Gambacorta, 2009). If the yield curves flatten because the low short-term interest rates are anticipated to prevail also in the future, this would ultimately lead to an erosion of banks' interest income, among others since returns from maturity transformation will shrink (BIS, 2012).<sup>6</sup> In the US, the yield curve is on the short end fixed by federal funds rates amounting to zero and compressed on its long end by shrinking Treasury yields at which commercial banks usually lend. It is important to note that low yields on fixed income investments are a cause of trouble also for pension funds and life-insurers (a point we elaborate further below).

Furthermore, protracted low interest rates may contribute to a build-up of financial vulnerabilities by "**triggering a search for yield in unwelcome segments**" (BIS, 2012).

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<sup>6</sup> Note in this context that the more recent flattening of the yield curve in the US and in the UK has been accompanied by a drop in the commercial banks' net interest margin (BIS, 2012, Table VI.1).

In this sense, monetary expansion was useful in the beginning to counter excessive risk aversion, but any overshooting of this effect (expressing itself in trading losses by some financial institutions) should be avoided. Empirical evidence supports the relevance of this channel as one driving force of the recent financial crisis (Altunbas, Gambacorta and Marqués, 2012, and Maddaloni and Peydró, 2011).

Low policy rates and protracted unconventional monetary policies as especially aggressive variants of monetary accommodation exert **distortionary side effects on financial and capital markets** (Belke, 2012a). They have altered the dynamics of overnight money markets, an effect which in itself is hampering the exit from these aggressive policies (BIS, 2012, Box IV.B, p. 46). Moreover, they have damped market signals by lowering long-term interest rates and financial market risk spreads and at the same time the price of sound assets which are not "*subsidized*" by them. Since long-term yields on sovereign bonds as a key benchmark for financial intermediation are pushed to exceptionally low levels (BIS, 2012, Graph IV.4), **financial mispricing** will become possible on a more general level. As an immediate consequence, the intertemporal and intersectoral allocation of resources would not be effective anymore.

## 2.4. Central banks are risking their independence – operationally and financially

As stated above, the probability distribution of expected inflation rates in the major advanced and emerging market economies tells us that long-term inflation expectations appear to be well-anchored as things stand. However, this should not make us too complacent and tempt us to interpret this as ample room for additional monetary policy easing. The reason simply is that the credibility of central banks in advanced economies must not be jeopardized in view of the potentially growing public pressure to do more if for instance the euro area will not be successful in solving its structural problems and the economy especially in the periphery will stay weak (Belke, Freytag, Keil und Schneider, 2012).

*"A vicious circle can develop, with a widening gap between what central banks are expected to deliver and what they can actually deliver. This would make the eventual exit from monetary accommodation harder and may ultimately threaten central banks' credibility"* the BIS (2012) warns and, thus, adds to our path-dependence argument speaking against a timely exit from unconventional monetary policies developed further above. If, in addition emerging market economies do continuously stick to export-led growth and the respective foreign exchange interventions, markets will feel legitimized to put the central banks' determination to pursue price stability under close scrutiny. These tendencies in advanced and emerging economies taken together finally have the potential to creepingly unfasten inflation expectations on a global scale.

*Longer-term inflation fears* stemming from the enduring low interest rate environment are reinforced by steadily *increasing risks on the political economy side* – just to mention the notions of "*fiscal dominance*" and "*financial repression*" in combination with the regulatory preference for investments in sovereign bonds. Bundesbank President Jens Weidmann was not the first to observe that central banks' unconventional monetary policies working via its balance sheet have clearly blurred the line between monetary and fiscal policy (Jens Weidmann in FAZ, 2012). With an eye on "*fiscal dominance*" and "*financial repression*" then enduring reliance on quantitatively and qualitatively extraordinary monetary policy measures raises concerns about the fall of the central banks' operational and financial autonomy. This is especially so because public debt is still on an unsustainable path in many countries and inflation and the inflation tax are easier ways out of the mess than budget consolidation or default from a political economy point of view (Burda and Wyplosz,

2012; and BIS, 2012, Chapter V). In other words, the main incentive problem is that accommodative monetary policy tends to alleviate the reform pressure for politicians. Under all circumstances the impression must be avoided that central banks stand ready any time to employ their balance sheets in order to come up with a solution to any kind of economic and financial problem (The Economist, 2012).

The continuously rising financial exposure in the overstretched central banks' balance sheets (as, for instance, the interest rate risk of the Fed and the credit risk of the ECB) may furthermore impede their financial independence. Financial losses do not per se have a negative bearing on central banks' operational capabilities since there is a "*fiscal backing*" available from the respective governments – with the slight complication in the euro area case that national governments provide the backing of the ESCB (Belke and Polleit, 2010). But it is exactly the very existence of this fiscal backing which could undermine operational autonomy, as soon as the central bank is not capable of pursuing its main monetary policy objectives without taking recourse to financial resources from the government (Stella, 2010; and Belke and Polleit, 2010).

Taking all this as a starting point, it seems fair to state that the current stability of long-term inflation expectations cannot be taken for granted. In case of *erosion* of the central banks' *credibility* and a *steady rise in inflation expectations*, it would be *very costly* in terms of the necessary adjustment recession *to restore price stability*, as impressively shown by the experience of the 1970s (Belke and Polleit, 2010a).

### 3. WIDER IMPLICATIONS FOR THE ECONOMY AND SOCIETIES

Wider implications for the economy and societies can be derived from the **impacts** of the low interest rate environment **on asset allocation decisions** of investors (IMF, 2011). On 20 December 2012, the General Board of the European Systemic Risk Board (ESRB) discussed four potential risks for financial stability in the EU in the medium-term. One of the risks identified were the ramifications of the low interest rate environment: "*Third, the General Board highlighted the need to investigate possible implications of a low interest rate environment on the ability of long-term investors, including insurance companies and pension funds, to generate adequate returns*" (ESRB, 2012). What exactly are these implications?

Low rates tend to extend the balance sheets of *pension funds* and *insurance companies* alike on *both the asset side* (fixed-income securities) and *the liability side* (benefit promises): with falling bond yields, the *discount rate used to determine the present value of future corporate pension benefits* becomes smaller as well. However, the degree of interest rate dependence hinges on the variability of future cash flows and on the responsiveness of payable future benefits to the "*new normal*" economic environment of lower growth. The latter may diminish the returns on portfolio investments which in turn puts pension commitments (for defined-benefit pension funds, public or corporate) or guarantees under downward pressure or alternatively pushes contributions and premiums upwards (Antolin, Schich and Yermo, 2011, and Shilling, 2012a).

In order to cope with this **interest rate-caused profit squeeze**, the affected financial institutions may opt for *gambling for redemption*, because benefit cuts are almost impossible – above all if employers are limited in their actions by public and private union contracts (Shilling, 2012a). They just choose *investments in higher-yielding, higher-risk instruments* such as real estate, private equity, developing-country stocks and bonds, hedge funds and commodities in order to be able to pay the level of return promised to beneficiaries before the financial crisis. (Antolin, Schich and Yermo, 2011). However, the success of this strategy is highly unlikely since the plan sponsors may not fully understand the increased risks involved (Shilling, 2012a).

#### 3.1. Impact on pension funds

Falling bond yields increase the present value of future pension liabilities. For the United Kingdom, "[t]he Pension Protection Fund recently reported that the deficit of British pension funds has risen thirteenfold from GBP 24.5 billion (USD 39 billion) to GBP 312 billion over the past year" (The Economist, 2012). As stated above, this forces firms to reserve more financial means which originally was intended for business expansion for their schemes (BIS, 2012, and The Economist, 2012).

*"Pension funds, especially vastly underfunded state and local defined-benefit plans, are probably the most severely hurt by chronic low interest rates. Corporations have been shifting to 401(k) and other defined-contribution plans and away from defined-benefit pensions, but the latter are uncomfortably underfunded, especially with low interest rates and muted investment returns in prospect. One study found that 42 companies in the Standard & Poor's 500 Index may have to contribute at least \$250 million each this year to make up for pension-funding shortfalls"* (Shilling, 2012, for the US case).

### 3.2. Impacts on the insurance sector

In general, the insurance sector should underperform, as far as very low interest rates, as a key risk, raise the present value of its liabilities and the shift into more risky alternative investments cannot make up for return losses on the asset side (BIS, 2012, Graph VI.1, top right-hand panel). Such a scenario may jeopardize the guaranteed yield of life-insurance contracts, deplete the bonus and rebate provisions and thus worsen the resilience of the life-insurers as a whole. In an important simulation exercise, Kablau and Wedow (2011) assess the impact of a low rate environment on German life-insurers by incorporating a wide array of adverse scenarios to a simplified balance sheet model for life-insurances.

*Resilience problems* of life-insurers should be taken seriously with an eye on the experiences in Japan where the low interest rate environment combined with serious negative profit margin problems led to failures of numerous life-insurance companies in the late 1990s and early 2000s (BIS, 2012). A decade later now, however, lack of resilience has become less of a problem for insurance companies in the same way as pension funds thanks to a successful hedge of interest rate risk, or to the use of insurance products which are unit-linked or exactly defined contribution schemes (Committee on the Global Financial System, 2011). The drawback of these mitigating actions, however, is that they pass the connected risks to individuals and other financial institutions and, hence, cause additional distortions elsewhere (BIS, 2012). For instance, they put further downward pressure on bond yields which worsens the pension funds' and life insurers' situation even further (Antolin, Schich and Yermo, 2011).

As said, a low interest rate environment impacts the scope and variety of investments of insurers, dependent on the *duration match* of the specific insurance company's asset and liability structure. The latter differs between life-insurance companies whose business contains long-run obligations, mainly fixed payments, to be matched by sufficient fixed-income returns and non-life insurers. The main problem from a prudential and financial stability perspective is that the life-insurers' "**search for yield**" changes the risk profile of the asset structure into an upward direction (Antolin, Schich and Yermo, 2011).

Seen on the whole, thus, a substantial period of low interest rates necessitates precautionary regulatory action and supervisory and monitoring activity including stress tests with respect to pension funds and insurers (Antolin, Schich and Yermo, 2011).

### 3.3. Investment opportunities for retail investors

The low interest rate environment may also lead to an increase in residential property market prices, thus stimulating taking recourse to mortgage credit. However, the allocation of credit has not perfectly matched the trend in real estate prices, since bank lending has been overly restrictive in times of crisis (Stinglhamber, van Nieuwenhuyze, and Zachary, 2011). The interest rate level affects home loans both *directly* and *indirectly* (Belke and Polleit, 2010a, Part VII).

Let us first turn towards the *direct effect* which comprises effects on the *number of new loans* and the *average amount borrowed*. For the overall volume of loans the first transmission channel is by far dominating (Stinglhamber, van Nieuwenhuyze, and Zachary, 2011). It works as follows. First, with lower interest charges, the households increasingly prefer to buy rather than just to rent. Second, lower borrowing costs make *real estate investments* more attractive than financial investments. Lower interest rates thus lead to a higher number of loans (Stinglhamber, van Nieuwenhuyze, and Zachary, 2011, pp. 86ff.).

However, the level of the interest rate may also determine the *average amount borrowed*. Here, we can differentiate between two variants of transmission mechanisms which obviously work in opposite directions. First, a low interest rate represents an incentive for households to borrow a larger sum with their monthly payment unchanged. They now have some leeway to diminish their down payment and/or to purchase a more expensive property. Second, more accessible loans imply availability to less wealthy borrowers who buy real estate which does not necessitate large loans and, thus, a reduction of the average amount borrowed. Data analysis usually suggests that the latter effect dominates the former (for Belgium, for instance, see Stinglhamber, van Nieuwenhuyze, and Zachary, 2011).

But a low interest rate environment may also have an *indirect* effect on the supply and demand of credit (Stinglhamber, van Nieuwenhuyze, and Zachary, 2011, pp. 88f.). Lower interest rates grant larger credit access to households, according to the direct mechanisms described above. This feeds back into housing demand, since more eventual buyers enter the market. Rising houses prices finally clear the market which stimulates more mortgage lending and – given unchanged down payment - higher borrowed credit amounts and thus increases risk.

This sequence of events has the potential to cause a property bubble if financial institutions go on with mortgage lending in a “business as usual” manner without putting the borrowers’ ability to repay under scrutiny. This closely follows the pattern which triggered the financial crisis in the US subprime sector (Stinglhamber, van Nieuwenhuyze, and Zachary, 2011, p. 88).

## 4. WHO BENEFITS AND WHO LOSES?

The following analysis is confined on **first-round effects** and a simple partial equilibrium analysis. We abstract from the possibility that one market participant may at the same time be member of several of the categories individually listed below.

Among the potential winners of a low interest rate environment are the mortgage payers, exporters, asset holders and banks and – although slightly more debatable – also issuers of corporate debt and those invested in gold and other commodities. Savers, pension funds, consumers and emerging markets in general tend to classify as losers of the low interest rate environment.

### 4.1. Winners from a low interest rate environment

**Mortgage payers:** The level of interest rates has some bearing on the liabilities taken by individuals. As a stylized fact, the exact figure of mortgage loans is inversely correlated with interest rates (for Belgium see Stinglhamber, van Nieuwenhuyze, and Zachary, 2011, p. 87). Monetary easing has by now passed through large parts of the monetary transmission mechanism and has made home loans cheaper, exerting the relatively largest effect on floating rate mortgages. In order to gauge the net quantitative effect, one has to take into account that the lenders do not fully pass along the benefits of lower interest rates to mortgage borrowers. But nevertheless, the diminished interest burden contributed to stabilize consumer spending and confined the frequency of home repossession. But in the last months, at least in the UK "*some of the biggest lenders have announced sharp increases in their standard variable mortgage rates*" (Elliott, 2012).

**Governments** represent of course another group of borrowers which is benefiting from modest interest costs or even negative real interest rates. What is more, central bank policy rates approaching zero have also given way to the rather new (and for economists quite strange) phenomenon of negative returns on short-term government securities (Shilling, 2012). The recent negative yield on 10-year Treasury inflation-protected securities was joined by similar movements among others in Germany and Denmark as well. It is important to keep in mind that low interest rates keep the cost of financing the debt low and are an incentive for governments to delay dealing with the exploding sovereign debt.

**Exporters:** A prominent example in this context is the United Kingdom with its flexible exchange rate. Its rather modest level of interest rates joint with its money supply growth has lowered the Sterling's attractiveness to investors. According to the exchange rate channel of monetary policy transmission, a lower external value of the pound renders UK exports cheaper (Belke and Polleit, 2010a, pp. 621ff.). But large part of the devaluation took place already in the past before March 2009 (Elliott, 2012). The net effect, however, depends on which central bank is ahead of the crowd in the "**currency war**" as described fully further above. In other words, in a world of competitive devaluations the exporters' net gain may be much smaller due to the high degree of exchange rate volatility and uncertainty induced which in turn is hampering trade (Belke and Gros, 2001).

**Asset holders:** Near-zero interest rates and especially the (targeted) Quantitative Easing (QE) programmes in the US and the UK were designed to make cash holdings less attractive for the private sector and to push investors into assets such as stocks, commodities and property. The Fed and the BoE referred to the traditional **asset price channel** of monetary policy transmission and hoped that higher asset prices would make the private sector feel wealthier which in turn would increase confidence of consumers and investors and let them spend more. Analogous impacts on asset prices are implied by the ECB's unconventional measures such as the Securities Markets Programme (SMP), the

Longer-Term Refinancing Operations (LTROs) and the announced Outright Monetary Transactions (OMTs) - although through slightly different channels (Belke and Polleit, 2012a, pp. 587ff.; and Elliott, 2012).

**Commercial banks** are the *fourth* group and perhaps the clearest case intended to profit from low interest rates (for the euro area see Belke, 2012b; and for Japan Caballero, Hoshi and Kashyap, 2008). Banks benefited from QE in the UK since it enabled them to receive cash in exchange for assets, predominantly UK government gilts. They employed these cash amounts to repair their balance sheets which were severely damaged by the financial crisis. The same is valid also for the euro area through the SMP, the LTROs and also the announced OMTs – but via slightly different transmission channels. In order to assess the incidence it is important to note that the intended growth in bank lending to individuals and businesses, especially SMEs, in the wake of strengthened balance sheets has not yet been seen to the anticipated extent up to now (Belke, 2012b).

The commercial banks in advanced economies have been *granted access to trillions of free money* they use to buy treasuries and other assets which have a guaranteed rate of return due to the Bernanke, Draghi and other central bankers' puts - some of which pours into emerging markets where it is leading to a massive inflation potential as derived further above. The profits from these trades have for instance in the US then been – to be a little but not overly polemic here - distributed partly as bonuses to the bankers whose institutions are shareholders at the Federal Reserve.

Fifth, a look at the impact of the low interest rate environment on **corporate debt** appears to be worthwhile as well. Investment-grade corporations have been enabled to issue and roll-over debt at very low interest rates on a wide scale. And these effects on corporate-bond yields are not mainly connected with substitution effects triggered by individual investors' disdain for stocks and the investment-grade corporates' appeal as havens. In the US, for instance, low interest costs besides tax deductibility let issuing bonds instead of equity more favourable. *Agency securities such as Fannie Mae mortgage-backed securities* are further winners from QE-induced lower interest rates (Shilling, 2012).

As a complement one should also spend a word on **commodities and gold** as potentially beneficiaries from a low interest rate environment. As mentioned above, interest rates approaching zero have also invited highly leveraged speculation in commodities – if one abstracts from offsetting factors like the global recession and hard landing in China (Belke, 2012a). However, with respect to gold one should be careful because its price is influenced by such an array of different factors that the exact direction and magnitude of the interest rate effect cannot be figured out by an econometric analysis. There are many driving forces of the gold price such as political risk, economic uncertainty, inflation and deflation, central-bank holdings, Indian gold demand for jewellery and trading down to silver, Asian gold demand and new gold-mining techniques (Belke, 2012a, and Shilling, 2012). But it seems anyway clear that a low interest rate environment makes gold holdings more attractive (although they bear no interest and even at zero rates bear security and storing costs), since carrying costs are very low and zero or even negative rates are surrounded by a high degree of uncertainty. What is more, the recent jumps in the gold price appear to be the result of safe haven considerations and increasing distrust for paper currencies and fiat money in general (Belke, 2012a, and Belke and Polleit, 2012a, pp. 11ff.) – which in turn is fully consistent with our analysis in Chapter 2 of protracted monetary easing with an ever lower chance to exit.

## 4.2. Losers from a low interest rate environment

The *first* category of losers is often said to consist of **private savers**. According to a popular view, *several years of pain* for savers are just the other side of the coin of mortgage payers' benefits. Sharply dropped interest rates are depressing those individuals who depend on the interest on investments accumulated over their lifetime – above all pensioners. Current incomes of many old-agers not only in the UK are closely connected with official rates (Elliott, 2012). In addition, savers see themselves confronted with less and less profitable but lower-risk investment alternatives. For instance, European money-market funds have closed their funds to new investors, as an immediate reaction to the ECB's decision as of July 2012 to cut its bank deposit rate to zero percent and its main refinancing rate to 0.75 percent.<sup>7</sup> This makes sense because returns on these funds may even become negative if fees would not be waived by fund managers. It perfectly fits into the whole picture that in the US free checking accounts are disappearing (Shilling, 2012a). Also in the US, many savers leave money-market funds at the benefit of accounts covered by the Federal Deposit Insurance Corporation (FDIC). This is exactly mirrored by the *decrease in the M2 velocity of money* (i.e., US GDP divided by M2) which implies that the boost in M2 has not translated into GDP growth but that, in spite of near-zero nominal and negative real returns money is just parked in the accounts (Shilling, 2012a).

Individuals will either be discouraged by low returns and diminish their savings or will save more to still meet their target consumption in the future – well-known in the literature as the consumption-smoothing motive. If the low interest environment is accompanied by volatile stock markets and significant value losses on owner-occupied real estate, undersaved mid-agers eventually feel forced to work well beyond their originally intended retirements and at the same time block jobs which should be offered to younger people. From a welfare economics perspective, these are just other distortions caused by ultra-low interest rates (Shilling, 2012a).

Besides the level of interest rates, also the **yield curve** plays a certain role in the individuals' selection of savings and investment instruments, i.e. on individual asset formation. For instance, when investors are confronted with a choice *between short-term and long-term instruments* they as a rule *prefer long-term investments* when long-term yields are high and/or if the rate cycle has started its downward trend. If the yield curve is flat or even inverted, investors tend to reduce their holdings of short-term assets since they anticipate declining long-term yields (Stinglhamber, van Nieuwenhuyze and Zachary, 2011, p. 84).

The savings decision on which the interest rate level exerts its largest impact on is the *choice of specific short-term savings instruments*, which could be either term deposits or regulated savings deposits. A fall in short-term yields may favour the latter due to the drop in opportunity costs of investing in savings deposits (see Stinglhamber, van Nieuwenhuyze and Zachary, 2011, p. 85, for evidence for Belgium).

This pattern corresponds remarkably strongly with the mixed empirical evidence on the interest rate elasticity of private savings. Recent evidence from similar micro data for Germany suggests that the *savings response to interest rate changes* is probably very *small* (Belke, Dreger and Ochmann, 2012). This does not come as a surprise because also other factors such as the decline in household net worth, higher uncertainty about the employment status, and the overall losses in sustainability of public debt determine savings behavior during the crisis. Hence, wealth effects, the precautionary savings motive and rational expectations play the decisive role (Stinglhamber, van Nieuwenhuyze and Zachary, 2011, p. 80).

<sup>7</sup> See <http://www.ft.com/intl/cms/s/0/a6fc2300-c789-11e1-a850-00144feab49a.html#axzz2KhKBUsO>.

The *second* group of losers from the low interest rate environment is often claimed to be **pension funds and insurers**. QE has induced shortfalls in *pension funds*, especially in the UK. Further above, we have devoted a specific section on this issue. Gilt yields which are often used as a proxy for the future expected pension funds income and of future inflation, have tumbled downwards which in turn increases pension shortfalls (Elliott, 2012).

We devoted another section to **insurers**, which have also been touched by low interest rates, above all life-insurance companies which basically sell savings accounts with an insurance envelope. These insurers are by-and-large invested in mortgages, related securities and bonds. If the yields on their portfolios decline, they may feel pressured to shorten benefits and to grant less generous prices. Since lower-earning obligations thus substitute maturing, higher-return securities, this scenario will probably endure for years (Shilling, 2012).

The *third* group allegedly suffering from the low interest rate environment is the **consumers**. As said, a rise in global commodity prices was one of the unintended side-effects of globally low interest rates and QE, since investors were pushed into speculation with assets with higher yields such as oil and food. In the UK (as in the US), for instance, the dramatic rise in commodity prices from early 2009 until the start of 2010 was exacerbated by the lower external value of the currency which gave rise to an annual inflation rate of more than 5 percent. This in turn diminished the purchasing power of consumers and thus hampered the economic recovery (Belke, Orth and Setzer, 2010, and Elliott, 2012).

*Fourth*, as mentioned further above, **emerging markets** are on the brink of becoming the losers from low interest rates initiated by the advanced economies' central banks. Quantitative Easing lowered the external value of currencies in advanced economies (US and UK), but caused stronger currencies in some of the more important emerging markets (Brazil and Mexico). This in turn led to weaker exports, slower growth, the introduction of capital controls and the threat of currency wars (Elliott, 2012).

The current paper looked mainly at the impacts of a low interest rate environment caused by (mainly unconventional) monetary policies. Further research may look at the role for discretionary fiscal policy in a low interest rate environment as it has been described, for instance, by Feldstein (2002). Fiscal policy could provide an incentive for increased private spending, since protracted monetary easing in a low interest rate environment risks the emergence of asset price bubbles and of a misaligned exchange rate, as shown in this note.

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**DIRECTORATE GENERAL FOR INTERNAL POLICIES  
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# **Impact of a Low Interest Rate Environment**

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## **NOTE**

### **Abstract**

Low interest rates over an extended period of time put long term investors, such as insurance companies and pension funds under pressure from low returns. They also encourage investors in search for higher yields to take up more risk, with potential adverse effects for financial stability.

Monetary policy can affect short-term nominal rates, but spending decisions are mostly taken on the basis of long-term real interest rates. However, the relation between short and long-term interested rates is still unclear as standard theory is often rejected by empirical research.

The euro area is not yet facing the risk of a low-interest environment. The policy rate is above the level set by other major central banks and it is unlikely to be reduced before the monetary transmission mechanism is repaired in the periphery. Fiscal policy would be the appropriate tool to deal with asymmetric shocks, but the fiscal space available in the euro area periphery is limited by consolidation measures being adopted to correct unsustainable budgetary positions.

## CONTENTS

<b>INTRODUCTION</b>	<b>59</b>
<b>1. IS THE PRESENT LOW INTEREST ENVIRONMENT IN THE EURO AREA A THREAT TO LONG-TERM INVESTORS?</b>	<b>60</b>
<b>2. WHY IS THE ECB KEEPING ITS MAIN REFINANCING RATE UNCHANGED?</b>	<b>63</b>
<b>3. SHOULD THE ECB ENGAGE IN FURTHER QUANTITATIVE EASING?</b>	<b>64</b>
<b>4. WHY SHOULD THE ECB MAIN REFINANCING RATE BE LOWER?</b>	<b>65</b>
<b>5. CAN THE EURO AREA LEARN FROM THE PRESENT US EXPERIENCE?</b>	<b>66</b>
<b>REFERENCES</b>	<b>67</b>

## INTRODUCTION

Low interest rates over an extended period of time put long term investors such as insurance companies and pension funds under pressure from low returns. They also encourage investors in search for higher yields to take up more risk, with potential adverse effects on their financial stability.

The Bank of England Financial Stability Report (2012) mentions that, "in a low interest rate environment, households and businesses may have very little incentive to deleverage and also may end affecting banks' incentives to forbear on non-performing loans". The Bundesbank Financial Stability Review (2012) mentions as a major threat to the financial stability of German banks "the tight negative feedback loop between banks and governments in Italy and Spain" and only speaks about low interest rate environment "as a threat for insurers, which suffer from lower investment income and tend to pursue new investment routes and enter into greater competition with banks".

According to relevant international institutions, the euro area is not yet facing the potential risks of a prolonged period of very low interest rates. Such an outcome is envisaged only after "protracted low interest rate periods" (OECD, 2011) or "prolonged periods of unusually low interest rates" (BIS, 2009/10) and mainly with reference to the US (IMF).

The euro-area policy rate (currently at 0.75%) is not even close to the "lower zero bound". And it is unlikely to be reduced before the monetary transmission mechanism is repaired in the periphery. The ECB has kept the policy rate above that of other major central banks (US, Japan, the UK) through the current crisis, despite most forecasts anticipate only a mild recession in 2013 in the euro area against positive growth in the US, Japan and the UK.

There is a key difference between these countries and the euro area in terms of policy instruments: in the former, both (national) monetary and fiscal policy can be used; in the latter, only (common) monetary policy is available as fiscal policy falls largely under the responsibility of euro area Member States. Fiscal policy is therefore the appropriate policy instrument to deal with the adverse impact of asymmetric shocks in the euro area. Unfortunately, the consolidation measures being adopted in several Member States of the euro area periphery to correct unsustainable budgetary positions considerably reduce the fiscal space available. The only way the ECB can help is by using unconventional monetary policies to compensate for the lack of common fiscal policy. Therefore, the ECB has to do almost all the work to stabilize the euro-area economy and minimise the effect of both symmetric and asymmetric shocks.

Fiscal policy, if available, may represent a useful policy tool in situations where policy rates are close to the lower zero bound and the level of economic activity is well below potential (depressed economies). This point is made forcefully by Martin Feldstein (2002). He claims that, "although there is widespread agreement in the economics profession that discretionary "counter-cyclical" fiscal policy has not contributed to economic stability and may have actually been destabilizing at particular times in the past, there is one important situation when discretionary fiscal policy can play a constructive role: in a sustained downturn, when aggregate demand and interest rates are very low and when prices are falling or may soon be falling. A fiscal stimulus can work and can be achieved without increasing budget deficits, if the fiscal policy acts providing an incentive for increased private spending".

## 1. IS THE PRESENT LOW INTEREST ENVIRONMENT IN THE EURO AREA A THREAT TO LONG-TERM INVESTORS?

**First, according to available research, it is still unclear how short-term interest rates affect long-term interest rates.** Economic theory states that the long-term interest rate is a weighted average of present and expected future short-term interest rates. According to the rational expectations hypothesis (Sargent, 1972) forward interest rates are forced into equality with short rates that investors expect to prevail in subsequent periods. Alternatively, the expected, one period holding return on riskless bonds of all maturities are the same, or only differ by a constant risk premia. Most empirical research, however, rejects the joint hypothesis of rational expectations and expectations theory behind the term structure of interest rates.

R. Shiller (1979) performed volatility tests, using six different data sets on US and UK interest rates. The expectations hypothesis posits that the long-term interest rate can be approximately represented as a long average of rationally expected future short-term rates plus a liquidity premium term. According to Shiller, however, long-term interest rates are too volatile to be consistent with the expectations theory. Even more, long rates show a slight tendency to fall when they are high relative to short term rates, rather than rise, as predicted by the rational expectations models.

The term structure of interest rates is very important for financial economists given its close connection with the pricing of bonds of different maturities. It is also relevant for macroeconomists as it plays a key role in the assessment of alternative macroeconomic policies (G. Mankiw and L. Summers (1984)). Monetary authorities can most directly control short-term rates, but aggregate demand depends primarily on long-term interest rates. In the IS-LM model, the short rate enters the LM curve while the long term rate enters the IS curve. The monetary transmission mechanism, i.e. the effect of monetary policy on output, thus hinges upon the term structure of interest rates.

Mankiw and Summers find that the response of interest rates to money supply announcements is similar at all maturities. However, standard theory suggests that the response of long rates should be much more attenuated, as long rates are a weighted average of short rates. While not confirmed by empirical evidence, the rational expectations view prevails among bond market participants (the conventional wisdom being that "long-rates follow short-rates") and it is also implicitly shared by ordinary people (with the popular claim that financial markets "over-react" to news or are, in some sense, "myopic").

Mankiw's and Summers' results imply that short interest rates have a much lower (sometimes negative) weight than the theory suggests. The authors reject the notion that expected future short rates exert a disproportionate influence on long-term rates. Using data on three-month and six-month bills, they show that market participants place too little weight on the current short rates in forecasting future yields. Only one quarter of the variation in the spread between six-month and three-month Treasury bill yields is attributable to expected movements in short-term rates, while the remainder is attributable to movements in the area tautologically labelled "liquidity premiums"<sup>1</sup>.

In the same line, B. McCallum (2005) finds the apparent drastic inconsistency of US data with expectations theory of the term structure of interest rates a major puzzle of financial economics. Both short-rate changes in long rates and long-rate changes in short rates fail

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<sup>1</sup> A liquidity premium is a premium that investors demand for any given security which cannot be easily converted into cash. The higher the liquidity premium, the more illiquid is the asset.

to be related to the existing long-short spreads along the lines implied by the rational expectations theory.

This result had been documented previously also by Campbell and Shiller (1991). According to theory, a high yield spread between a longer-term and a shorter-term would imply rising shorter-term interest rates over the longer-term. However, the authors show that interest rate actually displayed a declining yield on the longer-term bond over the shorter-term one. This pattern is inconsistent with the expectations theory of the term structure. It would be consistent with a model according to which the spread is proportional to the value implied in the expectations theory.

**Second, behavioural finance<sup>2</sup> provides a better framework to shed some light on the relation between short-term and long-term movements in interest rates.** R. Rajan (2006) analyses examples of greater risk taken in a low interest environment by "investment managers" as a result of changes in "risk aversion". He shows how changes in the structure of incentives affect the investment strategies of financial managers (e.g. in insurance companies or hedge funds). Changes in the stance of monetary policy may represent an important driver of these "behavioural" changes. To the extent that monetary policy has effects outside the traditional channels, the behavioural channel will amplify traditional effects. Rajan offers two examples of why institutions may take more risk when interest rates are expected to remain low for a long period and how this risk-taking behaviour is reversed when interest rates are high. In this way, he finds a link between monetary policy stance and the behaviour by financial actors.

One behavioural response is "risk shifting". Rajan shows two different types of "risk-shifting". The first type of risk-shifting is typical of insurance companies which are forced to take more risks whenever the long-term interest rates remains for a protracted period well below the promised premium holders. The second type risk-shifting is typical of hedge funds, whereby the hedge fund manager is induced to take more risk to the extent his compensation is linked to risk-free returns and not only to the fund performance. In the first case, pro-cyclicality of risk taking behaviour is induced by the level of interest rates because of the nature of pre-contracted liabilities. In the second pro-cyclicality is induced by the nature of compensation.

Another behavioural response is "alpha and illiquidity seeking". The typical manager of financial assets generates returns based, first, on the systematic risk that he takes ("beta" risk), and second, on the value of his abilities to contribute to the investment process ("alpha" risk). Shareholders in any asset management firm are unlikely to pay a manager for "beta" risk returns because the same return could be achieved investing in index funds while paying a fraction of the fees. What the shareholders really pay for is for the manager to outperform the indexes regularly, without taking more risk. Hedge fund managers often claim to produce returns that are uncorrelated with the traditional market (market neutral strategies), i.e. they generate excess returns or "alpha", which deserve to be compensated.

According to Rajan, however, there are only a few sources of "alpha" risk for investment managers. One is their "ability to identify undervalued financial assets". But this is a very difficult task as most investment managers are very sophisticated investors. Another may be called "activism", which means using financial resources to create, or obtain control over real assets and to use that control to change the payout obtained on the financial investment. An example could be "a vulture investor, which buys defaulted emerging

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<sup>2</sup> Behavioural finance integrates insights from psychology with neo-classical economic theory to study economic decisions of individuals and institutions and the consequences for market prices and the resource allocation. The field is mainly concerned with the bounds of rationality of economic agents. R. Thaler, D. Kahneman and A. Tversky are among the main contributors to the field.

market debt and presses country's authorities through various legal devices to pay more. A third source is "financial engineering" or "financial entrepreneurship". Investing in exotic financial assets that are not easily available to the ordinary investor or creating securities or cash flow streams that appeal to particular investors or creating securities or cash flows that may appeal to certain investors or particular investor tastes. Finally, "alpha"-risk can also arise from "liquidity provision". For instance, investment managers, having relatively easy access to finance, can hold illiquid or arbitrage positions to maturity. For instance if a closed end fund is trading at a significant premium to the underlying market, they can short the fund, buy the underlying market and hold a position until the premium dissipates".

Overall, Rajan shows that "alpha" risk is very difficult to generate since it mostly relies on the investment manager possessing unique abilities to identify more profitable opportunities. "Liquidity provision" is probably the easiest way to achieve it. In sum, Rajan shows that extremely accommodative monetary policy engenders "illiquidity seeking" behaviour, which has close parallels to "risk seeking" and "risk shifting" mentioned above. Rajan believes that this "behavioural channels" introduce a new dimension of analysis for monetary policy, as it adds to the traditional "money channel", the "borrower balance sheet channel" (Bernanke and Gertler, 1995), the "bank lending channel" (Bernanke and Blinder, 1988 and 1992) or (Kashyap and Stein, 1997) and the "liquidity channel" (Diamond and Rajan, 2006).

**Third, interest rates have to be maintained at very low levels for a long time to be able to affect decision making by long-term investors.** Antolin, Schich and Yermo (2011) show that a period of protracted low interest rates "would adversely affect pension funds and insurance companies. Protracted low interest rates affect investment opportunities and have potentially significant adverse effects on life insurance companies and institutions whose liabilities consist on a fixed investment return or benefit promises, such as the case of defined benefit pension funds. It cannot be ruled out that the financial institutions affected, engage in "gambling for redemption" in an attempt to match the level of return promised to beneficiaries when financial markets were more elevated".

A prolonged period of low interest rates is not the most likely outcome according to recent data on interest rate futures which indicate a gradual increase in nominal interest rates going forward. Nonetheless, such a scenario cannot be excluded according to Antolin, Schich and Yermo, as in a number of countries the level of economic activity remains well below the peak attained in the pre-crisis period.

## 2. WHY IS THE ECB KEEPING ITS MAIN REFINANCING RATE UNCHANGED?

In December 2012 and January 2013, the ECB decided to keep the policy rate unchanged in the euro area, despite ongoing recession and contained inflation expectations. The severe impairment of the monetary transmission mechanism (MTM), which operates through the banking system, in the euro area periphery is the main argument behind ECB choice. This is a serious problem, as banks represent about 75% of the total euro area financial system and probably a higher percentage in the periphery.

Standard monetary policy (i.e. acting on the main refinancing rate) thus cannot be used. Non-standard monetary policy, e.g. through the so-called Outright Monetary Transactions (OMT)), is unlikely to be useful either as the program can be activated only under strict conditionality by the requesting Member State. The Securities Markets Programme (SMP) program is not being used at present.

The adverse feedback loop between banks and sovereign debt prevents the adequate working of the monetary transmission mechanism in the periphery of the euro area (Adler, 2012). In addition, the euro area interbank market is seriously damaged as capital is not flowing smoothly from the surplus countries to the periphery, where is much needed. This is partly the result of the "liquidity ring-fencing policy" of northern euro area Member States which inhibit the pre-crisis inflow of deposits to outflow to the crisis-stricken countries. For the time being, the ECB LTRO has allowed banks in the periphery to withstand their liquidity crisis and to do "carry trade" with their sovereign debt holdings. Nevertheless, the ECB needs to find a way out of this serious situation because the monetary policy mechanism is not functioning.

### **3. SHOULD THE ECB ENGAGE IN FURTHER QUANTITATIVE EASING?**

At the moment, the ECB is trapped in a difficult dilemma: it cannot reduce its main refinancing rate as the monetary transmission mechanism is not working properly and, at the same time, it cannot apply its OMT programme unless a Member State of the periphery applies for it.

For the time being, President Draghi's magic words "whatever it takes", the new "OMT program" and "positive contagion" have been enough to limit contagion. They have given more comfort to investors, by reassessing their appraisal of the peripheral sovereign debt risk and producing a drop in their spreads, without the need to apply for the OMT program.

But what could happen in the case of a sudden external shock, e.g. Cyprus being forced to leave the euro area? One likely outcome is that Spain and Italy end up applying for the OMT program, with the conditionality clause focussing of accelerating structural reforms rather than asking for additional austerity measures given the current massive slack in demand. Another possible solution is that the ECB uses temporarily its SMP program (without conditionality).

## 4. WHY SHOULD THE ECB MAIN REFINANCING RATE BE LOWER?

**The are both pro and cons for a lower policy rate in the euro area.** First, the ECB policy rate (0.75%) looks comparatively high in the euro area in the light of GDP growth projection for 2013 (-0.2%), according to IMF(1). Other major central banks have set their policy rate at a lower level and closer to the "lower zero bound", notwithstanding a better growth outlook envisaged for this year. In the US, the policy rate is 0.25%, GDP growth is 2%; for Japan, policy rate is 0.1%, GDP growth is 1.2%; in the UK, policy rate is 0.50%, GDP growth is 1%. Policy makers in the US, Japan and UK do not seem too worried about a pick up of inflation expectations

Second, spending decisions are taken on the basis of "real" not "nominal" interest rates. Correcting (nominal) policy rates for inflation, the previous picture changes substantially. In 2013, consumer price inflation in 2013 is expected to be 2.0% in the US, -0.2% in Japan, 1.9% in the UK and 2.3% in the euro area, according to IMF(2). This implies a slightly positive real interest rate in Japan (0.3%), but negative real interest rates in the US (-1.75%), the UK (-1.4%) as well as in the euro area (-1.5%). Japan is currently loosening its policy stance, aiming at 2% inflation target to push real interest rates back into negative territory and stimulate growth.

Third, given their high level of government debt, stronger growth is needed in all these four economies to pay back the services of the debt. According to the IMF (3) debt levels in 2013 will be 111.7% of GDP in the US; 245% of GDP in Japan; 93% of GDP in the UK and 94.9% of GDP in the euro area. These figures exclude future "contingent liabilities" related to population ageing and which represent an additional threat to the sustainability of public finances. The only orthodox way to reduce the high levels of debt in the long term is to fulfil the "long term State debt sustainability golden rule". According to W.Buiter (2009) this must include both sovereign and the central bank debt. This requires, first, that the stream of government primary surpluses equals the outstanding stock of sovereign debt (sustainability) and, second, that the long-run real interest rate on sovereign debt equals the long-run rate of growth of real GDP (stability).

Fourth, a high policy rate may hamper growth via the exchange rate channel. In the short term, exchange rates tend to respond to interest rate differentials: a positive interest differential strengthens the currency.<sup>3</sup> Currently, the US dollar, the British pound and the Japanese yen benefit from lower policy rates compared to the euro. The relative strength of the euro makes euro area exports more expensive and euro area imports cheaper, eventually dampening euro area growth via a deterioration of the trade balance. Exports of goods and services represent as much as 46.8% of GDP in the euro area compared to 34.4% in the UK, 14.7% in the US and 15.6% in Japan. Imports represent 44.5% of GDP in the euro area, compared to 18.7% in the US 17.0% in Japan. However, a significant proportion of euro area exports are intra euro area trade. .

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<sup>3</sup> In the medium term, exchange rates tend to respond to productivity differentials. In the long run, they tend to respond to inflation rate differentials.

## 5. CAN THE EURO AREA LEARN FROM THE PRESENT US EXPERIENCE?

Karl Whelan (2012), on commenting the recent decision by the Federal Reserve to keep the target range for the Fed Funds at 0.25%, argues that that level should be considered appropriate as long as the unemployment rate remains above 6.5%. Inflation expectations do not seem to represent a major threat: Forecasts for inflation one and two years ahead remain relatively close to the Committee's 2 per cent longer-run goal.

In sharp contrast to the FED, the ECB puts a strong focus on past high levels of inflation, even if inflation in the euro area never exceed 3% since inception of the euro area. Moreover, in 2008 and 2011 the ECB raised the policy rate at a first sign of inflation, even if the source was a temporary increase in commodity prices.

According to John Makin (2012), the FED very accommodative monetary policy of virtually zero interest rates is hitting US savers hard, but at the same time is having a positive stabilizing effect on the economy. Given the significant slack in demand, the current loose monetary policy stance is likely to be continued to avoid any adverse effect on growth and on the still depressed housing market. In such a context, financially constrained households have only one option left to improve their earnings: work more and spend less. Households which are less financially constrained can improve their welfare by digging into their savings and/or taking on riskier investments, according to Makin.

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