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ECONOMIC PAPERS

Ansgar Belke

Impact of a Low Interest Rate Environment

Global Liquidity Spillovers and the Search-for-yield

UNIVERSITÄT DUISBURG ESSEN

#429

Imprint

Ruhr Economic Papers

Published by

Ruhr-Universität Bochum (RUB), Department of Economics
Universitätsstr. 150, 44801 Bochum, Germany

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Ruhr Economic Papers #429

Responsible Editor: Volker Clausen

ISSN 1864-4872 (online) – ISBN 978-3-86788-490-7

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Bibliografische Informationen der Deutschen Nationalbibliothek

Die Deutsche Bibliothek verzeichnet diese Publikation in der deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über: *http://dnb.d-nb.de* abrufbar.

http://dx.doi.org/10.4419/86788485
ISSN 1864-4872 (online)
ISBN 978-3-86788-485-3

Ansgar Belke[1]

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

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. Similar decisions have been taken by other leading central banks around the globe. This paper 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 paper 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.

JEL Classification: E58, F33, G22, G23

Keywords: Global liquidity; central banks and their policies; financial repression; low interest rates; insurance companies; pension funds

July 2013

1 *Ansgar Belke, University of Duisburg-Essen and IZA Bonn. – This paper heavily relies on an internal briefing paper prepared by the author for presentation at the Committee on Economic and Monetary Affairs of the European Parliament for the quarterly dialogue with the President of the European Central Bank, February 2013, Brussels. I am grateful for valuable comments received from participants in the Symposium on "Global Banking, Financial Stability, and Post-Crisis Policy Challenges" on February 1-2, 2013, at Maastricht University – All correspondence to Ansgar Belke, Fakultät für Wirtschaftswissenschaften, Universität Duisburg-Essen, Universitätsstr. 12, 45117 Essen, Germany, E-Mail: ansgar.belke@uni-due.de.*

1. INTRODUCTION

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 paper assesses and comments on several aspects of the implied low interest rate environment.

The remainder of the paper proceeds as follows. Section 2 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. Section 3 continues, dealing 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. 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 section 4, 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. In section 5, 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.

2. GENERAL CONSIDERATIONS

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

Headline inflation rates have been falling recently, among others due to lower commodity prices in the second half of 2012, and expected inflation seems to be converging towards the ECB's target of 2 percentage points 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 the share of those predicting deflation is shrinking steadily (Bundesbank, 2012, pp. 44f.).[1] So with inflation in the euro area well-anchored and short 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 per cent (only recently also in the case of the Fed).[2] It directly follows that bond investors now expect to lose money in real terms, whereas for

[1] In addition, some important business climate indicators such as those produced by the European research institutes Ifo, INSEE und ISTAT are turning upwards and monetary conditions in the euro area are currently very accommodative.

[2] 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.

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 – via changing the short-term interest rate – at full employment (Belke and Polleit, 2010a). This view rests on the very notion that *the short-term interest rate is the key variable for monetary policy*. As a result, 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). This is because a decline in inflation could then push the real short-term interest rate above the level compatible with keeping the economy at full employment.

For instance, if economic activity is weak, and short-term interest rates hit the zero bound, a dangerous dynamic might be set in motion. With actual output falling below potential, inflation might slow down 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. The issue of the zero bound is in great part related to the experience made in the Great Depression period in the US and came up to the surface again with unanticipated force at the start of 2009 in the wake of the financial crisis. The debate gained momentum in the late 1990s, when economic growth in many countries was weak and, at the same time, CPI inflation had reached rather low levels by historical standards (Belke and Polleit, 2010a).

The risk ascribed to hitting the zero bound – and the severity of the consequences – is usually assessed on the basis of empirical analyses. Detailed studies of the US economy by Fuhrer and Madigan (1997), Orphanides and Wieland (1998), Tetlow and Williams (1998) and Reifschneider and Williams (1999) 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 (Fuhrer and Sniderman, 2000).

At this juncture it should be noted that 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 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 government controlled paper money regime: there should be hardly any doubt that the central bank can increase, if it wants to, 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 – if this is demanded by politics - 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 countries 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 (Belke, 2013).

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).

3. CONFLICTS BETWEEN MONETARY POLICY AND FINANCIAL STABILITY IN A LOW INTEREST RATE ENVIRONMENT

3.1. Global liquidity and the monetary policy dilemma

In order to gauge potential conflicts between monetary policy and financial stability, 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 represents a *dilemma* situation for monetary policy actors in emerging and advanced economies alike. 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 (in the case of advanced countries trying to exit from unconventional monetary policies) or (in the case of emerging market economies) even more capital flows and thus

fuel a domestic credit boom.[3] 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 macroprudential 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 (IT) 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 IT strategies had not been cautionary enough or even had not paid enough attention to asset-price bubbles (Frankel, 2012). Instead, central bankers did as an "escape clause" not stop to argue 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. Moreover, they regularly argued that there is no need for explicit monetary policy coordination among the G-20 because it would best serve the interests of all if each country "keeps its own house in order" (as reported by Belke, Kösters, Leschke and Polleit, 2002, and recently stressed again by Taylor, 2013).

But it turned out that asset price developments would have deserved to be paid much more than indirect attention: although there was no significant rise in inflation before or after the date the financial crisis hit, indicating that monetary policy was in fact much too lax in the years 2003 to 2005 (Frankel, 2012, and Taylor, 2013). Also on a more general level, 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, our experience with the financial crisis tells us that common monetary policy strategies including inflation targeting *must be overhauled and that this overhaul should attach sufficient attention to the risks connected with the emergence of financial imbalances*, even if 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.

3.2. 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 the possibility of exit from unconventional monetary

[3] For the relationship between monetary and financial market liquidity see ECB (2012), p. 57.

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 (a footprint of the "new normal"). 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 (Belke, 2013, BIS, 2012, Chapter V).

Admittedly, monetary policy easing, metaphorically speaking, like a bazooka 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 labor 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 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).[4] 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

[4] 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).

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). 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).

In addition, I already stressed in some of my earlier papers that 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 dampened 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.

3.3. Global monetary liquidity and its spillovers: risks for global price and financial stability

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 ("financialisation") 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 globalisation, 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.

3.4. 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, 2013, and Belke, Freytag, Keil and 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 Frankfurter Allgemeine Zeitung, 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).

4. 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). Let us now become more specific and address the individual impacts on pension funds and the non-life insurers.

4.1. Impact on pension funds

We start with the impacts of a low interest rate environment on pension/retirement provisions. Falling bond yields increase the present value of future pension liabilities. For the United Kingdom, "the Pension Protection Fund recently reported that the deficit of British pension funds has risen thirteenfold from £24.5 billion ($39 billion) to £312 billion over 2011 (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).

4.2. 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 in 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).

4.3. 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 Niewenhuyze 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 Niewenhuyze, 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 Niewenhuyze, 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 Niewenhuyze, and Zachary, 2011).

But a low interest rate environment may also have an *indirect* effect on the supply and demand of credit (Stinglhamber, van Niewenhuyze, 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 Niewenhuyze, and Zachary, 2011, p. 88).

5. WHO BENEFITS AND WHO LOSES FROM A LOW INTEREST RATE ENVIRONMENT?

In the following brief analysis we try to single out which economic actors benefit and who loses from a low interest rate environment. We confine our analysis 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. Let us first identify the potential winners from the low interest rate environment.

5.1. Winners from a low interest rate environment

First, *mortgage payers* come immediately to one's mind. As already described above, the level of interest rates has some bearing on the liabilities taken by individuals. As a stylised fact, the exact figure of mortgage loans is inversely correlated with interest rates – of course only for those still employed after the crisis (for Belgium see Stinglhamber, van Niewenhuyze, 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 of course to take into account that the lenders do not fully pass along the benefits of a lower interest rate environment to the mortgage borrowers. But nevertheless, the diminished interest burden contributed to stabilize consumer spending and confined the frequency of home repossessions. 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.

Second, one may think of the *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).

The *third* group which is supposed to gain from the low interest rate environment are the *asset holders*. Near-zero interest rates and especially the (targeted) 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 SMP, the LTROs and the announced 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 (rigged?) 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 jewelry and trading downs 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 section 1 of protracted monetary easing with an aver lower chance to exit. Let us now turn to the potential *losers* from the low interest rate environment.

5.2. 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 (in German denoted as the so-

called "Anlagenotstand"). 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.[5] 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 Corp. 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, "under-saved" 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 Niewenhuyze 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 Niewenhuyze 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 Niewenhuyze and Zachary, 2011, p. 80).

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).

[5] See http://www.ft.com/cms/s/0/a6fc2300-c789-11e1-a850-00144feab49a.html#axzz2KOc05Rkx.

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 are 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 ("Anlagenotstand"). 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 paper.

6. CONCLUSIONS

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 paper assesses and comments on several aspects of the implied low interest rate environment.

The paper then proceeded as follows. We started 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. We continued by dealing with potential and already manifest conflicts between monetary policy and financial stability in a low interest rate environment.

As a starting point, we introduced and elucidated 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 (in the case of advanced countries trying to exit from unconventional monetary policies) or (in the

case of emerging market economies) even more capital flows and thus fuel a domestic credit boom.

We further argued that sustained monetary accommodation hampers comprehensive balance sheet repair. Moreover, we inferred that global monetary liquidity and its spillovers represent eminent risks for global price and financial stability. Finally, we derived why central banks committed to safeguarding the low interest rate environment are risking their independence – operationally and financially.

In section 4, we drew wider and more practical implications from protracted low interest rates for the economy and societies. The main focus of this exercise was on pension funds and on the insurance sector. We also assessed 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.

Finally, we tried to single out which economic actors benefit and who loses from a low interest rate environment. However, we confined 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.

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