

Amercias Edition  
March 2016  
The limits of  
monetary policy:  
Are central banks losing their magic touch?  
Marketing Material

The limits of monetary policy

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The limits of monetary policy:

Are central banks losing their magic touch?

Letter to investors

Central bank policy intervention has dominated the investment landscape for the

last eight years. As some monetary policy was certainly helpful – at least from a

financial market perspective - more and more questions come up where do we go from here? Opinions differ about whether it is a help or a hindrance. With economic

growth still stubbornly low in many regions, skepticism has grown about how effective it can be - as have concerns about its possible long-term side effects. This

special report should help to understand the limits to central bank policy intervention

and the implications for investment. It explains why quantitative easing can be a

powerful medicine, it is one which is only very imperfectly understood and which

relies as much on investor belief as well as rational calculation to work.

The report

also spells out why such intervention can have unexpected and possibly negative

consequences, for example through the encouragement of capital misallocation and

asset class bubbles. But, with central banks likely to persevere with this uncertain

cure, we will all have to learn to live with the consequences for some time to come.

Uncertainty, of course, will create opportunities as well as risks. You might still

navigate around this uncharted investment world in a potentially profitable way. But

given the likely background of varied asset class returns, coupled with high levels of

volatility, you may need to keep an open mind as to how you invest. To make your

portfolio appropriate to your needs, I would suggest focusing on four issues.

1. Returns expectations should be appropriate. Some investors may find it appropriate to lower their returns expectations, given their circumstances, but

others will not. The structure of portfolios must reflect this.

2. Risk comes in many forms. For those seeking to maintain returns expectations,

increasing risk budgets might be an appropriate approach, especially if you have a

longer-term perspective. In such uncertain times, constructing “airbags” to protect

portfolio returns may be wise if you are targeting normal or high returns. Remember that while protection has its costs, it may help you sleep better at night. And naturally, higher risk is no promise of higher returns, especially not short-term.

3. Diversify, but flexibly. Whilst I believe the old correlation patterns between asset classes will continue to change, a more flexible approach to diversification might still benefit portfolios. A well-diversified investor, ready to be flexible, can benefit from currency and other trends. You may want to consider investing in alternative assets to help you meet your return targets, but always with due regard to your risk profile.

4. Knowledge is still king. In an increasingly uncertain world, deep local knowledge of the world is also important, to identify structural trends early on and select assets accordingly.

I am not suggesting that investing in this environment, with central banks still feeling their way, will be easy or uneventful. But I believe that as an organization we have the skills to help you do it.

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Christian Nolting  
Global Chief Investment Officer for  
Deutsche Bank Wealth Management,  
Managing Director

Are central banks losing their magic touch?

When markets worry about central banks, they are really fretting about two distinct

things. On the one hand, there is the real economy. On the other hand, and usually

of much more immediate interest is the question of how central-bank moves will

impact financial markets.

For much of the period since equity markets bottomed out in 2009, those two questions have been intertwined. Not so long ago, the prices of risky assets, such

as equities, seemed like a one-way bet. Bad economic news, such as lackluster U.S.

job creation, led markets to expect further monetary stimulus and boosted financial

assets. Meanwhile, good economic news also boosted prices of risky assets. Solid

job figures, for example, suggested that the economy was healing nicely, but, given

the depth of the slump, financial markets rightly expected it would still take a long

time for interest rates to return to more normal levels.

This cozy era came to a close in 2015, and probably ended for good with the first

U.S. Federal Reserve Board (Fed) interest-rate hike last December. Major equity

markets began this new age with their worst start of the year since the 1930s,

amidst growing concerns that central banks have lost their magic touch. In recent

months, financial markets have increasingly seen central banks less as saviors and

more as part of the problem.

What next? Of course, the range of the federal funds rate at 0.25 to 0.50% remains

extraordinarily low by historic standards. What has changed, however, is the balance of risk from a market perspective. Strong U.S. economic figures are now a mixed blessing, while weak figures really are bad news. The pain caused by weakness in U.S. manufacturing, for example, is tangible enough, but the potential gain from more Fed action for now looks distant.

The stakes are particularly high for the European Central Bank (ECB) and the Bank

of Japan (BOJ), amidst growing concerns that they are running out of options.

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Central-bank moves and market-mood swings

8,500

9,000

9,500

10,000

10,500

11,000

11,500

12,000

12,500

in index points

ECB announces

QE

China devalues

the yuan

ECB lowers interest

rate, however markets

are disappointed

Global monetary policy action

has been the key driver for equity

markets

Dax

01/2015

03/2015

05/2015

07/2015

09/2015

ECB hints at

further loosening

11/2015

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;

as of 03/2016

01/2016

03/2016

The past year has seen many mood swings

in financial markets, as illustrated here by

the German Dax. When the ECB announced

the large-scale purchase of assets through

quantitative easing (QE), that gave equities

a boost. The Dax lost steam, once the ECB

actually started its QE program. Global

equities fell sharply in the summer, after

China devalued the Yuan. In fall, it was again

the expectation of further loosening that

helped equities, while the actual decision

disappointed.

But why, precisely, are markets worried? To answer this question, we suggest

that a

closer look at the role of central banks is warranted, by considering:

1. The role central banks see for themselves – and how it falls short of what markets have come to expect;

2. The limits of how much extra help central banks can and will provide.

Next, we take a more detailed look at:

3. The potential consequences for investors;

4. The specific challenges ahead for the ECB, the Fed and the BOJ

The report concludes by presenting some tentative solutions to the dilemma investors currently face from a multi-asset perspective.

1. The role of central banks

Sixteen years ago, Mervyn King of the Bank of England (BoE) suggested that “a successful central bank should be boring – rather like a referee whose success is

judged by how little his or her decisions intrude into the game itself.”<sup>1</sup>

That’s a far cry from what central bankers have been up to in recent years.

Ever

since the financial crisis of 2009, markets have looked to them for salvation.

The main tool used was quantitative easing – buying assets to stimulate money creation. In many market segments, this has turned central bankers from neutral

observers to dominant players.

But are markets right to have such high expectations of central banks? That reflects

a basic misunderstanding of what central banks can, and cannot do. And to see why, think back to what monetary policy was like not so long ago.

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“Monetary Policy: Theory in Practice”, Address given by Mervyn King, Deputy Governor of the Bank of England, 7 January 2000

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Not so long ago, central banks had a clear, but limited task. To be sure, there were small variations in terms of the mandate of central banks around the developed world. But essentially, monetary policy was a decision on when to adjust interest rates – ideally raising them before economic overheating and cutting them in time to mitigate or avoid a looming slump. How quickly an economy would grow in the longer term, though, was largely determined by other factors. That last insight is important. We should remember that there may not be much central banks can do to boost potential growth. Perhaps we need to realize that potential output growth is lower than it used to be. Blaming the Fed for lackluster potential growth is a bit like blaming a referee for the lack of sporting prowess you see among the players on the field. To be sure, a central bank can mitigate the lasting impact of a slump by trying to keep recessions brief, being mindful of the fact that workers who are unemployed for prolonged periods lose some of their skills. When young people struggle to find a job to begin with it can also hurt their prospects for many years to come. This has been a perennial problem in other parts of the world, and may be one of the root causes of economic stagnation in Southern Europe.<sup>2</sup> Arguably, the ECB made matters worse, when it prematurely increased interest rates in 2011. By contrast, U.S. unemployment has more than halved since peaking in 2010, thanks in large part to decisive Fed action. Unfortunately, this translated into a mere 2.4% of growth in gross domestic product (GDP) for both 2014 and 2015, according to the latest estimates of the Bureau of Economic Analysis. For 2016, we now forecast 1.8%. Potential U.S. growth is probably quite a bit lower still. The same is true in other developed markets that embraced QE early on. At 2%, growth remains disappointingly slow in the United Kingdom, if judged by historic standards. However, unemployment has fallen to 5.1 %, suggesting there is little slack left in the labor market. It appears that the United Kingdom, just as the United States, is no longer able to sustain the sort of growth rates familiar from previous

cycles, without  
triggering inflation.

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Blanchard, Olivier J., and  
Summers, Lawrence H.,  
Hysteresis and the European  
Unemployment Problem, NBER  
Macroeconomics Annual 1986,  
Volume 1, pp. 15 – 90.

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Since 2009, monetary-policy rates were mostly stuck near zero...

7

6

5

4

3

2

1

0

2007

2009

2011

2013

2015

2005

2007

2009

2011

2013

2015

in %

Fed Funds Target Rate

ECB Main Refinancing Rate

BoE Official Bank Rate

BOJ Result Unsecured Overnight Call Rate

... while unemployment swiftly started to decline.

10

11

12

13

3

4

5

6

7

8

9

in % (seasonally adjusted)

United States

Eurozone

United Kingdom

Japan

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH; as of 03/2016

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH; as of 03/2016

What can anyone do? Well, all U.S. monetary policy can do is to wait for the

economy to heal – and hope that potential growth will eventually pick up again.

Over the medium term, we would still expect potential growth to edge a bit higher, as some of the lingering effects of the crisis continue to fade, and productivity and labor-force growth recover a bit.

By contrast, there are plenty of things governments (as opposed to central banks) could do. Boosting spending on education, liberalizing labor and product markets, improving incentives in tax and entitlement systems, amongst other measures, come to mind. Talking about “structural reforms” may sound trite, but they remain extremely important.

Implementing reforms is easier said than done – just look at Japan and the Eurozone. Politics frequently gets in the way. This has arguably been the story behind the Eurozone debt crisis and Japan’s malaise. Japan is now in the 26th year of what was at first called its lost decade. Many of the problems in both Japan and the Eurozone are structural. Monetary policy is hardly the most obvious way of tackling them – as the BOJ itself argued for much of the initial lost decade. Fiscal policy would be a more obvious bet – especially if the money is spent on the sort of infrastructure projects that will actually boost potential growth, rather than on bridges to nowhere.

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Central balance sheets as percentage of GDP

in % of GDP

BOJ

100

120

20

40

60

80

0

2006

2008

2010

2012

2014

2016

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH; as of 03/2016

All of which makes it rather odd that so many hopes should still rest on central

banks. After all, Japan already tried QE from March 2001 to March 2006.

According

to most empirical studies, this was of limited help in either boosting output or

inflation. Indeed, it may even have strengthened the performance of Japan's weakest banks – further delaying the necessary clean-up of bank balance sheets.

Markets were fairly unimpressed. Japan's initial dose of QE simply seems to have

acted as a sedative. One down-side of loose monetary policy – and not just in Japan

– is that it can reduce the pressure for reforms.

2. The limits of central banking.

So far, we have seen that there is little monetary policy can do to boost long-term

growth potential. At most, it might provide breathing space for structural reforms

(but with the caveat noted above). For investors, however, a more immediate question is whether central banks are also losing their ability to cheer up markets.

Here, the evidence is mixed – and to see why, look no further than at Japan's previous attempt at QE.

Japan's structural problems are real enough, but they only tell half of the story. The

other half is one of monetary impotence to do even the limited work central banks

are usually charged with: making sure that actual economic growth is in line with

potential growth rates. Central banking can prove tricky enough in normal times. As Rüdiger Dornbusch quipped in 1997, "None of the U.S. expansions of the past 40 years died in bed of old age; every-one was murdered by the Federal Reserve."<sup>3</sup> at least, central banks have plenty of historic data to rely on. But By contrast, economists looking at Japan since the early 1990s had to go back to the Great Depression to find anything remotely similar. Japan appeared stuck in a liquidity trap, the traditional bogeyman of central banking (see box). Much of the policy response in the rest of the world since 2009 can best be understood as an attempt to avoid such a fate. Central bank balance sheets as percentage of GDP have ballooned

BoE  
BoJ forecast  
BoE forecast  
ECB  
ECB forecast  
Fed  
Fed forecast

Throughout the developed world, central banks have taken ever more assets onto their balance sheets. Initially, this reflected such programs as the Fed's Term Asset Backed Securities Loan Facility (TALF) in the United States, intended to boost consumer lending in the aftermath of the financial crisis. Similarly, the Eurozone debt crisis caused the ECB's balance sheet to expand, well before the formal adaption of QE. In recent years, balance sheet growth has been strongest in Japan, reflecting its increasingly aggressive use of QE policies.

<sup>3</sup> Dornbusch, Rudiger. 1997. "How Real Is U.S. Prosperity?" Column reprinted in World Economic Laboratory Columns, Massachusetts Institute of Technology, December.

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## Liquidity traps, monetary policy and QE

Liquidity traps describe a situation where conventional monetary policy has lost

its potency. Remember how monetary policy normally boils down to changing interest rates in a timely fashion? Technically, this means buying short-term bonds from the banking sector, reducing short-term rates and paving the way for money creation. By promising to keep buying short-term bonds until the economy has regained its footing, moreover, the central bank will also put pressure on yields of longer-term government bonds. This ideally translates into lower interest rates when a firm was looking to fund risky, longer-term investments, such as building a new factory.

Note that a central bank only firmly controls the first step of this process. The

rest partly depends on others. Even in normal times, it is rather like a very impressive conjurer's trick, which works best when the audience is willing to play along. In a liquidity trap the central bank loses control even over that first

step – short-term interest rates. Since the late 1930s, most economists felt that this was a theoretical, but fairly remote possibility. A liquidity trap requires

several unusual things to happen at the same time.

First, you need a severely depressed economy – an ailment central banks would normally be able to cure by waving their interest-rate wand. And second,

inflation needs to be very low to begin with. That too, should normally not be much of a challenge – in fact, central banks usually worry more about the opposite problem, of inflation being too high. Take both things together, though,

and you have every reason to worry.

A central bank that has already cut nominal interest rates to zero must face up to

the problem that the interest rate wand no longer works. Its first instinct might

be to do more of the same, that is to keep on buying more bonds. The trouble is

that once nominal interest rates hit zero, households and firms will already have

plenty of cash – probably far more than they need for their planned purchases of

goods and services. So, if you try to buy even more bonds from them, they will

take the cash and simply hold onto it as a store of value. Under these conditions,

money becomes a perfect substitute for short-term bonds. At the first glance, it

is not clear how printing more money will help in this situation!

Why would an economy get so depressed? Well, for one thing, you might find yourself in a vicious circle. Falling prices and weak consumer demand

discourage investment. This, in turn, means that real interest rates would need to fall for firms to invest in new factories. But with inflation turning more and more negative, zero nominal interest rates will translate into real interest rates actually rising, discouraging investment even more. This, in turn, might make households want to consume less (and save even more).<sup>4</sup> Alternatively, the initial source of the problem might be households, who expect real incomes to be lower in the future, due to, for example, an aging population. This appears to have been part of the problem in Japan, where a shrinking working population has existing disinflationary and, increasingly, deflationary pressures.

<sup>4</sup> This is broadly the argument of John Maynard Keynes, esp. chapters 15 and 23 of "The General Theory of Employment, Interest and Money.", 1936, Palgrave Macmillan. His followers took a narrower view, looking at liquidity traps mainly by focusing on the zero lower bound of nominal interest rates.

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Most recent discussions take a highly accessible paper by Noble laureate Paul Krugman as their starting point.<sup>5</sup>

The implication of his model is that there is indeed little that conventional monetary policy can do in the here and now. Printing more money to buy more bonds makes no difference.

There is a way, however, that a central bank might still work its magic, namely

through expectations. This means convincing households and firms that you will not just expand money supply today, but continue to do so tomorrow. If it

succeeds, inflation expectations will rise, allowing real interest rates to fall and

stimulating investment. Of course, this only shows that monetary policy might work, not that this is the best option, or even a particularly good path out of the

liquidity trap.

Once interest rates are at zero, short-term bonds and money are close to perfect

substitutes. Conventional monetary policy loses much of its potency. Even if a

central bank somehow succeeds in pushing nominal interest rates on bank deposits

into negative territory (an option section 2 looks at), this would simply make cash

even more attractive than bonds as a store of value. So, if a central bank keeps on

buying short-term bonds, we would still have the same problem – it would keep on

buying, without those purchases having any impact.

But what if the central bank starts buying longer-duration government bonds?

Couldn't this help by reducing the term premium? And surely, QE might squeeze spreads, either by central banks buying corporate bonds directly or by pushing

private investors into higher risk assets? And finally, all this should reduce funding

costs for companies building new factories, should it not? Also, might the rise in

asset prices of all sorts not make households feel wealthier, boosting consumption?

Well, a resounding "Maybe" to all of the above. Something along these lines has

happened in practice. Central banks used to be lenders of last resort.

Increasingly,

they have instead become the buyer of last resort. This certainly worked in terms

of reducing longer-term government bond yields – ballooning central bank balance

sheets coincided with falling bond yields.

Krugman, Paul R. "It's Baaack:  
Japan's Slump and the Return  
of the Liquidity Trap." Brookings  
Papers on Economic Activity, 1998,  
29(2), pp. 137-205.

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ECB balance sheet and 10-year Bund yields

3,500

3,000

2,500

2,000

1,500

1,000

500

2006

2008

2010

2012

2014

2016

in billion euros

in % 0

Yield 10-year Bunds (right axis, inverted)

ECB balance sheet (left axis)

1

2

3

4

5

6

Fed balance sheet and 10-year Treasuries

6,000

in billion U.S. dollar

5,000

4,000

3,000

2,000

1,000

0

2006

2008

2010

2012

2014

2016

Yield 10-year U.S. Treasuries (right axis, inverted)

Fed balance sheet (left axis)

in % 0

1

2

3

4

5

6

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;  
as of 03/2016

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;  
as of 03/2016

For such a widely used tool, it is surprising how hard it is to make QE work  
in  
theory.<sup>6</sup>

The trouble is that any such framework must take its longer-term impact  
into account. Fortunately, central banks not much keener than stage  
magicians to

let you in on the inner workings of their latest creations. As a result, it  
is fairly easy

to figure out what is known – and, more worryingly, what even central banks  
do not  
know.

We know from empirical studies in the United States, the United Kingdom,  
and, in

recent years, the Eurozone and Japan, that QE “works” in the short term in  
terms

of moving markets, and perhaps, even increasing lending. We have some ideas  
on

why this might be so. It remains unclear, however, how QE will impact  
inflation,

economic activity and asset prices across the economic cycle.

From a theoretical perspective, we know that households and firms will try to  
anticipate future central-bank actions – which risks offsetting much of what  
the

central bank is doing through the channels described above in the here and  
now.

To take the example of the wealth effect, let’s say that the Fed buys 30-  
year bonds

today, drives down nominal market rates and thereby increases the nominal  
value of

the longer maturity bonds I hold in my portfolio. On paper, this makes me  
wealthier.

If I am rational, though, I will know that returns on any additional bond  
investments I

make to save for my retirement will be lower. Moreover, if and when QE does  
its job

in restoring full employment, interest rates will increase, so I will face  
losses in the

future.

My real wealth, over my remaining life-time, has not really gone up, and  
there is

little reason why I should boost my consumption. Instead, I might even  
decide to

save more!

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As a useful starting point for figuring when central-bank openmarket operations do and do not impact the private sector, see Wallace, N. (1981). A ModiglianiMiller theorem for open-market operations. American Economic Review, 71(3):267-74.

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For QE to have much of an impact, you need to create somewhat ad-hoc assumptions. Translated into plain English, this means coming up with stories for why private investors will not fully adjust their portfolios to reflect recent and

anticipate future actions by the central bank. Generally, such stories boil down to

different assets not being perfect substitutes for different types of investors.

Insurance companies or pension funds, say, might face regulatory restrictions on

which assets they can hold. There might be differential information and transaction

costs for retail investors. Some investors might invest in certain ways simply out of

habit. All of which might be true, but ideally, you would want to have a lot more data

before betting economies worth trillions of dollars on it. To his credit, Ben Bernanke,

the Fed's chair throughout much of the crisis, has freely acknowledged as much in

speeches and in his earlier academic work.<sup>7</sup>

We would argue that part of the reason the Fed was relatively successful with this

policy, was markets were ready – indeed eager – to play along. It is less clear that

QE will be as helpful going forward, either in the United States or elsewhere. As the

balance sheets of central banks have ballooned, private-sector debts have also been

mounting, from emerging markets borrowers to U.S. corporates. In the search for

yield, some of the money that actually did find its way into lending will inevitably

turn out to have been misspent – perhaps sowing the seeds of the next crisis.

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See, for example, Bernanke, Ben,

"Monetary Policy since the Onset

of the Crisis", Presented at the

Federal Reserve Bank of Kansas

City Economic Symposium, "The

Changing Policy Landscape,"

Jackson Hole, Wyoming,

August 31, 2012; [http://www.federalreserve.gov/newsevents/](http://www.federalreserve.gov/newsevents/speech/bernanke20120831a.pdf)

[speech/bernanke20120831a.pdf](http://www.federalreserve.gov/newsevents/speech/bernanke20120831a.pdf)

Despite monetary easing, Eurozone lending remains subdued

year-on-year change in %

20

15  
10  
5  
0  
-5  
2006  
2008  
2010  
2012  
2014

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;  
as of 03/2016

2016

Eurozone loans to non-financial corporations

Eurozone loans to households

Lending never really recovered from  
the crisis

Despite all the efforts by the ECB, loans to  
the business sector of the Eurozone remain  
weak. In part, this probably reflects the fact  
that troubled banks, especially in Southern  
Europe, are not fully transmitting monetary  
loosening to their clients. A bigger problem is  
probably demand for business loans remains  
weak, reflecting subdued growth in several  
Eurozone economies. Loans to households  
are slowly rising. Overall, however, QE has not  
proven very effective in improving lending.

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And, we are hardly alone in this assessment. As Stephen Williamson, Vice President

at the Federal Reserve Bank of St. Louis, noted in a recent review, taking a broader

historic perspective:

“The theory behind QE is not well-developed ... Evidence in support of Bernanke’s

view of the channels through which QE works is at best mixed... Much of the work on the quantitative effects of QE consists of event studies, whereby researchers look for effects on asset prices close to the date of an announced

QE intervention. ... All of this research is problematic, as it is atheoretical. There

is no way, for example, to determine whether asset prices move in response to a

QE announcement simply because of a signaling effect, whereby QE matters not because of the direct effects of the asset swaps, but because it provides information

about future central bank actions with respect to the policy interest rate. Further

there is no work, to my knowledge, that establishes a link from QE to the ultimate

goals of the Fed –inflation and real economic activity.” 8

Given such doubt, it is no wonder that the Fed is hoping for a return of more normal

times – when it could count on well-understood tools to do the job.

### 3. Consequences for investors

In 1976, the economist Robert Barro argued that an activist monetary policy gains

much of its effectiveness from confusing people, clouding signals to market participants. That can secure tranquility for a while and perhaps provide a temporary

boost to output. However, that stability comes at the cost of even greater variance

later on.<sup>9</sup>

Eventually, you might expect inflation, GDP and also financial markets to become more volatile.

Given how much QE appears to have relied on market expectations, it is hard to say

if such a tipping point has already been reached. Over the past year, the investment

environment has clearly been getting trickier. In the past, correlations across

different asset classes were generally such that you could reap decent returns

without taking too much risk, using diversification effects to mitigate the downside

risks. Now things are different.

This is especially true if we compare the period between 2010 and 2015 with the recent market turmoil. Lately, many unusual correlations have cropped up that you might not have expected. For example, major equity indices have tended to move in sync with the oil price. This might seem justifiable for the S&P 500 Index, but is less understandable for the German Dax, which does not include a single major oil producer. In any case, correlations between oil and the S&P 500 Index have historically tended to be negative, which also makes more economic sense. Worse still, many old correlations have been swept aside. Volatility is increasing.

8

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Historical relationship between the Dax and government bonds

Correlation Dax1 vs. Bunds2

-1.0

-0.8

-0.6

-0.4

-0.2

0.0

0.2

0.4

0.6

0.8

1.0

2000

2002

Dax Price Index 2

2004

(monthly data, 12 month rolling)

Old correlations are breaking down

Until recently, investors could count on

returns from equities to be negatively

correlated with returns on government bonds

for most of the time. As the chart comparing

the German Dax and 10-year Bunds

illustrates, this relationship was not stable,

but the tendency was clear. In recent months,

by contrast, correlations have turned positive.

This meant that adding government bonds to

an equity portfolio has become a much less

effective tool to reduce the overall risk profile.

2006

2008

2010

BofA Merrill Lynch 7-10 Year German Government Index

2012

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;

as of 03/2016

1

2014

2016

These are early signs that QE euphoria has come at a cost. It may have

assisted

generating high returns in financial markets in recent years, but investors

should

expect leaner times ahead.

In the meantime, there are likely to be dramatic swings – in both

directions. Over

the medium term, it appears likely that confidence in the ability of central

banks

to stabilize financial markets will continue to erode. Just because this is likely to

happen eventually, however, does not mean we are quite there yet. Central banks

still have options – and willingness too, it would seem, to creatively use any readily

available tool remaining.

However, betting on their magic touch is getting riskier. Look at how last December,

the ECB caught investors on the wrong foot. Markets had grown used to its President Mario Draghi over-delivering. Instead the ECB underwhelmed in the short

term. It only tinkered on the edges of its existing QE program, focusing instead on

cutting (its already negative) deposit rate further in the wake of similar decisions

in several smaller European economies. Sweden, Denmark and Switzerland have increasingly relied on negative interest rates to discourage capital inflows (see box).

Beyond the zero bound

Negative interest-rate policies (NIRP) have always been controversial in the academic community, and even less systematic research has been done on their effectiveness than with respect to QE. We believe, their growing use raises at

least three issues:

1. What's the point of negative nominal interest rates?

The answer to this question should be clear from section 2. If they can be implemented without too many detrimental side-effects, NIRP offer a neat way out of the liquidity trap. Monetary policy regains its power to push real interest

rates lower, even in a low-inflation environment.

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However, things get somewhat messy when you think about the practicalities. So far, negative interest rates are only charged on balances of commercial banks with the central banks. Commercial banks have been reluctant to pass this cost on to their clients, so most of the private sector, including practically

all individual savings accounts, is not charged. This, in turn, means two things.

First, households are shielded, so lower interest rates will not have an impact on

household behavior (encouraging current consumption, say, by discouraging saving, or prompting households to purchase riskier assets). Second, bank profitability will suffer.

2. What's the evidence so far on the impact on banks?

In Sweden, Denmark and Switzerland banks have coped reasonably well with negative interest rates, in part because their domestic banking markets are quite

concentrated." This allowed the top two or three key players to make up for the

shortfall by pushing up profits on other products. For example, Swedish banks have been able to protect their net interest margin by increasing mortgage loan

rates to offset charges on deposit. The problem is that, first, this means that the

NIRP results in tighter, rather than looser financial conditions. Second, it would

not work in other, less concentrated markets. And third, and perhaps most troubling for the ECB, it means NIRP will have a differential impact in different

Eurozone countries, depending on the degree of concentration in the local banking market.

3. How low can central banks go?

Therein lies another problem. After all, there was a reason why most economists

were doubtful of attempts to push interest rates below zero. Reduce the interest

rates too much, and the private sector might simply withdraw their bank deposits and hold the money in cash. Of course, there are some costs to storing

cash, with some estimates at 20 basis points (bps), and some a bit higher.

However, the ECB is already in the lower range of such estimates. Moreover, comparisons with credit-card charges of several hundred bps are somewhat flawed: a large chunk of cash deposits are probably held as a store of value, rather than with any immediately looming payments in mind. To implement negative deposit rates anywhere near that level, you would probably have to introduce a time-varying fee of some sort on (physical) cash of the sort initially

proposed by the German merchant Silvio Gesell 100 years ago. No country has since tried to implement 'Gesell money' and political obstacles look

sizeable.

The evidence so far suggests that when they work, the effect from NIRP is mainly from driving down exchange rates rather than by stimulating lending. For

small open economies, this might even be part of a "foolproof way" to escape the liquidity trap and deflation. The idea was for the central banks to give a

commitment to higher future price levels, concrete action, such as a currency's

sharp depreciation, to demonstrate that commitment, and an exit strategy of when and how to get back to normal.<sup>10</sup>

In a small open economy, such as Sweden, a currency devaluation can go a long way in rekindling inflation. Unfortunately, using devaluation is a lot harder to

manage in large economies, such as Japan and the Eurozone.

<sup>10</sup> Svensson, Lars E.O. "Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others."

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Again, it is Japan that provides the most cautionary tale on monetary impotence.

In January it took markets by surprise by implementing a NIRP of minus 0.1%. The

system was structured in three tiers, to reduce the impact on bank profitability, but nevertheless hit bank share prices hard and reinforced broader market weakness.

This, in turn, put upward pressure on the yen, precisely the opposite of what the

BOJ had been aiming for.

NIRP has suddenly brought home one implication of unconventional measures for households: it is supposed to work, in part, by depressing the future value of their

savings. To a trained economist, there might not seem to be much of a difference

whether that wealth transfer takes place through inflation eroding nominal returns

or NIRP. To households and companies, it probably does – which risks further eroding confidence in central banks being able to “fix” the problem.

Asset-class implications:

1. Currencies: Expect more currency volatility, sometimes in surprising directions,

that defies what policy makers have had in mind. The underlying driver of this

volatility remains divergence in monetary policy between the Fed, wanting to get

back to normal, and others, particularly the BOJ and the ECB relying on increasingly

unfamiliar tools, such as NIRP. We believe eventually, this should translate into a

strengthening U.S. dollar.

2. Bonds: QE has pushed an ever growing number of sovereign bonds into negative territory. Effectively, this has destroyed positive, nominal

returns on “safe”

government bonds, a key element which diversified investors have long been able

to rely on. This means risk-free rates can no longer serve as a portfolio cushion in

a diversified portfolio. For sovereign bonds, it is worth keeping in mind that these

too are far from risk-free. If you think that QE will eventually succeed in boosting

inflation, rates have to go up. Holders of longer maturity bonds therefore face

significant duration risk. Against this background, we believe investment-grade

debt and also high yield are probably among the more attractive alternatives.

3. Equities: For U.S. equities, most recent concerns have centered around recession fears. However, this is no longer the only risk. Continuing solid U.S. economic performance, resulting in swift further interest-rate increases, would also be worrisome. Either way, U.S. margins have probably peaked. U.S. strength would probably be reflected in consumer spending holding steady on the basis of rising wages and continuing employment growth. This could put pressure on earnings. More broadly, the above discussion suggests that further monetary adventures in other parts of the world, such as negative interest rates, come with risks attached – both in terms of their direct impact (on bank profitability, for example) and by increasing the scope for policy errors. Risk premia might rise. Past performance is not indicative of future returns. No assurance can be given that any forecast, investment objectives and / or expected returns will be achieved. Allocations are subject to change without notice. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect. The information herein reflect our current views only, are subject to change, and are not intended to be promissory or relied upon by the reader. There can be no certainty that events will turn out as we have opined herein.

#### 4. Policy challenges ahead

##### Eurozone:

Following the latest meeting of the Governing Council of the ECB, the ECB announced on March 10th that it would reduce its deposit rate (on money deposited by Eurozone banks by 10 bps to minus 0.4%. Its other key rates were cut

by 5 bps, with one on the main refinancing operations (MRO) now at 0% and on marginal lending facility at 0.25%.

As many market participants had hoped, it also expanded QE, increasing the monthly purchases under the asset purchase program by €20bn to €80bn starting in April. More significantly, the scope of assets eligible to be included in the list

of assets for regular purchases will include investment grade euro-denominated

bonds issued by non-bank corporations from now on.

In our view, this will somewhat alleviate one of the issues the ECB has faced,

namely the growing scarcity of government bonds of some countries, such as Germany. It comes at the risk, amongst other issues, of losses on these private

sector bonds and will no doubt prove controversial. However, the alternatives would

probably have been even less palatable.

In order to increase the QE program without including new sets of assets, the ECB

could instead have changed its capital key, allowing it to purchase more bonds from

more highly indebted countries such as Italy. Or it could have given up the deposit

rate as a hurdle rate when it buys government bonds. However, this would have effectively resulted in an arbitrage opportunity for banks, with the ECB locking in

losses with each purchase of bonds from the banking sector (which could then deposit the proceeds at a less negative rate with the ECB.

Finally, the ECB announced a new series of targeted longer-term refinancing operations (TLTRO). These are designed to stimulate lending to the real economy,

by allowing banks to borrow on attractive terms from the ECB. These will now be

very attractive indeed – from now on, borrowing conditions in these operations can

be as low as the interest rate on the deposit facility, or minus 0.4%. This will depend,

however, on the banks actually lending. The more banks lend, the closer the rate

will fall to the deposit rate.

In our view, the package illustrates the growing ECB concerns about the potential

impact on bank profitability from cuts in its deposit rate. This impact will be alleviated somewhat by the benefits bank will get from TLTRO II. Nevertheless, we would expect minus 0.5% to be the lower limit of how much further the ECB will cut the deposit rate, which will probably be reached at the next meeting. All of which sounds quite impressive. However, stocks eroded their gains within hours, and the euro reversed its initial weakening, after Mario Draghi indicated during the press conference that he expected no further cuts. In the following trading days, equities strengthened again, as investors took a closer look at the package. The volatile market reaction showed three things. First, the ECB still has some options to move markets. Second, it now takes a very comprehensive set of

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measures, far beyond what would have seemed possible six months ago to have much of an impact. And third, there will be more beneficiaries from QE, in this case

investment grade bonds, as investors swiftly try to reshuffle their portfolios.

United States:

Despite the concerns outlined above, we would stress that the U.S. economy also

has several strengths. Thanks in part to QE and the temporary relief it brought, both

the banking sector and households are on a more solid footing than they were a

decade ago. The labor market continues to heal.

Against this background, our view is that the Fed is likely to continue on its current

course. The Fed has made it clear that its decision making will be data-dependent.

We expect this to translate into interest rates remaining low and increases to be

slow in materializing. Our central case is a 25 bps increase in 2016 and another one

early in 2017.

With financial conditions highly volatile, there are risks to this view, of course.

However, it should be kept in mind that financial markets are more vulnerable to

some of the recent shocks than the real economy, due to, for example, the heavy

weighting of the energy sector in the S&P 500 Index.

Japan:

Most concerns on the limits of monetary policy will continue to center on Japan. Its

current program, known as Quantitative and Qualitative Monetary Easing (QQE), is distinctive in not just the size of its purchases but also their

composition. At an

annual 80 trillion yen (700 billion U.S. dollars) or 16% of GDP, it dwarfs attempts by

other central banks. The BoJ has also been buying a broad mix of assets. In January

2016, it added negative deposit rates to the mix.

Part of its challenge was the very negative market reaction, when it took markets

by surprise in January, by implementing a negative interest rate of minus 0.1%.

Negative interest rates also risk a further destabilization of the banking sector. The

system is structured in three tiers, similarly to what we envision for the Eurozone.

Having caused bank shares to fall by 28% and the broader market by 17% in the two weeks following the announcement, we doubt the BOJ has much appetite for further cuts.

Japan cannot simply turn its back on QE, because the result could be too destabilizing. But relying increasingly on currency depreciation is risky with growth

in the rest of the world weakening.

Part of the problem is that there are simply not enough bonds left that the private

sector is willing to sell. The BOJ could buy equities, after already dipping into

Exchange Traded Funds last year, and, basically, anything else they can get their

hands on. By contrast, the scope for fiscal policy looks limited, given already high

levels of public debt.

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Central bank holdings of government bonds in % of total outstanding debt

50 in % of total debt

40

30

20

10

0

Fed

ECB

BoE

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH; as of 03/16

Meanwhile, it is worth pointing out that QE has not been quite as ineffective

in terms of its impact on the real economy as you might think, based on Japan's

previous experience with QE. In fact, a casual newspaper reader might be surprised

when digging deeper into the data on recent price and wage trends.

Disappointing

inflation data partly reflects falling energy costs, as well as the somewhat harsh

statistical treatment of rental cost. Strip out these factors, and core inflation has

picked up in recent years. Partly, this was on the back of Japan's increased sales

tax, but it also reflects falls in unemployment to levels last seen two decades ago.

Wage growth finally appears to be improving. While most jobs created are relatively

lowly paid and part-time, even for full-time workers, unemployment rate has fallen,

and labor participation has improved over the last few years.

In Japan, at least, QE appears to be working – but at what cost?

5. Assessing the problem from a multi-asset perspective

With confidence in monetary policy at lower levels than it used to be, central banks

are finding it increasingly hard to manage market expectations. This, in turn, makes

surprises in both directions more likely. Subdued returns will probably come with

hefty doses of volatility and event risk. In that sense at least, central banks are as

much part of the problem, as part of the solution. Even if you knew when the BOJ

or the ECB will announce a new surprise move and what that move will be, you would still be left guessing how markets will react. Part of the difficulty

would be in figuring out how other market participants have positioned themselves. The bigger difficulty, however, is that it is getting ever harder to figure out which moves would be seen as decisive shows of strength – and which ones would simply be interpreted as signs of desperation. The ability of central banks to prevent periods of turbulence and mitigate sharp declines in financial-market valuations certainly looks more limited than ahead of previous crises. This is due not so much to central banks running out of options. Past performance is not indicative of future returns. No assurance can be given that any forecast, investment objectives and / or expected returns will be achieved. Allocations are subject to change without notice. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect. The information herein reflect our current views only, are subject to change, and are not intended to be promissory or relied upon by the reader. There can be no certainty that events will turn out as we have opined herein.

BOJ

Current (2015)

End 2017 (forecasted)

QE has turned central bankers into major buyers of government bonds

Under QE programs, the Fed and the BoE have bought large amounts of domestic government debt. In recent years, the ECB and the BOJ have followed suit, while the programs in the United States and the United Kingdom have expired. The problem that the BOJ in particular increasingly faces is that it already holds 30% of all outstanding debt of the Japanese government. The BOJ is finding it increasingly hard to find willing sellers.

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per se. Already, measures once considered outlandish, such as various versions of helicopter money, are once again doing the rounds. These would no doubt face practical, legal, and, in many instances, constitutional concerns. However, in recent years we have already seen that policy makers are willing to take extreme measures, if times get sufficiently desperate. The real problem is that the longer-term implications of the remaining tools are even less well-understood than QE. Recent market turbulence in the wake of Japan's implementation of negative deposit rates should serve as a cautionary tale that more monetary action no longer necessarily equates with better financial-market outcomes. They also reinforce doubts on how much good monetary policy could do, if things go wrong (either as a result of a new shock, or because of policy errors). Already, many investors have shifted their focus from seeking gains to merely wanting to preserve their existing wealth. Gold is just one example of an asset benefitting from its apparent safe-haven appeal. Given the concerns outlined above, it makes sense for risk-averse investors to attempt to limit the downside potential of their portfolio, while maximizing its ability to capture upside moves in markets. Even if we imagine a relatively benign outcome to the current growth and policy uncertainty, we expect future returns to be lower, for any given amount of risk.

When it comes to risks and rewards, we have already entered a new investment world

Allocation

15%

2004

85%

Total Return

4%

2015

50%

50%

11%

2%

Volatility

Equities<sup>1</sup>

Bonds<sup>2</sup>

0%

2%

4%

6%

Sources: Bloomberg Finance L.P., Deutsche Asset Management Investment GmbH;  
as of 03/2016

1

Dax 2

iBoxx Euro Germany Sov 1-3

8%

10%

12%

This has already started to happen. Take a portfolio held in 2004, with an  
expected

return of 4%. Looking at the historical data, a portfolio comprised of 15%  
equities

and 85% bonds would have delivered just that, with volatility of just 2%.

Fast

forward to 2015, however, and you would have needed to allocate 50% to  
equities

to generate the same 4% in total return. Volatility would have been 11%.

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For a multi asset investor, we would suggest focusing on the following four key points.

First: be realistic about your returns expectations and how you can achieve them.

Lowering returns expectations as part of a desire to better align asset allocation

with investment objectives might make sense for some investors (such as those already approaching retirement). Depending on your personal circumstances, the

lower expected returns from most financial assets may tempt you instead to some

consumption opportunities. Keep in mind, after all, that part of the whole point of

QE is to make you spend more in the here and now. But note also the ECB and other

central banks' increasing focus on getting QE to work through revitalising the credit

channel in economies: increased lending will support economies and help create

investment opportunities too. For most investors, the main issue will remain on how

to generate acceptable levels of returns with acceptable levels of risk.

Second: remember that risk comes in many forms.

As we have outlined above, current central bank policy will have a tendency to

increase risk in part because lower yields on lower-risk assets can alter investor

behavior. In search of higher yielding investment they are forced to buy riskier

assets, both in the fixed income space and equities or alternatives. In this way,

loose monetary policy can increase the risk of misallocation of capital and bubble

formation in financial assets. This is true for fixed income as well as equities. The

valuations side of the equation can come into particular focus as investors are

willing to take more risk, even if earnings are not able to keep pace with valuations.

As always, bear in mind, assuming greater risk is no assurance of greater returns.

At the same time as investors are looking for higher returns, multi asset investors

are also trying to establish what might be perceived current investment "safehavens".

Effective safe-havens vary over time and between crises and no

investment is without risk. Gold, for example, may have proved a good safe

haven in some periods in the past, but has been a less effective one in recent years. In other words, the correlations between safe havens and risk assets are not stable and history does not always repeat itself. So, as noted above, some risks accompany holding Treasuries (or Bunds) in an interest rate up-cycle, they do not always lose their appeal. It is also worth remembering that "safe havens" may not be confined to those traditionally perceived as such (e.g. Treasuries, cash and, perhaps, gold). In the current environment, currencies might be seen as a key part of any safe-haven strategy. And, linked to the currency issues, some regions' equities may also offer temporary safe haven status. When considering risk and safe-havens, it is also worth distinguishing between overall market risks and those which are countryspecific – emerging markets provide a good example of this. Investors, of course, also need to look beyond seeking higher risk and safe havens and take an overall approach to their own risk profile. As noted above, accepting only as much risk as one has historically budgeted for is likely to result in returns below historical averages. For some people, a better solution might be to increase their risk budgets, especially if they want to take a longer-term perspective, but any increase in risk must be in line with your personal risk composure. Further, you may want to endeavor to limit the downside risk in your portfolio with an appropriate

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protection strategy. You might also want to take a broader look at the assets you really have in your investment portfolio and in particular take your human capital in to account, when thinking about risks and rewards. Already, we are seeing clear signs that the advantages from taking a world-wide perspective when making investment decisions are once again growing. For example, a few individual emerging markets have performed quite well in recent months, after years of disappointing returns. Benefitting from such reversals requires a strong grasp of the trends shaping the global economy. To well-diversified investors, the increasingly volatile currency movements we are expecting are presenting opportunities, not just risks and it may be appropriate to integrate these into the portfolio decisionmaking process. At a time when yields on traditional asset classes can be so low, currency investments may in some cases help generate added returns, as they will be directly affected by central banks' policy. Handling such sophisticated diversification however requires consideration of the fourth point below.

Third: diversify but flexibly. Traditionally, the main idea of a multi asset approach has been to reduce portfolio risk through diversification. But if monetary policy is determining the overall risk sentiment of investors, affecting all conventional asset classes, traditional diversification effects (e.g. through combining equity and fixed income in a portfolio) are unlikely to contribute much to a portfolio's performance. But this is not to suggest that diversification no longer has a part to play: instead we would argue that it can still be extremely important, but to make it so, investors will need to broaden their investment horizon both regionally, within asset classes and with regard to other investments, e.g. alternatives/illiquids.

Fourth: knowledge is king. Paradoxically, in such an uncertain world, specific knowledge becomes particularly important. We would distinguish two types of knowledge here. First, you need deep local knowledge of what is happening in different regions of the world, to identify structural trends early on, and select assets accordingly. As wealth managers, we

fully intend to help our clients make the best of what has no doubt become a more difficult investment environment. Second, you need a data-driven understanding of what is going on at an overall investment level, so you can separate out the reality of what is going on from general perception. Only with this knowledge can you, for example, look deeper into concepts such as valuation, equity selection and risk. The environment will change and you need to be able to judge the likely implications for your own personal situation. Past performance is not indicative of future returns. No assurance can be given that any forecast, investment objectives and / or expected returns will be achieved. Allocations are subject to change without notice. Forecasts are based on assumptions, estimates, opinions and hypothetical models that may prove to be incorrect. The information herein reflect our current views only, are subject to change, and are not intended to be promissory or relied upon by the reader. There can be no certainty that events will turn out as we have opined herein.

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Glossary

Here we explain central terms.

A balance sheet summarizes a company's assets, liabilities and shareholder equity.

The Bank of Japan (BOJ) is the central bank of Japan.

One basis point (bp) equals 1/100 of a percentage point.

Bunds are issued by Germany's federal government, most frequently with a maturity of 10 years, and are the German equivalent of U.S. Treasury bonds.

The Bureau of Economic Analysis is a U.S. government agency which produces economic statistics that enable government and business decision makers to follow and understand the performance of the nation's economy.

Core inflation is a measure of inflation that excludes certain items that face volatile price movements, such as energy and food products.

Correlation is a statistical measure of how two securities move in relation to each other.

The Dax is a blue-chip stock-market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange.

Deflation is a sustained decrease in the general price level of goods and services.

The deposit rate is the rate banks receive when they make overnight deposits with the ECB.

In relation to currencies, depreciation refers to a loss of value against another currency over time.

Devaluation is the forced reduction of the value of a currency against other currencies.

Disinflation is a decrease in the rate of inflation.

Diversification refers to the dispersal of investments across asset types, geographies and so on with the aim of reducing risk or boosting risk-adjusted returns.

Duration is a measure of the sensitivity of the price of a fixed income investment to a change in interest rates and is calculated on the basis of present value, yield, coupon, final maturity and call features.

The ECB's main refinancing operations or MROs are one-week liquidity-providing operations in euro which serve to steer short-term interest rates, to manage the liquidity situation and to signal the monetary policy stance in the euro area.

The European Central Bank (ECB) is the central bank for the Eurozone.

The Eurozone, also called the euro area, is a monetary union of 19 of the 28 European Union (EU) member states which have adopted the euro as their common currency.

The Federal Reserve System or Fed, which serves as the U.S. central bank, was established in 1913, consisting of the Federal

Reserve Board with seven members headquartered in Washington, D.C., and twelve Reserve Banks located in major cities throughout the United States.

The federal funds rate is the interest rate at which banks actively trade balances held at the Federal Reserve.

Through fiscal policy, the government attempts to improve unemployment rates, control inflation, stabilize business cycles and influence interest rates in an effort to control the economy.

Government bonds are issued by a government to support government spending, mostly in the country's domestic currency and are backed by the full faith of the government.

The Great Depression was the deepest and longest-lasting economic downturn in the history of the Western industrialized world.

The gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Headline inflation is the raw inflation figure based on the consumer price index (CPI) and not adjusted for seasonality or for the often volatile elements of food and energy prices.

Helicopter money refers to a large sum of money being directly or indirectly distributed to the public by the central bank in order to stimulate the economy.

High yield (HY) is often used as a shorthand for high-yield bonds.

Inflation is the rate at which the general level of prices for goods and services is rising and, subsequently, purchasing power is falling.

An investment-grade (IG) rating by a rating agency such as Standard & Poor's indicates that a bond has a relatively low risk of default.

Lender of last resort refers to a central bank, which offers loans to banks or other eligible institutions that are experiencing financial difficulty or are considered highly risky or near collapse.

Liquidity trap describes a situation where conventional monetary policy has lost its potency.

Lost decade refers to Japan's dismal economic performance in the 1990s after the burst of the country's real-estate and equity asset price bubbles.

Monetary policy focuses on controlling the supply of money with the ultimate goal of price stability, reducing unemployment, boosting growth etc. (depending on the central bank's mandate).

A mortgage is a debt instrument, secured by the collateral of specified real-estate property, that the borrower is obliged to pay back with a predetermined set of payments.

A negative interest-rate policy (NIRP) is an unconventional monetary policy tool whereby nominal target interest rates are set below zero.

Potential growth of gross domestic product (GDP) is defined as the rate of output growth that an economy can produce at a constant inflation rate. Although an economy can temporarily produce more than its potential level of output, that comes at the cost of rising inflation.

Quantitative and qualitative easing (QQE) aims at increasing the monetary base by both buying a wide range of assets as well as extending the maturities held by the central bank.

Quantitative easing (QE) is an unconventional monetary policy in which a central bank purchases securities in order to lower interest rates and increase the money supply to promote increased lending and liquidity.

The real interest rate is the nominal interest rate adjusted for inflation as measured by the GDP deflator.

The risk premium is the expected return on an investment minus the return that would be earned on a risk-free investment.

The S&P 500 Index includes 500 leading U.S. companies capturing approximately 80% coverage of available U.S. market capitalization.

The spread is the difference between the quoted rates of return on two different investments, usually of different credit quality.

The ECB's targeted longer-term refinancing operations (TLTROs), announced in June 2014, are designed to enhance the functioning of the monetary-policy transmission mechanism by supporting bank lending to the real economy.

The Term Asset-Backed Securities Loan Facility (TALF) was a funding facility provided by the Fed from 2009 onwards and intended to boost lending to households and small businesses by

supporting the issuance of asset-backed securities (ABS).  
Treasuries are fixed-interest U.S. government debt securities with different maturities: Treasury bills (1 year maximum), Treasury notes (2 to 10 years), Treasury bonds (20 to 30 years), and Treasury Inflation Protected Securities (TIPS) (5, 10 and 30 years).  
The United States dollar (USD) is the official currency of the United States and its overseas territories.  
Volatility is the degree of variation of a trading-price series over time.  
The wealth effect is the change in spending that accompanies a change in perceived wealth (also known as the wealth channel).  
Yield is the income return on an investment referring to the interest or dividends received from a security and is usually expressed annually as a percentage based on the investment's cost, its current market value or its face value.  
Yuan refers to the Chinese yuan (CNY).

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