ADBInstitute

The Implications of Ultra-Low and Negative Interest Rates for Asia

Edited by
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The Asian Development Bank Institute, located in Tokyo, is the think tank of the Asian Development Bank. The institute aims to identify effective strategies to improve policy and development management in Asia and the Pacific. We work with an extensive network of partners in the region and globally to influence policies on poverty reduction, inclusive growth, the environment, regional cooperation, infrastructure development, middle-income countries, and private sector development.

Contents

Figures

Abbreviations

ADBI	Asian Development Bank Institute
BIS	Bank for International Settlements
BOJ	Bank of Japan
CPI	consumer price index
Dodd–Frank Act	Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010
ECB	European Central Bank
ETF	exchange-traded fund
Fed	Federal Reserve System
FRB	Board of Governors of the Federal Reserve System
GDP	gross domestic product
GPIF	Government Pension Investment Fund
IMF	International Monetary Fund
JGB	Japanese government bond
LIBOR	London interbank offered rate
LTV	loan-to-value
NPS	National Pension Service
PRC	People's Republic of China
ROE	return on equity
US	(the) United States
VAR	vector autoregressive

1

Introduction

The introduction of negative interest rates across Europe and Japan from 2014 to 2016 has been a major event in the world of international central banking. Introduced as an instrument to ease financial conditions and stimulate inflation, negative interest rates have received a great deal of attention and have generated an equally large amount of debate. While some have argued that negative interest rates are a logical extension of existing monetary policies, others have pointed out the financial stability risks associated with negative interest rates. Recent debate has focused on ways to maximize economic growth while minimizing risk, but the cross-border effects of negative interest rates, particularly for emerging economies, have received less attention.

This edited volume brings together an international group of scholars, policy makers, and financial market practitioners to explore the effect of ultra-low and negative interest rates on Asia. As one of the most dynamic and open regions in the world, Asia has been uniquely affected by low and negative global interest rates. From foreign direct investment and portfolio investment to exchange rate effects and credit availability, financial conditions in advanced economies can directly or indirectly affect regional economies in important ways.

The contributions in this volume were originally presented at the Asian Development Bank Institute's (ADBI) Annual Conference 2016. While negative interest rate policies were still comparatively new at the time of the conference, many of the conclusions and predictions presented by the speakers in Tokyo in December 2016 hold up remarkably well and provide unparalleled insights into the economic and financial links between Asia and the rest of the world.

In their opening remarks for the conference, Naoyuki Yoshino and Narayana Kocherlakota draw attention to the relationship between negative interest rate policies and broader macroeconomic trends around the world. Yoshino argues that monetary policy may be less effective where a large share of the population comprises elderly people. Kocherlakota then stresses how financial crises create uncertainty and fear in the post-crisis period, suggesting these as factors behind slow consumption growth in much of the advanced world.

Distinguished Speaker Session I explores negative interest rates in advanced economies. Renowned experts from the economies that have adopted negative rates explain the specific economic conditions which motivated negative interest rate policies, as well as their goals. Jean-Pierre Danthine explains what motivated negative interest policies in the specific structural context of the Swiss economy. Cecilia Skingsley illustrates the Swedish case, drawing attention to the international linkages between Europe, Sweden, and the rest of the world. Sayuri Shirai addresses negative interest rates in Japan, highlighting linkages with financial markets more broadly. Finally, Luc Laeven explains the implementation of negative interest rates in the euro area, stressing various concerns and dynamics unique to the European Monetary Union. All four experts agree on the necessity for appropriate communication of the policy, its goals, and the methods of implementation.

Distinguished Speaker Session II addresses the implications of ultra-low and negative interest rates for monetary policy and macroprudential policy in Asia. Veerathai Santiprabhob starts off the discussion by addressing the potential side effects of low and negative rates for emerging market economies, such as Thailand, giving particular emphasis to the risks low and negative rates pose for financial stability and monetary policy transmission. Joon-Ho Ham also stresses these concerns in his summary of the case of the Republic of Korea, suggesting macroprudential policy as a first line of defense while acknowledging the difficulty of achieving several different objectives with a limited set of tools. Hans Genberg expands the discussion to other Asian economies, especially Indonesia, Malaysia, and the Philippines, drawing attention to the high degree of integration of Asia with the world, which also implies high exposure to risks. Reflecting upon the effect of negative interest rate policies from a more global perspective, Dong He contextualizes these considerations against the background of global United States (US) dollar funding. He draws attention to different forms of liquidity and how those relate to policy making and market functioning.

Finally, Distinguished Speaker Session III takes a financial point of view and explores the implications of ultra-low and negative interest rates for financial markets in Asia. Michael Hutchison examines the transmission channels of negative rates and draws attention to possible adverse interaction between households' intertemporal budget optimization and policy objectives as well as the challenges faced by central banks in simultaneously addressing potentially excessive saving and borrowing. Robert McCauley continues the discussion by providing an intriguing illustration of how low and negative rates in Japan drive the cross-border investment behavior of Japanese banks that simultaneously lowers investment returns and pushes up the

costs of hedging through swaps. Tamim Bayoumi then reflects upon the future path of interest rates in the US, highlights several key areas where correlations between economies in Asia and the US have changed and points out potential risks arising from increasing US rates. Finally, Alicia Garcia-Herrero analyzes how the investment portfolios of private and public investors have changed across Asia in response to low and negative rates, emphasizing the behavior of sovereign investors from Japan and the Republic of Korea.

The final section of this volume reflects upon these contributions, highlights several key issues that were brought up, and draws some overarching conclusions. We also evaluate what lessons negative interest rates hold for economic theory and reflect upon the future of negative interest rates.

ADBI's mission is to provide intellectual input for policy makers in the developing member countries of the Asian Development Bank. This volume and ADBI's Annual Conference 2016 directly contribute to this goal by highlighting the important macroeconomic and financial linkages that exist between Asia and the rest of the world and the lessons that Asia's experience holds for economists. We encourage readers to continue following ADBI for state-of-the-art research on the policy questions facing Asia and we invite them to visit ADBI's website for presentation slides, papers, and video recordings of ADBI's conferences (ADBI, ADBI Annual Conference 2016).

Finally, we ask readers to note that the views expressed in this volume are those of the speakers and not those of ADBI or the institutions the speakers are, or have been, affiliated with.

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2

Opening Remarks and Keynote Speeches

A. Opening Remarks by Naoyuki Yoshino

Textbooks on macroeconomics and monetary economics suggest that monetary and fiscal policy should be used to stimulate a sluggish economy through interest rates, quantitative easing, and the money supply.[1]

Japan has suffered a recession for more than 20 years, partly because of its demography and aging population. However, no textbook has discussed the relationship between monetary policy and an aging population. In my work, I have shown that the effectiveness of monetary policy diminishes as the population ages because monetary policy primarily affects young workers; retired people are more likely to be removed from monetary policy.

There are many structural issues facing Asia. I hope that during this 2-day conference, we can explore the relation of those structural changes to monetary policy and come up with new solutions and better macropolicies.

Naoyuki Yoshino

Naoyuki Yoshino is dean of the Asian Development Bank Institute, chief adviser at the Japan Financial Services Agency's Financial Research Center, chair of the Meeting of Japanese Government Bond Investors, and professor emeritus of Keio University. He chaired the Financial Planning Standards Board, the Japanese Ministry of Finance Council on Foreign

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[1] For a recording of the opening remarks and keynote speeches, see Asian Development Bank Institute (ADBI). ADBI Conference 2016: Opening Remarks and Keynote Speeches. https://www.youtube.com/watch?v=BKnJS37KbGE&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1&index=1

Exchange, and the Fiscal System Council. He was a board member of the Deposit Insurance Corporation of Japan and president of Japan's Financial System Council. He obtained his PhD from Johns Hopkins University. He holds honorary doctorates from the University of Gothenburg and Martin Luther University of Halle-Wittenberg.

B. Keynote Speech by Narayana Kocherlakota

Negative interest rates are likely to be an important topic among central bankers and academic economists in the years to come. I will address the duration of likely stays at the zero lower bound. I will argue that there are good reasons to expect stays of the lower bound to be rather lengthy. In making my argument, I will focus on the nature of the events that led to the zero lower bound and explain why those events should lead us to think that stays at the zero lower bound will be long.

Based on that premise, I will argue that there are large benefits to reducing the lower bound on null interest rates by even modest amounts. My argument relies on the National Bureau of Economic Research working paper that I wrote earlier this year, *Sluggish Inflation Expectations: A Markov Chain Analysis* (Kocherlakota 2016).

Let me begin by giving some historical background. The zero lower bound has proven to be a much bigger deal than anyone would have thought back in the latter part of the last century.

David Reifschneider and John Williams (1999), two staff economists on the Board of Governors of the Federal Reserve System (FRB), wrote a working paper that helped frame the way many in the US policy community thought about the zero lower bound on interest rates. Taking the Board of Governors' relatively new FRB/US statistical model and using the Taylor rule to analyze the zero lower bound, they found that at an inflation rate of 2% the Federal Reserve System (Fed) would be constrained by the zero lower bound only about 5% of the time and the average stay at the zero lower bound would be four quarters. They concluded that, at least with a 2% inflation target, the zero lower bound would lead to only a slight diminution in macroeconomic performance. They found that 2% was better than 0% and that a 0% inflation target would lead to a much more dramatic reduction in macroeconomic performance.

Much has changed since 1999. John Williams has been the president of the Federal Reserve Bank of San Francisco for nearly 6 years. The Fed's FRB/US model, which was very new and shiny in 1999, recently celebrated its 20th birthday. But the biggest change, as shown in real-

world experiences, has been that stays at the zero lower bound can be much longer than the year or four quarters that Reifschneider and Williams found to be the average duration then. This, however, is not meant to be a criticism of Reifschneider and Williams. In 1999, Japan had been at, or near, the zero lower bound for only about 2 years. That stay stretched to nearly 2 decades. In the US, the Fed stayed at its effective lower bound for 7 years before raising rates in December 2015. The long stay at the zero lower bound that was seen in the US and in other countries is not surprising, and, in fact, there are good reasons to expect stays at the zero lower bound to be long.

A financial crisis will lead to a sharp decline in the natural real rate of interest. Because of the effective lower bound on interest rates and inertia in the central bank's policy-reaction function, the central bank is unable to insulate the macroeconomy fully against the crisis. As a result, aggregate economic activity is likely to fall, possibly by a large amount. This is a fair description of the events of 2008 and 2009 in the US and in many other parts of the developed world. I invite all of you to think about the possibility that there is a small chance of a financial crisis hitting which—because of the lower bound on interest rates and inertia in policy—will lead to a sharp decline in economic activity.

Based on the lessons learned from the last financial crisis of 2007 to 2009, I do not expect the next financial crisis to last very long—maybe 6 to 12 months. I agree with many that there is certainly an ad hoc feel to much of what the Fed and other central banks did in 2007 and 2009. I strongly believe that the Fed and the world are fortunate to have someone such as Ben Bernanke, whose deep knowledge of the last great global financial crisis in the 1930s could guide those rather ad hoc activities.

The interventions put in place from 2007 to 2009 provide a useful playbook that allows central banks and their treasury counterparts to stem a global financial crisis, even if that crisis should prove serious. I do not expect a prolonged financial crisis to be the source of long stays of the zero lower bound. Instead, a short sharp decrease in economic activity can generate a persistent scarring effect on the economy through its impact on people's beliefs.

Suppose, for instance, that after the financial crisis, conditions normalize except for one thing: people now believe that a financial crisis, with its associated large decline in economic activity, is much more likely. That belief increases the precautionary demand for savings and lowers the demand for current consumption. Beyond the rate of time as a source of the demand for savings, I am thinking of a richer model in which people are also concerned about downside risk to their consumption profiles, possibly associated with a financial

crisis leading to a very sharp decline in aggregate activity. This may well not be shared evenly by everyone in the population. It will affect those with a higher risk of unemployment by increasing their precautionary demand for savings and by lowering their demand for current consumption.

This decline in consumption demand can, and should, be offset by lowering the target interest rate. If the decline in demand is sufficiently large, the central bank could again be constrained by the zero lower bound. In this way, even though the financial crisis has been cleaned up and panic in financial markets stemmed, the increased fear of a future financial crisis could lead to subdued economic activity, even though, apparently, market conditions have normalized.

During my time as president of the Minneapolis Fed, I observed that this fear period could last a very long time. Even at the end of my term as president, 7 years after the Lehman crisis, I would often be asked about the possible recurrence of a financial crisis like 2008. Similarly, Neel Kashkari, who succeeded me as president of the Fed of Minneapolis, has made the same point, maintaining that the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd–Frank Act) has not been effective at eliminating the risk of a financial crisis (Kashkari 2016). There is good reason to expect that even though financial markets have normalized, people's fears and beliefs about the likelihood of a future financial crisis may not be the same as the beliefs they held before the crisis hit.

This fear period is likely to be self-enforcing. The longer it lasts, the more people will see future financial crises as being associated with near-permanent declines in economic activity, which will lead to further cutbacks in their demand for spending and further downward pressure in economic activity during a "fear period."

In sum, I anticipate that central banks will use the lessons of 2007 and 2009 to ensure that financial crises do not persist for long periods. Even after the crisis ends, I would expect that a lengthy period of fear would follow, in which households believe it to be highly probable that a crisis could recur. If this fear is sufficiently pronounced, it could drive central banks into the zero lower bound. In this way, relatively short crises can lead to long stays of the zero lower bound. If the zero lower bound is expected to stay for a long time, how can central banks offset this issue?

Krugman (1998) and Eggertsson and Woodford (2003) are definitive modern treatments of the zero lower bound. Both papers emphasize the role of forward guidance to provide stimulus when current interest rates can fall no further. The Fed used forward guidance in a variety of ways during its recent 7-year stay at its effective lower bound of

25 basis points. Although I used to be a big fan of forward guidance during the time the Fed was implementing it, I am now more skeptical of its utility.

Forward guidance refers to communication that is intended to change the public's belief about future central bank actions. In the Fed's case, they used two types of forward guidance during the slow recovery.

The first was "lower for longer." The Fed announced that its Fed funds rate would stay at, or near, a quarter percent of the effective lower bound it had adopted, for longer than had been anticipated by investors. The second was "more gradual for longer." The Fed announced that its Fed funds rate would rise from its current low level more gradually than had been anticipated by investors.

Both types of communication had the same intent: to try to shift investors' beliefs about the path of the interest rate target after the date investors expected interest rates to lift off from the effective lower bound.

The whole point of forward guidance is to provide further stimulus today. There is no way to provide additional stimulus if one is constrained by the zero lower bound. To provide stimulus, forward guidance must relate to the likely future actions of the central bank after it is currently anticipated to raise rates.

This is a big restriction on the usefulness of forward guidance. If the public anticipates that the central bank will be constrained by the zero lower bound for a long time, say for 10 years, the effect of forward guidance will need to relate to something that will happen in 10 years or later. But, the term of the chairman of the Fed is only 4 years and the term of the President of the US is no longer than 8 years. So, how can the current chairman of the Fed and the Monetary Policy Committee credibly communicate how the committee will behave in 10 years' time? In my view, few would deem such information credible. I think that the credibility concerns in any monetary policy-setting regime would be the same. And therefore, forward guidance is not the answer to being in the zero lower bound for a long time.

What about reducing lower bound interest rates so they can be negative? First, what creates a zero lower bound? Currency pays a nominal interest rate of zero. If the central bank lowers the interest rate on bank reserves below zero, then this bank and its customers have an incentive to switch from their electronic funds to currency.

Miles Kimball of the University of Colorado Boulder has discussed many ways by which central banks can disrupt the substitutability of bank reserves in currency (Agarwall and Kimball 2015; Kimball 2012). By doing so, the central bank can lower the opportunity cost of funds to

financial institutions well below zero. If the ability of institutions to swap below their reserves into currency can be disrupted, the interest rate paid on reserves can be lowered and this could provide a large amount of additional stimulus to the economy. I agree with Kimball on this point and I have argued that governments should contemplate getting rid of currency entirely to prevent them from ultimately substituting between reserves and currency. Central banks in Europe and in Japan have been able to lower the interest rates on reserves slightly below zero without even creating these types of barriers between reserves and currency.

The benefits of lowering rates by 10, 25, or 50 basis points are unlikely to be large. Let me emphasize that the benefit of even a slight reduction in that lower bound could be considerable if households believe that the central bank is likely to be constrained by that lower bound for many years.

To use the example given earlier, suppose households anticipate that the central bank will be at the lower bound for the next 10 years. It is reasonable to assume that reducing the lower bound has little or no effect on post-liftoff or normal consumption. The decision to spend or save today can be shaped by the relative price between current consumption (when at the zero lower bound and within the fear period) and post-liftoff consumption.

It is often forgotten that what matters to that relative price is not the average rate of interest but the cumulative interest that will be lost. In reality, the relative price between current consumption and post-liftoff consumption is, in fact, governed by the households' projections of the amount of interest they could accumulate between today and liftoff. If households see liftoff occurring in 10 years' time, reducing the lower bound by even 50 basis points can have a large effect on the projection of the interest that can be accumulated before liftoff. To put it in another way, reducing the lower bound by 50 basis points has a large stimulative effect on current consumption because it makes post-liftoff consumption a lot more expensive. In other words, bond prices are what matter, not the average yield on a bond. If that bond price becomes more expensive, so consumption of the post-liftoff world becomes more expensive, the choice would be to spend today instead.

If stays of the lower bound are likely to be protracted, being able to reduce the lower bound by a modest amount of 50 basis points would yield big economic gains.

Why not try to achieve that lower real interest rate by raising the inflation target instead by 50 basis points? Earlier this year, Ben Bernanke (2016) compared these two approaches in a blog post. I think that there are two types of credibility problems in trying to raise the inflation target.

First, the public's inflation expectations could rise by a lot less than one-for-one with the increase of the inflation target, especially if you wait until you are in the fear period to do it. However, if the inflation target is raised when you get to the fear period, it might be difficult to generate the traction to get the belief. We have seen such phenomena in Japan.

Second, the public could see the increase in inflation target as simply the first of many such steps. Olivier Blanchard (Blanchard, Dell'Ariccia, and Mauro 2010) famously suggested that central banks should consider raising the inflation target from 2% to 4%. That generated pushback. The fear at that point in time was that raising the inflation target to 4% would make everyone expect that we raise it to 6% and then on to 8%—the slippery slope argument. At 2.5% inflation, expectation would rise to 3% or 4% instead.

Not much is known about how central banks are able to discipline people's beliefs using communication to influence longer-run inflation expectations. I know that we should have tremendous confidence in our ability to affect the real interest rate by changing the announced intentions for the inflation target. The central bank can, in fact, achieve the desired reduction in the real interest rate by lowering the nominal interest rate below zero by 50 basis points, rather than by trying to raise the inflation target by 50 basis points.

On the issue of using asset purchases as a tool, the Fed and many other central banks have attempted to provide additional stimulus by buying long-term assets. Because the Fed is restricted to buying certain kinds of long-term assets, they focused on buying those issued or backed by the US government.

I have two concerns about asset purchases. First, they do seem to have their intended downward effect on long-term yields but their ultimate impact on the actual real economy remains very uncertain. Some authors, notably Arvind Krishnamurthy and Annette Vissing-Jorgensen (2012, 2011), have argued that even though they are lowering yields, these purchases are actually a drag on the macroeconomy because they suck needed liquidity out from the private sector. Long-term assets are a source of liquidity, and therefore buying them would take liquidity out and create a drag on economic performance.

Second, asset purchases may not be all that helpful during long stays of effective lower bound. The view of the Fed, as with most central banks, is that asset purchases work through what is called the stock view of asset purchases, that is, the stock of assets that is expected to be purchased and the period over which the stock of assets is expected to be held.

Many market participants believe in the flow view, namely that what matters is the flow of purchases that affect the economy as opposed to

the stock. Suppose for a moment that the economists are wrong and the market participants are right on this; the flow is what matters. Then, a large flow of assets would have to be bought for many years if the zero lower bound lasts for a long time. Such a program would eventually fail because available assets would run out or create a disconnect between the interest rates being targeted and the interest rates that really matter—those that prevail in the private sector.

Let me make two points. First, going forward, stays of the effective lower bound should be expected to be long. This has nothing to do with permanent declines in real interest rates. Instead, crises enhance the fear factor and that fear alone means that any future financial crisis will lead to a long stay at the zero lower bound.

Second, if households expect stays of the effective lower bound to be long, then even modest reductions in the lower bound can provide a great deal of stimulus. The accumulated interest, not the average interest, is what matters in deciding whether to consume today or to consume in the future.

Narayana Kocherlakota

Narayana Kocherlakota is the inaugural Lionel W. McKenzie Professor of Economics at the University of Rochester. He held appointments in economics and finance at the University of Minnesota, Stanford, Northwestern, and the University of Iowa. In 2009–2015, Kocherlakota served as the 12th president of the Minneapolis Federal Reserve Bank. He has published over 50 scholarly articles in macroeconomics, financial economics, and economic theory. He is also a fellow of the Econometric Society and a columnist for Bloomberg View. He received his PhD in economics from the University of Chicago and his AB in mathematics from Princeton University.

C. Open Floor Discussion

Question from Michael Hutchison to Narayana Kocherlakota: What evidence is there to prove that the fear factor is so great that it is subduing consumption, at least in the US?

Reply from Narayana Kocherlakota: Consumption demand proved to be much lower than anticipated at the low interest rates that prevailed in the US. While there is not much evidence to back this up, I think

that fear of a downturn might be the cause of this development. When growth expectations remain the same and interest rates are low, then if one believes that people are indeed trading off today versus tomorrow, there should be some other factor to explain what is happening. Risk is a natural factor to be drawn to. In the case of financial markets, market participants are not necessarily the key driver of interest rates but rather households are.

Question from Jean-Pierre Danthine to Narayana Kocherlakota: If the financial crisis has remained in people's memory for a long time, it seems that policy makers may have already forgotten it with their ambitious efforts to get rid of the Dodd–Frank Act.

Reply from Narayana Kocherlakota: The Dodd–Frank Act is more of a political issue. Many people—I certainly do not associate myself with this view—are looking to get rid of the Dodd–Frank Act since it has not decreased the risk of a financial crisis, but possibly increased it by labeling some institutions as being too big to fail. I am certainly not going to argue that point. I view that as perhaps too polemical to discuss here.

In addition, people may have a prolonged memory of the crisis, but we know that that can change very quickly, particularly in financial markets, in which we always complain about their short memory.

Question from Joseph Gagnon to Narayana Kocherlakota: Regarding the Krishnamurthy and Vissing-Jorgensen point, the most liquid assets are the reserves and the overnight repurchase agreements created by the Fed, and these are injected into the market when long-term assets are bought. So, why is liquidity not increased?

Reply from Narayana Kocherlakota: Markets are extremely segmented. Liquidity is provided to banks by taking 10-year treasuries out of the marketplace and providing them with reserves. But other market participants use those key sources of liquidity, which might be more material in terms of the productive opportunity set for the economy.

Question from Mark Spiegel to Narayana Kocherlakota: On the challenges to forward guidance when a country is stuck at the zero bound for a long period, there is an analogy to the case of negative interest rates, in the sense that you cannot commit to low rates for a long period because of limited terms. In what sense can you move into negative interest rates currently and then say that there will be some cumulative long-term effect at these negative rates?

Reply from Narayana Kocherlakota: It has more to do with the situation than a commitment. If one considers a situation in which households expect rates to be at zero, but then would need to expect

rates to be at minus 50 basis points, that would give you much more room to manipulate. It would give you the ability to tell people that we will remain at zero for a long time. Such is the forward guidance the Fed could play with. Instead of saying that people already expect rates to be at zero for a long time, saying that people can expect to be at minus 50 basis points for a long time would have a powerful effect.

3

Distinguished Speaker Session I: Negative Interest Rates in Advanced Economies

A. Jean-Pierre Danthine: Negative Interest Rates in Switzerland—What Have We Learned?

Negative interest rates in Switzerland are a special case. From the perspective of a small open economy, the interest rate is the critical intertemporal price, but it is also the key policy lever that influences the exchange rate.[2]

This means, in principle, the zero lower bound is particularly constraining as it binds on both sides. In practice, many small, open economies have a positive risk premium so that they are above the zero lower bound when advanced economies are at the zero lower bound. But, this is not the case for all. Switzerland is an exception because it has a safe haven currency. But, having a negative risk premium is the counterpart to that safe haven currency and the buyer of such insurance that is safe haven currency must pay a price—typically a negative interest differential.

Figure 1 shows the Swiss franc–euro interest rate differential. The 3-month London interbank offered rate (LIBOR) for the euro is in gray, and the 3-month LIBOR for the Swiss franc is in blue. In this figure, the Swiss franc rate has been consistently and mathematically constantly below the euro interest rate by 150 to 170 basis points.

In such a situation, as in a financial crisis, not only is there a special hunger for the safe haven, but the interest rate differential also collapses because everyone goes to zero. In that context, a price has to be paid, and the price is that of a massively overvalued currency (Figure 2).

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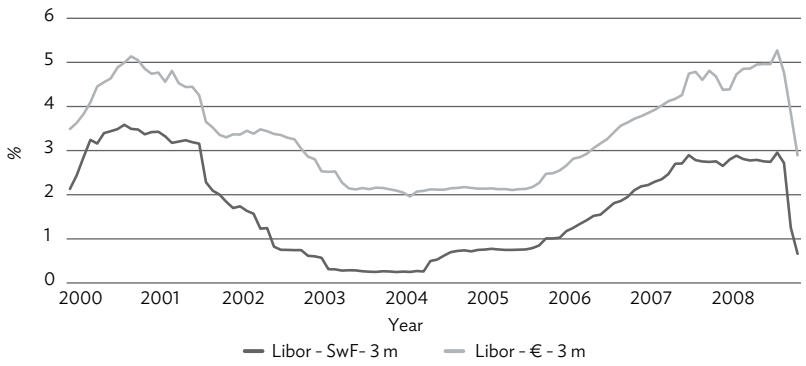
[2] For a recording of Distinguished Speaker Session I see ADBI. ADBI Annual Conference 2016: Distinguished Speaker Session I. https://www.youtube.com/watch?v=1Hx061hvHrI

Figure 1 The Swiss Franc–Euro Interest Rate Differential



€ = euro, Libor = London interbank offered rate, m = month, SwF = Swiss franc.
Source: Author.

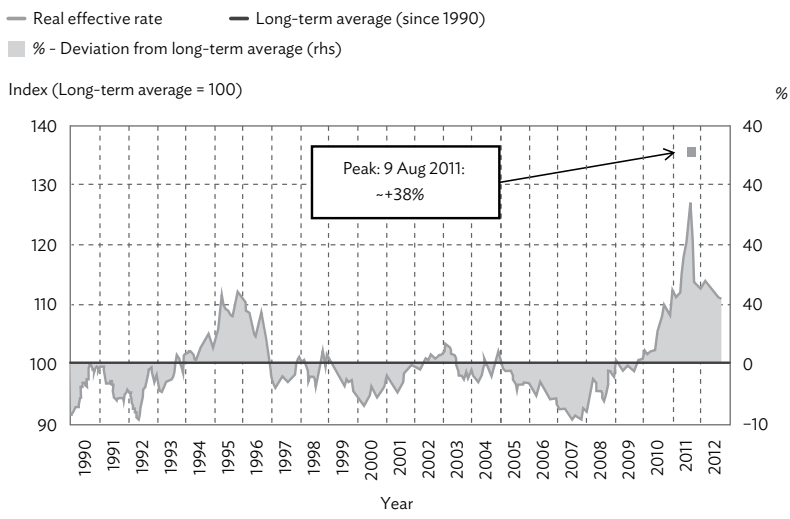
Figure 2 shows the Swiss franc real effective exchange rate since 1990. By 2007, it had started to increase. The first increase from below zero to zero was probably purely a result of safe haven. However, when the exchange rate reached zero, the euro and the Swiss franc were basically at the zero lower bound. The further increase, which peaked at the little dot in Figure 2, is the 38% plus real effective exchange rate that the Swiss National Bank imposed as an exchange rate floor in the early days of August 2011. This exchange rate floor was an extraordinary response to an extraordinary situation and it lasted for over 3 years.

The exchange rate floor ended on 15 January 2015, which should really be interpreted as back to "normal," or back to relying on the interest rate differential. But, the interest rate differential was not quite enough.

We needed to go to minus 75 basis points to get into real negative rates. As previously mentioned, the traditional difference was 150 basis points—minus 75 was not enough. Indeed, discretionary foreign exchange intervention was needed to complete the policy. The policy worked for a limited time only and if it could not last forever, we needed to think about the future. So, what next?

Switzerland's negative rates are low at minus 75, a record held together with Denmark, and it goes with large exemptions. The banks pay these negative rates at the Swiss National Bank only for what is on top of 20 times their required reserves. At the moment, this means that the average negative rate is around less than 30 basis points instead of

Figure 2 The Consequence: A Massively Overvalued Currency



SwF = Swiss franc, rhs = right-hand side.

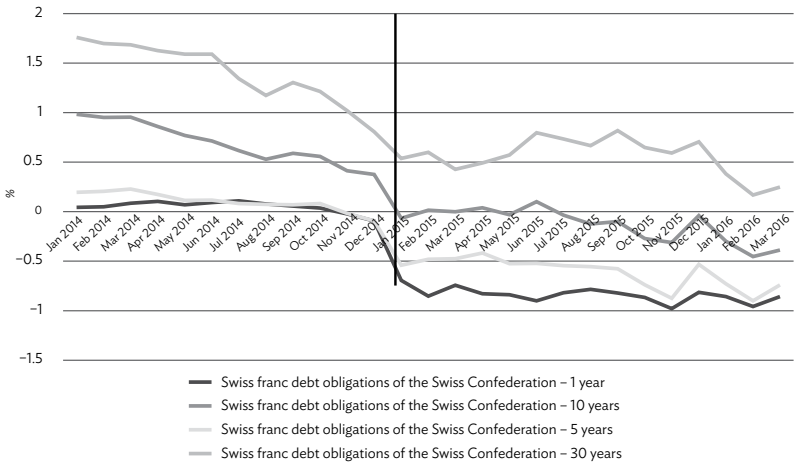
Source: Bank for International Settlements; Swiss National Bank Markets Analysis Platform.

75 basis points. It is important to note that Switzerland has a marginal negative rate and an average negative rate.

Although the zero lower bound remains in place for retail depositors, this is not specific to Switzerland. Negative rates for retail depositors are almost nowhere to be seen because banks are afraid of losing their good clients. For years, they have relied on depositors to give them money for free. Given the unpopularity of the negative rate, banks are afraid that clients will move to competitors if they are the first to impose negative rates. But they can, in fact, afford to do so because of the large exemptions. In 2015, the banking sector's profits were greater than they had been before the negative rate was imposed.

This means that there is no risk of paper currency hoarding at the retail level because the negative rate does not apply to the retail level. However, the marginal negative rates are being used on market rates so that the interest rate differential plays its part on the exchange rate, but there is no transmission to bank lending rates, so there is no demand stimulus.

Figure 3 Swiss Confederation Bond Yields



Source: Author.

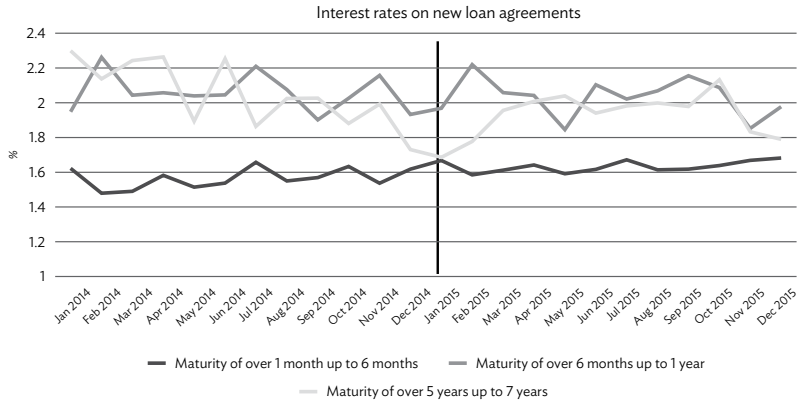
Figure 3 gives an overview of Swiss Confederation bond yields. On the vertical line at 15 January, there was a major transmission effect on long rates and a perfect transmission on short rates. In everything we look at, market rates have been adapted to the new policy.

Figure 4 shows bank lending rates. There was no change in the bank lending rate. The vertical line had no impact. These short-term bank lending rates were not adjusted.

Figure 5 shows mortgage and investment loan rates. The important line is probably the gray one, which shows that following the start of the negative rates there was a small fall in 10-year mortgage bonds. In Switzerland, the 10-year mortgage rate is the most common mortgage instrument. After a week or so, the rate started to rise and then remained at the higher level. So basically, there was no transmission to bank rates and no transmission to aggregate demand in a bank-dominated economy.

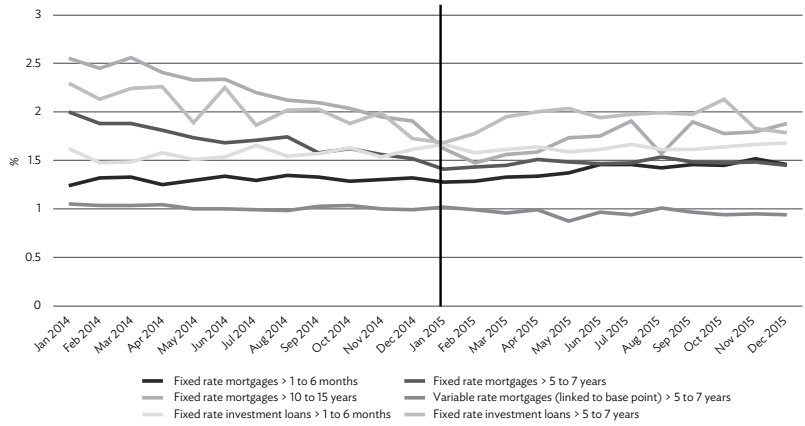
So, what are the next steps? If we get into the situation described earlier—where we need to think about going more negative so that we do not need to rely on these foreign exchange interventions—how do we go more negative? And the answer is that it would be possible to consolidate the current policy by doing several things, including going

Figure 4 Bank Lending Rates: New Loan Agreements



Source: Author.

Figure 5 Mortgage and Investment Loan Rates



Source: Author.

lower than minus 75 basis points but simultaneously increasing the exemptions so that the burden on the banking system is stabilized. To do this, monitoring would be required.

Levying a fee on cash withdrawals at the central bank could discourage wholesale paper currency hoarding. Basically, going much further than minus 75 basis points will result in a currency-hoarding problem. If it is not at the retail level, it will be at the wholesale level, which is easy to handle if you have the willingness and the legal basis to do it. It would be enough to have a fee on cash withdrawals at the central bank for those few institutions that treat cash at the wholesale level, to make sure that wholesale paper currency hoarding is not profitable.

If needed, another option would be to do what Belgium has done by strengthening the zero lower bound for retail depositors and imposing zero minimum on interest rates on deposits to make sure the zero lower bound holds for retail depositors. Otherwise, there is a potential cash-hoarding problem for retail depositors.

Why do that? These negative rates are called "light" because they help reach the goal of a small, open economy that needs an appropriate interest rate differential to stabilize its exchange rate. This is exactly the case for Switzerland. Sweden and Denmark have been in similar situations. This option, however, does not work in an economy that needs "classical" monetary stimulus because there is no such stimulus, at least in a bank-dominated economy.

Why be satisfied with that? You could think of unencumbering monetary policy. One could try the radical way, which is to abolish paper currency or introduce an exchange rate between paper currency and electronic money and ensure that the rate of return implicit in the depreciating exchange rate matches the negative interest on electronic money—the Miles Kimball solution which Kocherlakota has alluded to. However, the lesson from Switzerland—maybe it is purely a Swiss lesson—is that this is not democratically feasible. Negative rates are very unpopular. To choose this radical option in Switzerland, people would have to vote, and they would vote "no." They would feel expropriated—low rates are the problem, and negative rates are even worse. Also, pension funds are fierce contradictors, and exemption thresholds are seen as unfair.

While this may be a Swiss perspective, we should beware of technocratic advances without democratic support. If in general, the opinion on negative rates is the same as in Switzerland, I would be very wary for central banks—as technocratic, independent institutions—to go for it. This is because they would not remain independent for long.

And last, central bankers are not good at public relations. We would need to conduct some level of public relations, even though the need for it is much less severe in Switzerland because, again, the zero lower bound is maintained for retail depositors.

I conclude with the following points.

- Interest rates unbound? Not yet.
- A full monetary stimulus below zero requires a radical solution.

- Beware of democratic deficits.
- More negative rates to restore a needed interest rate differential may be within reach.
- The question: Is anyone else interested but the Swiss?

Jean-Pierre Danthine

Jean-Pierre Danthine is president of the Paris School of Economics and a member of the Board of Trustees of the Centre for Economic Policy Research in London. He is also a member of the Board of the Fondation Leenaards in Lausanne. He was a member of the Governing Board of the Swiss National Bank from January 2010 to April 2012 and its vice-chairman from May 2012 until June 2015. Born in Havelange, Belgium, he earned a master's degree in economics at the Université catholique de Louvain (Belgium) and a PhD in economics at the Carnegie Mellon University.

B. Cecilia Skingsley: Negative Interest Rates in Advanced Economies

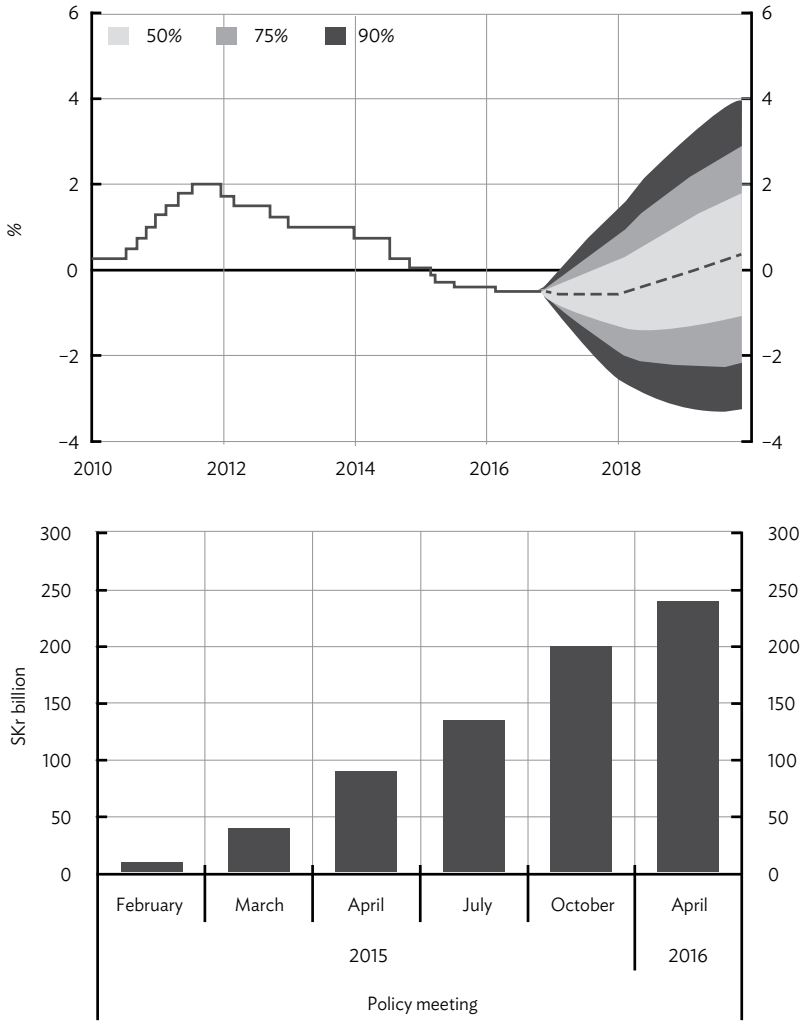
I would like to explain how Sweden ended up with negative interest rates, how the effects from the current policies have been analyzed, and where the policy is heading in the future.

The graph to the left in Figure 6 is Sweden's main policy rate and the forecast for the policy rate going forward. We have had a negative rate since February 2015. When we conducted the rate cuts below zero level, we used somewhat smaller steps than the usual 25 basis points, since we wanted to be able to monitor the pass-through effects more thoroughly. The monetary implementation system in Sweden does not have any exemptions. The surplus that the banks are forced to deposit within the central bank at minus 0.5% interest every night is the full amount. This is costly to banks.

To give a bit of background, Sweden has been on an inflation-targeting framework since the mid-1990s and into the global financial crisis of 2008 and 2009. The Swedish economy was one of the modestly hard-affected advanced economies that were hit then. However, Sweden was also one of the advanced economies that had the strongest recovery in 2010.

Eventually, the euro area crisis meant another, although less dramatic, downturn in the development of Sweden's gross domestic product (GDP). The core task was stabilizing inflation in a situation where inflation had begun to weaken in 2011 and had slowly, but

Figure 6 Swedish Monetary Policy: Repo Rate Path and Quantitative Easing



SKr = Swedish kroner.

Notes: The uncertainty bands for the repo rate are based on the Riksbank's historical forecasting errors and the ability of risk premium adjusted forward rates to forecast the future repo rate for the period 1999 up to the point when the Riksbank started to publish forecasts for the repo rate during 2007. The uncertainty bands do not take into account the fact that there may be a lower bound for the repo rate. Outcomes are daily rates and forecasts refer to quarterly averages.

Source: The Riksbank. http://www.riksbank.se/

surely, decreased below the 2% target. Inflation reached close to 0% in underlying measures in 2014.

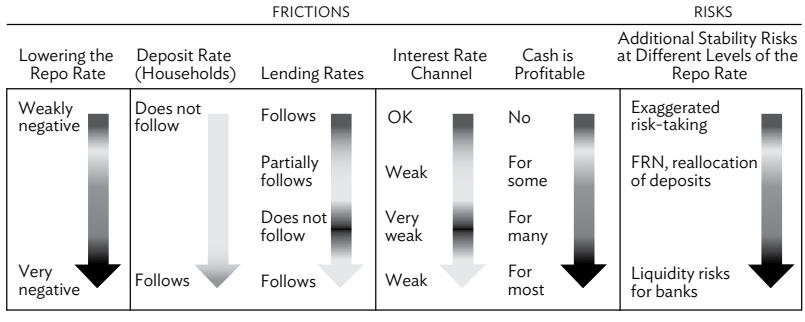
It was clear that cutting rates would not be enough. By the end of 2014, we were at the zero level. But inflation expectations had also begun to weaken. The survey-based, long-term expectations had begun to weaken. People did not expect Sweden to reach its inflation target, even on a 5-year horizon, which was a concern. But, disinflationary impulses from abroad continued to be strong. We also knew (or had a fairly good hunch) that the European Central Bank (ECB) planned for large quantitative easing programs to begin in 2015.

The executive board, of which I am a member, found it necessary to ease policy further. By the beginning of 2015, we had combined rate cuts with purchasing programs of nominal sovereign debt. The lower graph of Figure 6 shows a series of purchases. This is the accumulated numbers that you can see. To maintain flexibility, we decided to use shorter programs than those conducted by the ECB.

By year-end, according to the decision the board has taken so far, we will have purchased about 40% of the outstanding government nominal debt and almost 10% of the index-linked government debt. In GDP terms, we are not keeping the same pace as the ECB, but are somewhat slower. Nevertheless, we will have purchased about 8% of the government debt by the end of the year.

Figure 7 gives an overview of how we analyze challenges of the efficient lower bound. It gives a coarse overview of monetary policy pass-throughs and also potential risks from negative rates. Looking first

Figure 7 Transmission Analysis of the Effective Lower Bound



ELB = effective lower bound, FRN = floating rate note.

Source: The Riksbank. http://www.riksbank.se/

at the effects on deposit rates, retail deposit rates in Sweden were already at the zero level before the policy rate went negative. Retail accounts were at zero but some larger deposit accounts, such as corporate and local government, faced negative rates. Though not very popular, local governments and corporates are experiencing lower lending rates. Net–net, they are still in a fairly favorable situation.

On lending rates, Sweden's latest rate cut (but potentially not its last), which took place in February 2016, was almost a full pass-through in accordance with previous patterns. The board is satisfied with the interest channel—the pass-through—but they are cautious as it could weaken if further rate cuts occur.

On the issue of cash substitutions from the lower bound, there have been no effects from any kind of cash hoarding or cash substitution. Sweden is a very clear outlier when it comes to cash use as the value of cash outstanding has fallen by 40% in the last 6 years. This is not primarily related to interest rates, but to structural changes in how Swedes are conducting their payments.

On the separate topic of how the private sector is turning its back on notes and coins, I recommend a speech I gave on the subject, "Should the Riksbank Issue an e-krona, a Central Bank Digital Currency?" (Skingsley 2016).

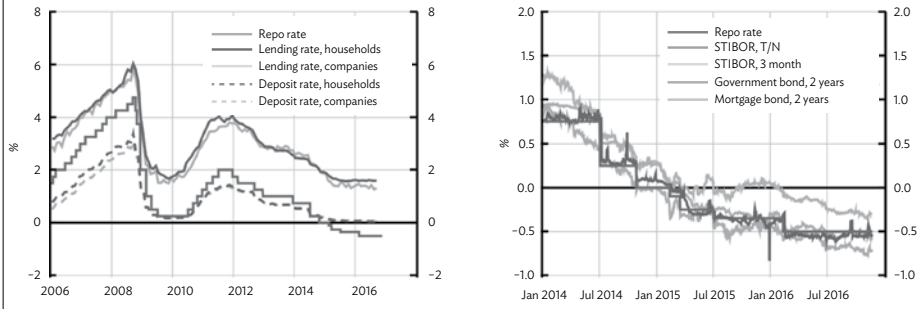
There is no substitution into cash whatsoever. The continued rise of household debt has been a concern for many years. It is not connected primarily to negative rates, but rather to the fact that rates have been low for a long time. But, because the central bank is not the macroprudential authority, it does not have the tools to balance these effects.

Figure 8 shows a graphic explanation of how market rates, lending rates, and deposit rates have behaved. Pass-through to lending rates is more or less normal, even though the deposit rates are stuck at zero. One of the reasons for the acceptable pass-through is that Swedish banks have a relatively large share in market funding as opposed to deposit funding. This is beneficial to profits since they are experiencing lower market rates.

As a small, open economy with 50% of the GDP trade exposed, the currency is of key interest to us. Figure 9 shows the Swedish krona in trade-weighted terms.

During the euro crisis between 2010 and 2012, the appreciation of the Swedish krona dampened the inflation pressure considerably. Then as rates were cut more aggressively, the Swedish krona depreciated. Figure 9 shows the estimated forecast of the Swedish krona. We think that there will be an appreciation in the years to come. We need this to be not too rapid. We do not want the Swedish krona to stand in the way of normalizing inflation. The board maintains a high level of alert to intervene, if necessary, to maintain the current trend in inflation.

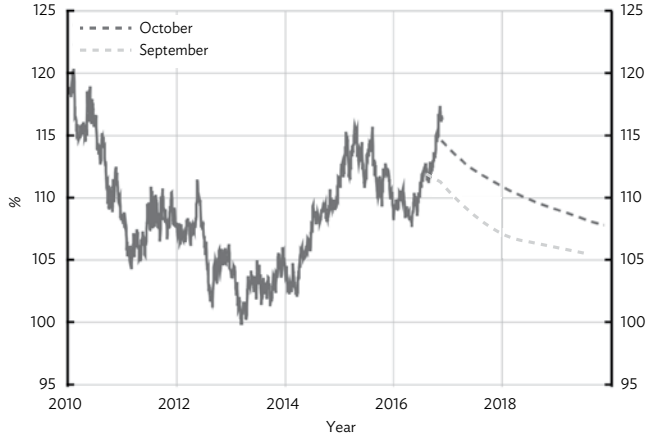
Figure 8 Market Rates, Lending Rates, and Deposit Rates



STIBOR = Stockholm Interbank Offered Rate, T/N = tomorrow next.

Sources: Macrobond; The Riksbank. http://www.riksbank.se/; Statistics Sweden.

Figure 9 Foreign Exchange Trade-Weighted, Outcome, and Forecasts

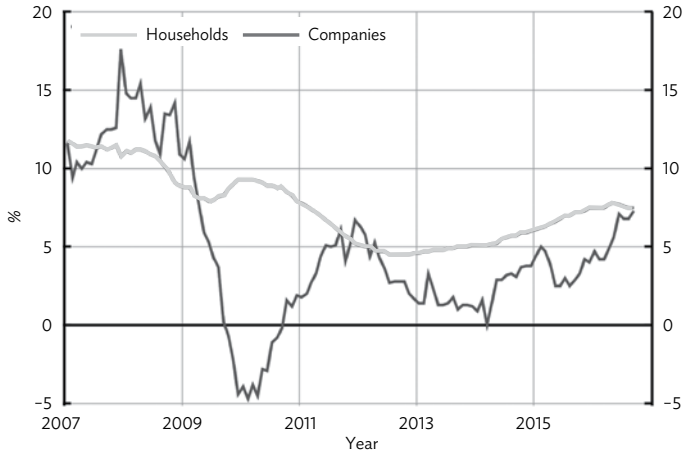


Notes: Index, 18 November 1992 = 100. Outcomes are daily rates. Forecasts refer to quarterly averages. Swedish Krona Index refers to an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources; The Riksbank. http://www.riksbank.se/

Figure 10 shows that the credit channel continues to work and the economy is growing. As mentioned earlier, household debt is the main concern. It currently stands at 180% of disposable income, which is about 90% of Swedish GDP. As was also mentioned, the

Figure 10 Lending to Households and Companies



Notes: Annual percentage change. Monetary financial institutions' lending to households and nonfinancial companies according to financial market statistics adjusted for reclassifications and traded loans since 2006.

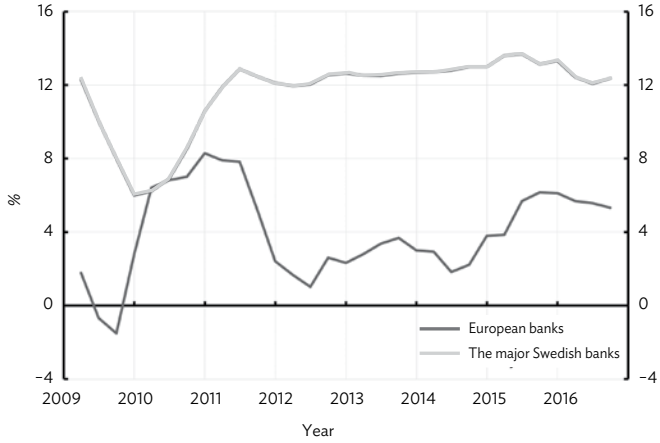
Source: Statistics Sweden.

central bank has no tools to offset the risk of increasing household debt. The macroprudential responsibilities lie primarily with the government but also with the financial supervisory authorities that conduct the microsurveillance. We see this as an area of concern and feel that not enough macroprudential decisions have been made. In its recent Financial Sector Assessment Program study, the International Monetary Fund (IMF) stated that Sweden's debt and macroprudential governance was not satisfactory (IMF Monetary and Capital Markets Department 2016).

The European Systemic Risk Board has also issued warnings against the growing vulnerabilities in Sweden (ESRB 2016). This is a clear challenge when conducting policy in the future.

So far, Swedish banks are managing well under the negative policy rates. Figure 11 shows the return on equity (ROE) in Sweden. Swedish banks are holding up well compared with their European peers. They have low credit losses and high cost efficiencies, which are important when they keep ROE at a high level. Swedish banks are also helped by lower funding costs and by being able to increase

Figure 11 Return on Equity: Swedish and European Banks



Notes: Unweighted average. The red line represents a sample of European banks. The peer group is composed of BBVA, Banco Santander, Barclays, BNP Paribas, Commerzbank, Crédit Agricole, Credit Suisse, Danske Bank, DNB, Erste Bank, BPCE, HSBC, Intesa Sanpaolo, KBC, Lloyds, Raiffeisen, RBS, Société Générale, UBS, and UniCredit. Each observation from the peer group consists of an average where the single highest and single lowest observations have been excluded.

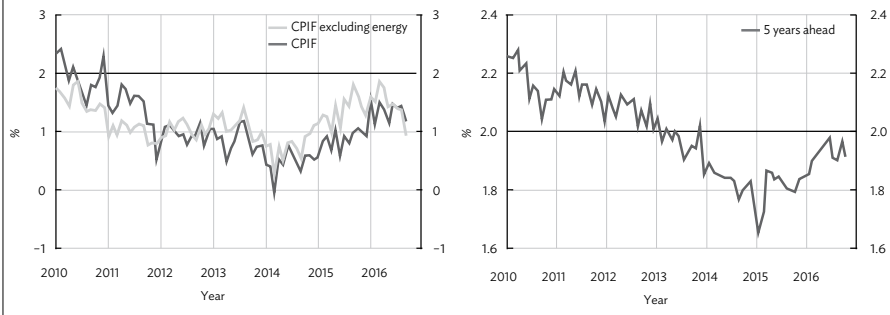
Sources: The Riksbank. http://www.riksbank.se/; SNL Financial.

their lending margins due to fairly weak competition—four banks have about 80% of retail clients and almost the same percentage among corporate clients in Sweden. Also, a growing economy means increasing lending volumes, which is also beneficial for the Swedish banks.

Our core target is raising inflation. Figure 12 shows our underlying measures: the consumer price index (CPI) with fixed interest and the same index, excluding energy. We have had a situation in which the weakened currency has been a pass-through to imported goods and this has supported inflation. But, this effect is dissipating now and service prices, which are a more domestically driven price, have become somewhat difficult to estimate. There have also been occasional disappointments related to domestic price pressures.

The right-hand graph of Figure 12 shows that expectations have risen again, which is important, but we are still not out of the woods there either. The Riksbank believes that the policy easing to which it has been committed was the right thing to do. But clearly, there is a

Figure 12 Result: Inflation and Inflation Expectations



CPIF = consumer price index with a fixed mortgage rate.
Notes: Annual percentage change. Inflation expectations according to money market participants.
Sources: Statistics Sweden; TNS Sifo Prospera.

need to be patient. We expect it will be a long time before inflation returns to normal levels, and rates will stay in negative territory for quite some time.

Cecilia Skingsley

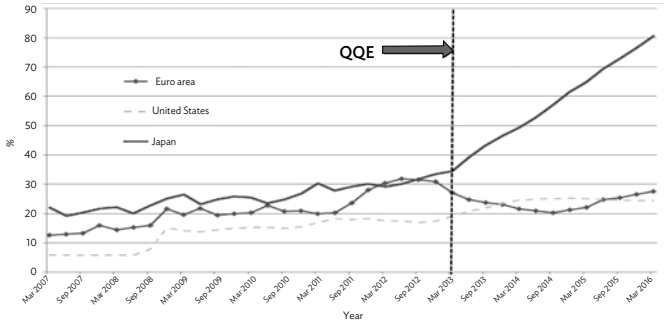
Cecilia Skingsley took up the post of deputy governor of the Riksbank in May 2013 with a term of office of 6 years. She is chair of the Retail Payments Council and was previously chief economist at Swedbank. She has a BSc in economics and a CEFA degree.

C. Sayuri Shirai: An Overview of the Bank of Japan's Negative Interest Rate Policy Experience

I would like to talk about the monetary policy of the Bank of Japan (BOJ) since 2013, focusing especially on the negative interest rate and the list of new policies.

One way to measure the degree of monetary accommodation of each central bank is to look at the central bank's total assets as a percentage of GDP, as shown in Figure 13. In the case of Japan, it is now about 90%.

Figure 13 Extraordinary Monetary Easing (Asset/Gross Domestic Product)



QQE = quantitative and qualitative easing.
Source: Author.

There is no doubt that the BOJ has undertaken massive monetary easing, at least in terms of quantity.

Figure 14 shows a decomposition of the entire period since April 2013 (under Kuroda's governorship) into three phases.

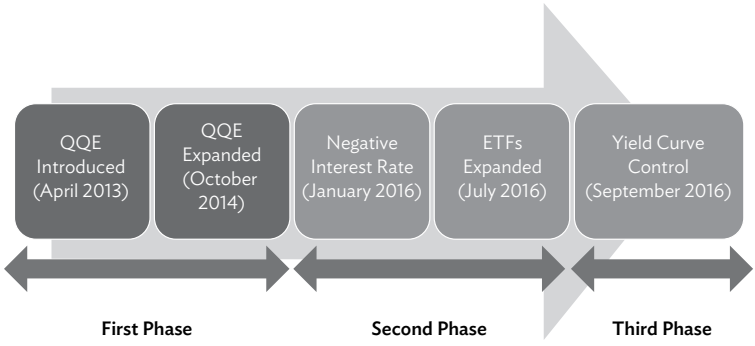
The first phase started with quantitative and qualitative monetary easing. Then in October 2014, the BOJ expanded quantitative easing. This is categorized as the first stage because the framework remained the same. In January 2016, the negative interest rate was introduced. In July 2016, the BOJ doubled its purchases of exchange-traded funds (ETFs). This is categorized as the second phase because the framework had gradually shifted.

The third phase started in September 2016 when the BOJ started to target the 10-year yield and the negative interest rate. This was called yield curve control and it was a complete shift from the earlier frameworks.

During the first phase, the BOJ tried to achieve 2% as soon as possible with a time horizon of about 2 years and continued quantitative easing as long as necessary to achieve the 2% target in a stable manner. The BOJ said that they would not hesitate to add monetary easing. What was interesting during this period was that the BOJ shifted the operational target from the short-term interest rate—like the Fed funds rate in the case of the Fed—to monetary base targeting.

Why did they do it? Some people, including myself, wanted to show that this was a game change from previous monetary policy, and we wanted to show that we were keen to get out of deflation. Some

Figure 14 The Bank of Japan's Monetary Easing since 2013



ETF = exchange-traded fund, QQE = quantitative and qualitative easing.
Source: Author.

board members believed in the quantity theory of money and a one-to-one relationship between monetary base targeting and inflation expectations. Monetary base targeting was adopted for various reasons.

In April 2013, the BOJ started to purchase massive amounts of Japanese government bonds (JGBs) in order to achieve this monetary base target of ¥60 trillion–¥70 trillion annually. Together with that, the BOJ purchased risky assets, such as ETFs (stocks) and real estate investment trusts.

In 2014, the BOJ increased the monetary base target from ¥60 trillion–¥70 trillion to ¥80 trillion. To achieve that, the annual number of JGBs purchased was increased from ¥50 trillion to ¥80 trillion. Also, the number of ETFs and real estate investment trusts purchased was expanded.

From January 2016, the BOJ decided to introduce negative interest rates. I argue that this framework marks the beginning of the second phase since the negative interest rates were not fully consistent with the asset-purchase program.

In the case of Japan, Japanese financial institutions own more than 90% of JGBs. Given that most are held by Japanese commercial banks and institutional businesses, foreign holdings are very limited. Those holding them would have to think of whether to sell JGBs to the BOJ or maintain existing bonds to earn the coupon rate.

Japan's banking sector has huge deposits. Even now, deposits are growing more than lending. The loan-to-deposit ratio is only around

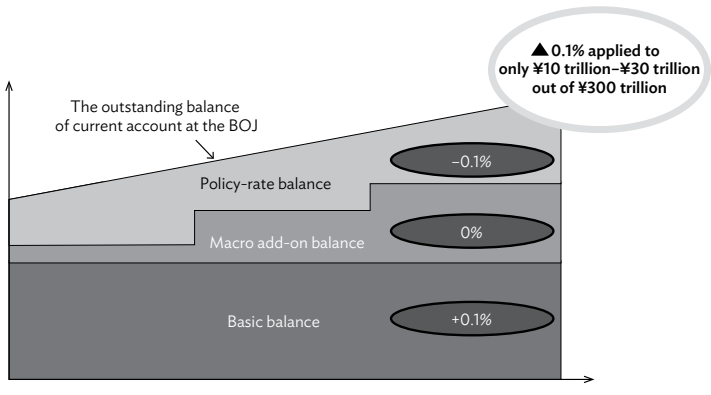
60%–70%, and so JGBs were filling this gap. Given the limited demand for credit, when banks sold JGBs to the BOJ, they would have to consider which was more profitable. In the past, the positive interest rate of 0.1% on excess reserves, in a sense, provided an incentive for the BOJ to easily purchase JGBs from the market. When the negative interest rate was announced in January 2016, it became more challenging for the BOJ to continue with the current asset-purchase program.

Let me now briefly touch on the features of negative interest rate policy. The BOJ said that quantitative easing with the negative interest rate would continue for as long as necessary to achieve the 2% target in a stable manner. The BOJ would not hesitate to add monetary easing in three dimensions. More quantity meant a monetary base beyond ¥80 trillion, and correspondingly with JGBs, more qualitative easing and a more negative interest rate.

Similar to Switzerland, the BOJ introduced a three-tier reserve system. This included lots of exemptions with regard to the application of negative interest rates. The BOJ now had three rates: +0.1% (the original rate), 0%, and –0.1% (Figure 15).

In July 2016, the BOJ doubled its annual purchase of ETFs from ¥3 trillion to ¥6 trillion. A very interesting thing happened when the BOJ made the announcement about the negative interest rate on Friday, 29 January. The next day, Saturday, 1 February, the market reacted positively, meaning the Japanese yen further depreciated and

Figure 15 Three-Tier System of the Reserves



¥ = Japanese yen, BOJ = Bank of Japan.
Source: Author.

stock prices increased. But from the third day, things reversed very quickly. The Japanese yen started to appreciate rapidly and stock prices declined.

With this negative interest rate, the BOJ faced a couple of challenging issues. For many years, even from the time of Masaaki Shirakawa (governor of the BOJ 2008–2013), the BOJ denied the application of negative interest rates. Even under Kuroda's leadership (governor of the BOJ since 2013), the BOJ continued to deny the possible adoption of negative interest rates because of possible inconsistencies with the asset-purchase program. Then suddenly, the BOJ adopted negative interest rates, which surprised many. This indicated some remaining issues with the BOJ's communication agenda.

The BOJ open market operations, as I mentioned previously, had inconsistency issues. The BOJ ended up purchasing JGBs at much higher prices than before. It had already purchased 40% of the outstanding bonds so further purchases became more challenging given the strong demand for JGBs in the Japanese market. Because the deposit rate for customers was already around 0% in commercial banks, negative interest rates led to a decline in the lending rate. Naturally, the interest margin dropped, and there was a direct adverse impact on commercial banks' profitability. Because the negative 10-year yield at one point went down to minus 0.3%, the discount rate started to decline and there was greater liability. Financial conditions deteriorated for institutional investors. JGB market liquidity deteriorated because there were fewer market participants, as many commercial banks stopped participating. They wanted to keep the JGB up to the maturities, so market liquidity declined. Money market funds shrank quite substantially. Households were worried that their deposit rate, which was already at 0%, would become negative. From February to June, notes in circulation year-on-year increased quite substantially, signifying that consumers were withdrawing money and keeping the cash at home. Notes in circulation, as a percentage of nominal GDP in Japan, is already at 20%. Japan is quite a cash-based economy, very different from Sweden.

The three-tier system of the reserves as shown in Figure 15 is, in some respects, similar to Switzerland, but slightly different because it is more dynamic. The BOJ continued to purchase JGBs in significant amounts, so excess reserves were growing every year. The BOJ had to regularly transfer from the policy-rate balance region, which is subject to negative interest rates, to the 0% region in the middle, to reduce the burden on commercial banks. As of January 2016, total reserves amounted to ¥300 trillion, of which only ¥10 trillion–¥30 trillion

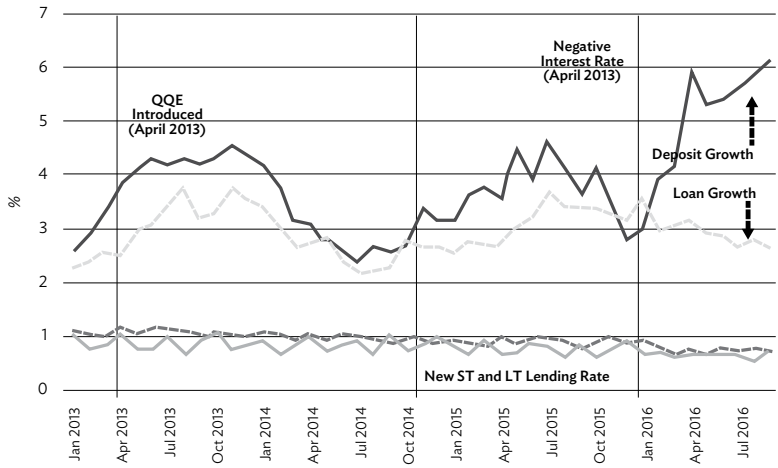
were subject to the negative interest rate. The amount is small, but the impact was very big.

Figure 16 shows what happened to the deposit and loan growth. It shows total lending, which includes the private sector and non-private sector; total deposit, which includes the household, corporate sector, and others; and banking sector deposits and loans. After the negative interest rate was introduced, the deposit growth expanded, partly because of the transfer of money from money market funds and other funds that cannot operate in a negative interest rate environment and were brought into the banking sector in the form of deposits.

Meanwhile, loan growth continued, but it did not show a significant increase as a result of the negative interest rate. At the bottom of the figure is the short-term lending rate. Lending and deposit margins were already very low but declined even more. Now, interest margin is only 0.7%. Hence, the corporate sector could hardly make any money from its main business.

As a result, I think there is growing tension between the banking sector and institutional investors and the BOJ. Banks and institutional investors started to complain and worry about the future, whereas

Figure 16 Deposit and Loan Growth



LT = long term, QQE = quantitative and qualitative easing, ST = short term.
Source: Author.

the BOJ wanted to continue with negative interest rate policy in three dimensions to achieve its 2% inflation target. Inconsistencies and tensions increased.

Some people say that the impact of the negative interest rate on the banking sector is not so serious at the moment. Yes, profits may have dropped, but I think that the problem is more that people worry about the future. If the BOJ continues this policy into next year, what will happen? Because people worry more about the future and not just the present, growing conflict has resulted. There is also criticism from the banking sector and tension in terms of continuing the massive JGB purchases. The yield curve control was a way to deal with the side effect of the negative interest rate.

Most interestingly, the policy target shifted from monetary base control to yield curve control. This was quite surprising, but it is good, and I support it. It is, however, a big change. Remember that during the first and second phases, the BOJ and Kuroda adopted monetary base control as a sort of symbol of quantitative easing, and then they abandoned it and shifted to yield curve control.

How did they control it? Two points were targeted: the negative interest rate of 0.1% and the 10-year yield. Pegging the 10-year yield at 0% was quite interesting and brings to mind the Fed's policy between 1942 and 1951 when they set a ceiling on long-term bond yields at 2.5%. The BOJ has said that quantitative easing with yield curve control will continue as long as necessary to achieve the 2% target in a stable manner and monetary easing will be added by cutting these two types of interest rates.

The next component is the inflation overshooting commitment, where the BOJ has said that the monetary base will expand until inflation exceeds 2% and stays above 2% in a stable manner.

So, the monetary base is not a target anymore, yet the BOJ keeps the monetary base within its inflation overshooting commitment. Understandably, this has been done to show a willingness to achieve 2%, and perhaps continuity from the previous framework. But it got many investors asking, "Is this really interest rate targeting? Or is this still quantitative easing?" There cannot be two endogenous targets.

This new framework could be interpreted as a shift. Previously, expectations were lowered by pushing the term premium downward through the asset-purchase program. Now, the long-term interest rate is lowered by lowering expectations on the path of future short-term interest rates. I think this is a formation from the asset-purchase program to forward guidance.

Conceptually, the negative interest rate and its forward guidance alone could stabilize long-term interest rates at a low level, but this

could be mistaken for a temporary measure. Therefore, the 10-year yield peg was introduced to help stabilize market expectations regarding the path of future short-term interest rates. It also served to prevent the interest rate from overshooting.

What are the positive aspects of this policy? First, there is certainly no more quantity expansion—no more expansion beyond ¥80 trillion—and it will make the JGB purchases more sustainable. It will also slightly mitigate the BOJ's balance sheet risk. Second, the BOJ has created a somewhat steeper yield curve, which has been positive for institutional investors. Third, if this is the ultimate transition to forward guidance, then it should create a smoother transition in the event of normalization because we have now shifted to interest-rate targeting. At a time of normalization, they can get rid of the 10-year yield and deal with the interest rate on excess reserve, which is equivalent to US Fed policies.

What are the negative aspects? First, as mentioned above, complexities may arise because many people do not really understand the current stance on the JGB policy. If continued, this policy might have a negative impact on the JGB market because it is suppressing price information embedded in the yield curve. Second, it also creates the risk of a sudden reversal. Third, if the BOJ maintains a 0% interest rate until the 2% inflation target is reached, and if this (as some people say) takes 10 years, that is too long. This would distort credit allocation and delay corporate restructuring.

As of October 2016, the CPI, excluding energies and food, year-on-year, is at +0.2%: slightly improved from 0% in September. However, if you look at the market-based inflation expectations, such as the 5-year inflation swap rate, there has been no change before and after the 2016 US presidential election, as it has remained at 0.1% to 0.2% only. Breakeven inflation based on 10-year JGBs slightly increased from 0.4% to 0.5%. Based on these actual underlining inflation and inflation expectations, Japan is still far from reaching the 2%.

The current sharp depreciation may help but the question is whether continuous depreciation is possible. At some point, going beyond the fair value may have a reverse depreciation trend. We really have to think about the sustainability of current policies. At the moment, they are okay.

CPI will start to be positive sometime next year as a result of the base effect, the government fiscal stimulus, and the impact of the Japanese yen's depreciation. However, at some point, the BOJ should really think about whether pegging the 10-year yield at 0% is reasonable for the Japanese economy and whether maintaining only a 0.1% difference between the 10-year yield and the negative interest rate may be too narrow.

Perhaps one way is to introduce a range so that the 10-year target can be between 0.0%–0.5% or 0%–1%, which is better, as it will create more price information. Also, the ¥80 trillion purchase is becoming quite a challenge, so sometime next year, if the BOJ starts to increase the 10-year target, a decrease in the amount of asset purchases or tapering could be considered.

Sayuri Shirai

Sayuri Shirai is a visiting scholar at the Asian Development Bank Institute and a full professor at Keio University. She was a member of the Policy Board of the Bank of Japan (BOJ) from April 2011 to March 2016. During her term she made 22 official speeches (see BOJ website) at major central banks, the International Monetary Fund, universities, think tanks, and other institutions. Topics include the negative interest rate policy, the BOJ's quantitative and qualitative monetary easing and past monetary easing policies, a comparison of the unconventional monetary policies across countries, inflation expectations, European crises, global financial flows, and inflation-targeting frameworks of emerging Asia.

D. Luc Laeven: Negative Rates and Bank Profitability

In my talk, I will give a reserve currency perspective. So, think of the US, the euro area, and maybe Japan. This will thus be somewhat different from the cases of Sweden and Switzerland, for obvious reasons, as they suffered flight to quality and unfortunately faced the collateral damage of neighboring central banks, such as the ECB.

My presentation focuses very narrowly on the impact of negative rates on bank profitability, which is not only of great interest in Switzerland. In the euro area, and in particular in countries such as Germany, bankers and their depositors are screaming because German households put their savings predominantly in banks. It is a similar story in the Netherlands with the pension funds. The experience to date with negative interest rates is probably not one to be tried in developing economies, and to those from that part of the world, the usual disclaimer applies when you see something interesting but dangerous on television; "Don't try this at home."

What are the merits of the new policy measures? I will call them "nonstandard" partly because we know very little about them and

partly because some of them have not been tried before. The goal is pretty much the same as with the standard measures: to maintain the transmission mechanism of monetary policy. There is, however, an additional requirement; they need to be effective in an environment in which the more standard tool is either no longer available or its impact is more limited.

The ECB has relied on four measures. Early in the crisis, the ECB moved to a full allotment policy for its tenders in main refinancing operations, basically taking liquidity issues off the table for banks. This was followed by an important innovation, so-called long-term refinancing operations, which later became targeted. This allowed banks to refinance their marketable liabilities with the additional requirement that they should use the benefits from the funds received from the central bank to make loans to the real economy.

And then in January 2015, the ECB introduced asset-purchase programs, starting with government bonds—as in the case of Japan—and covered bonds, and corporate bonds. Corporate bonds for the nonfinancial sector were added later. So, the ECB added another full range of assets, unlike Japan, for instance. We were also among the first to move into negative interest rate territory.

First, our internal analysis showed measurable effects on the indicators of inflation, particularly as they were implemented at a time of heightened risk of deflation. So, the judgment is that, in addition to avoiding deflation, these measures have also put us on a more sustainable recovery path. The difficulty in the analysis is to pinpoint one single measure because very often more than one change in policy was announced at the same time.

Second, opinions differ on underlying channels and it is very difficult to distinguish between what these channels are and, in particular, what the adverse effects are. So, I would focus on one that has increasingly risen to the fore.

Jean-Pierre Danthine put it very well when he said that central bank independence also relies on the acceptance of its policies by the larger, broader populate. And so, some concerns are definitely about the profitability of banks and about households and their savings, which in Europe are predominantly held in banks.

So, what is the impact of our policies on bank profitability? It's not that straightforward to understand as there are several channels at play. The textbook example would say that as interest rates are held low and, in particular, when this is done in conjunction with an asset-purchase program in which the long-term yield is depressed, negative impact on bank profitability will result. This is, indeed, the main complaint from the private sector and from banks.

Another cost for banks is that they enjoy increasingly negative rates on excess liquidity. This imposes simple holding costs for such liquidity, which is also the whole point of these policies because we want to apply penalty rates on holding what we consider to be excess amounts of liquidity. The hoarding of liquidity is being penalized. But there are also some positive, one-off effects, some of which are of shorter duration, and others of long-term duration.

The immediate impact, which was felt very strongly in the case of the euro area, was felt especially in periphery countries or countries where credit risk was highest. In those countries, there were very large capital gains on the holdings of such securities and they dominated all the other factors. However, this was a one-off effect and not something you enjoy every year.

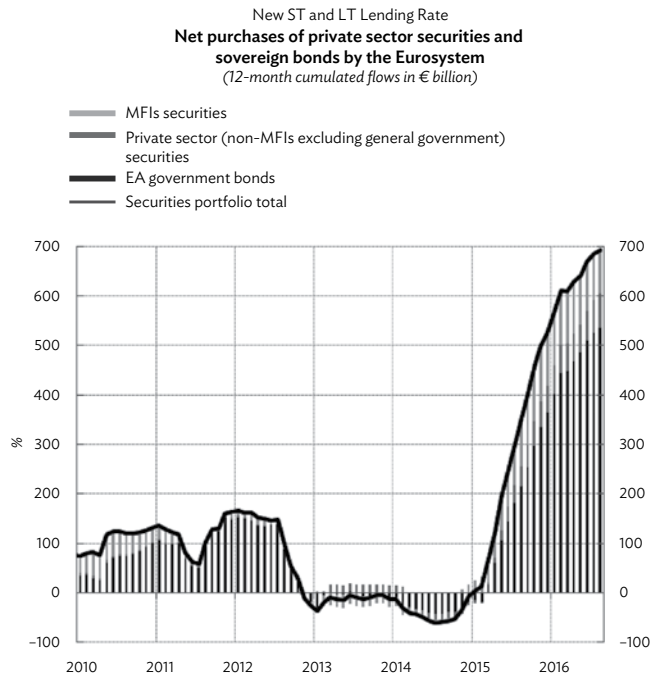
Most importantly, in the end, this was a race between economic recovery and financial stability risks. If the interest rates and asset-purchase package were successful in bringing about economic recovery, then this should show in improved loan quality. And indeed, this was seen in the euro area—loans that were deemed nonperforming were increasingly put back in the performing bucket by banks, which meant that, from a profit-and-loss account perspective, banks were able to reduce loan charges. Basically, this is a sign that credit quality was improving as the economy picked up speed.

And then there has been an academic debate on the "search for yield" arguments that the impact of interest rate policy is not only operating through the quantity of credit but also through the quality of credit. In particular, when rates go into very low or negative territory, banks, or portfolio managers in general, search for higher-yielding assets. That in and of itself should, from a profitability perspective, have a positive effect, at least in the short run, since those higher-risk assets offer higher returns. I will return later to what this means for financial stability in general.

Since 5 June 2014, we entered the new world of negative interest rates in the euro area. This applied to one of the three policy rates—the deposit facility rate, which is the rate that banks enjoy when they park their liquidity at the central bank. At the moment, they no longer "enjoy" this. Basically, they pay for this, and there is no compensation whatsoever but a straight penalty. A penalty is set on the excess reserves to encourage banks to lend in Europe's bank-dominated economy. In Europe, many countries tend to rely on loans to smaller and mid-sized firms, to the benefit of innovation and growth in the real economy.

As mentioned above, this was not an isolated policy; there were also asset purchases. Figure 17 shows that the US and the euro area both bought up about 16% of government bonds from the total market.

Figure 17 Eurosystem Asset Purchases



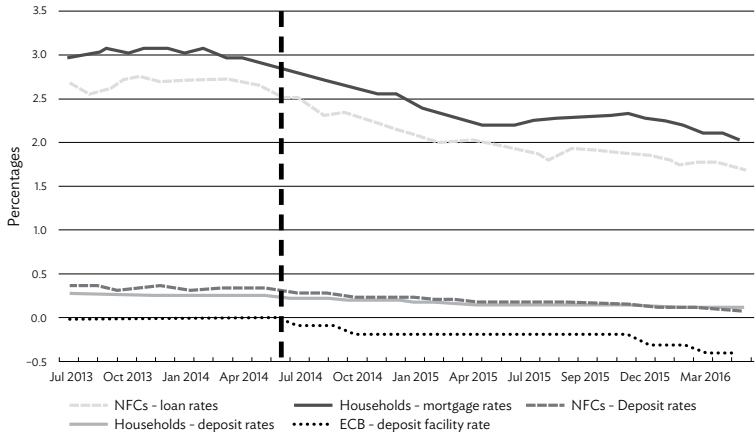
€ = euro, EA = euro area, LT = long term, MFI = monetary financial institution, ST = short term.
Note: Latest observation: August 2016.
Source: European Central Bank.

The pace at which the ECB or the eurosystem did this was just a little bit more rapid. And more recently, the ECB also bought up some nonfinancial corporate bonds, but most of the purchases consisted of government bonds.

Now, what are the implications of all these policies? First, we see a very strong pass-through on interest rates both on deposits and new loans. What does this mean for banks? Figure 18 shows a decline on both the lending and deposit side.

Figure 19 shows that net interest margins remain quite stable for the time being. More recent figures show that a decline is finally setting in. But, what is interesting is that for about 2 years net interest margins have remained fairly stable.

Figure 18 Euro Area Banks: Interest Rates on New Loans and Deposits

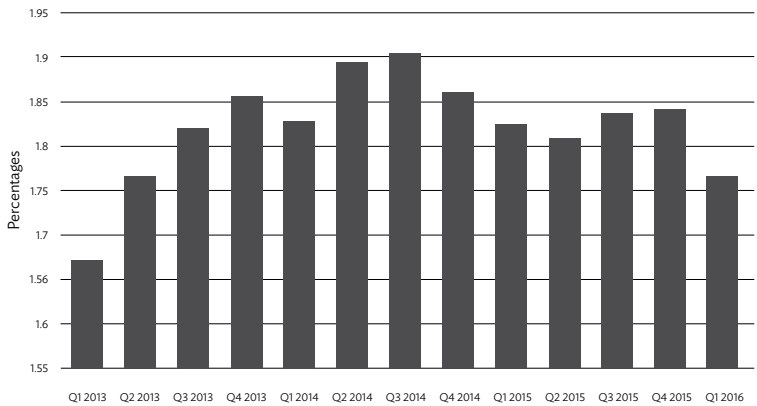


ECB = European Central Bank, NFC = nonfinancial corporation.

Notes: All rates are averages for euro-denominated loans and deposits in the euro area. Deposit rates are rates on new overnight deposits. Loan rates for NFCs are rates on new loans other than revolving loans and overdrafts; and convenience and extended credit card debt. Loan rates for households are rates on new loans for house purchases excluding revolving loans and overdrafts; and convenience and extended credit card debt. The vertical red line indicates June 2014. On 5 June 2014, deposit facility rates were set below zero for the first time. Latest observation: May 2016.

Source: European Central Bank Statistical Data Warehouse–MIR data.

Figure 19 Euro Area Large Banks: Net Interest Margin



Note: Based on publicly available data for 27 euro area banking groups for which quarterly profit-and-loss data are available. Annualized average net interest margins. The net interest margin is calculated as net interest income over total assets.

Sources: European Central Bank calculations; SNL Financial.

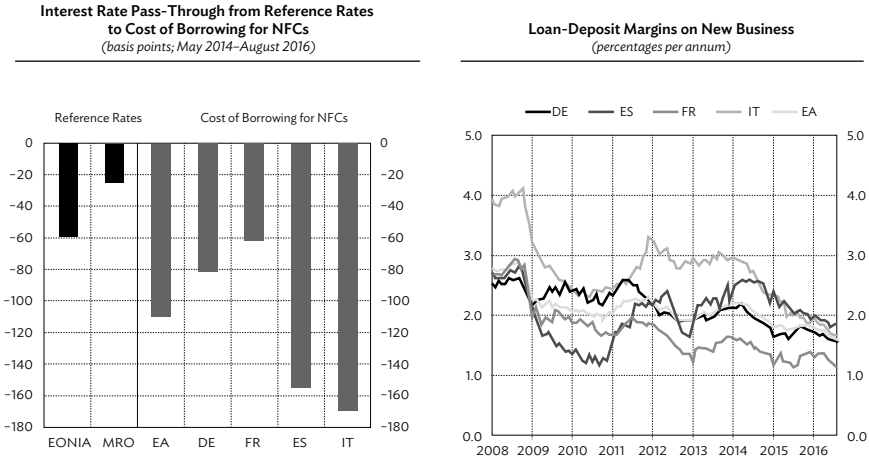
At the same time, borrowers have benefited tremendously. The cost of borrowing for firms and nonfinancial corporations has gone down tremendously since the deposit facility rate was cut (Figure 20).

For about 2 years, the reference rates were cut by 60 basis points. Borrowing costs were cut by much more than that for the euro area as a whole. This is a euro area with different sovereign nations, and Germany and Italy are always interesting to contrast. Germany benefits substantially, although a little bit less than Italy, because it started out with lower borrowing costs. Italy, of course, benefited a little bit more because the credit risk was higher.

Figure 21 shows an interesting dissection of the different channels that affect net income. The figure depicts the year we moved into negative territory and bankers were screaming, "This is going to hurt our bottom line!" In 2014, the rates were just moving into negative territory with a certain net interest income for the euro area banking system as a whole. I'll focus here on large banks.

Net interest income was no longer so large in 2015. Non-interest income was bigger because banks were not able to pass on the additional cost of negative rates to their retail depositors. What they could—and

Figure 20 Further Decline in Lending Rates Continues to Depress Loan–Deposit Margins

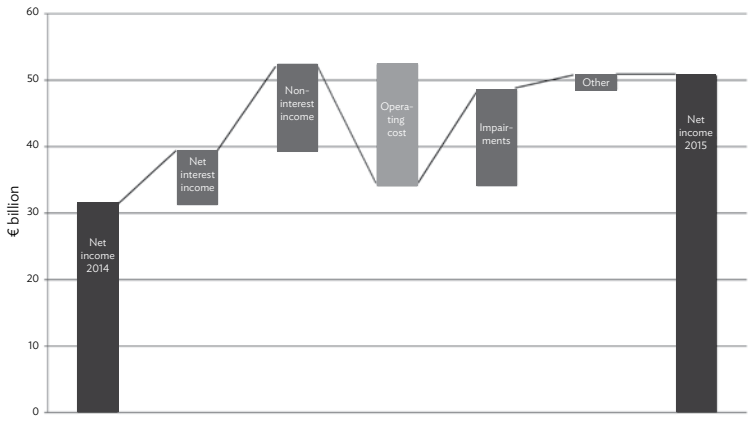


DE = Germany, EA = euro area, EONIA = Euro OverNight Index Average, ES = Spain, FR = France, IT = Italy, MRO = main refinancing operation, NFC = nonfinancial corporation.

Note: Last observation: August 2016.

Source: European Central Bank.

Figure 21 Euro Area Large Banks: Aggregate Net Income



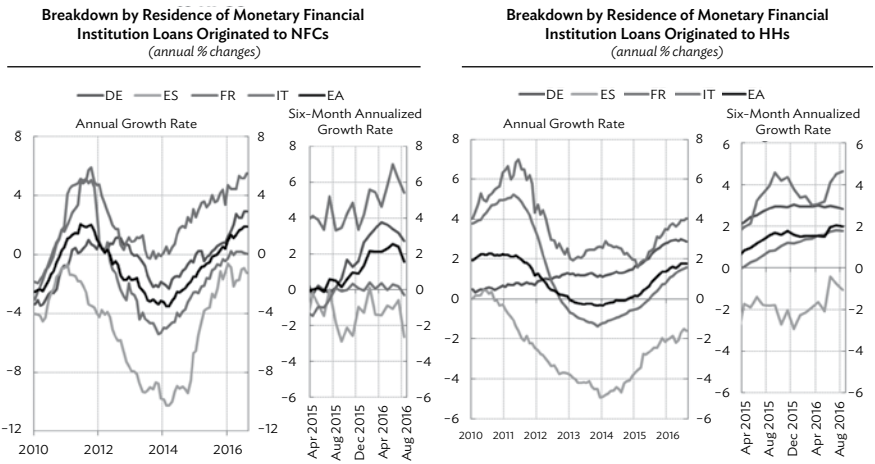
Note: Based on publicly available data for a sample of 83 euro area systemic banking groups and on SNL Financial data.

Source: SNL Financial data. Available at European Central Bank. 2016. Financial Stability Review. May: Chart 3.4. https://www.ecb.europa.eu/pub/pdf/other/financialstabilityreview201605.en.pdf

did—do was increase fees. Operating costs are quite high and much higher than in Sweden. This is an area where euro area banks can definitely improve. But then, the interesting bucket is the loan impairments, which had been added to net income as nonperforming loans which became performing again. So, in the year we moved to negative rates, net income was actually about 60%–70% higher than the year before. In the short run, capital gains, etc., made a positive impact on bank profitability. As mentioned above, we only care about the profitability of banks to the extent that they are not hampered by financial stability risk. What we really care about is the pass-through to the real economy. Since these policies have been put in place, loan growth has also moved into positive territory. It is now recovering quite gradually in all euro area countries (Figure 22).

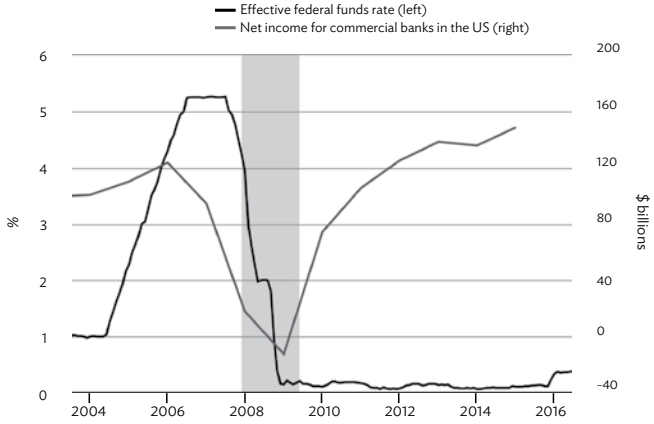
A similar pattern can be seen with the two other reserve currency areas in the US. Figure 23 shows that when interest rates fell close to zero, there was not necessarily a decline in banks' profitability, but actually, net income rose and the economy picked up much more strongly than in the euro area. And one reason is that, again, in the US, net interest margins remained stable, at least with the exception of the largest banks, as shown in Figure 24.

Figure 22 Lending to the Private Sector



DE = Germany, EA = euro area, ES = Spain, FR = France, HHs = households, IT = Italy, NFC = nonfinancial corporation.
Notes: Loans adjusted for sales, securitization, and cash pooling activities. Last observation: August 2016.
Source: European Central Bank.

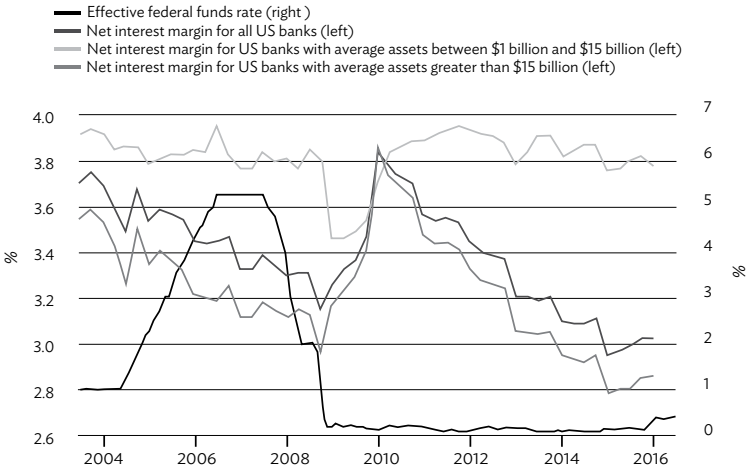
Figure 23 United States Banks: Increase in Net Income (United States)



$ = US dollar, US = United States.

Source: Board of Governors of the Federal Reserve System (US). Effective Federal Funds Rate [FEDFUNDS]. Retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/graph/?g=6EHF

Figure 24 United States Banks: Net Interest Margins by Type of Bank



$ = US dollar, US = United States.

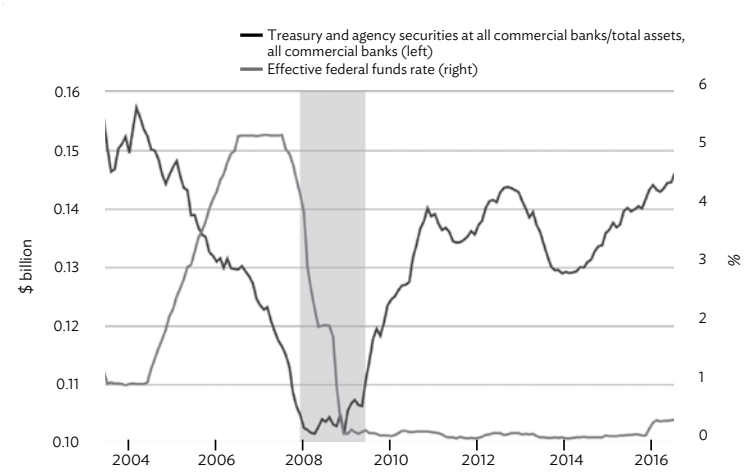
Source: Board of Governors of the Federal Reserve System (US). Effective Federal Funds Rate [FEDFUNDS]. Retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/graph/?g=6Ewt

The profit of the largest banks was not affected because they hold a lot of securities and there were lots of valuation gains on those (Figure 25).

The most important channel was that, as the economy picked up because of the Fed's successful monetary policy, delinquency rates on commercial and industrial loans dropped sharply. So banks, or at least their loan portfolios, were in much better shape.

Figure 26 shows a mixed picture of some of the more recent announcements that the BOJ made on the negative interest rates and yield curve targeting. I am not a big fan of these announcement effects because they are always influenced by what the market expects. But, if we contrast the overall effect on the stock market and exchange rates for the subset of banks shown, it seems that banks did not react favorably to the negative interest rate. They reacted favorably to the yield curve targeting.

Figure 25 Commercial Banks' Holdings of Treasury and Agency Securities and Effective Federal Funds Rate (United States)



Source: Board of Governors of the Federal Reserve System (US). Treasury and Agency Securities at All Commercial Banks [USGSEC]. Retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/graph/?g=6EJ0

Figure 26 Japan Equity Market Developments

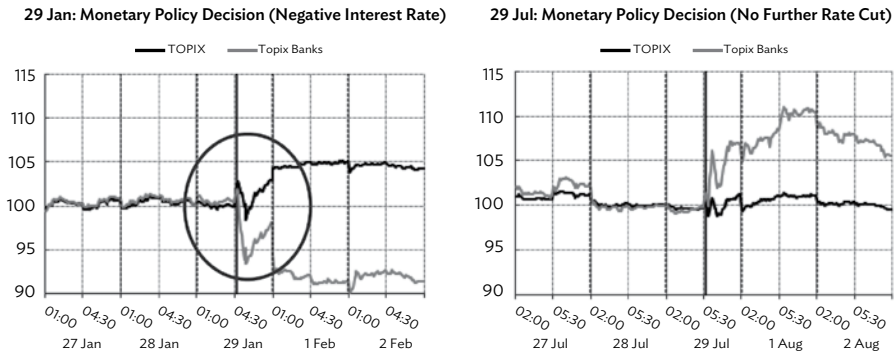


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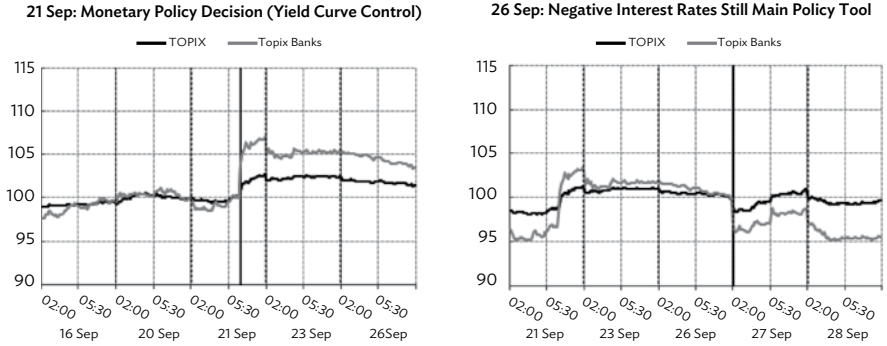
Figure 26 *continued*



TOPIX = Tokyo Price Index.

Notes: Normalized to 100 at close of business day prior to event. Vertical dotted lines represent the start of a new business day. The straight lines show the timing of the event.

Sources: Bloomberg; European Central Bank calculations.

In conclusion, at least in the case of the euro area, nonstandard measures have supported inflation and growth. The risk of deflation has dropped to virtually zero, which is a major accomplishment. Before jumping to conclusions on bank profitability, we need to think through the different channels, in particular in regard to the short-run versus long-run impacts. As shown, some of the short-term impacts tend to be positive.

But there are two caveats. The first is that risk may have been affected. For more research on the risk-taking channel, see Dell'Ariccia, Laeven, and Suarez (2017) and Dell'Ariccia, Laeven, and Marquez (2014). The bottom line is that low interest rates do encourage banks to take risks. This is significant from a statistical point of view but not from an economic one.

The second caveat is that most studies don't consider the general equilibrium. In my view, there is too little risk-taking in the euro area at the moment. Some encouragement to take on risk may actually be helpful. But the more important point is that, while negative rates have had positive short-term effects on the economy and on the finance sector at large, those benefits have been more short-lived and the positive effects, in the long run, will only dominate if growth resumes. I believe that growth will dominate the financial stability considerations. That is a balancing act to think about when judging whether one policy is good or bad.

Luc Laeven

Luc Laeven is the director general of the General Research Directorate of the European Central Bank. Prior to this, he worked at the International Monetary Fund and the World Bank. His research focuses on banking and international finance issues and has been widely published in top academic journals, including the American Economic Review, Journal of Finance, and Journal of Financial Economics. He is a chaired professor of finance at Tilburg University and a research fellow of the Centre for Economic Policy Research. He studied economics and finance at Tilburg University, the University of Amsterdam, and the London School of Economics.

E. Open Floor Discussion

Question from Naoyuki Yoshino to Jean-Pierre Danthine: For Swiss banks, it was mentioned that the loan rate of interest has not been so much affected. But in the case of Japan, the bank loan rate has substantially declined. Is this because the Swiss market is oligopolistic, or because the corporate bond market must have dropped and there was substitution between bank loans and corporate bonds, which may obviously reduce loan rates? But why did that happen?

Reply from Jean-Pierre Danthine: Clearly, banks have to think about what to do if they don't want to translate the negative rates to their liabilities side. How will they maintain their profitability? What is the only possible equilibrium? Banks said that the only way they could do it was to increase their margins on the asset side (mortgages being their main asset). If they needed to go further, monitoring would be essential because, of course, this is a fragile equilibrium. But, at the moment it is holding on, although banks are also increasing their transaction costs to try to recover and ensure that they maintain margin in one way or another. But the main point, and one which has been slightly puzzling, has been the increase in their margin and their practice in long mortgage rates. It is clearly a form of oligopolistic equilibrium.

Question from Naoyuki Yoshino to Cecilia Skingsley: Why has cash dropped so drastically in Sweden?

Reply from Cecilia Skingsley: The fact that cash use continues to drop and doesn't seem to be affected by the low rates and negative rates can be explained by both the supply side and demand side. First, there are no legal obligations in Sweden for either banks or shops to receive cash as a way of payment. Banks are not obliged to service clients in cash and shops

can very happily put up a sign saying they only take credit cards or debit cards or any other form of payment and do not accept cash. Customers are supposed to accept this. Sweden is also fairly technically advanced, and Swedes are among the highest users of debit cards. So, fees like that are very compressed and, for many years, there has not been any tradition among Swedes to store cash at home for a rainy day. But, it is important to remember that deposit rates are not negative for households—they are at zero or are a little bit positive. If they were to go negative for households, there might be more cash holding, but this has not happened so far.

Question from Naoyuki Yoshino to Sayuri Shirai: Targeting long-term interest rates is one policy. However, if the Ministry of Finance is the biggest supplier and the central bank becomes the biggest demander, would it be possible for supply and demand to be coordinated? Otherwise, a 10-year target or a 20-year target would be very difficult.

Reply from Sayuri Shirai: If the BOJ tried to peg the 10-year yield at 0%, and the treasury tried to increase the supply with a maturity longer than 10 years, and if the BOJ reduced the demand, that would lead to lower prices and higher interest rates. Then the BOJ would have to think about whether the interest rate would become too high. The institutional investors would be quite happy with higher interest rates. But interest rates that went too high might be detrimental to the Japanese economy. On the other hand, if we look at a maturity of below 10 years, then the BOJ bought more short-term bonds, and say the treasury reduced the supply, then prices would go up and interest rates would go too low. This is also problematic because maturity in commercial bank lending is usually between 3 to 4 years. So, if the interest rate with maturity below 10 years becomes too negative, that's also not very good for commercial banks. In the end, they know what a desirable yield curve is, and in order to achieve that yield curve, some coordination with the treasury is very important. Therefore, my suggestion would be that sometime in the first half of next year, the BOJ should probably think about whether pegging at 0% is desirable. Maybe more flexibility in terms of pegging could be introduced because I think this will not be easy operationally. Also, suppressing interest rates at extremely low levels will not be beneficial to the Japanese economy.

Question from Robert McCauley to all four panelists: Please comment on the connection between negative interest rates and the exchange rate. Some say that the tiering systems are very revealing.

Question from Hans Genberg to Jean-Pierre Danthine: The Swiss exchange rate floor was taken off because I presume there were risks to the balance sheets or other distortions in the economy. But, when you describe the possible measures needed to lower interest rates further they seem to be fairly distorting as well. So, are we better or worse off by removing the exchange rate floor?

Reply from Jean-Pierre Danthine: On the first question on exchange rate, of course, we don't have the counterfactual. We have this long history of the necessity for a negative interest differential. And I also have the basic intuition that if you provide free insurance, the demand is going to explode. So, my hunch is that we are where we are today at a reasonably overvalued exchange rate. The negative interest rate differential is playing its part.

On the question of abandoning the floor, it's more than that. The fact is, we set up the floor when financial markets were completely off track. We returned to a situation where financial markets were much quieter. So, this type of extraordinary measure could be justified on one hand, but it was much harder to justify in the new situation. In 2011, we had extreme strength of the Swiss franc and gold was losing value against the Swiss franc. In January 2015, we had a weak euro rather than a strong Swiss franc. I guess that the proof of the pudding is that if we had maintained the flow, we would have a US dollar today at 1.10 Swiss francs, and that is not credible. So, in other words, yes, we have had to expand the balance sheet in a huge fashion, but also in a noncredible way. It would not have been good compared with the situation we are in today.

Question from Alicia Garcia-Herrero to Sayuri Shirai: Having a point target on the 10-year JGB to me looks difficult to maintain for the reasons you've mentioned and also because monetary and fiscal policy coordination are not good enough for the given range. But the range you've explored might be too narrow, given what's going on in the US. When they started doing this, the 10-year JGB was, I believe, at minus 0.6—its most negative point. They basically tried to, as they said, steepen the curve and get it to zero. To begin with, the BOJ's profit-and-loss statement would be at risk. Now that market circumstances have changed in the US, what is the point of pressing it downward to zero? You just can't think of a yield curve in the US that is going to remain as we thought it would, so that "point" target doesn't make sense anymore.

Reply from Sayuri Shirai: Regarding the relationship between negative interest rates and the exchange rate, in the case of Japan, this relationship contributed to the appreciating Japanese yen. Investors, especially foreign investors, regarded the negative interest rate adoption as a sign that the BOJ admitted there was a limit with regard to quantitative easing. So, they took it as the end of this monetary easing, and they reacted negatively after 2 days.

On the first 2 days, I heard it took a while for them to digest the meaning of the negative interest rate. When the ECB introduced negative interest rates, it generated a euro depreciation, but the yen is different.

On Alicia's question about the JGB: Yes. I completed my term at the BOJ in March this year. Since April, my proposal has been for the BOJ to start to unwind or do some tapering sometime between the end of this

year and the beginning of next year when inflation starts to turn positive, as ¥80 trillion is too much given the net issuance of JGB of ¥40 trillion. If the BOJ buys ¥80 trillion, that means it takes away too many JGBs from the market. So, I suggested that, to turn inflation to positive, the BOJ starts to reduce the number of JGBs toward the Ministry of Finance's net issuance of JGB. I support this because it is still more sustainable than the previous quantitative easing with negative interest rates in three dimensions, which created a lot of tension and probably more negative effects than positive effects. I had proposed the tapering with a negative interest rate, if necessary, to mitigate the overshooting of the interest rate. It helps in normalizing BOJ's policy. So, I agree with you.

Reply from Cecilia Skingsley: On Robert McCauley's question regarding negative interest rates and the exchange rate, I'm a firm believer that interest rate differentials still matter. It doesn't have to be a different situation because rates go negative. I think the differential is of the greatest interest. On the other hand, there are also other factors that matter. So, for example, if you are in a situation where your currency experiences flight-to-safety flows, you may have to conduct a more aggressive monetary policy than you would have done otherwise, which leads me to conclude that you still have monetary policy autonomy in a small, open economy, but that autonomy will probably vary over time.

Reply from Luc Laeven: On the exchange rates, yes, interest rate differentials do matter, although both uncovered and covered interest rate parity are pretty much dead, in the strict sense. For the euro area, the exchange rate channel was very important as well. I would not ascribe it only to the lowering of the interest rate, which contributed, but probably more important was the asset-purchase program itself, especially as many of the assets that changed hands early on were sold by foreigners, so that affected the exchange rate. And on yield curve targeting, I think it would depend greatly on having the ability to purchase bonds and, if needed, in unlimited amounts. Yes, there is such a thing as supply and demand. Earlier on, we talked about what the treasury is going to do in Japan. But in the case of the euro area, where we are already facing some feasibility constraints, that will have to be considered when thinking about policies such as this one where you actually credibly commit to a particular price level.

4

Distinguished Speaker Session II: Implications of Ultra-Low and Negative Interest Rates for Monetary Policy and Macroprudential Policy in Asia

A. Veerathai Santiprabhob: The Side Effects of Ultra-Low and Negative Interest Rates in Asia and Their Implications for Emerging Market Economies

When we talk about the implications of ultra-low and negative interest rate policies in Asia, no Asian country, apart from Japan, has gone far in terms of monetary policy.[3] I address the potential side effects of such policies in advanced economies, which could have implications for emerging market economies, such as Thailand.

I focus on three issues: the side effects of prolonged low interest rates in general; the side effects of negative interest rate policy in particular; and the broader implications for the overall monetary policy framework.

On the prolonged low interest rates for emerging markets, the risk-taking channel is an issue of domestic concern. Distorted asset valuations, which are often called "search for yield" behavior, can be seen across different segments of the economy.

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[3] For a recording of Distinguished Speaker Session II see ADBI. ADBI Annual Conference 2016: Distinguished Speaker Session II. https://www.youtube.com/watch?v=1xE2LEPE8Qw&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1

The sustained low interest rates threaten the long-run viability of financial institutions, particularly those that have committed liabilities, such as insurance companies and pension funds, and create the need for them to take on more risk. Low interest rates have also led to a buildup of financial positions that are attractive only if yields continue to be low. As a result, global bond yields and the exchange rates have become acutely sensitive to shifting expectations about monetary policy changes in advanced countries. This heightened sensitivity has put global markets on a knife-edge with frequent bouts of volatility. This is the first implication that can be seen in emerging markets: a large increase in volatility of asset prices and exchange rates.

At the depositor level, "search for yield" behavior has also been observed in several ways. We see the emergence of shadow banking in a number of emerging market countries, ranging from saving cooperatives to mutual funds. We also see asset-management companies producing mutual funds of assets consisting of nonrated instruments. Depositors are not aware of the risk involved and they cannot look through the cycle. The "search for yield" behavior among depositors could become a big concern in many emerging markets in Asia. There are too many people involved and, if such a collective investment scheme or saving cooperative goes under, it could have many implications.

The persistent ultra-low interest rates and the increasing presence of central banks in markets also raise concerns about the distortion of market prices from the fundamental values of these financial assets. As observed from the panel, central banks in major advanced economies are holding more than 30% of their respective government bonds outstanding. This has implications on the benchmarks and the pricing of corporate bond risks that have also passed on to emerging markets.

As mentioned earlier, we have seen an increase in the issuance of nonrated bonds. There is also underpricing of rates in the capital markets. For certain types of companies, there is a big gap in the rate that banks charge when they lend money and the rate that companies can get from issuing corporate bonds. It shows underpricing of rates in capital markets.

By selling those instruments to institutional investors who pass them on to depositors and small investors to mutual funds, depositors and small investors do not have to measure the true risk of such instruments. This could also lead to a mismatch of corporate maturity, which is something most central banks do not get good visibility on when a land or property developer company starts issuing short-term bills to finance land banks. Land banks are a long-term concept, but they use the opportunity of very low rates by issuing short-term bills

and then rolling them over. This is a concern. A mismatch of corporate maturity has emerged as a result of the low rates. This is the domestic concern on the "search for yield" behavior that has started to emerge in a number of segments of society.

The cross-border spillover is another concern. When advanced countries adopt a very low rate policy, obviously capital money is pushed into other parts of the world. Before the Trump effect, we have been on the receiving end of capital inflows. Countries may resist appreciation of their currency by also easing their monetary policy, so there have been frequent references to currency walls and competitive devaluations. For these reasons, monetary policy globally has looked unusually easy, regardless of which benchmarks are studied.

Monetary easing in advanced economies has been exported through capital markets. In Asia, we have seen the rapid increase in the issuance of US dollar debt by some countries. US dollar debts of nonbank emerging markets have doubled since 2009, amounting to about $3.3 trillion as of the end of 2015. Another side effect that is a concern is when there is a possibility of currency mismatches as a result of a large issuance of US dollar debt. To sum up the first implication, having a low rate for quite some time poses greater financial stability risks and more complicated trade-offs for central banks.

The second issue I would like to look at is the implications of negative interest rates. When we talk about negative interest rates, we have to be concerned about financial stability risks. Negative rates are intended to boost bank lending by lowering borrowing rates, but, as we have seen, the effect on lending depends on investment opportunities, confidence, and the health of domestic banks' balance sheets.

Transmission mechanisms, as mentioned by the previous panel, have proven to be problematic in some countries. Negative policy rates have only been partially transmitted to wholesale rates so far, and not at all to retail deposits. Banks are reluctant to do so, out of concern for the reactions of depositors.

Indeed, concerns about the impact of persistently negative rates on banks' profitability and resilience contributed to bouts of bank share sell-offs in 2016. When banks' share prices remain very low, as in some countries, banks may need to be recapitalized. And that will complicate the recapitalization effort much further when bank shares have been suppressed by the concerns of prolonged negative interest rates.

If the negative policy rates cannot transmit to lending rates, obviously they cannot boost the demand for loans. If the negative policy rates do transmit to lower lending rates but not to deposit rates, they squeeze bank profits and, over time, possibly undermine the banks' willingness and ability to lend. If the negative policy rates transmit to

both lending and deposit rates, they risk unsettling the deposit base, making it harder for banks to attract funds.

Hence, the intermediary role of banks, which are traditionally at the center of monetary policy transmission mechanisms, could be compromised. I totally agree that negative policy rates cannot be used for long and their side effects are huge.

More importantly, with bond markets, negative yields distort incentives in a potentially dangerous way. With negative yields, I think that people are willing to hold these bonds only if they realize that there is a possibility that the yield will go down further and they could realize capital gains. There is no point holding negative yield bonds until maturity, as they will be making losses for sure. But with the current snapback of yields, as the bond yields in many countries have gone up, to what extent will this have implications for the willingness of holders of these negative yield bonds to continue to hold them? This could lead to big volatility in the bond market as there are no capital gain incentives to hold on to those negative yield bonds. For those from emerging markets, this case will have to be monitored very closely, as there is a possibility that the recent yield snapback could have a significant impact on the global bond market.

Regarding the implications of negative yields on the risk to central bank independence and credibility in certain societies, negative rates may be viewed as a tax, particularly if they hit the deposit rate. The more that easy monetary policies are used, supplemented by a large number of unconventional measures, the greater the risk to central banks' independence.

Central banks' large holdings of securities could imply significant losses when interest rates start to normalize. This could leave central banks open to increased political pressure, particularly for central banks that need to be recapitalized to compensate for the losses.

It is also a perception that monetary ease hurts savers and retirees while boosting asset prices that benefit banks and wealthy asset holders. This could be a flash point given growing popular discontent against the establishment amid rising income inequality. Central bank legitimacy and central bank independence rest on the popular support of the people and should not be taken for granted.

The final area we look at is the implications for monetary policy frameworks, an area that deserves more research and agreement in advanced countries and in emerging markets. The impact of monetary policy on inflation and aggregate demand has become very complicated now. A number of structural forces are also at play at the global level: world trade has slowed down, there is a shift toward the service sector, and technology has also advanced. These factors have a profound impact on the dynamics of economic growth and inflation. At the same time, in

countries like Japan and Thailand, demographic trends and population aging have also had important effects on growth. There are also legacies of debt overhangs and household debt in many countries that have an impact on the banking system. These have hampered the transmission of monetary policies.

Many structural forces drive inflation and output and might not be easily amenable to monetary policy. At the same time, we have seen financial markets and asset prices globally become much more sensitive to monetary policy actions and communication. This raises a dilemma, given that a number of global factors and growth headwinds, inflation, and output have failed to respond to monetary ease. As observed, there is a temptation to do more and more by central banks.

In my view, the relevant monetary policy trade-offs nowadays are not so much the traditional trade-offs we are used to, in particular, the trade-off between inflation and growth. Growth and inflation will continue to be low because of structural factors. But the trade-offs we are facing now are those between inflation and growth on the one hand, and financial stability on the other, when monetary policy has become "the only game in town" in a number of countries.

The trade-off implications for financial stability need to be taken into account in the framework of monetary policy in a more systematic manner. The use of macroprudential tools and capital flow management measures have been talked about a lot. They might be appealing in theory, but operationalizing them in practice has proven challenging because of limited experience by most central banks and the markets. We have to get a common understanding of this policy when we communicate with the market and the market needs to understand the implications of such policies and what central banks mean.

Traditionally, we tended to see macroprudential tools as complementary to monetary policies. But these days, macroprudential tools are seen as instruments to offset the effects of too easy monetary policies as well as other government policies. Monetary policy, as we know, has been overburdened. There is also the possibility that macroprudential tools risk becoming overburdened as well.

Financial stability is a big concern in advanced economies and emerging markets, which are on the receiving end of inflows of excess liquidity globally. A monetary policy framework that expressly considers financial stability concerns is important for emerging markets and advanced economies alike. Central banks need to be able to communicate monetary and financial stability objectives and operational targets in a much more systematic manner. Unfortunately, research in this area is only at the initial stage. I encourage ADBI and the academics to work on a monetary policy framework that incorporates financial stability.

Veerathai Santiprabhob

Veerathai Santiprabhob is the governor of the Bank of Thailand. He is a macroeconomist, strategist, and financial professional with more than 20 years of experience in economic policy design, commercial banking, and capital market. He began his career in 1994 as an economist at the International Monetary Fund in Washington, DC before serving as a co-director of the Policy Research Institute of Thailand's Ministry of Finance during the 1997 Asian financial crisis. In 2014, he was appointed as a member of the Bank of Thailand's Board and Monetary Policy Committee. He has also been a member of the State-Owned Enterprise Policy and Supervisory Committee and was an advisor of the Thailand Development Research Institute (TDRI). He received his BA in economics from Thammasat University and his MA and PhD in economics from Harvard University.

B. Joon-Ho Hahm: Implications of Ultra-Low and Negative Interest Rate Policies for Monetary Policy and Macroprudential Policy in the Republic of Korea

In my contribution today, I will first give a contextual preamble by describing cross-border channels of monetary policies to open emerging economies. I will then discuss macroeconomic and financial stability implications based on the experience of the Republic of Korea. Finally, I will give policy lessons and some remarks.

It is crucial for policy makers of open emerging market economies to have a better understanding of cross-border spillover effects of unconventional monetary policies in advanced economies, as these policies will not only affect macrofundamentals and the financial conditions of open emerging market economies, but will also constrain the policy space and policy options available for small open economies.

There seem to be two opposing views on spillover effects. The first view sees minimal impacts. If any, benefits of these unconventional monetary policies may exceed costs. In other words, small, open economies, such as the Republic of Korea, may have benefited from high external demand, low-risk premiums, low funding costs, a stable economic and financial environment, and so on.

However, less supportive views suggest that the risk and negative externalities could be potentially large. Emerging market economies

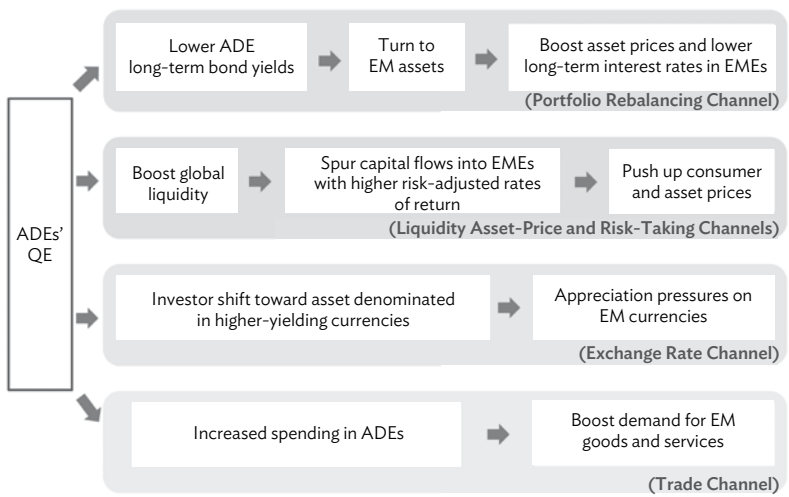
may suffer from currency appreciation, external imbalances, and credit and asset market booms associated with huge capital inflows.

There is a growing volume of research on cross-border impacts, but no consensus has emerged yet. However, the interim evidence indicates that the cross-border channels can be very dynamic and diverse depending on the state of the financial and business cycles of emerging market economies and also the economic soundness and characteristics of institutional features, such as the foreign exchange regime as well as the extent of macroprudential policies and monetary policies to counter the spillover effect.

In a financially integrated world, portfolio rebalancing and liquidity, asset prices, and risk-taking channels may interact to have a spillover effect on open economies (Figure 27). We also have traditional exchange rate and trade channels.

On macroeconomic implications based on the Republic of Korea's experience, when we look at GDP growth and inflation, we have to first characterize the post-crisis capital inflows to the Republic of Korea. One notable feature is that quantitative easing of major advanced economies has led to a substantial rise in foreign portfolio investment in

Figure 27 Cross-Border Transmission Channels



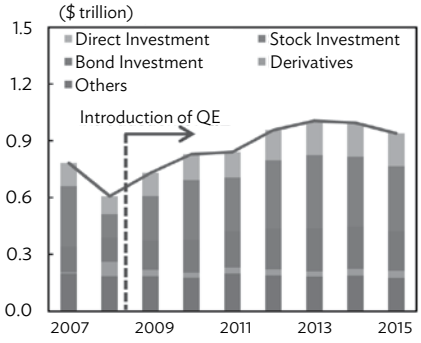
ADE = advanced developed economy, EM = emerging market, EME = emerging market economy, QE = quantitative easing.

Source: Author.

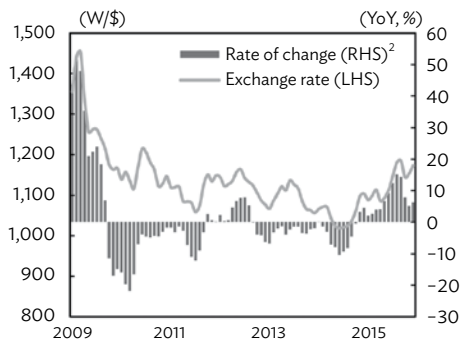
the country. While capital inflow through the banking sector was very strong before the global financial crisis, the graph in the lower panel of Figure 28 shows that most of the capital inflow surged after the financial global crisis in the form of stock and bond investment.

Figure 28 Macroeconomic Implications

Foreign Investments[1]



W/$ Exchange Rate



Correlations among Quantitative Easing, Capital Inflows, Foreign Exchange Rate[3]

	Securities Held	Foreign Portfolio Investment	Won/US Exchange Rate
Securities Held	1.00	0.57	−0.61
Foreign Portfolio Investment	0.57	1.00	−0.75
Won/US $ Exchange Rate	−0.61	−0.75	1.00

$ = US dollar, ADE = advanced developed economy, GDP = gross domestic product, HP = Hodrick–Prescott, IIP = international investment position, LHS = left-hand side, QE = quantitative easing, RHS = right-hand side, W = Korean won, YoY = year-on-year.

Notes:

1 End-period balance of stock; IIP basis.

2 Year-on-year.

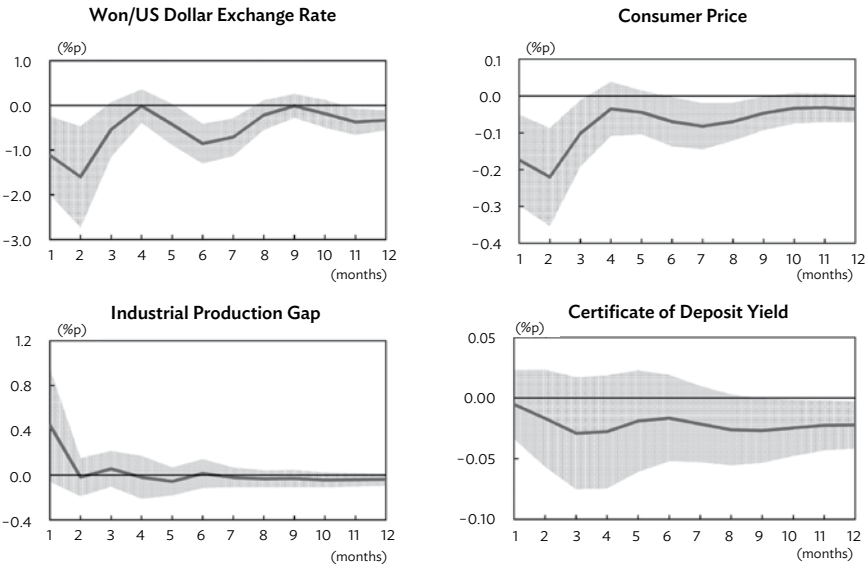
3 Correlation among detrended variables. Trend of each variable estimated by applying HP filter between January 2007 and December 2015. Calculations based on the Bank of Korea's IIP statistics and securities held by central banks of the European Union, Japan, the United Kingdom, and the United States.

Source: The Bank of Korea.

The table shows a simple correlation coefficient between a measure of quantitative easing in advanced economies, which is the number of securities held in the balance sheet of central banks in major advanced economies, as well as foreign portfolio investment into the Republic of Korea and the Korean won–US dollar exchange rate. Quantitative easing has a strong correlation with foreign portfolio investment and a negative correlation with the Korean won–US dollar exchange rate. This means quantitative easing led to the appreciation of the Korean won and huge volumes of capital flow, especially in the form of portfolio investment.

Figure 29 shows a simple vector autoregressive (VAR) analysis to study the impact of quantitative easing of advanced economies on the Republic of Korea's macrovariables, such as the exchange rate, consumer prices, and industrial production. The increase in the amount of quantitative easing in advanced economies has a significant, negative impact for the Korean won–US dollar exchange rate (an appreciating impact), and a negative impact on the Republic of Korea's inflation

Figure 29 Responses of Macrovariables to Increase in Securities Held by Advanced Developed Economy Central Banks



Note: Solid lines indicate reactions to one unit standard deviation (32.0%p) shock in rate of growth in securities held by advanced developed economy central banks; shaded zones refer to 68% confidence intervals.

Source: Nam, M. and J. Jeong. 2016. Impacts of Unconventional Monetary Policy of Major Central Banks on Domestic Inflation. Monthly Bulletin. The Bank of Korea (in Korean).

rate, potentially through imported prices. The impact on industrial production or real economic activity seemed to be positive initially but dissipated rapidly and was not that significant. Money market conditions represented by certificate of deposit yields were also not significant.

Using another measure for a quantitative easing or unconventional monetary policy shock and using long-term interest rates in advanced economies yielded very similar results. We had a negative impact on the exchange rate and inflation rate, while the positive impact on industrial production and money market conditions was not particularly significant.

To summarize, the impact of unconventional monetary policies of advanced economies on the Republic of Korea seems to have been positive for real economic activity (GDP growth and inflation). However, this positive effect was not very significant and dissipated soon, while the negative effects on CPI inflation and the exchange rate seemed to be significant.

Unconventional monetary policies of advanced economies may have led to currency appreciation and decreased import prices and inflation pressure, calling for more accommodative monetary policies in the Republic of Korea. Liquidity effects seem to have been limited, possibly because of the positive policy rate—the Republic of Korea still maintains a 1.25% policy rate, which means any excess liquidity through capital inflows must be absorbed by open market operations, which may reinforce the exchange rate channel.

While the exchange rate seems to be significant and effective, trade channels seem not so effective. We may need counterfactual analysis, but at least the immediate impact on exports is very much limited, as global trade has been extremely sluggish since the global financial crisis, possibly because of declining commodity prices, economic growth in advanced economies, weak investment, slowing expansion of global value chains, and so on.

On financial stability implications, I will go over macroprudential policies, focusing on the two channels of potential spillovers: through the banking sector (noncore bank liabilities), and through portfolio investment and the long-term interest rate.

Macroprudential policy is more desirable than monetary policy for preemptively addressing financial imbalances in open emerging economies, as financial cycles in open emerging economies are often driven by global liquidity conditions. Leaning on tighter monetary policy would only attract the traditional capital inflows.

In the aftermath of the global financial crisis, the Republic of Korea has introduced diverse macroprudential policy tools to ensure that capital inflows through banks and bond markets do not cause excessive procyclicality and to avoid credit and housing bubbles. These

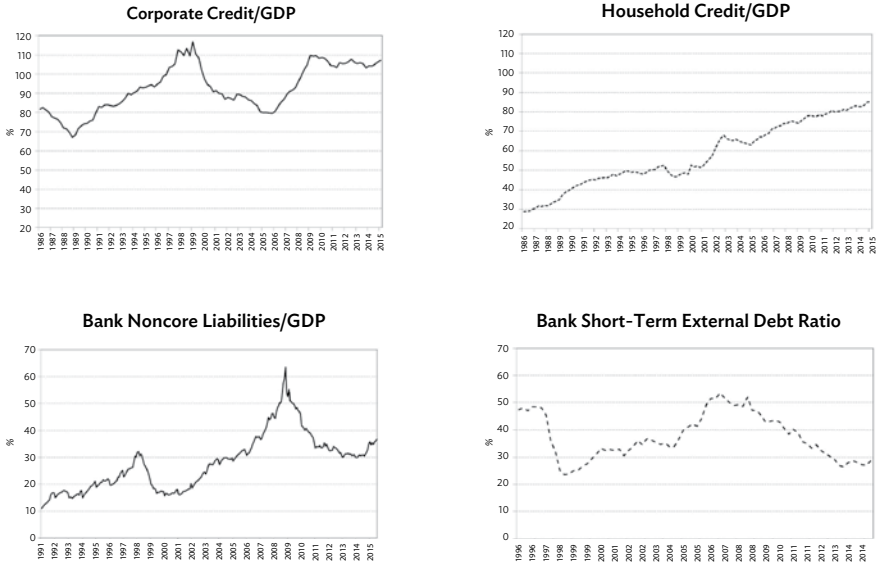
macroprudential tools include a leverage cap on foreign exchange derivatives, macroprudential bank levies, taxation of foreigners' bond investments, loan-to-value (LTV) and debt-to-income regulation, countercyclical regulation on home mortgage lending, loan–deposit regulations, and so on.

Possibly as a result of these macroprudential policies, the corporate credit-to-GDP ratio has stabilized after the global financial crisis. While we have continued increasing household debt despite the LTV/debt-to-income regulation we used countercyclically, we did not regulate it, so the net impact is a little bit confused.

The lower two graphs in Figure 30 show that banks' noncore liabilities relative to GDP had declined very rapidly and that banks' short-term external debt ratio has also declined.

Noncore liabilities of the banking sector can be regarded as a measure of both stages of the financial cycle and of vulnerability to systematic risk spillovers. Especially in open emerging market economies, the stock of foreign currency liabilities of the banking sector is an indicator of excess

Figure 30 Macroprudential Policies in the Republic of Korea



GDP = gross domestic product.

Sources: Bank for International Settlements; Bank of Korea.

liquidity and vulnerability to capital flows driven by deleveraging. In open emerging market economies, financial cycles can differ greatly from domestic business cycles as a result of these cross-border linkages, through banks' noncore funding.

Noncore bank liabilities in Asia have actually contributed to these procyclical management cycles and constitute input channels for the transmission of global liquidity shocks to economies in Asia. To rein in the rapid increase in noncore bank liabilities, the Republic of Korea introduced two measures: a bank stability levy and a loan-to-deposit ratio. We investigated the policy impact using counterfactual VAR analysis and found that the policy impact was indeed significant.

While short-term interest rates are under the central bank's control, long-term rates can fluctuate substantially because of changes in term premiums triggered by bond market flows. This may undermine monetary policy autonomy in emerging market economies.

On the graphs in Figure 31, note that long-term interest rates and yield spreads have fallen substantially due to the compression of term premiums, rather than due to expected future short-term interest rates. The diamond-shaped dot on the lower panel representing the term premium in the Republic of Korea is significantly negative and it is

Figure 31 Portfolio Investment and Long-Term Interest Rates I

Decomposition of Long-Term Interest Rate[1]

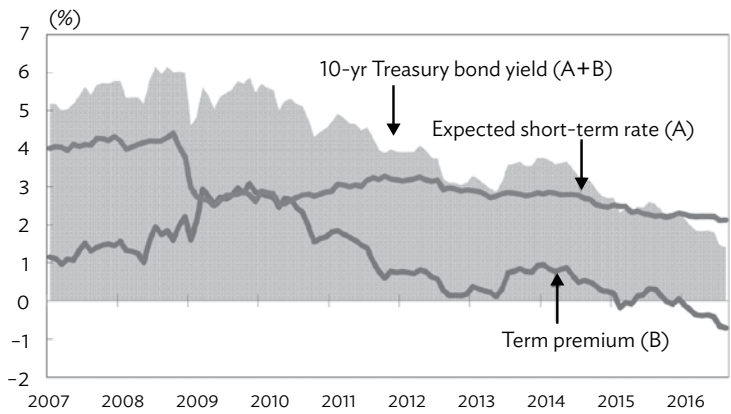


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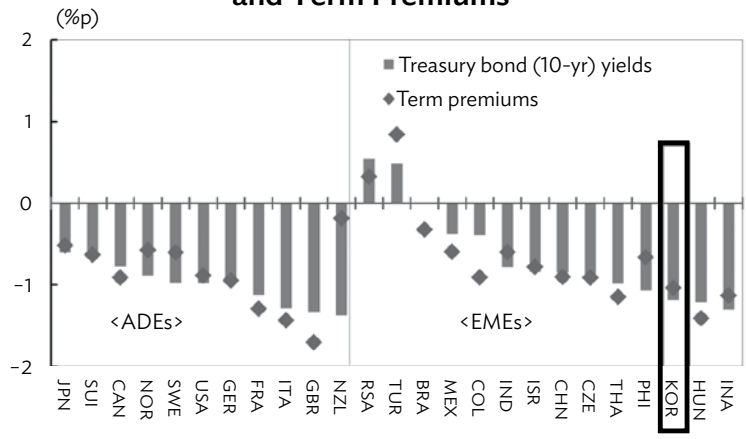
Figure 31 *continued*



ADE = advanced developed economy, BRA = Brazil, CAN = Canada, CHN = People's Republic of China, COL = Colombia, CZE = Czech Republic, EME = emerging market economy, FRA = France, GBR = United Kingdom, GER = Germany, HUN = Hungary, IND = India, INA = Indonesia, ISR = Israel, ITA = Italy, JPN = Japan, KOR = Republic of Korea, MEX = Mexico, NOR = Norway, NZL = New Zealand, PHI = Philippines, RSA = Republic of South Africa, SUI = Switzerland, SWE = Sweden, TUR = Turkey, THA = Thailand, USA = United States, yr = year.

Notes:

1. 10-year Korea Treasury Bond.
2. Changes from June 2015 to July 2016. Interest Rates from 10-year Korea Treasury Bond.
3. 10-year Korea Treasury Bond.

Sources: Bank of Korea estimates; Bloomberg.

surprising that this negative term premium is even greater than that of the US or Germany. At the moment, global factors have a greater impact, whereas the role of domestic factors, such as monetary policy or nominal GDP growth, has diminished since the global financial crisis.

The fall in the term premium has been driven by the real risk premium due to foreign investors' increasing preference for the Republic of Korea's treasury bonds as a safe asset.

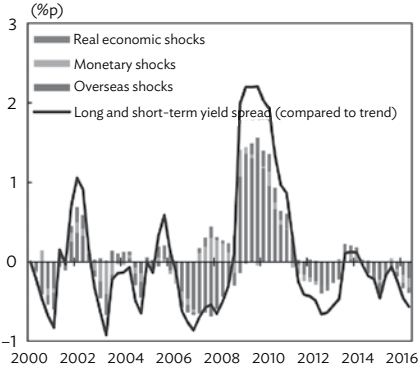
The graphs in Figure 32 show that not only has the amount of foreign investment in the Republic of Korea's bonds increased, but the duration has also continuously increased, which means that foreign investors and investors from the Republic of Korea have continued investing in long-term interest rates.

Figure 32 Portfolio Investment and Long-Term Interest Rates II

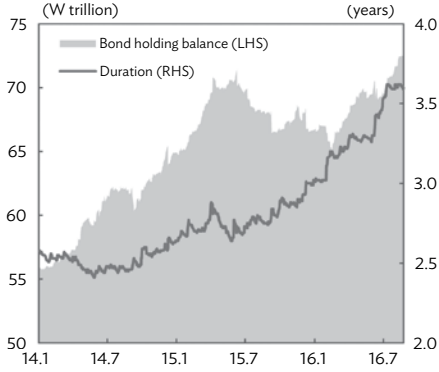
Estimates of Factors Determining Yield Spread

	Domestic Yield Spread (Y_t)	
	2000-07	2010-06
Y_{t-1}	0.56***	0.42***
Call $Rate_t$ [1]	−0.52**	−0.29***
Nominal GDP $Growth_t$	0.11**	0.06*
Global $Factors_t$ [2]	0.03	0.16***
Constant Term	1.77**	0.75***
R^2	0.82	0.97

Yield Spread Historical Decomposition[3],[4]



Foreign Investor's Treasury Bond Balance and Duration[5]



GDP = gross domestic product, LHS = left-hand side,RHS = right-hand side, VAR = vector autoregressive model, W = Korean won.

Statistical significance denoted by stars, * for p<0.05 , ** for p<0.01, and *** for p<0.001

1 Overnight rate basis

2 First common factor of yield spread among 14 advanced economies (Principal Component Analysis)

3 4-variable VAR model including yield spread, call rate, GDP gap ratio and global factors

4 Real, monetary and overseas shocks included in GDP gap ratio, call rate and global factors, respectively

5 Based on total won-denominated bonds held by foreign investors

Sources: Bank of Korea estimates. Yonhap Infomax.

This compressed term premium and flattened yield curve undermine financial intermediation for the productive use of financial resources and may increase risk-taking by financial institutions. Indeed, insurance companies' holdings of risk assets have increased substantially, and a lower home mortgage rate for households has increased persistently.

Long-term interest rates have risen significantly, affected by the increasing US market rates since the 2016 US presidential election. Long-term interest rates are likely to continue to show high volatility, affected largely by the US interest rate movement in line with the Trump administration's policy changes. Interestingly, the increase in 10-year treasury bonds in the Republic of Korea's market is even greater than the 10-year US bond yield.

To summarize, a prolonged period of unconventional monetary policies in advanced economies has led to the appreciation of exchange rates and overly compressed term premiums of long-term interest rates in the Republic of Korea without the significant effect of boosting external demand for exports. Unconventional monetary policies have not contributed much to real GDP growth, as trade channels have substantially weakened since the global financial crisis. On the other hand, currency appreciation has put significant downward pressure on inflation, so while the aggregate demand effects of low long-term interest rates and currency appreciation are uncertain, both seem to have brought about lax financial conditions, raising financial stability concerns; hence, the central bank has faced difficult trade-offs between price stability and financial stability. Accommodative monetary policies to address disinflationary pressure may increase financial stability risks. Macroprudential policies could be a useful first line of defense to cope with these trade-offs, but it is difficult to address every channel of potential spillovers.

The Republic of Korea has constrained rapid bank credit growth and currency mismatches, driven by noncore foreign currency bank financing. Bond market flows, however, and long-term interest rates have been significant channels of cross-border spillovers, leading to higher financial stability risks and less monetary policy autonomy. We may need more active debt-management policies to cope with extra volatilities in the bond market, but with the risk of weaker fiscal discipline.

It may be essential to conduct macroprudential and monetary policies in a harmonized and complementary manner. It may be necessary to consider financial stability risks in formulating the central bank's monetary policy strategies. Establishing an effective and

transparent macroprudential policy governance scheme may, therefore, be instrumental. On the central bank's monetary policy, diverse methods in formulating monetary policies may be utilized, such as a finance-neutral GDP gap, finance-neutral real interest rates, and so on.

Joon-Ho Hahm

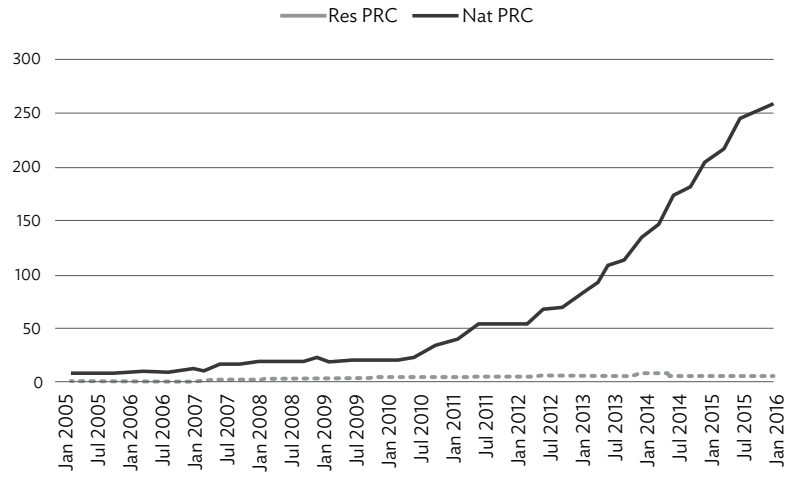
Joon-Ho Hahm is a member of the Monetary Policy Board of the Bank of Korea. He is on leave from Yonsei University, where he is a professor of international economics and finance. He was an assistant professor of economics at the University of California, Santa Barbara, and a research fellow at the Korea Development Institute. He served in a variety of advisory and consultative roles for the Government of the Republic of Korea, and for international organizations, including the World Bank and the Asian Development Bank. He received his MBA and PhD from Columbia University's Graduate School of Business.

C. Hans Genberg: Implications of Ultra-Low and Negative Interest Rates for Monetary Policy and Macroprudential Policy in Asia

I will talk about the external challenges faced by central banks in Asia, focusing principally on some of the smaller economies such as Indonesia, Malaysia, and the Philippines. I am going to elaborate on three points. First, there is the obvious fact that the external environment is challenging. Second, central banks in Asia have come a long way in their monetary policy strategies as well as in the resiliency of their economies in general, since the Asian financial crisis. Third, although they are relatively well-equipped to navigate external troubled waters, they still need to be vigilant, particularly in the regulatory area.

On the external environment, as the preceding speakers have already said, low interest rates and major financial centers, of course, lead to capital inflows in search of yield. However, the expected tightening in the US continued, with accommodation in Europe and Japan, leading to issues of uncertainty and jittery financial markets and therefore volatile capital flows, which need to be dealt with. There are the overarching risks associated with a potential economic slowdown, such as financial instability in the People's Republic of China (PRC) and, of course, the uncertainty about trade and fiscal policies in the US.

Figure 33 External Borrowing by Nonfinancial Corporates



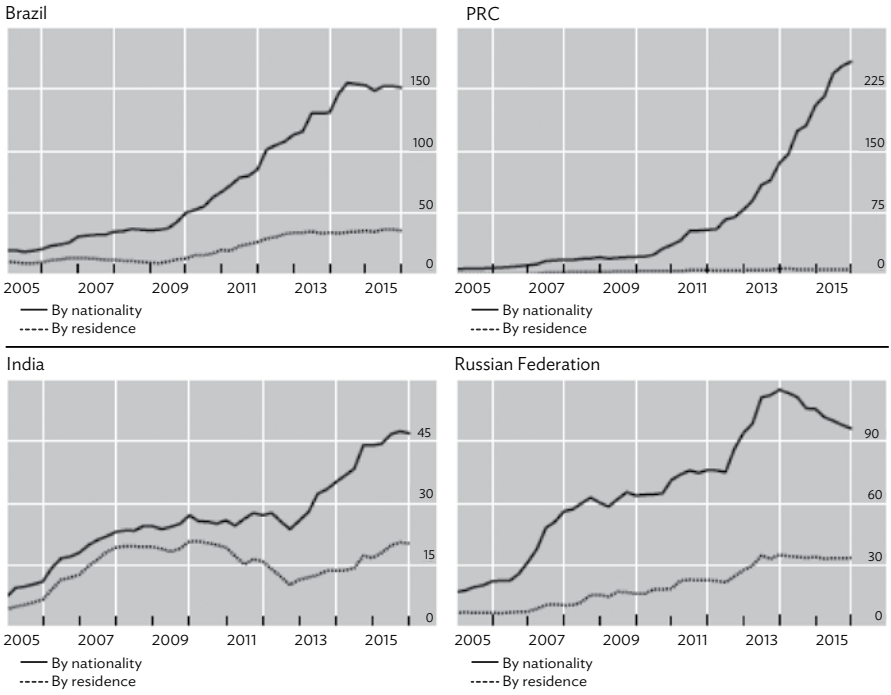
Nat = nationality, PRC = People's Republic of China, Res = residency.
Source: Author.

Figure 33 gives an illustration of the external challenges relating to capital flows. The Bank for International Settlements (BIS) and various other institutions have for some time now focused on, and drawn attention to, external borrowing by nonfinancial corporates and the distinction between what shows up in the balance of payments statistics. The figure shows the gray dotted line, which records the residency of the corporation, and the black solid line, which measures the nationality of the borrower. This figure shows that for the PRC, external borrowing on nonfinancial corporates is $250 billion.

The BIS in Figure 34 has emphasized that the numbers for Brazil, India, and the Russian Federation are similarly large as well and typically refer to large borrowings by emerging market noncorporates.

However, if one looks at other emerging markets and the smaller countries mentioned above, borrowing by nonfinancial corporates has increased over time, but not to the same magnitude and is, therefore, perhaps less worrying from a financial stability perspective or due to currency mismatches (Figure 35).

Figure 34 International Debt Securities Issued by Nonfinancial Companies Outstanding in Foreign Currencies by Residence and by Nationality
($ billion)



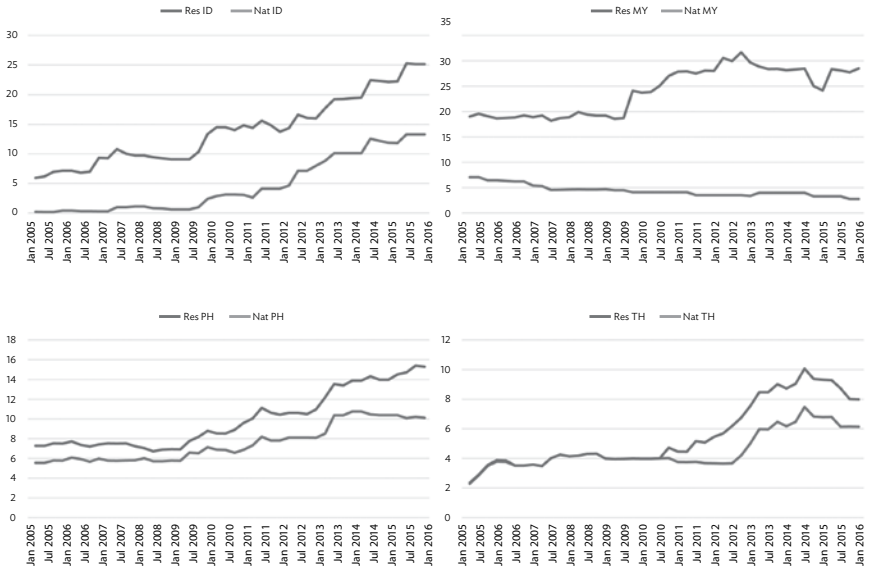
$ = US dollars, PRC = People's Republic of China.

Source: Chui, M., E. Kuruc, and P. Turner. 2016. A New Dimension to Currency Mismatches in the Emerging Markets: Nonfinancial Companies. BIS Working Papers 550. March. Basel. https://www.bis.org/publ/work550.pdf

Furthermore, central bank officials, perhaps unsurprisingly, say it is not such a big problem, because they know about most of the borrowing and have urged their corporations to hedge their foreign currency exposure. If that is true, then perhaps this is not such a big issue for the smaller economies in the region.

Figure 36 refers to the jittery financial markets where there are changes in monetary policy in advanced countries. This refers to the taper tantrum episode in 2013, in which sovereign yields shot up, volatility increased substantially, and currencies depreciated.

Figure 35 Borrowing by Nonfinancial Corporates in Emerging Markets



ID = Indonesia, MY = Malaysia, Nat = nationality, PH = Philippines, Res = residency, TH = Thailand.
Source: Author.

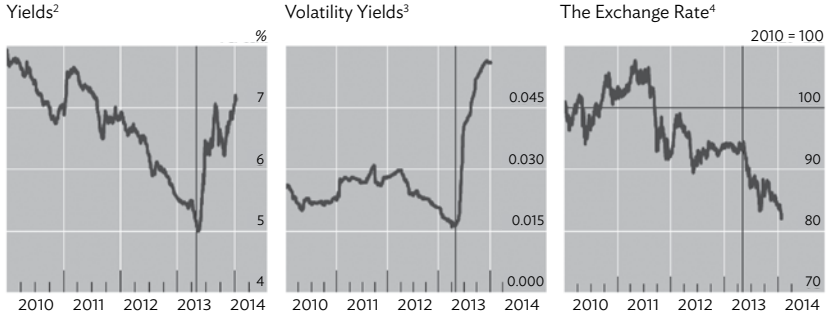
Figure 37 is an example of very sharp volatility in the exchange rate, which happened outside the US in the week of 7 November. The graph on the left-hand side shows the Malaysian ringgit relative to the US dollar, which depreciated by some 6%: a huge intraday volatility. On the right-hand side, something similar happened to the Indonesian rupiah, which is also the case for the Philippine peso and probably the Korean won.

Uncertainty going forward could create difficulties for emerging Asia, particularly the smaller economies. I am going to argue, however, that perhaps the central banks and the economies are relatively well prepared.

It has been 18 years since the Asian financial crisis, and Asian economies have not been particularly affected by the financial aspects of the North Atlantic financial crisis. Since the early 2000s, Asia has adopted macroprudential policies to a larger extent than other regions of the world. Asian economies have also resorted to capital account management policies.

Figure 36 Jittery Financial Markets I

Yields of Local EM Government Bonds and the Exchange Rates[1]



EM = emerging market.

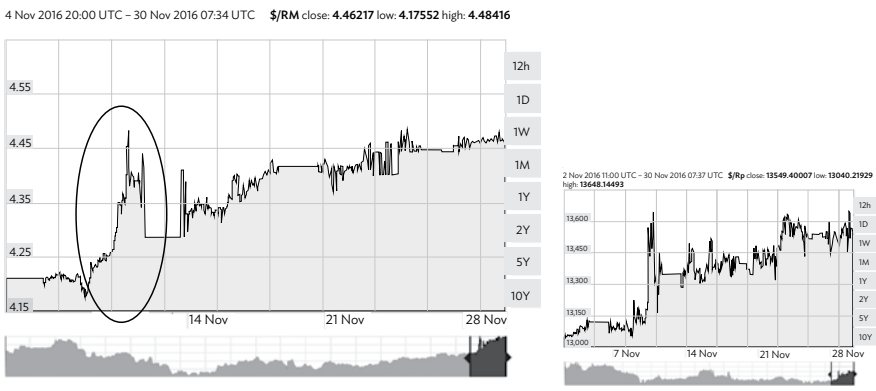
Notes: The black vertical lines correspond to 1 May 2013 (Federal Open Market Committee statement changing the wording on asset purchases).

1. All three graphs show the simple average of Brazil, India, Indonesia, Malaysia, the Philippines, Poland, South Africa, and Turkey.
2. Yields on 5-year local currency bonds.
3. 180-day moving standard deviation of daily changes in yields.
4. In US dollars per unit.

Source: Turner, P. 2014. The Global Long-Term Interest Rate, Financial Risks and Policy Choices in EMEs. BIS Working Papers 441. February: Graph 3. Basel. https://www.bis.org/publ/work441.pdf

Figure 37 Jittery Financial Markets II

$ to RM Chart



$ = US dollar, RM = Malaysian ringgit, Rp = Indonesian rupiah.

Source: Author and XE.

Central banks, in general, feel more comfortable using these policies and no longer feel like they need to be on the defensive for using these unorthodox policies, especially now that the IMF has endorsed some of these ideas.

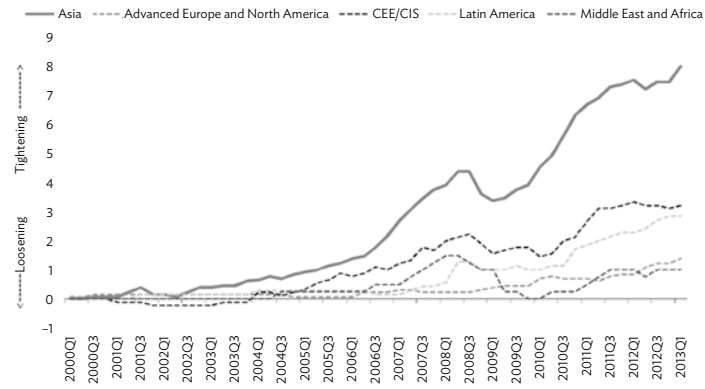
Have the macroprudential policies worked? There is some evidence that they have, for the variables on which the policies focus on. Whether they have increased financial stability is a different question. It may be too early to tell because there are potential side effects that need to be factored in.

So, 18 years since the financial crisis, were good policies the reason that there has not been a real financial crisis in the region? While greater flexibility in exchange rates has helped, regulatory and monetary institutions have improved in independence, governance, and strategies. As mentioned before, there has been some restraint in the liberalization of financial markets, in the sense of being ready to use macroprudential and capital account management policies.

Figure 38 is an IMF study on the accumulated use of macroprudential policies in various regions of the world, showing Asia as the gray solid line far ahead of the others (Zhang and Zoli 2014).

Figure 39 is from the same paper and shows the use of capital flow management policies in which South America/Latin America has been more active and Asia is catching up. Judging also by the Chinn–Ito Index, there has been some tightening of capital controls over time.

Figure 38 The Use of Macroprudential Policies

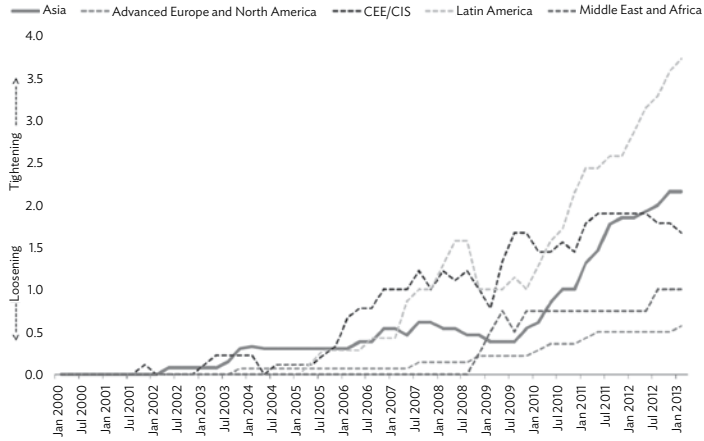


CEE/CIS = Central and Eastern Europe and the Commonwealth of Independent States.

Notes: Index summing up housing-related measures, credit measures, reserve requirements, dynamic provisioning, and core funding ratio. Simple average across countries within country groups.

Source: IMF calculations. Available at Zhang, L. and E. Zoli. 2014. Leaning Against the Wind: Macroprudential Policy in Asia. *IMF Working Paper* 14(22): Figure 7. Washington, DC. https://www.imf.org/external/pubs/ft/wp/2014/wp1422.pdf

Figure 39 The Use of Capital Flow Management Policies



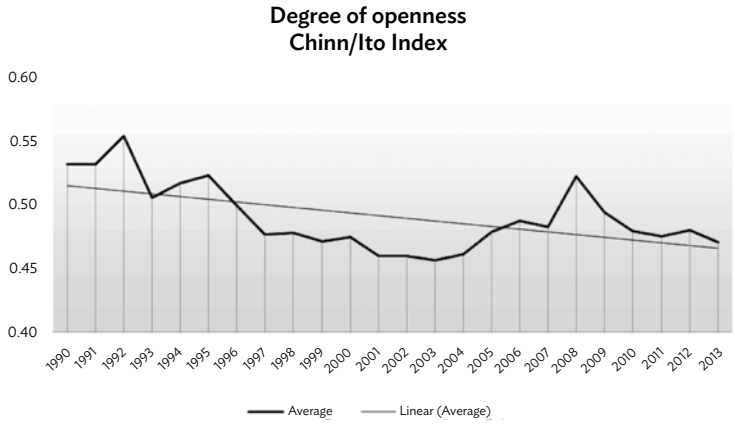
CEE/CIS = Central and Eastern Europe and the Commonwealth of Independent States.

Notes:

1. Index summing up foreign currency and residency-based measures. Average across countries within country groups.

Source: Zhang, L. and E. Zoli. 2014. Leaning Against the Wind: Macroprudential Policy in Asia. *IMF Working Paper* 14(22): Figure 8. Washington, DC. https://www.imf.org/external/pubs/ft/wp/2014/wp1422.pdf

Figure 40 Some Tightening of Capital Controls



Source: Author.

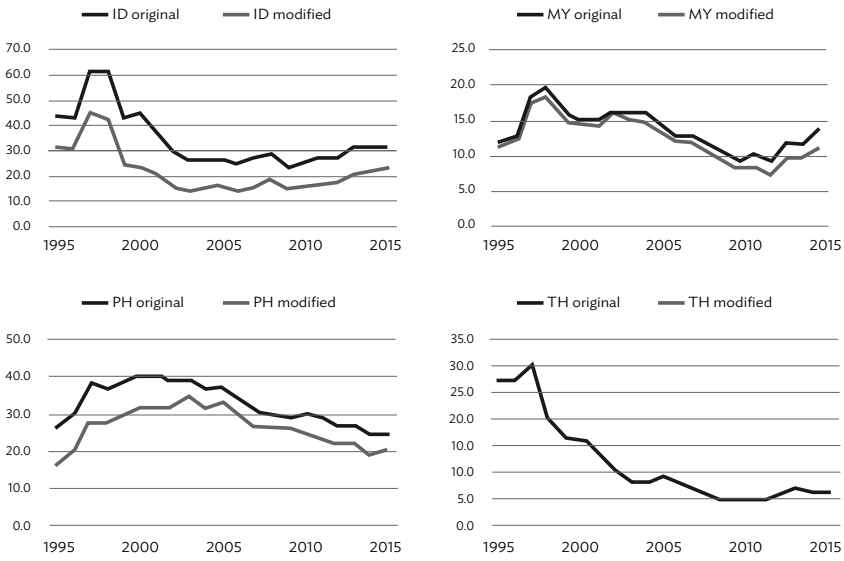
Figure 40 shows an average of about 20 Asian economies in which the opening has become less consistent with the idea of capital account management policies being applied more frequently. Since the Asian financial crisis, foreign currency debt has declined.

Figure 41 also shows that the external foreign currency country debt as a percentage of total debt has declined over time, rendering the countries somewhat less vulnerable, although there is some increase recently in Indonesia and Malaysia.

One could also argue that it was partly luck that protected the financial markets of the economies from the North Atlantic financial crisis.

Have macroprudential policies worked? Papers by Dong He, Eric Wong, and others (He 2013; Wong, Tsang, and Kong 2014; Wong et al. 2011), on the effects of the implementation of LTV ratios in Hong Kong,

Figure 41 Foreign Currency Debt as a Percentage of Total Debt



ID = Indonesia, MY = Malaysia, PH = Philippines, TH = Thailand.

Notes: The series denoted as "original" assumes that debt between domestic residents is denominated in domestic currency, whereas the series denoted "modified" is adjusted to take into account foreign currency denominated debt between domestic residents. See Chui, Kuruc, and Turner (2016) for a discussion.

Source: Author's calculations based on data provided by M. Chui and used in Chui, M., E. Kuruc, and P. Turner. 2016. A New Dimension to Currency Mismatches in the Emerging Markets: Nonfinancial Companies. *BIS Working Papers* 550. March. Basel. https://www.bis.org/publ/work550.pdf

China provide a reference. Macroprudential policies have been used extensively in mortgage lending and the evidence suggests that policies were at least partially binding in the sense that they led to a reduction in actual measured LTV ratios and in nonperforming loan ratios.

Kim and Mehrotra (2015) of the BIS looked at the effects of macroprudential policies in a VAR set up. Two interesting results are that macroprudential policies do have an effect on credit growth, which was a sort of proxy for financial stability, and also that macroprudential policies affect output and inflation dynamics. Strengthening and tightening macroprudential policies could lead to reduced output growth, which means that macroprudential and monetary policies need to be coordinated carefully when one is contemplating applying both.

Singapore is an interesting example because, while we typically say macroprudential policies should be used as the first line of defense toward financial stability, Singapore has used macroprudential policies to achieve macroeconomic stability. They have used LTV ratios and similar policies focusing on the housing market to get housing prices to rise less rapidly, and therefore inflation to rise less rapidly. That makes sense, given that their monetary policy is based on an exchange rate target.

What about the effect on financial stability, broadly speaking? This is much tougher to analyze because, first of all, we do not have a good measure of what financial stability is, and we always have to use some sort of proxy.

Potential side effects could include migration of risk from the regulated banking system, where macroprudential policies apply, to shadow banking. For instance, real estate developers in Hong Kong, China offer mortgages, thus initially circumventing the LTV ratios imposed on banks.

There is also a "whack-a-mole" or "whack-a-risk" effect more generally, in which risk migrates to various unregulated areas of the system and which may not make the system more stable.

A trickier but perhaps even more important issue is that macroprudential policies have some fiscal component to them as they can be replicated by certain fiscal measures. Think of the LTV ratios having a particularly strong effect on first-time homeowners and then the fiscal authorities introducing some subsidy to young people to buy houses so they are not crowded out of the market. Imagine this multiplying into more and more policies being used to offset the spillovers from the initial policy. There is indeed a clear need to coordinate policies between the monetary and fiscal authorities.

In a recent explanation for how it works in both Indonesia and the Philippines, there were very elaborate and very well thought-out processes for coordinating between the various regulators, the central bank, and the fiscal authorities. That is good, as long as it does not infringe on the independence of the central bank in setting pure monetary policy. There might be a potential issue of weakening central bank independence as a result of the proliferation of macroprudential-type tools. The South East Asian Central Banks Research and Training Centre Financial Stability Journal contains policy-related articles on financial stability issues.

In conclusion, I have highlighted the following points. Asia is obviously highly integrated into the international financial system and, hence, exposed to the risks. Policy frameworks have been strengthened. Central banks are less defensive now about the use of unorthodox policies, including interventions in the foreign exchange markets, macroprudential policies, and capital flow management. When these are used more frequently, a coordination mechanism between them will be needed.

There is, however, a challenge that remains for banking regulation, which Mike Zamorski and Minsoo Lee have written about in an Asian Development Bank working paper (Zamorski and Lee 2015). The challenge is to coordinate regulatory and supervisory cooperation policies across borders. There is more cross-border banking by design in the region, and there are conglomerate banking firms that operate in several jurisdictions. It is important for supervision of these banking conglomerates to be coordinated across regions so that they do not take advantage of differences in regulatory or legal applications of regulatory policies.

Hans Genberg

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D. Dong He: "Low for Long" and Market Liquidity

To understand the implications of very low and negative interest rates for emerging markets, it is important to understand the nature or the characteristics of capital flows. In recent years, one changing feature of capital flows has been the rise of nonbank flows or portfolio flows and the relative decline of bank flows. Consistent with that has been the rise of nonbank finance in advanced economies.

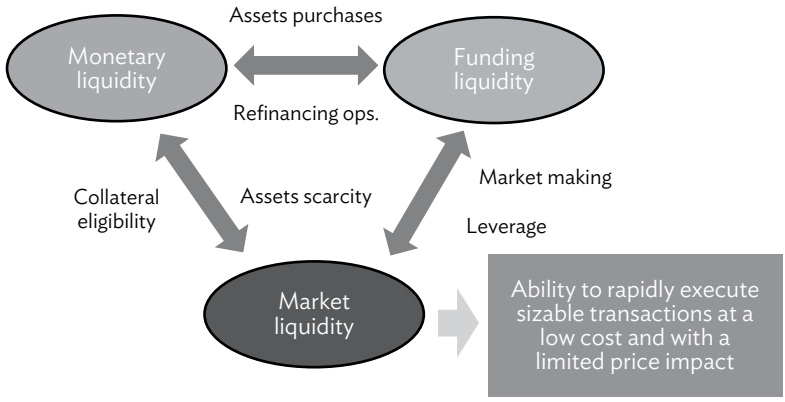
I am going to talk about how monetary policy and, in particular, "low for long" affects market liquidity. To understand the implications for monetary policy and financial stability policies, we have to go behind the macrostatistics or the macrochannels and understand the market mechanisms. To put it differently, I would argue for an industrial organization view of capital flows or the transmission of global liquidity. There have been several studies in the Global Financial Stability Report over the past couple of years on the changing nature of financial intermediation.

On market liquidity, a first reaction is, "How is it possible to have market liquidity issues in the age of abundant liquidity?" When we talk about a tripling of central bank balance sheets (very large excess reserves), is it possible to have liquidity issues? That is a question at the back of many people's minds. In the Global Financial Stability Report (IMF 2015), we tried to come up with an analytical framework to clarify what we mean by liquidity or market liquidity.

One way to classify the different facets of liquidity is to have three concepts: funding liquidity, market liquidity, and these will relate to monetary liquidity, or the availability and the terms of central bank money (Figure 42). These are all related, but when we think about it, funding liquidity is a prerequisite for very good market liquidity, but market liquidity enhances funding liquidity. A simple way to put it is this: market liquidity is the ability to rapidly execute sizable transactions at a low cost, without a large price impact.

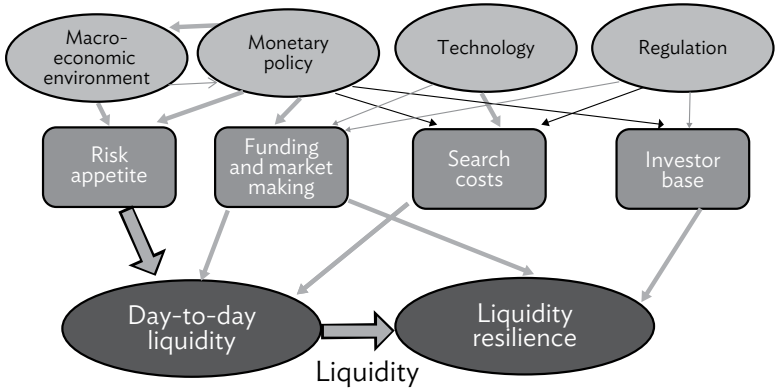
What are the determinants or drivers of market liquidity? The gray oval-shaped in Figure 43 present one way to think about the issue. Market liquidity is very much dependent on risk appetite; on the investors' willingness to use their balance sheet capacity to take risks. It also depends on market functioning: on the functioning of funding on the market and the ability of financial intermediaries to make markets. From a microstructure view, it depends on search costs and on the characteristics of investors and how they behave when they face policy shocks. At the same time, these important factors are driven by the macroeconomic environment (the square boxes in Figure 43); by the monetary policy stance. Its base is driven by technology in the long

Figure 42 What Is Market Liquidity?



Source: Author.

Figure 43 Drivers of Market Liquidity and Its Resilience



Source: Author.

run, including, for example, electronic trading platforms that would very much affect how abundant market liquidity is. It is also driven by regulation. The Dodd–Frank Act in the US, for example, constrained the ability of institutions to make markets.

These drivers would affect the level of liquidity and its resilience. In the October 2015 Global Financial Stability Report, we emphasized the difference between a day-to-day level of liquidity and its resilience. The level of market liquidity is very important for the efficiency of financial markets in the sense that it is important for savings to be channeled efficiently from savers to borrowers, but the resilience is very important for financial stability. If there is not much resilience in the day-to-day liquidity, it can quickly evaporate. It can disappear overnight when there is a shock, if there is not enough resilience.

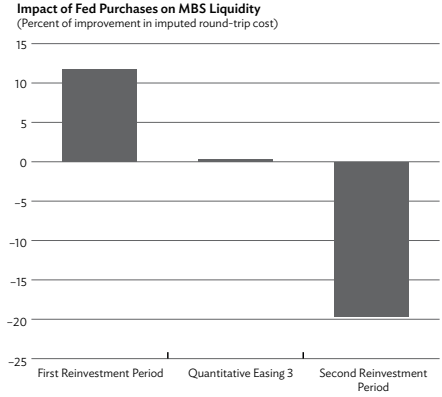
Asset purchases by central banks affect market liquidity through a number of channels, among them the bank-funding channel. This is mostly positive because asset purchases increase banks' funding, increasing the balances maintained with the central bank, so it eases the funding of inventories and margins.

In market functioning, there are mixed effects. On the positive side, they reduce information asymmetry and search frictions by providing a committed buyer. The central bank is a committed buyer of these securities because of the asset-purchase program. It can also potentially increase search costs by reducing the availability of the securities that the market demands—there is a scarcity effect.

Then there is the risk-appetite channel. We know that easing monetary policy tends to boost the capacity of financial intermediaries to take risks in various ways. Both conceptually and empirically, monetary policy easing is typically associated with rising appetite for risk. There are changes in the investor base. Unconventional monetary policies may have contributed to a more homogeneous and concentrated investor base in securities, which increases the fragility of liquidity.

In the October 2015 Global Financial Stability Report, we used a lot of microdata and security-level data to do event studies, to tease out market reactions, and try to measure liquidity precisely around a certain event. To illustrate the effect of monetary policy on market making, or central bank collateral policies, we used the example of the ECB. During the sample period from 2008 to 2014, the ECB changed collateral policies to enlarge the pool of collateral that financial institution or banks can use in relation to the relationship with the ECB. For example, there were several rounds of relaxing the credit rating of bonds that could be used as collateral and also two attempts to include foreign-exchange-denominated bonds in the collateral. The ECB allowed bonds to be issued in US dollars, pounds sterling, and Japanese yen to be used as collateral. Figure 44 shows that when this policy was announced, the median quoted bid–ask spread decreased quite significantly—liquidity improved because inventory costs were reduced.

Figure 44 Monetary Policy and Scarcity Effects



Fed = Federal Reserve System, MBS = mortgage-backed securities.
Source: Author.

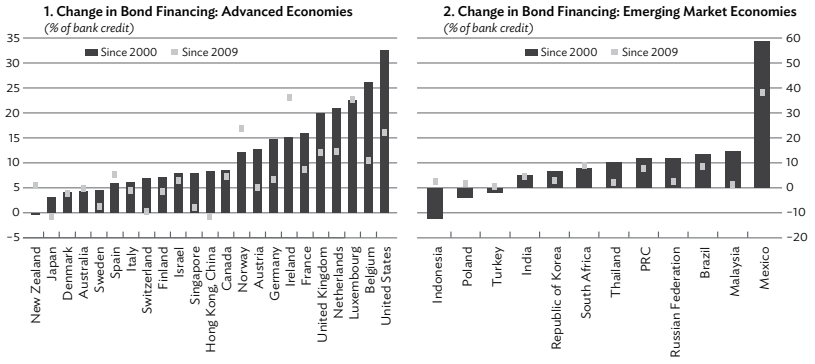
Another example is the scarcity effects of the Fed policies (Figure 44). In some small asset markets, such as the mortgage-backed securities market, for instance, the Fed's purchases improved liquidity early on, but negative effects on market liquidity were seen in the second reinvestment period when looking at a detailed calculation of the imputed round-trip cost of trading mortgage-backed securities. The securities became less widely available.

From a structural point of view, what does "low for long" mean for the changing nature of financial intermediation? If "low for long" is viewed as "low forever," we will live with very low interest rates for a long time.

First, what does "low for long" imply for the yield curve? Much research has been done on what it means for the shape of the yield curve. Most people currently believe that it would imply a flatter yield curve. In such cases, there would be pressure on bank profits and solvency of life insurance and pension funds. In such a world, one could question the ability of life insurers and pension funds to survive.

Then one could argue that there is much less collectivization of risks and a shift toward mutual funds and asset managers. The risks are really being shifted toward households themselves. They can no longer benefit from guaranteed rates of returns from financial products offered by, for example, life insurance and insurance companies. There will be

Figure 45 Nonbank Finance Has Been Growing



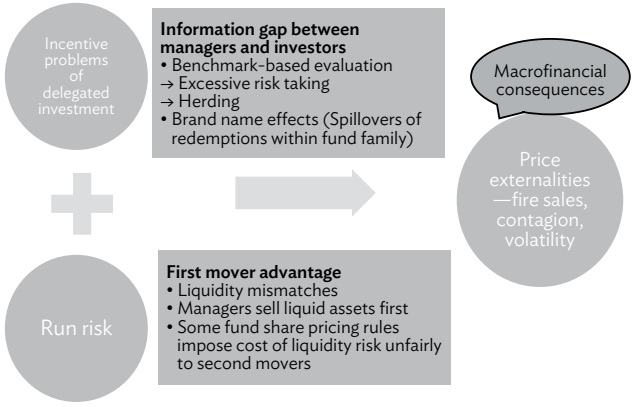
PRC = People's Republic of China.
Source: Author.

a lot more risk management by households themselves through mutual funds. The rise of nonbank finance, mutual funds, and asset managers, in particular, has logic behind it. That's from a more structural point of view. Even from a slightly cyclical point of view, if one were to argue that the effect is more search for yield by investors, this would mean increasing investment in less liquid and riskier bonds. In this category, bonds are more homogeneous and have a somewhat more concentrated ownership structure.

Figure 45 shows the rising importance of nonbank finance in both advanced economies and emerging markets, especially since the financial crisis. These bars show the ratio of outstanding bonds in relation to bank assets. Economies such as Luxembourg, Mexico, and Norway are the prime examples of a fairly fast rise of nonbank finance.

Figure 46 shows what that means for liquidity. From the behavior of both the asset managers themselves and the end investors, we see important implications for market liquidity. There are some incentive problems associated with delegated investment since, as end investors, we cannot observe the behavior of the asset managers directly. In this case, we use devices such as benchmarks. We set a benchmark for the asset managers to beat and we monitor their performance against these benchmarks. This, in a way, leads to the problem of the "tyranny of benchmarks."

Figure 46 Liquidity Risks in the Asset-Management Industry



Source: Author.

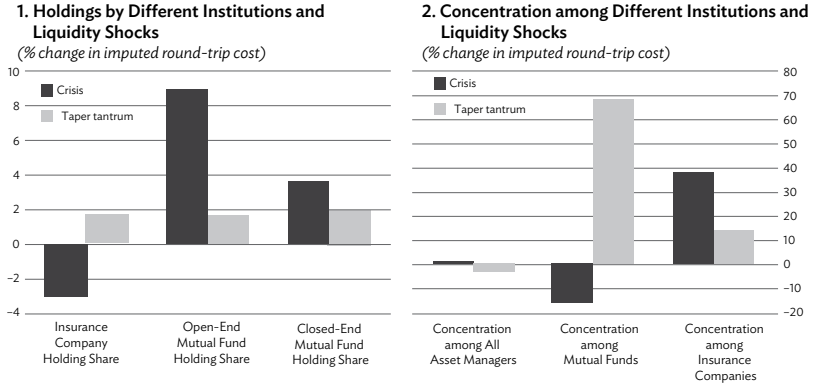
There are many behavior problems arising from the "tyranny of benchmarks." For example, in good times, it will lead to excessive risk-taking. But in bad times, herding back to benchmarks and maybe brand name effects may take place. From the end investor's point of view, there are important run risks because there are embedded first-mover advantages due to the way these products are priced. For example, if you buy a mutual fund unit in the US, you won't know the price until the end of the day, and that price is actually affected by the cost of trading during the day. These issues lead to run-risk problems, which lead to price externalities. In bad times, these could lead to fire sales and contagion in volatility.

Figure 47 presents a detailed security-by-security analysis. It shows that mutual funds and concentrated ownership are associated with decreased liquidity resistance. Here, market liquidity is measured by imputed round-trip cost. The cost of trade is measured by taking the difference between the highest and lowest price for a security of the same size that is traded within the day.

In summary, the following points need to be studied further:

- Monetary policy plays an important role in influencing both the level and the resilience of market liquidity.
- Quantitative easing of asset purchases by central banks is likely to have positive and negative effects on market liquidity. It will be positive by relaxing funding constraints and raising

Figure 47 Mutual Funds and Concentrated Ownership are Associated with Decreased Liquidity Resilience



Source: Author.

risk appetite, and negative by reducing the supply of certain bonds.

- "Low for long" may induce changes in market structure that increase the fragility of market liquidity.
- The rise of the asset-management industry poses challenges to prudential policies and central bank emergency-support policies. For prudential policy, for example, how do we internalize some of this externality in nonbanks when nonbanks are typically not regulated or supervised by prudential authorities? Is there a role for macroprudential policy for nonbanks? Emergency support is traditionally for banks because banks are supervised and/or regulated by banks. Is there a case for central banks to extend emergency support under certain circumstances to markets?

Dong He

Dong He is deputy director of the Monetary and Capital Markets Department of the International Monetary Fund. His responsibilities include providing leadership for work on global financial stability analysis (including the production of the Global Financial Stability Report), monetary and macroprudential policies, and central bank operations,

among others. Prior to joining the IMF in 2014, he was executive director at the Hong Kong Monetary Authority and director of the Hong Kong Institute for Monetary Research. He holds a doctorate in economics from the University of Cambridge. He has published extensively on monetary policy and financial market issues.

E. Open Floor Discussion

Question from Sayuri Shirai to Dong He: You mentioned that two central bank policies may help improve liquidity: collateral policy and central bank purchase of mortgage-backed securities. What do you think of the central bank's security lending program? If the purchase of government bonds and the use of these for lending are against the central banks' policy, they must redeem these.

My second question is also related to securities lending. There are two types of security lending: one done by the BOJ and the Fed in which the central banks lend the security in exchange for cash, and the other one done by the ECB in which securities are lent in exchange for other securities. Can you comment on these?

Reply from Dong He: Securities lending is a highly complicated subject. Conceptually, I think it is certainly useful, to the extent that the scarcity effect dominates at some point. You can circulate the securities back to the market. As to different types, my immediate reaction would be that swapping different types of securities may make better sense.

Question from Joseph Gagnon for Veerathai Santiprabhob and Joon-Ho Hahm: I wonder if the audience might get the wrong impression in terms of what's going on. The discussion focused on ultra-low rates in advanced economies, which set up incentives for capital to flow to Asian economies. Fast growth rates in Asia would be consistent with that and positive interest rates, except maybe in Japan, would support that flow. That might be a good thing and we should manage it, but, in fact, it's missing a key point, which is that capital is flowing the other way. The outflows from Asia vastly exceed the inflows. The IMF for this year predicts that for Asian economies as a group, capital is going to flow out on net by $600 billion. That's a net outflow from Asia, which is a big puzzle considering that Asia is growing faster and has positive rates. The question is, "What is going on?" That's more than 1% of the US and European GDP, and it's larger than the national savings rate. Perhaps the title of the session should have been "The Implications of Asian Economic Policies for Interest Rates on the Rest of the World."

Question from James McAndrews for Veerathai Santiprabhob: You mentioned that the central banks are overburdened. What is the source of that? Is it the zero lower bound in advanced economies? Is that when the central bank encounters the zero lower bound? Is the central bank then overburdened in its trade-off between growth and inflation when it is missing out on one of the targets?

Reply from Joon-Ho Hahm: While it is true that our foreign savings have increased, the Republic of Korea's net international investment has turned positive only recently. It really depends on the kind of liquidity risk. Our foreign investment is in an exceptionally liquid form. This season, the quality of our investment really depends on the private sector. We are concerned about the rapid surge in capital inflows and sudden stop of capital outflows, and less concerned about our foreign savings.

Reply from Veerathai Santiprabhob: On the first question on outflows from Asia, you will have to look carefully at the details. A large contributor to outflows in Asia is the PRC. Part of it is due to liberalization, to which a lot of domestic factors contributed.

The other source of outflows from Asia is through central bank reserves. Because of the large inflow, central banks have to intervene in the foreign exchange market, accumulating reserves and parking those reserves out, mainly going back to advanced countries. That might have contributed to the net impact of outflows from Asia, but if you look at many emerging markets, we have received private inflows as a result of easing monetary policies.

On central banks being overburdened, I was referring to central banks of advanced economies. When we look at different limitations that central banks are dealing with in the current environment, I look at it from three different angles: operational limits, functional limits, and political limits.

On the operational limits, you look at how much central banks have been involved in quantitative easing and bond buying and the number of government bonds the central bank has to take in. Central banks cannot buy as many bonds as they would like to because banks are not willing to sell them.

On the functional limit, transmission mechanisms of monetary policies have been compromised by several factors, including the structural forces I mentioned.

On political limits, there are different angles. These include the possibility of central banks incurring huge losses when the rates go up (they have so many bonds on their balance sheet), the public perception of negative or low rate policies that remain in place for too long, and the

discontent on rising income inequality. In some cases, the central bank is also thought of as part of the problem, by creating these asset bubbles by keeping deposit rates very low.

Reply from Hans Genberg: If I may just add one thing about capital flows. In general, one should be very careful when referring to emerging Asia. One should probably almost always take out the PRC and have emerging Asia ex-PRC because the PRC is so huge in many aspects. It dominates numbers completely and puts the other economies in the shadows.

5

Distinguished Speaker Session III: The Implications of Ultra-Low and Negative Interest Rates for Financial Markets in Asia

A. Michael Hutchison: Effects of Ultra-Low and Negative Interest Rates on Asian Financial Markets

I am going to focus on Asian financial markets and the three transmission channels of ultra-low and negative interest rates.[4] I will talk about the portfolio rebalancing channel (risk structure and term structure come to mind), the bank lending and risk-taking channel, and the exchange rate and capital flows channel.

Portfolio rebalancing refers to the wholesale interest rate falling with the central bank deposit rate. Investors switch from low-yield government securities to riskier assets such as equities and corporate bonds. The cost of funds falls in principle for borrowers, particularly large corporates, who can directly finance in commercial paper and corporate bond markets. The objective is to spur aggregate demand, at least in the countries that are lowering their interest rates.

The bank lending channel is used to lower bank lending rates in correspondence, or at least in tandem, with the decline in reserve rates. We see this on the wholesale side but less so on the retail side because retail deposit rates remain anchored at zero or above. The hope is, however, that the fall in lending rates will spur growth in the economy, which is one of the main objectives of the policy.

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[4] For a recording of Distinguished Speaker Session III see ADBI. ADBI Annual Conference 2016: Distinguished Speaker Session III. https://www.youtube.com/watch?v=ex-lBqYRCSY&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1

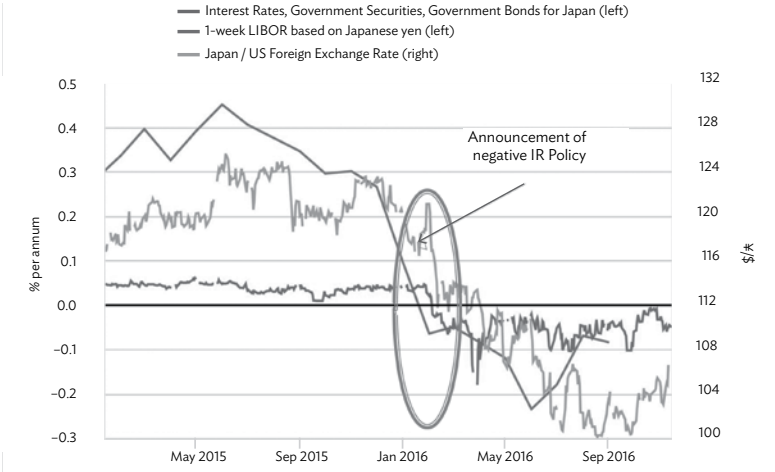
For the exchange rate channel, the exchange rate should, in principle, depreciate in the home country. That is, the exchange rate should depreciate in negative interest rate countries such as Japan. Capital should flow out from the home country to, in this case, emerging market countries, primarily in Asia. The exchange rate should appreciate in the countries that are receiving these flows. For the home country at least, this sounds like a good idea, as it should spur aggregate demand.

I will give a brief overview of the positive effects of this policy. As I have already mentioned, these include relaxing financial conditions, which can be considered a complement to, and an extension of, quantitative easing. Lower interest rates spur aggregate demand by depreciating currency. That is a channel to spur growth and perhaps to lower the burden of debt. The possible bad outcomes, however, are that a bank's net interest margins may be squeezed. Profitability of the banking sector and other financial institutions may be lower. Possible excessive risk-taking or squeezed bank margins may lead to lending to riskier borrowers. Capital flows increase search for yield. Capital flow volatility has been raised on several channels as well as potential "beggar thy neighbor" policies, in which everyone gets into a round of reducing interest rates with the explicit objective of depreciating their currencies.

Negative interest rates have had marginal effects overall. In Japan, we've seen the discount rate remain constant and the call rate fall sharply. The highlighted area in Figure 48 shows the immediate and sharp depreciation of the Japanese yen over the line that represents the announcement of the negative interest rate policy. But in the succeeding weeks, the Japanese yen appreciated substantially by more than the initial depreciation. The figure also shows some short-term interest rates.

So, what's my take on all this? Figure 49 shows a few Asian economies with the vertical line representing 1 January 2016 when the BOJ announced the negative interest rate policy. In Indonesia, money market rates continued to decline. But for the Republic of Korea, Malaysia, and Thailand, there was no obvious movement and therefore no immediate transmission. Government bond yields continued to decline. It is not clear if these were greatly accelerated by any changes in Japan or if the European moves to negative interest rates have had much of an influence on government bond interest rates. In principle, you have this transmission from advanced countries to these emerging markets, but it's not immediate, at least in these examples.

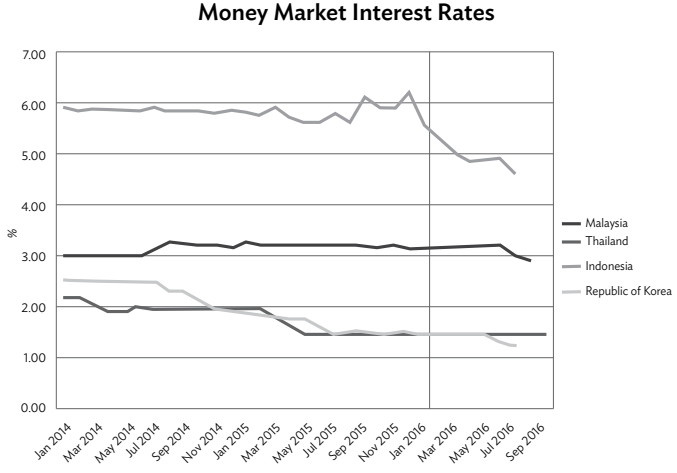
Figure 48 Falling Interest Rates and Japanese Yen Depreciation



IR = interest rate, LIBOR = London interbank offered rate.

Sources: Author; International Monetary Fund, Interest Rates, Government Securities, Government Bonds for Japan [INTGSBJPM193N], retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/graph/?g=bQq4

Figure 49 Some Declines in Money Market Rates



Source: Author.

Figure 50 Large Declines in Corporate Bond Yields in Asian Emerging Markets

BofA = Bank of America, EM = emerging market.

Note: Data represent the effective yield of the BofA Merrill Lynch Asia Emerging Markets Corporate Plus Index and are the subset of the BofA Merrill Lynch Emerging Markets Corporate Plus Index, which includes only securities issued by countries associated with the region of Asia, excluding Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.

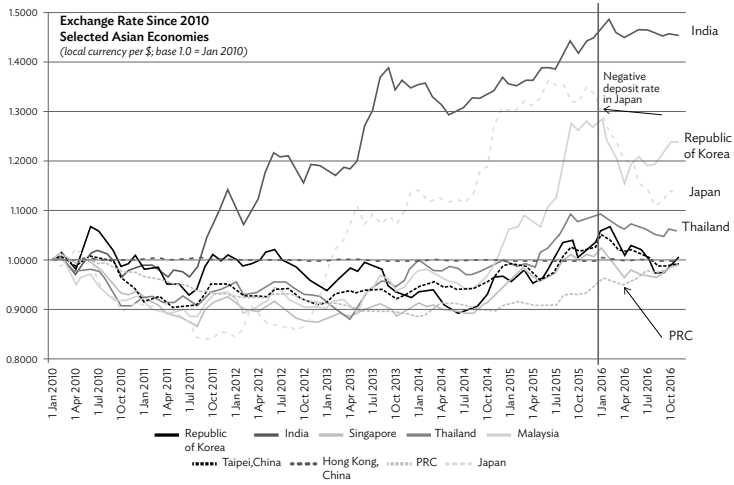
Source: Bank of America Merrill Lynch. BofA Merrill Lynch Asia Emerging Markets Corporate Plus Sub-Index Effective Yield [BAMLEMRACRPIASIAEY], retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/graph/?g=bQkv

By contrast, however, Figure 50 shows not only a declining trend of corporate bond yields in Asian emerging markets but also, since the beginning of January 2016, a rather sharp drop from an average of 4.20% to 2.96%.

Figure 51 shows developments in exchange rates for selected Asian economies.

It is difficult to know whether the announcement of the negative interest rate policy will depreciate currency, cause it to appreciate, or not have much effect. Exchange rates are not just about an uncovered interest parity condition and interest rate differentials, but also forward-looking expectations of future policy as well as a policy response function. Why did the central bank lower the interest rates to negative, to begin with? That may signal a very weak economy or a weak financial sector. These things are considered when forming market expectations of what actually happens to an exchange rate. So, it is not surprising that the Japanese yen depreciated sharply and then continued in an appreciating

Figure 51 Mixed Developments in Exchange Rates



PRC = People's Republic of China.
Source: Author.

trend. Nor is it surprising for a country such as the Republic of Korea to experience some appreciation while others experience depreciation over this period.

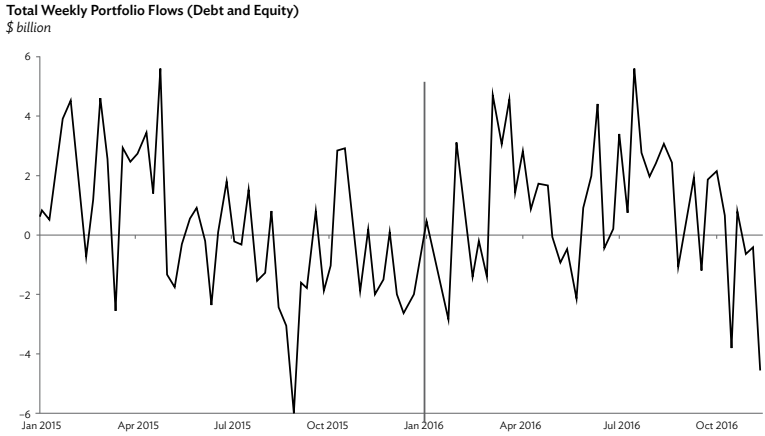
On capital flows, based on the time when the Japanese yen or the BOJ moved on negative interest rates, no obvious change was seen in capital for volatility. While capital may be more volatile for some individual countries, it is less obvious in Asian emerging markets. However, we do observe a trend since March 2016 toward more capital flows to emerging markets.

In Figure 52, the vertical line is January 2016. The data are weekly debt and equity flows combined, which are very volatile overall. It is not easy to distinguish any difference before and after January 2016.

Figure 53 shows where debt and equity flows are separated out. The graph excludes Mexico and Turkey. Weekly flows are very volatile. It is difficult to say anything definitive by simply looking at the graph.

We see more when we look at the monthly data in Figure 54. The figure shows a move to outflows. A problem with this data is that this is private portfolio debt equity, which does not include the massive government outflows associated with reserve purchases. It is not associated with foreign direct investment. But, this is what we talk about

Figure 52 Net Nonresident Purchases of Emerging Market Stocks and Bonds, Debt and Equity Combined

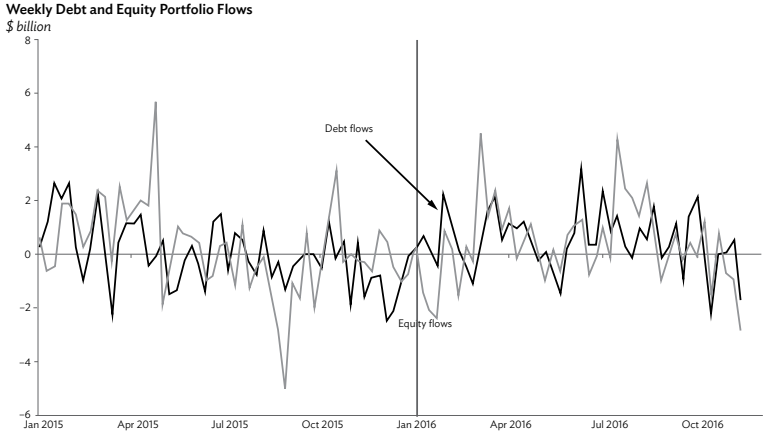


$ = US dollar.

Notes: Weekly net nonresident purchases of emerging market stocks and bonds. Excludes Turkey and Mexico. Debt and equity combined, weekly data.

Sources: Institute of International Finance; National Sources.

Figure 53 Net Nonresident Purchases of Emerging Market Stocks and Bonds, Debt and Equity Separate

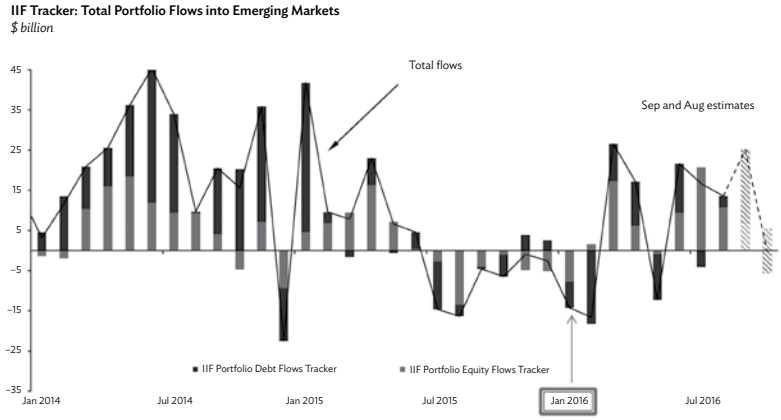


$ = US dollar.

Note: Excludes Turkey and Mexico.

Sources: Institute of International Finance; National Sources.

Figure 54 Institute of International Finance Tracker: Total Portfolio Flows into Emerging Markets



$ = US dollar, IIF = Institute of International Finance.
Note: Figure shows monthly data.
Sources: Bloomberg; Institute of International Finance; National Sources.

when we consider volatile capital flows, namely these bond and equity markets.

Figure 55 shows that a fairly substantial turnaround can be seen around mid-March 2016. If we look at quarterly data in the figure, we see an increase around March 2016 after fairly sharp declines in these flows to the group of 25 emerging markets in Asia.

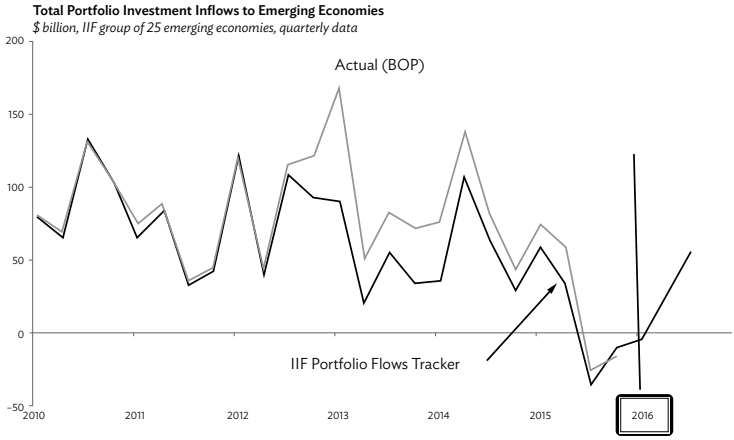
Figure 56 shows the debt flows to emerging Asia in black.

Figure 57 shows the equity flows to emerging Asia in black.

Although not a scientific study of the consequences of a low and negative interest rate policy, a substantial increase in capital flows to emerging Asia can be observed in the recent quarters both for debt and equity.

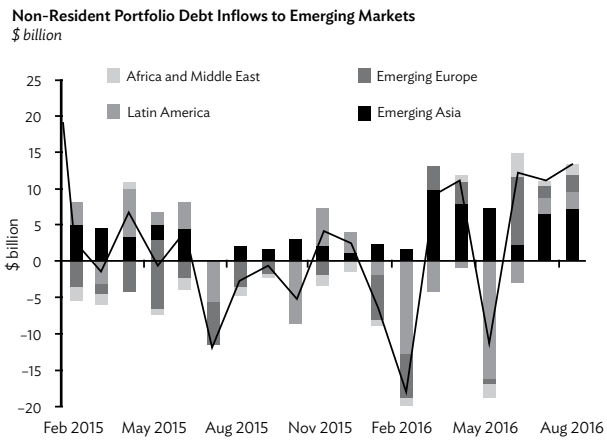
So, what is the future here? As far as I can tell, the biggest effect on financial markets in Asia was the taper tantrum. Dozens of studies on the taper tantrum showed that in 2013 when Bernanke noted that it was time to taper, there were enormous consequences in emerging markets. The research suggests that there was a potential problem, but when the data are examined, it doesn't seem to be the case in aggregate.

Figure 55 Total Portfolio Investment Flows to Emerging Economies



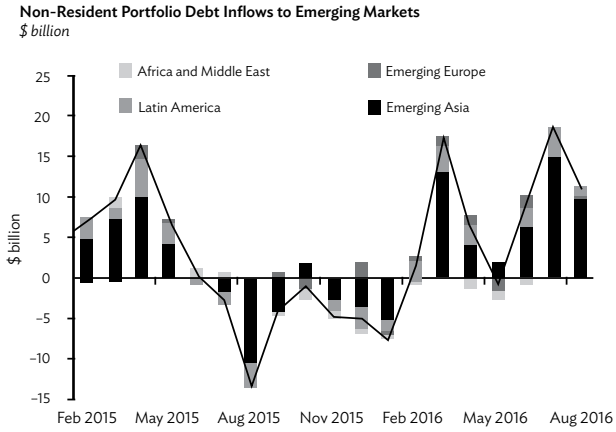
$ = US dollar, BOP = balance of payment, IIF = Institute of International Finance.
Note: IIF group of 25 emerging economies. Quarterly data.
Sources: Institute of International Finance; National Sources.

Figure 56 Nonresident Portfolio Debt Inflows to Emerging Markets, by Region



$ = US dollar, IIF = Institute of International Finance.
Sources: Institute of International Finance; National Sources.

Figure 57 Nonresident Portfolio Equity Inflows to Emerging Markets, by Region



$ = US dollar.

Sources: Institute of International Finance; National Sources.

In the US, however, mortgage rates have already increased substantially. We see the Fed very likely tightening policy by raising short-term rates. Although it is yet unclear what the fiscal policy is, there will likely be a substantial fiscal stimulus. Given the recent 2016 US presidential election and the campaign platforms, there is likely to be a tax cut combined with substantial government expenditure increases, particularly in defense and infrastructure spending. The combination of monetary tightening and fiscal stimulus may see short-term and longer-term interest rate rises. The concern in Asian emerging markets about negative and low interest rates may, perhaps, be a problem for today but not next year.

In summary, I have raised the following points for further thought. On low interest rates, we cannot be in a long-term equilibrium with negative real interest rates, concern about the weak economy, and people not consuming. But how can people be expected to consume when negative interest rates have been negative for a long time? Intertemporal theory says that when interest rates fall temporarily, people are going to consume today and save tomorrow. But when the central bank says that they will keep interest rates as low as they can over the foreseeable horizon, then I would be saying to myself, "Well, I better start consuming

less and saving more, because I'm not getting any interest returns for the foreseeable future." So, it could be that the central bank may not be fighting with the household sector's intertemporal optimization in the way we normally think—where it is temporary—but more permanently. Maybe this relates to fear of financial collapse or other issues. But in some sense, this could be a downside to forward guidance that goes on for too long and actually convinces people that they had better save today because there is no return on their assets.

Finally, central bankers seem to be concerned with debt overhangs. In the meantime, they have zero interest rates and they are worried about people borrowing. Now, how can you say on the one hand that people want to save, but on the other hand that they are also borrowing a lot? What you're doing is investing in assets with presumably a high yield (i.e., housing, high returns) and levering it totally by borrowing. So you may, in fact, be saving a lot. But for these other assets, you're buying assets and borrowing to cover up. So, these are actually consistent. In fact, what else could be expected when low interest rates are run on for a sustained period?

Michael Hutchison

Michael Hutchison is a distinguished professor of economics at the University of California, Santa Cruz. He has held positions at the Federal Reserve Bank of San Francisco, the Bank for International Settlements, the Copenhagen Business School, the Bank of Japan, the Hong Kong Monetary Authority, the Reserve Bank of New Zealand, the International Monetary Fund, the Asian Development Bank, and other institutions. His research focuses on the causes and costs of financial crises in developing economies, the European sovereign debt crisis, and the conduct of monetary policy in emerging markets.

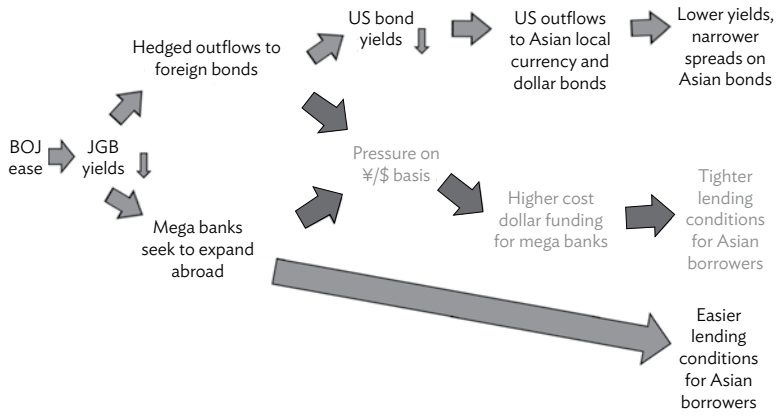
B. Robert McCauley: Effects of Low or Negative Policy Rates on Asian Financial Markets

My theme is that low and negative policy rates have generally, through lower bond yields, eased financial conditions in Asian financial markets. I want to dwell today on a negative feedback loop that works through a higher US dollar funding cost for Japanese banks, which fund themselves by taking spare Japanese yen on their balance sheet and swapping them for US dollars to fund their international operations. The pricing of those

swaps is such that, at the margin, Japanese banks are paying quite a bit for their US dollars over US dollar LIBOR. Passing on this costly marginal US dollar funding would tighten financing conditions in Asian banking markets, particularly given the sizable role of Japanese banks in those markets. But Japanese banks seem not to have passed on the cost of their US dollar–Japanese yen swaps to Asian borrowers, based on them gaining market share in practically every banking market in Asia, apart from the PRC. So, despite this unintended consequence of monetary policy easing, we see a positive transmission of ease from the low and negative rates to Asian bond markets and to Asian banking markets.

Figure 58 shows the transmission mechanism of the BOJ's negative rates to Asian financial markets. The BOJ eases by buying bonds and lowering policy rates. That pushes down JGB yields, taking the sort of bond fork in the figure. This leads to hedged outflows into foreign bonds by, for example, the institutional investors of Japan, which in turn puts downward pressure on US bond yields and provokes US outflows into local Asian currency and US dollar bond markets. Joon-Ho Hahm described how that pushed down the term premium in the Republic of Korea bonds, and also led to a lot of US dollar borrowing in Asia. In general, these lower yields and narrower spreads mean an easing of financial conditions for Asian borrowers.

Figure 58 Bank of Japan Quantitative and Qualitative Monetary Easing/Negative Rates and Asian Financial Markets



$ = US dollar, ¥ = Japanese yen, BOJ = Bank of Japan, JGB = Japanese government bonds, US = United States.

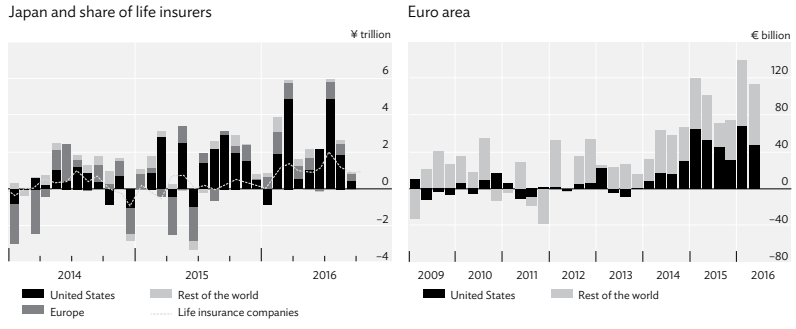
Source: Author.

On the lower fork, the megabanks in Japan react to the same lower JGB yields by wanting to increase their international operations. They want to swap Japanese yen out and fund lending in US dollars, Korean won, and Thai baht around Asia. This negative feedback can be seen in gray in Figure 58. The hedging by institutional investors and by the Japanese banks puts pressure on the Japanese yen–US dollar basis, the cost of borrowing US dollars in the foreign exchange market. That higher cost of US dollar funding for the megabanks could turn into tighter lending conditions for Asian banks.

Figure 59 follows the first bond boomerang. It shows that the outflows into foreign bonds by Japanese investors were very strong, indicated by sizable spikes in 2016 on the right-hand side of the first graph. These are very strong outflows into foreign securities. As you can see, it is predominantly the US (indicated in black in the figure) that receives it. The story would be different if the Japanese investors were more comfortable buying, say, Thai government bonds, but the outflows tend to go into the advanced markets.

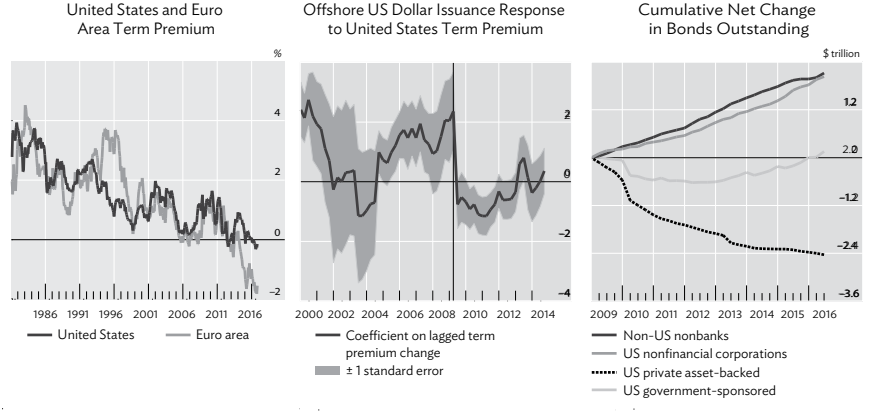
A similar pattern can be seen in the euro area as Figure 60 shows. That pushes down the term premium on 10-year US dollar treasury bonds (indicated in solid black line in the first graph of Figure 60). Borio et al. (2016) suggest that the downward pressure on the term premium leads to higher issuance of US dollar bonds by non-US residents. As seen in the graph on the right-hand side, if the Fed's intention in pushing down the bond yield and the bond term premium in the US was to provoke US companies to borrow, they were successful as indicated by the gray line.

Figure 59 Japanese and Euro Area Purchases of Foreign Bonds



€ = euro, ¥ = Japanese yen.
Source: Author.

Figure 60 The Term Premium and United States Dollar Bond Issuance by Non-United States Borrowers

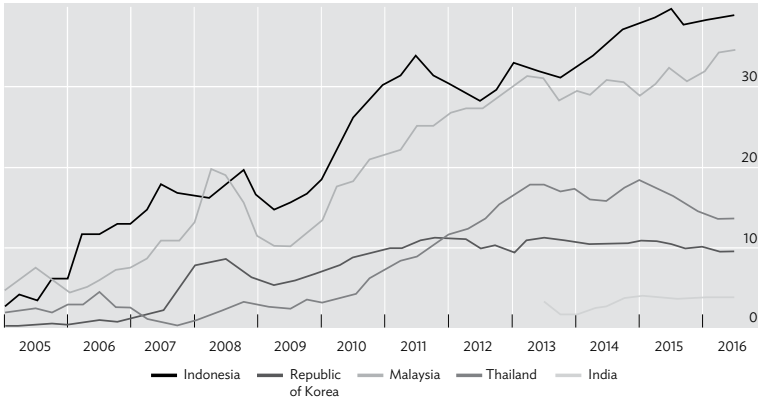


$ = US dollar, US = United States.

Sources: Author; Bank for International Settlements (BIS) calculations; BIS international debt securities statistics; Bloomberg; Federal Reserve. Available at BIS. 2015. *85th Annual Report 1 April 2014–31 March 2015*. June: Graph V.2. https://www.bis.org/publ/arpdf/ar2015e5.pdf

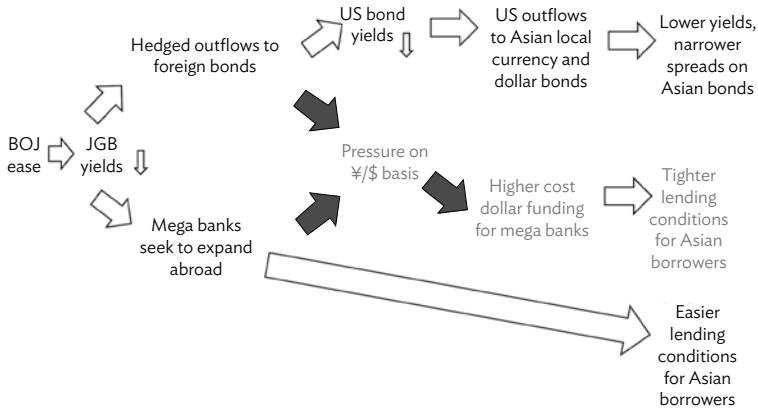
Figure 61 Foreign Ownership of Asian Local Currency Government Bonds

(% of outstanding stock)



Source: Author.

Figure 62 Banks' and Insurers' Hedging Pressures
(Japanese yen–US dollar basis)



$ = US dollar, ¥ = Japanese yen, BOJ = Bank of Japan, JGB = Japanese government bonds, US = United States.

Source: Author.

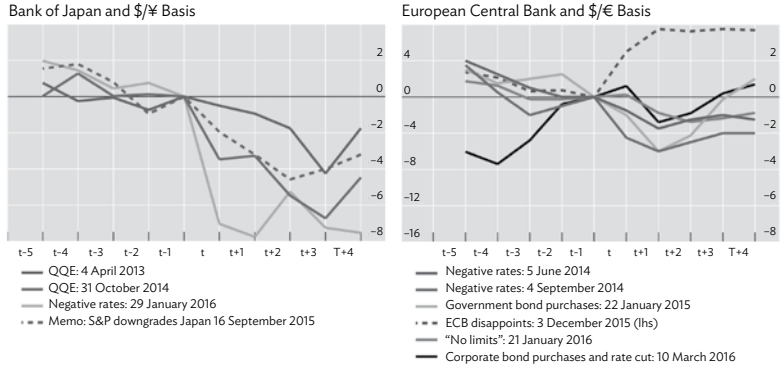
But they were even more successful, unintentionally, in provoking non-US nonbanks to borrow US dollar bonds, which is the solid black line in the third graph on the right.

As Hahm related, the tendency has been for foreign ownership of the local currency bonds in the region to rise. This is shown in Figure 61.

So, this is the bond boomerang: buying JGBs and lower yields in Japan provokes outflows that have effects in New York, which in turn provoke outflows from the US to the non-Japanese parts of the world. This is shown in Figure 62.

Let's talk about the potential offset of the unintended pressure. On the left-hand side of Figure 63, we see the announcement effects of the three big moves by Governor Kuroda, with the 2-year basis swap plotted there. It's almost as if there is learning going on, reflected in a progressively larger announcement effect of pushing down the Japanese yen–US dollar basis, as the prospect of further outflows from Japan is set off by the monetary policy changes. This means that market participants expect US dollar funding to become more expensive on the basis of Japanese yen provided in the swap market with the easing in Japan. My interpretation is that the increasing monetary policy divergence is leading to the outflows into US bonds shown earlier.

Figure 63 Monetary Policy Announcements and Currency Basis



$ = US dollar, € = euro, ¥ = Japanese yen, ECB = European Central Bank, lhs = left-hand side, QQE = quantitative and qualitative monetary easing.

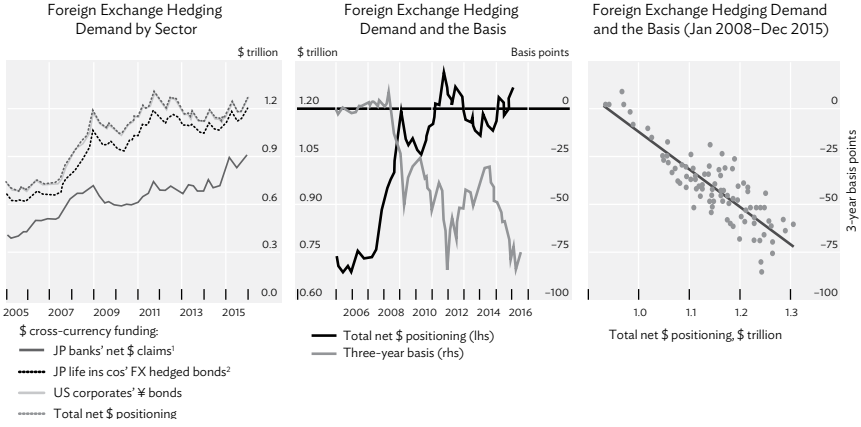
Source: Author.

In the left-hand graph of Figure 64, we have added up the presumed swapping by the Japanese banks. The gray dotted line in the first graph indicates this. The life insurers' swapping is in black dotted line, and some samurai bond issuance is in light gray solid line. And these create pressure, demand for hedges out of Japanese banks, insurance companies, and foreign borrowers in Japanese yen. The middle panel shows what has been associated with the downward move in the Japanese yen–US dollar basis, i.e., more expensive borrowing of US dollars against Japanese yen. And the right-hand panel shows a close relationship over time.

So where is the arbitrage in this? Here we have an opportunity to lend US dollars against Japanese yen and pick up returns well in excess of LIBOR. Just for lending US dollars against Japanese yen in the foreign exchange market, we can pick up returns of 40, 50, 60, and now 70 basis points above LIBOR. So where are the arbitrageurs?

When Michael Hutchison teaches international finance, he teaches the covered interest parity as the closest thing to a physical law that we have. Of course, the arbitrageurs are there. Krugman and Obstfeld in their textbook describe Baba, Packer, and Nagano's research into what happened to the BOJ in 2008 (Baba, Packer, and Nagano 2008). But in general, it hasn't penetrated the international finance courses or the textbooks that we no longer live in the world where this law holds.

Figure 64 Sources of Currency Hedging Demand and the Japanese Yen/United States Dollar Basis



$ = US dollar, ¥ = Japanese yen, bp = basis points, JP = Japanese, lhs = left-hand side, rhs = right-hand side, US = United States.

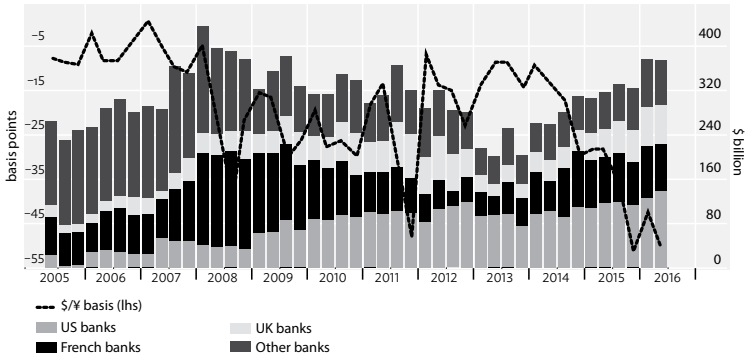
Notes:

1. Difference between gross US dollar assets and liabilities of Japanese banks; quarterly data linear-interpolated to monthly frequency.
2. Japan life insurance companies' currency-hedged US dollar bond holdings estimated by multiplying the stock of the insurance companies' foreign exchange bond holdings by their time-varying currency hedges rations; monthly frequency.

Source: Borio, C., R. McCauley, P. McGuire, and V. Shushko. 2016. Covered Interest Parity Lost: Understanding the Cross-Currency Basis. *BIS Quarterly Review. September*: Graph 4. https://www.bis.org/publ/qtrpdf/r_qt1609e.pdf

Figure 65 shows a breakdown of the holding of claims on the Japanese sector by nationality of banks, which could be either current account balances of the BOJ or holdings of the Ministry of Finance paper. The dotted black line in the graph represents the opportunity to make money by swapping US dollars for Japanese yen and parking the proceeds with the public sector in Japan. The dotted black line goes down on the right-hand side of the graph, indicating more opportunities for profit and actually more arbitrage, with the banks stepping up to the plate. The gray bars at the bottom of the graph are the US banks, the middle black bars are the French banks, and light gray bars are the British banks. Our hypothesis is that within those nationality groups, this is quite concentrated among particular banks. There are banks that are responding to the arbitrage incentive, but there are not enough of them and they are not responding vigorously enough to keep this thing

Figure 65 Foreign Bank Claims on the Japanese Public Sector and Foreign Exchange Basis



$ = US dollar, ¥ = Japanese yen, lhs = left-hand side, UK = United Kingdom, US = United States.
Source: Author.

from departing further away from the zero line it hugged before 2007. So, there is arbitrage, but it is insufficient.

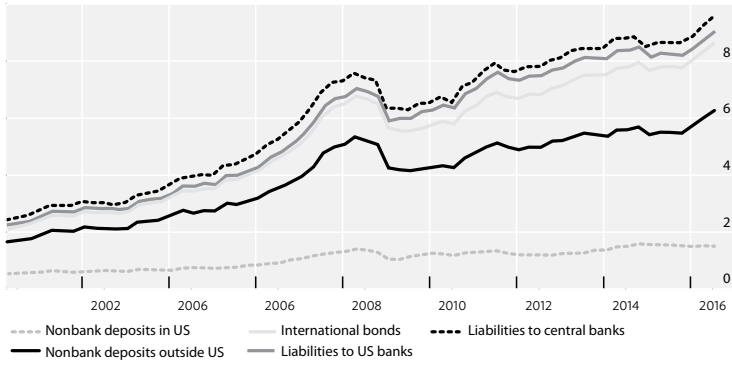
Is it money market reform in the US that has somehow defunded foreign banks, so that the foreign banks or non-US banks no longer have US dollars with which to do this arbitrage? Figure 66 suggests this is not the case. If you add up various sources of US dollars to non-US banks, they are at an all-time high, around $9 trillion.

The dotted gray line at the bottom of Figure 66 suggests that money market reform did lower the US dollar funding of branches of foreign banks in the US, but they have more than made up for it in the solid black line with funding of US dollars outside the US, which is captured in the BIS statistics. So, the arbitrage is working, but only with a kind of limp, and it is not because the foreign banks, as a group, at least, lack the US dollars to do it.

So, we now have two competing effects, as shown in Figure 67. On the one hand, Japanese banks want to escape their domestic market and earn higher returns outside of Japan and need to swap Japanese yen to do that. On the other hand, the swap market is working against them and raising their marginal cost to US dollar funds. So, who's winning?

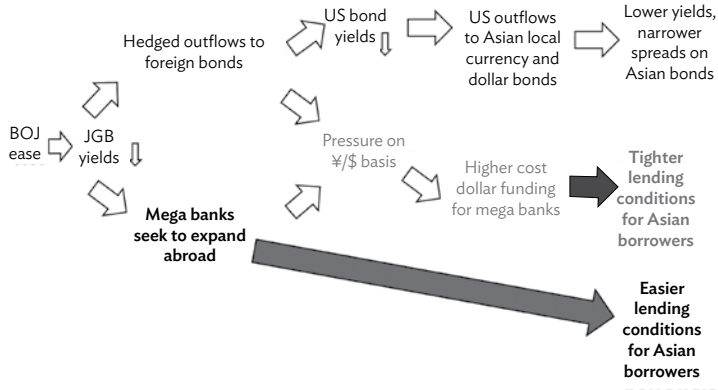
Figure 68 gives an overview of Japanese banks' share by nationality in various markets in the Asia and Pacific region. You can see an all-time high in various markets in Asia and the Pacific, although not so in the PRC and Hong Kong, China.

Figure 66 United States Dollar Liabilities of Non-United States Banks: All-Time High
($ trillion)



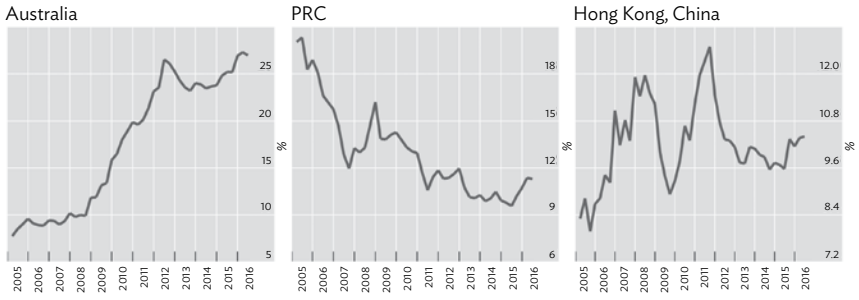
$ = US dollar, US = United States.
Source: Author.

Figure 67 Bank of Japan Quantitative Easing/ Negative Rates and Asian Financial Markets



$ = US dollar, ¥ = Japanese yen, BOJ = Bank of Japan, JGB = Japanese government bonds, US = United States.
Source: Author.

Figure 68 Japanese Bank Share of Foreign Claims on the Asia and Pacific Region I



PRC = People's Republic of China.
Source: Author.

Moving on to India, Indonesia, and the Republic of Korea, we also observe an all-time high market share for Japanese banks, as shown in Figure 69.

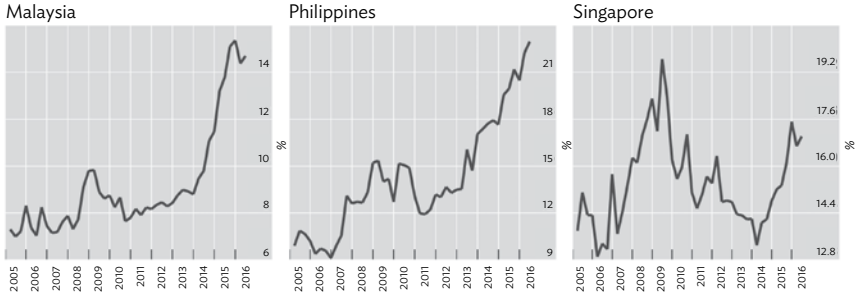
Figure 70 shows that Malaysia and Singapore are just off the peak and the Philippines is at the peak.

In Figure 71, you can see that Thailand is just off the top, looking like an acquisition leading to a very high market share of Japanese banks in Thailand. Taipei,China is at an all-time high. Viet Nam is also at an all-time high.

Figure 69 Japanese Bank Share of Foreign Claims on the Asia and Pacific Region II

Source: Author.

Figure 70 Japanese Bank Share of Foreign Claims on the Asia and Pacific Region III



Source: Author.

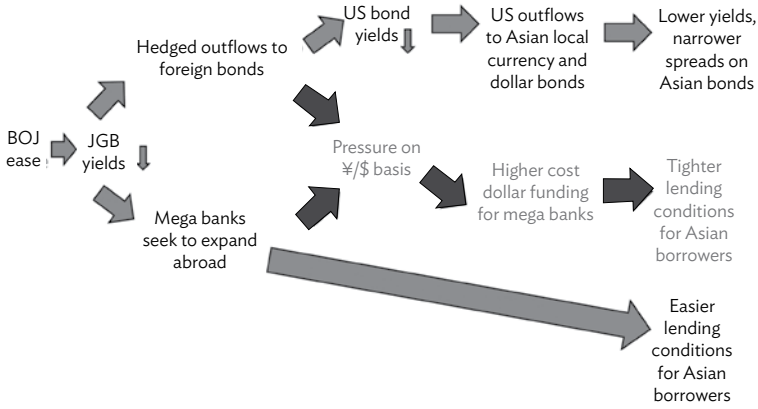
Figure 71 Japanese Bank Share of Foreign Claims on the Asia and Pacific Region IV

Source: Author.

Given this quantity data, I am going to make an inferential leap and suggest that Japanese banks are gaining market share by not passing on the cost of US dollar swaps, which is coming from the increasingly negative basis (which increasingly works against Japanese banks taking Japanese yen and turning it into US dollar funding).

So, this suggests that there is competition between the higher cost of US dollar funding on the one side and the greater desire by

Figure 72 Bank of Japan Quantitative and Qualitative Easing/ Negative Rates and Asian Financial Markets



$ = US dollar, ¥ = Japanese yen, BOJ = Bank of Japan, JGB = Japanese government bonds, US = United States.

Source: Author.

the Japanese banks as a strategic imperative to get out of their home market and increase their market share abroad on the other, as shown in Figure 72. That latter impulse—the desire to get out of Japan and increase market share abroad—is winning, which Hutchison, in the previous talk, conjectured was actually easing financing conditions in the rest of Asia.

This implies that the Japanese banks are accepting lower returns on assets or lower ROE in their foreign expansion so that even though the US dollar–Japanese yen basis is obviously not helping them, they are capturing new business in the rest of Asia. So even though you might imagine a 60–70 basis point marginal funding disadvantage in US dollars, as compared with US banks (although not as compared with European banks, which have their own problems), you would think that sort of disadvantage would have really slowed them down and prevented, or at least slowed, their foreign expansion. But from the evidence of the market share, it appears that Japanese banks are stepping up to the plate, accepting lower returns on assets and return of equity, and easing financial conditions in the rest of Asia.

Robert McCauley

Robert McCauley is a senior adviser at the Monetary and Economic Department of the Bank for International Settlements. Before joining the Bank for International Settlements, he worked for the Federal Reserve Bank of New York. He is a member of the Banque de France Fondation Scientific Council. His fields of interest are financial markets, international finance, and exchange rates.

C. Tamim Bayoumi: Implications of Low (Rising?) Interest Rates for Asia

The topic at hand is how interest rates are affecting Asian financial markets. I am a great believer that what we mean by "global financial conditions" is, to a very large extent, US interest rates. There are many things that affect global financial markets, but US dollar interest rates tend to be the dominant factor. So rather than addressing low rates, as the title says, I will be addressing the implications of rising rates. I will focus on what may happen after the 2016 US presidential election and the potential spillovers from rising rates, since the US rates are the dominant factor.

The general consensus before the US elections was that Clinton was going to win and so we would have continued deadlock in the US Congress and, as a result, basically nothing would happen in US fiscal policy. And because there is very little stimulus for the US economy, the Fed would be stuck and the US economy would continue to trundle along. But since the Fed would basically try to support a weak economy, there were the usual concerns about tightening of US financial conditions. That, however, was seen as a medium-term risk. The immediate risk was that money would continue to slush around.

This month, however, is a rather different world in which, all of a sudden, it looks like there is going to be US fiscal stimulus. Tax cuts and spending on infrastructure are almost certain as well as high US growth, high US equities, higher US inflation, and higher US bond yields. In addition, with regard to international relations, there is a complete lack of clarity about how we move forward on the trade side. Thus, there is a lot of certainty on the US fiscal side.

Now, post-election, the concern is that not only will US rates go up, but also the long-term reduction in term premiums and risk premiums

that we have seen in quantitative easing, will start to reverse. History has shown that US monetary tightening has been a time of emerging market crisis. So, the real question is, "How different are the Asian emerging markets now in comparison to how they were before?"

First, they have much more borrowing in local currency as opposed to US dollars. Traditionally, as emerging markets are fixed to the US dollar and borrow in US dollars, a lot of uncertainty on the trade side but they get into big trouble when the US exchange rate and US interest rates rise. There has been a rerun of such a scenario, which is called the frontier market. Frontier markets have followed exactly that pattern—they borrowed in US dollars, tried to fix themselves going to the US dollar and as soon as the US dollar went up, they got into trouble.

But the emerging markets have switched. They now have much more flexible exchange rates, but a lot of their buffers have been depleted since the crisis. They have made quite a lot of interventions by raising their fiscal deficit, etc. In addition to the stronger position of the emerging markets, you can also argue that they are also in a weaker position on a structural level because they have used up some of the buffers over the crisis.

What are the potential spillovers? As a positive to Asian financial markets, high US growth and a higher US dollar should boost exports to the US, which should help local equities and lower exchange rates. Against that is the cost of higher local yields. How much higher? It all depends on whether the high US rates occurred due to higher US growth or not. If they occur on their own, it's bad for emerging markets. If they occurred due to higher US growth, it's good for emerging markets, because the net benefits of having greater trade and greater external demand outweigh the costs from higher bond yields as such.

Is this true in the current circumstances for Asia? Looking at some empirical work we did on the spillovers from US monetary policy over quantitative easing, we took daily data on US 10-year yields over the quantitative easing period—short-term effects—and we related them to the changes in local currency bond yields, local equities, and US dollar exchange rates for a whole series of advanced and emerging market countries (Figure 73).

A significant proportion of those are in Asia and these are highlighted in the table, which looks at the daily correlations, the correlations on Federal Open Market Committee meeting days, and the day-to-day correlations when there are major announcements of US data. These are ordered from large effects to small effects. I find this table interesting because it shows a rather different pattern for local currency bond yields than for local equities or exchange rates.

Figure 73 Daily Correlations to the United States 10-Year Rate

Local Currency Bond/Yields

Country	β_1	β_2(FOMC)	β_2(Econ.)	$\beta_1+\beta_2$(Econ.)
Canada	0.613***	-0.061**	0.013	0.599***
Australia	0.598***	0.019	0.11	0.662***
Hong Kong, China	0.562***	-0.101*	0.076	0.663***
United Kingdom	0.457***	-0.286***	0.088	0.502***
Germany	0.434***	-0.228***	0.06	0.461***
Euro Area	0.434***	-0.239***	0.055	0.461***
Denmark	0.400***	-0.198***	0.087	0.425***
Finland	0.386***	-0.217***	0.016	0.392***
New Zealand	0.379***	-0.048	0.028	0.392***
Netherlands	0.377***	-0.196***	0.013	0.375***
Sweden	0.337***	-0.196***	0.071	0.376***
Singapore	0.306***	-0.01	0.087*	0.363***
France	0.299***	-0.168**	0.008	0.318***
Mexico	0.244***	0.179*	0.148	0.255***
Norway	0.229***	-0.189***	0.042	0.271***
Switzerland	0.220***	-0.102**	0.002	0.224***
Republic of Korea	0.216***	0.126***	0.172***	0.352***
Belgium	0.206***	-0.1	-0.072	0.178***
Thailand	0.185***	0.217***	-0.009	0.165***
Brazil	0.153**	0.344**	0.423**	0.395*
Czech Republic	0.127***	-0.07	-0.071	0.074
Japan	0.125***	-0.023	0.040**	0.169***
Taipei,China	0.077***	0.001	0.024	0.096***
Malaysia	0.077***	0.07	0.008	0.098***
Indonesia	0.074	0.457	-0.106	-0.182
South Africa	0.055*	0.066	0.219***	0.224***
Colombia	0.031	0.310**	0.428***	0.185***
Poland	0.03	-0.068	0.099	0.104*
Chile	0.016	-0.343***	-0.237*	0.037
Republic of Korea	0.015	-0.02	0.034	0.044
Turkey	0.004	0.038	0.184	0.156
Ireland	0.004	-0.038	-0.305***	-0.161
Spain	-0.009	-0.037	-0.186*	-0.073
Pakistan	-0.013	-0.01	0.257***	0.218***
Italy	-0.046	-0.096	-0.140*	-0.065
Philippines	-0.049	0.220**	-0.069	-0.192*
Portugal	-0.073	0.058	-0.507***	-0.417**
Russian Federation	-0.164*	-0.375	0.326**	0.111
Hungary	-0.187***	0.169	-0.046	-0.229
Greece	-0.672***	0.11	0.137	-0.247

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Figure 73 *continued*

Local Equities

Country	β_1	β_2(FOMC)	$\beta_1+\beta_2$(FOMC)	β_2(Econ.)	$\beta_1+\beta_2$(Econ.)
Belgium	0.101***	-0.055**	0.037***	0.125	0.198
Spain	0.088***	-0.035*	0.045**	0.024	0.098***
Euro Area	0.082***	-0.028	0.050***	0.023	0.095***
France	0.082***	-0.03	0.047***	0.017	0.089***
Germany	0.081***	-0.018	0.056***	0.027	0.097***
Russian Federation	0.080***	-0.003	0.077***	0.029	0.103***
Netherlands	0.077***	-0.013	0.059***	0.022	0.090***
Finland	0.075***	-0.028	0.042**	0.028	0.091***
Norway	0.072***	-0.023	0.049**	0.006	0.073***
Brazil	0.071***	-0.068***	0.022	-0.003	0.076***
Sweden	0.069***	-0.024	0.043**	0.019	0.079***
Japan	0.065***	-0.023	0.046**	0.037*	0.097***
Hungary	0.064***	-0.018	0.041**	-0.003	0.055***
Greece	0.063***	0.009	0.065***	0.025	0.080***
United Kingdom	0.061***	-0.02	0.041***	0.009	0.067***
Ireland	0.061***	-0.036**	0.031*	0.003	0.063***
Portugal	0.061***	-0.034**	0.025*	0.002	0.057***
Canada	0.060***	-0.023	0.042*	0.011	0.072***
Mexico	0.056***	-0.034	0.037*	0.006	0.069***
Switzerland	0.054***	-0.022*	0.032***	0.007	0.057***
Czech Republic	0.052***	-0.041**	0.015	0.019	0.071***
Poland	0.051***	-0.031**	0.023*	0.002	0.053***
Denmark	0.049***	-0.029**	0.022*	-0.004	0.043***
Turkey	0.048***	-0.003	0.048**	-0.029	0.025
Italy	0.048***	-0.022	0.021	0.013	0.053***
South Africa	0.041***	-0.028	0.017	0.008	0.049***
Hong Kong, China	0.038***	-0.039*	0.008	0.029	0.066***
Australia	0.038***	-0.018	0.028*	0.02	0.060***
Philippines	0.034***	-0.029**	0.013	-0.008	0.032**
Republic of Korea	0.033***	-0.026	0.014	0.009	0.043**
Colombia	0.031***	-0.020**	0.013	0.005	0.034***
Taipei,China	0.031***	-0.018	0.02	-0.009	0.026
Chile	0.030***	-0.027***	0.009	0.001	0.032***
Indonesia	0.027***	-0.037**	0	-0.009	0.02
Singapore	0.025***	-0.026*	0.007	0.017	0.043***
New Zealand	0.020***	-0.007	0.016*	-0.003	0.021**
Malaysia	0.017***	-0.012	0.01	0.003	0.023***
Thailand	0.015***	-0.027*	-0.006	-0.014	0.004
PRC	0.011*	-0.045***	-0.018	0.003	0.024
Pakistan	0.003	0.018	0.023	-0.016	-0.009

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Figure 73 *continued*

Exchange Rate

Country	β_1	β_2(FOMC)	$\beta_1+\beta_2$(FOMC)	β_2(Econ.)	$\beta_1+\beta_2$(Econ.)
Poland	-0.033***	0.012	-0.013	-0.018	-0.040***
Hungary	-0.033***	0.016	-0.011	-0.001	-0.027
South Africa	-0.030***	0.008	-0.022*	0.014	-0.018
Russian Federation	-0.029***	0.005	-0.015	0.001	-0.019**
Australia	-0.028***	-0.004	-0.027***	0.009	-0.016
Sweden	-0.027***	-0.007	-0.024*	0.001	-0.018
Norway	-0.026***	-0.008	-0.026***	0.014	-0.008
Brazil	-0.026***	-0.009	-0.037***	0.011	-0.019
Czech Republic	-0.023***	0.008	-0.008	-0.013	-0.027**
Canada	-0.023***	0.004	-0.015**	0.006	-0.012
Mexico	-0.022***	0.004	-0.017**	-0.006	-0.025**
Turkey	-0.022***	0.024**	-0.005	0.014	-0.013
New Zealand	-0.020***	-0.004	-0.022**	0.004	-0.016
Chile	-0.017***	-0.007	-0.020***	0.008	-0.007
Colombia	-0.016***	0.01	-0.008	0.007	-0.01
Republic of Korea	-0.014***	0.011	-0.006	0.01	-0.006
United Kingdom	-0.013***	-0.011	-0.018**	-0.005	-0.015
Denmark	-0.011***	0.003	-0.003	0.002	-0.005
Belgium	-0.011***	0.003	-0.003	0.002	-0.005
Euro Area	-0.011***	0.003	-0.003	0.002	-0.005
Finland	-0.011***	0.003	-0.003	0.002	-0.005
France	-0.011***	0.003	-0.003	0.002	-0.005
Germany	-0.011***	0.003	-0.003	0.002	-0.005
Greece	-0.011***	0.003	-0.003	0.002	-0.005
Ireland	-0.011***	0.003	-0.003	0.002	-0.005
Italy	-0.011***	0.003	-0.003	0.002	-0.005
Netherlands	-0.011***	0.003	-0.003	0.002	-0.005
Portugal	-0.011***	0.003	-0.003	0.002	-0.005
Spain	-0.011***	0.003	-0.003	0.002	-0.005
Singapore	-0.010***	-0.002	-0.009*	0.003	-0.005
Malaysia	-0.009***	-0.003	-0.010***	0	-0.008*
Indonesia	-0.008**	-0.011	-0.017**	0	-0.007
Philippines	-0.005***	0.001	-0.004	-0.002	-0.006
Taipei,China	-0.003**	0.001	-0.002	0.002	-0.001
Thailand	-0.003**	0	-0.003	0.005	0.001
Pakistan	-0.001	-0.005	-0.006	0.006***	0.004**
PRC	-0.001*	-0.001	-0.002	-0.001	-0.001
Hong Kong, China	0.000***	0	0	0	0
Switzerland	0.007*	-0.003	0.009	0.006	0.015*
Japan	0.033***	-0.002	0.033***	0.011*	0.043***

FOMC = Federal Open Market Committee, PRC = People's Republic of China.
Statistical significance denoted by stars, * for p<0.05 , ** for p<0.01, and *** for p<0.001

Source: Author.

The first table shows local currency bond yields. The black-shaded countries are generally in the top and middle part of the table. In other words, at least over the period of quantitative easing, it looks like there has been quite a large transmission of changes in US 10-year rates to Asian bond rates. Local equities show a different pattern. Except for Australia, all other Asian countries are at the bottom. This indicates that there has been relatively little transfer of the impact of changes in US 10-year rates onto local equities in Asia, as compared with other countries.

Finally, for exchange rates, the same pattern applies. Here, there are three exceptions, but nevertheless, the table shows a very striking pattern, with virtually all the black-shaded countries at the bottom of the table. This shows that apparently, at least over the period of easing, changes in the US 10-year rate had relatively large effects on Asian bond yields and very small effects on equities and exchange rates. These are the correlations shown by the daily data.

So, what does that mean? Let's go back to the positives and negatives we considered earlier. The positives are that high US yields would (ostensibly) also raise Asian equities because a higher US growth would raise Asian equities, and lower the exchange rate. These two channels don't seem to be particularly strong in Asia. By contrast, the negative channel, which is the rise in bond yields coming from a rise in US 10-year rate, seems to be working fairly carefully. Now, there seems to be a caveat to this. This analysis was done while the US was essentially undergoing quantitative easing and you could argue that circumstances were rather different. But it's quite striking how strong the results are.

Basically, the conventional wisdom is that Donald Trump will be reasonably good for Asia, as he will be for the rest of the world because he will raise US growth. I think at least in the case of Asia, there is a reasonable case to be made that you should at least worry that, especially if very compressed term and risk premiums jump up as the result of the change in US policies, then there could be some nasty surprises.

Tamim Bayoumi

Tamim Bayoumi is a deputy director in the International Monetary Fund's Strategy, Policy, and Review Department, where he focuses on developing policy on surveillance. He previously worked on the Japanese and US economies as well as the World Economic Outlook and the External Sector Report, in addition to numerous academic papers. He recently took a sabbatical as a senior fellow at the Peterson Institute for International Economics, where he wrote a book analyzing the origins and implications of the 2008–2010 North Atlantic crisis. He has a first degree from Cambridge University and a PhD from Stanford University.

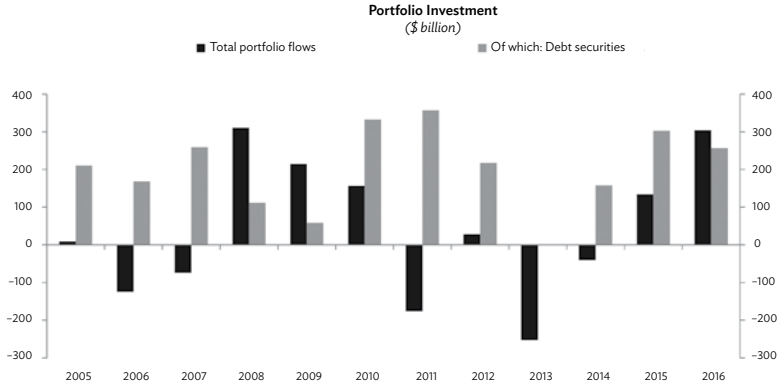
D. Alicia Garcia-Herrero: Japanese Investors' Reaction to the Low Interest Rate Environment—Some Takeaways for Emerging Asia

I was trying very hard to find an impact of ultra-low and negative interest rates on Asia, but the truth is that it's very hard to find. Asian markets (and global markets in general) are very US dollar-dominated. Nevertheless, I will focus on Japan, the reaction of Japanese investors to the low interest rate environment, and what these investors are bringing to Asia. I am going to cover mainly Japanese portfolio flows as well as Japanese banks, pension funds, and different investors, comparing the Republic of Korea and Japan.

Have these ultra-low rates brought something to the region? Figure 74 shows data on the portfolio flows (and debt securities) between Japan and the rest of the world. It's obvious that a lot of money has been leaving Japan since rates have become negative on JGBs in particular. The question is, "Where are they heading and is this making a difference for emerging Asia?"

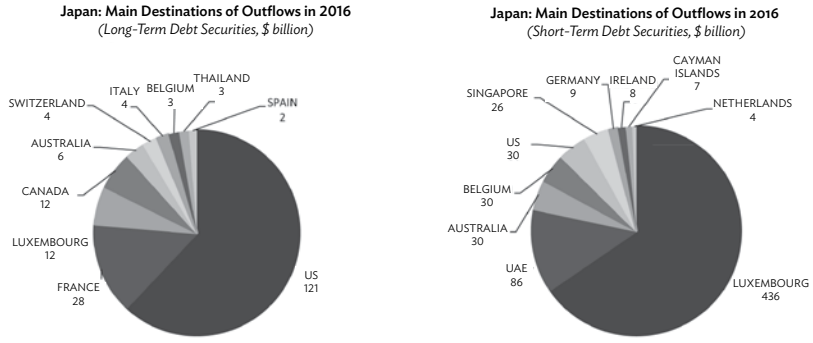
Japanese investors have mainly purchased longer-term debt securities abroad. Figure 75 shows the main destinations of outflows from

Figure 74 Portfolio Flows between Japan and the Rest of the World



$ = US dollar.
Sources: Ministry of Finance, Japan; NATIXIS.

Figure 75 Preferred Destinations for Japanese Portfolio Outflows, Outside of Emerging Asia



$ = US dollar, UAE = United Arab Emirates, US = United States.
Note: 2016 data are until September.
Sources: Datastream; Ministry of Finance; Japan; NATIXIS.

Japan. The left-hand side shows long-term securities. Most investments were in the developed world: the US, followed by the European countries, and European Union countries in particular. As yet, there is little that is actually going to emerging Asia. Perhaps the aggregate reduction in sovereign yields in Asia can be attributed to the Fed's laxness beyond what the market had anticipated rather than Japanese investors.

Within Asia, which is dominated by Singapore, there is hardly any flow to emerging markets and the flow has not increased with Japanese ultra-low rates, as shown in Figure 76. My feeling is that Japanese investors want foreign assets but they are not yet ready to take on risky ones. And maybe this would require better econometric analysis.

So, we looked at portfolio flows and at the correlation between those flows and interest rate differentials and the expected appreciation of the local currency. No matter how small the flows, they would go where there was money to be made: some kind of carry trade. The evidence is very mixed. On the left-hand side is a graph without exchange rates, because traders only look at the interest rate differential. On the right-hand side, we show what we thought they should be doing and they don't seem attracted necessarily by that high rate.

Say I believe that traders don't look at the exchange rate, Figure 77 shows the interest rate differential between the local economy and Japan. Had I been a life insurer in Japan, I would have considered going abroad.

Figure 76 Main Destinations of Outflows to Asia

Main destinations of outflows in Asia
(Total portfolio investment, $ billion)

$ billion	2012	2016[1]	Change in outflow[2]
SG	72.6	29.8	↓
TH	21.4	5.8	↓
TA	0.1	1.1	↑
ID	8.3	0.9	↓
IN	–0.2	0.0	↑
PH	0.2	0.7	↑
MA	0.9	0.6	-
VN	0.3	0.4	↑

$ = US dollar; IN = India; ID = Indonesia; MA = Malaysia; PH = Philippines; SG = Singapore; TA = Taipei,China; TH = Thailand; VN = Viet Nam.

Notes:

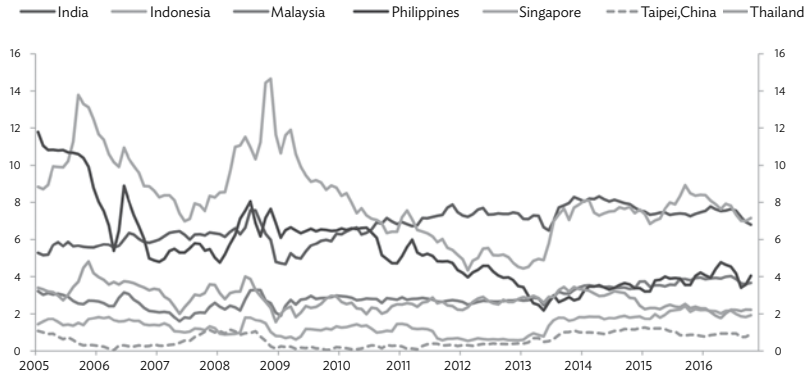
1. 2016 data until September.

2. Comparison between 2012 and Jan–Sep 2016.

Sources: Datastream; Ministry of Finance; Japan; NATIXIS.

Figure 77 Interest Rate Differentials between Local Economy and Japan

(%)



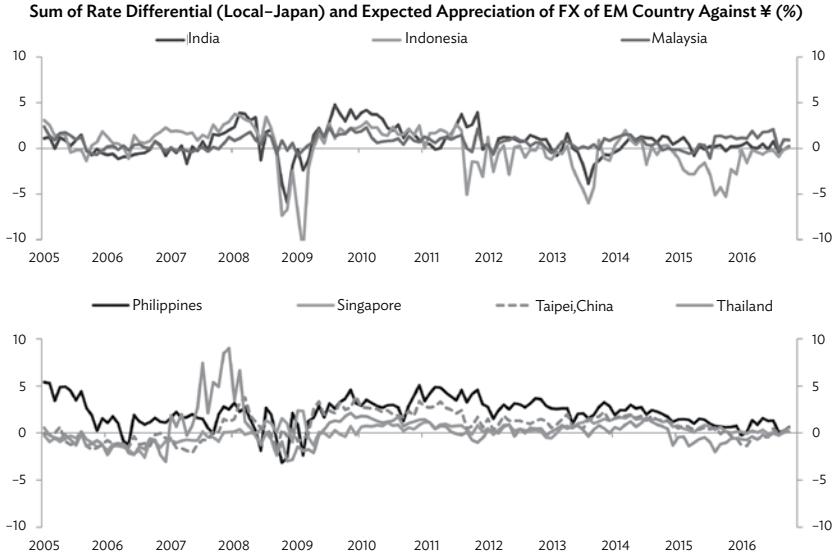
Sources: Bloomberg; Datastream; NATIXIS.

Figure 78 shows the actual adjusted return, given what happened with the exchange rate. We were already there in 2015. These currencies have lost a lot of value and investors got burned. So, I think it's difficult for them to see these as a marvelous carry trade in the way that the Australian dollar was in the past. They're not ready to take that kind of risk. That's what the data show. They're not really going there.

I now look at two types of investors, Japanese banks and Japanese and the Republic of Korea pension funds, to see whether what is seen in the aggregate data matches the data on banks and pension funds in Japan and the Republic of Korea. It does.

This reflects what Robert McCauley said. I will add some information about why Japanese investors are still going abroad. They are not necessarily searching for yield in emerging Asia, even though the spreads are not quite as wonderful anymore once you take exchange rate developments into account. In reality, no matter how bad the profitability may be (I am talking about the US and Europe, where they are heading), both cross-border lending and investment is actually

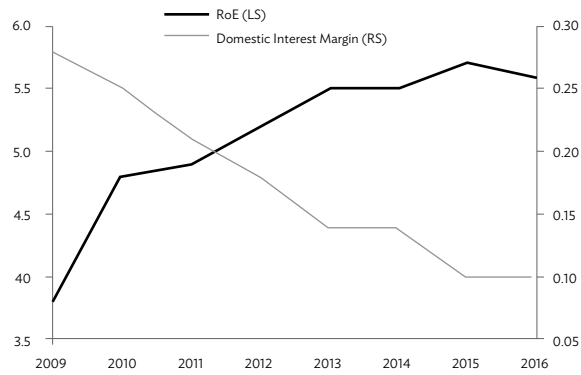
Figure 78 Interest Rate Differentials and Expected Exchange Rate Appreciation in Relation to Japan



EM = emerging market.
Sources: Bloomberg; Datastream; NATIXIS.

better than their domestic profitability. So even though they lose money with these aggressive cross-currency swaps which, I imagine, can only get worse as the Fed hikes rates, it is actually nothing given how low profitability is for their domestic business, as shown in Figure 79. So, they're forced, no matter what, to continue with that strategy.

Figure 79 Profitability of Japanese Banks

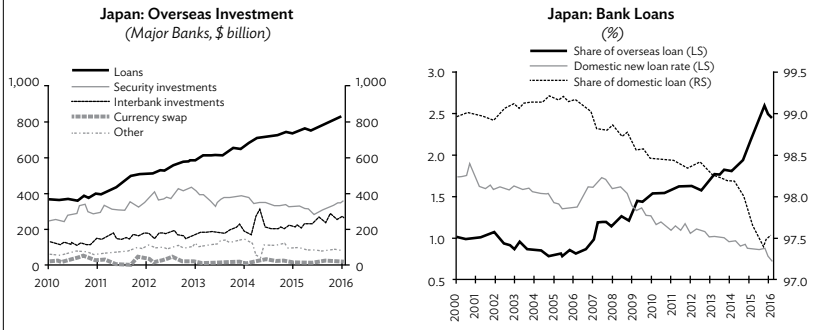


FY = fiscal year, LS = left side, RoE = return on equity, RS = right side.
Sources: INDB; NATIXIS.

Figure 80 shows the levels of investments. Loans are the biggest chunk. But you also have a lot of security investments. Still, it's a very small part of Japanese banks' balance sheets. And this is helping them to keep their low profitability at bay, or at least not to see additional reductions, given very low yields, which were negative until recently for the 10-year JGB for Japan. Of course, they continue. They have to. The problem is that, at the moment, they're really not going to emerging markets in Asia, or at least not to the extent that it would make a big difference.

I was very interested in Robert McCauley's graph showing that Japanese banks are increasing their market shares across Asia. But, if I understand McCauley's figures correctly these are only foreign claims by all international investors, which are increasingly dominated by Japanese investors. So, I believe it still wouldn't be enough against local claims, as banks in Asia are becoming larger.

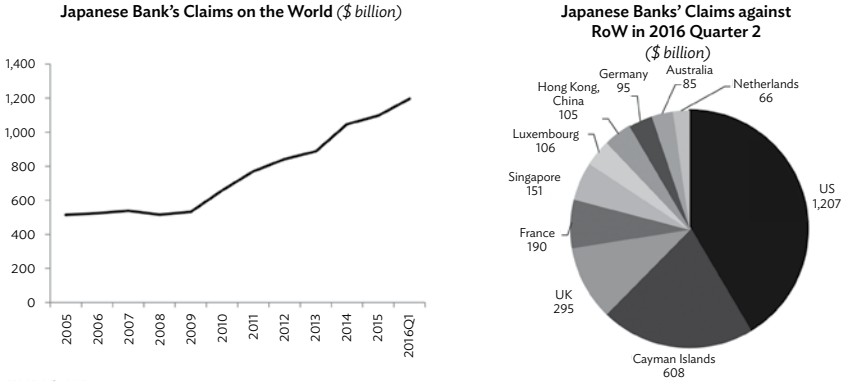
Figure 80 Japanese Overseas Investments, Bank Loans



$ = US dollar, LS = left side, RoE = return on equity, RS = right side.
Sources: Bank of Japan; NATIXIS.

Figure 81 shows the Japanese banks' claims in the world, amounting to $1.2 trillion, which are US dominated. So even the banks, let alone the portfolio flows, are going to the developed world. There is very little left for Asia.

Figure 81 Japanese Banks Cross-Border Lending Abroad



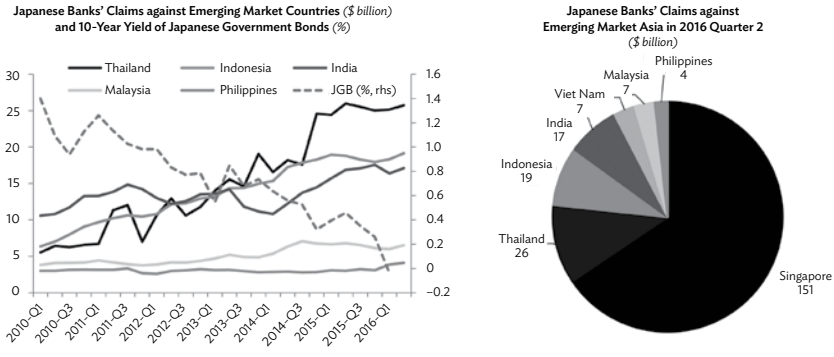
$ = US dollar, RoW = rest of the world, UK = United Kingdom, US = United States.
Sources: Bank for International Settlements; NATIXIS.

Figure 82 shows what is left for Asia. It shows Japanese banks' cross-border lending into Asian emerging markets. This shows the evolution of the JGB, where we observe that of course, it increases as the domestic rate of return declines. The size is very small still today and quite dominated by Indonesia, Singapore, and Thailand.

Perhaps we should be thankful it isn't bigger. If they had put all that money into Asian emerging markets at the time when the Fed was reluctant to hike rates, it would have probably caused more trouble. The question is what happens now. Hopefully, they manage to rethink their risk strategy and put more eggs into this basket. Unfortunately, I don't think this is going to happen.

The channel that McCauley mentioned, about the increased cost of funding by Japanese banks (which is also affecting European banks and French banks in particular, which are massively short in US dollars), is going to continue. This additional profitability, compared with very low profitability at home might, at some point, be insufficient for them to continue.

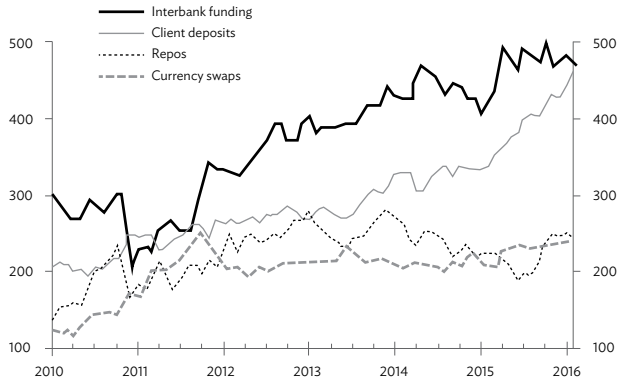
Figure 82 Japanese Banks' Cross-Border Lending into Emerging Market Asia



$ = US dollar, JGB = Japanese government bonds, RHS = right-hand side.
Sources: Bank for International Settlements; NATIXIS.

Not only that. The BOJ's Financial Stability Report is already increasing warnings of maturity mismatches and interest rate risk. Expansion through US dollar funding is increasingly hard to find. Looking at Figure 83, we see that they're funding themselves

Figure 83 Japan Overseas Funding
(Major Banks, $ billion)



$ = US dollar.
Sources: Bank of Japan; NATIXIS.

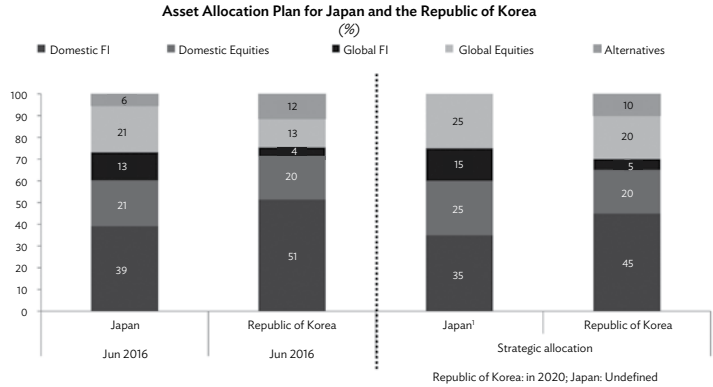
increasingly through client deposits. As interbank funding is capped, given the money market fund reform in the US, so Japanese banks are paying increasingly larger spreads. I think there is a limit to how much they can do.

There is also the issue of how currencies have reacted to Trump in Asia and not only yields. Currency really went all the way, as we saw. In a much better environment, will Japanese banks now behave less conservatively than they have done in the past? I do not expect Japanese investors to come to the rescue at a time when outflows will happen because of the US dollar. Unfortunately, that would only strengthen the negative effect.

As for pension funds, Figure 84 shows Japan's Government Pension Investment Fund (GPIF) and the Republic of Korea's National Pension Service (NPS), which tell basically the same story. These are, of course, diversifying abroad. This is truer for the GPIF today, but their strategic allocation for 2020 remains about the same. So, they will have between 25% and 30% of their assets abroad, which sound substantial. It is not, however, going to emerging Asia.

It is going to the same place as aggregate data showed (Figure 85). For the Republic of Korea, it's mainly North America and Europe. We might have expected the GPIF, which has more experience with low yields, to move more aggressively. The Republic of Korea's NPS

Figure 84 Asset Allocation Plans for Pension Funds

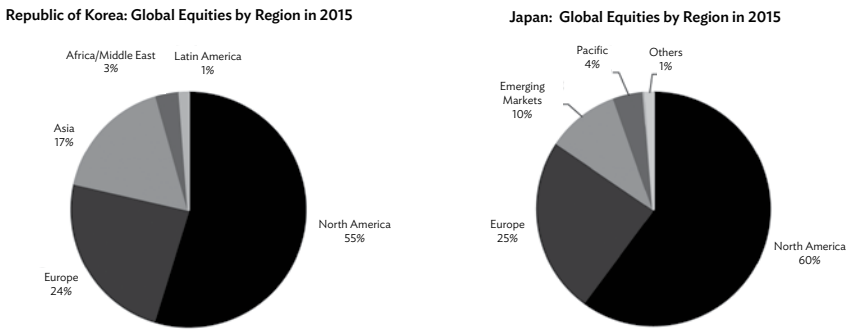


FI = fixed income securities (e.g., bonds); GPIF = Government Pension Investment Fund (Japan); NPS = National Pension Service (Republic of Korea).

Notes: 1. Japan: Target undefined for alternative investment.

Sources: Government Pension Investment Fund company data; NATIXIS.

Figure 85 Global Equity Allocations by Region for Japan and the Republic of Korea



NPS = National Pension Service (Republic of Korea).

Sources: Company data; NATIXIS.

Figure 86 Returns by Pension Funds

GPIF = Government Pension Investment Fund (Japan), NPS= National Pension Service (Republic of Korea).
Sources: Government Pension Investment Fund; National Pension Service; NATIXIS.

has moved further, and the share of Asian emerging markets is bigger than Japan's. Based on the data, it is clear that life insurers need to get yields fast in the Republic of Korea's NPS. This is true also for equities and government bonds as well as alternatives. So, the bulk of their increasing investment is in Australia and not so much in emerging Asia. But, to start with, they have more alternatives outside of the Republic of Korea than Japan.

So maybe Japan's experience is an extreme case of conservative behavior in their external allocation of assets, which may not be repeated by others. If you look at the Sharpe ratio (a ratio of return adjusted for risk), adjusted returns seem to be higher in the Republic of Korea lately than in Japan, as we see in Figure 86.

In a nutshell, Japan's front-running position in this ultra-low interest rate environment has not moved too far, and the change in environment has not resulted in large parts of portfolio flows going into what would be search for yield right there in the neighborhood of emerging Asia. Life insurers, more so in the Republic of Korea than in Japan, have a lot of restrictions on where they can buy and what they can and cannot buy, which contradicts our findings. The Republic of Korea seems to be less risk-averse than Japan, notwithstanding the tighter regulatory environment today.

It might have been a good idea for "search for yield" behavior to be there at the time when there were big outflows. There seems to be a lot of appreciation of sovereign risks and currency risks for these investors in this ultra-low interest rate environment. A topic for further research may

be that of becoming more risk-averse after having lived in an ultra-low interest rate environment for a long time and how to diversify without going all the way to a massive high search for yield or credit risk.

Alicia Garcia-Herrero

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E. Open Floor Discussion

Question to Michael Hutchison: Professor Hutchison briefly referred to the impact of the ultra-low interest rate in some interesting areas. In Japan, it may not be cross-border; it may be quite internal. In other major countries, the situation may be quite similar. First, the ultra-low interest rate or negative interest rate has already had a visible impact on the real estate market or real estate sector. In Tokyo, surprisingly, the land price and the real estate price have been rising quite rapidly, which may be a repetition of the real estate bubble in the 1980s. Perhaps this could be generalized to the asset market. At the same time, ultra-low interest rates have had an impact on the liquidity availability for merger and acquisition transactions. This is a cross-border issue. Another visible impact of negative interest rates that is quite particular in the US and in Japan is the repurchase of companies' own equity shares by reducing equity capital. They try to increase artificially the ROE. Finally, as has been mentioned, ultra-low interest rates may have preserved zombie-type corporations in many countries. How do you assess these types of negative impacts of ultra-low interest rates?

Question from Narayana Kocherlakota to Michael Hutchison: Michael Hutchison made a comment about whether low interest rates could actually be anti-stimulative because households are so concerned about being able to save enough for retirement that they cut back consumption in order to save more. Perhaps the right comparison might be how people would think low interest rates today are affecting

their long-run consumption position. In the representative agent model, the long-run consumption is unaffected by the fact that interest rates are low today. That's why low interest rates are simulative because the long-run consumption decision is unaffected by that. If you are a person who thinks that your long-run consumption is lower because of low interest rates today, then there is a race between the fact that interest rates are low and your long-run consumption. I think many people who think that their consumption could be lower in the long run because of low interest rates today are leaving out the fact that if asset prices are increasing as a result of low interest rates, their long-run consumption might actually be higher. These forces should be taken into account. Notwithstanding the impact of the 2016 US presidential election, there is much uncertainty unfolding over the next 4 years.

Comment from Veerathai Santiprobhob to Michael Hutchison: With regard to Michael Hutchison's presentation about the cross-border transmission effects on money market rates and on exchange rates, if I got it correctly, you seem to suggest that there are few effects of transmission mechanisms of quantitative easing in other Asian financial markets. I would like to encourage you to consider the central bank's operations and obviously the policy rates that central banks in Asia have to defend. These may explain the stickiness of money market rates in these countries as well as exchange rates. A look at the central bank's balance sheet, its stabilization operations, and reserves will give a better picture.

Question from Peter Morgan to Tamim Bayoumi: How generalizable are your results—which are that the decline in US interest rates was driven primarily by the Fed's quantitative easing announcements as opposed to new economic news—given the rather specific circumstances of the period you're looking at? At the same time, you had Asian central banks resist currency appreciation through intervention. Whereas if you had a situation of interest rates rising because of good economic news in the US, that might have affected equity markets and Asian central banks might be less interested in intervening to keep the currencies from weakening rather than strengthening.

Question from James McAndrews to Robert McCauley: Do you know the currency in which Japanese banks are lending in the different Asian countries or the mix of US dollar versus local currencies? My second comment would be that we have absolutely no indication of what kind of economic policy will be adopted in the US, only greater uncertainty so far.

Comment from Masazumi Hattori to Robert McCauley and Alicia Garcia-Herrero: Japanese megabanks have a segment-by-segment

profitability report that I think will provide solid evidence to support Robert McCauley and Alicia Garcia-Herrero's conjectures.

Question to Tamim Bayoumi: Earlier presentations emphasized two things: that the interest rate and the inflation rate are going to be low for the long term and at the same time that these are a result of the confidence shock. And this confidence shock is explained by the low expectation in consumptions, global uncertainty, and the work of luck in the case of bank profitability. My question is, "What can explain the raising of interest rates in the US? Is it only political or microeconomic fundamentals?"

Reply from Alicia Garcia-Herrero: Thank you for the comment on the data for Japanese banks. In my humble capacity, I would like to say something with regard to uncertainty. Everyone knew what was happening before the elections. LIBOR was moving up. Inflation had been creeping up since the summer both in the US and in Europe. So, it's not really only about Trump. I think that we were moving into an equilibrium where we would have higher interest rates at some point. It's probably a case that a sleeping Fed and all of the other factors may have diverted attention from the fact that we were getting there, especially in the US but, as I said, even in Europe. You can tell that headline inflation was moving up, so I don't think it is about Trump, but maybe about growth. Inflation is a different topic. A lot of what has been said might still be there, such as the outflows from emerging Asia.

Reply from Robert McCauley: In addition, long-term rates have indeed been moving up since July and there was a notable increase in the JGB yields in August, but I want to thank Masazumi Hattori for his suggestion. Jamie McAndrews asked in what currency the loans are being made in East Asia by the Japanese banks. The foreign claims I am using would be both cross-border claims and the loans made by local affiliates, be they subsidiaries or branches. That would include large amounts of local currency lending as well as mostly US dollar lending on the foreign exchange side. A more complete presentation would have taken Japanese money starting in Japanese yen and got its cost in US dollars after the foreign exchange swap. It would then, for example, have looked at what happens to the Republic of Korea when you turn US dollars into Korean won and their basis in each of the currencies in Asia as well. That might improve things a little bit from the Japanese bank's standpoint if the US dollars get them slightly cheaper funding in Korean won (that used to be much cheaper and closer to zero than now). But you have to remember that any competitor of the Japanese bank with US dollars would get the same benefit swapping them into Korean won. So, the competitive disadvantage of going from Japanese yen to the US dollar would be maintained. And Alicia Garcia-Herrero

is correct in saying that there is also basis between the euro and the US dollar, so a German and French bank swapping euros into US dollars do not come out clean either. It's paying 30 or 40 basis points, about half of what the Japanese bank is paying. Given that the US banks are not the major competitors for major Japanese banks among the foreign banks, but that the European banks are, it's a question of the relative disadvantage of the Japanese banks rather than the absolute. But after taking account of the funding in local currency, they are definitely still at a sizable disadvantage to the most relevant competitors: the European banks. I take the point that a lot of their lending globally is in the major economies. But market by market, the fact that they are gaining market share with a marginal funding disadvantage is an extraordinary observation and tells you how important the whole strategy of escaping negative rates is to the Japanese banks.

Reply from Michael Hutchison: The negative interest rates in Japan are no doubt affecting various sectors. I'm not quite sure where real estate prices are now but are they still 50% of what they were in 1989? It seems to me that a rebound at some point would be desirable. In any case, the issues of zombies and other effects in the Japanese economy itself was not the point I was making. I was talking about the transmission to Asia, and primarily the emerging markets. In regard to the repurchase of equity shares, I would point out that it makes perfect sense to go for debt finance rather than equity finance in the current environment.

With regard to Kocherlakota's question, when I'm thinking of policy, I don't normally think of the representative agent model with perfect foresight. Of course, you would need an overlapping generations model or something realistic.

On the issue of the central bank balance sheets, I have no doubt that there would be some balance sheet effects. But ultimately if these are not affecting prices, exchange rates, or your interest rates, it seems to me it's primarily just an issue of quantity. So, is that really having much effect on the Thai economy? It would seem to me to be a second-order effect compared with significant effects on exchange rates or interest rates.

Reply from Tamim Bayoumi: I would have thought that the points I made would tell you that there is a lot of uncertainty in this world. It seems that compared with last month, one can make an educated guess that the policy mix will be more Reaganesque. And I was trying to trace out what a high US deficit, high US interest rates, and high US dollars might mean for the rest of the world. How high? I don't know. But as an educated guess, I think it is a good place to start from.

In terms of the period over which this was estimated, remember the estimates are daily results and were not in reference to a Federal Open

Market Committee meeting, or a US data release. Ten-year rates went up some days and down some days. These overall relationships between what was happening in Asian economies and other economies and what was happening in the US are not based on certain specific events, and they look very similar to results for the pre-crisis period as well. I don't think there will be huge changes in these general correlations. But I could turn out to be wrong, and we'll all find out.

Comment from Robert McCauley: One correlation that has definitely changed is the correlation of the 10-year JGB against the US 10-year Treasury bond, which is now effectively zero. That means as interest rates in the US go up, it puts a huge pressure on the exchange rate, rather than 70% as it would have before, or 50% as it is for the German bunds in the last several weeks.

6

Concluding Remarks

ADBI's 2016 Annual Conference on the Implications of Ultra-Low and Negative Interest Rates for Asia has brought together a group of world-renowned scholars, policy makers, and experts and produced key insights into the macroeconomic and microeconomic effects of negative interest rate policies. Since December 2016, many things have changed in the fast-moving world of central banking and international finance, yet the conclusions and predictions presented in this volume have held up remarkably well.

Narayana Kocherlakota's prediction that fear and uncertainty would continue to weigh on the economic recovery is as prescient now as it was in late 2016. While the world's advanced economies are continuing to grow, the recovery from the global financial crisis has taken more time and reached fewer people than past recoveries, which presents a conundrum for economic policy makers and particularly monetary policy. Subdued economic activity in advanced economies, in turn, has important consequences for the world's emerging economies, especially in Asia, where exports play a central role. Lower demand in advanced economies will provide an impetus for Asian countries to rebalance toward domestic demand as a source of growth. For the foreseeable future, however, Asia's fortunes will remain closely tied to those of the global economy. We thus echo Tamim Bayoumi in his call for attention to how the macroeconomic linkages between Asia and the world evolve, since monetary policy normalization in advanced economies may pose new and unexpected challenges.

The case for negative rates may have declined somewhat with monetary policy normalization in the US, but monetary policy in economies with negative rates has not changed substantially since late 2016. As Narayana Kocherlakota pointed out, there are various reasons for why stays at zero lower bound may be long. Nevertheless, exit policies are starting to be discussed, so the experience of different countries at implementing negative rates provides valuable insight into available methods of policy adjustment. The presentations by Jean-Pierre Danthine, Cecilia Skingsley, Sayuri Shirai, and Luc Laeven gave overviews of how the euro area, Japan, Sweden, and Switzerland

implemented negative rates, and each central bank's experience holds valuable lessons for the others. The reserve tiering system of the BOJ, for example, provides one way of offsetting adverse effects of negative rates to bank profitability while still maintaining low market rates. This allows policy makers to cushion the impact of negative rates on private balance sheets while otherwise continuing to pursue their policy targets.

The inherent complexity of negative rates also provides a strong case for clear central bank communication. As central banks are facing a growing array of challenges, communication plays a key role in ensuring that policy becomes, and remains, effective. Part of the research presented in this volume suggests that the transmission of negative interest rates differs from that of positive rates in key respects, a theme which has been explored, for example, by Michael Hutchison. Against this background, central bank actions may seem inconsistent or contradictory unless accompanied by effective communication. Veerathai Santiprabhob reminded us that active communication is part of a central bank's mandate, since central bank legitimacy and central bank independence both rest on the broader popular support of their countries' societies.

Communication also plays a key role in the transmission of negative interest rate policies across borders, a key theme at ADBI's Annual Conference 2016. We learned from Veerathai Santiprabhob, Joon-Ho Hahm, and Hans Genberg that negative interest rates affect Asia in substantial ways, most importantly by way of financial inflows searching for yield.

Contributions by these three experts have shown that financial inflows have the potential to create trade-offs between price stability and financial stability, increase foreign and foreign currency denominated indebtedness, and can adversely affect macroeconomic policy in the recipient countries. Policy makers in Asia have actively responded to this development and have not shied away from managing their foreign exchange regime and financial flows in unorthodox ways. Macroprudential policies have been proposed by several experts as the way to deal with negative effects of international financial flows. Short of international policy coordination, active communication between central banks worldwide and with the public contributes to mitigating risks and strengthening policy effectiveness.

While negative interest rate policies put our focus squarely on price measures, Dong He emphasizes that central banks have also actively applied quantity-oriented policies, such as asset-purchase programs that have affected market liquidity. He outlined different types of liquidity

and the role those play in the financial system. His framework, based on the IMF's Global Financial Stability Report, provides an important and highly useful analytical tool to understand how contemporary monetary policies are shaping markets. Liquidity considerations are likely to come to the fore again during the process of monetary policy normalization, as authorities are expected to roll back at least part of the balance sheet policies adopted during the crisis, which is likely to affect liquidity across the financial system.

Dong He's contribution is also crucial because it forces us to think about the global interconnectedness of financial markets. Foreign exchange markets are some of the deepest and most liquid in the world, and it is right here that monetary policy divergence between the US, where rates are low and rising, and Europe and Japan, where rates are largely negative, has a big impact. Robert McCauley addressed this relationship in his examination of swap markets. He provided an intriguing illustration for how low and negative rates in Japan motivate Japanese banks to expand abroad, and how this triggers a negative feedback loop whereby foreign expansion raises the costs of hedging and lowers the returns of investment. Alicia Garcia-Herrero picked up this line of analysis in her examination of how portfolio structures have changed in response to low and negative rates, demonstrating how low returns have affected investment behavior.

In general, the experts featured in this volume maintain a very balanced view of negative interest rate policies. They recognize that the aim of the policies is to raise inflation and economic activity, but they also remain very aware of potential downside risks. Overall, financial stability concerns featured prominently in most discussions, reflecting the greater attention to this topic now after the global financial crisis. In many ways, the debates reflected in this volume take us back to discussions on central bank instruments and targets of the 20th century. Jan Tinbergen famously argued that policy makers would need one instrument for each target they are trying to attain. As the global financial crisis has forcefully demonstrated, a simple mechanism of adjusting only interest rates may not be effective in managing the increasing sophistication of advanced economies' financial systems. So, although discussions still largely revolve around interest rate policies, this volume shows that there is now also much greater attention to balance sheet policies and macroprudential tools and their interaction.

The discussion on negative interest rates has continued in the months since ADBI's 2016 Annual Conference, and policy makers and academics have stressed that negative rates can only be effective when

economic conditions are right. Wage growth, fiscal policy, and structural reforms go hand in hand with monetary policy, and one requires the support of the other. Calls for monetary policy normalization are increasing in frequency now, and as the Fed raises interest rates, other central banks around the world might follow. Negative interest rates are likely to continue to feature in policy debates and will probably intensify again the next time central banks are called upon to stimulate economic growth. We hope that, at that time, the insights presented in this book will help policy makers, researchers, and the interested public to navigate these policies and the increasing sophistication of global finance.

References

Agarwal, R., and M. Kimball. 2015. Breaking Through the Zero Lower Bound. *International Monetary Fund Working Papers* 15(224). 23 October. Washington, DC. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Breaking-Through-the-Zero-Lower-Bound-43358

Asian Development Bank Institute (ADBI). ADBI Annual Conference 2016: The Implications of Ultra-Low and Negative Interest Rates for Asia. https://www.adb.org/news/events/adbi-annual-conference-2016-implications-ultra-low-and-negative-interest-rates-asia

____. ADBI Conference 2016 (1 December 2016): Opening Remarks and Keynote Speeches. Video. 1:11:54. Uploaded 13 February 2017. https://www.youtube.com/watch?v=BKnJS37KbGE&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1&index=1

____. ADBI Annual Conference 2016 (1 December 2016): Distinguished Speaker Session I: Negative Interest Rates in Advanced Economies. Video. 1:12:25. Uploaded 13 February 2017. https://www.youtube.com/watch?v=1Hx061hvHrI

____. ADBI Annual Conference 2016 (1 December 2016): Distinguished Speaker Session II: Implications of Ultra-Low and Negative Interest Rates for Monetary Policy and Macro-Prudential Policy in Asia. Video. 1:27:52. Uploaded 14 February 2017. https://www.youtube.com/watch?v=1xE2LEPE8Qw&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1

____. ADBI Annual Conference 2016 (1 December 2016): Distinguished Speaker Session III: The Implications of Ultra-Low and Negative Interest Rates for Financial Markets in Asia. Video. 1:31:01. Uploaded 14 February 2017. https://www.youtube.com/watch?v=ex-lBqYRCSY&list=PL3GDf1IIofbk1UnACS7f1uOiOUKfqJ8b1

Baba, N., F. Packer, and T. Nagano. 2008. The Spillover of Money Market Turbulence to FX Swap and Cross-Currency Swap Markets. *BIS Quarterly Review*. 3 March: 73–86. https://www.bis.org/publ/qtrpdf/r_qt0803h.htm

Bank for International Settlements (BIS). 2015. *85th Annual Report 1 April 2014–31 March 2015*. Basel. June. https://www.bis.org/publ/arpdf/ar2015e5.pdf

Bank of America Merrill Lynch. BofA Merrill Lynch Asia Emerging Markets Corporate Plus Sub-Index Effective Yield [BAMLEMRACRPIASIAEY]. Retrieved from FRED, Federal

Reserve Bank of St. Louis. https://fred.stlouisfed.org/series/BAMLEMRACRPIASIAEY

Bernanke, B. 2016. Modifying the Fed's Policy Framework: Does a Higher Inflation Target Beat Negative Interest Rates? *Brookings*. 13 September. https://www.brookings.edu/blog/ben-bernanke/2016/09/13/modifying-the-feds-policy-framework-does-a-higher-inflation-target-beat-negative-interest-rates/

Blanchard, O., G. Dell'Ariccia, and P. Mauro. 2010. Rethinking Macroeconomic Policy. *IMF Staff Position Note* 10(03). 12 February. Washington, DC. https://www.imf.org/external/pubs/ft/spn/2010/spn1003.pdf

Board of Governors of the Federal Reserve System (US). Effective Federal Funds Rate [FEDFUNDS]. Retrieved from FRED Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/series/FEDFUNDS

Borio, C., R. McCauley, P. McGuire, and V. Shushko. 2016. Covered Interest Parity Lost: Understanding the Cross-Currency Basis. *BIS Quarterly Review*. September: 45–64. https://www.bis.org/publ/qtrpdf/r_qt1609e.pdf

Chui, M., E. Kuruc, and P. Turner. 2016. A New Dimension to Currency Mismatches in the Emerging Markets: Nonfinancial Companies. *BIS Working Paper* 550. March. https://www.bis.org/publ/work550.pdf

Dell'Ariccia, G., L. Laeven, and R. Marquez. 2014. Real Interest Rates, Leverage, and Bank Risk-Taking. *Journal of Economic Theory* 149. January: 65–99. http://www.sciencedirect.com/science/article/pii/S002205311300118X

Dell'Ariccia, G., L. Laeven, and G. Suarez. 2017. Bank Leverage and Monetary Policy's Risk-Taking Channel. *Journal of Finance* 72(2). April: 613–654. http://onlinelibrary.wiley.com/doi/10.1111/jofi.12467/full

Eggertsson, G., and M. Woodford. 2003. The Zero Bound on Interest Rates and Optimal Monetary Policy. *Brookings Papers on Economic Activity (BPEA)* 1. https://www.brookings.edu/bpea-articles/the-zero-bound-on-interest-rates-and-optimal-monetary-policy/European Central Bank. 2016. *Financial Stability Review*. May. https://www.ecb.europa.eu/pub/pdf/other/financialstabilityreview201605.en.pdfEuropean Systemic Risk Board (ESRB). 2016. The ESRB Issues Eight Warnings on Medium-Term Residential Real Estate Vulnerabilities and a Recommendation on Closing Real Estate Data Gaps. 28 November. https://www.esrb.europa.eu/news/pr/date/2016/html/pr161128.en.html

He, D. 2013. Hong Kong's Approach to Financial Stability. *International Journal of Central Banking*. March: 299–313. http://www.ijcb.org/journal/ijcb13q1a12.htm

International Monetary Fund (IMF). 2015. Market Liquidity–Resilient or Fleeting. In IMF. 2015. *Global Financial Stability Report: Vulnerabilities, Legacies, and Policy Challenges: Risks Rotating to Emerging Markets*. October. Washington, DC. https://www.imf.org/External/Pubs/FT/GFSR/2015/02/pdf/c2_v2.pdf

____. Interest Rates, Government Securities, Government Bonds for Japan [INTGSBJPM193N], retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/series/INTGSBJPM193N

IMF Monetary and Capital Markets Department. 2016. Sweden: Financial System Stability Assessment. *Country Report* 16(355). 17 November. https://www.imf.org/en/Publications/CR/Issues/2016/12/31/Sweden-Financial-System-Stability-Assessment-44404

Kashkari, N. 2016. Lessons from the Crisis: Ending Too Big to Fail. President's Speeches. Federal Reserve Bank of Minneapolis. 16 February. https://www.minneapolisfed.org/news-and-events/presidents-speeches/lessons-from-the-crisis-ending-too-big-to-fail

Kim, S., and A. Mehrotra. 2015. Managing Price and Financial Stability Objectives—What Can We Learn from the Asia-Pacific Region? *BIS Working Papers* 533. December. Basel. https://www.bis.org/publ/work533.htm

Kimball, M. 2012. How Paper Currency Is Holding the US Recovery Back. *Quartz*. 5 November. https://qz.com/21797/the-case-for-electric-money-the-end-of-inflation-and-recessions-as-we-know-it/

Kocherlakota, N. 2016. Sluggish Inflation Expectations: A Markov Chain Analysis. *National Bureau of Economic Research Working Paper*. 22009. February. Cambridge, MA. http://www.nber.org/papers/w22009

Krishnamurthy, A., and A. Vissing-Jorgensen. 2012. The Aggregate Demand for Treasury Debt. *Journal of Political Economy* 120(2). April: 233–267. http://www.journals.uchicago.edu/doi/abs/10.1086/666526

____. 2011. The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy. *BPEA*. Fall: 215–265. https://www.brookings.edu/wp-content/uploads/2016/07/2011b_bpea_krishnamurthy.pdf

Krugman, P. 1998. It's Baaack: Japan's Slump and the Return of the Liquidity Trap. *BPEA* 2. 137–205. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.320.9837&rep=rep1&type=pdf

Nam, M., and J. Jeong. 2016. Impacts of Unconventional Monetary Policy of Major Central Banks on Domestic Inflation. *Monthly Bulletin*. The Bank of Korea. (in Korean).

Reifschneider, D., and I. Williams. 1999. Three Lessons for Monetary Policy in a Low Inflation Era. *FEDS Working Paper* 99(44).

16 November. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=186013

Skingsley, C. 2016. Should the Riksbank Issue an e-krona, a Central Bank Digital Currency? Speech given at FinTech Conference. Stockholm. 16 November. http://www.riksbank.se/en/Press-and-published/Speeches/2016/Skingsley-Should-the-Riksbank-issue-e-krona/

Turner, P. 2014. The Global Long-Term Interest Rate, Financial Risks and Policy Choices in EMEs. *BIS Working Papers* 441. February. Basel. https://www.bis.org/publ/work441.pdf

Wong, E., A. Tsang, and S. Kong. 2014. How Does Loan-to-Value Policy Strengthen Banks' Resilience to Property Price Shocks—Evidence from Hong Kong. *Hong Kong Institute for Monetary Research Working Paper* 2014(03). February. Hong Kong, China. http://www.hkimr.org/uploads/publication/374/wp-no-03_2014-final-.pdf

Wong, E., T. Fong, K. Li, and H. Choi. 2011. Loan-to-Value Ratio as a Macro-Prudential Tool—Hong Kong's Experience and Cross-Country Evidence. *Hong Kong Monetary Authority Working Paper* 2011(01). February. Hong Kong, China. http://www.hkma.gov.hk/media/eng/publication-and-research/research/working-papers/HKMAWP11_01_full.pdf

Zamorski, M., and M. Lee. 2015. Enhancing Bank Supervision in Asia: Lessons Learned from the Financial Crisis. *Asian Development Bank Economics Working Paper Series* 443. August. Manila. https://www.adb.org/sites/default/files/publication/172481/ewp-443.pdf

Zhang, L., and E. Zoli. 2014. Leaning Against the Wind: Macroprudential Policy in Asia. *IMF Working Paper* 14(22). Washington, DC. https://www.imf.org/external/pubs/ft/wp/2014/wp1422.pdf

The Implications of Ultra-Low and Negative Interest Rates for Asia

Twenty years after the East Asian financial crisis, Asia is facing challenges as advanced economies implement unprecedented low and negative interest rate policies to jumpstart moribund economies and avoid deflation. As the longer ends of yield curves in many advanced economies plunge into negative territory, fears are growing that these policies may create unintended side effects, including cash hoarding, housing bubbles, and damage to banks' balance sheets. It has long been argued that Asian financial markets are influenced more by the monetary policies of advanced economies than their own, so Asia may be affected disproportionally by volatile swings of currencies, international capital flows, and debt levels.

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