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EDITORIAL

Accommodative monetary policy to continue until a sustained adjustment in the path of inflation is reached

28 SEP 2017 4:30 PM • BANK OF FINLAND BULLETIN 4/2017 • EDITORIAL

The amount of underutilized domestic capacity is expected to gradually be taken up, and the global economy's generally favourable outlook will support growth in the euro area. Together these factors support expectations that the inflation rate will slowly return to the policy objective.



The economic expansion accelerated in the euro area more than expected in the first half of 2017 and continues to be solid across a range of countries and sectors. The amount of underutilized capacity within the economy is expected to gradually be taken up, and the global economy's generally favourable outlook will support recovery in the euro area. Together these factors support expectations that the inflation rate will slowly return to the policy objective, even if inflation has so far remained relatively subdued. A substantial degree of monetary accommodation is still needed for underlying inflationary pressures to gradually build up and support headline inflation developments in the medium term.

The ECB Governing Council will this autumn decide on the calibration of its policy instruments beyond the end of the year, taking into account the expected path of

inflation and the financial conditions needed for a sustained return of inflation rates towards levels that are below, but close to, 2%.

Forward guidance on interest rates is a constant feature of the ECB's non-standard monetary policy measures. Forward guidance is effective if it influences market expectations of future interest rates. An analysis conducted at the Bank of Finland indicates that the prevailing time-contingent forward guidance, which links the first ECB interest rate hike explicitly to the duration of the APP, has influenced market expectations on the timing of interest rate hikes.^[1] Even as economic recovery in the euro area has gained momentum, market expectations on the timing of the first interest rate hike have not shortened excessively. Indeed, they have persisted consistent with the ECB's forward guidance linked to the duration of the net purchases. *Forward guidance has become a constant feature of monetary policy, enhancing its transparency. Forward guidance will also in the future help economic agents interpret the monetary policy measures of the central bank.*

Why has the ECB Governing Council adopted a quantitative price stability objective of 'below, but close to, 2%' for the Eurosystem? Firstly, adoption of the definition serves to anchor inflation expectations and improve the transparency of monetary policy. Secondly, the implementation of monetary policy calls for flexibility, which explains the adoption of a medium-term objective for the euro area as a whole. And finally, price stability is an important primary objective of monetary policy in that it supports economic growth in the long term.

The quantitative definition of price stability does not imply that monetary policy would, in all conditions, be persistently geared towards keeping the average rate of inflation in the euro area below 2%. This would tighten monetary policy more than intended and cause inflation expectations to drop well below 2%.^[2] It is therefore possible that inflation will, at times, be above 2% – as, indeed, has been seen in the past – which increases the symmetry of the inflation objective.

The euro area's accommodative monetary policy has also bolstered the recovery of the Finnish economy. Lending rates remain low, and the euro area has seen continued economic growth, which is important for Finland's export sector. Furthermore, Finnish exports are receiving support both from the outlook for the global economy and from the Competitiveness Pact, which came into force at the turn of the year.

With a revival in both exports and corporate investment in machinery and equipment, the recovery of the Finnish economy is more broadly based and solid than earlier. The economic recovery, together with the fiscal consolidation measures adopted in recent years, has reduced the general government deficit, and this trend is expected to continue. That said, the long-term sustainability of general public finances is not ensured, given

1. Eskelinen, Maria – Kortela, Tomi (2017) [Are market expectations in line with the forward guidance of the ECB?](#) Bank of Finland Bulletin 4/2017.

2. Łyziak, Tomasz – Paloviita, Maritta (2016) [Anchoring of inflation expectations in the euro area: recent evidence based on survey data.](#) ECB Working Paper Series No 1945. See <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1945.en.pdf>.

that population ageing will, in the coming years, increase pension and care expenditure and reduce the size of the working-age population.

Hence, it is of key importance that the consolidation measures designed to strengthen Finland's economy continue to be implemented. The losses in competitiveness of the previous decade have been partly offset, but the work is not yet complete, and this progress must be sustained. Most urgent are measures to foster growth in employment and productivity, with a special focus on youth unemployment. It is also essential to strengthen the public finances and improve their long-term outlook.

Consolidation of Economic and Monetary Union (EMU) is a key priority. Finland would also benefit from continued discussion on the enhancement of the institutional arrangements of EMU. The Single Supervisory and Resolution Mechanisms of the Banking Union are already in place, but completion of Banking Union also requires establishment of a common deposit insurance scheme. This issue has been under preparation for a long time.^[3] However, before a changeover to a common deposit insurance scheme can occur, we must ensure that a phased solution has been found to the problem of non-performing loans and that sufficiently uniform criteria have been employed in assessing the risk position of banks joining the scheme, to ensure appropriate capital adequacy. A common insurance-type deposit guarantee is in the interests of both individual countries and EMU.

A Capital Markets Union (CMU) will pave the way for increasingly effective risk sharing on the financial markets. The CMU will provide for more efficient financial intermediation and diversification of funding sources. However, to ensure progress of the initiative as a whole, priority must be given to the objectives of the broad action plan. Similarly, openness and initiative on the part of Member States in advancing the projects will also play a key role.

Helsinki 28 September 2017

Erkki Liikanen
Governor of the Bank of Finland

Tags

competitiveness, monetary policy, price stability, EMU

3. Improving the resilience of Europe's Economic and Monetary Union (2015) Ministry of Finance publications – 37b/2015. See <http://vm.fi/en/publication?pubid=7801>.

Growth picking up but inflation remains subdued

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • MONETARY POLICY

Global economic growth is broadly based and brisk in the current year. World trade, in turn, is experiencing a growth spurt. At the same time, inflation remains subdued. After an upward spike stemming from oil prices at the turn of the year, inflation has moderated again globally.



In 2016, global economic growth was still at its slowest since the financial crisis. The Bank of Finland forecasts global growth strengthening to 3.5% in 2017 and continuing at annual rates well above 3% through 2018–2019. There will also be a marked acceleration in global trade, following exceptionally weak dynamics in 2016.

Following the cyclical recovery in the global economy, slow potential growth in the advanced economies and economic restructuring in China will dampen the momentum of growth. The risks to global growth have eased, but remain tilted on the downside. However, there is potential for some positive alternative paths, should productivity growth accelerate and structural reforms continue.

Economic growth in the United States continues, even though expectations about stimulus measures have abated and the direction of economic policy is unclear. Chinese growth is expected to slow, albeit slightly later than forecast in the spring. The Chinese economy is expected to grow by 6% in 2018 and 5% in 2019.

China is the world's largest economy in terms of purchasing power-adjusted data, which means that it also has a significant impact on the global economy. In fact, the weight of advanced economies in the global economy has decreased. A stronger-than-forecast deceleration in China's debt-driven growth would weaken confidence globally and put a substantial brake on growth.

The European economy is expanding at a steady pace, and firm economic developments in the euro area will compensate for the somewhat moderating dynamics stemming from Brexit. Euro area GDP has grown at a rate of about 2% in recent years. Despite robust growth, core inflation has only very recently shown signs of a slight pick-up, supported by the ECB's monetary policy.

Investment in the euro area has rebounded, and employment has continued to grow for around the past four years. The global cyclical upswing also supports euro area growth. In addition to the economic upswing, structural reforms, too, have underpinned employment growth by raising the participation rate. Economic restructuring measures lend support to productivity growth, and therefore also longer-term economic growth. Therefore, there is potential for more positive economic developments than forecast.

The pace of structural reforms has slowed from the crisis years, however, and many euro area countries still lag behind the world's best-performing economies. In addition, the euro area is still burdened by legacies from the financial and debt crises. Over the longer term, slow population growth and weak productivity performance dampen the euro area growth outlook.

Euro area financing conditions remain favourable

The ECB Governing Council has pursued strong monetary accommodation over the past few years. Key policy rates are exceptionally low. Since March 2016, the main refinancing rate has been 0.0%, the rate on the deposit facility -0.40% and the rate on the marginal lending facility 0.25%. In January 2015, the ECB Governing Council decided to launch an Extended Asset Purchase Programme (EAPP). The net asset purchases, at a monthly pace of EUR 60 billion, will run until the end of 2017, or beyond, if necessary, and in any case until there is a sustained adjustment in the path of inflation consistent with its inflation aim. The ECB Governing Council has announced that it will take a decision in autumn 2017 on the calibration of policy instruments beyond the end of the year. By the end of 2017, the Eurosystem balance sheet will include EUR 2,300 billion worth of securities purchased under the EAPP. Principal payments from maturing securities purchased under the EAPP will be reinvested, past the horizon of the net asset purchases.

The monetary policy measures will maintain accommodative financing conditions until there is a sustained adjustment in the path of inflation consistent with the price stability objective. While the growth outlook for the economy has improved, the price stability objective still lies far ahead, and, therefore, monetary accommodation will remain in place. Although the Governing Council does not expect interest rates to fall further, interest rates are, nevertheless, expected to remain at their present low levels for an extended period of time, and well past the horizon of the net asset purchases.^[1]

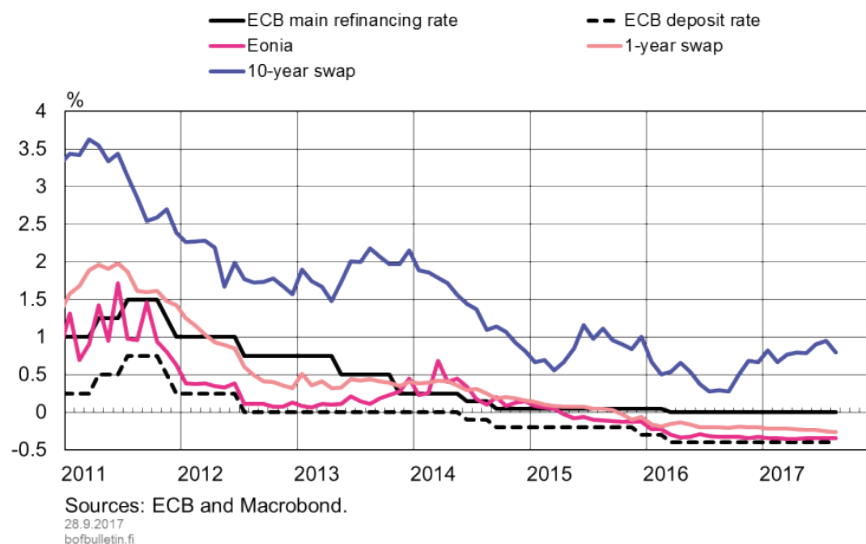
The fixed-rate tender procedure with full allotment adopted during the crisis, together with the abundance of liquidity created by the securities purchases, has made the overnight interest rate Eonia closely shadow the ECB deposit rate (Chart 1). Interbank

1. For closer details on the ECB's forward guidance and its effect on market expectations of interest rate developments, see Bank of Finland Bulletin 4/2017. [Are market expectations in line with the forward guidance of the ECB?](#)

Euribor rates have remained very low during the course of 2017. However, longer-term interest rates have climbed far higher than before, with the spread between short-term and long-term interest rates having grown wider. The 10-year swap rate has risen a full ½ of a percentage point since October 2016 (Chart 1).

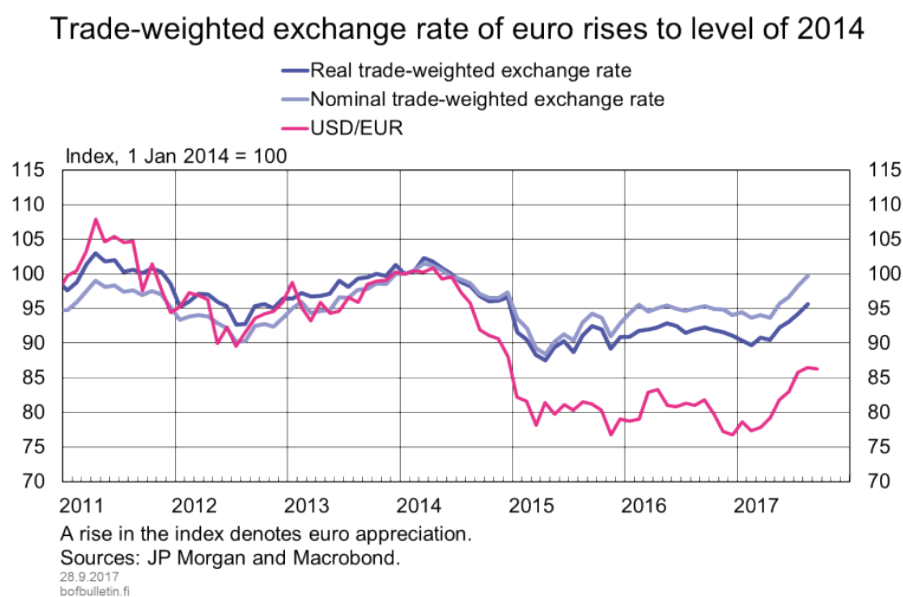
Chart 1.

Longer-term interest rates up slightly



The rise in longer-term interest rates reflects both an improvement in the economic outlook and a moderate strengthening of medium-term inflation expectations, as well as expectations of a gradual unwinding of the non-standard monetary policy measures. The improved outlook for the economy is also demonstrated by the marked appreciation of the euro since spring 2017 (Chart 2). The euro has appreciated notably against all major currencies, with the nominal exchange rate of the euro already largely in line with the level of early 2014, as measured by the broad currency basket. The stronger growth outlook and sizable current account surplus put upward pressure on the euro. The appreciation of the euro/dollar exchange rate is also underpinned by fading expectations of US stimulus measures, political uncertainty in the United States, and expectations regarding the Fed's monetary policy.

Chart 2.



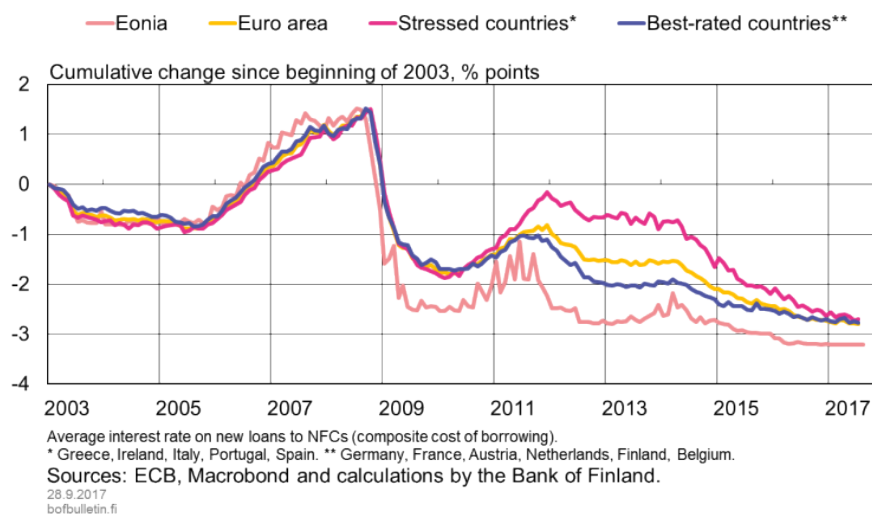
It is important for price stability that financing conditions in the euro area remain favourable. Although the ECB has not adopted an explicit exchange rate target, exchange rate fluctuations may have a significant effect on the inflation outlook and, by extension, on the stance of monetary policy. In addition to interest and exchange rates, asset price developments and access to funding also influence financing conditions. Access to funding, in particular, has eased notably in response to improvements in lending to non-financial corporations (NFCs) and households, and lower borrowing costs.

Better transmission of monetary policy to lending rates

Euro area monetary policy notably influences aggregate demand via the price of bank finance for households and NFCs, given that banks are the main source of funding for the private sector. Central banks usually influence banks' lending rates through policy rate changes. Banks' lending rates are, in turn, reflected in consumption and investment. During the financial and sovereign debt crises, the standard measures for influencing lending rates were insufficient and non-standard monetary policy measures were adopted, such as the Extended Asset Purchase Programme (EAPP). Over the years 2003–2009, the ECB was successful in steering the lending rates charged by banks (Chart 3). At the time, the changes in interest rates on new loans to NFCs mirrored the cumulative fluctuation of Eonia almost to perfection. If Eonia was down by one percentage point, corporate lending rates followed suit, both across the euro area as a whole and in individual euro area countries. This situation changed in 2009. Over the years 2009–2010, the average interest rate on new loans to NFCs in the euro area fell almost one percentage point below Eonia. The spread between euro area countries was at its widest in 2011. In the stressed countries (Greece, Ireland, Italy, Portugal, and Spain), the average rate on new loans to NFCs had, by the end of 2011, risen almost to the level of early 2003.

Chart 3.

In cumulative terms, average interest rates on loans to NFCs declined equally across country groups

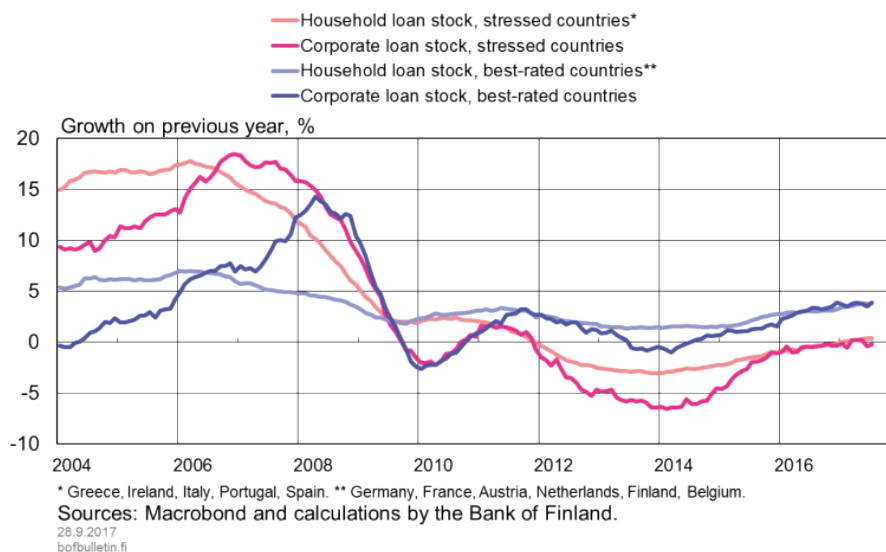


In the most acute stages of the sovereign debt crisis, fluctuations in the Eonia were no longer reflected in the normal way in lending rates throughout the Monetary Union. With a view to enhancing the transmission of monetary policy, the ECB Governing Council in summer 2014 decided on measures to support lending, and in January 2015 on the adoption of an Extended Asset Purchase Programme (EAPP) to maintain price stability. Currently, the decline in interest rates is almost equal to the fall in the Eonia rate by a full 3 percentage points since 2003. In addition, the gap between the two groups of countries has almost been closed. In cumulative terms, the decline in average interest rates on new loans to NFCs in the stressed countries has been nearly equal to that witnessed in the best-rated countries. Presently, the average interest rate on loans to NFCs is 2.2% in the stressed countries and 1.6% in the best-rated countries. When the spread in interest rates between the countries was at its widest, the corresponding average interest rates were 4.3% and 2.4%, respectively.

This examination is merely indicative, as the transmission of monetary policy may, at the same time, have been influenced by e.g. regulatory changes and financial market and economic restructuring. It is, however, obvious that there has been a marked improvement in monetary policy transmission since the crises. The ECB's Bank Lending Survey (BLS) also found that credit standards have been further eased for corporate and housing loans alike.

Chart 4.

Still no growth in the loan stock of debt-stressed countries



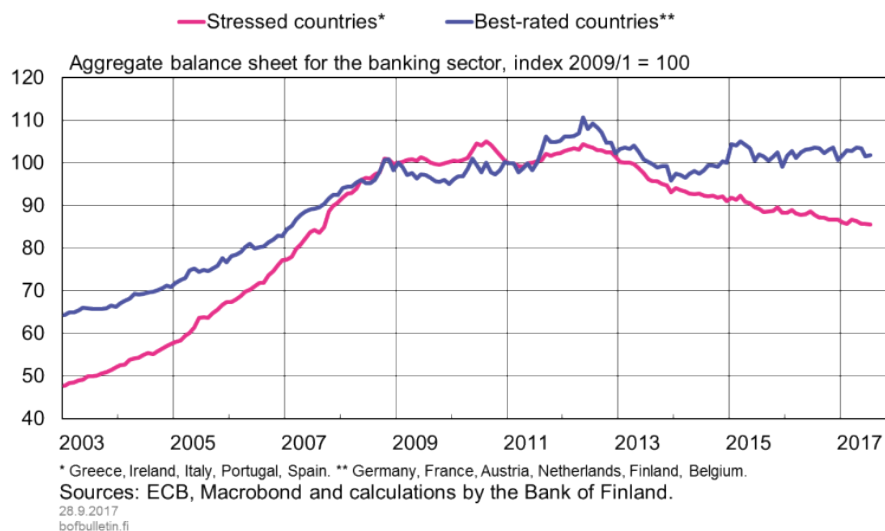
Private-sector loan stock continues to contract in some euro area countries

Euro area stocks of both corporate and household loans are currently posting marked growth (around 2.5%). However, the pace of lending growth still diverges across countries (Chart 4). In some euro area countries, growth in the corporate loan stock has already hit double digits (e.g. Malta and Slovakia), whereas in others the loan stock is set to contract further (e.g. Greece, Ireland, and Portugal). Of the large euro area countries, France has recorded the strongest annual growth in the household loan stock (6%). In Germany and Italy, growth has been broadly in line with the euro area average. However, the household loan stock continues to contract in Spain, Ireland, Greece, Portugal, Cyprus and the Netherlands.

The differences in lending growth across the euro area are also reflected in balance sheet developments for the banking sector as a whole (Chart 5). Indeed, developments in the banking system balance sheet tell the story of the financial crisis. The pre-crisis period was marked by robust lending growth. This growth was particularly strong in the countries that were in the end hardest hit by the crisis. The aggregate size of the banking sectors of Greece, Ireland, Italy, Portugal, and Spain doubled over the years 2003–2008.

Chart 5.

Banks of sovereign debt countries continue to reduce their balance sheets



With the onset of financial crisis, growth came to a standstill, lending growth slowed and banks began to adjust their balance sheets. Capital adequacy was also improved through balance sheet contraction. In the best-rated countries, banking sector balance sheets have already expanded beyond the levels recorded in early 2009. By contrast, banking sector balance sheets continue to shrink in stressed countries.

Lending barely profitable, but banking sector outlook is brighter

The profitability outlook for euro area banks is currently brighter than in recent years. Bank share prices have mainly risen, while risk premia on bank bonds have remained low. According to the Single Supervisory Mechanism (SSM), return on equity (ROE) for euro area banks was 7.1% in the first quarter of 2017, against 5.1% a year earlier. The profitability improvement in the early part of the year is related above all to economic expansion and favourable financial market developments. At the same time, the monetary accommodation pursued by the ECB has kept banks' funding costs at a historical low. Investor confidence in the sector has revived in step with a moderate pick-up in inflation expectations and a wider yield spread. Together with the improvement in economic outlook, this also points to an improvement in the medium-term outlook for banks' results.

The revival of investor confidence is also reflected in the special resilience of bank share price performance to various negative market shocks and political risks. For example, the resolution measures of June 2017 conducted under the auspices of the Banking Union and by Italy and Spain met with a positive response on the financial markets. The minor effects of the measures on other banks are seen as a sign of the banking sector's stronger resilience to problems and of investor confidence in the Banking Union's Single

Resolution Mechanism (SRM). The improvement in capital adequacy has also contributed to banks' higher shock-absorption capacity. According to the ECB, banks' average Tier 1 capital ratio measuring original own funds stood at 14.8% in the first quarter of 2017, while it had still been in the region of 10%, on average, in 2010 before the escalation of the euro area sovereign debt crisis.

Banks' profitability performance nevertheless continues to be overshadowed by many structural and cyclical risks. In Europe, growth in retail banking has remained lacklustre. Due to the low level of interest rates and feeble growth in loan stocks, banks are finding it difficult to meet their operational costs in their retail business, i.e. bank loans. Although growth in banks' other income has been encouraging in the early part of 2017, many banks are still struggling to find other sources of income to offset the decline in net interest income. Furthermore, harsher competition between banks and the increasing role of new players – e.g. in the field of payment services and asset management and in certain credit segments, such as the retail credit market – may further impair the ability of banks to earn additional income in the future.

In addition to suffering from structural problems, euro area banks are also troubled by a substantial amount of non-performing loans on their balance sheets. According to the Single Supervisory Mechanism (SSM), non-performing loans of euro area banks amounted to EUR 865 billion in the first quarter of 2017, which is 9% less than a year earlier. This positive trend notwithstanding, large amounts of non-performing loans continue to erode the profitability of some banks and contribute to upholding the differences in lending volumes between euro area countries. The market expects European banks to clear their balance sheets of bad loans worth at least EUR 80–90 billion in the current year.^[2] The large amount of non-performing loans makes it necessary to continue the measures designed to reduce bad loans, thus strengthening confidence in the banking sector, supporting banks' access to funding and improving their future lending capacity.

Given current developments in banking income, the profitability outlook for euro area banks is likely to remain constrained in the immediate years ahead, while still being brighter than over the past few years. Future profitability will also depend on banks' efforts to adjust their operations to reflect changes in the operating environment and stricter regulations, as well as on economic developments. To improve their long-term profitability, many banks are rethinking their operations and strategies. Banks are optimistic about the cost savings to be gained especially from automation and digitalisation. That said, IT investment and digitalisation initiatives have also significantly added to banks' costs, and therefore cost-to-income ratios for euro area banks have remained persistently high. Due to the high expense of reform projects, there is a risk that less profitable banks that are struggling with old problems will not be able to renew themselves.

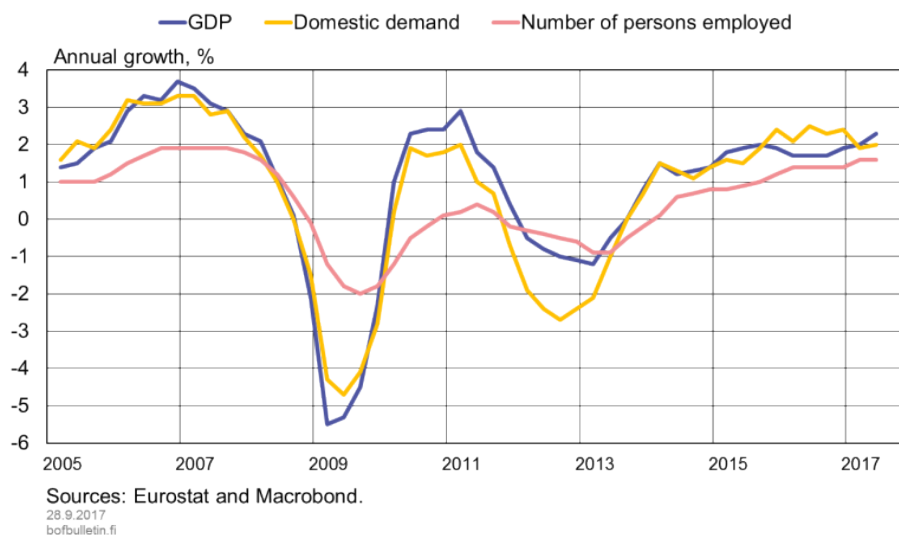
2. In addition to the restructuring of Spanish and Italian banks undertaken in spring 2017, market expectations are also driven by a range of supervisory initiatives, including the forthcoming IFRS 9 update, the ECB's guidance to banks on non-performing loans (issued in spring 2017) and the 2017 Transparency Exercise of the European Banking Authority (EBA).

Euro area economy growing, supported by monetary policy

Confidence in the euro area economy has remained solid throughout 2017. All key confidence indicators predict robust growth to continue into the upcoming quarters (Chart 6).

Chart 6.

Euro area growth picking up and employment on the rise



Private consumption and investment have been the main components of aggregate demand contributing to economic growth in the euro area in recent years. The composition of growth is expected to remain largely unchanged through the immediate years ahead. Public consumption will make some contribution to growth on average, but the contribution of net exports will be very modest.

Employment has now seen four years of uninterrupted growth. In the first quarter of 2017, euro area employment was up by 1½% from a year previously. By country, employment growth has been widespread, although this can be partly attributed to fiscal measures. Unemployment fell to 9.2% in the second quarter, reaching its lowest level since early 2009.

Private consumption will be bolstered in the euro area by an increase in households' disposable income amid a steadily improving employment situation and higher labour income per employee. At the same time, a slight increase in the rate of inflation will temper growth in real disposable income.

Household indebtedness relative to income has fallen in the euro area by a few percentage points from the levels reached in 2011 and is now at approximately 95% of disposable income. Debt-servicing costs relative to income have continued to fall in the major euro area economies. Germany and Spain, in particular, have seen their debt service ratios (i.e. interest expenditure and loan amortisations as a percentage of net

income) fall under their long-term averages. France, however, is a notable exception, in that its debt service ratio has remained approximately 10% above its historical average. France is also the only country out of the major economies whose growth in total household debt has accelerated faster than growth in available income.

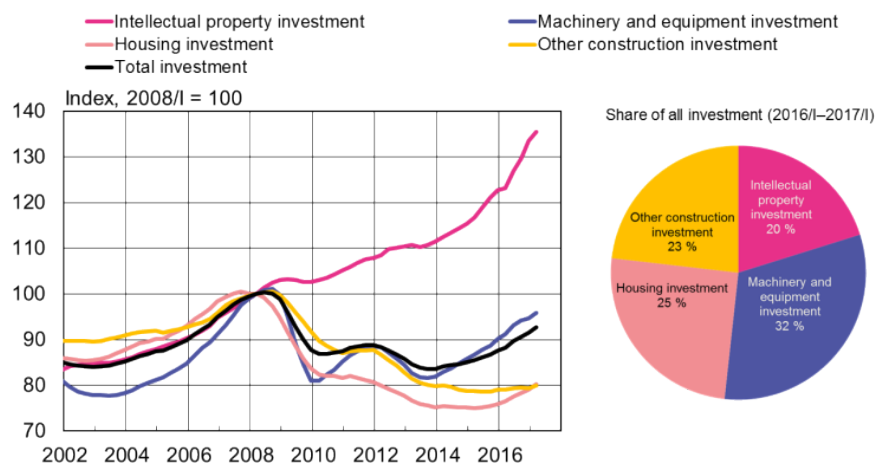
Increased corporate investment in the euro area

The corporate sector is responsible for more than half of the fixed investment within the euro area. As firms have improved their balance sheets in the years since the financial crisis, internal finance is used to fund an increasingly large share of investment. As a result, an upturn in corporate sector profits and available income has also resulted in an upsurge in investment. Nevertheless, as of the first quarter of 2017, investment had not yet returned to the levels reached before the onset of the financial crisis (Chart 7). This is mainly due to construction investment alone accounting for almost half of all fixed investment. Housing and other construction-related investments collapsed during the crisis and still remain approximately 20% below their 2008 levels.

Immaterial investment (e.g. investment in R&D or computer software) did not experience a similar decline during the crisis and has actually increased by over 30% since 2008. Immaterial investment has grown from 12% of total corporate investment in 1995 to more than 20% by the beginning of 2017.

Chart 7.

Broadly based pick up in investment



The rise in intellectual property investments towards the end of 2016 is largely due to Ireland where annual growth in the fourth quarter of 2016 accelerated to 85%, as some multinational corporations shifted their operations to Ireland.

Sources: Eurostat and calculations by the Bank of Finland.

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According to SAFE (Survey on the Access to Finance of Enterprises), the ECB’s semi-annual survey measuring access to corporate finance, the half-year period ending in March 2017 saw the fewest corporate loan rejections since the onset of the financial crisis. Firms also reported improved revenues, stable product development cycles and rising costs. According to a corporate survey issued by the European Commission, only a fifth of manufacturing companies reported their output to be limited by inadequate demand. This is in stark contrast to the worst phase of the financial crisis, when 60% of

respondents reported that production was constrained by demand. Instead, the availability of labour has become an issue for 10% of manufacturing companies, the highest reported level since early 2008. The outlook for the construction sector is largely analogous to that of the manufacturing sector, except that the former is still plagued by the financial crisis' impact on the availability of finance.

Companies expect demand for labour to increase across all sectors (services, construction, industry and retail) in the third quarter of the year and maintain a positive outlook on employment. Confidence indicators and purchasing managers' indices also remain positive across all sectors, and industrial order books are at their highest since before the financial crisis.

Furthermore, the corporate sector is continuing to deleverage. Corporate debt relative to value added has dropped by 10 percentage points since 2009 and currently stands at 120%. Similarly, companies' debt service ratios (i.e. interest expenditure and loan amortisations as a percentage of net income) have clearly improved in the large euro area economies, most notably in Italy and Spain. The corporate sector has in fact become increasingly financially self-sufficient since the financial crisis. According to SAFE, the reasons for corporate deleveraging include a desire for higher credit ratings and improved balance sheets going into the future.

Overall, the outlook for non-financial corporations has improved in the past year. Growth in private fixed investment will be buttressed by the very low interest rate environment, improved availability of finance, the need to renew the capital base after years of weak investment activity, and the lower level of the capital ratio for corporate sector debt. It appears that the recent upswing in the corporate sector has resulted in a virtuous circle, as growth expectations foster an appetite for investment and recruitment.

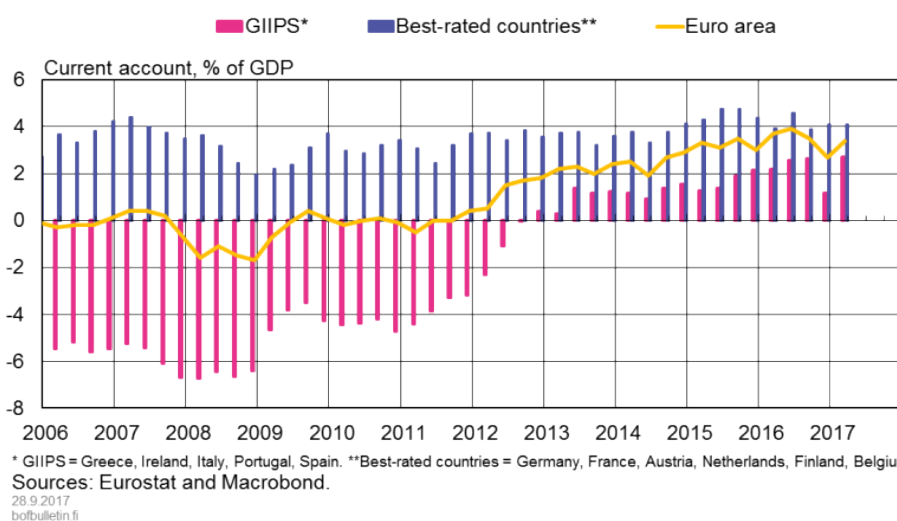
Current account surplus historically large

Many euro area economies ran large current account deficits leading up to the financial crisis. The significant deficits of the GIIPS-countries^[3] have eased in response to consolidation measures and reforms (Chart 8). Currently the Netherlands, Germany, Slovenia and Malta all have exceptionally large current account surpluses. In fact, in 2016 as many as 13 out of 19 euro area countries ran current account surpluses. Consequently, the aggregate current account surplus of the euro area has reached approximately 3% of GDP, while it was close to zero before the crisis. This development can be explained by low commodity prices (most notably oil) and the continued low rate of investment. In addition, exports have been bolstered by the depreciation of the euro from its peak values.

3. Greece, Italy, Ireland, Portugal and Spain.

Chart 8.

Inflation accelerated in early 2017 and then stalled due to the price of energy



Cost-competitiveness can be harnessed to steer the external balance of the economy and boost employment. Cost-competitiveness indicators have shifted across the euro area in recent years and reflect well the policies that each Member State would need to adopt to balance their current account. Germany, who runs a large trade surplus, has experienced the largest hike in costs when measured by unit labour costs. Cost developments have been modest in Portugal, Greece, Spain and Cyprus, whose economies are all still recovering from the financial crisis. Finland, in turn, has experienced the largest drop in unit labour costs out of all of the euro area economies.

Growth outlook improved for large euro area economies

Germany experienced strong economic growth in the first half of 2017, bolstered by consumption and investment in both the public and private sectors. Housing investment has increased fairly strongly, and industrial and public investment are both also on the rise. The German economy is projected to sustain its growth into the immediate years ahead, fuelled by private consumption and increasing employment. Germany's economic fundamentals are in order: the economy remains cost-competitive, household and public debt are at moderate levels, and unemployment ranks among the lowest in the euro area. On the back of a general government surplus and the lowest debt ratio among the large euro area countries, Germany is well-equipped to support its economy via fiscal measures if required.

France's economy is expected to show improved signs of growth in the current year, up from its 2016 level of around 1%. Domestic demand spurred growth in early 2017. Growth is also projected to remain relatively strong into the next few years, on the back of private consumption and investment. The economy is also being supported by a strong increase in lending, owing to low bank lending rates. The new French Government has set a target of keeping its fiscal deficit within the margins of the Stability and Growth

Pact (i.e. at most 3% of GDP). High structural unemployment makes unemployment fall more slowly, an issue that upcoming labour market reforms will attempt to tackle.

Italy saw faster GDP growth than projected in the first half of 2017, and growth forecasts for the year have accordingly been revised up to a good 1%. This notable increase in growth can be explained by an upswing both in investment activity and exports as well as an unforeseen boost in private consumption owing to improvements in employment. Employment is indeed on the rise; however, this has not been accompanied by a decrease in unemployment, as the recent positive development stems from a higher participation rate. This is Italy's third consecutive year of GDP growth following an extended period of recession.

The Spanish economy has grown robustly since the turnaround in 2013. Already in early 2017, GDP reached the same level as prior to the financial crisis. Growth is projected to continue at a stronger pace than the euro area average, but gradually moderating. Economic growth is supported by structural reforms, improved price-competitiveness, a moderate rise in house prices and favourable financing conditions. The ongoing brisk pace of growth will lower unemployment and boost inflation. This positive trend will work to improve the state of the public finances, but the ratio of public debt to GDP still remains around 100%.

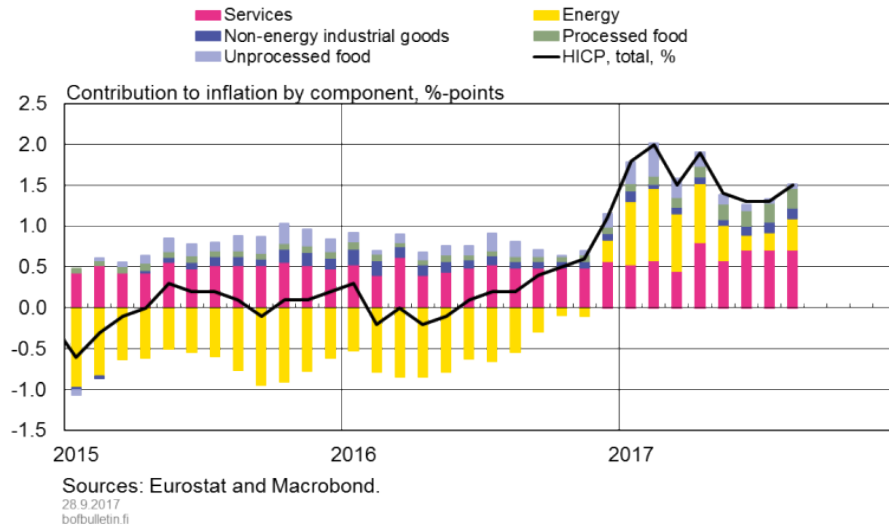
Inflation still subdued despite cyclical upswing

The euro area enjoyed brisk growth in the first half of 2017; the output gap, which measures the level of unused capacity in the economy, is expected to close sooner than previously forecast in the spring. However, the rate of inflation is not displaying signs of sustained acceleration.

In the beginning of the year, inflation was primarily driven by the base effect of energy prices, i.e. the increase relative to the reference period of the previous year. The price of oil increased by approximately 70% from January 2016 to January 2017, significantly spurring consumer price inflation in the first quarter. The energy component's effect on euro area inflation was on average approximately 0.8 of a percentage point between January and April. The base effect weakened further on in the year, and inflation slowed. In August, euro area consumer price and core inflation (the latter of which excludes energy and food prices) stood at 1.5% and 1.2%, respectively.

Chart 9.

Inflation accelerated in early 2017 and then stalled due to the price of energy

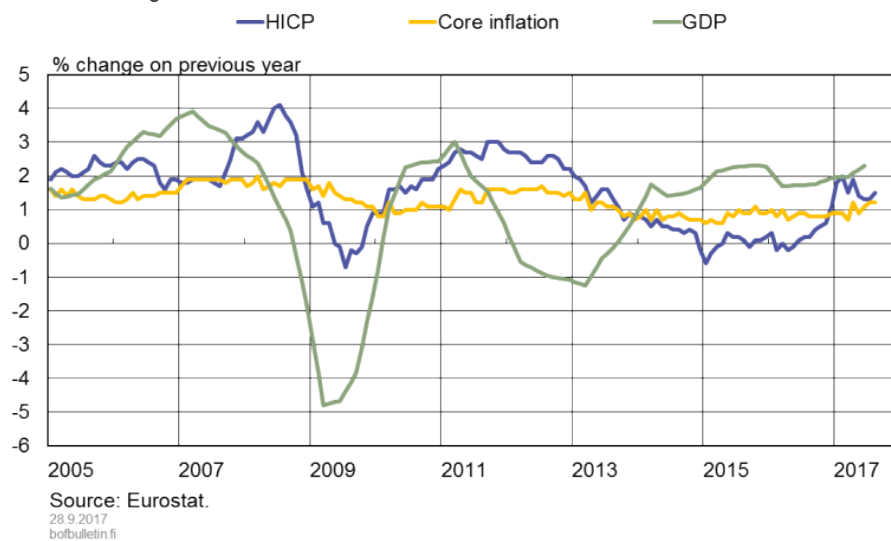


The euro area's external price pressures, both those stemming from global inflation and those stemming from commodity prices, remain moderate. The recent appreciation of the euro will also offset inflationary pressures that a possible increase in euro area import prices might otherwise induce. The euro area is a large internal market unto itself, and as such, exchange rates only have a limited impact on import prices and are slow to affect consumer prices. Insofar as the euro's appreciation reflects the improved growth outlook of the euro area, the impact of the currency's appreciation on inflation will decrease even further. On the other hand, should the appreciation of the euro stem from factors exogenous to the euro area, inflationary pressures might be tempered to a greater extent.

Chart 10.

Growth is brisk, but price pressures remain low

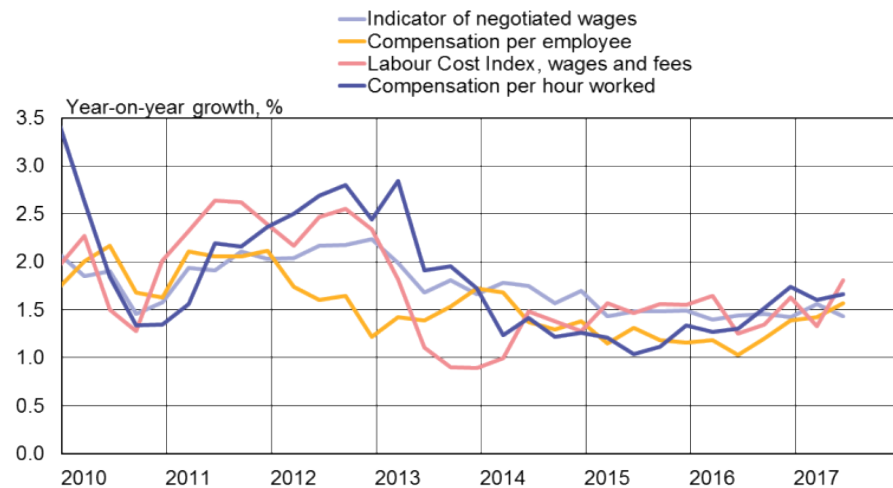
Euro area growth and inflation



Core inflation, which measures internal price pressures affecting the euro area, has hardly increased at all. A relatively high unemployment rate and labour market reforms in several countries have together kept wage pressures low. Growth in labour costs in the euro area has been slower than before the global financial crisis. This might not, however, be a consequence of the crisis itself, but could instead be the result of improved efficiency on global markets for factors of production. Increased competition, digitalisation and the easy transferability of know-how together mean that companies are better equipped to optimise their supply chains. This optimisation can be interpreted as an increase in the elasticity of demand for factors of production (e.g. labour and capital). In a situation like this, workers might accept increasingly moderate pay rises in order to keep their jobs. It is very likely, then, that wage pressures in the euro area have been subdued due to these very factors.

Chart 11.

Euro area wage pressures remain moderate



Sources: ECB and Macrobond.

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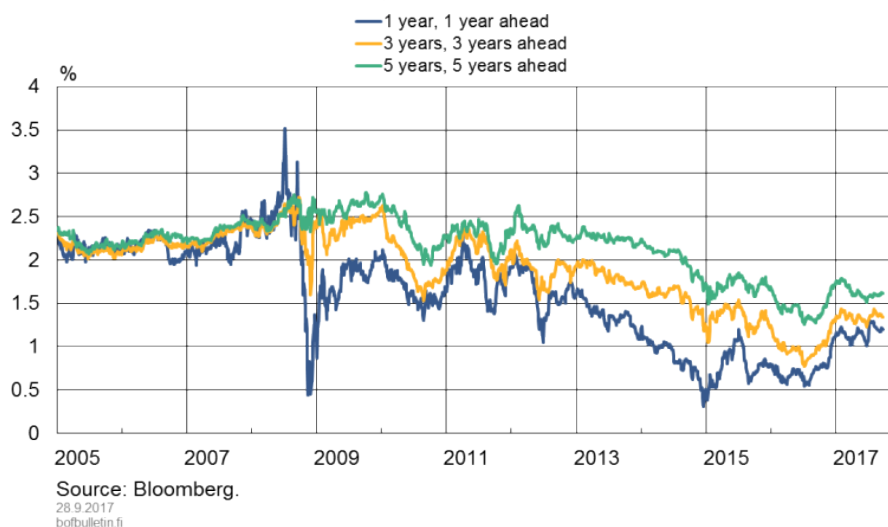
The improved condition and positive outlook of the euro area economy, do, however, create the necessary backdrop for an increase in demand and, consequently, growing wage pressures, as long as unemployment slowly decreases and unused production capacity is brought back into play. Yet, there is a concern that even considerable improvements in the real economy might not translate into higher inflation, at least to the extent previously expected. There have been signs of this in the major economies, where inflation has remained lower than expected despite the growth in the economy.

From the perspectives of monetary policy and the price stability objective, the essential long-term inflation expectations are still relatively low. At the same time, surveys by professional forecasters still put long-term expectations at approximately 2%. Overall, inflation expectations project that euro area inflation will not pick up significantly and that adjusting the rate path towards the price stability objective will take time.

Chart 12.

Inflation expectations up from all-time lows

Market-based euro area inflation expectations



Currently, inflation is expected to slow again at the beginning of 2018 due to transient factors. After this, it is expected to accelerate gradually. Even though the acceleration of inflation is still characterised by uncertainty, sustained economic growth will support rate paths adjusting to the price stability objective in the years ahead.

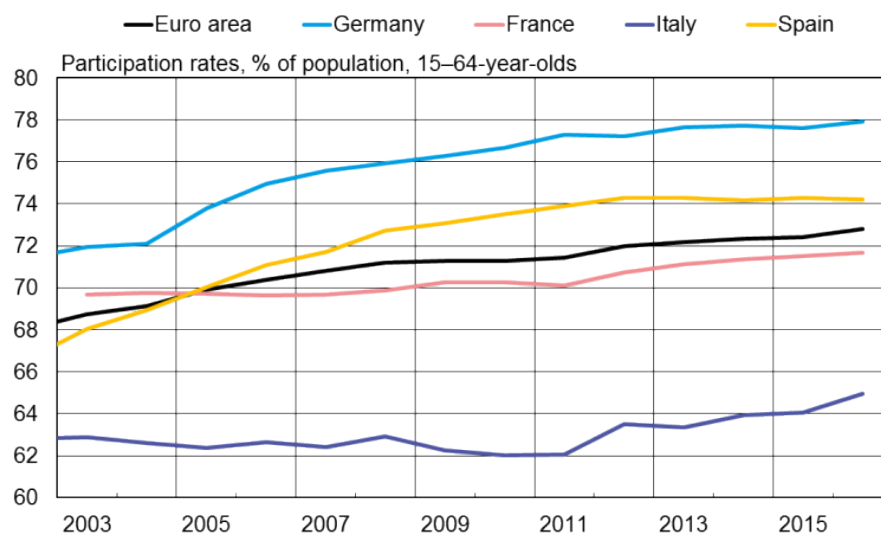
Structural reforms ease the challenges from an ageing population

Even though euro area economic growth has recently gained momentum, it has still remained moderate since the financial crisis. This has reflected slow population growth in the euro area and weak productivity performance in all the largest euro area economies. In recent years the working-age population (15–64-year-olds) has grown at a subdued pace in the euro area, and has even contracted in many euro area Member States, including Spain and Italy, which are among the largest countries. Sound economic structures impact on employment and productivity growth positively, thereby easing the adverse economic effects of an ageing population. At the same time, sound economic structures contribute to strengthening the effectiveness of monetary policy by raising the natural rate of interest^[4], improving monetary policy transmission and reducing economic rigidities.

4. The natural rate of interest is the real interest rate that brings the economy into equilibrium and would prevail if output were at its potential level, i.e. in a situation where the economy is in neither an upswing nor a downswing. The equilibrium would lead to stable inflation over the long term.

Chart 13.

Participation rates of working-age population on the increase



Sources: Eurostat and Macrobond.

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Structural reforms have considerably raised the participation rate (the sum of the number of persons employed and unemployed relative to all persons aged 15–64) in the euro area, which mitigates the effects of the contracting working-age population on economic growth. The euro area participation rate for 15–64-year-olds has risen by over 2 percentage points in the past ten years. The participation rate has increased in all the largest Member States, and also particularly in the Baltic States and Malta. The positive development reflects primarily more active labour participation by women aged 50–64. This has been supported by pension reforms, higher educational levels and the improved health situation of the population (Chart 13).

Deregulation and easing the conditions for business activity support productivity and economic growth. In this respect, structural reforms have been a vital condition for economic stimulus packages granted to euro area crisis countries. The reforms implemented are reflected in the World Bank’s Doing Business^[5] indicators which have improved relative to 2010 for Spain, Italy, Greece, Portugal and the Baltic States.

All in all, several euro area countries still lag far behind the world’s best product and labour market structures. There are also considerable differences between euro area Member States. Nevertheless, progress with the implementation of reform measures has slowed since the crisis years. Structural reforms could still further improve the functioning of the economy and monetary policy transmission in the euro area.

5. The indicator aims at measuring the ease of doing business on the basis of 11 indicator sets essential for carrying out business operations.

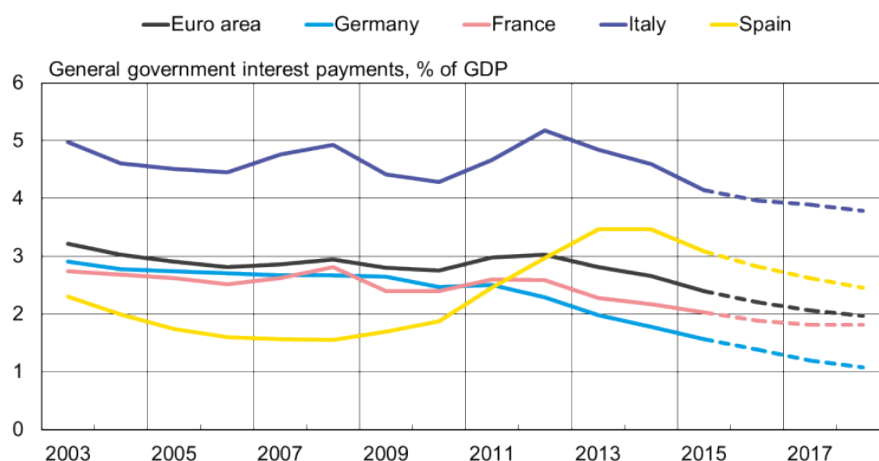
General government finances improving slowly in the euro area

The euro area general government debt ratio, which reached its peak (around 92% relative to GDP) in 2014, declined to around 90% in 2016 and is expected to continue on a gradual downward trend. However, the significant differences in debt ratios across euro area countries are not disappearing. In France, Italy and Spain, the level of public sector debt is expected to remain roughly unchanged in the next few years, while in Germany the debt-to-GDP ratio is set to decline notably.

The general government headline deficit ratio for the euro area is expected to fall somewhat in the current year, from 1.5% of GDP in 2016. Even in 2016, the headline deficit was quite low by historical standards. Similar to public debt-to-GDP ratios, euro area countries appear to remain divergent also in terms of the size of their deficits. In Germany, general government finances will remain in surplus, while the other large euro area countries will post significant deficits.

Chart 14.

General government interest payments in euro area declining



The figures for 2016–2018 are from the European Commission's spring 2017 Economic Forecast. Source: European Commission.

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The fiscal situation in the euro area has improved in the past couple of years due to cyclical conditions and declining interest payments. Of these two factors, cyclical conditions are the more important. Nevertheless, falling interest payments have also notably boosted the public finances. The prevailing level of interest rates is still very low. Interest payments have contracted because maturing longer-term loans carry higher interest rates than the new loans taken out to replace them (Chart 14).

The third factor impacting the state of and outlook for the public finances – discretionary fiscal measures – has no longer been an important element in stabilising euro area general government finances in recent years. The fiscal policy outlook in the euro area has remained roughly unchanged from spring 2017, and the fiscal stance in the immediate years ahead is expected to remain broadly neutral.

Even though the public finances will improve in the near term because of low interest rates and economic growth outpacing the rate of potential growth, the general government debt-to-GDP ratio will remain high. Under less favourable conditions, high debt ratios could cause significant problems for certain euro area countries. Therefore, in making decisions on fiscal policy, countries should also prepare for less favourable times. From the perspective of maintaining confidence on the financial markets, this is all the more important for countries with high levels of public debt.

Tags

[ECB](#), [employment](#), [inflation](#), [monetary policy](#)

FORECAST FOR THE GLOBAL ECONOMY

Upswing in the global economy

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • ECONOMIC OUTLOOK

Global economic growth is broadly based and brisk in 2017. The Bank of Finland foresees global growth strengthening to 3.5% in 2017 and continuing at well over 3% throughout 2018–2019. World trade is experiencing a surge. Global inflation is, however, still subdued. Economic growth in the United States and the EU22 will continue, and Chinese growth will decelerate later than previously expected. Towards the end of the forecast horizon 2017–2019, the growth pattern of the global economy will dampen slightly. Despite the decrease in risks to growth, growth may be slower than forecast.



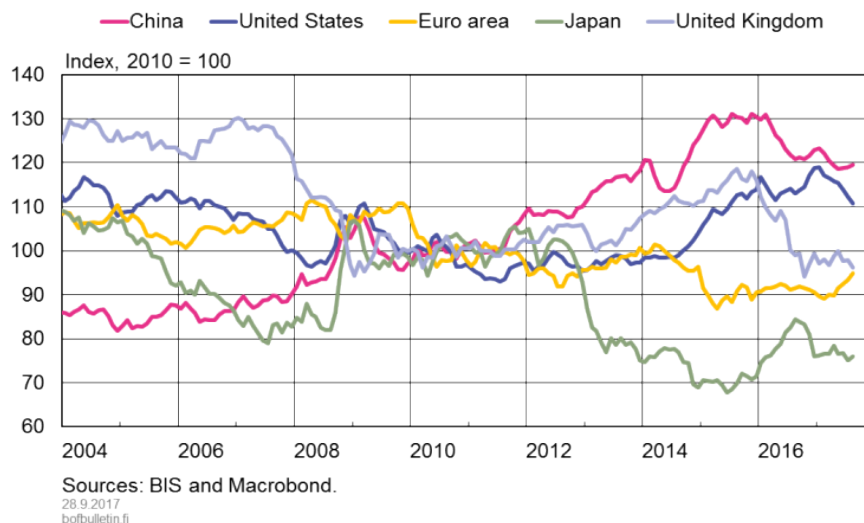
Euro has strengthened

In early 2017, there were still strong expectations in the US of stimulus measures, but these have now faded. This, together with the upcoming UK departure from the EU, has been reflected in exchange rates. Sterling depreciated already at the time of the Brexit referendum, whereas the US dollar began to weaken in spring 2017. The outlook for economic growth in the euro area has strengthened and political uncertainty has decreased, which is reflected in appreciation of the euro.

Real exchange rates (Chart 1) take account of the nominal exchange rate and price developments. If a strengthening of the nominal exchange rate is accompanied by slower inflation relative to global developments, the real exchange rate –one of the measures of cost-competitiveness – may remain unchanged. In the short term, changes in real exchange rates reflect mainly movements in nominal exchange rates, because typically the inflation rate does not react as rapidly as exchange rates.

Chart 1.

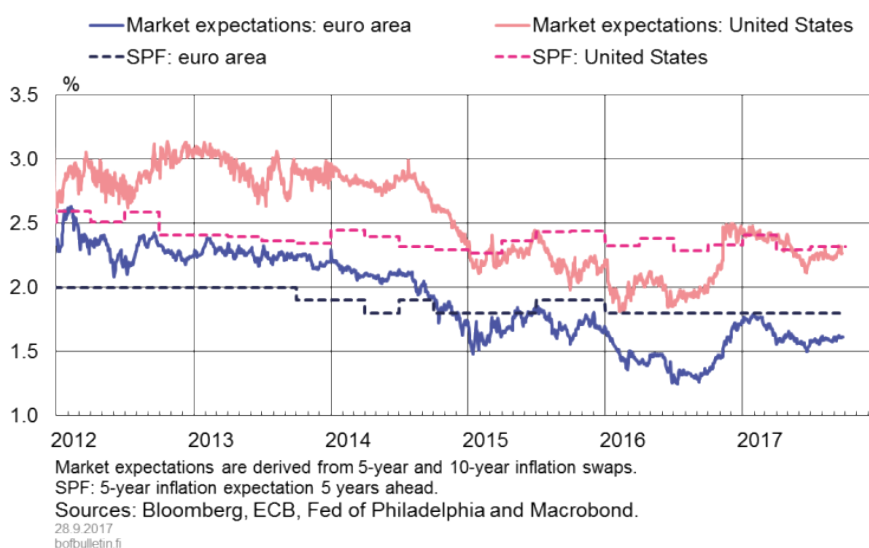
Real trade-weighted exchange rate of the euro has strengthened in 2017



Expectations of US growth have moderated recently. This has slightly lowered long-term government bond yields and dampened inflation expectations that had strengthened at the turn of the year. Euro area inflation expectations, too, dampened in the early part of 2017, but they are nevertheless clearly stronger than in summer 2016 (Chart 2). (For a more detailed discussion on euro area financing conditions, see monetary policy article: [‘Growth picking up but inflation remains subdued’](#)).

Chart 2.

Inflation expectations still moderate

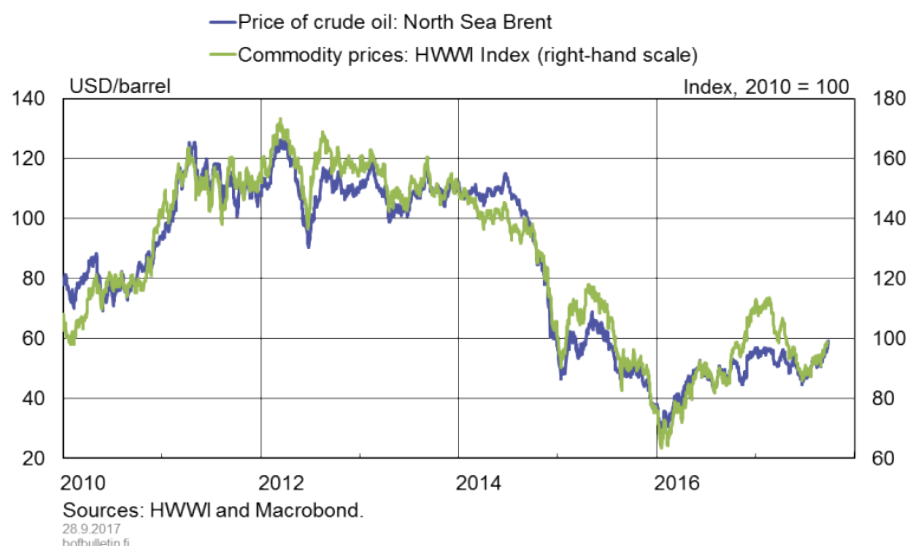


The world market price of oil declined slightly in spring 2017, but has since returned to the level witnessed earlier in the spring, i.e. around USD 55 per barrel, where it is expected to remain in the immediate years ahead based on futures prices. Due to the

moderation in expectations of US growth and the difficulties of oil producing countries in reaching an agreement on output restrictions, the fluctuations in oil prices have remained small. There was a general slight decline in commodity prices in the early part of the year, but prices have remained fairly stable recently (Chart 3).

Chart 3.

Commodity prices have declined from the levels of early 2017



Growth stronger than anticipated, inflation expected to pick up

The Bank of Finland foresees world growth strengthening to 3.5% in 2017 and continuing at well over 3% throughout 2018–2019. Global trade growth is expected to accelerate markedly, to around 5%, following subdued dynamics in 2016. This growth spurt reflects the pick-up in trade in Latin America, China and other emerging Asian economies. Towards the end of the forecast period 2017–2019, the pace of growth will, however, dampen, approaching the level of global GDP growth, on the upside of 3%. Inflation is still subdued worldwide, and in many advanced economies there are expectations of an acceleration in inflation, supported by robust growth and relaxed monetary policy (tables 1 and 2).

US growth is expected to pick up, to slightly over 2%, following the dip in 2016, and to continue at a steady pace throughout the forecast horizon. The expectations in early 2017 of stimulus measures by the new US administration have faded. The favourable trend has, however, been sustained by continued strong corporate and household confidence. Inflation slowed slightly in the early part of 2017, but it is nevertheless expected to rise, to slightly over 2% as the economy continues to grow at a steady pace and the unemployment rate has fallen to the pre-crisis level.

Economic growth in EU22 (euro area, United Kingdom, Sweden and Denmark) will also accelerate in 2017, to over 2%. In the forecast period 2017–2019, the strongest phase of the cyclical upswing in the euro area will moderate slightly and the effects of Brexit will

slow UK growth. Despite stable growth in the EU22 throughout the forecast horizon, inflation will not pick up significantly and will persist below 2%.

The ongoing rapid growth in the Chinese economy is still expected to decelerate, albeit slightly later than previously expected, to 6% in 2018 and 5% in 2019. Chinese growth has decelerated gradually during the current decade. This is a natural evolution for China as structural factors put a brake on growth. China is already the world's largest economy, the working-age population is shrinking, the composition of growth is shifting towards consumption, and the easiest productivity-enhancing reforms have already been made.

The Japanese economy has posted growth figures for six consecutive quarters already. After 2017, Japanese growth will, however, decelerate slightly, with the consumption tax increase in 2019 slowing growth towards the end of the forecast horizon. Inflation will remain subdued, with the exception of 2019, when the consumption tax increase will fuel inflation.

Russian GDP continues to rise by 1.5% in 2017–2019, as economic growth is already approaching its potential and the price of oil is expected to remain close to its current level throughout the forecast horizon.

Overall, the global economy is currently experiencing a strong cyclical recovery. Subdued potential growth in advanced economies and structural changes in China will, however, depress global growth slightly in 2019.

Table 1.

Changes in GDP and world trade

% change on the previous year (previous forecast below)

GDP	2016	2017 ^f	2018 ^f	2019 ^f
United States	1.5	2.1	2.2	2.0
		(2.4)	(2.2)	(2.2)
EU22	1.8	2.1	1.8	1.6
		(1.8)	(1.7)	(1.6)
Japan	1.0	1.5	0.9	0.7
		(1.1)	(0.8)	(0.7)
China	6.7	6.5	6	5
		(6)	(5)	(5)
Russia	-0.2	1.5	1.5	1.5
		(1.5)	(1.5)	(1.5)
World*	3.1	3.5	3.4	3.2
		(3.4)	(3.3)	(3.3)
World trade*	1.9	4.8	3.9	3.6
		(3.4)	(3.6)	(3.5)

f = forecast.

EU22 = euro area, Sweden, Denmark and United Kingdom.

* = Changes in country weights.

Source: Bank of Finland.

Table 2.

Inflation in key economies

% change on previous year (previous forecast below)

	2016	2017 ^f	2018 ^f	2019 ^f
United States	1.3	2.2	2.2	2.2
		(2.5)	(2.5)	(2.4)
EU22	0.3	1.7	1.5	1.7
		(1.9)	(1.6)	(1.7)
Japan	-0.1	0.4	0.8	1.4
		(0.5)	(0.7)	(1.3)

f = forecast.

EU22 = euro area, Sweden, Denmark and United Kingdom.

Sources: National statistical authorities and calculations by the Bank of Finland.

Steady growth in EU22; inflation still below 2%

Economic growth in the EU22 (euro area, United Kingdom, Sweden and Denmark) will be fuelled in 2017 particularly by robust growth in the euro area. Thereafter, EU22 growth will dampen slightly, approaching the longer-term rate of growth. The expansion of the euro area economy is largely based on growth in domestic demand. Fiscal policy is neutral and the contribution of net exports to growth will be only moderately positive. Relaxed monetary policy and stable global economic growth will continue to support euro area growth. (Euro area monetary policy and the condition of the economy are discussed more closely [here](#).)

Sterling depreciated by over 10% following the referendum^[1] on the UK departure from the EU, which has fuelled inflation to nearly 3%, i.e. over the Bank of England's target of 2%. The pick-up in inflation will dampen growth in real incomes and thus consumption. The weakening of the exchange rate has not boosted exports as expected. In the first half

1. On 29 March 2017, the United Kingdom submitted an official notification of intention to withdraw from the EU. This triggered the withdrawal process under the Lisbon Treaty, with a two-year deadline. If the deadline is not extended by mutual agreement, the United Kingdom will withdraw from the EU on 29 March 2019. Negotiations on withdrawal from the EU have commenced, and the UK's ultimate goal is to have a bilateral relationship with the EU based on a 'comprehensive, bold and ambitious' free trade agreement. Due to the lengthy free trade negotiations, the most likely outcome is a temporary agreement that would enter into force after the UK's departure from the EU in March 2019. As a result, the current situation may persist for years to come.

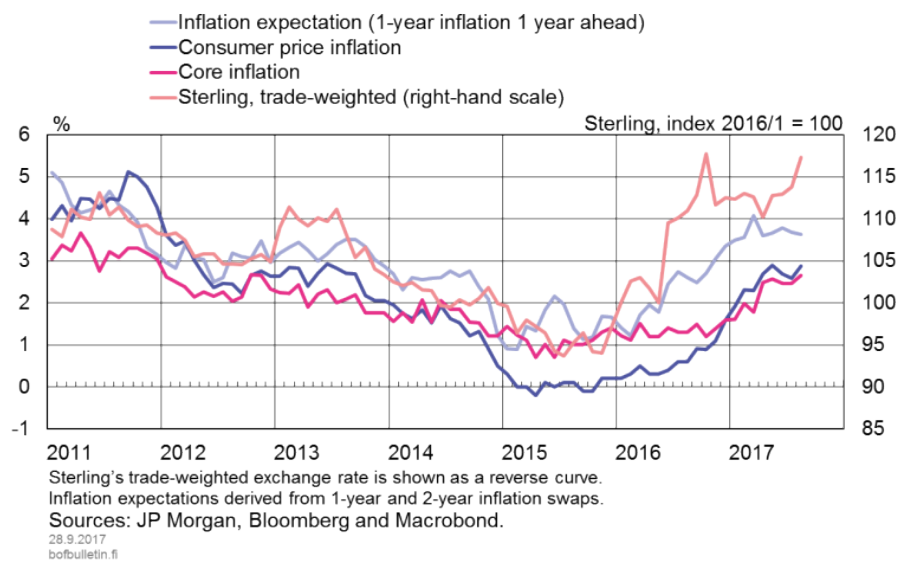
of 2017, economic growth decelerated significantly. GDP growth is however expected to remain steady in the immediate years ahead.

In Sweden and Denmark, economic growth will be brisk in 2017, following robust growth in the early part of the year, but it is expected to slow slightly. In Sweden, growth will be broadly-based, private consumption and investment will pick up, exports have developed favourably and industrial output will expand. Household debt accumulation and a possible correction in housing prices remain the most significant risks to strong economic growth. In Denmark, the favourable trend in real incomes has boosted private consumption and retail trade. Exports, too have improved significantly.

EU22 inflation will accelerate partly due to temporary factors, such as the price of oil, to 1.7% in 2017, but will slow temporarily in 2018. In 2019, EU22 inflation will accelerate again, to 1.7%. Even though the depreciation of sterling will contribute to higher inflation in the EU22, the pace of inflation will remain below 2% until the end of the forecast period (Chart 4). Despite robust growth, thus far there are no signs of a significant pick-up in wage inflation. Financial market inflation expectations have also remained moderate.

Chart 4.

Depreciation of sterling fuels inflation



US economy will continue to expand, despite the uncertain course of economic policy

In the United States, the economic climate was filled with high expectations in the first stages of the new administration, but in recent months there have been signs of disappointment in the slow pace of reform. Despite the ongoing strength in corporate confidence and stock markets, the increase in political uncertainty has been reflected in a depreciation of the dollar.

The Bank of Finland forecast does not take account of possible fiscal stimulus measures by the new US administration, as no decisions have been taken on such measures. Fairly sluggish growth in the first quarter of 2017 depresses the growth forecast for 2017. US GDP will continue to grow at a steady rate of over 2% during the forecast period. Growth will be sustained particularly by private consumption. The contribution of net exports to growth will remain negative throughout the forecast period 2017–2019. In recent years, US potential growth has decelerated, possibly due to mainly demographic factors and weak productivity growth. Towards the end of the forecast period, actual growth will slow and approach its potential rate.

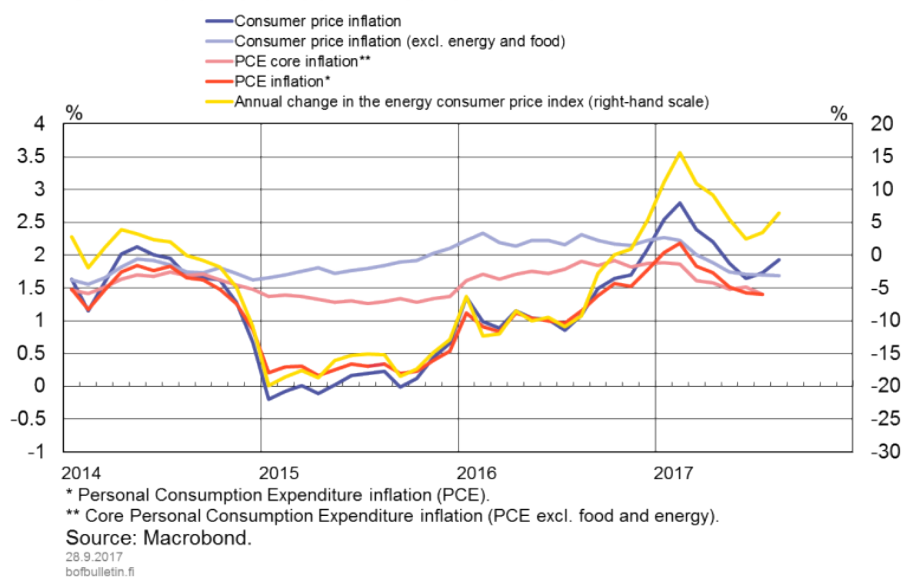
In the past couple of years, wages have risen by over 2.5% per annum, measured by average hourly earnings. Wage inflation has been dampened by the fact that, as the employment situation has improved, many of those who have returned to the labour market have been forced to start with lower hourly wages. The Federal Reserve Bank of Atlanta has developed the Wage Growth Tracker, a measure in which wages data is adjusted for changes on the labour market. According to this measure, the wages of persons who have maintained their position on the labour market have, in fact, increased at a higher pace than average hourly wages, on average 3.3% per annum.

US inflation has slowed significantly since the early part of the year, to well below 2% (Chart 5). Energy price fluctuations cause volatility in total inflation. However, core inflation (excl. energy and food prices) has also slowed after remaining clearly above 2% in 2016.^[2] This is due to, for example, a decline in the prices of many imported goods and the slow rate of change in service prices. The subdued pace of inflation is, however, expected to be only a temporary phenomenon, and inflation is anticipated to remain at over 2% in the immediate years ahead. The expected pick-up in inflation and favourable developments on the labour market provide the US Federal Reserve leeway to continue with the interest rate rises begun in December 2015 and to dismantle its unconventional monetary policies (See ‘[US Federal Reserve normalising its monetary policy stance](#)’).

2. Core PCE (Personal Consumption Expenditure) inflation monitored by the US Federal Reserve has in recent years remained significantly slower than core inflation as measured by the consumer price index.

Chart 5.

US inflation slowed in first half of 2017



Stability a top priority in Chinese economic policy; slow progress in reforms

The Chinese economy has recently been dominated by political issues. Even though structural factors – such as contraction in the labour force and the structural shift in the economy – from investment-driven growth towards a more consumption- and services-driven growth – are gradually slowing the natural rate of growth in the Chinese economy, China has kept to its target of doubling real GDP from 2010 to 2020. To achieve this, it has supported economic growth with expansionary policies. China’s indebtedness has soared, and the rapid growth of debt has also continued in 2017.

In October 2017, China will hold the National Congress of the Communist Party, in which new members of the Party’s leadership organs will be selected. The power game, taking place mainly behind the scenes, has been reflected in economic policy so that excessive striving for stability has become a top priority of economic policy, and not much progress has been achieved in reforms. Economic policy has also been tightened somewhat in the name of stability, for example by introducing stronger capital controls.

China’s official GDP figures have shown exceptionally stable 6.5–7% growth for a couple of years now, in line with its long-term growth target. The uncertainty surrounding the official growth figures has, however, increased. At the start of the current year, officials revealed a massive statistical fraud in Liaoning province. In June, officials announced that they were also looking into suspected instances of statistics manipulation in two more provinces. These cases reflect the fact that the success of provincial leaders is assessed particularly based on their ability to reach the growth targets.

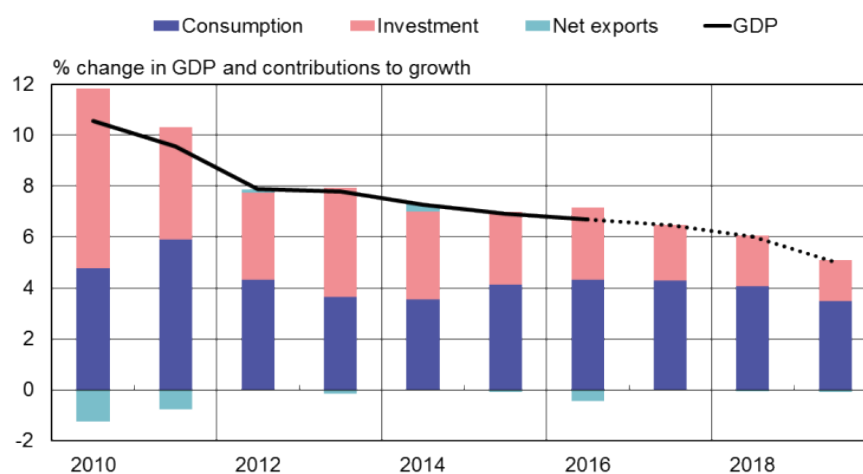
China’s economic growth has decelerated gradually during the current decade (Chart 6). Growth is expected to slow also in the years ahead (GDP growth will be 6.5% this year, 6% in 2018 and 5% in 2019). Slowing economic growth is a natural evolution for China as

structural factors put a brake on growth. Firstly, China is already the world's largest economy, and size in itself places a restriction on growth. Secondly, the Chinese population is ageing rapidly and the cohort of working-age persons is already shrinking. Thirdly, the economy's structure is changing. As a result of this change, investment growth will slow and correspondingly, the importance of domestic consumption demand and services will increase. In addition, there are signs of a decline in productivity growth as the easiest productivity-enhancing reforms have already been made. Moreover, there is little evidence to suggest any significant productivity leap during the forecast period 2017–2019. China's environmental problems are also hindering growth.

Net exports make only a minor contribution to GDP growth, but for global trade it is of interest that China's foreign trade has grown at a much higher pace than expected. The volumes of goods imports and exports are up by roughly 10% year-on-year in 2017. Growth has been broadly based, by both country and product category. In addition to the slight recovery in the global economy, exports have been supported by the 10% depreciation in the yuan's real effective trade-weighted exchange rate in the past year or so. In recent months, the yuan has, however, strengthened again. The rapid export growth, in turn, has encouraged a recovery in imports, as a third of exports are based on finishing or assembly of imported goods.

Chart 6.

Chinese growth gradually decelerating



Sources: China's National Bureau of Statistics and BOFIT.
28.9.2017
bofbulletin.fi

According to the official figures, Chinese inflation has remained stable, at around 2%. In contrast, there have been swings in asset prices. The 2015 stock market bubble was followed by a rapid rise in housing prices. Official figures show housing prices still continuing to climb on average, even if the price explosion has ebbed in some of China's major metropolises.

The accuracy of the Bank of Finland forecast for the Chinese economy is subject to a number of factors. China may continue to push GDP growth to the 2020 target, which would lead to higher-than-expected growth rates, but, at the same time, to even more

unsustainable economic policy and growing distortions in the economy. This would fuel the build-up of debt, possibly at an accelerating pace, which in turn would increase the likelihood of a financial crisis and the possibility of China's economy slowing faster than expected. The possibility of a financial market crisis cannot be ruled out. In 2017, the top Chinese leadership has stressed the importance of mitigating the financial market risk. Risk mitigation would be advisable to ensure sustainable growth, but thus far the efforts have been modest. The National Congress of the Communist Party in October could be a turning point for Chinese economic policy. On the other hand, recent strong measures, aimed at, for example, increasing censorship and strengthening the power of the party, undermine trust in real market reforms.

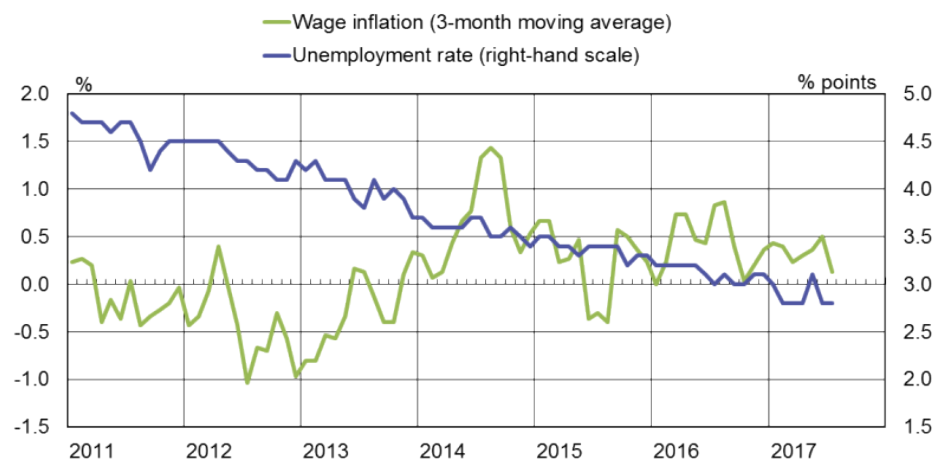
Positive short-term outlook for the Japanese economy

In Japan, the economic sentiment is currently positive, with already six consecutive quarters of growth. Growth is based mainly on exports, which have been supported by the weakening of the yen since mid-2016. Growth has been bolstered also by expansionary fiscal policies. Now, however, domestic demand has also picked up, and private consumption and investment have been growing. The fundamentals for the continuation of growth are, nevertheless, not strong, as the Japanese Government cannot continue its expansionary fiscal policies for much longer, due to the high level of public sector debt.

The key bottleneck for Japanese growth is a lack of labour, caused by population ageing. The size of the working-age population is shrinking, and there is no labour available to replace it. There are 1.5 vacancies to every jobseeker. Pay increases have nevertheless remained very cautious, which weakens the growth potential of private consumption and thus also reduces companies' willingness to invest in the domestic economy (Chart 7).

Chart 7.

Tightness of the Japanese labour market has not fuelled wage inflation



Sources: Statistical Bureau of Japan, MHLW and Macrobond.
28.9.2017
bofbulletin.fi

The Japanese economy is expanding at a rate higher than its potential. In the medium term, therefore, Japanese growth will slow to just under 1%, the country's estimated potential output growth. In an environment of shrinking population, even moderate economic growth is, however, sufficient for maintaining welfare, and Japan's per capita GDP growth has indeed been stable. In the longer term, the completion of structural reform is key to the achievement of sustainable growth and to turning the high indebtedness onto a downward trajectory.

Despite economic expansion and strong monetary policy stimulus, inflation is still slow. Subdued wage inflation and the forecast slowing of economic growth will dampen the rise in consumer prices in the forecast period, and inflation will remain just under 1%. Towards the end of the forecast period, inflation will be fuelled by the consumption tax increase planned for late 2019, but inflation will still remain under the central bank's target of 2%. The Bank of Japan has announced that it will continue with quantitative and qualitative monetary easing until inflation is above the target.

Russian economy recovering gradually

The Russian economy has turned to growth in 2017, as expected. Both domestic and export demand have recovered slightly faster than expected in the current year, but they have to a large extent supported an import rebound. As a result, Russian GDP rose in January–June at a modest pace of 1.5% per annum (Chart 8). Russian GDP is expected to continue to rise by 1.5% in 2017–2019, as economic growth is already approaching its potential and the price of oil is expected to remain close to its current level throughout the forecast horizon.

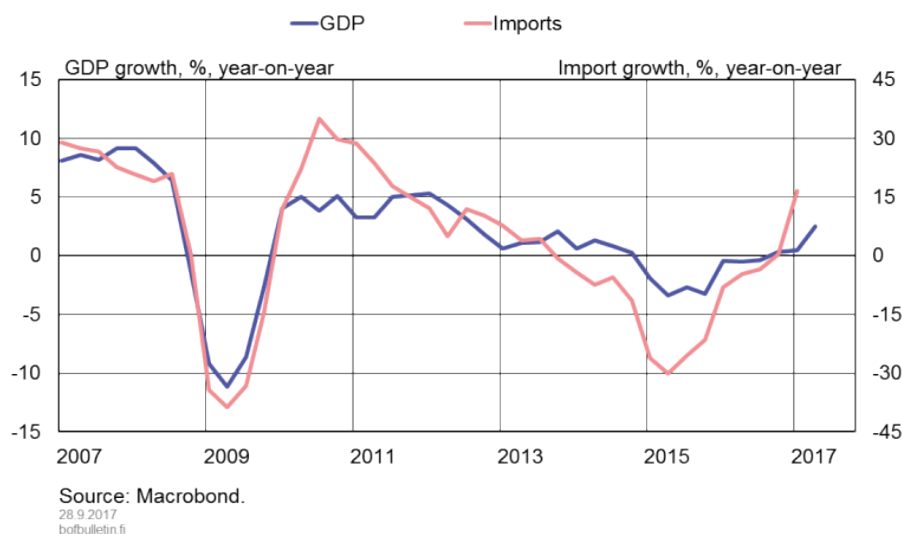
Growth will be bolstered by the gradual recovery in household consumption, which is supported by an increase in wages and borrowing. Investment will also grow, but investment demand will be depressed by the uncertain economic outlook and difficult business environment. Public sector expenditures will decrease, but more moderately than planned, due to adjustments in the budget framework in 2017. Presidential elections in spring 2018 may cause pressure to postpone expenditure cuts, which could accelerate growth temporarily. Domestic demand is supported also by the slowing of inflation, close to the central bank's target of 4%. The Bank of Russia has signalled that it may continue to relax its monetary policy by gradually lowering its key rate if inflation pressures remain subdued.

Russian imports have recovered strongly in 2017, on the back of domestic demand and the stronger rouble. Based on brisk growth in the early part of the year, the volume of imports is expected to rise by 15% in 2017 and the pace of growth to moderate to 6% in subsequent years. The strong recovery in imports has been counterbalanced by fairly rapid growth in exports.

Russia's short-term growth trend may deviate from the forecast if the price of oil does not develop as expected. The prospects for longer-term growth have not improved, because the badly needed structural reforms have not been conducted. The Russian economy is therefore expected to reach its potential growth rate of 1.5% and to maintain this rate throughout the forecast period 2017–2019.

Chart 8.

Growth in Russian GDP and imports



Risks to global growth have decreased, but remain tilted on the downside

Risks to global growth

The global economy is currently subject to a great deal of uncertainty regarding the course of US economic policy as well as the materialisation of the plans by the new administration. The fiscal policy plans of the US administration have thus far not been materialised. If the plans for tax reform and investment in infrastructure were to come through in full, they would boost economic growth. The effects would, however, depend on the financing of the possible measures. Deregulation may bolster growth in the short term, but financial market deregulation, in particular, increases the risks to financial stability in the longer term. For global growth, a cause for concern remains the border taxes and renegotiation of trade agreements planned by the new US administration.

Developments in the global economy may be weaker than expected, particularly if China's debt-driven growth were to decelerate strongly (see [‘What if China’s economic growth were to slow substantially?’](#)). China's growth is largely debt-driven, which exposes the economy to risks from financial market disruptions. A drastic deceleration of Chinese growth would weaken confidence globally and raise the price of financing, which would put a substantial brake on global growth. A recent cause for concern has also been the increase in geopolitical tensions on the Korean Peninsula. An escalation of these tensions could have severe and unpredictable consequences.

The global economy is currently slowed by lacklustre productivity developments (see [‘Weak productivity a drag on global economy’](#)). Labour productivity growth has slowed in many advanced economies, and the exact reasons for this are not yet known. In recent years, labour productivity has grown at record low rates. This may, however, be a

temporary phenomenon, and, for example, the next wave of digitalisation may fuel productivity growth.

Internal risks to growth in EU22

Concerns over the condition of banking sectors and public finances in some euro area countries have been alleviated somewhat, reflecting ongoing and strengthening growth in the euro area. Deleveraging and resolving the problems remaining in the banking sector will take time, however. European banks still have nonperforming assets as a legacy from the debt crisis, and the volume of these assets continues to shrink only slowly. The general government debt-to-GDP ratio will remain large in the euro area, and under less favourable conditions the considerable indebtedness could cause significant problems in some euro area countries. The outlook for the EU22 is also overshadowed by the upcoming UK departure from the EU, as there is uncertainty concerning the speed of the process and the outcome of negotiations.

Well-functioning economic structures have a positive impact on developments in employment and productivity, and hence on growth. Structural reform has thus been a key part of economic adjustment programmes for stressed countries in the euro area. The growth-enhancing effects of the reforms already implemented may show only after a time lag. Moreover, in many euro area countries the functioning of the economy could benefit further from structural reforms.

Tags

[growth forecast for the global economy](#), [risks to growth](#), [inflation forecast](#)

Weak productivity a drag on global economy

YESTERDAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • ECONOMIC OUTLOOK

Labour productivity growth has slowed in many of the advanced economies, though the precise reasons for this have yet to be pinpointed. Optimists believe that the causal factors are temporary or that the slowdown is due to measurement inaccuracies, whereas the pessimistic view is that the slowdown will be more permanent.



Slowdown in productivity growth in advanced economies

Labour productivity is measured as output per hour worked.^[1] The weak trend in productivity is one of the key factors underlying the present sluggish growth in the global economy.

Chart 1 shows that annual labour productivity growth in developed economies converged close to 2 % in the 1970s. Nevertheless, productivity growth did accelerate for a while in the late 1990s and early 2000s as a consequence of the development and adoption of information and communication technologies (ICT). Labour productivity growth in the United States was exceptionally rapid during this period. This productivity leap has been specifically attributed to developments in ICT.^[2]

The peak in productivity growth had already begun to tail off before the financial crisis struck in 2008. Since the crisis, the rate of labour productivity growth in many of the

1. Labour productivity can also be measured as output per person employed. The recent growth trend is not significantly different in either of these two measures of labour productivity, however.

2. Gordon, R. (2015) Secular Stagnation: A Supply-Side View. *American Economic Review*, 105(5): 54–59.

advanced economies has plummeted to a record low. In the euro area, Japan and the United States the pace of growth has slowed to around 1% from its pre-crisis level of about 2% in each case. In the United Kingdom, the decline in productivity growth has been even more marked.

Chart 1.

Extensive slowdown in labour productivity growth in advanced economies

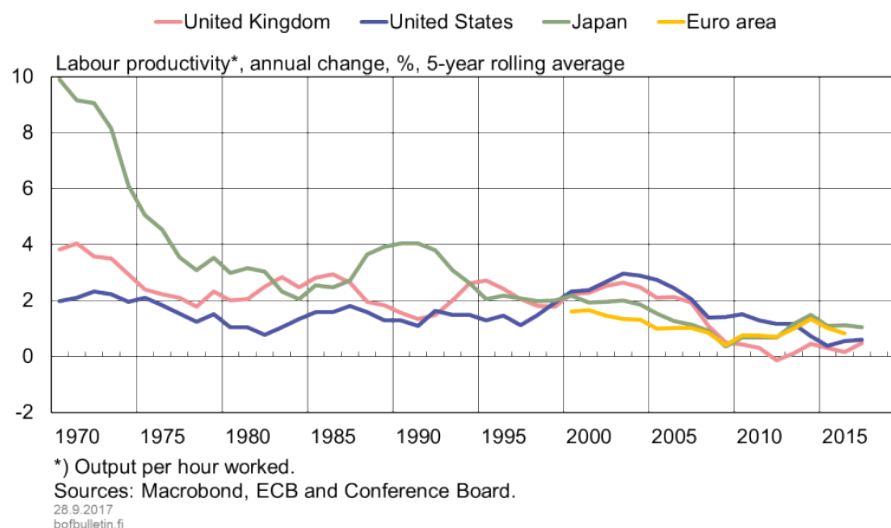
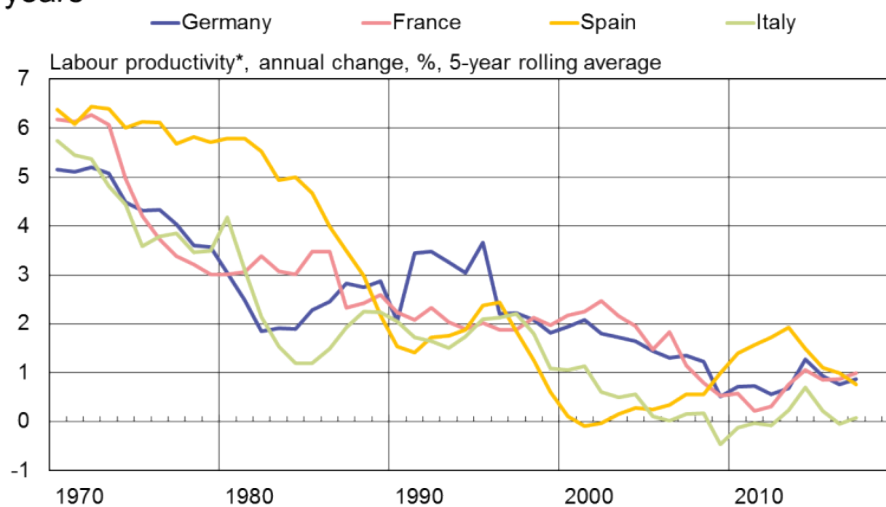


Chart 2 illustrates that labour productivity growth has a declining trend in each of the four largest euro area economies as well. It also shows that productivity growth in recent years has remained subdued at a level below that of the early 2000s. The trend in labour productivity nevertheless differs from country to country in the euro area. In France and Germany, as well as in many smaller economies, labour productivity growth has declined gradually, and there has only been a slight recovery from the lows reached during the financial crisis. By contrast, productivity growth in Italy was already slowing as the new Millennium began and has stayed close to zero since 2006. In Spain, labour productivity growth has picked up a little, as the deterioration in the employment rate during the financial crisis has become reflected in the productivity growth rate.

Chart 2.

Labour productivity growth in euro area subdued in recent years



*) Output per hour worked.

Sources: Conference Board and Macrobond.

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Is the weak trend in productivity permanent or temporary?

Views concerning the reasons behind the slowdown in labour productivity growth can be divided roughly into the pessimistic and the optimistic. The former see the causes as being lasting, whereas the optimists consider them to be short-lived or attributable to measurement inaccuracies.

Some suggest that the reason is the increasing difficulty in coming up with new ideas and innovations for significantly boosting total factor productivity, and that this also requires an increasing amount of resources.^[3] The steam engine, the combustion engine and ICT all brought substantial productivity gains, but today the challenges in developing new inventions that would lead to a similar productivity leap are greater. There are critics of this view, however, who assert that advances in technology have also brought more efficient tools for generating innovations.^[4]

New efficiency benefits obtained from ICT in particular have probably diminished since the early 2000s. Up to that point, most industrial sectors had already adapted their activity so as to take more effective advantage of the opportunities offered by ICT.^[5] Indeed, it has been shown that productivity growth in the United States has

3. Bloom, N., Jones, C., Reenen van, J. & Webb, M. (2017). Are Ideas Getting Harder to Find? Stanford University, mimeo, 4 January 2017.

4. Mokyr, J., Vickers, C. & Ziebarth, N. (2015). The History of Technological Anxiety and the Future of Economic Growth: Is This Time Different? *Journal of Economic Perspectives*, 29(3), 31–50.

5. Fernald, J. (2015), Productivity and Potential Output before, during, and after the Great Recession, NBER Macroeconomics Annual 29.

slowed dramatically in ICT-intensive sectors.^[6] The productivity benefits gained with ICT may also have diminished somewhat in other sectors, too, and this may well explain the slower productivity growth across a broad front in various sectors. Even so, the next wave of digitalisation – making use of robotisation and more efficient artificial intelligence systems – could return productivity growth to its immediate post-2000 level.

According to one view, the slower growth in productivity is attributable to a reduced level of investment in research and development (R&D) in the advanced economies.^[7] In both Japan and the United States, the growth in the number of R&D personnel has tailed off significantly since 2000. The growth in R&D personnel in Europe has remained almost constant, however. In the United States, in particular, the educational level of the population has no longer been improving in recent decades at the rate previously seen, and this may have served to impede productivity growth.^[8]

A possible, more positive reason for the weak productivity growth could be that there are measurement inaccuracies that have arisen in association with digitalisation that could have led to an underestimation of the real growth rate in output and productivity. In particular, it is difficult in the compilation of national accounts data to take into consideration factors such as productivity growth in free-of-charge services and improvements in quality.^[9]

Growth in productivity may also have been restrained by the exceptionally protracted aftermath of the global financial crisis that began in 2008. Both the private and public sectors have reduced their debt burden by cutting back on investment. In the euro area, the investment-to-GDP ratio has fallen by almost three percentage points in comparison with the pre-recession period (see Chart 3). As a result, total demand has also decreased. It has also been argued that the subdued level of demand has had a negative impact on GDP growth and on productivity growth.^{[10], [11]}

6. Fernald, J., Hall, R., Stock, J. & Watson, M. (2017) The Disappointing Recovery of Output after 2009. NBER Working Paper No. 23543, summer 2017.

7. Jones, C. (2017) Discussion: Long-Term Growth in Advanced Economies. ECB Sintra Forum, 28 June 2017.

8. Gordon (2015) Secular Stagnation: A Supply-Side View. *American Economic Review*, 105(5): 54–59; Acemoglu, D. & Autor, D. (2012) What Does Human Capital Do? A Review of Goldin and Katz's 'The Race between Education and Technology'. *Journal of Economic Literature*, 50(2): 426–63.

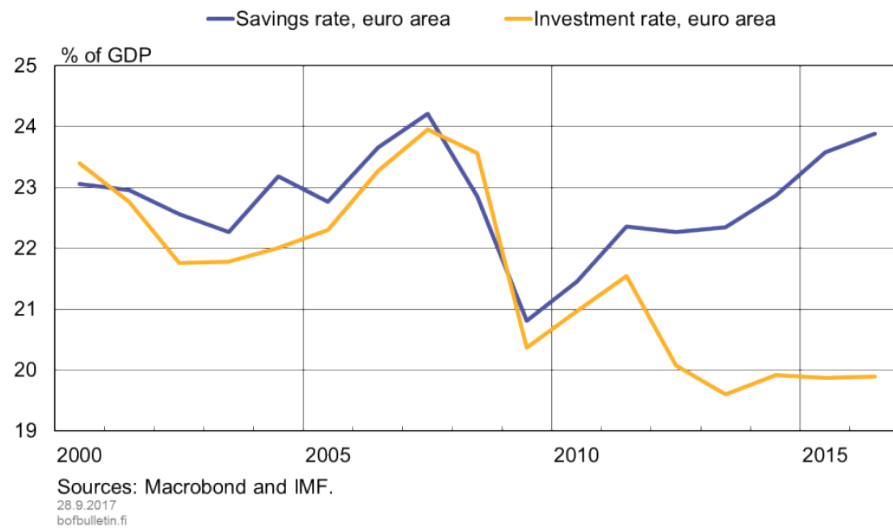
9. Itkonen, J. (2017). *How can we measure the economy in the digital era?* *Bank of Finland Bulletin* 3/2017.

10. Rogoff, K. (2015). Debt supercycle, not secular stagnation. *VoxEU*, 22 April 2015.

11. Yellen, J. (2016) Macroeconomic Research after the Crisis. Speech at 60th Annual Economic Conference Sponsored by the Federal Reserve Bank of Boston, Boston, Massachusetts, 16 October 2016.

Chart 3.

Decline in euro area investment rate since the financial crisis



Tags

advanced economies, labour productivity, productivity growth

ALTERNATIVE SCENARIO

What if China's economic growth were to slow substantially?

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • ECONOMIC OUTLOOK

This review examines two scenarios that allow a brief analysis of how a rapid but controlled restructuring of China's economy and a sudden halt of debt-driven growth would impact the Chinese and euro area economies. These estimates suggest that even a strong deceleration in China's growth would not considerably dampen euro area growth. If confidence were to suffer globally, however, euro area growth would slow considerably more than estimated.



The Chinese economy has grown at a remarkable pace ever since the introduction of market reforms at the beginning of the 1980s. In recent years, however, China's growth has been largely debt-driven. Growth based on strong reliance on debt is typically unsustainable and involves the risk of a sudden halt if the debt bubble bursts. Therefore, from the perspective of stable developments, a gradual transition from an investment-led growth structure towards an economy driven by consumption would be welcome. However, even if China were to be able to restructure its economy in a controlled manner, its growth would still slow from its current pace.

Below, we will briefly examine two alternative scenarios.^[1] The first scenario analyses the effects of economic restructuring in China on Chinese and euro area growth. The second

1. The Global Integrated Monetary and Fiscal Model (GIMF), Kumhof, Laxton, Muir & Mursula (2010) IMF WP 10/34.

scenario examines a situation in which a financial market shock leads to a sharp deceleration in China's debt-driven growth. The calculations are based on the assumption that the Chinese central bank keeps the exchange rate between the yuan and the US dollar unchanged, but otherwise its monetary policy responds according to an inflation-targeting monetary policy rule.

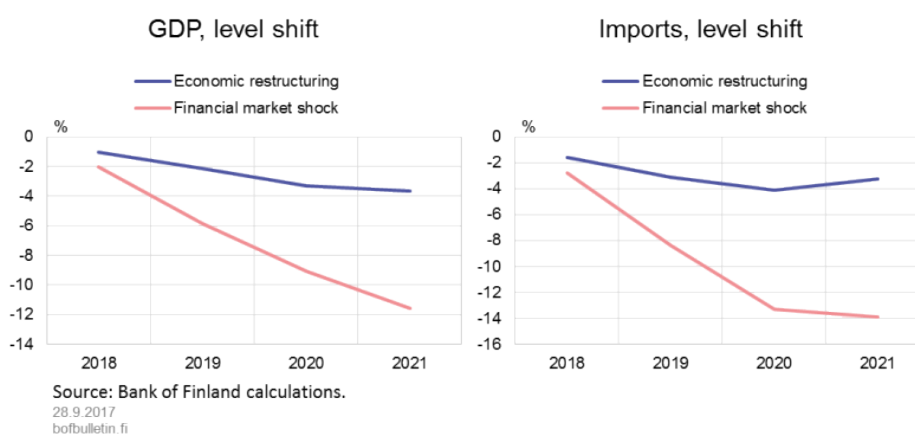
Scenario 1. Restructuring of China's economy

The first alternative scenario assesses how economic restructuring in China impacts Chinese and euro area growth.

It is assumed that the pace of investment in China moderates, which leads to slower economic growth, even with a simultaneous slight improvement in private consumption growth. As a result, weaker investment drags down potential output due to lower productivity growth. Based on this scenario, China's GDP four years ahead can be estimated to be about 4% lower than in the Bank of Finland forecast (Chart 1).^[2] This means that China's economic growth slows by a good 1 percentage point for the next 3 years, after which it picks up gradually. Weaker domestic investment demand leads to a contraction in imports, albeit temporarily.

Chart 1.

Effects of economic restructuring on the Chinese economy – deviations from the baseline



Scenario 2. An abrupt halt in debt-driven growth

The second scenario assumes that China's heavily debt-driven growth slows sharply and for a prolonged period. The slowdown is triggered by a shock stemming from the financial markets, which leads to a steep rise in companies' financing costs. With an abrupt rise in risk premia on external funding, companies substantially scale down their investment.

2. In the economic restructuring scenario, global GDP contracts by about ½% over the medium term. In the financial market shock scenario, global GDP contraction is around three times this.

In this scenario, lower investment also reins in potential output. At the same time, a collapse in economic confidence strongly reduces private consumption. This scenario suggests that China's GDP four years ahead is about 12% lower than in the Bank of Finland forecast (Chart 1). This means that the annual growth rate of GDP slows by 2–4 percentage points in 2018–2021. Consequently, China's average growth is cut by half, which corresponds in magnitude to a similar slowdown in the Chinese economy as during the financial crisis. Imports will now contract steeply, and even slightly more strongly than GDP.

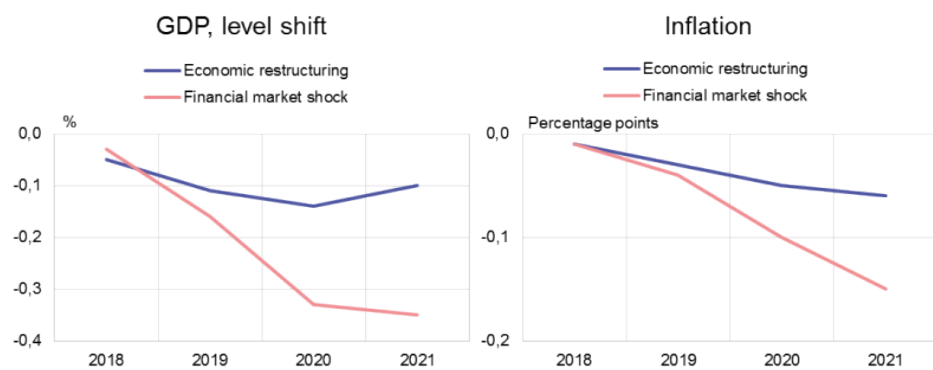
The effects on the euro area

A comparison of the effects of the two alternative scenarios on the euro area (Chart 2) shows that under scenario 1 of China's economic restructuring, euro area GDP would remain only slightly lower than forecast. Consumer price inflation slows less than GDP growth.

If the Chinese economy were hit by a financial market shock, the effects would be slightly more pronounced: euro area GDP would be nearly 0.4% lower than forecast and inflation would fall by about 0.1 of a percentage point during the next few years.

Chart 2.

Effects of China's economic slowdown on the euro area – deviations from the baseline



Source: Bank of Finland calculations.

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There are many reasons why even an abrupt halt in China's debt-driven growth would only have a marginal impact on the euro area.

China's economic slowdown can affect the euro area in several ways. The direct effects come via trade flow channels, changes in net foreign asset items and exchange rate changes. A significant deceleration in Chinese growth would also depress the real interest rate globally. These factors have been taken into account in our estimates.

On the other hand, the transmission of factors relating to confidence and risk premia across countries has not been accounted for in the calculations. For this reason, the estimated spillover effects on the euro area can be regarded more or less as minimum effects. However, it is very likely that a strong deceleration in Chinese growth would

weaken confidence globally and raise the price of funding. Hence, euro area growth would also moderate considerably more than in these calculations.

In addition to the spillovers from weaker confidence, euro area growth could decelerate more than estimated if China were to allow its exchange rate to depreciate. If the yuan were to be allowed to depreciate, euro area growth and inflation would slow even more strongly than estimated.

Tags

[alternative scenario](#), [China](#), [euro area](#)

US Federal Reserve normalising its monetary policy stance

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • MONETARY POLICY

The US economy has recovered from the financial crisis. The unemployment rate in the United States has already fallen to the level prevailing before the financial crisis, and inflation has risen to a point close to the 2% targeted by the central bank, the Federal Reserve (Fed). The Fed has been in the process of winding down the unconventional monetary policies that it pursued during the financial crisis. It gradually ceased its net purchases of securities during 2014, and in December 2015 took its first decision to raise the federal funds rate. In September 2017, the Fed decided to begin in October to reduce the holdings of securities on its balance sheet that it had purchased in three different securities purchase programmes. Although, initially, holding securities was seen as a temporary measure, in public debate it has been suggested that there are grounds for leaving the Fed's balance sheet permanently above its pre-crisis level.



In spring 2013, US Federal Reserve Chairman Ben Bernanke stated at a Congress hearing that he felt the time was approaching to taper the monthly purchase volumes in the asset purchase programmes. This unnerved the international financial markets. Market volatility increased on the foreign exchange and fixed income markets, and a rise in interest rates turned international flows of capital away from emerging economies and towards the United States, which strengthened the dollar. This 2013 'taper tantrum' demonstrated that the financial markets are not indifferent to the manner and pace at which the unconventional monetary policies are dismantled.

The Fed made the actual decision to scale back the asset purchase programmes in December 2013. It subsequently discontinued net purchases of securities in phases during 2014 and has since kept its securities holdings unchanged at approximately USD

4,200 billion by replacing maturing securities with new ones. Of the Fed's securities holdings, 57% are Treasury securities and the remainder are mortgage-backed securities.

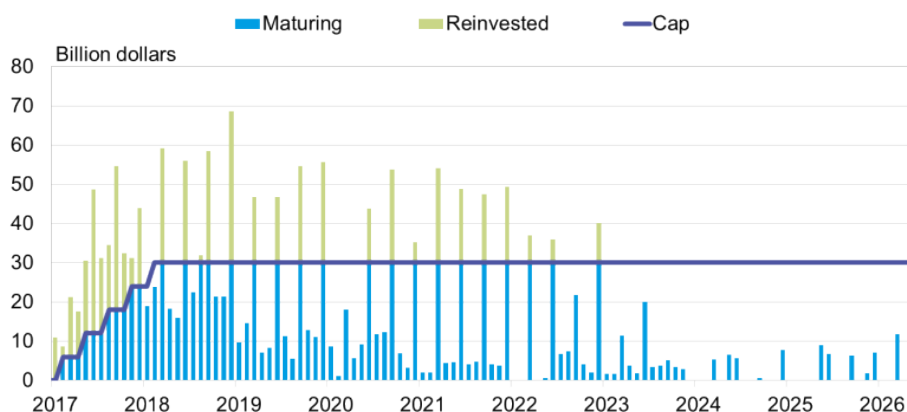
Following the discontinuation of the purchase programmes, the Fed has regularly referred to its plans to reduce the holdings of securities acquired during the programmes. Based on the principles announced by the Fed, it intends to decrease its securities holdings gradually, proactively and only after the federal funds rate has been raised sufficiently.

At its June 2017 meeting, the Fed's Federal Open Market Committee (FOMC) published a more detailed report about the way in which the scaling back of the balance sheet is to be conducted. The FOMC will set a monthly limit on maturing Treasury securities, and this limit will be raised in stages during the year, from USD 6 billion to USD 30 billion. The corresponding figures for mortgage-backed securities are USD 4 billion and USD 20 billion. A year after the start of this scaling back, the amount of securities on the Fed's balance sheet will be decreasing monthly by USD 50 billion. In September, the FOMC decided, in line with the report published in June, that the scaling back of its balance sheet would begin in October 2017.

Most of the securities held by the Federal Reserve are Treasury securities with a maturity period of 1–3 years. This being the case, the amount of Treasury securities maturing monthly in the coming years will total an average of USD 30–35 billion (Chart). The Fed will replace some of the maturing securities by purchasing new Treasury securities on the maturity date. The maturities of mortgage-backed securities are, on average, considerably longer than the Treasury securities held by the central bank. The Fed anticipates that it will reduce holdings of these securities, too, by gradually selling some of them.

Chart.

Federal Reserve's maturing and reinvested Treasury securities



The chart incorporates all System Open Market Account (SOMA) maturities, but excludes mortgage-backed securities. The calculations take no account of the type of reinvestments (amounting to more than USD 500 billion) and make no other assumptions about these either.

Source: Federal Reserve and calculations by the author.

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To avoid sudden movements in the prices and interest rates of securities, the Fed will decrease its securities holdings slowly. Further to this, the FOMC will seek to curb the

rise in interest rates by issuing carefully worded announcements on a persistent basis about the normalisation of monetary policy. These announcements have already allowed the markets to price some of the effects of a shrinking balance sheet in advance. The FOMC's announcement on commencement of reducing the balance sheet had a number of immediate impacts on the markets. The dollar strengthened by over 1% against the euro, but the yield on 10-year government bonds rose by only 5 basis points (i.e. 0.05 percentage points).

The scaling back of the Fed's balance sheet could have longer-term impacts on the markets. When the Fed's securities holdings decrease, the amount of securities held by the private sector will correspondingly rise, which may increase their interest rates. Retaining the size of central bank purchase programmes and balance sheets through reinvestment has led, above all, to a fall in long-term interest rates. The impact has been felt in the term premium of interest rates for securities – i.e. the extra sum payable on top of the expected interest rate, due to uncertainty – and this has led to a decrease in the term premium. The tapering of the Fed's securities holdings can be expected correspondingly to increase this premium.

Although the Fed's aim is to reduce its balance sheet, it is likely in the future to hold more securities than it did before the financial crisis. In part this is because of the growth in the demand for cash, with some of this growth originating outside the United States. On the other hand, the regulatory changes aimed at securing the liquidity of the banks will encourage banks to hold funds in their accounts with the Fed. A number of researchers have suggested that the Fed's active role on the financial markets may reduce the incentive for market participants to engage in excessive risk taking.^[1] This would require the Fed to practise an active balance sheet policy in the future, and for this it would need to hold more Treasury securities than hitherto.

Tags

[central bank's balance sheet](#), [Federal Reserve](#), [mortgage-backed securities](#), [Treasury securities](#), [unconventional monetary policy](#)

1. Greenwood, R., Hanson, S. and Stein, J. (2016) The Federal Reserve's Balance Sheet as a Financial-Stability Tool. Jackson Hole Symposium 2016.

Changes in the economy challenge traditional methods of evaluating monetary policy

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 4/2017 • MONETARY POLICY

Euro area monetary policy has provided the economy with strong support in recent years. Many traditional guidelines used for evaluating the policy stance, such as the Taylor rule, would call for a more restrictive form of monetary policy. However, a number of variations can be derived from the relatively simple base formula underlying the Taylor rule, providing alternative paths for benchmark interest rates. Thus we could argue that recent monetary policy has not, in fact, significantly deviated from interest rate paths that are consistent with variations of the Taylor rule. The economy has recently undergone changes that provide justification for the more accommodative policy stance. Thus, monetary policy cannot solely be determined on the basis of simplistic rules.



Monetary policy stance more accommodative than under traditional rules

The Taylor rule has served as a ubiquitous guideline for implementing monetary policy ever since the rule's inception in 1993. It determines the key interest rate set by central banks, based on the discrepancy between inflation and the central bank's inflation target, as well as the output gap, which estimates how much gross domestic product (GDP) deviates from potential output. The Taylor rule allows for policy to change in response to fluctuations in the economy; therefore, by following Taylor's rule, the policy stance ought to remain consistent with economic developments.

Several models have shown that adhering to the Taylor rule leads to a policy stance that is close to optimal.^[1] It is no surprise, then, that the monetary policy practised by all major central banks in recent decades can be approximated by some variant of the Taylor rule.^[2] Indeed, it is partly due to the success of this policy that inflation held steady and business cycles displayed less volatility in the decades leading up to the financial crisis.

Since the onset of the financial crisis in the United States, however, many economic regions have deviated from the conventions of the Taylor rule in their policy stance.^[3] This is readily apparent when plotting and comparing interest rate paths based on the original 1993 Taylor rule and on the Eonia rate, the latter of which depicts the effective monetary policy stance in the euro area (Chart 1).^[4] As is evident from the chart, the standard Taylor rule calls for a more contractionary policy stance to be implemented from the beginning of 2015. From this perspective, the deviation from the actual short-term rate would have reached up to 2 percentage points by summer 2017. The Eonia rate alone, however, is an imperfect measure of the effective policy stance when central banks are equipped with non-standard policy tools that impact on long-term rates, one such example being the expanded asset purchase programme (EAPP) that was launched in 2015. Indeed, the discrepancy between actual policy rates and the rate path determined by the Taylor rule should be even more pronounced during periods when non-standard policy tools are employed.

1. See e.g. Woodford (2003) and Taylor (1999).

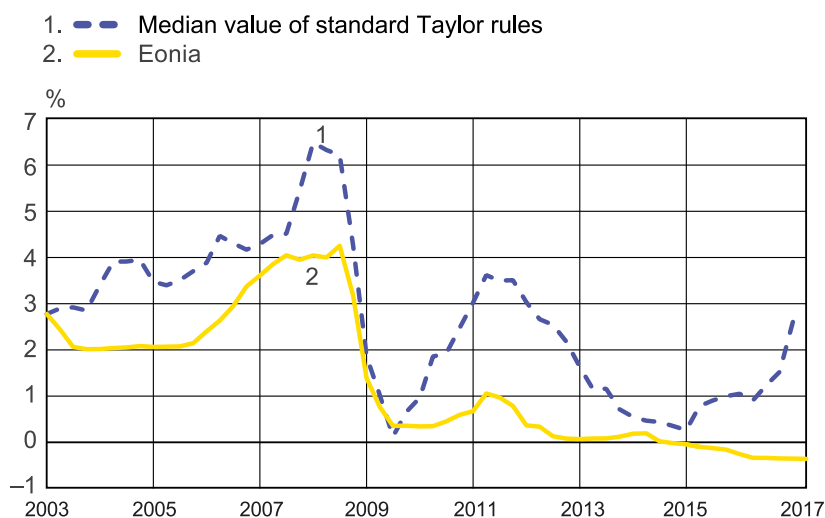
2. McCallum & Nelson (1999) and Taylor (2016a).

3. See e.g. Hofmann & Bogdanova (2012).

4. The Taylor rule (1993) policy stance described here is the median value of different interest rate paths, each based on various inflation figures and output gap estimates. There are considerable differences in the methodologies used to estimate the output gap. By using the median of this data, it is possible to even out possible flaws or weaknesses in any given method. Inflation can also be measured as core inflation or headline inflation.

Chart 1.

Euro area interest rate path based on the original Taylor rule (1993), and the effective policy rate (Eonia)



Sources: Macrobond and Bank of Finland.

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Departure from the standard Taylor rule has led to claims that post-crisis monetary policy has been excessively accommodative.^[5] In the United States, policymakers have defended their practices, arguing that the Taylor rule has been subject to refinement over time and that structural changes within the economy have impacted the formula's key variables – particularly the natural rate of interest.^[6] Both arguments conclude that, on balance, the policy stance has not significantly deviated from that of the Taylor rule.^[7]

The Taylor rule, then, is evidently open to interpretation. The explanation for this is that the variables and multipliers upon which the rule makes its calculations cannot be unambiguously defined. The euro area is no exception, and a variety of Taylor rules can be calculated, using various variables and multipliers, all sourced from common research literature or construed using different research methodologies. Our analysis yields approximately 1,300 different interest rate paths, all based on variations of the Taylor rule. This type of survey helps resolve the ambiguity associated with selecting the correct variables and parameters.

5. For the United States, see e.g. Taylor (2016a, 2016b, 2017). For the euro area, Volker Wieland, who evaluates Germany's economic policy as member of the German Council of Economic Experts, has given several speeches where he has characterised the prevailing policy stance as too expansionary (see e.g. GCEE 2016, chapter 5). See also Michaelis & Wieland (2017).

6. The natural rate of interest is the real interest rate that brings the economy into equilibrium and would prevail if the output of the economy were at its potential level, i.e. in a situation where the economy is in neither an upswing nor a downswing.

7. According to Bernanke (2015), the parameters of the Taylor rule and its variables have evolved over time. Yellen (2015, 2017) has postulated that the natural rate of interest has fallen.

By examining a wide enough array of interest rate rules, it is possible to comprehensively evaluate euro area policy and compare it with the policy path as determined by the Taylor rule. The results of this analysis show that monetary policy has not significantly departed from past practice, despite appearing to do so when viewed superficially against the standard Taylor rule. Furthermore, there are additional arguments for why prevailing policy should indeed deviate from the stance prescribed by a simplistic policy rule. While monetary policy ought to maintain a degree of consistency, a single rule should not dictate policy outcomes.

Taylor rule does not lay out an unambiguous strategy for the policy stance

The variables that determine the Taylor rule are inflation and its deviation from the central bank's target, the output gap, the natural rate of interest (i.e. the equilibrium real interest rate) and the prior key interest rate set by the central bank. Each of these variables acts as a multiplier in determining the value of the key interest rate. Various estimates of these multipliers do exist in studies. This analysis relies on values found in the most commonly sourced research literature.^[8] In addition, every variable found in the Taylor rule can be construed using a variety of different methodologies. For example, consumer price inflation can be measured using the total index of consumer prices, or by inspecting core inflation, which removes the most volatile price elements from the index.

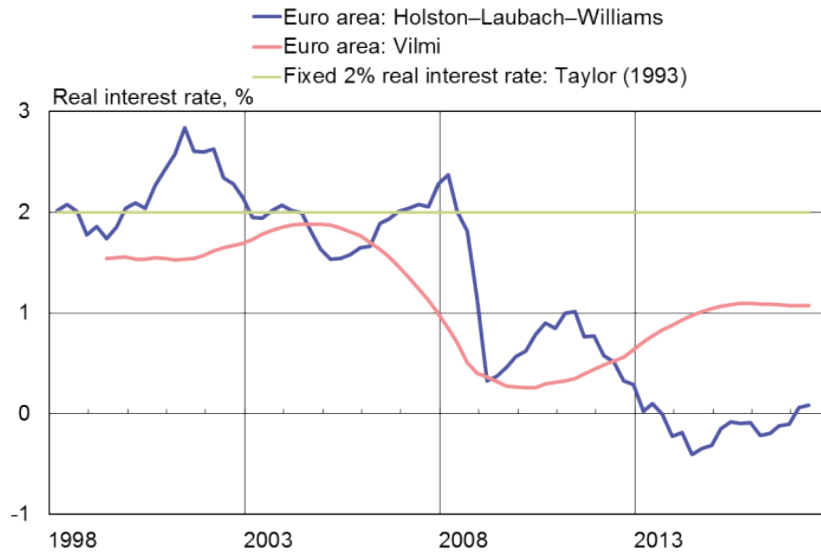
Moreover, there is particular uncertainty in estimating the actual values of the output gap and natural rate of interest, and as a result, various estimates deviate from one another considerably. This analysis uses four different estimates for the output gap, namely those released by the ECB, the mean value of estimates released by international institutions, and those published by Holston, Laubach and Williams (2017) and by Vilmi (2017). The natural rate of interest has also been sourced from both Vilmi (2017) and Holston, Laubach and Williams (2017). These two estimations of the natural rate of interest are plotted in Chart 2, which also includes a natural rate fixed at 2 %, an assumption used by Taylor (1993).

Contrary to the assumptions held in the standard Taylor rule, the other two estimates display a large fall in the natural rate during the financial crisis. As such, the estimates deviate from one another by as much as one percentage point. Different estimates of the natural rate of interest lead to significantly different rate paths and as such constitute one of the greatest sources of uncertainty when applying the rule.

8. Three different values were selected for each parameter. Another way to define the Taylor rule parameters is by estimation, where statistical estimators are used to select parameters that match historical policy stances. Since this analysis attempts to find changes in the Taylor rule itself, the application of statistical inference to this end is difficult. Nevertheless, it is, statistically speaking, highly probable that the estimated Taylor rule for the euro area is indeed amongst the Taylor rules used in this analysis.

Chart 2.

Estimates of the natural rate of interest in the euro area



Sources: Macrobond and Bank of Finland.

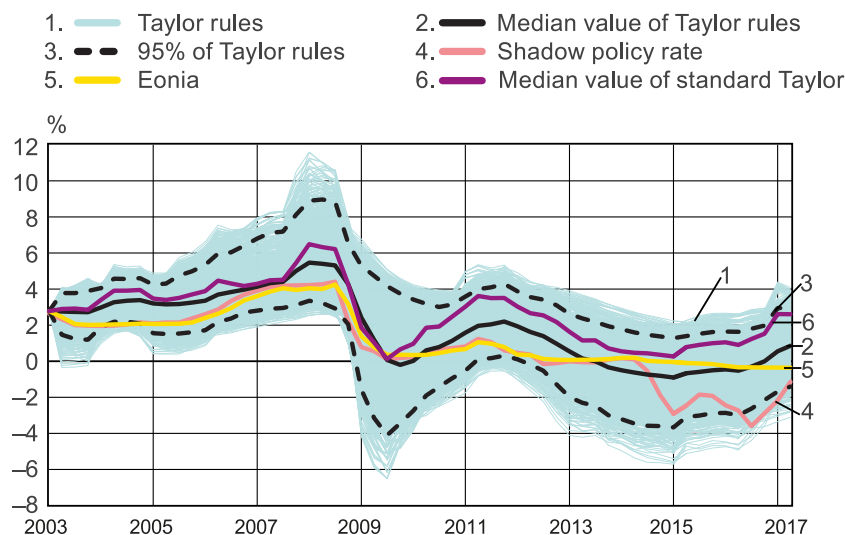
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Using these different variables and multipliers, it is possible to calculate 1,300 different interest rate paths that all follow the Taylor rule (turquoise lines in Chart 3). The key finding here is that different variables and multipliers lead to markedly different interest rate paths. As a result, some of these permutations outline a much more accommodative policy stance than the standard Taylor rule.

These various rate paths begin to deviate significantly in the presence of economic change, such as during the peak of the 2008 business cycle and the recession that followed the global financial crisis. For example, in mid-2009, the key rates determined by the Taylor rule vary between a low of -6% and a high of 5%. This result highlights the degree of uncertainty in selecting the variables underlying the Taylor rule, and this ambiguity grew even greater during the upheaval of the financial crisis. To further illustrate this point, the spread in suggested interest rate levels only reached approximately 4 percentage points in 2005.

Chart 3.

Rate paths determined by Taylor rules and measures of effective policy in the euro area



Sources: Macrobond and Bank of Finland.

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Comparing the actual policy stance with the interest rate path laid out by the Taylor rule is useful when trying to evaluate the consistency of euro area monetary policy. A good point of comparison is the median interest rate path of all the various outcomes of the rule (black line in chart 3).^[9] While the Eonia rate can be used to depict the policy stance, the so-called shadow policy rate does a better job of capturing the effects of non-standard policy tools.^[10]

The policy rate tracked the Taylor rule median up until 2014. Consequently, euro area monetary policy appears consistent with the majority of Taylor rules during this period. The short term rate also tracked the median relatively well during the crisis years of 2008 and 2009, despite the considerable diversion of rate paths amongst the Taylor rules themselves. Taking these various interest rate paths into consideration, it can be concluded that monetary policy had not meaningfully deviated from the Taylor rule median in the long term, at least until 2014. Even since then, the Eonia rate has stayed relatively true to the Taylor rule median.

9. The Taylor rule median is calculated on a period-by-period basis, using the spread of every Taylor rule for each period in question.

10. The shadow policy rate provides a gauge of the hypothetical policy rate in the absence of a zero lower bound on nominal interest rates. For further detail on using the shadow policy rate to evaluate monetary policy, see Kortela (2016a) and Kortela (2016b).

The non-standard monetary policy measures launched in 2014, and particularly the EAPP which began in early 2015, have reduced long-term interest rates and increased the expansionary effects of policy, which is illustrated in the shadow policy rate dropping below the Eonia rate (Chart 3). During this period, the majority of the Taylor rules plot only a slight decrease in interest rates. Consequently, it is at this point that the shadow policy rate enters its long term pattern of falling under the Taylor rule median. To be sure, there are Taylor rules that determine low interest rate paths similar to those observed: in particular, variations of the rule that allow the natural rate of interest to fall tend towards lower interest rate paths than others.

Nevertheless, it does actually appear that euro area monetary policy has recently begun to deviate from the Taylor rule. A similar departure from traditional interest rate policy can be observed in the United States.^[11] The Taylor rule relies on only a limited number of important variables in delineating monetary policy, and it is therefore inevitable that it ignores many variables. This is both the strength and the weakness of the Taylor rule. Its simplified approach to setting policy rates has turned it into a ubiquitous tool for assessing broader monetary policy issues, but this very characteristic means that it ignores many variables within the economy.

A simple rule does not account for changes in the economy

Recovery from the current financial crises has been exceptionally sluggish in many economic regions, pointing towards long-term changes within these economies. Indeed, recent policy departures from the Taylor rule can be explained by looking into these developments.

In the first place, the structure of the economy has changed in the advanced economies, and they have also experienced diminished economic growth. These factors offer justification for adjusting the Taylor rule multipliers and changing the estimate of the natural rate of interest; in fact, most estimates put the euro area natural rate at a minimum of one percentage point lower than it was before the financial crisis.^[12] This alone should result in lower policy rates.

Secondly, past data on the Taylor rule's behaviour in various economic models have often relied on results where the effect of business cycles on long term trends has been relatively slight. In the present situation, where the economy is far removed from its historical trends, it remains unclear how much weight should be placed on past studies. Far-reaching structural changes within the economy might necessitate a prolonged period of accommodative monetary policy.

Thirdly, the policy options have been limited by the effective lower bound on interest rates in recent years. This has possibly resulted in lowered inflation expectations, which in turn necessitates even stronger policy measures.^[13]

11. See e.g. Michaelis & Wieland (2017).

12. See e.g. Vilmi (2017) and Del Negro et al. (2017).

13. See e.g. Hills, Nakata & Schmidt (2016).

It is also important to consider the effects of the non-standard monetary policy measures, as these have a different impact on the economy than conventional policy. While the shadow policy rate is used to quantify these effects, calculating the shadow policy rate itself is not entirely straightforward. Thus, it is possible that the shadow rate does not measure the policy stance as effectively as short-term rates. Some of the Taylor rules outline extremely negative interest rate values for the euro area – values that are impossible to achieve by simply cutting the benchmark rate. Unfortunately, the Taylor rule does not offer a solution as to what measures should actually be undertaken to make the policy stance correspond to highly negative policy rates.

A simple policy rule is not a sufficient guideline for monetary policy

Upon initial review, it might seem that the euro area policy stance has departed from the standard Taylor rule, but closer analysis reveals that this deviation is much less when alternative rules are taken into account. The policy rule produces different results by appropriately selecting the values of variables and multipliers used in the rule; therefore, it is in fact more accurate to speak of policy rules, in the plural. Indeed, some of these variations call for significantly more accommodative policy stances than the standard version of the Taylor rule in the period following the financial crisis. For example, factoring in the fall in the natural rate of interest leads to more accommodative interest rate paths than the standard rule.

The Taylor rule considers a limited number of key factors that should be taken into account when deciding the policy stance. Due to the complex nature of the economy, other factors should also be considered, despite their absence in the formula underlying the Taylor rule. It appears that the financial crises of recent years have had a lasting impact on several areas of the economy. This being the case, it would seem intuitively sound that the rules that worked before the financial crisis no longer suffice.

Sources

Bernanke, B. (2015) The Taylor Rule: A benchmark for monetary policy? Brookings Blog 28 April 2015.

Del Negro, M., Giannone, D., Giannoni, M. & Tambalotti, A. (2017) Safety, liquidity, and the natural rate of interest. BPEA Conference Drafts, 23.–24 March 2017.

German Council of Economic experts (GCEE), (2016). Low interest rates not appropriate for either euro area or Germany. Annual Report 2016/17, Chapter 5.

Hills, T., Nakata, T. & Schmidt, S. (2016) The Risky Steady State and the Interest Rate Lower Bound. Working Paper. December.

Hofmann, B. & Bogdanova, B. (2012) Taylor rules and monetary policy: a global ‘Great Deviation’? BIS Quarterly Review. September.

- Holston, K., Laubach, T. & Williams, J. (2017) Measuring the Natural Rate of Interest: International Trends and Determinants. Due for publication shortly. *Journal of International Economics*.
- Kortela, T. (2016a) Nykyisin ohjauskorko on varjo entisestään. Blog entry 9 August 2016: Euro & talous web page.
- Kortela, T. (2016b) A Shadow Rate Model with Time-Varying Lower Bound of Interest Rates. Bank of Finland Research Discussion Paper No. 19/2016.
- McCallum, B. & Nelson, E. (1999) Performance of Operational Policy Rules in an Estimated Semiclassical Structural Model. See Taylor, J. (ed.) (1999) *Monetary Policy Rules, Business Cycles Series*. Volume 31.
- Michaelis, H. & Wieland, V. (2017) R-Star and the Yellen rules. *VoxEU.org* 3.2.2017.
- Taylor, J. (1993) Discretion versus Policy Rules in Practice. *Carnegie-Rochester Conference Series on Public Policy* 39, 195–214.
- Taylor, J. (1999) Introduction in Taylor, J. (ed.) (1999) *Monetary Policy Rules, Business Cycles Series*. Volume 31.
- Taylor, J. (2016a) Remarks on Monetary Rules for a Post-Crisis World. Conference presentation: *Monetary Rules for a Post-Crisis World* 7 September 2016.
- Taylor, J. (2016b) Central Bank Models: Lessons from the Past and Ideas for the Future. Keynote Presentation at the Workshop ‘Central bank Models: The Next Generation’. Bank of Canada 17 November 2016.
- Taylor, J. (2017) Sound Monetary Policy. Testimony before the Subcommittee on Monetary Policy and Trade Committee on Financial Services. US House of Representatives 16 March 2017.
- Vilmi, L. (2017) Two Tales of the Natural Rate of Interest. *BoF Economics Review* 1/2017.
- Woodford, M. (2003) *Interest & Prices: Foundations of a Theory of Monetary Policy*. Princeton University Press.
- Yellen, J. (2015) Normalizing Monetary Policy: Prospects and Perspectives. Speech given on 27 March 2015 at the research conference ‘The New Normal Monetary Policy’.
- Yellen, J. (2017) The Economic Outlook and the Conduct of Monetary Policy. Speech given on 19 January 2017, the Stanford Institute for Economic Policy Research, Stanford University, Stanford, California.

Tags

[Taylor rule](#), [euro area monetary policy](#)

Are market expectations in line with the forward guidance of the ECB?

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By promising low interest rates in the future, a central bank can provide stimulus for the economy today. The effectiveness of this kind of forward guidance can be assessed by the impact it has on market expectations regarding interest rates. This article examines how successful the forward guidance of the ECB has been in steering market expectations. We find that the recent forward guidance linking explicitly to the duration of the Asset Purchase Programme has been particularly effective.



Forward guidance as a monetary policy instrument

Forward guidance can be defined as announcements made by the central bank about the future course of monetary policy, traditionally referring to guidance about the future of its policy rate. Forward guidance can be an effective monetary policy tool to boost the economy, especially when short-term interest rates are limited by the effective lower bound. The effectiveness of the policy relies on the fact that not only current short-term interest rates but also the future path of short-term rates matters for the economy, as current investment and consumption decisions depend on both current and future rates.^[1]

The effectiveness of forward guidance is based on the central bank's ability to influence market expectations on the future path of short-term interest rates. If the central bank can lower the expected path of short-term interest rates by using forward guidance, it can also lower long-term interest rates, as these are formed by the short-term rates. However, if market expectations are not affected by the forward guidance, its effects will be limited.

This article examines whether market expectations are in line with the forward guidance provided by the ECB Governing Council. Market expectations over the timing of interest rate lift-off, the date when the ECB is expected to raise its policy rate for the first time, is compared against the forward guidance provided by the ECB. Especially, the role of the ECB's Asset Purchase Programme (APP) is discussed as a means of influencing expectations on short-term interest rates.

We find that market expectations are in line with the ECB's forward guidance. Moreover, it seems that the guidance stemming from sequencing the end of net asset purchases and rate hikes has proved to be an effective tool in affecting market expectations on future interest rates.

Forward guidance: Delphic or Odyssean

Forward guidance can be divided into two categories: Delphic and Odyssean, introduced by Campbell et al. (2012). Delphic forward guidance is a form of openly stated prediction or expectation from the central bank regarding the future stance of the economy or monetary policy. It is effective if the central bank is perceived to have superior information on these. However, Delphic forward guidance never commits the central bank to any actions; it is merely a prophecy. Typical Delphic-style forward guidance can be found in the statement of the FOMC in December 2008,^[2] that '...the Committee *anticipates* that weak economic conditions are likely to warrant exceptionally low levels of the federal funds rate for some time.'

A potential problem with Delphic-style forward guidance is the lack of commitment. The effectiveness of forward guidance is based on its power to move market expectations on the future course of monetary policy. But without any commitment to a certain path of monetary policy actions, it is not obvious that market expectations will be affected by the guidance. Hence, Delphic forward guidance may not be that effective, and other types of forward guidance can be designed to provide stronger commitment.

Odyssean forward guidance commits the central bank publicly to a set of pre-defined monetary policy actions, and it can therefore be more effective than Delphic forward guidance. However, Odyssean forward guidance may suffer from time-inconsistency: when the economy starts to recover, the central bank may be tempted to raise interest rates faster than it has promised. If the markets anticipate the time-inconsistent behaviour by the central bank, the guidance is not likely to impact expectations on the course of future monetary policy and the forward guidance does not provide additional

1. Another possible channel of influence is the creation of higher inflation expectations for coming periods, which sinks the real interest rate and encourages current consumption. For this see Eggertsson and Woodford (2003).

2. FOMC Statement December 16, 2008.

stimulus to the economy. Central banks have tried to increase the credibility of their forward guidance by using different contingencies in their guidance: time contingency and state contingency.

Time-contingent Odyssean forward guidance has a clear link to the calendar, as the FOMC stated in August 2011:^[3] ‘The Committee currently anticipates that economic conditions...are likely to warrant exceptionally low levels for the federal funds rate *at least through mid-2013*.’ State-contingent Odyssean forward guidance, in turn, makes policy actions dependent on the economic outlook or certain economic variables. The FOMC used this kind of guidance in December 2012 when it stated ‘the Committee...currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the *unemployment rate remains above 6-1/2 percent*...’^[4] The central bank may also link other non-standard monetary policy tools to its forward guidance to increase the credibility of its guidance.

Asset purchases as a commitment device

In addition to forward guidance, other non-standard monetary policy measures can also be used when the standard policy tool is limited by the lower bound for interest rates. These include, first and foremost, large-scale asset purchases by the central bank, which are also known as quantitative easing, or QE. QE has two main channels through which it influences the markets: the portfolio balance effect and the signalling effect. The portfolio balance effect materialises when the compensation required by investors for holding risky assets decreases due to the central bank removing risky assets from investors’ portfolios. As a result, the yields of risky assets – such as long-term government bonds and corporate bonds – decrease, which lowers interest rates in the economy.

The second channel, the signalling effect, is sometimes difficult to separate from forward guidance.^[5] By committing itself to a large QE programme with a known duration, the central bank can signal its commitment to an easier monetary policy stance for a prolonged period, at least until the end of the programme. QE acts as a commitment device for forward guidance, as an interest rate hike during the QE period seems rather unlikely. So, forward guidance and other non-standard monetary policy tools can be mutually re-enforcing for the monetary policy stance.

ECB forward guidance and the duration of asset purchases

The ECB introduced forward guidance in July 2013, when the Governing Council stated: ‘The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time.’ At that point, the measure was intended more to insulate euro area money market conditions from the volatility imported from the United

3. FOMC Statement August 09, 2011.

4. FOMC Statement December 12, 2012.

5. For a deeper discussion on the effects of quantitative easing that are similar to forward guidance, see Krishnamurthy and Vissing-Jorgensen (2011).

States than to act as an active instrument for increasing stimulus.^[6] Thereafter, forward guidance has been an important part of ECB monetary policy, and Table 1 presents the most important changes in ECB forward guidance over time. Table 1 also shows the changes in the intended minimum duration for the APP announced by the Governing Council, as the APP and forward guidance are connected, especially in the later phase of forward guidance.

Table 1.

6. Praet (2016) discuss the reasoning behind the start of forward guidance by the ECB.

Changes in ECB forward guidance and in the intended minimum duration of the APP

Date	Forward guidance	Intended minimum duration of the APP announced by the Governing Council
4 July 2013	“The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time. ”	-
22 January 2015	“ ...in line with our forward guidance , we decided to keep the key ECB interest rates unchanged.”	“They [asset purchases] are intended to be carried out until the end of September 2016 and will in any case be conducted until we see a sustained adjustment in the path of inflation which is consistent with our aim.”
3 December 2015	“we expect them [interest rates] to remain at present or lower levels for an extended period of time ” ¹⁾	“The monthly purchases of €60 billion under the APP are now intended to run until the end of March 2017 , or beyond, if necessary“
10 March 2016	“the Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases ”	“...we decided to expand the monthly purchases under our asset purchase programme from €60 billion at present to €80 billion. They are intended to run until the end of March 2017 , or beyond, if necessary”
8 December 2016	“we continue to expect them to remain at present or lower levels for an extended period of time, and well past the horizon of our net asset purchases ”	“From April 2017, our net asset purchases are intended to continue at a monthly pace of €60 billion until the end of December 2017 , or beyond, if necessary“

¹⁾ Strictly speaking, there seems to be no forward guidance regarding the future path of interest rates in December, after the deposit rate had been lowered to -0.30%. However, as the forward guidance took the form ‘present or lower levels’ both in the earlier meeting

Changes in ECB forward guidance and in the intended minimum duration of the APP

in October and in the later meeting in January, we ignore the change in forward guidance in December for simplicity.

Source: Bank of Finland.

Three phases can be identified in the ECB's forward guidance. First, Delphic-style open-ended forward guidance ran from July 2013 to January 2015. The second phase started with the introduction of the APP in January 2015, when state and time contingency were provided regarding the programme duration but the forward guidance regarding interest rates was left unchanged. However, the credibility of the interest rate forward guidance in this phase was reinforced by the signalling channel of the APP. In the third phase, starting from March 2016, a time-contingent component was explicitly introduced to the forward guidance regarding interest rates when the Governing Council stated that the interest rate lift-off would not take place before the end of the net asset purchases. Whereas in the second phase the APP and the forward guidance on interest rates are connected only via the signalling channel of the APP, in the third phase the sequencing between the end of net purchases and rate hikes brings in a time-contingent Odyssean-style forward guidance for interest rates. So, the APP provides stronger support for interest rate guidance in the third phase than in the second phase. In addition, the third phase includes a Delphic component considering interest rate guidance after the end of the APP, with the statement 'well past the horizon of our net asset purchases'.

The common feature for all the ECB's forward guidance is that it indicates interest rates to be at lower or present levels for some period of time. Put differently, the forward guidance says that the ECB at least will not raise interest rates from the prevailing levels for some time. Hence, a measure which can be used to describe this forward guidance is the interest rates lift-off horizon, i.e. the period of time that is expected to pass before the ECB raises its policy rate for the first time.

It is hard to express forward guidance in the first phase in terms of lift-off horizon, because the Governing Council used open-ended forward guidance. However, given the experiences from the United States, we can argue that a reasonable expectation on the lift-off horizon for successful open-ended forward guidance should be between 12 and 18 months.^[7] For the other two phases a more precise benchmark for the lift-off can be given, because the Governing Council has stated an intended minimum duration for the APP. As the ECB's forward guidance regarding interest rate hikes entails a reference to 'net asset purchases', an assessment for the potential tapering period also needs to be added.^[8] The Bloomberg economists' consensus survey is used to define how expectations regarding the duration of the tapering period have developed.^[9] Chart 1 shows both components and their sum, which gives the expected duration of the net

7. See, for example, Swanson and Williams (2014), Swanson (2017) and Moessner (2013).

8. The tapering period is the phase during which the central bank shrinks the net purchases down to zero.

asset purchases. This measure is used to provide a minimum horizon for the lift-off implied by the ECB's forward guidance during the APP.

Chart 1.

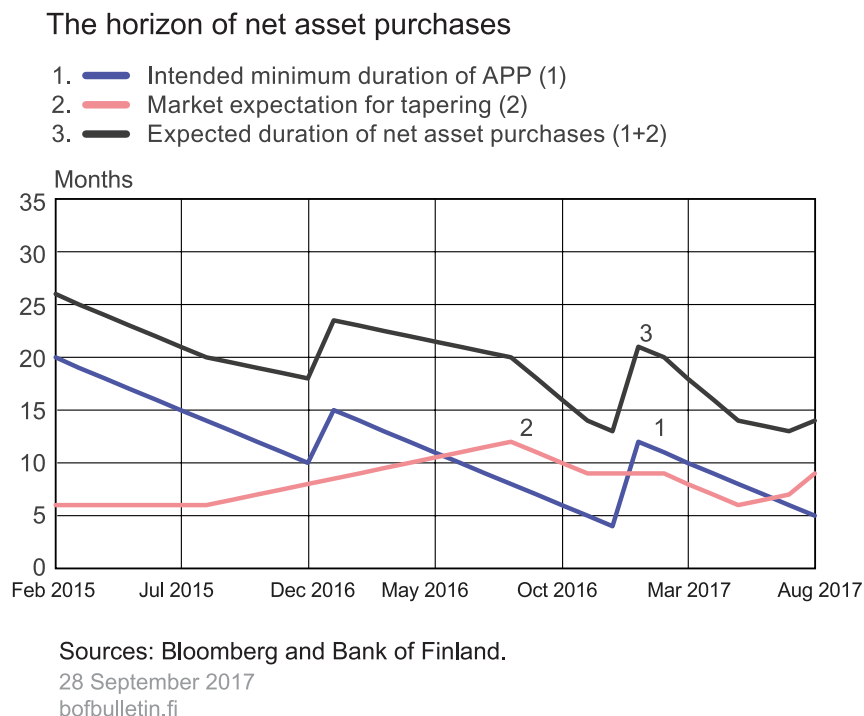


Chart 1 shows that the intended minimum duration of the APP has jumped twice as the ECB Governing Council has extended the APP (in December 2015 by 6 months, and in December 2016 by 9 months). After the jumps, the intended minimum duration declines linearly as time passes and the announced date for asset purchases comes closer. The expectations for the tapering period have varied between 6 and 12 months since the introduction of the APP. The sum of these gives the expected minimum duration of the net asset purchases. The announcements for the intended minimum duration of the APP dominate the early part of the expected duration measure, because the intended minimum duration for the APP was quite long. However, the expectation for the tapering becomes important as the announced intended minimum duration shortens. Towards the end of the sample, changes in the tapering period begin to dominate the expected duration measure.

One cause of concern could be that the expected duration of net asset purchases is generated directly from market expectations. This could introduce a connection between market expectations and our duration measures that could generate an endogeneity problem, as these measures are compared against each other. However, the expected duration for net asset purchases is also influenced by the shortening of the minimum duration of the APP, which is independent of the tapering expectations. Moreover, the

9. The Bloomberg survey is not available for all the periods, but we have interpolated and extrapolated linearly to replace the missing values.

increase in the expected duration measure at the end of the sample shows that the time-varying expectations on the tapering period are a key driver for the expected durations of net asset purchases. Thus, the use of a constant tapering period – for instance, 6 months – would lead to biased results. Therefore, there is an argument that it is better to control for the changing tapering expectations.

The expected duration of the net asset purchases gives a benchmark for the lift-off horizon, which should be reflected by market interest rates if market expectations are in line with the forward guidance of the ECB. That is, if market expectations are in line with the forward guidance of the ECB, the market expectation for the lift-off should be equal to or longer than the previously introduced expected duration of the net asset purchases. The expected duration measure is compared with market expectations regarding the lift-off date, but first we must discuss the measurement of market expectations regarding the interest rate lift-off.

Measuring market expectations for the lift-off horizon

The markets' position regarding forward guidance can (roughly speaking) be measured by a forward rate, because this gives the market expectations on the path of short-term interest rates.^[10] A forward rate is an interest rate in the future that can be obtained today and is implied by the current term-structure of interest rates.^[11] So, when the forward rate exceeds a certain threshold, we can conclude that this is the market expectation for the lift-off. The lift-off threshold is defined as follows: 25 basis points over the prevailing deposit facility rate.^[12]

The forward rate is frequently measured directly from observed yields. However, there are two potential flaws in this procedure. Firstly, the forward rate measured directly from the observed yields does not depend solely on the expected path of short-term interest rates, but is also affected by a term premium. The term premium is the compensation required by investors to hold long-term debt versus investing in short-term debt and rolling it over. Term premia could have recently turned negative, due to the ECB's Asset Purchase Programme, and this could cause an overestimation of the lift-off date. A forward rate that measures market expectations cannot be observed directly, but must be estimated. Our estimates are based on the term structure model introduced by Kortela (2016).^[13]

10. Here we ignore the effects coming from Jensen's inequality. For short-term interest rates, the effect of Jensen's inequality term is typically small.

11. For the euro area, the expectations of the markets on monetary policy can be measured from the overnight index swap rates (OIS), which give a term-structure for the overnight unsecured interbank interest rate (EONIA).

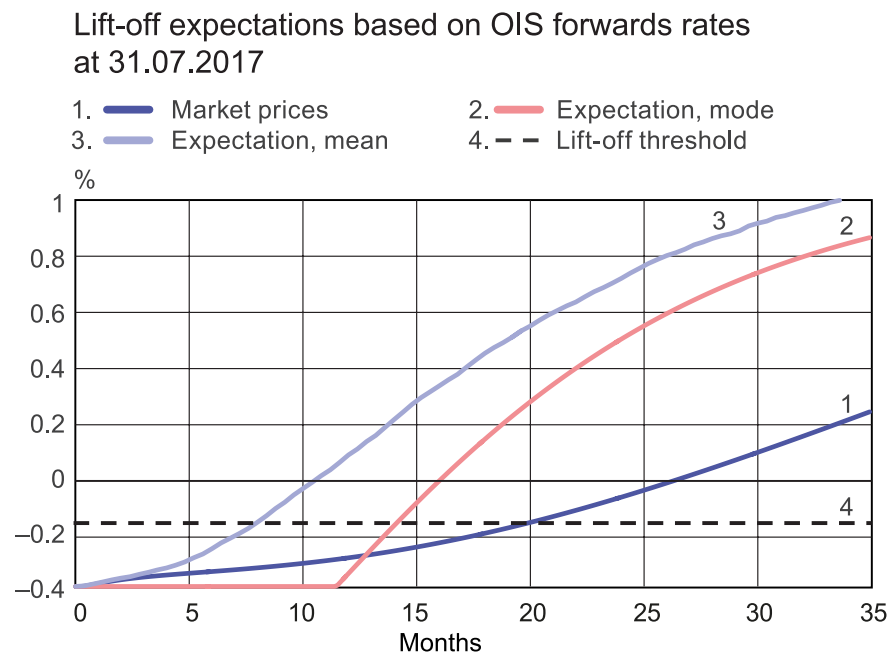
12. The typical size of a policy rate hike has so far been 25 basis points, and the deposit facility rate is the key policy rate when the banking sector operates with significant excess liquidity.

13. In a low interest rate environment the effects of the lower bound on interest rates must be taken into consideration in the estimation or the results could be biased. A widely used approach to adapt the effective lower bound to a term structure model is to use what are known as shadow-rate models. In addition to Kortela (2016), see also Lemke and Vladu (2016) and Wu and Xia (2017).

Secondly, the effective lower bound complicates the measurement of the future path of short-term interest rates. That is, the effective lower bound restricts interest rates when the distribution of the forward rates are censored from below. Then, the forward rate, which is based on the mean of the forward rate distribution, is not an optimal forecast for the lift-off and would lead to an underestimation of the lift-off horizon.^[14] Here we choose to use the path given by the mode of the forward rate distribution to estimate the lift-off horizon expected by the markets.^[15]

Chart 2 presents three forward rate paths and the lift-off threshold as on 31 July 2017. The forward rate called ‘Market prices’ is based on observed yields when the path may have been affected by the term premia. The other two forward rates, ‘Expectation, mean’ and ‘Expectation, mode’ give forward rate paths for which the effects of the premia have been removed. The mean path is not an optimal forecast, whereas the path given by the mode is. Chart 2 shows that at the end of July the markets expected that the Governing Council would increase the policy rate from the effective lower bound after 14 months – i.e. in September 2018.

Chart 2.



Source: Bank of Finland.

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Chart 2 also shows the features of different forward rates discussed above. On one hand, the lift-off would be overestimated if it were measured by using observed yields: it would

14. The optimal forecast for the lift-off day depends heavily on the loss function used to evaluate the accuracy of the forecasts. Here we choose to use the absolute-error loss function.

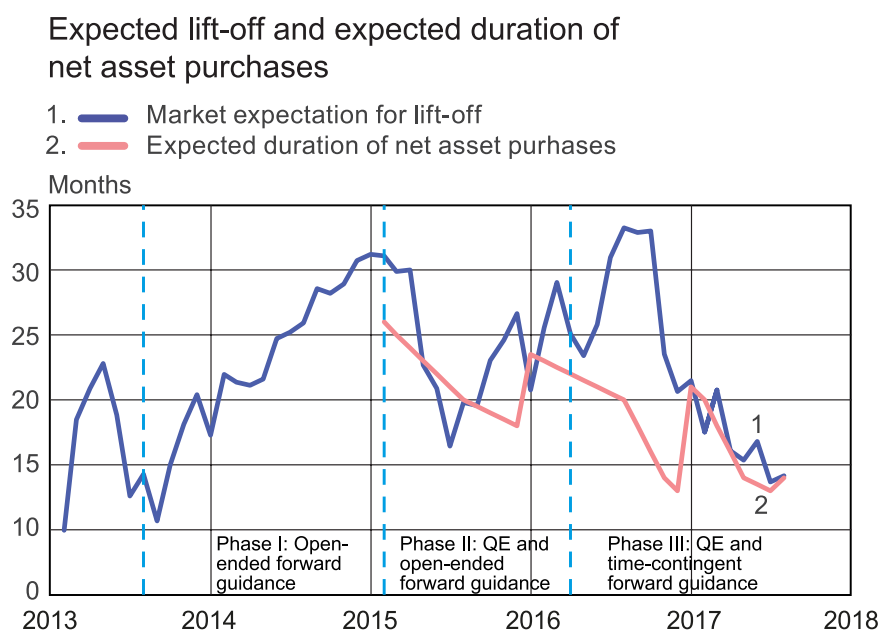
15. This path is very close to the median of the lift-off distribution, which is an optimal forecast under absolute-error loss. For more details on the estimation of the lift-off horizon, see Bauer and Rudebusch (2016).

occur after 20 months ('Market prices' in Chart 2). On the other hand, the presence of the effective lower bound makes the distribution of the forward rate path asymmetric – when the mean is higher than the mode – which could lead to an underestimation of the lift-off, to occur after 8 months. The optimal forecast (under absolute-error loss) is given by the mode and is 14 months, as noted above.

Are market expectations in line with the ECB's forward guidance?

The market expectation on lift-off is compared against the expected duration of the net asset purchases to find out if the market expectations are in line with the ECB's forward guidance. If the market expectations for the lift-off are equal to or longer than the expected duration of the net asset purchases, then the market expectations do not contradict the forward guidance. That is, the necessary condition for the market expectations to be in line with the forward guidance is fulfilled. Chart 3 shows the development of market expectations and the development of the expected duration of the net asset purchases. The Chart is divided into three phases following the previously introduced phases of the ECB's forward guidance.

Chart 3.



Source: Bank of Finland.
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In the first phase, from July 2013 to January 2015, the ECB used open-ended forward guidance. Given the experiences from the United States, we could argue that successful open-ended forward guidance should give a lift-off horizon of between 12 and 18 months. As the market expectations remained roughly between 12 and 18 months, we can

conclude that they were in line with the ECB's forward guidance during the first phase. The expectations on the lift-off began to rise gradually during 2014. Although it is not possible to identify the precise driving force behind the development, it might indicate that expectations about the introduction of a QE programme began to rise, especially in the autumn of 2014.

In the second phase, from January 2015 until the beginning of March 2016, the expected duration of the net asset purchases should provide a floor for the markets' lift-off expectations through the signalling channel. Hence, the market expectations regarding lift-off should be at least equal to the floor. This is in fact what happened in the beginning, as the market expectations ran somewhat higher than the expected duration of the net asset purchases. However, in the spring of 2015, inflation began to accelerate and the economic outlook improved, which led to the timing of the expected lift-off coming closer and temporarily even subsiding through the floor. When the economic outlook deteriorated again, the expectations began to increase steeply. The market expectations were in line with the open-ended interest rate forward guidance during the second phase, too, as the lift-off horizon was constantly at over 15 months. This horizon is, again, similar to the earlier results from the United States and approximately the same as in the first phase. However, the market expectations were occasionally lower than the expected minimum duration of the net asset purchases, which indicates that the signalling channel of QE was limited to controlling expectations on the path of short-term interest rates.

In the third phase, beginning in March 2016, the forward guidance by the Governing Council stated that interest rates would remain at present or lower levels 'well past the horizon of our net asset purchases'. That implied that the market should have expected the lift-off to materialize only after the ECB had finished its net asset purchases. In the months after this announcement, expectations moved further into the future, partly due to the deteriorating economic outlook and the Brexit referendum held in June 2016. At the end of the sample, the expected duration of the net asset purchases is highly correlated with market expectations for the lift-off and seems to give a floor to the expectations. A key observation is that, whereas in the second phase market expectations did go below the expected duration of the net asset purchases, this basically never happened in the third phase. This indicates that the time-contingent forward guidance bound to the duration of the APP is effective in controlling market expectations on short-term interest rates. This result is consistent with the research on the Fed's forward guidance, as the time-contingent forward guidance provided by the Fed has been found to be effective in influencing market expectations.^[16]

Forward guidance has been a successful part of the non-standard monetary policy

Since July 2013, forward guidance on future interest rates has been a constant feature at the ECB. This forward guidance can be considered to be effective if it influences market expectations of future interest rates. This analysis finds that market expectations regarding the first rate hike by the ECB have indeed been in line with the guidance

16. See, for example, Campbell et al. (2017), Bernanke (2013) and Femia et al. (2013).

provided by the ECB. Moreover, the results indicate that the time-contingent forward guidance applied since March 2016, which links the first ECB interest rate hike explicitly to the duration of the APP, has provided a particularly tight floor to market expectations over the interest rate lift-off. Even as economic recovery in the euro area has gained momentum during 2017, market expectations on the timing of the first interest rate hike have not shortened excessively. Indeed, they have persisted consistent with the ECB's forward guidance on the duration of the net purchases. Hence, forward guidance can be seen as a successful component of the non-standard monetary policy implemented in the euro area.

References

- Bauer, M. D., & Rudebusch, G. D. (2016). 'Monetary policy expectations at the zero lower bound', *Journal of Money, Credit and Banking*, 48(7), 1439–1465.
- Bernanke, B. S. (2013). Communication and monetary policy. *Speech at the National Economists Club Annual Dinner, Herbert Stein Memorial Lecture, Washington DC, 19.*
- Campbell, J. R., Evans, C. L., Fisher, J. D., & Justiniano, A. (2012). 'Macroeconomic effects of Federal Reserve forward guidance', *Brookings Papers on Economic Activity*, 2012(1), 1–80.
- Campbell, J. R., Fisher, J. D., Justiniano, A., & Melosi, L. (2017). 'Forward guidance and macroeconomic outcomes since the financial crisis', *NBER Macroeconomics Annual*, 31(1), 283–357.
- Eggertsson, G. B., & Woodford, M. (2003). Optimal monetary policy in a liquidity trap. *NBER Working Paper No. 9968.*
- Femia, K., Friedman, S., & Sack, B. (2013). The effects of policy guidance on perceptions of the fed's reaction function. *Staff Report (No. 652), Federal Reserve Bank of New York.*
- Kortela, T. (2016). A shadow rate model with time-varying lower bound of interest rates. *Bank of Finland Research Discussion Papers, No. 19/2016.*
- Krishnamurthy, A. & Vissing-Jorgensen A. (2011). 'The effects of quantitative easing on interest rates: Channels and implications for policy'. *Brookings Papers on Economic Activity, Fall 2011*, 215–265.
- Lemke, W., & Vladu, A. L. (2016). Below the zero lower bound: a shadow-rate term structure model for the euro area. *Discussion Paper Deutsche Bundesbank No. 32/2016.*
- Moessner, R. (2013). 'Effects of explicit FOMC policy rate guidance on interest rate expectations', *Economics Letters*, 121(2), 170–173.
- Praet, P. (2016). The ECB's monetary policy response to disinflationary pressures. *Speech at ECB and Its Watchers XVII conference organised by Center for Financial Studies, Frankfurt, 7 April 2016.*

Swanson, E. T. (2016). Measuring the Effects of Federal Reserve Forward Guidance and Asset Purchases on Financial Markets. *NBER Working Paper No. 23311*.

Swanson, E. T., & Williams, J. C. (2014). 'Measuring the effect of the zero lower bound on medium-and longer-term interest rates', *The American Economic Review*, 104(10), 3154–3185.

Wu, J. C., & Xia, F. D. (2017). Time-varying lower bound of interest rates in Europe. *Chicago Booth Research Paper No. 17-06*.

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