Financial stability implications of increasing interest rates

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Abstract

Increasing interest rates appear to pose little risk to financial stability at present. The basic reason is simple: Monetary policy normalisation, which comes as a reaction to the 'normalisation' of the economy, should not lead to a deterioration of the creditworthiness of most debtors.

The end of the bond-buying programme of the ECB, per se, should not pose a threat to financial stability. It has already been anticipated in the markets, and the public sector purchase programme (PSPP) seems to have had only a minor and temporary impact on yield spreads within the euro area. The remaining risks to the stability of national government bond markets appear to be mainly political.

Policy normalisation more in general, including bringing policy rates into positive territory, might have some stabilising impact on the banking system, as it would tend to improve net interest margins.

A legacy of the PSPP is that the cost of servicing government debt will be less exposed to market rates, but more directly and quickly exposed to increases in ECB policy rates. Conversely, banks would benefit more from higher revenues on the €2 thousand billion they hold in central bank deposits at present, potentially strengthening their capital position and ability to lend.

Given the limited role of the euro as a reserve currency, the global impact of normalisation by the ECB should also remain limited since it has been preceded by normalisation in the US. Pockets of vulnerability remain in emerging markets, however, especially those in the European neighbourhood with large current account deficits.

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1. Introduction

The euro area economy has gradually strengthened over the last few years. Employment has now surpassed the previous peak. Unemployment has fallen and the output gap is closing. All of this has raised the expectation that interest rates might soon increase as well.

With this strengthening of the euro area economy, accompanied by an increase in headline inflation, the ECB has indeed signalled its intention to normalise its policy. A first step has been the announcement that the large public sector purchase programme (PSPP) will most likely stop at the end of 2018. But this announcement seems to have had little impact so far. Long-term interest rates have lowered further, indicating that markets expect a 'low for long' scenario.

Thus, financial markets do not expect any quick increase in interest rates. But this leaves open the question whether such an increase would create financial instability, which is the main theme of this contribution.

At the time of writing, short-term rates are increasing in the United States, while long-term rates seem to have reached a plateau. As a result, the US yield curve has been flattening for some time and might even invert soon. The gap between yields on 2-year and 10-year Treasuries was 1.34% at the end of December 2016; it now stands at 0.25%, suggesting that the market expects that the Federal Reserve will soon reach the end of its tightening cycle. This scenario is different from that commonly associated with the euro area where there is still more potential for growth. This assessment suggests that the entire yield curve could move up.

The experience from the US has shown that changes in policy in a reserve currency country can sometimes have important spill-over effects for the global economy. This contribution will thus consider the potential implications of policy normalisation in the euro area for global financial stability.

2. The end of central bank bond buying: Does it matter?

There has been some concern that the end of the bond purchase programme(s) of the ECB could lead to instability, given that the Eurosystem has been a major buyer of government debt over the last few years.[1]

In the US the end of quantitative easing (QE), and the subsequent increases in policy rates has not led to any financial market instability. The 'taper tantrum'[2] of 2013, constituted, in retrospect, a temporary over-reaction of financial markets which had misinterpreted the initial announcement of the beginning of a reduction (tapering) of the purchases by the Federal Reserve as meaning that policy rates would be increased soon. When this was clarified, financial market stabilised quickly (Bernanke, 2016). Given that the ECB has underlined several times that its rates are likely to stay low for an extended period, a similar misunderstanding has so far been avoided in Europe.

There is a large empirical literature[3] on the impact of various forms of bond buying by central banks on interest rates and inflation, but there is no widely accepted theoretical model as to why central bank purchases of long-term bonds should permanently lower long-term interest rates. This uncertainty about the channels by which balance sheet policies work was succinctly expressed by the former Chairman of the Federal Reserve, Ben Bernanke, who is reported to have quipped, "[t]he problem with QE is that it works in practice, but it doesn't work in theory" (Saft, 2014).

At first sight, it might appear obvious that central bank purchases of government bonds should lead to lower interest rates since an additional buyer in the market should lead to higher prices (and thus lower yields). However, the ultimate investors often hold bonds because they have certain expectations about inflation, interest rates and other relevant variables. If these expectations do not change, these investors might sell their holdings as yields fall. The initial impact of central bank purchases would then dissipate over time.

For safe assets, the price (yield) should be determined by expectations about future short-term rates, plus possibly a liquidity premium. One channel for central bank bond purchases to permanently affect the risk-free (long-term) rate would be through a lower liquidity premium. The return on risky assets should be anchored by different considerations since the risk spread (i.e. the return above the safe rate) should be determined by default probabilities, recovery rates, etc. As long as these do not change, there is no reason why the risk spread should change.

[1] This contribution does not take a stance on whether the PSPP was appropriate given the outlook for price stability when the decision was taken (end of 2014). It merely examines the impact of the asset purchases undertaken on private and public sector balance sheets with a view to determining the financial stability impact of increasing interest rates.

[2] The term was used to refer to the 2013 surge in US Treasury yields, which resulted from the Federal Reserve's announcement to 'taper', i.e. to gradually reduce the amount of securities it was buying.

[3] Altavilla et al. (2015) is a first important reference. Urbschat and Watzka (2017) provide a more recent survey.

If the central bank buys some of the risky assets (and holds them), it will just displace some investors (presumably those with the highest risk aversion and/or highest subjective probabilities of default). Yields might jump a little bit the moment the central bank buys, but this blip (less than 10 basis points) should disappear soon. This is confirmed in the literature on the 'flow' effects of central bank purchases (see De Santis and Holm-Hadulla, 2017).

Several papers have shown convincingly that, on days on which the ECB announced its intention to start a large bond-buying programme, yields on many euro area government bonds fell.[4] There is thus little doubt that the announcements of bond purchases had an impact on financial markets. The key issue that remains is whether the impact of central bank purchases is transitory or permanent (see Neely, 2014, versus Wright, 2012). If it is transitory, one should not expect financial instability resulting from the end of the bond buying program or even a reduction of the stock of securities held by central banks.

The PSPP program of the ECB took place in very different circumstances than the first large asset purchase program (APP) of the Federal Reserve. At the time the Fed took the decision, in late 2008, financial markets were in turmoil with many risk spreads at exceptional levels. By contrast, the ECB took the decision to launch the PSPP in late 2014, when financial markets had been quite calm for some time and risk spreads had already reached low levels. Moreover, the longer-term (10-year) interest rate in the US was around 4% when the first US bond purchase programme started. Here again one finds a stark contrast with the situation in the euro area where the long-term rate riskless rate, that on German 10-year bonds, was already below 1% and the average for the euro area was below 2%, thus limiting the extent to which bond purchases by the ECB could be expected to depress yields (and risk spreads).

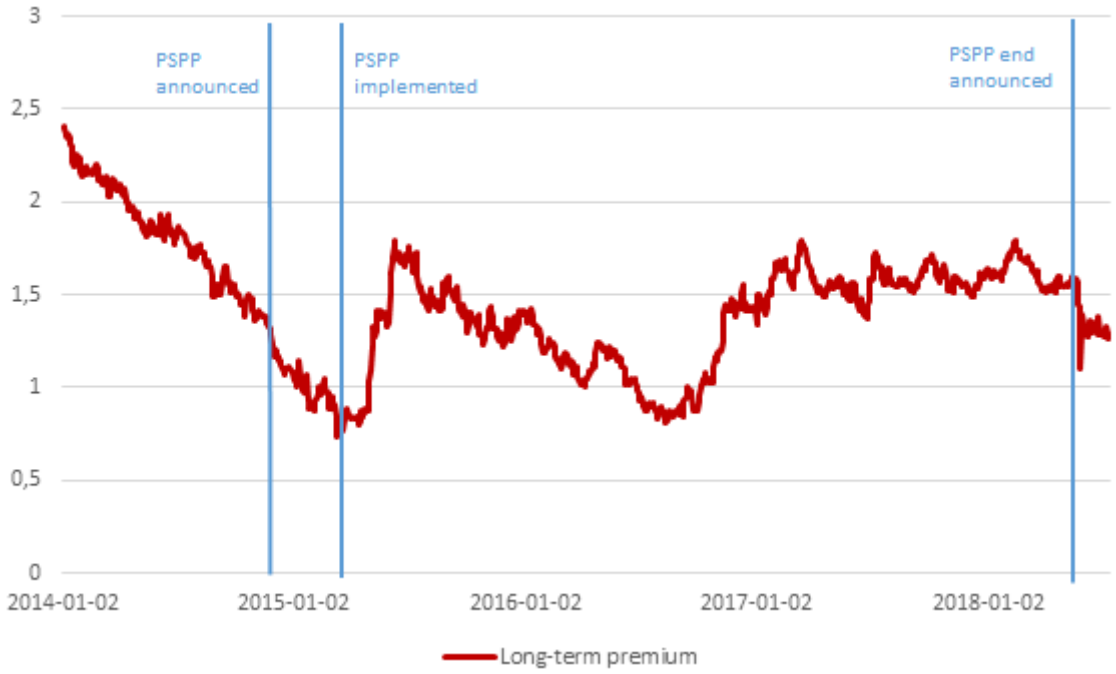
The best measure of the impact of the PSPP (and thus the potential for financial dislocation when it ends or is reversed) might not be the yield on the bonds, which were bought under this programme, but the long-term premium, or the difference between long-term and short-term interest rates. The reason for this is simple. When a central bank buys a long-term bond, it has to entice commercial banks to hold more (very short-term) deposits. The excess demand for government bonds thus goes hand-in-hand with an excess supply of short-term deposits. The ECB controls the rate at which it remunerates deposits (currently minus 40 basis points). But when commercial banks hold very large amounts of central bank deposits, they are likely to reduce their holdings of other short-term assets, which might not be perfect substitutes but have similar liquidity characteristics. This implies that in a pure 'demand and supply' framework, one would expect central bank bond buying to lead to lower long-term rates, but potentially somewhat higher short-term ones.

Figure 1 thus shows a measure of the average euro-area term premium, namely the difference between ten- and one-year government bonds. It is apparent that the risk premium had been falling already throughout 2014. After the announcement of the PSPP (towards the end of 2014), this fall continued, but it is difficult to discern a clear change in the trend that had already

[4] This is the main message from 'event studies'; see the literature cited above or Belke et al. (2017).

existed. The minimum was reached just around the time the asset purchases started, i.e. in March 2015. A few months after the start of the asset purchases the yield curve was back to where it had been when the PSPP had been announced. Moreover, the announcement of the end of PSPP purchases in early summer 2018 was followed by a fall in the risk premium, which is the opposite of what one would have expected.

Figure 1. The PSPP and the euro area government long-term premium



Data source: https://datamarket.com/data/set/1pfv/euro-yield-curves-daily-data#!ds=1pfv!1ovg=1:1ovh=1.2:1ovi=5&display=line

Gros (2018) analyses comparable measures of the long-term premium separately for Germany and Italy and finds a similar pattern: the announcement of the PSPP was followed by a reduction in risk premia, but this initial effect was entirely offset during the first few months of implementation.

It is of course possible that the yield curve would have remained much steeper, and the risk spread higher, without the PSPP. But this is difficult to prove (or disprove). All one can say with confidence is that several months after the announcement yields were back to the level at which they had been before the implementation of asset purchases. Moreover, the scaling up (and later down) of asset purchases did not have a noticeable impact either way.

Looking forward, the key question is whether one should expect to see a similar pattern in the future. If the pattern observed in the past continues, one would expect that a decision to sell part of the PSPP holdings would lead only to a temporary reaction. On this basis, there should be

little danger to financial stability from a normalisation of monetary policy. Temporary instability could of course arise when policy steps are too abrupt, badly communicated or simply misunderstood by the markets (as in the case of the famous 'Taper Tantrum' mentioned below). However, given the track record of the ECB there it is likely that every step of the normalisation will be gradual and well communicated beforehand.

The experience of the US seems to confirm this view. There has been no perceptible market reaction to the announcement of the gradual running down of the Federal Reserve holdings of Treasuries and other securities.

Some studies have found that the announcement of the PSPP had a large impact on yields even in markets not affected by the PSPP (Falagiarda et al., 2015). Such 'spill-over' effects have been found both within the euro area (Greece) and outside, especially in non-euro area member states. ECB President Draghi has argued that this could well be attributed to the demand for other assets by investors who have sold their bonds to the Eurosystem.[5] It is indeed likely that different markets for sovereign debt are linked. Spill-over effects are thus to be expected. It is difficult to understand, however, why these indirect spill-over effects should produce changes in yields that are larger in markets where there were no purchases than in markets where the PSPP was implemented. For example, one finds particularly large effects for Greece and Hungary from purchase announcements, although there were no purchases in either case. One can of course argue that investors who held the riskier bonds from PSPP countries (IT, ESP, PT) might then add Hungarian and Greek bonds to their portfolio. But these bonds will be held at lower yields only if the fundamentals of these countries improve. The spill-over effects for other countries are thus likely to have been transitory.

3. Interest rates and public finance: The legacy of the PSPP

When central banks buy government bonds, the debt does not disappear but rather takes a different form. The case of the PSPP illustrates this general point well. The counterpart to the large government debt holdings of the Eurosystem are largely commercial bank deposits at the NCBs of the Eurosystem, which have increased by almost €2,000 billion since the end of 2014.[6]

[5] "QE has several effects. [...] The portfolio rebalancing effect, namely if you buy euro-denominated assets, people who will get cash, will buy perhaps non-euro-denominated assets, and you have a portfolio rebalancing effect through that channel" (Mario Draghi, Introductory Statement to the press conference, 4 December 2014).

[6] The accounting of the Eurosystem is rather complicated. The increase in deposits (and cash in circulation) is somewhat smaller than the increase in holdings of securities. Securities held for monetary policy purposes increased by approximately €2,500 thousand billion over the life of the APP and the PSPP, but deposits (and cash) increased by somewhat less because other liabilities of the Eurosystem, notably those to non-euro area residents increased. It is not known what interest rate the Eurosystem pays (or earns) on these assets.

The more general point is that in a country with its own currency, the central bank and the Treasury can be consolidated for fiscal purposes, at least in the long run (Reis, 2017).[7] Any gains or losses that the central bank makes on its investments are usually transferred over time to the (national) Treasury.[8]

If the central bank buys longer-term government bonds, overall public debt is thus not reduced, but its composition *de facto* changes: it becomes more short term because the central bank finances its purchase of government bonds typically with commercial bank deposits, which are usually very short term.

Within the euro area, one could consolidate the sum of all national Treasuries with the accounts of the Eurosystem, as the so-called monetary income (the financial profit of the entire system) is, sooner or later, transmitted to national Treasuries, according to the capital key, which determines the respective share of each country in the ECB.

This applies only to ordinary monetary policy operations, however, and not to the bulk of the PSPP. In purchasing bonds issued by their own governments, national central banks were operating under their own responsibility.

This means that one cannot consolidate all NCBs within the Eurosystem for most of the PSPP, but rather must consider the implications of bond purchases at the national level.

The NCBs are part of the larger public sector of their country and they transfer all profits or losses of these transactions eventually back to their own government. This implies that one can still apply the principle that the central bank can be consolidated with the government for most of the PSPP operations, but at the national level.[9]

In this approach the PSPP could be regarded as an asset/liability operation. For example, when the Banca d'Italia buys a long-term Italian government bond it is as if the subsidiary of a large corporation buys the debt of the mother company (issuing itself short-term liabilities). Ordinarily one would not expect such an operation to have a large impact. One could thus compare the 80% of the PSPP to a gigantic 'liability' management exercise, which consists essentially of a reshuffling of (national) public debt from one part of the public sector (governments) to another part (NCBs).

The ultimate effect of this 'liability' management is to shorten the effective duration of national public debt. The deposits of banks with the NCB effectively represent public debt (held by

[7] Fiscally speaking, this is the case. But Eurostat considers central banks as independent financial institutions, completely separate from both central and general government.

[8] This explains why monetary policy decisions have fiscal implications. However, the Eurosystem takes its decisions solely with respect to the price stability objective; in complete independence of any possible fiscal implications.

[9] Of course, this is the case only at the conceptual level and in the long run. The short run can deviate significantly from the consolidated view. NCBs do not transfer all of their profits and losses to the treasury immediately but do so according to country-specific rules, which are more complex and differ from country to country.

commercial banks) with a zero duration (these deposits can be withdrawn daily). Again, to make a concrete example: When the Bundesbank buys a German government bond with a residual maturity of 10 years, by issuing commercial bank deposits, it reduces the maturity of that part of the German public debt from 10 years to zero (one day, to be precise).

This shortening of the effective duration of government debt throughout the euro area is substantial given the size of the PSPP (over 20% of euro area GDP and bit more of the public tradable debt), but it varies from country to country. This also implies that the impact of increasing interest rates on the stability of public finances will be different from country to country.

In the case of Germany, for example, the Bundesbank is likely to have bought between one-quarter to one-fifth of all the (publicly traded) German government (federal) debt over the lifetime of the PSPP. If the average maturity of the purchases of the Bundesbank is about six years, the effective duration of German government debt (at least that which is in a publicly tradable form) would be reduced by 1.2 to 1.5 years (i.e. from 6 years to 4.8-4.5 years).

For other countries the reduction in the effective maturity of public debt might be somewhat different because there are two offsetting factors. The Banca d'Italia buys about the same amount of debt as a proportion of GDP as other countries, but a lower proportion of the outstanding debt because Italy's debt-to-GDP ratio is much higher (about double that of Germany). This factor would tend to reduce the impact of the bond purchases on the effective average maturity of Italian government debt. But the Banca d'Italia has also bought, on average, longer-term maturities than the Bundesbank. This factor would tend to go in the opposite direction.

The other side of this coin is that increases in *market* rates (at unchanged ECB rates) will have less of an impact on government finances. With about one-quarter of all euro area government debt in the hands of the Eurosystem, the impact of a *persistent* increase in the entire yield curve would be mitigated by about one-quarter – at least as long as the Eurosystem keeps PSPP holdings at the present level.

Any increase in market interest rates would lead to higher interest payments by the government to bond holders. But about one-quarter of the increased interest payments would go to the national central bank. This implies that the large PSPP holdings provide a substantial mitigating effect in case of tensions on the government debt market of any one country.[10]

The new situation created by the PSPP is that government interest expense will henceforth be directly related to the deposit rate of the ECB. An illustrative calculation can illustrate the importance of ECB policy rates for debt service.

[10] This partial mitigation through PSPP holdings would of course be in addition to the fact that market interest rates would have to remain higher for some time before this effect works itself through the existing stock of debt as bonds come due and have to be replaced by new issues at higher rates.

The current stock of deposits at the Eurosystem of around €2,000 thousand implies that if the ECB were to increase the deposit rate by one percentage point, say to plus 0.6%, interest payments to commercial banks (by Eurosystem NCBs) would have to increase by about €20 billion (p.a.).[11] This increase in payments to commercial banks would reduce the 'monetary income' of the Eurosystem and would, over time, result in lower transfers from NCBs to their national Treasuries of an equivalent amount.

If the central bank does not hold any government bonds, changes of the policy rate can still have a major impact on government finances because the policy rates of the central bank will influence very strongly short-term market rates and potentially longer-term rates. However, that influence is indirect and not necessarily 1:1. Over the last few years, the cost of short-term debt of euro area countries (in particular for the AAA-rated ones) has deviated sometimes substantially from the policy rates or 'corridor' set by the ECB. The impact of an increase in policy rates could thus be rather small and difficult to predict if the Eurosystem did not hold any government debt.

However, PSPP holdings would tend to accelerate the impact of a generalised increase in *both policy and market* rates on government finances (perhaps the most likely case). This is a natural consequence of the shorter effective duration of public debt caused by the PSPP. It can best be illustrated by a concrete example, namely an increase in policy and market rates along the entire curve which lasts one year.

In the absence of the PSPP, the impact would be moderate, assuming an average maturity of eight years. Only about €1,200 thousand billion (or 12.5% of total public debt of close to €10 thousand billion) has to be refinanced that year, resulting in an increase of interest expenditure of €12 billion per annum if rates increase by 100 basis points along the full maturity spectrum.

With the PSPP holdings, the debt service shock would be much larger. During that year the interest cost on the deposits at the Eurosystem will increase by about €20 billion, as already indicated. On top of this, governments will still have to refinance $1/8^{th}$ of total public debt, resulting in higher interest payments of €12 billion per annum. Thanks to Eurosystem holdings, only $4/5^{th}$ of this amount will represent a net increase in the debt service burden for the government, which implies that the impact of a generalised increase in interest rates would lead to an increase in debt service costs of €29.6 billion. With the PSPP legacy, the impact of a

[11] The exact impact might be somewhat smaller given that not all deposits pay the negative rate of 0.4%. Moreover, this calculation refers only to the impact of higher rates on commercial bank deposits. Higher ECB lending rates would tend to increase revenues for the Eurosystem. In the absence of PSPP holdings, the Eurosystem would still record the income from lending to commercial banks and other assets as the counterpart to the monetary base, especially cash in circulation. Given that the latter has increased gradually to about €1,200 billion, the monetary income of the Eurosystem should increase by about €12 billion annually if the lending rate were to increase by one percentage point.

generalised increase in interest rates on public finance would thus be more than twice as large during the first year.[12]

4. Interest rates versus financing conditions

An increase in policy and market interest rates could thus have a significant impact on the interest expenditure of euro area governments. Financing conditions are currently so favourable, however, that rates would have to increase considerably before they are likely to cause financial instability.

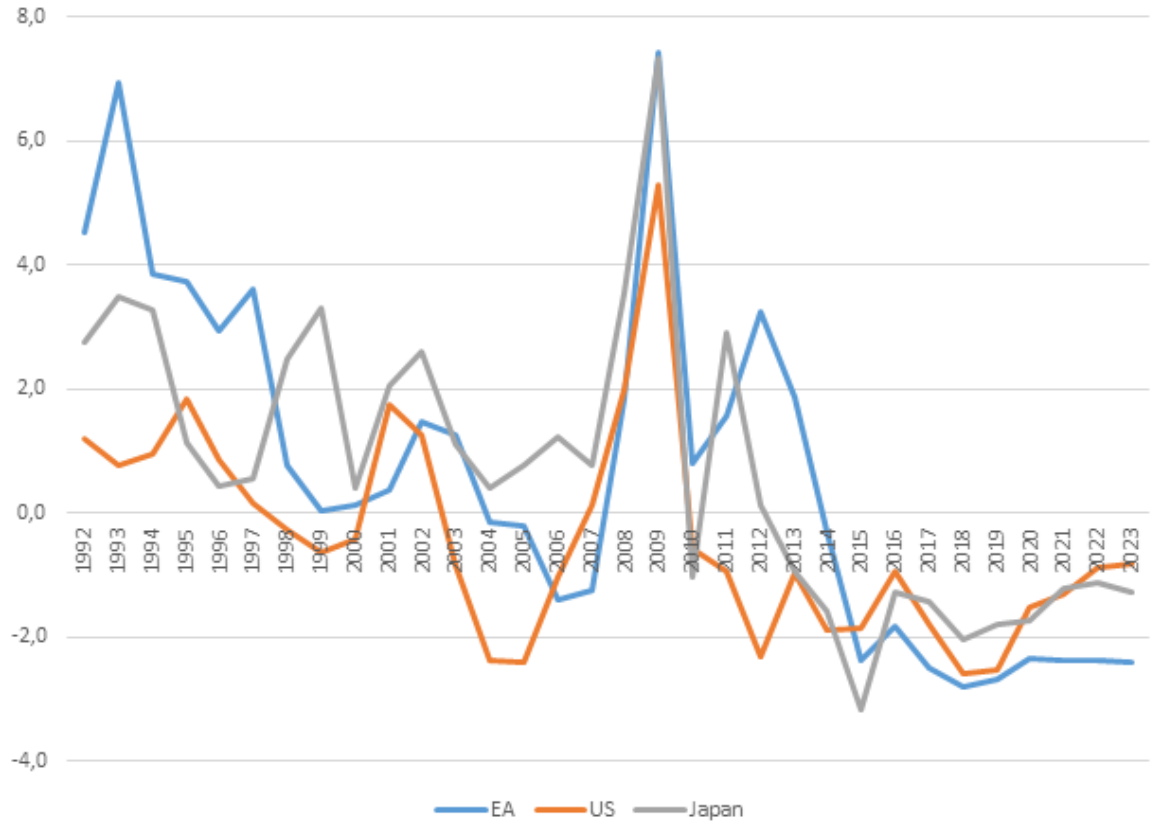
Figure 2 below shows one key measure of financing conditions, namely the difference between long-term (ten-year) interest rates and the growth rate of nominal GDP. This difference is also called the 'snowball' effect because it indicates to what extent governments need to run a primary surplus just to keep the debt-to-GDP ratio constant. At the present time, nominal GDP growth for the euro area is running slightly above 3%, whereas the average long-term interest rate is somewhat below 1%, more than 2 percentage points lower – thereby creating a negative snowball effect.[13] This is exceptional in a longer-term perspective since until 2007 the snowball effect had been positive with interest rates exceeding (nominal) GDP growth. A cross-country comparison shows that other large developed economies experience a similar pattern.

Moreover, these favourable should continue, at least on the basis of forward rates and the available growth forecasts from the Commission and the IMF. Interest rates would have to increase considerably before the snowball effect becomes unfavourable. The data shown here refers to the euro area average. There are of course important differences across countries. However, the observation that nominal growth is higher than the interest rates applies to most euro area countries. Italy constitutes the main borderline case because of its low growth rate combined with an unstable risk premium. But apart from this case, most government would continue to face very favourable financing conditions even if rates were to increase somewhat (less than 2 points).

[12] See Cavallo et al. (2017) for a detailed examination of the impact of different interest rate paths on the income of the Federal Reserve. They find that the larger balance sheet increases the impact of interest rate changes on the profits of the Federal Reserve.

[13] This means that in the long run the debt-to-GDP ratio could be stabilised even with a primary deficit of 2% of GDP.

Figure 2. Longer-term financing conditions for government debt in major economies



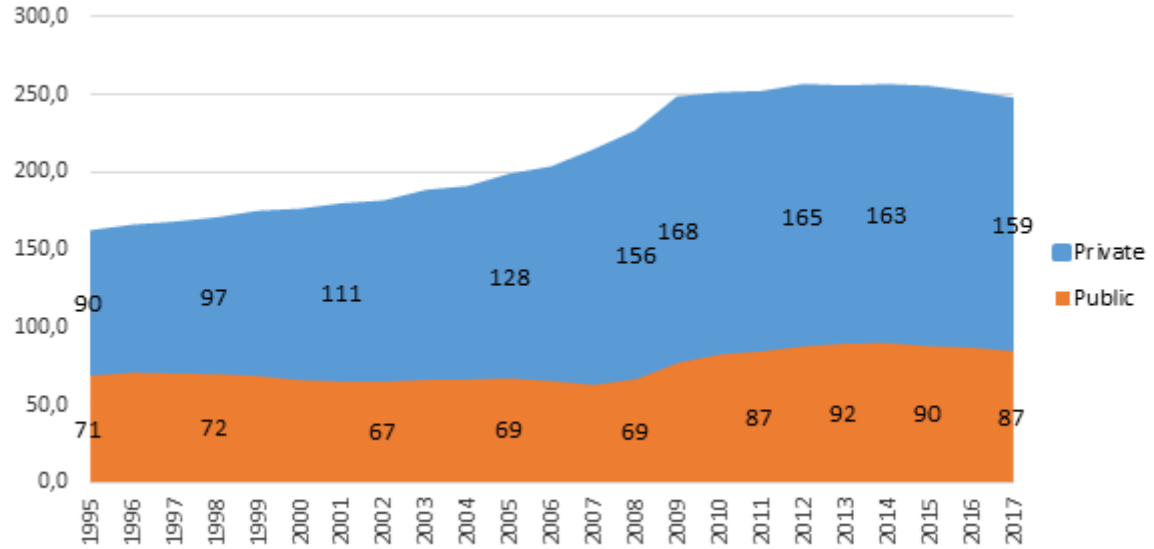
Note: Solid lines denote interest rates on government bonds, minus nominal GDP growth rates.

Data source: Eurostat.

The easy financing conditions extend also to most of the private sector given that risk premia are also low for many risk classes. In the short run this should reinforce financial stability, but a long period of low interest rates allows so-called 'Ponzi' borrowers to become more important (Minsky, 1986). With GDP growth higher than the interest rate, many borrowers could survive and see their debt-to-revenue ratios decline even if they make no profit on average. This is why Minsky argues that 'stability breeds instability'.

The increasing share of low-rated issues on bond markets could be taken as the real-world manifestation of this concern. Concerns over systemic instability would be compounded if low interest rates had led to an increase in debt levels, but this does not seem to have taken place, as shown in Figure 3. Both private and public debt have been substantially stable since the end of the acute financial crisis. The huge build-up of private debt between 1995 and 2007 has not been reversed, but at least the accumulation has stopped. Both public and private debt levels are now declining, albeit very slowly. If this decline can be maintained, it should become easier to absorb higher interest rates.

Figure 3. Private and public leverage in the euro area



Source: Eurostat.

5. Interest rates, the banking system and financial stability

Higher interest rates should not only be viewed as a burden for public finances. They could also constitute a stabilising factor for a key element of the financial system, namely banks. The reason for this is simple: Higher interest rates improve the net interest revenues of banks, strengthening their capital position and thus increase their capacity to lend to the economy. Brunnermeier and Koby (2018) provide a model that yields a 'reversal interest rate', i.e. a rate "at which accommodative monetary policy `reverses' its intended effect and becomes contractionary for lending".

The logical implications of this approach are far-reaching. If present short-term interest rates were below the 'reversal rate', an increase in policy rates might be expansionary and reinforce financial stability because it would strengthen bank's balance sheets.

An important element of this approach is that the reversal interest increases the longer rates stay low because over time the longer-term assets on banks' balance sheets mature and will be substituted by low yielding assets.[14]

[14] Brunnermeier and Koby (2018) summarise their findings thus: "The determinants of the reversal interest rates are (i) banks asset holdings with fixed (non-floating) interest payments, (ii) the degree of interest rate pass-through to deposit rate, (iii) the capital constraints that they face. Low interest rates beyond the time when fixed interest rate mature do not lead to recapitalization gains while still lowering banks' margins, suggesting a shorter forward guidance policy: the reversal interest rates 'creep up'. Moreover, interest rate cuts can have heterogeneous effects across regions where monetary policy operates, being possibly expansionary in one region and contractionary in another. Furthermore, quantitative easing increases the reversal interest rate."

These 'stabilisation' aspects of higher rates are of course increased by the deposits which constitute the counterpart of the asset purchase programmes of the ECB because banks now hold about €2 thousand billion in deposits at the NCBs of the Eurosystem. This implies that banks would receive, *ceteris paribus*, higher revenues of about €20 billion annually if the effective deposit rate were to increase by 1 full percentage point, which should strengthen their capital base and might ease lending conditions. Of course, this higher-interest income for commercial banks just represents the higher-interest burden to the public sector mentioned above.[15]

It is of course uncertain whether the present level of interest rates is above or below this reversal rate. The general consideration is that increasing rates from a negative to a slightly positive level might make the banking system somewhat more stable. And the legacy of the asset purchase programmes should reinforce this effect.

The 'stabilising' properties of interest rate increases will of course vary greatly from country to country and from bank to bank. Unfortunately, it is difficult to obtain data on the importance of central bank deposits for individual banks. However, supervisors have this information and have used it to 'stress test' banks for increases in policy rates. One such test (see ECB, 2017), which included several different scenarios for interest rates, found that higher rates, especially an increase in the entire yield curve, would increase the net interest margin of banks, but would also reduce the 'economic value of equity' as the internal rate of return should increase. The impact of an interest rate increase on regulatory capital, however, might still be positive – at least in the short run.[16]

The overall conclusion is that an increase in rates from the present extremely low level might not constitute a danger to the stability of the euro area's financial system, which is dominated by banks.

Increasing interest rates would of course also have wide-ranging implications for the balance sheets of other important financial intermediaries, such as insurance companies. The investment portfolios of insurance companies are heavily skewed towards bonds, which make up between one-half and two-thirds of the asset side. However, this does not imply than an increase in interest rates could or should destabilize insurance companies. On the contrary, an increase in interest rates is likely to increase the returns of all insurers, without increasing their liabilities.

[15] These calculations only describe the difference between the present situation and the balance sheets without the asset purchases. Many other factors have naturally also impacted the balance sheet in the meantime. Moreover, it is likely that many macroeconomic variables would be different if the APP or PSPP had not been launched. These calculations thus serve only as an estimate of the direct balance sheet impact of these asset purchases. Cavallo et al. (2017) document that payments on reserves balances of commercial bank at the Federal Reserve have already increased by over $30 billion (at an annual rate). This might be one of the reasons for the higher profitability of the US banking system.

[16] In practice, this would depend on a host of assumptions, such as how banks would revalue longer-term assets at 'fair value'. Moreover, this stress test was conducted on end 2016 balance sheet data, at which point only about one-half of the PSPP had been implemented.

Insurance companies, especially life insurers, have the opposite asset/liability structure of banks. While banks have short-term liabilities and medium to long term assets (loans and some government bonds), insurance companies have extremely long term liabilities and assets with a shorter duration. Moreover, the liabilities of insurance companies are not subject to runs. This is why insurance companies represent rarely a threat to financial stability. The real danger for the insurance sector is the opposite, namely a persistence of rates 'low for long'. Some insurance companies have still old contracts outstanding which were based on much higher return expectations and thus constitute a source of losses today (given that (life) insurance companies are generally not able to fully match the duration of their assets and liabilities.[17]

There is also little risk that an increase in rates, which would depress the market value of existing bond holdings, would impair the regulatory capital of insurance companies; The regulation of the sector, Solvency II, which established mark to market as the norm, also takes a balance sheet approach to risk. This implies that a generalised increase in safe interest rates (essentially the Swap curve) would have approximately offsetting impacts on the asset and the liability side. Higher interest rates would lower the market value of bond holdings, but they would also lower the present value of future liabilities. The insurance sector has been subject to repeated stress tests, coordinated by EIOPA (European Insurance and Occupational Pensions Authority), which have in general shown that increases in interest rates would not pose a threat to the sector.[18]

Higher interest rates have of course many more implications for the financial system. However, higher rates can have a destabilising influence only if there are important leveraged investors or highly indebted institutions or governments, whose difficulties could be magnified by an increase in risk premia. Unleveraged debtors or investors are unlikely to create financial instability. The case of banks, which are the most important leveraged financial institutions has already been discussed. This leaves an increase in risk premia as the main remaining source of financial instability. Abrupt increases in risk aversion and risk premia constitute always a potential threat to financial stability, but they materialise only if a new risk is discovered, i.e. if there is at least some vulnerability which had previously not been properly priced. The analysis of this contribution suggests that the normalisation of monetary policy should not create new vulnerabilities or financing difficulties. This implies that one should not expect the normalisation of monetary policy (including an increase in policy rates) to lead to an increase in risk aversion.

[17] This was called the 'negative spread problem' in Japan and led to the failure of 7 life insurance companies in the late 1990s.

[18] The 2018 stress test is still going on (https://eiopa.europa.eu/Publications/Surveys/2018-05-14%20InsuranceStressTest2018%20FAQ.pdf).

6. The potential global impact of higher interest rates in Europe

The 'taper tantrum' mentioned earlier arose when the Federal Reserve announced its intention to reduce, or 'taper' its asset purchases.[19] This triggered a sharp sell-off in emerging markets and considerable volatility in overall financial markets. Could a similar event repeat itself if interest rates were to increase in the euro area?

A priori it appears unlikely that any tightening by the ECB would produce a similar bout of financial instability at the global level.

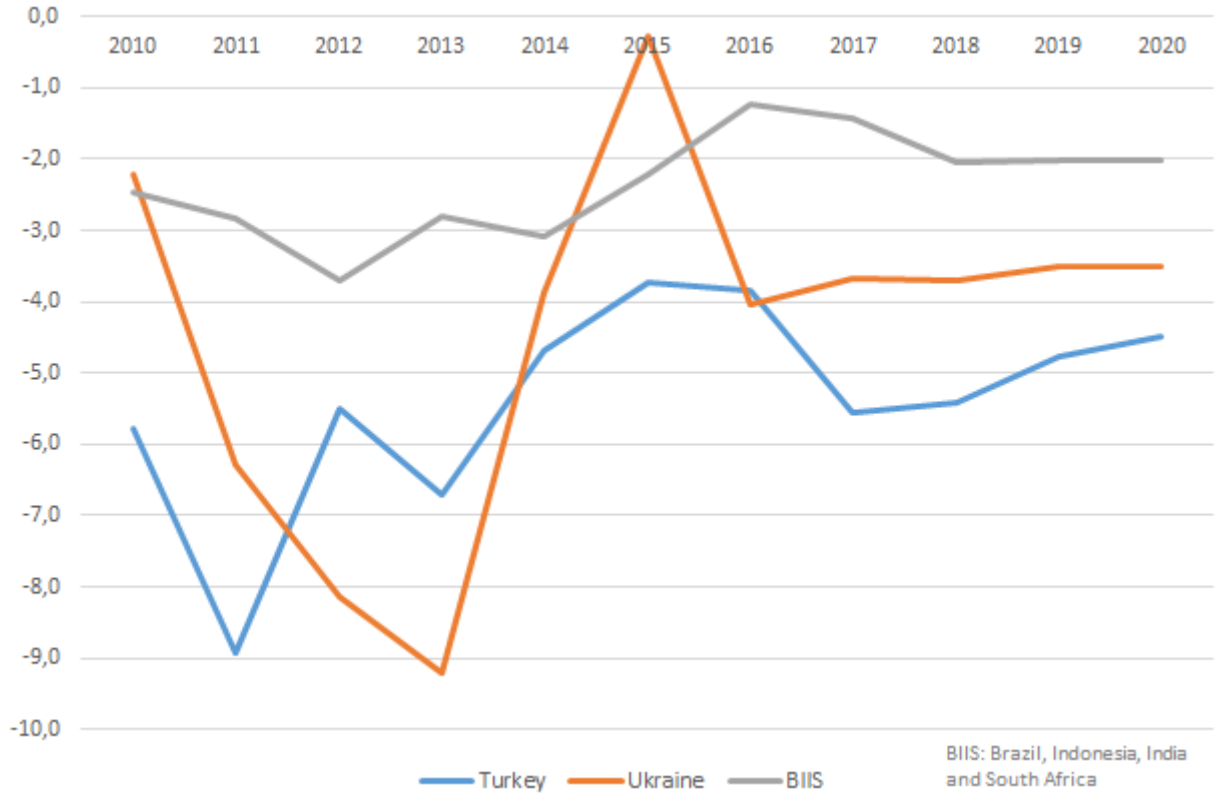
First of all, experience and academic research have shown that the global financial cycle is determined essentially by the policy of the anchor country, namely the United States (Rey, 2018). This central role of the policy of the Federal Reserve is a natural consequence of the dominant role of the US dollar as reserve currency.

Higher interest rates, especially if they occur at the same time as increases in risk aversion, naturally affect first of all countries that depend on foreign capital inflows, i.e. countries with a current account deficit.

In 2013, the financial press concentrated on the so-called vulnerable five: Brazil, India, Indonesia, South Africa and Turkey. The first four of these five countries (which one might call the improving four BIIS) have strengthened their external position considerably as the current account has improved from a deficit of around 3% of GDP, to one of only around 1.5% of GDP (see Figure 4).

[19] The exact phrase used at the press conference on 19 June 2013 by Chairman Bernanke was "[T]he Committee currently anticipates that it would be appropriate to moderate the monthly pace of purchases later this year".

Figure 4. Current account balances of selected emerging economies (% of GDP)

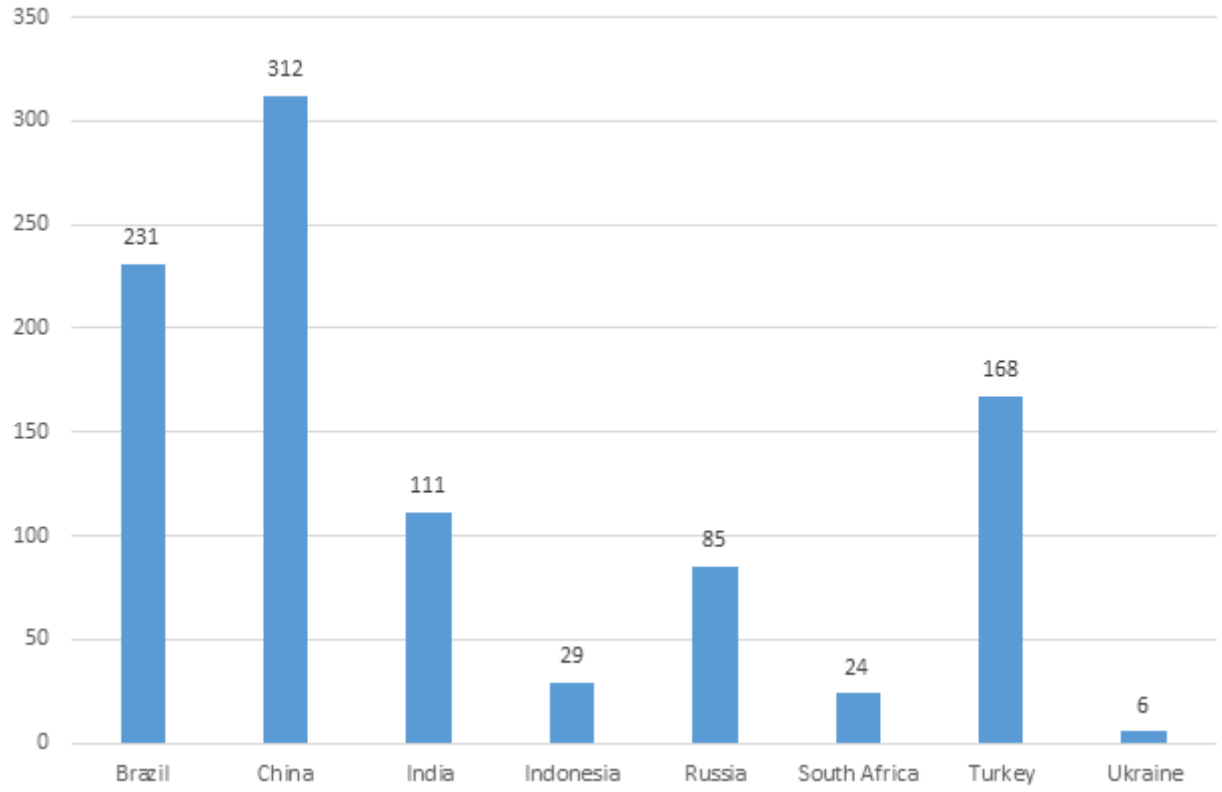


Data source: IMF, WEO database.

However, the countries in Europe's neighbourhood, namely Turkey (one of the 'vulnerable five') and Ukraine, have seen a deterioration of their current account balances to over 4% of GDP. But these two economies are of limited relevance in a global context. Their total financing needs (external deficits) amount to only about $40-50 billion for Turkey (and in single digit for Ukraine). This is about one-half of the combined deficits of the 'improving four', the BIIS, whose combined external deficit is projected to run at about $90-100 billion.

The more immediately relevant metric for the potential financial stability implications of problems in Turkey and Ukraine would be the exposure of euro area banks to these countries – which is rather limited, as shown in Figure 5. This might be the reason why the steep depreciation of the Turkish currency over the last months has had little impact on financial markets in the euro area. The data on cross-border banking exposure also show that credit problems in China could be far more important for euro area banks than problems in Turkey.

Figure 5. Cross-border exposure of euro area banks to selected vulnerable emerging economies ($ billions)



Data source: Bank for International Settlements.

7. Conclusions

Higher interest rates do not need to be the harbingers of wider financial market instability. Policy normalisation should not create financing difficulties for government or major financial institutions. There is also little reason to fear that policy normalisation should lead to an abrupt return of risk aversion and risk premia. On the contrary, a continuation of the 'low for long' scenario might, over time, lead to a build-up of vulnerabilities.

The PSPP seems to have had two implications in terms of financial stability of opposite sign. The very large commercial banks' deposits at the NCBs, which constitute the counterpart to the government bond holdings of the Eurosystem, have increased the direct negative impact of increases in policy rates on government finances, but also a positive impact of higher rates on banks' balance sheets.

Moreover, if the PSPP holdings are kept at present levels, a generalised increase in rates (policy and market) will have a stronger, and more immediate negative impact on public finances. But this latter effect operates at the aggregate euro area level. For each individual euro area member country, the PSPP holdings of the NCB are stabilising, as they would mitigate about one-quarter of the impact of higher national risk premia on the cost of servicing public debt.

The opposite impact of the PSPP on the stability of public finances and the banking system in the face of interest rate increases is a simple consequence of the fact that the PSPP has reduced the effective duration of public liabilities. The mirror image of this is a reduction in the duration of the assets of the banking system, i.e. the private sector. The public sector would gain, if interest rates did not increase. But this would come at the expense of the income of the banking system, whose capital might then remain weaker for longer.

The main policy implication is that lengthening the maturity of public debt would make public finances more robust.

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