

The development of government interest expenditure in Germany and other euro-area countries

Interest rate developments in recent years have been a major source of relief for government budgets in the euro-area countries. Most of them saw their interest burdens contract on the back of cheaper borrowing terms despite some having substantially increased their debt ratios. The average rate of interest on government debt has hit a low, including for countries whose risk premiums surged for a time in the wake of the financial and economic crisis. If the average interest rate were, for example, still at its pre-crisis level, interest expenditure, viewed in isolation, for the past year alone would have been higher by almost 2% of nominal gross domestic product (GDP) for the euro area. Since 2008, this downturn in interest charges has yielded savings of almost €1 trillion, or a little short of 9% of euro-area GDP.

The very advantageous borrowing terms available currently will probably provide continued relief for government budgets for a time. Yet fiscal policymakers would nonetheless be wise to make provisions for when interest rates bounce back. One fundamental objective anchored in the Stability and Growth Pact is that governments be required to achieve structural budgetary positions which are at least close to balance. Achieving that goal swiftly would go a long way towards reining in what are still very high debt ratios overall and trimming both interest burdens and any risk premiums. However, the most recent figures show that consolidation progress (measured in terms of the structural primary balance) has largely ground to a halt – probably partly because of the sustained favourable borrowing terms. But high debt ratios represent a lingering threat for public finances, given the mounting risk that a rate reversal might erode confidence in the sustainability of individual countries' public finances, and not least that monetary policymakers might then be pressured to respond.

Germany's public finances are in a relatively advantageous position. Yet it is nonetheless appropriate for the country to run moderate structural surpluses in light of its still-high debt ratio and the demographic outlook. The unusually favourable financing terms should not be expected to persist indefinitely; it is worth noting that central and state government have already made provisions for an uptick in interest rates in their medium-term plans. One notable risk factor facing the Federal budget is the current convention of fully netting premiums and discounts directly against interest expenditure when issuing Federal securities. This causes considerable volatility during budget implementation and is incompatible with the European fiscal accounting rules. One option here would be to switch to the accrual accounting method. In light of factors including the looming burden of pension costs, state and local government would be wise to pursue an ambitious fiscal path until budgetary solidity has been achieved at both these levels of government. Otherwise, mounting interest rates might expose debt-ridden entities in particular to the risk of resurgent fiscal imbalances.

Low rates provide relief for government budgets

Only some euro-area countries have reversed debt increase but very low rates providing relief

Government debt levels increased substantially in the wake of the financial and economic crisis, and also peaked relative to GDP, with adverse cyclical factors, an expansionary fiscal policy stance in many countries, and government measures designed to stabilise financial markets all playing a part in this rise. While Germany saw its debt ratio decline distinctly after 2010, levels have yet to recede noticeably in a number of other euro-area countries. In spite of that, the exceptionally low interest rates of the past few years, which are partly down to the crisis, have substantially reduced the cost of servicing debt, giving governments crucial assistance in scaling back their deficits. For the majority of countries, borrowing costs, the average rate of interest on government debt, and government interest expenditure as a ratio of GDP are the lowest they have ever been in the history of the monetary union.

Definitions and selected statistical and economic aspects

Interest expenditure determined by debt level and average interest rate

The main variables which determine the level of government interest expenditure are the debt level and the interest payable on that debt (see the box on pages 35 and 36 for definitions).¹ One notable factor for determining the interest burden is the effective average interest rate for each individual debt instrument. In theory, that rate can be subdivided into a risk-free real interest rate, an inflation component (which also comprises expectations) as well as maturity and risk premiums. Following this logic, bonds with a longer maturity and a lower trading volume, say, will normally be remunerated at a higher rate of interest because investors expect to be compensated for a higher risk of changes in value and limited market liquidity. The borrower's expected ability and willingness to repay the debt have a major bearing on the credit quality assessment and the size of any

risk premium. Indicators for this include the expected (structural) fiscal deficit, the borrowing requirement and the debt level (including contingent liabilities), but it is also worth gauging a sovereign's macroeconomic and political prospects. Other potential indicators include the credibility of fiscal rules and the expectation of assistance being provided by third parties.

Interest rate terms for current government borrowing are normally driven by supply and demand conditions in the capital market. Yet the overall interest burden of government in a given year is determined not by the prevailing interest rate but by the average rate of interest resulting from past borrowing in relation to the aggregate debt stock. The average rate of interest and interest expenditure show a lagged response to interest rate developments in the capital markets. The higher the gross borrowing requirement, which is to say, the shorter the residual maturity and the higher the deficits which need funding, then the quicker expenditure will respond to rate changes. In the case of floating rate agreements, expenditure will always adjust quite promptly to changes in the relevant reference rate, regardless of maturity.

Average interest rate shows lagged response to changes in borrowing terms

One notable yardstick for measuring how much of a burden interest expenditure is for public finances is the ratio of interest expenditure to GDP (known as the interest expenditure ratio). Economic output is ultimately also the basis for government (tax) revenue, from which debts need to be serviced. It is important to note that a high level of government debt not only automatically implies larger interest charges for government, but that it also has a bearing on macroeconomic developments themselves.² On the one hand, a high level of government debt can, for instance, give rise to risk premiums and uncertainties on the whole. When

Interest expenditure relative to output key for debt burden assessment

¹ See also Deutsche Bundesbank, The development of government interest expenditure in Germany, Monthly Report, September 2013, pp 47-67.

² See Deutsche Bundesbank, Government debt and interest payment burden in Germany, Monthly Report, April 2010, pp 15-33.

Definitions of general government debt and interest expenditure in the statistics for Germany

Definition of the general government sector

The general government sector is defined in almost identical terms in the harmonised European System of Accounts (national accounts) and the national government finance statistics (budgetary statistics¹). It not only comprises the core budgets of central, state and local governments as well as the social security funds (which are not generally permitted to borrow), but also their off-budget entities, such as bad banks, which count as part of the general government sector.

Definition of debt

According to the national accounts and the government finance statistics, government debt comprises, in the first instance, short and long-term debt securities and loans for budget financing, as well as bridging loans (cash or liquidity advances). The consolidated general government debt is adjusted for the securities holdings of other government units and for intra-government credit operations. The “Maastricht debt level”, which is relevant to budgetary surveillance in the euro area, also includes liabilities from circulation coins (issued as currency by general government) and from other deposits with general government. Liabilities such as those arising from holding arrangements with Kreditanstalt für Wiederaufbau (KfW)² or for public-private partnerships (PPPs) are also included if it is assumed that general government bears the majority of the associated opportunities and risks or exerts a significant influence. Liabilities for assistance loans to euro-area countries such as Greece that are backed by German guarantees and were paid out formally by KfW

or the European Financial Stability Facility (EFSF) also count towards the Maastricht debt level.³ This also applies to certain loans granted by public promotional banks where, in particular, central government or state governments directly bear the majority of the risks and set the framework conditions of the transactions. The Maastricht debt level likewise encompasses the cash collateral provided to general government under derivatives contracts,⁴ the payment obligations (to offset inflation) connected with inflation-linked securities and also, under certain conditions, accounts payable.⁵ By contrast, premiums received in association with new issues of securities, for example, which are to be paid back over time through higher coupon amounts, are

¹ Expenditure by entities that keep commercial accounts is converted into data showing payment flows.

² These types of agreement were concluded by central government to sell shares in its public limited companies. Although KfW paid an acquisition price, central government retained the right to any additional revenue generated from the later, final sale to the private sector. In the national accounts, this is booked as central government borrowing from KfW (which is not assigned to the government sector). Not only the associated interest expenditure, but at the same time the dividend income from the public limited companies, is allocated to central government.

³ By comparison, loans issued via the European Stability Mechanism (ESM) are not allocated to the member states, particularly because it is deemed to have its own risk-bearing capacity on the basis of the capital paid in by the creditor countries. See Deutsche Bundesbank, The development of government interest expenditure in Germany, Monthly Report, September 2013, pp 47-67.

⁴ In addition, potential credit components (which, for instance, provide for an inflow of funds when the agreement is concluded, to be paid back at a later date) contained in derivatives contracts are included in the debt level.

⁵ Accounts payable arise through the acceptance of payment terms for purchases of goods or services. However, they only count as debt under the Maastricht rules if, say, important payment conditions have been renegotiated or if they have been sold on through factoring without recourse. Likewise, long-term financing agreements should be recorded as credit liabilities.

excluded from the debt amount – which is actually inconsistent with the basic approach adopted.⁶

Other liabilities, such as outstanding tax refunds or entitlements to pension benefits, are not taken into account in the debt level. As long as general government has scope to make adjustments with respect to such obligations, for example by changing the statutory retirement age or benefit level, this type of approach seems reasonable.

Maastricht debt is recorded at redemption value (nominal value). A rise in the market value of outstanding debt instruments caused by a considerable decline in interest rates is thus not reflected in the level of debt. This is also different from the procedure usually otherwise adopted in the national accounts. In the financial accounts, for instance, securities liabilities are reported at market value.

Definition of interest expenditure

Interest expenditure in the government finance statistics refers to current debt servicing expenditure. This encompasses payments to central, state and local governments and special funds, which are to be consolidated for the general government overview, as well as payments to the capital market.⁷ In addition to the regular interest payments on loans or securities, issue premiums or discounts for newly issued securities, accrued interest to be paid on issues after the coupon date, as well as payments relating to interest rate swaps or other derivatives contracts have, to date, also generally been recorded in full at the time of payment under the relevant item in the government finance statistics and have an effect on the fiscal balance.

The national accounts, on the other hand, are based on the accrual principle. Whereas, for example, coupon payments for securities issued at the beginning of the year with annual interest payments would not result in any costs in the government finance statistics to begin with, the national accounts already attribute the claims arising over the course of the year to this period.⁸ Losses or gains from swaps are generally classified as financial transactions in the national accounts and thus do not have an impact on the fiscal balance. Accrued interest received does not affect the fiscal balance either. The inflows are treated as liabilities, and the counter effect at the time of the next coupon payment retains a neutral effect on the balance in the form of a repayment. Premiums and discounts are distributed over the years to maturity on an accrual basis in the national accounts.

There are further differences to interest expenditure in the government finance statistics owing to the fact that, in the national accounts, some of the interest costs are considered financial intermediation services indirectly measured (FISM) in connection with lending. These are not taken into account in property income paid, but are assigned to the category “intermediate consumption”. They thus have an effect on GDP. To provide a comprehensive overview of the burden created by debt servicing, this item is therefore also included here for Germany.

⁶ According to this approach, discounts would have to be recognised as a reduction because they reflect lower future coupon payments in comparison to the issue yield. Upon payment of these coupons, the shortfalls compared to market conditions would have to be factored in as increasing the debt level.

⁷ However, this also includes interest to social security funds, which are allocated in full to the general government sector, and to public-sector enterprises and institutions of which selected entities (attributable to the general government sector) are to be consolidated but are not recorded separately in the publications.

⁸ In the national accounts, interest costs are recorded under property income paid.

an economy has a generally higher level of interest rates, private investment may be crowded out, which would have a negative impact on potential growth, especially. Should additional tax revenue be needed to cover higher interest charges, the distortions this produces can further dent that economy's growth. On the other hand, borrowing to steady macro-economic developments (owing to the effect of automatic stabilisers) or to overcome a severe crisis can stimulate growth as long as the capital markets do not lose faith in the general robustness of the country's public finances.

2003. Peaking at 81% in 2010 in the aftermath of the financial and economic crisis, it then fell back sharply on the back of favourable macro-economic and fiscal developments⁵ and the reduction of the portfolios acquired to stabilise the financial markets. Even so, Germany's debt level at the end of 2016, under the Maastricht definition, still lingered at 68¼% of GDP.

Government interest expenditure as a ratio of GDP, meanwhile, peaked back in the mid-1990s at 3½%, before gradually working its way back to 2¾% by the middle of the last decade. After remaining stable for a brief period, the decline continued in 2010, accelerating in the past few years. At last count, the ratio stood at 1½%.

Interest expenditure ratio down even before the crisis

Interest expenditure offset at least in part by government property income

A more detailed picture of the impact of changes in interest rates on the government budget and other variables can be obtained by factoring in property income received on the revenue side. Financial assets such as participating interests in enterprises or loan claims are a source of profit distributions or interest income³ – and this is an area where central bank profits also come into play. However, generating streams of financial income is not normally the main reason why governments accumulate financial assets: returns are sometimes low (eg those on development loans or assets acquired as part of financial market support measures) and often bear little relation to capital market developments. Besides property income, revenue from the taxation of interest income also offsets interest expenditure to a degree. All told, these factors normally soften the impact of changes in interest rates on public finances. Nonetheless, their effect is mostly relatively muted at present because of the very high debt levels.

The fact that the interest expenditure ratio diminished noticeably after 1999, even though the debt ratio continued to show trend growth initially, is due to the significant drop in the average interest rate. Pushed in part by higher expected inflation and growth to 8% in the early 1990s, the average rate of interest then began to chart a distinct decline. This underlying trend was weakened for a time by higher borrowing costs during upbeat economic spells (like at the turn of the millennium), and the average interest rate hovered at around 4¼% for a number of years from the middle of the last decade. But the downward motion resumed in 2009, bringing the average interest rate on Germany's Maastricht debt level down to just 2% last year.

Average interest rate down

Development of government interest expenditure in Germany

General government⁴

Germany's general government debt ratio has risen significantly in recent decades, first breaching the 60% Maastricht debt ceiling in

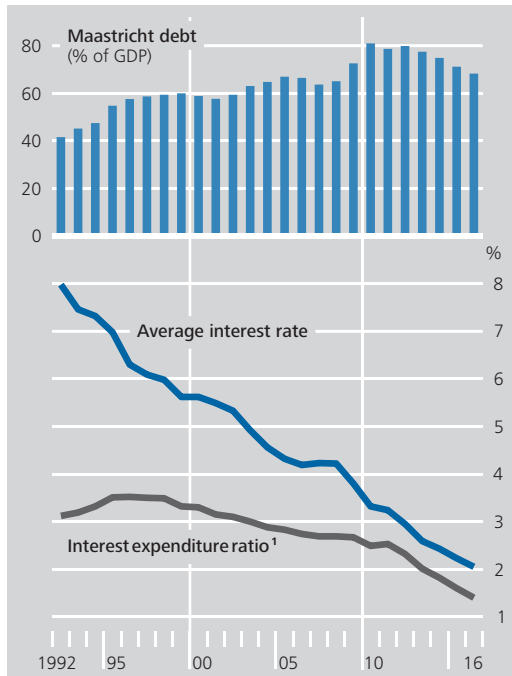
Debt ratio up sharply by end-2010 but waning ever since

³ The bulk of non-financial assets, such as roads and schools, do not generate any property income. Where they do generate specific receipts, these are chiefly fee income flows.

⁴ Government interest expenditure is presented for general government in Germany following the national accounts approach, plus financial intermediation services indirectly measured (FISIM) (see the box on pp 35-36). While FISIM had a magnitude of €5¾ billion, or nearly 0.3% of GDP, in 1999, a trend decline into the middle of the last decade reduced that figure to €¾ billion (0.02% of GDP) in 2016.

⁵ During this period, the fiscal policy stance tended to be neutral overall, while the economic recovery, strong tax revenue growth, healthy labour market developments and dwindling interest burdens ultimately made it possible to achieve the current surplus.

Government debt, interest expenditure and average interest rate



Sources: Federal Statistical Office and Bundesbank calculations.
 1 As defined in the national accounts, plus FISIM, as a percentage of GDP.
 Deutsche Bundesbank

Drop in average interest rate since start of crisis yields considerable savings

To get an idea of just how much arithmetical fiscal relief the lower interest rates have yielded in recent years, one need only look at the impact of the shrinking average interest rate⁶ in isolation. This decline meant that interest expenditure in 2016 was half of what it had been in the pre-crisis year of 2007.⁷ Last year alone, the savings this yielded for general government, calculated on the basis of the current debt level, came to €47 billion, or 1½% of GDP. In cumulative terms, the interest expenditure relief generated since 2008 comes to €240 billion, which equates to 7½% of last year's GDP.

Stability programme expects average interest rate to pick up again from 2019

Only a rough estimate of the future path of government interest expenditure – eg depending on various interest rate scenarios – is possible because the available information is incomplete, notably on the scale and the terms for rolling over maturing debt instruments and interest rate adjustment clauses.⁸ However, since issue yields have so far fallen well short of the remuneration on maturing identical-

maturity securities, the average interest rate looks set to recede further until interest rates go perceptibly into reverse. The German stability programme from April 2017 expects the interest expenditure ratio to decrease again next year before moving more or less sideways. Assuming a fall in the debt-to-GDP ratio, this would mean that the average interest rate, after slipping back one final time this year, will gradually start picking up again, albeit to a limited extent overall, in 2019, rising to roughly 2% at the end of the projection period in 2021. The stability programme thus assumes that capital market rates will climb distinctly from their current very low levels, which means that discernible provision has been made for rising interest rates.

The sensitivity of government finances to interest rates can be gauged by simulating how spending would increase if capital market rates were one percentage point higher, say, than in a benchmark scenario. In this situation, the additional costs, in cash terms, would normally come to bear one year later on the next interest due date of newly issued paper. Initially, these costs are particularly high year-on-year because short-term debt is quickly rolled over. Given a one-percentage-point interest rate increase, the additional outlay, in cash terms, for general government (assuming annual coupon payments) is thus estimated⁹ to come to just over €5 billion in the following year, rising by slightly more than €2 billion again a year later and by just over €1½ billion annually after that. Rolling over the entire debt level (assumed to remain unchanged) would run up additional

Implications of rise in interest rates for government finances

⁶ This calculation divides interest expenditure as reported in the national accounts (plus FISIM) by the relevant Maastricht debt level (the mean of the levels at the end of the previous year and the reporting year).

⁷ In 2007, the issue yield roughly matched the average interest rate on debt.

⁸ Debt statistics on the maturity of debt instruments for the general government budget are currently only available as at year-end 2015. Furthermore, these data provide no information on local government cash advances, for example, which have interest rate lock-in periods of up to ten years. The terms of maturing liabilities are another significant factor, but these are unknown for loans.

⁹ Based on figures from the debt statistics for 2015.

annual spending of €21½ billion. Almost all the debt would have been rolled over at the new terms after ten years. However, the majority of the 30-year Federal bonds, which make up some 10% of general government debt, would then still need to be rolled over.¹⁰

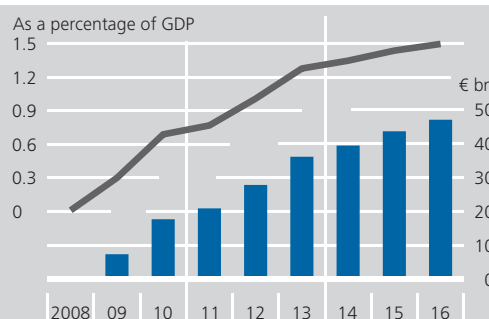
Dwindling property income, ...

However, it is not only government's interest spending which has been dampened by the lower interest rates, but also property income on the revenue side. Stock changes are a major factor for the latter as well, given that a number of bad banks were established in the wake of the financial crisis. Their liabilities count towards the Maastricht debt level, so the corresponding assets are also recognised as government financial assets, sending their level significantly higher. The still ongoing process of winding up the bad banks, and repayments of capital which government injected into banks in the crisis have pushed government financial assets (and debt) down again in recent years, however. All in all, government financial assets (at market prices) as a ratio of GDP climbed from 23½% in the middle of the last decade to 38½% by 2012, partly due to the establishment of the resolution entities, before falling back to the current level of 36½%. Income from financial assets (defined here as meaning property income received excluding rental receipts) rose initially, but has fallen back noticeably of late, partly on account of dwindling Bundesbank¹¹ profit distributions. All told, this property income as a ratio of GDP first increased from almost ¾% in the pre-crisis year of 2007 to just shy of 1% in 2011, before falling back to a little more than ½% last year. Property income set in relation to interest expenditure, meanwhile, climbed until 2014, and levelled off recently at just over two-fifths of interest paid.

¹⁰ More detailed calculations can be found in Deutsche Bundesbank, The development of government interest expenditure in Germany, Monthly Report, September 2013, pp 54-55.

¹¹ The amounts recorded in the national accounts do not match the actual distributions, as the release of provisions created at an earlier point in time in the national accounts does not affect the balance.

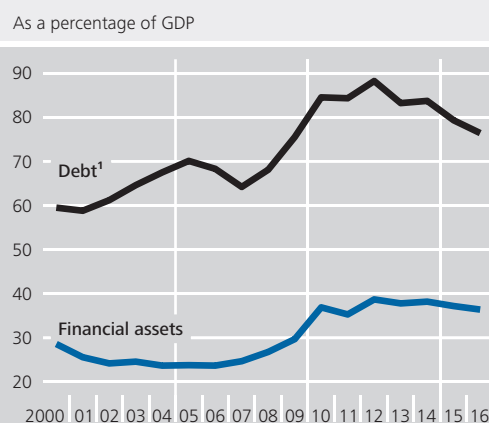
Annual government interest savings* in Germany



Sources: Federal Statistical Office and Bundesbank calculations.
 * Mean value of Maastricht debt from the end of the reporting year and the previous year, multiplied by the difference between the average interest rate (including FISIM) in 2007 and in the reporting year.

Deutsche Bundesbank

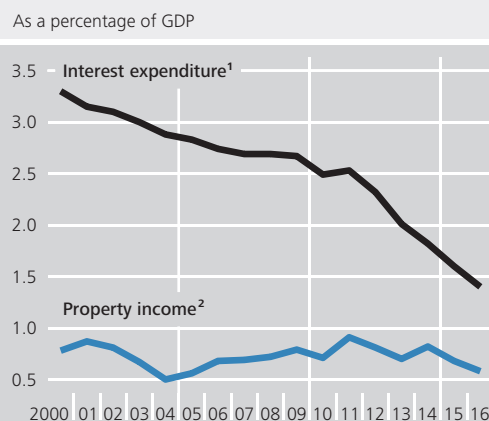
Government financial assets and liabilities at market prices*



* Data from the national financial accounts. ¹ Maastricht debt at market prices plus other liabilities such as trade payables.

Deutsche Bundesbank

Government interest expenditure and property income



Source: Federal Statistical Office. ¹ Including FISIM. ² Excluding rental income.

Deutsche Bundesbank

... but less correlated to capital market rates than debt servicing

As multiple factors (such as the declining profits of power supply companies or special depreciation) feed into government property income received, this item is normally less correlated to changes in capital market rates than is the case with interest expenditure. What this would also suggest, going forward, is that the Bundesbank profit, for instance, will no longer be positively correlated to rising interest rates for a time, given the implementation of non-standard monetary policy measures (see also the box on pages 58 to 60).¹² All things considered, while the impact of interest rate volatility on interest expenditure will probably continue to meet with countervailing developments on the revenue side, the latter look set to be a much less weighty factor in terms of volume.

Selected aspects of central government's interest expenditure

Average yields on newly issued central government debt down significantly

Among the levels of government, the most detailed information on financing terms is available for central government, which, together with its off-budget entities, accounts for six-tenths of general government interest expenditure.¹³ Based on the Federal Ministry of Finance's annual borrowing reports, various aspects of the decline in the interest expenditure of central government (including the off-budget entities it funds¹⁴) can be presented in more detail. A glance at the average yields on newly issued debt instruments, for example, shows how pronounced the decreases were in the past few years. In 2007, before the onset of the financial and economic crisis, these yields still stood at a little over 4% on average, whereas over the following years they dropped to around ¾% from 2012. As in many western countries, a key contributor to this was the trend decline in the general interest rate level, which itself was down to a variety of factors. Furthermore, in 2015, after the launch of the ESCB's expanded asset purchase programme, interest rates even entered negative territory in some cases, extending into the medium-term

maturity range. On average in 2015, a figure of just under ¼% was reached – very beneficial for the government coffers – and was even followed in 2016 by a negative value. Afterwards, too, yields on Federal securities remained exceptionally low. In the June auction of Treasury discount paper with a maturity of six months, for example, a negative issue yield of a little under -0.7% was achieved. Five-year Federal notes were issued with a -0.5% yield this spring, while in July the reported yield was as little as -0.1%. For 30-year Federal bonds, a low of 0.5% was reached last year. In June 2017, the issue yield stood at 1.0%.

Since 2006, central government has also offered inflation-linked debt instruments, which currently run to a total volume of €70 billion. For these instruments, the coupon and repayment amount are adjusted for inflation as measured by a consumer price index for the euro area as a whole.¹⁵ The unexpectedly low rates overall in the past few years have thus provided distinct relief to the Federal budget. To make provision for the inflation-adjusted final payments, central government set up a special fund in 2009 to which – after a back payment for the preceding years – the relevant transfers are made on an accrual basis.¹⁶ These are recorded in the budget as interest expenditure in the relevant years,

Inflation-linked debt instruments helped ease pressure

¹² Tax revenue from interest income is positively correlated, ceteris paribus, to general interest rate developments, but they are only correlated up to a point with Germany's general government interest expenditure. Receipts from withholding tax on interest income and capital gains shrunk from 0.5% of GDP in 2009, the year that tax was introduced, to 0.2% of GDP in 2016.

¹³ Of the remainder, just over three-quarters is accounted for by state government and just under one-quarter by local government.

¹⁴ Particularly the investment and repayment fund (with outstanding liabilities in the region of €20 billion, or just under 2% of central government debt), but excluding the bad bank set up while rescuing Hypo Real Estate, which accounts for roughly one-tenth of total central government debt.

¹⁵ Investor protection against higher inflation remains incomplete, however, insofar as the settlement payment upon redemption (like nominal coupon payments, which for conventional bonds contain a lump-sum inflation adjustment) is taxed as interest income (see also the article entitled "Return on private financial assets taking into account inflation and taxes" in this Monthly Report, pp 69-75).

¹⁶ In 2015, however, the Federal budget received a repayment on balance, as the reference index fell.

which is the correct economic approach and conforms with reporting of these figures in the national accounts. According to the budget plan, a transfer of just under €¼ billion will suffice for this year. For the next few years, inflation rates are expected to remain moderate in the financial markets, judging by issue yields. Overall, the share of outstanding central government debt accounted for by inflation-linked instruments has grown distinctly over the past few years, but still remained within limits at around 6% at the end of 2016. Provisioning for redemptions amounted to €2½ billion. Settlement payments of €3½ billion had been made from the special fund in the meantime, however.

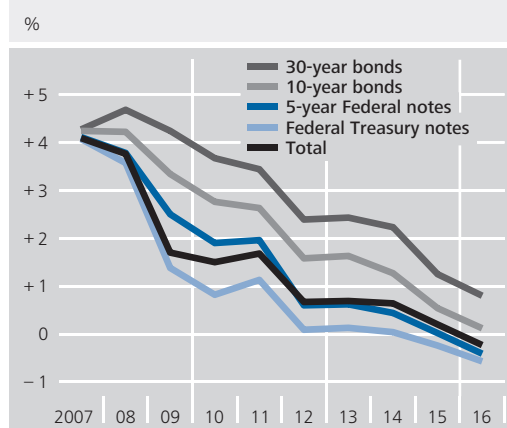
Clearly falling average interest rate easing pressure on central government considerably

Against the backdrop of reduced issue yields, the average rate of interest on central government debt, as defined in the national accounts, also contracted significantly. From a starting point of just over 4% in 2007, the last year before the crisis, the rate fell rapidly, especially at the end of the last decade, to just over 3%, which was followed by a relatively even further decline up to the current end. In 2016, the average rate of interest was no higher than almost 2%. Central government's interest expenditure (including the off-budget entities) came to €26½ billion last year. Given an average interest rate at the pre-crisis level, central government's interest expenditure would have been €30 billion (1% of GDP) higher last year. Calculated in this way, the cumulative saving since 2008 runs to €155 billion.

Rising interest rate lock-in period

On balance, the declining average interest rate was not helped by a reduction in the average interest rate lock-in period, which, taken in isolation, generally (for an upward-pointing yield curve) facilitates lower average yields. Instead, the lock-in period rose over the past few years. Having stood at just over 5¾ years in 2007 (pre-crisis), the lock-in period hit almost 6¾ years in 2016,¹⁷ a high level by historical standards. Central government is evidently trying to lock in the extraordinarily low interest rates for a longer period, after having temporarily shortened the lock-in period markedly in 2009, during the crisis.

Yield on newly issued central government debt instruments



Sources: Federal Ministry of Finance and the Federal Republic of Germany – Finance Agency.
 Deutsche Bundesbank

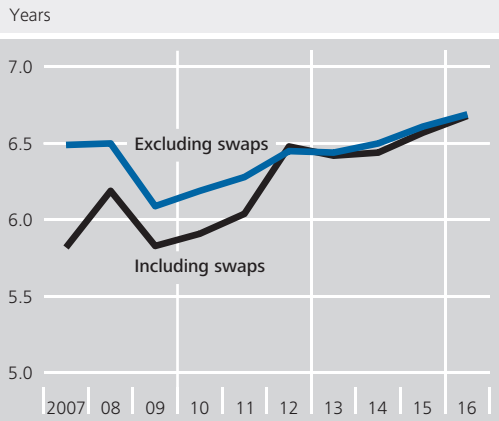
For the Federal budget (including the off-budget entities funded by central government, the interest expenditure of which recently came to only around one-twentieth of that in the core budget), future developments in total interest expenditure can be roughly estimated for a variety of financing assumptions on the basis of the maturities and terms and conditions of listed securities. If current capital market conditions were to persist – as a hypothetical reference line of largely interest-free financing – interest expenses would continue to shrink in subsequent years, under the assumption of an unchanged level of debt¹⁸ and of refinancing obtained with the same original maturity. Based on a 2016 starting level of around

Scenarios for future developments ...

¹⁷ Both figures factor in the limited effects, on balance, of swap agreements on this. The cost or saving these entail for the budget cannot be quantified on the basis of the data published by central government, however. In the Federal budget, for example, the effects of swaps are only reported together with the interest payments for the respective debt instruments. In the national accounts, swaps generally have no impact on the fiscal balance. Payments resulting from swaps are categorised as financial transactions and thus are excluded here.

¹⁸ The plan for a balanced budget, ie no net borrowing in the budget, only relates to the core Federal budget. However, the planned deficits in the off-budget entities, which are counted towards the debt brake, are offset by surpluses in the precautionary special fund for pension costs. Depleting the reserves in order to finance the budget would, however, drive up debt – after the debt level was initially pushed down when the reserves were accumulated (by deferring follow-up financing).

Average interest rate lock-in period for outstanding central government debt



Sources: Federal Ministry of Finance and the Federal Republic of Germany – Finance Agency.
 Deutsche Bundesbank

€25 billion in the budget (adjusted for the effects of premiums), interest expenditure would be roughly halved successively up until 2022.

... reveal essentially moderate impact of interest rate rise, but risks stemming from accounting for discounts and premiums

A deterioration from today's financing terms, however, would slow down or even reverse this process. By way of example, a one percentage point increase in financing costs from the middle of this year would roughly halve the aforementioned annual additional saving from the first coupon payments for the new – higher-yielding – debt instruments (ie basically with a one-year delay). A rise of two percentage points would lead to slightly increasing additional expenditure, although even in 2021 (the final year of the financial plan) interest expenditure would be only moderately higher, relatively, than the actual 2016 figure (adjusted for premiums). The benchmark figures for central government's financial plan (excluding the off-budget special funds) adopted in March 2017 indicate an estimate for 2021 that is roughly €2 billion lower than the actual figure for 2016, adjusted for premiums.¹⁹ Thus, discernible provision has been made for interest rate rises in the capital markets. However, any discounts that arise in this connection when issuing debt instruments could, because they are accounted for immediately as expenditure, lead to considerable budgetary strains in the short term. For fundamental reasons, it would be advisable to

change the current convention for recording discounts and premiums in the budget (for more information, see the box on pages 43 and 44).

Selected aspects of state and local government interest expenditure

For both state and local government, national accounts data on interest expenditure are available at the aggregate level only. However, the development of average interest rates over the last decade (for both levels of government together) differs only immaterially from that of central government; since 2007, the last year before the crisis, there has been a contraction from 4¼% to just over 2% recently. The (Maastricht) debt ratio of state and local government initially rose from just over 25% to a little more than 30% by 2012 (partly in connection with the establishment of a government resolution agency for WestLB). Thereafter, the ratio slid back to the pre-crisis level by the end of 2016.

State and local government budgets heavily eased overall by declining interest rates, ...

On balance, state and local government have also benefited considerably from the very favourable interest rate level, and the interest burden has fallen sharply. Against an average interest rate unchanged since 2007, nearly €17 billion in interest expenditure was saved, corresponding to just under 3½% of total expenditure in 2016. The strong savings were a considerable aid to the consolidation of state and local government finances.²⁰ Under these con-

... facilitating compliance with the debt brake rules

¹⁹ Besides interest payments, the debt servicing section contained in the Federal budget also includes calls on guarantees, for which major fluctuations are not normally envisaged (but which are not presented separately in the benchmark figures). For premiums and discounts on issuance, usually only minor amounts are budgeted.

²⁰ In a commercial (double-entry) bookkeeping system, however, a counter effect on profit/loss in the pension provisions also has to be recognised. When interest rates are low, future burdens are much heavier from today's perspective, which means that greater precautions have to be taken by building up provisions. For local government at least, which largely uses double-entry bookkeeping, this entails expenses which are substantial in some cases (but which are not visible in the national accounts data).

Distortive accounting of premiums and discounts in the Federal budget

The way that interest expenditure is currently recorded in the Federal budget means that this budgetary position is volatile and difficult to accurately forecast. The securities issued have regular coupon payments that are spread evenly over the term. If the coupons are not in line with the current market interest rates when the bonds are issued, this results in corresponding premiums or discounts on the issue price. These are recorded in the budget in full when the instrument is issued as negative or positive interest expenditure. A premium thus effectively eases pressure on the current budget at the expense of budgets in subsequent years in which, all other things being equal, higher interest payments are to be made (in line with the higher coupons). Discounts have the opposite effect.

There are generally not too many premiums and discounts on new issuances if these are made at market rates. However, the desire for greater market liquidity for individual series of debt instruments requires high outstanding volumes, which typically cannot be achieved by a one-off issue. If market yields have changed when the bonds are subsequently tapped, these bonds will have the same coupon as the first issuance but the issue price will deviate from the nominal value despite the coupons initially having been in line with market rates. Generally, these deviations are positive when yields are declining and negative when yields are increasing. Furthermore, premiums regularly occur in a negative-interest-rate environment because there are no negative coupons.

Over the past year, for example, premiums totalling €6 billion were received (following €4 billion and €1½ billion in 2014 and 2015,

respectively) on account of the low-interest-rate environment. Their deduction from interest expenditure contributed significantly to the fact that, for example, the budget outturn for interest expenditure in 2016 was almost €6½ billion lower than originally planned and therefore down by a quarter. The high premiums primarily arose because the yield on 30-year Bunds had, at times, fallen to as little as ½%, while coupons had been set in line with market rates at 2½% when initially issued. At their peak, issue premiums of almost 60% on the nominal value were paid when these bonds were tapped.

Ultimately, the current method of recording premiums and discounts results in interest expenditure in the Federal budget frequently departing considerably from the planned figures. The budget outturn therefore does not reflect financing conditions. This would require premiums and discounts to be distributed over the term of the bonds. An additional cause for concern is that recording premiums in full in the year of issue may give the false impression that there is budgetary scope. Ultimately, securities with high coupons might be issued deliberately in order to exploit the fact that premiums have an immediate effect on the balance sheet so as to ensure compliance with budgetary requirements in the short term in spite of financial difficulties. In economic terms, however, this is the equivalent of borrowing and would make it possible to circumvent the debt brake. By the same token, the current accounting method could jeopardise the achievement of budget targets when implementing the budget should interest rate policy be reversed because the debt service charges for discounts are overstated at the current end. Thus when the bonds are tapped, considerable

discounts could accrue for longer maturities in particular and especially for 30-year securities, thereby driving up interest expenditure.

A switch to an accruals-based allocation of interest costs would not mean venturing into new territory as such a process is already employed for inflation-linked bonds. Each year, an inflation-related provision is recognised in the Federal budget for subsequent compensation payments when redeeming the inflation-linked debt instruments. This protects the budget against potentially erratic cost leaps when securities reach final maturity, and the costs are allocated to the economically relevant periods.

Another argument in favour of a change in accounting practice is that when recording interest expenditure in the national accounts premiums and discounts are gener-

ally distributed over the term of the bond and that the respective burdens affecting the fiscal balance therefore match the market yields when the bonds were issued (and not necessarily the coupons). The national accounts and the general government fiscal balances calculated therein are based on the European fiscal rules. As national rules also aim not least to ensure compliance with these provisions, any discrepancies that are present should be reduced.¹ All the more so given that this could provide a better picture of economic reality and decisively reduce the risks associated with rising interest rates during budget implementation.

¹ For these reasons, it would be appropriate to alter the method of accounting for receipts and payments arising from derivative contracts, too. Like premiums and discounts, under the EU rules these are generally classed as financial transactions and thus not included in the fiscal balance calculation.

ditions, compliance with the debt brake, which envisages (structurally) balanced budgets for all state governments from 2020, is also much easier than was expected when the debt brake was adopted.

The major differences between individual state governments (each including their local governments in the following) remain obscured when looking at the national accounts data. According to the more detailed figures of the government finance statistics, debt *per capita* at the end of last year was more than ten times higher in Bremen (€35,400) than in Saxony or Bavaria (see the table on page 62). In Saarland, the non-city state with the highest debt *per capita* (€18,500), the figure was slightly better, but still nearly double the national average (€9,700). Particularly extensive debt entails significantly higher interest burdens. Looking at the share of interest expenditure in overall spending, while the national average was 3½% last year, the figures ranged from just under

1½% in Saxony and Bavaria through as much as just under 5½% in Rhineland-Palatinate and Berlin to 8% in Saarland and even 11½% in Bremen. In other words, interest expenditure *per capita* came to just over €1,000 in Bremen, whereas the same metric for Saarland and Hamburg was a little under €500. In Saxony and Bavaria, interest expenditure *per capita* stayed below €100.

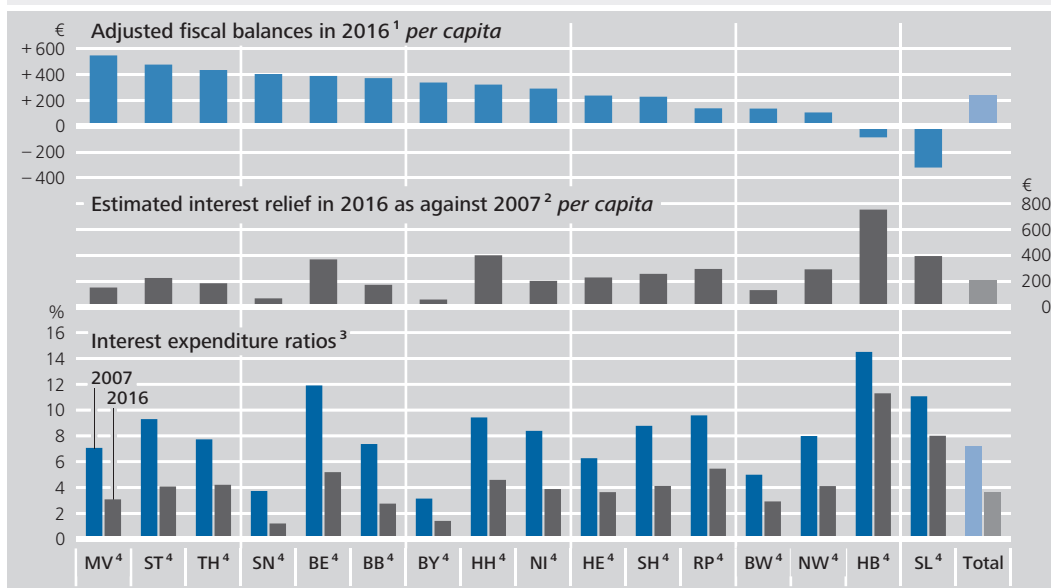
These differences in interest expenditure depend crucially on the level of debt, whereas the financing terms for borrowing are likely to differ moderately, at most, between the individual state governments on balance. For bonds issued by the state governments, say, there are only very limited differences in yields,²¹ with

... given virtually identical financing terms

²¹ For example, for a group of comparable bonds with a residual maturity of around 9 years and a similar coupon amount, the difference in yields (between Bavaria and North Rhine-Westphalia) recently came to approximately ¼ percentage point. Joint bonds (with pro rata liability) were issued by a number of state governments ("jumbo state government bonds").

Major differences across Federal states in debt service burden, ...

Budget position and interest relief of state and local government*



Sources: Federal Statistical Office and Bundesbank calculations. * State and local government viewed together. Core budget and off-budget entities. **1** Fiscal balance (according to quarterly cash statistics) adjusted for financial transactions. **2** Change in arithmetical uniform average interest rate (aggregate interest expenditure of state and local government, as reported in the national accounts, for the reporting year in relation to mean Maastricht debt levels at the end of the reporting year and of the respective previous year) in 2016 as against 2007 in relation to the Federal state-specific debt levels at the end of 2016 (according to the government finance statistics; no consolidation of debt owed to general government). Counter-effects relating to interest income are disregarded here. **3** Interest expenditure as a percentage of total expenditure (according to the quarterly cash statistics). **4** MV: Mecklenburg-West Pomerania; ST: Saxony-Anhalt; TH: Thuringia; SN: Saxony; BE: Berlin; BB: Brandenburg; BY: Bavaria; HH: Hamburg; NI: Lower Saxony; HE: Hesse; SH: Schleswig-Holstein; RP: Rhineland-Palatinate; BW: Baden-Württemberg; NW: North Rhine-Westphalia; HB: Bremen; SL: Saarland.
 Deutsche Bundesbank

the capital markets apparently assuming that financial support obligations will ultimately kick in, as they did for the budgetary hardship situations identified in Bremen and Saarland by the Federal Constitutional Court in 1992. At the local government level, too, there are major differences in debt levels both within and between the non-city states.²² Nonetheless, even highly indebted local governments (some with arithmetically negative equity capital) have to offer at most comparatively limited interest rate premiums for cash advances owing to the expectation that, where necessary, support payments would be provided from the relevant state government.

this connection were in Berlin (just over 6½ percentage points) as well as in Saxony-Anhalt and Hamburg (roughly 5 percentage points each).

Changes in the shares of interest expenditure give only limited insight into the relief provided by lower interest rates, however, because this relief is also shaped by the differing debt and expenditure dynamics of the individual state governments (including local governments) over time. It is possible to arrive at a rough estimate of the gross savings provided by lower interest rates for each state government by applying the two-percentage-point decrease in the average interest rate uniformly calculated

Schematic projections of interest relief

Varying levels of relief brought by interest developments thus far

On the whole, the more highly indebted state and local governments, in particular, have enjoyed major relief, and consolidation was aided considerably. Measured by total expenditure, the share accounted for by interest expenditure halved from 2007, going from just over 7% to 3½% on average. The greatest savings made in

²² For more information, see Deutsche Bundesbank, Local government finances: development and selected aspects, Monthly Report, October 2016, pp 13-36. Where this involves cash advances, with which budget shortfalls are bridged, possibly over multiple years, the anticipated additional expenditure of especially highly indebted local governments is currently obscured in large part by the extremely low interest rate level. In numerous cases, it appears that negative interest rates have even been agreed for such advances at present.

using the national accounts data to the current levels of debt (see also the chart on page 45).²³ For Bremen, the Federal state with the highest debt *per capita*, this produces a saving of €½ billion (€750 *per capita*) compared with 2007. For Saarland, the saving comes to just under €½ billion (€390 *per capita*). In the case of North Rhine-Westphalia, the estimated saving is more than €5 billion (€290 *per capita*). In addition, besides the remaining city states, the other highly indebted states of Rhineland-Palatinate, Schleswig-Holstein, Hesse and Saxony-Anhalt also enjoyed especially strong savings.

*Highly indebted
Federal states
still urged on*

Given the unabated major differences in debt levels, budget sensitivities to future interest rate changes also vary in strength. Like central government, the state governments will still benefit from the very favourable financing terms at present, and the average interest rate is likely to fall further initially. However, it would be a mistake to assume that the low interest level reached at this stage will be sustained into the long term and to ignore the possibility of an interest rate reversal in the medium and longer-term financial planning. When the debt brake enters into force, all state governments will be required to produce at least a (structurally) balanced budget from 2020. Given the still largely aligned financial capacities and a virtual lack of tax-raising autonomy, major debt servicing burdens ultimately have to be offset by restricting the range of public services provided. More highly indebted Federal states, especially – and chiefly Bremen and Saarland – are particularly urged to rigorously pursue an ambitious budgetary stance, so as to also be equipped for resurgent interest rates.

Development of government interest expenditure²⁴ in euro-area countries

*Fiscal relief from
lower financing
costs*

Following on from the detailed analysis of interest expenditure in Germany, this section outlines developments in selected euro-area

countries.²⁵ The low-interest-rate environment has brought about favourable financing terms in the other euro-area countries, as well. In spite of rising debt ratios, the ratio of interest expenditure to GDP has declined in almost all countries. In a number of euro-area countries, average interest rates and interest expenditure ratios fell much more heavily than in Germany. This section illustrates developments for the founding members of the euro area from 1999 to 2016.²⁶

The launch of the euro intensified the convergence in the member states' government financing terms that had already been seen in the lead-up (see the chart on page 47). The inflation and risk premiums that existed in some cases decreased significantly. Yields on ten-year government bonds, for example, approached the German level to a very large extent. Even

*Interest rate
convergence at
the start of
monetary union*

²³ The arithmetical average interest rate for individual state governments calculated on the basis of the government finance statistics is comparable to a limited extent only owing to classification problems. It is possible that debt and interest payments between core budgets and off-budget entities were not consolidated consistently. In order to simplify matters, the uniform calculation performed here on the basis of the national accounts data assumes that refinancing terms improved to the same extent and that differences in average interest rates arise mainly from differences in debt management. Due to the lack of detailed information on numerous debt instruments and their maturities in the individual Federal states, the effects related to these have to be disregarded here.

²⁴ Government interest expenditure is described here at the general government level as per the national accounts. Unlike the analysis of interest expenditure in the preceding section about Germany, financial intermediation services indirectly measured (FISIM) are excluded owing to a lack of data in some cases.

²⁵ To ensure comparability, this section disregards the countries that joined the euro area after 1999: Slovenia (accession: 2007), Malta and Cyprus (2008), Slovakia (2009), Estonia (2011), Latvia (2014) and Lithuania (2015). The founding member Luxembourg is likewise excluded owing to its very low debt ratio and its low absolute volume of debt throughout the period under review. Greece (2001), as a country that is still reliant on financial assistance, is analysed separately (see the box on pp 52-54). Comprehensive comparative tables containing data on all euro-area countries can be found in the annex to this article; see pp 62-67.

²⁶ To better illustrate the trends, the charts depict one group of countries which were hit especially hard by the financial and debt crisis and which have received support from fiscal and bank-related rescue measures or the Euro-system's SMP (Italy, Spain, Portugal and Ireland). The remaining countries (Austria, Belgium, Finland, France and the Netherlands) are analysed in a second group.

though there was a temporary general increase in interest rates around the turn of the millennium, average interest rates on government debt saw a continued trend decline (see the upper chart on page 48). As the yields converged, most euro-area countries reported a stronger decrease in average interest rates than Germany – from a higher starting level. Since the debt ratios predominantly receded or stabilised up to 2007, the interest expenditure ratio also went down markedly in almost all countries (see the lower chart on page 48 and the chart on page 50).

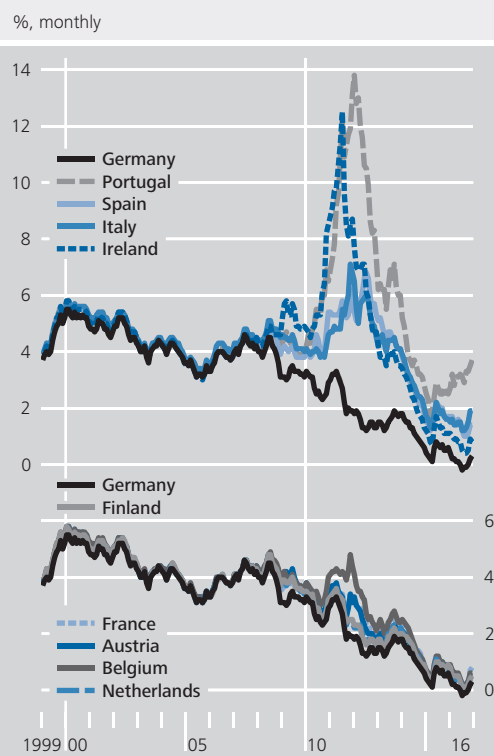
Disparities during the financial and economic crisis

During the financial and economic crisis, a more differentiated risk assessment of the individual euro-area countries re-emerged. As a consequence, yields rose sharply in the countries hit especially hard by the crisis. In Italy, Spain and Portugal, the average rates of interest on government debt saw a marked interim rise (see the table on page 64).²⁷ Issuance of bonds at the lower-yielding short end of the maturity structure was stepped up, which dampened the impact of the rising yields on the average issue yields. The rescue instruments in place since 2010, which today are bundled in the European Stability Mechanism (ESM), and also the Eurosystem's programmes for purchasing government bonds from certain countries (the activated SMP and the announced OMT programme) played a role in ensuring that even these countries that were hit especially hard by the crisis could again take on debt at significantly better conditions as time progressed. For the other founding members, average interest rates continued to fall during the crisis, too, and interest expenditure ratios dropped or remained broadly stable.

Divergence in average interest rates has now fallen back

The average interest rate in all countries is now significantly lower than it was before the crisis. Financing terms have once more converged to a considerable extent. However, risk premiums can be identified for heavily-indebted Italy, Portugal and Spain in particular. The average interest rate on government debt in these countries tends towards the upper end of the spectrum

Average yield on outstanding ten-year government bonds



Source: Bloomberg.
 Deutsche Bundesbank

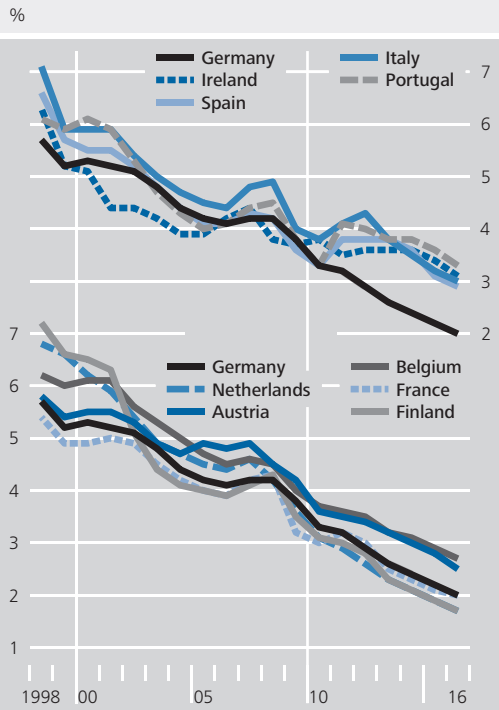
at roughly 3%, whereas Germany, Finland, France and the Netherlands are at the lower end with a figure of 2%. The divergence is therefore still greater than it was prior to the crisis. Although Germany regularly reported the most favourable financing terms on the capital market, the average interest rate in France, Finland and the Netherlands was for the most part lower due to differences in the debt structure.

As the average interest rate reflects borrowing conditions in the past, changes to the current financing terms only gradually take effect (see also the chart on page 49). Consequently, the interest rate level, which has been very low for

Market yields having a delayed effect on average interest rates

²⁷ In Ireland, the average interest rate experienced a comparatively small increase during the crisis. The low starting level of government debt and sound fiscal policy history prior to the crisis are likely to have maintained the confidence of the capital markets at first. The financial assistance programme then reduced interest rate pressure from as early as the end of 2010, and in 2011 and 2012 interest payments on government promissory notes were suspended in order to recapitalise banks ("interest holiday").

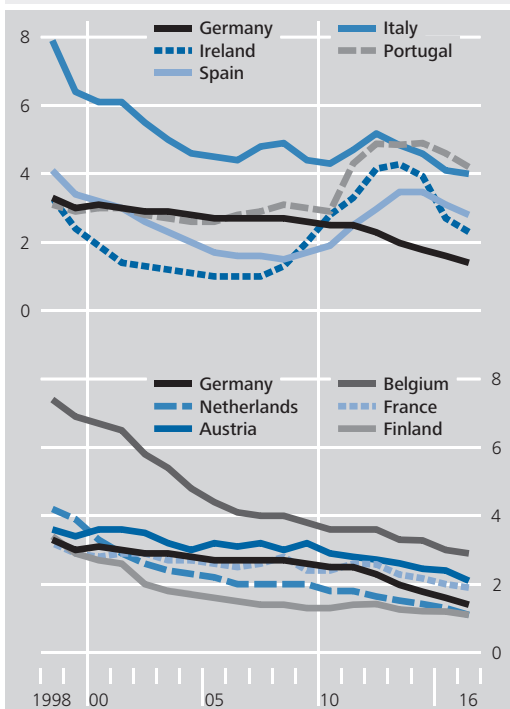
Average rates of interest on government debt*



Sources: European Commission and Bundesbank calculations.
 * Interest expenditure in relation to the average debt level for the year.
 Deutsche Bundesbank

Interest expenditure*

As a percentage of GDP



Source: European Commission. * Government interest expenditure according to the national accounts (excluding financial intermediation services indirectly measured (FISIM)).
 Deutsche Bundesbank

years, is currently still bringing down the average interest rate. As the observed very low issue yields are for the most part still below the remuneration level of maturing government bonds with comparable maturity, even at the longer end of the maturity spectrum, a further decline in the average interest rate in all countries appears likely unless there is a fundamental interest rate reversal or a marked lengthening of the maturity structure.

While debt instruments with a relatively short maturity were resorted to more often during the crisis as a result of higher risk premiums and uncertainty, an issuance strategy aimed at implementing a longer lock-in period has established itself at the current juncture, thereby anchoring the current historically-low interest rate level.²⁸ This enables countries to shield themselves better against increasing financing costs in the years to come.²⁹

Current trend towards longer-term indebtedness

Debt ratios experienced a strong initial increase in all countries during the crisis (see also the table on page 63). This increase was particularly sharp in Ireland, but also in Portugal and Spain. In recent years, there has been a marked debt ratio decline in Germany, Ireland and the Netherlands, whilst in the other countries,

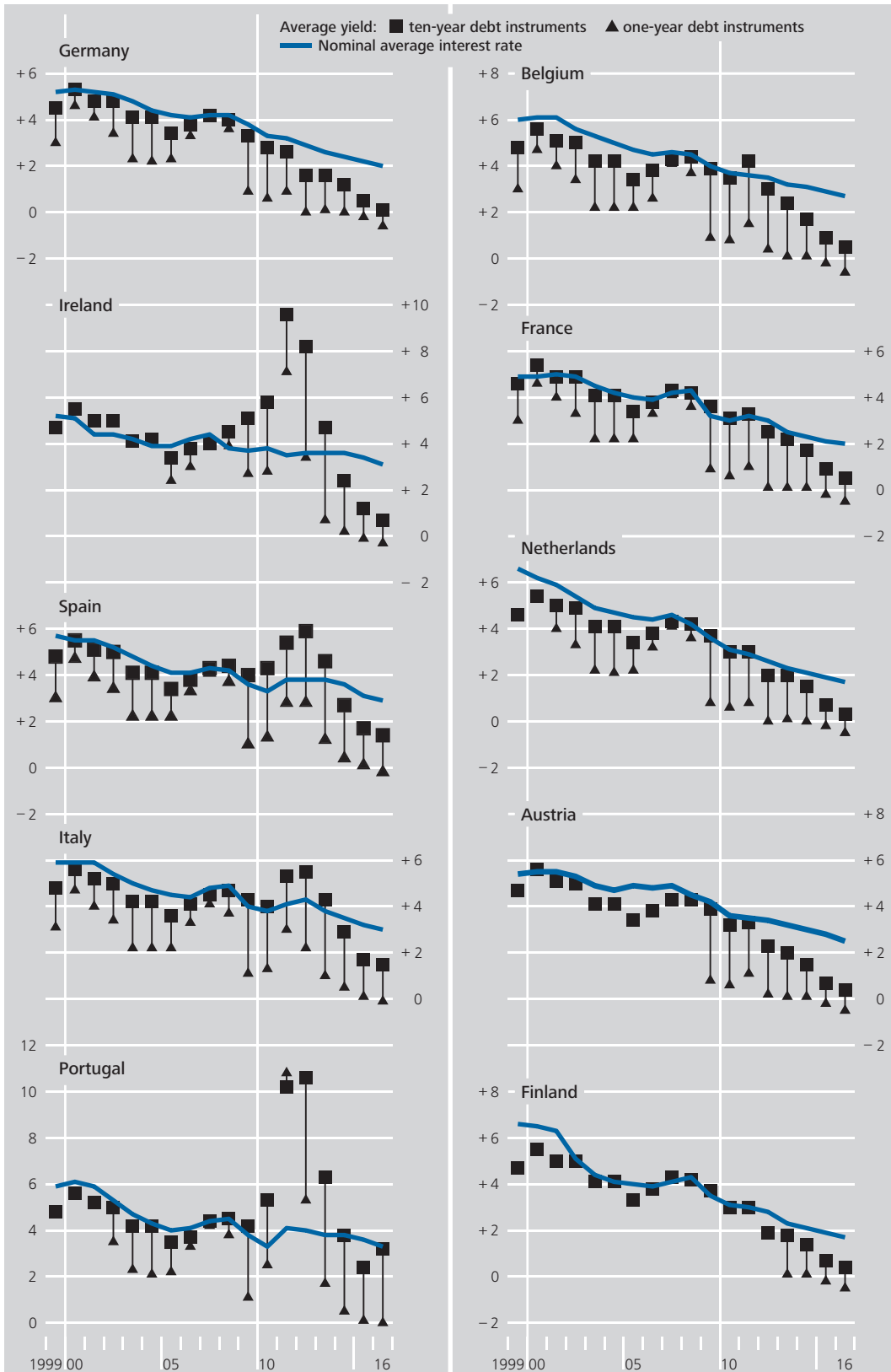
Increasing debt ratios in the wake of the crisis

²⁸ Despite the positive effects of a low interest rate from the borrower's point of view, creditors may face risks. For instance, if banks have invested heavily in long-dated government securities (or other long-dated claims) and have shorter-term funding, an increase in the interest rate will burden the balance sheet. To prevent risks being transferred to the government, sufficient provisioning by banks is important, as is the consistent implementation of investors' liability, where necessary – within the context of the banking union's recovery and resolution scheme, for instance. Breaking the sovereign-bank nexus would essentially represent an important step towards strengthening the stability of the euro area. For more information, see Deutsche Bundesbank, Approaches to strengthening the regulatory framework of European monetary union, Monthly Report, March 2015, pp 15-37, and Deutsche Bundesbank, Financial Stability Review, 2016, pp 31-48.

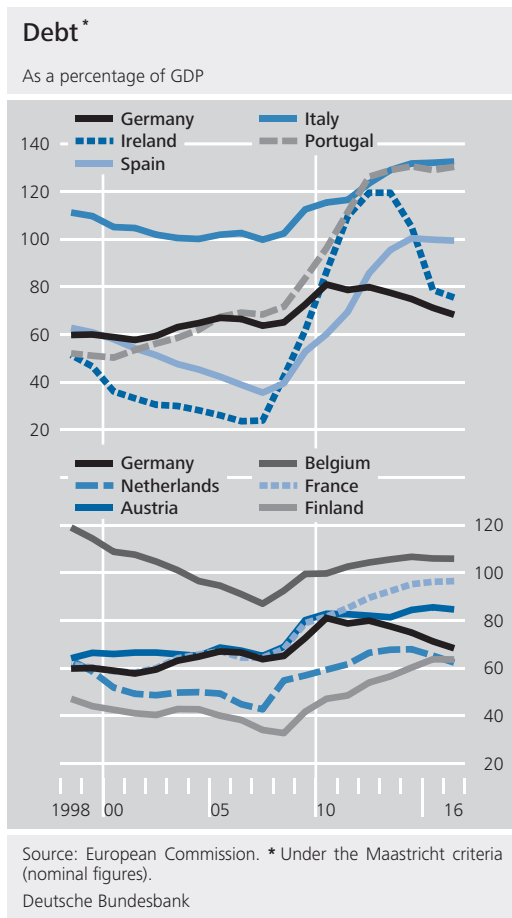
²⁹ Alterations were also made to interest rate agreements. Since 2013, the proportion of variable-interest loans (including inflation-linked bonds) in Belgium, Finland, Germany, Ireland and the Netherlands, which, similarly to short-term liabilities, are associated with volatile interest charges, has decreased substantially. This is amplifying the effect of increased average bond times to maturity. By contrast, a slight shift from fixed rate to floating rate debt instruments ensued, particularly in Italy, Spain and Austria.

Change in financing costs* and average interest rates

%



Sources: European Commission and Bloomberg. * Financing costs depicted by average yield on outstanding one-year and ten-year government bonds. Data on the average yield on outstanding one-year government bonds only available from 2005 for Ireland, from 2002 for Portugal, from 2001 for the Netherlands, from 2009 for Austria, and from 2013 for Finland.



slower increases and sideways movements were observed. Out of the countries under review, Italy, Portugal and Belgium had debt ratios exceeding 100% at end-2016, standing at 133%, 130% and 106% respectively. Government debt ratios in Spain and France came in at just under 100%.

Declining trend in interest expenditure ratios in the aftermath of the crisis

The ratio of interest expenditure to GDP tended to sink in most countries, albeit in some cases considerably more slowly in recent years than during the first few years of the monetary union (see the table on page 63). Only Ireland, Portugal and Spain experienced additional interest expenses on account of their sharply increased debt ratios, although a decline has since set in once more. In Italy, the downward trend following the onset of the crisis abated for several years. However, since 2014, the interest expenditure ratio there has fallen once again. At last count, the interest expenditure ratio ranged from around 1% in Finland and the Netherlands to roughly 4% in Portugal.

The declining average interest rate has contributed substantially to the fact that the interest expenditure ratio in most countries is at its lowest level since the launch of the monetary union, in spite of sharply increased debt ratios. Had the average interest rate remained unchanged from its level in 2007, the year preceding the crisis, interest expenditure would currently be significantly higher (see the chart on page 51). Alongside the declining average interest rate, such interest savings are particularly dependent on the level of government debt. In this way, the greatest savings have been made in Italy, amounting to 2½% of GDP for 2016 alone and 10½% of GDP for the years 2008 to 2016 cumulated. Savings were similarly high in the Netherlands, Austria, France and Belgium, all of which have lower debt levels but have seen a fairly sharp decline in the average interest rate. Germany's cumulative savings, by comparison, are 7½% lower, placing it in the middle of the countries under review. However, even the countries which depended on financial assistance during the crisis are set to make significant savings compared to the pre-crisis interest rate level.³⁰

Significant budget relief in comparison to 2007 resulting from reduced financing costs

Lower interest rates ease the pressure on current government budgets, all other things being equal. Taken in isolation, they result in declining deficits and make existing debt levels more sustainable. However, the latter can be undermined by a simultaneously slackening

Relationship between interest rates and economic growth

³⁰ At end-2015, the average interest rate on ESM loans to Spain stood at 0.9%. In Portugal, the average interest rate on outstanding EFSM, IMF and EFSF loans is 2.6%. Repayment of the IMF loans (interest rate of 4.6%) is envisaged, as Portugal is now able to borrow under more favourable capital market conditions. Ireland was able to refinance the majority of its IMF loans in the years 2014-2015 by means of low-interest government bonds, which reduced the average interest rate. The net interest burden faced by the Irish government is therefore lower than the figure recorded when the Irish central bank purchased a large volume of government bonds as part of the support given to the banking sector in 2013. The Irish central bank's net interest income is thus higher as related interest income is offset by significantly lower liabilities expenditure. This income ultimately returns to the Irish government over time by means of correspondingly higher profit distribution.

pace of growth.³¹ Alongside the primary balance (ie the fiscal balance excluding interest expenditure), the development of the government debt ratio is dependent on the average interest rate and (nominal) growth. The interest rate-growth differential is derived from the last two factors.³²

Declining trend growth rates in the euro area as a whole

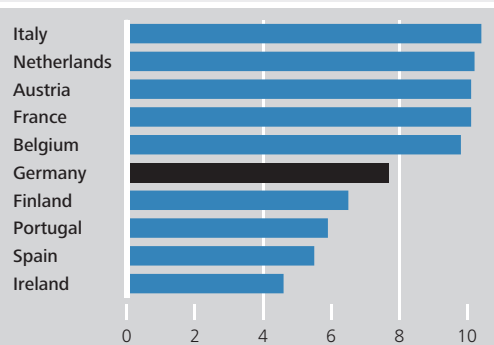
In the euro area as a whole, not only interest rates but also trend growth rates have declined over time. This means that for the most part, substantially falling real growth trends were observed over the past two decades, and price inflation was also lower in the aftermath of the crisis. In this respect, Germany is an exception to the rule, as its nominal GDP trend growth rates were already rather low prior to the crisis and did not decrease thereafter (see the chart on page 55). While Germany had the lowest nominal trend growth rate of all the countries under review at the start of the monetary union, its rate was relatively high last year. In the other countries, particularly those hit hardest by the crisis, declines were observed – some substantial. Following a sharp drop during the crisis, however, signs of recovery have recently been observed once more.

Stronger interest rate-growth differential fluctuations in the countries hit hardest by the crisis

Viewed as a whole, this backdrop puts the easing of public finances due to subdued interest expenditure into perspective (see the top chart on page 56). In the wake of the crisis, therefore, almost all countries initially experienced a deterioration in their interest rate-growth differential due to decreasing trend growth rates and, in the countries hit hardest by the crisis, to the temporary effect of increasing average interest rates. From the government’s perspective, however, the interest rate-growth differential has improved recently by a combination of decreasing interest rates and stable or increasing trend growth rates. In Germany, the interest rate-growth differential has declined more substantially since 2007 than in most other countries. Viewed as a whole, reductions in interest expenditure, taken in isolation, during the observation period provided significant relief for government budgets and are therefore making it

Cumulative saving on interest expenditure * from 2008 to 2016

As a percentage of 2016 GDP



Sources: European Commission and Bundesbank calculations.
 * Calculated as the difference between actual interest expenditure in 2016 and what would have been incurred given the average interest rates for 2007.

Deutsche Bundesbank

easier to comply with the fiscal rules focused on the deficit. However, in most countries, the lower growth rate trend is restricting the scope for expenditure. The positive effects on debt dynamics are therefore being offset to a considerable extent, or indeed, outweighed in the countries hit hardest by the crisis.

Alongside the interest rate-growth differential, the development of a country’s debt dynamics is dependent on the primary balance.³³ Before the onset of the financial crisis, the primary

Improved structural primary balances recently

³¹ To the extent that lower capital market rates reflect worsening growth prospects, lagging average interest rate development even makes it possible to identify a (temporary) burden. GDP and tax revenue growth subsequently decrease more quickly than interest payment growth, as a result of which the scope for other expenditure shrinks.

³² The interest rate-growth differential is calculated below as the difference between the (nominal) average interest rate on government debt and the trend of nominal GDP growth. The trend is used in order to see beyond fluctuations in real GDP or the price component. In principle, a positive interest rate-growth rate differential necessitates a positive primary balance to prevent the debt ratio from rising. The higher the debt ratio and the interest rate-growth differential, the larger the primary balance must be. For more information, see Deutsche Bundesbank, Government debt and interest payment burden in Germany, Monthly Report, April 2010, pp 15-33.

³³ The impact of financial transactions with a neutral balance effect is disregarded hereinafter. If a country purchases financial assets of value (generally only shown as a deficit-neutral booking in the national accounts), this should not, in principle, result in an unfunded additional burden.

Greece: support programmes have sharply reduced interest expenditure

In 2001, Greece joined the euro area with a high debt-to-GDP ratio of over 100%. Interest expenditure had run up to nearly 6½% of gross domestic product (GDP), and the average rate of interest was at roughly the same level. Thereafter, funding terms were initially barely less unfavourable than those elsewhere in the euro area. The average rate of interest and the interest expenditure-to-GDP ratio therefore gradually fell to 4½%.

During the financial crisis, a strong rise in the deficit and debt and the news that falsified statistics had been published were two major factors triggering a loss of confidence in Greek government finances. Funding on the market no longer seemed possible. Support programmes were subsequently launched. Since the spring of 2010, the Greek government has been funded largely by support loans, for which primarily the other euro-area countries and, to a smaller degree, also the other member countries of the International Monetary Fund (IMF) are liable. The terms and conditions of the support loans are, all in all, extremely favourable.¹ In addition, in 2012 private sector debt was restructured, including relief concerning the terms of interest and an extension of maturities. That enabled the precipitous increase in the interest expenditure ratio to over 7% between 2008 and 2011 to be reversed.² Despite the drastic spike in the debt-to-GDP ratio from just over 100% in 2007 to 180% in 2014, as early as in 2013 the interest expenditure ratio had already fallen below its pre-crisis level and amounted to just over 3% last year. The average rate of interest on sovereign debt dropped from over 4% prior to 2010 to a recent figure of below 2%. Greece's interest payments-to-GDP ratio has thus, since 2013, been well below that of Italy and Portugal, two particularly highly indebted countries. If the average interest rate on

Greek government debt were at its 2007 (pre-crisis) level, in 2016 alone nearly 5% of GDP would have had to be additionally spent on debt service, and for the 2008 to 2016 period additional expenses totalling, overall, €37 billion (around 21½% of GDP) would have been incurred.³ The support programmes have provided substantial debt relief, which turns out to be even more extensive if based on alternative market terms and conditions.⁴

Greece's future burden of interest payments will depend on how successfully it reduces the debt ratio and on funding conditions. Since the terms of the support loans are, in most cases, locked in at the very low level over quite a long-term horizon, in this respect Greece will be protected in large part from any unfavourable market conditions and risk premiums for many years to come. In order to minimise the burden when, especially in later years, funding in the capital

¹ The terms and conditions (interest and maturity) of the support loans have been repeatedly eased over time, but are not published for each individual tranche. According to information provided by the European Stability Mechanism (ESM), the average interest rate on ESM loans to Greece stood at 0.7% at the end of 2015. The funding terms for IMF support, by contrast, are perceptibly worse.

² The interest expenditure ratios being examined here are as defined in the national accounts. The temporary reduction in the cash payment burden caused by extensive deferrals of interest payments is neglected here.

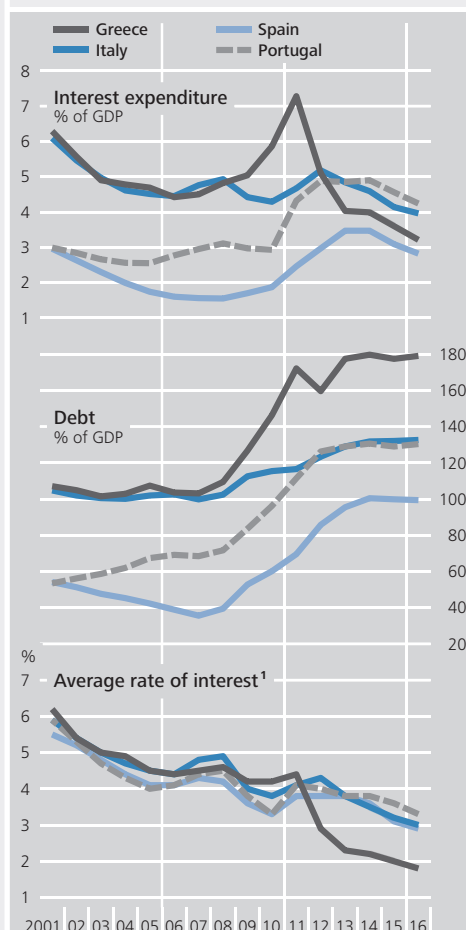
³ For more information on the calculation methods, see page 51.

⁴ According to calculations by the ESM, for 2016 alone its loans will generate savings of 5.6% of GDP (€9.9 billion). See ESM, Annual Report 2016, pp 48-49. These calculations compare the interest on ESM loans and on the loans under the European Financial Stabilisation Facility with the market yield on Greek government bonds, yet only inasmuch as the latter were below a selected threshold of 6.4%; otherwise, the relief is calculated based on the difference from this upper limit. The interest saving calculated using this method is, from this point of view, larger than if the average interest rate of 2007 were used as a reference, even though this only takes account of borrowing from the ESM and not the entire debt level.

market increases, future investors need to be convinced that Greece's government finances are on a sound trajectory. According to the underlying scenario of the European Commission's current sustainability calculations, the average return on issues following the end of the programme will be around 5% and, by 2060, will drop below the 4½% mark.⁵ Against this background, the interest expenditure ratio is expected to gradually rise over the next few years up to just over 4½% of GDP and subsequently be in the area of 4% by 2060, corresponding roughly to the latest reported interest expenditure ratio in Portugal. Should market participants' confidence return more quickly and strongly, this would dampen the interest expenditure ratio and, in conjunction with a fall in the debt ratio, provide stronger relief. The higher Greece's annual primary surplus (net lending/net borrowing less interest payments), the more quickly its debt ratio will fall (at a given nominal GDP growth and interest rate terms). The same will apply to higher growth, especially on the back of successful structural reforms. Conversely, lower primary surpluses or less favourable growth rates would weigh on the debt-to-GDP ratio.

The requirements regarding the primary surplus were rewritten in connection with the programme review which ended in July; now Greece has to demonstrate a primary surplus of at least 3.5% of GDP by 2022. The Eurogroup stated in June 2017 that the European fiscal rules should be complied with after that. According to the European Commission, this will require, as from 2023, a primary surplus of around 2% of GDP. In order to achieve a structural budget that is (close to) balanced, interest expenditure should thus hardly exceed 2% of GDP. As things now stand, this appears illusory, and higher interest expenditure should be expected under the European Commission's baseline scenario. It is therefore not beyond the realms of possibility that Greece will be permitted to get away with a less ambitious budget target than other countries. How-

Interest burden indicators in selected euro-area countries



Sources: European Commission and Bundesbank calculations.
¹ Interest expenditure-to-debt ratio.
 Deutsche Bundesbank

ever, reducing the requirements for the country with the EU's highest debt-to-GDP ratio to a level below that in the Stability and Growth Pact would hardly be conducive to instilling confidence in sound government finances, and the fiscal rules would be weakened further.

⁵ These assumptions reflect expectations about a rise in the risk-free interest rate and a decrease in the risk premium. According to European Commission calculations, the debt-to-GDP ratio in 2020 will be around 160%, dropping to around 90% by 2060. See European Commission, Compliance Report, The Third Economic Adjustment Programme for Greece, Second Review, June 2017. The IMF appears to be, on the whole, more pessimistic about developments in Greece.

Support programmes should be designed to put government budgets on a firm footing, and structural reforms should create the conditions for sustainable, sound economic growth. If programme conditionality and a structurally close to balanced budget are implemented credibly, it should be possible to regain the confidence of the capital markets even in light of higher debt levels. If the reform process does not succeed, or programme agreements are not credible, even a further haircut – which the IMF has declared to be a precondition for providing further financial support – could also prove futile. With regard to fiscal targets, it would be worrying if Greece were seen as not being able to deliver a considerable longer-term primary surplus. In other euro-area countries, the persistently high debt ratios mean that perceptible primary surpluses will be necessary in order to achieve the medium-term budgetary objectives set out by the fiscal rules, quickly reduce their high debt level and thus also create sufficient scope to cope with any future burdens. The current interest expenditure ratios of Portugal and Italy are around 4%, meaning that there, too, to achieve a structurally balanced budget, appropriately high structural primary surpluses will be needed.⁶ Some countries have achieved these, and even far more ambitious, fiscal positions and have maintained them for relatively long periods.⁷ According to the assumptions in the European Commission's baseline scenario, if Greece were to maintain a primary surplus of around 4% beyond 2022, it could achieve, without any further haircuts, an at least close to balanced budget and a steady, perceptible decline in the debt-to-GDP ratio.

However, the Eurogroup apparently regards a primary surplus of 3.5% of GDP for more than five years as being too ambitious for Greece – a far cry from the situation in June 2016, when the objective was to maintain this level until 2028. On 15 June 2017, the Eurogroup reiterated its intent to examine whether, once the current programme ex-

pires in 2018, further debt relief measures should be taken. One of the ideas presented was that the maturity of the outstanding loans granted, ultimately, by the euro-area countries was to be once again postponed, and that interest and redemption payments on the EFSF loans were to be deferred once again. In accordance with this memorandum of understanding, these measures would be an option if Greece were to fully implement the current programme, yet debt sustainability, measured in terms of the gross funding ratio,⁸ is still not yet certain. These measures are apparently designed to get around a formal haircut. On the whole, further actions going forward should be taken with a view to not further eroding the credibility of future programme agreements. This is a genuine concern if programme agreements do not appear to be binding and the impression is given that they will be softened later on if the political will to implement them evaporates. There is also a threat of a further erosion of the European fiscal framework if country-specific exceptions are increasingly permitted. This would cause the rules to cease to act as an anchor of confidence in sound government finances, which also helps keep risk premiums down.

⁶ Although interest expenditure could initially fall, it should also be possible to cope with resurging interest rates going forward.

⁷ For instance, Belgium ran a primary surplus of mostly far above 4% of GDP from the 1990s up until the outbreak of the crisis. Similarly, in more than ten years Finland and also Denmark had a primary surplus that was, in some cases, significantly higher. Since 1995 Italy and Ireland were each able, in five years, to achieve a primary surplus of 4% or more.

⁸ The gross funding ratio is composed of annual net new borrowing and debt to be rolled over (each as a percentage of GDP). For Greece, the Eurogroup has set an initial threshold of not more than 15%, to go up later to 20%, as a measure of debt sustainability. In the baseline scenario for the European Commission's debt sustainability analysis (excluding additional debt relief, with a long-term primary surplus of around 2% of GDP) the gross funding ratio is expected to exceed the threshold value somewhat after 2045, corresponding to a decline in the debt ratio to around 90% by 2060.

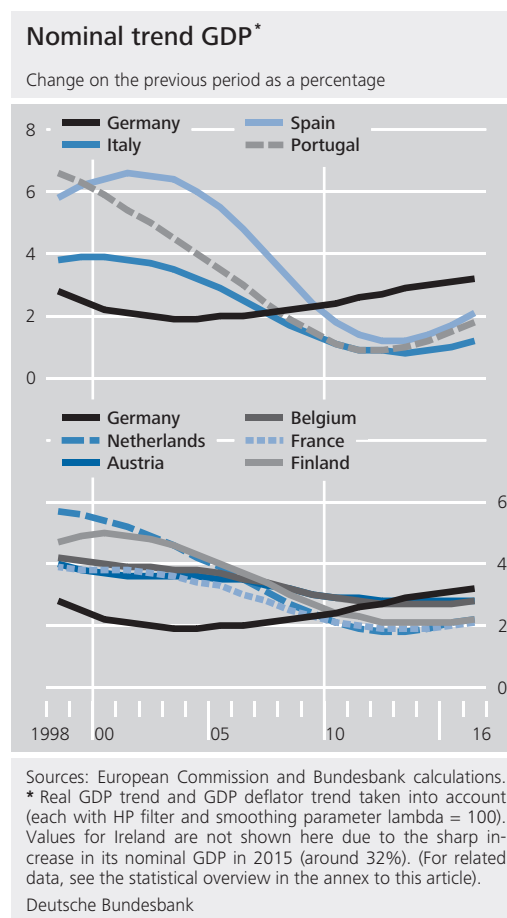
budget balance, adjusted for cyclical effects,³⁴ in combination with the respective interest rate-growth differential, allowed a reduction of the debt ratio in most countries. During the crisis, however, the metrics deteriorated, and the debt ratios increased markedly (see the upper chart on page 56).³⁵ In recent years, both the primary balance and the interest rate-growth differential have improved again in most countries. In 2016, therefore, with the exception of France, Italy and Spain, all the countries were suitably positioned to bring about reductions (albeit highly variable) in their debt ratios, viewed in isolation.

Countries with lower debt levels better prepared for interest rate increases and foreseeable demographic challenges

To ensure lasting debt sustainability, the European fiscal rules prescribe a scaling-back of debt ratios. A relatively rapid reduction of the debt ratio could be achieved, particularly if the goal of structural budgetary positions that are at least close to balance were accomplished.³⁶ Although the average interest rate could fall further in the near future if bonds and loans which still bear relatively high rates of interest are refinanced more cheaply, it is likely to increase again, looking ahead. Against this background, it would seem risky from a fiscal policy perspective to rely on the interest rate-growth differential remaining negative in the longer term, for example. Should the trend of a declining average interest rate reverse, interest burdens will increase once more, which is of even greater consequence in the context of a higher debt level. The long-term strains on government finances from demographic trends could also be better managed if the countries swiftly achieved balanced structural budget positions. The associated decline in debt ratios and interest burdens would make it easier to cover the foreseeable additional expenditure associated with an aging population.³⁷

Interest rate-sensitive revenue for the most part considerably lower than interest expenditure

As changes in the interest rate do not solely affect government interest expenditure but are also reflected on the revenue side, interest rate-sensitive property income, including distributed central bank profits, also has to be taken into account, as a general rule. In relation to gov-



ernment interest expenditure, government property income stood at just under 30% (28% at last count) for the euro-area member states

34 As the European Commission publishes no data for the structural primary balance (ie adjusted for cyclical and temporary effects) for the years prior to 2010, the figures here are based on the cyclically adjusted primary balance.

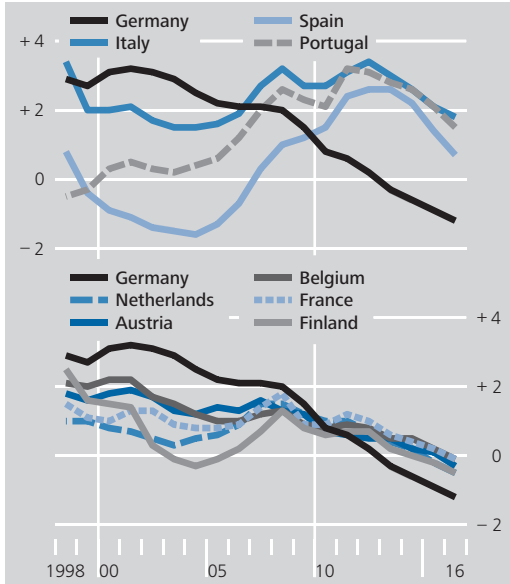
35 Contributing to these were sometimes extensive support measures for credit institutions, which affected the debt level but (as financial transactions) were not reflected in the fiscal balance.

36 The medium-term budget target is intended to support safety margins set below the agreed deficit ceiling of 3% of GDP ("minimum benchmark") and ensure sustainable public finances through a reduction of high government debt levels. To this end, the target is set every three years, taking into account general government budget burdens related to population aging. See European Commission, Vade Mecum on the Stability and Growth Pact, 2017 Edition, Institutional Paper 52, March 2017.

37 For information on long-term sustainability gaps, particularly those due to demographic change, see European Commission, Fiscal Sustainability Report, 2015, European Economy, Institutional Paper 018, January 2016. Sensitivity analyses compared with the long-term scenario deemed plausible for Germany suggest that higher potential growth rates arising from stronger productivity growth, for example, or lower interest rates, will change little in regard to the current German sustainability gap. See M Werding, Modellrechnungen für den vierten Tragfähigkeitsbericht des BMF, FiFo-Berichte No 20, February 2016.

Interest rate-growth differentials*

Percentage points

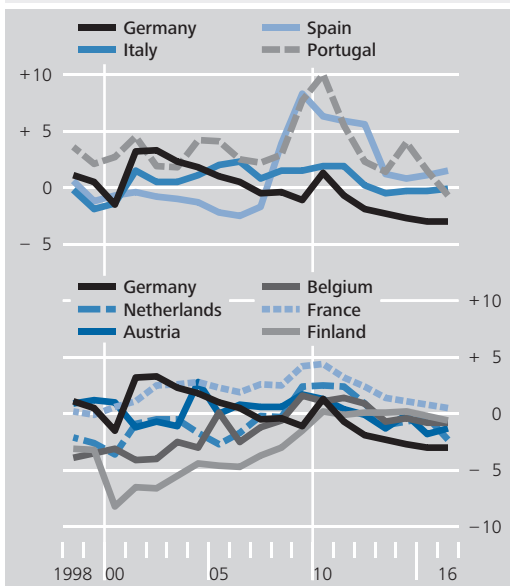


Sources: European Commission and Bundesbank calculations.
 * Defined here as the difference between the nominal average interest rate on government debt and the trend growth rate of nominal GDP. In the case of the latter, both the real GDP trend and the price component trend are taken into account (each with HP filter and smoothing parameter lambda = 100). Values for Ireland are not shown here due to the sharp increase in its nominal GDP in 2015 (around 32%). (For related data, see the statistical overview in the annex to this article).

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Difference between primary balances that stabilise debt ratios and realised cyclically-adjusted primary balances*

%



Sources: European Commission and Bundesbank calculations.
 * Negative values: a realised cyclically-adjusted primary balance results, ceteris paribus, in a declining debt ratio. Values for Ireland are not shown here due to the sharp increase in its nominal GDP in 2015 (around 32%). (For related data, see the statistical overview in the annex to this article).

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in the period 2007 to 2016. The level of the arithmetical average yield on government financial assets is lower than the level of the average interest rate on government debt, which is probably attributable to the fact that gains are not the priority here, or that less profitable assets are involved, as is the case for resolution entities. The arithmetical average interest rate also decreased over time (see the chart on page 57),³⁸ but less strongly than for government debt. Viewed as a whole, then, changes in governments' property income compensate for interest-related influences on the expenditure side to a certain, but still fairly minor, extent. However, such savings are likely to be lower than in previous cycles in the event of a future interest rate increase, since central bank profits will initially tend to react not positively but negatively to interest rate increases, as a result of the non-standard monetary policy measures (see the box on pages 58 to 60).

Conclusion

Government debt in the euro-area countries increased substantially in the wake of the financial and economic crisis and, in most cases, is still near peak levels in relation to GDP. Compared with the pre-crisis year 2007, however, the interest expenditure burden affecting general government budgets has generally fallen almost continuously, with a few exceptions in cases of particularly strong debt growth. The extremely favourable financing terms are a cru-

Interest burden in euro area countries mostly at a low despite increased debt ratios

³⁸ For a rough calculation of the average yield on government property income, the received property income (less rental receipts) can be compared to financial assets in accordance with the financial accounts. If the ratio of property income to interest expenditure were to be viewed as an indicator of the relative value of financial assets in relation to the debt level, this would produce a correspondingly extrapolated average financial asset value of around 25% of GDP in the euro area between 2007 and 2016 (with the average debt ratio, at market prices, of 91%). According to the financial accounts, the value of financial assets amounted to 36% of GDP in the same period. Overall, financial assets are comparatively less significant in relation to gross debt. Notable exceptions are member states which record capital-backed social security systems to a larger extent in the general government sector (eg Finland).

cial factor. The average interest rate on government debt has since reached a low in all countries. If the average interest rate had been that of 2007, interest expenditure in the euro area last year would have been higher by almost 2% of GDP (eg by nearly 2½% in Italy, by just over 2% in France and by 1½% in Germany). This has generated savings of approximately €1 trillion or just under 9% of total GDP in the euro area over the past nine years.

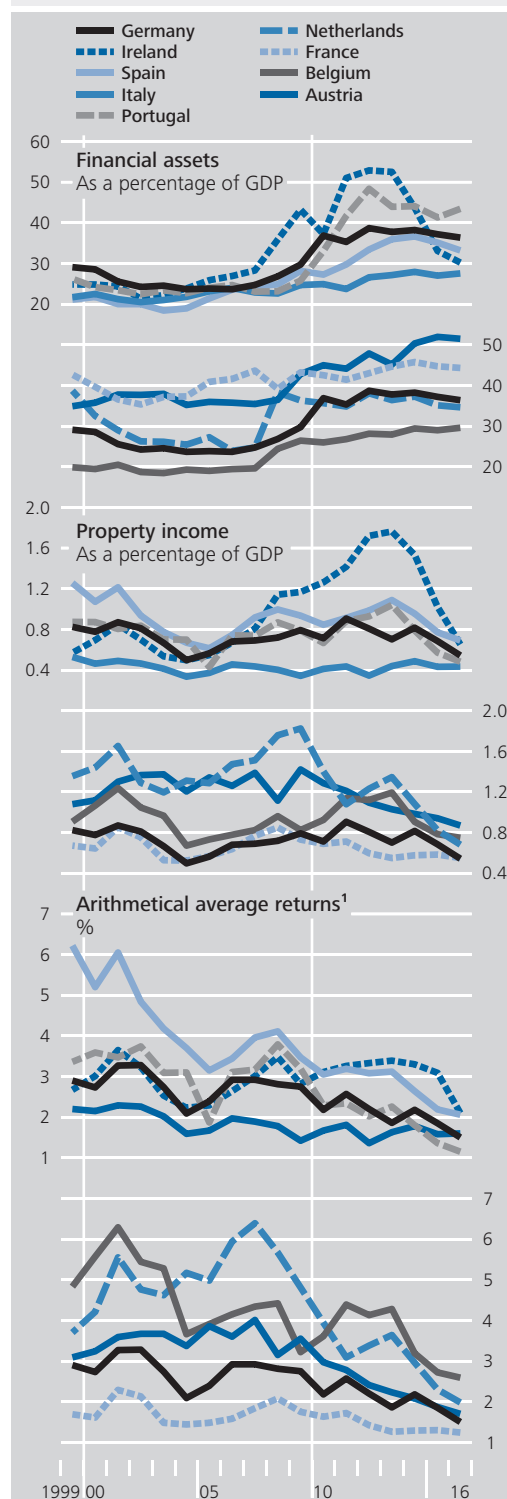
Fiscal policy not to be built on low interest rates

The very low interest rate level, also supported by the significant government bond purchases by the Eurosystem, gives reason in the first instance to expect further decreases in average interest rates and interest expenditure ratios. However, building fiscal policy on the assumption that financing terms for high levels of government debt will remain extremely favourable would be problematic. Instead, it is important to swiftly put public finances on a sound footing. If the goal of structural budgetary positions that are at least close to balance, enshrined in the Stability and Growth Pact, were to be achieved, the debt ratios, which are predominantly still very high, could be lowered relatively rapidly.

Monetary policy could come under pressure if high debt ratios not reduced

In actual fact, however, consolidation effects have faltered in the last three years. In the majority of member states, the structural primary balance has deteriorated yet further, or has barely improved. The persistent easing of funding conditions and the associated decline in interest costs are likely to have contributed to this. In view of the high debt ratios, however, public finances remain vulnerable to shocks, and an increase in the interest rate will have a stronger negative impact, all other things being equal. The fiscal consolidation requirements, which would then become more substantial again, are also likely to entail greater political costs. If, as a result, this risks eroding the confidence of the financial markets in the sustainability of public finances, monetary policy not least is likely to be pressured to respond.

Government financial assets and property income*



Sources: Eurostat and Bundesbank calculations. * Finland is not shown here because its funded pension provision is, to a large extent, recorded in the general government sector. At last report, financial assets in Finland amounted to 129% of GDP, property income amounted to 2.6% of GDP and arithmetical average return totalled 2%. ¹ Property income less rental receipts relative to the mean of the level of financial assets at the end of the previous year and the year in question.

Central bank profits: the impact of changes in interest rates in the context of unconventional monetary policy

A central bank's profit (or loss) and the subsequent transfer to the government are determined by a number of different factors.¹ In a highly stylised and simplified approach, where a central bank balance sheet has a conventional structure, a rise in key interest rates drives up net interest income and profit. This is because cash issued by a central bank does not bear interest (liability) and is offset by claims on credit institutions resulting from refinancing operations (assets) which bear interest at the main refinancing rate for monetary policy and thus yield higher income when key interest rates are raised. If this higher central bank profit is transferred to the government budget, it counteracts the impact of interest rate rises on government interest expenditure which, all other things being equal, increases in a phase of rising interest rates.²

However, due to unconventional monetary policy measures and the resulting high excess liquidity, relationships are becoming much more complex and are tending to be reversed. Once monetary policy, and with it interest rate rises, return to normal, central bank profits will initially fall markedly. If profit transfers also decline as a result, this – taken in isolation – will temporarily heighten the impact of interest rate rises on public finances.

Central bank profits in connection with unconventional monetary policy measures

As a result of the relationship described above (taken in isolation), cuts in key policy rates have lowered interest income and profits in the Eurosystem. At the same time, in the wake of unconventional policy measures, the European banking system has built up a considerable amount of excess liquidity on central bank accounts. These increased Eurosystem liabilities are predominantly offset by extensive new assets from monetary policy purchase programmes (used to purchase primarily government but also corporate bonds) and from the targeted longer-term refinancing op-

erations (TLTRO).³ As interest on such central bank assets at present is usually higher than interest on excess liquidity (which currently bears interest at the negative deposit rate of -0.4%), this results in net interest income on balance.⁴

The positive effect of bond purchases under the current programme is thus relatively small for the Bundesbank as each national central bank (NCB) purchases government bonds of its own country and, while the exclusion of risk-sharing minimises risk for the Bundesbank, it means that interest earned is also only correspondingly low. In the previous securities markets programme, which ran from May 2010 until September 2012, the focus was on bonds from countries where risk premiums rose particularly sharply. As a result of the fact that risk-sharing was agreed for this pro-

¹ Including the structure and volume of the balance sheet, accounting rules, fiscal regulations and provisions governing profit transfer to the government or other shareholders. The Eurosystem has harmonised accounting rules (for valuation and income recognition). In addition, each national central bank has national (specific) regulations on profit transfer, setting up reserves and general risk provisions.

² In this simplified approach, interest income equates to income from short-term investment in the amount of cash holdings (in accordance with the capital key, Germany's share of cash holdings in the Eurosystem amounts to around €270 billion, or just over 8% of gross domestic product (GDP)). In the Eurosystem, central bank balances for minimum reserves bear interest at the main refinancing rate and thus have no impact here on net interest income. Excess liquidity (credit institutions' central bank balances that exceed the minimum reserve requirements), which bears interest at the deposit facility rate (which is lower than the main refinancing rate), should not play a notable role in a functioning money market (such as that prior to the financial crisis).

³ For more information on the Eurosystem's non-standard measures since mid-2014, see Deutsche Bundesbank, The macroeconomic impact of quantitative easing in the euro area, Monthly Report, June 2016, pp 29-53.

⁴ The TLTRO initially bear interest at the main refinancing rate (0%); however, if the bank in question issues sufficient loans, the rate is (retroactively) cut (at most to the deposit rate (-0.4%)). The respective rate is fixed for a period of four years. If the purchasing bank so desires, it can repay the transactions at an earlier date.

gramme, interest income was also shared in accordance with the capital key. In the euro area as a whole, excess liquidity currently totals around €1.6 trillion. By the end of the year, this could rise in line with the planned bond purchases to around €2 trillion, or approximately 18% of euro-area nominal GDP. The NCBs' net interest income from this unconventional policy, all other things being equal, is thus likely to increase as the year progresses – assuming returns on these purchases remain above the deposit rate.

In simplified terms, the significance of bond purchases for public finances is as follows. An NCB ultimately uses the bond purchase programme to take medium to long-term national bonds on to its balance sheet and finances this by creating short-term central bank deposits that bear interest at the deposit rate.⁵ If the resultant central bank profit or loss has a direct impact on the government budget, in economic terms this equates to the financial impact of switching a government's financing modalities from longer-term debt (government bonds at current market conditions) to debt at the short-term, standard monetary policy deposit rate. As described above, this generates additional relief for the government – at least initially – (in excess of the yield-reducing effect of purchases of newly issued government bonds) as long as the deposit rate remains below the return on the purchased bonds and, all other things being equal, the central bank's profit and the subsequent transfer to government rise. However, this also increases public finances' sensitivity to changes in short-term interest rates (as is also the case when switching from long-term to short-term debt).

Impact of an interest rate rise

If, as part of the process to normalise monetary policy, key policy rates in the Eurosystem are raised, net interest income and (taken in isolation) central bank profits initially decline – in contrast to the simplified conventional central bank balance sheet – and this could also result in losses. As the deposit rate rises, profitability declines in connection with excess

liquidity due to interest payments to credit institutions, whereas interest income from the TLTRO (which do not reach maturity until 2020/2021) and securities purchased (such as those under the public sector purchase programme, which have a weighted average term of around eight years for the Eurosystem's total portfolio) remains unchanged until maturity. Losses generally occur if the deposit rate is raised above the average return on the assets (bonds and refinancing operations).⁶

Seen in this light, the unconventional central bank balance sheet means that interest rate rises no longer simply cause the government's interest expenditure for newly issued bonds or floating rate bonds to increase (as it would usually do in a phase of rising interest rates). In addition, a central bank's profit initially declines (rather than rising, as it would do in the case of conventional monetary policy), meaning that interest rate rises place a greater strain on public finances (once the central bank's profit has been factored in). This is also demonstrated by the above considerations on the impact of government bond purchases: when an NCB purchases such bonds, the net costs initially fall; however, any subsequent interest rate rise (starting from a favourable position) has a greater impact on public finances. With excess liquidity at 18% of GDP in the euro area, a one percentage point rise in the deposit rate means, all other things being equal, a fall of 0.18% of GDP in the Eurosystem's net interest income (equivalent to around €6 billion for Germany).

The higher the return on the assets purchased, the greater the initial relief for public finances from expanding the central bank balance sheet as described above. However, the expected future deterioration in profitability when interest rates are raised would thus, all other things being equal, affect all countries

⁵ The financial impact depends on the purchase volume and the return on the paper purchased. The effect is thus the same irrespective of whether government bonds or corporate bonds are purchased – assuming returns on both are identical.

⁶ If sold before maturity, this would result in losses in the corresponding period.

Profits of the euro-area national central banks in the 2016 financial year

As a percentage of GDP

Country	Profit before taxation	Taxes and transfer to government
Austria	0.0	0.0
Belgium	0.2	0.1
Cyprus	0.4	0.3
Estonia	0.2	0.0
Finland	0.1	0.0
France	0.2	0.2
Germany	0.0	0.0
Greece	0.6	0.6
Ireland	0.9	0.7
Italy	0.2	0.2
Latvia	0.0	0.0
Lithuania	0.1	0.0
Luxembourg	0.0	0.0
Malta	0.6	0.5
Netherlands	0.0	0.0
Portugal	0.4	0.3
Slovakia	0.2	0.0
Slovenia	0.1	0.0
Spain	0.1	0.1

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(starting from different positions) in approximately the amount at which they participate in the bond purchase programme.

The extent to which the above-mentioned effects have a concrete effect on public finances in the individual years ultimately depends on a number of other factors. Central bank profits and transfers are, for instance, subject to other influences, some of them country-specific. For example, profits or losses may have an effect elsewhere or in connection with the bonds purchased under the programme (say, if various risks were to materialise). As far as the individual transfers are concerned, setting up or releasing reserves could also play a role, causing shifts in or changes to the time frame.

In the Bundesbank's case, given the low risk premium, the German government bonds purchased yield very low – in some cases even negative – returns and, as a result, the contribution to growth in the Bundesbank's profit from these purchases is relatively small. With regard to interest rate risks, in last year's annual accounts additional reserves of just under €2 billion were set aside and similar plans have been announced for this year. These re-

serves thus already spell a reduction in the profit transfer and make provisions for future losses from an interest rate rise. Given the fact that the Bundesbank's profit transfer (of only €½ billion) at the beginning of this year was already low, it cannot fall all too sharply even if interest rates are raised in the future. However, the profit transfer could be low, or even zero, for the medium to long term. Keeping to the past approach of factoring in €2½ billion in central government's budgetary and financial planning would therefore be risky.

In some of the other euro-area countries, transfers of central bank profits to the government (in relation to GDP) for the 2016 financial year were higher than in Germany (see the table on this page⁷). Profitability *inter alia* is initially more favourable due to the fact that greater risks generally mean that interest earned on bonds purchased under the programme is higher and, as purchases are set to continue, profitability is subsequently likely to improve in relative terms this year, too. If a central bank makes a large profit transfer, the potential for setbacks when monetary policy returns to normal is generally greater accordingly. The strain on public finances from rising financing costs would be intensified further as a result of reduced central bank profit transfers.

⁷ Governments' investment income from central bank profits reported in the national accounts may deviate from the figures given here. Seigniorage in Ireland is particularly high as extensive government liabilities were transferred to the central bank balance sheet in connection with bank rescue measures. The above-mentioned effects of holding government bonds in the current environment are thus especially pronounced in Ireland. The profits, but likewise the risks, of some central banks are also inflated by higher interest income in connection with the granting of ELA.

Longer maturities for government debt, but dampening effect of central bank profits would cease if interest rates reversed

Borrowing in most countries is currently shifting more strongly towards debt instruments with longer maturities, meaning that the implications of increasing interest rates in the future are delayed. Government property income could, in principle, benefit from a rising interest rate, thereby easing expenditure pressures. However, it is less significant in quantitative terms and is likely to be less responsive to interest rate changes on the whole. Central banks' profit distribution also usually increases with rising interest rates. In the light of the non-standard monetary policy measures and high excess liquidity, however, increased interest rates would initially burden the Eurosystem's balance sheets and ultimately government finances. With regard to containing further fiscal risks resulting from increasing interest rates, it is also important that financial institutions make sufficient preparations for the event of an interest rate reversal, and that, should financial distress occur, investors' liability is enforced as envisaged within the banking union arrangements.

Germany in more favourable position, but surpluses also appropriate

Germany's public finances are currently in a relatively favourable position. However, moderate structural surpluses are also appropriate in light of the still-high debt ratio and the demographic outlook. Moreover, it has proven beneficial to ensure safety margins rather than running close to the limits set in the rules. It was thus possible to absorb the financial impact of refugee immigration in the budget plans without counterfinancing measures. Low interest rates have aided the emergence of fiscal surpluses in Germany considerably. If the average interest rate had remained at its pre-crisis level of 2007, last year's interest expenditure would have been €47 billion or 1½% of GDP higher. Even if interest expenditure continues to de-

crease against a backdrop of ongoing favourable financing conditions, such terms should not be expected to remain the norm. The central and state governments, however, have evidently already made certain provisions for this in their medium-term plans.

However, the current recording procedure for premiums and discounts when borrowing poses a risk to the Federal budget. Contrary to European accounting rules and the economic background, these are fully recorded upon accrual as negative or positive interest expenditure, making the budgets highly volatile. It would be wise to distribute burdens and relief evenly over the life of the bond, as is already the case for inflation-linked bonds.

The state and local governments also profit greatly from lower interest rates. This makes it easier for the very heavily-indebted states to adhere to the national debt brake, which requires all states to have (structurally) balanced budgets from 2020. Interest expenditure halved from 7% to 3½% during the period 2007 to 2016 relative to budget volume, whereas debt-to-GDP levels barely changed. Even the very high debt levels of some local governments are becoming more affordable. This is also due to the significant fall in the burden arising from cash advances, which are a significant source of funding for local government and whose remuneration is generally fixed in the short term. As at the European level, however, an ambitious fiscal stance should be pursued, particularly given high debt levels, until a sound budgetary situation has been achieved. Otherwise, mounting interest rates might expose heavily-indebted entities in particular to the risk of resurgent fiscal imbalances in the event of an interest rate reversal.

Amended booking of interest expenditure advisable in Federal budget

Relief for heavily indebted state and local governments, but challenges remain

Germany: state and local government debt and interest expenditure in 2016*

State	Debt ¹			Bal- ance ²	Change from 2007 to 2016				Estimated interest relief in 2016 compared with 2007 ³			
	€ per capita	€ per capita	% of total expend- iture		€ per capita	Debt		Interest expenditure	Balance	€ mn	€ per capita	% of total 2016 expend- iture
						€ per capita	% of total expend- iture					
Baden- Württemberg	6,083	182	2.9	137	1,284	- 34	- 2.1	- 235	1,411	130	2.1	
Bavaria	2,680	89	1.4	339	- 564	- 48	- 1.7	- 82	734	57	0.9	
Brandenburg	8,001	169	2.7	373	130	- 189	- 4.6	58	424	171	2.8	
Hesse	10,710	255	3.6	238	3,370	- 69	- 2.6	193	1,410	228	3.3	
Lower Saxony	9,457	218	3.9	292	1,522	- 131	- 4.5	283	1,598	202	3.6	
Mecklenburg- West Pomerania	7,013	188	3.1	549	- 769	- 157	- 4.0	312	241	150	2.4	
North Rhine- Westphalia	13,624	262	4.1	107	4,890	- 98	- 3.9	116	5,190	291	4.6	
Rhineland- Palatinate	13,790	310	5.5	139	4,488	- 98	- 4.1	145	1,192	294	5.2	
Saarland	18,458	487	8.0	- 320	7,352	- 11	- 3.1	- 68	392	394	6.5	
Saxony	3,078	69	1.2	405	- 633	- 100	- 2.5	- 218	268	66	1.1	
Saxony-Anhalt	10,514	253	4.1	478	449	- 200	- 5.2	312	503	224	3.6	
Schleswig- Holstein	12,005	260	4.1	229	2,831	- 119	- 4.7	407	732	256	4.1	
Thuringia	8,562	236	4.2	436	406	- 127	- 3.5	217	396	183	3.3	
Berlin	17,243	398	5.2	390	- 619	- 359	- 6.7	314	1,294	368	4.8	
Bremen	35,362	1,011	11.3	- 86	13,032	92	- 3.2	1,072	506	754	8.4	
Hamburg	18,763	470	4.6	323	5,839	- 117	- 4.8	157	715	400	3.9	
Total	9,706	226	3.6	241	2,145	- 100	- 3.6	81	17,008	207	3.3	

Sources: Federal Statistical Office, debt statistics and quarterly cash statistics (excluding "fifth quarter" accruals). Bundesbank calculations.
 * State and local government viewed together. Core budgets and off-budget entities. **1** Including debt owed to other government sectors and specific public entities. Data as at 31 December 2016. **2** Fiscal balance adjusted for financial transactions. **3** Change in arithmetical uniform average interest rate (aggregate interest expenditure of state and local government, as reported in the national accounts, for the reporting year in relation to mean Maastricht debt levels for the reporting year and for the respective previous year) in 2016 as against 2007 in relation to the Federal state-specific debt levels at the end of 2016 (according to the government finance statistics; no consolidation of debt owed to the general government budget). Counter-effects relating to interest income are disregarded here.
 Deutsche Bundesbank

Euro area: government debt

As a percentage of GDP

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	66.41	65.10	68.85	80.09	82.78	82.59	82.02	81.32	84.44	85.47	84.61
Belgium	114.40	87.03	92.53	99.52	99.73	102.58	104.34	105.61	106.66	105.96	105.88
Cyprus	54.87	53.51	44.67	53.34	55.80	65.23	79.26	102.22	107.13	107.50	107.81
Estonia	6.47	3.66	4.49	7.04	6.56	6.07	9.74	10.19	10.67	10.05	9.49
Finland	44.04	33.98	32.68	41.71	47.14	48.51	53.91	56.46	60.20	63.67	63.58
France	60.18	64.35	68.01	78.94	81.65	85.16	89.53	92.32	95.24	96.20	96.50
Germany	59.98	63.66	65.15	72.58	80.96	78.73	79.94	77.48	74.89	71.18	68.33
Greece	98.89	103.10	109.43	126.76	146.26	172.10	159.57	177.41	179.67	177.41	179.03
Ireland	46.59	23.87	42.41	61.70	86.28	109.61	119.49	119.47	105.25	78.73	75.46
Italy	109.66	99.79	102.40	112.55	115.41	116.52	123.35	129.02	131.78	132.06	132.61
Latvia	12.12	8.41	18.68	36.60	47.44	42.70	41.21	39.01	40.88	36.52	40.13
Lithuania	22.73	15.87	14.56	27.96	36.21	37.19	39.76	38.71	40.53	42.70	40.23
Luxembourg	6.76	7.72	14.90	15.74	19.79	18.70	21.72	23.39	22.43	21.61	20.02
Malta	62.07	62.39	62.75	67.80	67.63	70.37	68.06	68.75	64.28	60.61	58.25
Netherlands	58.55	42.74	54.84	56.85	59.33	61.64	66.39	67.74	67.95	65.19	62.26
Portugal	51.07	68.45	71.67	83.61	96.20	111.37	126.25	129.03	130.58	128.97	130.37
Slovakia	47.08	30.10	28.46	36.30	41.20	43.68	52.17	54.74	53.63	52.47	51.94
Slovenia	23.71	22.84	21.79	34.65	38.37	46.62	53.89	71.00	80.89	83.15	79.66
Spain	60.94	35.59	39.47	52.78	60.14	69.53	85.74	95.45	100.44	99.84	99.38

Source: European Commission.

Deutsche Bundesbank

Euro area: government interest expenditure*

As a percentage of GDP

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	3.44	3.15	2.96	3.16	2.90	2.79	2.72	2.61	2.45	2.37	2.10
Belgium	6.88	3.98	3.96	3.82	3.61	3.60	3.60	3.30	3.28	3.03	2.86
Cyprus	2.82	2.77	2.58	2.33	2.04	2.18	3.15	3.34	2.82	2.88	2.60
Estonia	0.37	0.17	0.21	0.19	0.13	0.13	0.14	0.11	0.10	0.09	0.08
Finland	2.90	1.42	1.40	1.33	1.33	1.39	1.42	1.26	1.21	1.16	1.06
France	2.92	2.62	2.81	2.40	2.39	2.60	2.58	2.28	2.17	2.04	1.89
Germany	3.04	2.67	2.67	2.64	2.47	2.50	2.29	1.98	1.78	1.56	1.38
Greece	7.58	4.50	4.82	5.04	5.86	7.28	5.10	4.03	3.99	3.60	3.21
Ireland	2.36	1.00	1.28	2.01	2.84	3.33	4.15	4.28	3.93	2.67	2.32
Italy	6.40	4.76	4.93	4.42	4.29	4.67	5.18	4.84	4.59	4.14	3.96
Latvia	0.64	0.35	0.55	1.52	1.75	1.78	1.64	1.48	1.43	1.32	1.13
Lithuania	1.47	0.66	0.65	1.24	1.82	1.84	1.97	1.76	1.60	1.52	1.35
Luxembourg	0.43	0.32	0.38	0.40	0.41	0.47	0.52	0.54	0.41	0.34	0.34
Malta	3.84	3.48	3.34	3.27	3.08	3.17	3.00	2.87	2.74	2.46	2.20
Netherlands	3.87	1.96	2.03	2.02	1.77	1.76	1.64	1.52	1.42	1.25	1.08
Portugal	2.94	2.95	3.11	2.97	2.93	4.32	4.88	4.85	4.90	4.56	4.24
Slovakia	3.35	1.39	1.30	1.43	1.30	1.53	1.77	1.87	1.90	1.75	1.65
Slovenia	2.31	1.24	1.10	1.31	1.63	1.89	2.03	2.58	3.30	3.27	3.21
Spain	3.42	1.56	1.55	1.70	1.87	2.46	2.97	3.47	3.47	3.09	2.82

Sources: European Commission and Bundesbank calculations. * Government interest expenditure as presented for general government in the national accounts. Financial intermediation services indirectly measured (FISIM) not included.

Deutsche Bundesbank

Euro area: nominal average interest rate on government debt

%

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	5.40	4.90	4.49	4.20	3.61	3.46	3.35	3.22	2.99	2.82	2.51
Belgium	6.04	4.59	4.47	3.95	3.70	3.62	3.52	3.16	3.12	2.89	2.74
Cyprus	5.33	5.18	5.49	4.72	3.81	3.64	4.33	3.56	2.66	2.69	2.43
Estonia	6.18	4.52	5.10	3.09	1.98	2.18	1.89	1.16	1.02	0.93	0.79
Finland	6.55	4.10	4.28	3.48	3.05	2.99	2.80	2.30	2.09	1.89	1.69
France	4.90	4.17	4.30	3.22	3.01	3.17	2.97	2.52	2.33	2.15	1.98
Germany	5.15	4.20	4.19	3.76	3.30	3.20	2.91	2.55	2.37	2.17	2.02
Greece	7.98	4.50	4.62	4.23	4.19	4.39	2.95	2.33	2.22	2.00	1.80
Ireland	5.18	4.36	3.78	3.70	3.81	3.45	3.65	3.63	3.62	3.38	3.07
Italy	5.89	4.80	4.91	4.04	3.80	4.07	4.29	3.82	3.54	3.16	3.02
Latvia	6.13	4.42	4.16	4.99	4.07	4.20	4.06	3.77	3.64	3.48	2.98
Lithuania	7.42	4.39	4.57	5.42	5.77	5.29	5.29	4.59	4.14	3.70	3.32
Luxembourg	6.43	4.27	3.39	2.59	2.41	2.52	2.61	2.47	1.87	1.57	1.65
Malta	6.95	5.66	5.51	5.01	4.72	4.68	4.44	4.33	4.33	4.13	3.83
Netherlands	6.59	4.60	4.24	3.56	3.08	2.93	2.57	2.28	2.11	1.90	1.73
Portugal	5.93	4.40	4.48	3.80	3.29	4.12	4.02	3.82	3.81	3.58	3.32
Slovakia	8.50	4.81	4.63	4.29	3.43	3.68	3.73	3.53	3.55	3.36	3.21
Slovenia	10.50	5.39	5.10	4.56	4.47	4.49	3.99	4.12	4.42	4.06	4.00
Spain	5.73	4.35	4.18	3.63	3.32	3.77	3.78	3.81	3.57	3.14	2.88

Source: European Commission.
 Deutsche Bundesbank

Euro area: government interest savings per year

As a percentage of GDP

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	Cumulative savings ¹
Austria	0.27	0.52	1.03	1.17	1.26	1.36	1.56	1.74	2.01	10.12
Belgium	0.11	0.62	0.87	0.97	1.10	1.50	1.55	1.79	1.94	9.77
Cyprus	-0.15	0.23	0.74	0.92	0.62	1.51	2.68	2.67	2.94	12.30
Estonia	-0.02	0.09	0.17	0.14	0.20	0.33	0.36	0.37	0.36	1.79
Finland	-0.06	0.24	0.46	0.52	0.66	0.98	1.17	1.35	1.52	6.54
France	-0.09	0.71	0.91	0.82	1.04	1.49	1.71	1.91	2.09	10.12
Germany	0.01	0.31	0.68	0.78	1.01	1.28	1.37	1.45	1.50	7.70
Greece	-0.12	0.32	0.43	0.18	2.68	3.76	4.10	4.48	4.80	21.23
Ireland	0.19	0.36	0.41	0.87	0.81	0.86	0.80	0.77	0.97	4.61
Italy	-0.11	0.84	1.13	0.84	0.62	1.24	1.64	2.15	2.34	10.41
Latvia	0.03	-0.17	0.15	0.09	0.14	0.26	0.31	0.36	0.55	1.63
Lithuania	-0.03	-0.24	-0.43	-0.31	-0.34	-0.07	0.10	0.28	0.44	-0.31
Luxembourg	0.10	0.26	0.32	0.33	0.33	0.40	0.53	0.58	0.54	2.95
Malta	0.09	0.42	0.62	0.67	0.83	0.88	0.84	0.91	1.06	5.11
Netherlands	0.17	0.59	0.88	1.00	1.29	1.55	1.67	1.78	1.80	10.16
Portugal	-0.05	0.47	0.98	0.30	0.46	0.74	0.77	1.05	1.39	5.86
Slovakia	0.05	0.17	0.52	0.47	0.51	0.68	0.68	0.76	0.82	4.30
Slovenia	0.06	0.24	0.33	0.38	0.71	0.79	0.72	1.07	1.11	5.12
Spain	0.06	0.34	0.58	0.37	0.45	0.49	0.76	1.19	1.44	5.48

Sources: European Commission and Bundesbank calculations. ¹ Cumulative savings: sum of annual savings since 2008 as a ratio of 2016 GDP.

Deutsche Bundesbank

Euro area: interest rate-growth differential*

Percentage points

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	1.56	1.56	1.30	1.16	0.67	0.59	0.55	0.45	0.24	0.06	-0.29
Belgium	1.98	1.22	1.28	0.94	0.83	0.85	0.83	0.51	0.46	0.17	-0.06
Cyprus	-2.29	0.37	1.53	1.65	1.58	2.15	3.43	3.02	2.22	2.13	1.60
Estonia	-7.70	-4.36	-2.61	-3.64	-4.05	-3.38	-3.29	-3.72	-3.63	-3.55	-3.59
Finland	1.63	0.74	1.30	0.83	0.63	0.74	0.66	0.23	0.02	-0.23	-0.53
France	1.06	1.36	1.76	0.91	0.88	1.15	1.04	0.61	0.40	0.15	-0.12
Germany	2.68	2.07	1.99	1.46	0.85	0.60	0.17	-0.33	-0.63	-0.93	-1.17
Greece	1.11	2.16	3.47	4.23	5.17	6.06	4.96	4.32	3.89	3.14	2.27
Ireland	-6.85	0.26	0.52	0.88	0.99	0.27	-0.16	-0.95	-1.73	-2.61	-3.26
Italy	2.04	2.67	3.18	2.65	2.67	3.12	3.44	2.98	2.61	2.11	1.82
Latvia	-7.34	-4.33	-3.19	-1.06	-1.08	-0.39	-0.16	-0.21	-0.20	-0.31	-0.82
Lithuania	-7.06	-4.19	-2.94	-1.09	-0.03	-0.00	0.40	0.01	-0.21	-0.48	-0.75
Luxembourg	-0.63	-1.78	-2.40	-2.97	-3.01	-2.80	-2.62	-2.71	-3.27	-3.51	-3.36
Malta	0.37	0.81	0.55	-0.11	-0.66	-0.98	-1.53	-1.96	-2.22	-2.58	-2.95
Netherlands	0.97	1.46	1.51	1.19	0.98	1.01	0.74	0.44	0.19	-0.17	-0.52
Portugal	-0.34	1.97	2.55	2.32	2.15	3.17	3.12	2.81	2.57	2.08	1.54
Slovakia	-1.14	-5.95	-5.13	-4.30	-3.99	-2.69	-1.73	-1.22	-0.71	-0.58	-0.58
Slovenia	4.02	0.97	1.30	1.38	1.80	2.17	1.86	2.02	2.20	1.66	1.39
Spain	-0.43	0.33	1.00	1.23	1.54	2.41	2.61	2.61	2.16	1.40	0.74

Sources: European Commission and Bundesbank calculations. * Calculated here as the difference between the nominal average interest rate on government debt and the nominal GDP trend growth rate. The latter takes into account the real GDP trend and the GDP deflator trend (each with HP filter and smoothing parameter $\lambda = 100$).

Deutsche Bundesbank

Euro area: government property income*

As a percentage of GDP

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	1.08	1.39	1.11	1.42	1.29	1.21	1.09	1.03	0.98	0.94	0.87
Belgium	0.91	0.82	0.96	0.83	0.92	1.14	1.12	1.19	0.91	0.78	0.75
Cyprus	0.77	0.65	0.72	0.89	1.37	0.81	0.69	0.65	1.58	1.35	1.06
Estonia	0.56	1.38	1.36	2.16	1.38	1.00	1.17	0.90	1.09	0.96	0.75
Finland	2.33	4.06	4.51	3.67	3.30	3.36	3.21	3.05	2.88	2.83	2.59
France	0.67	0.77	0.85	0.73	0.69	0.71	0.60	0.55	0.58	0.58	0.55
Germany	0.82	0.69	0.72	0.79	0.71	0.91	0.81	0.70	0.82	0.68	0.54
Greece	0.76	0.77	0.70	0.61	0.61	0.66	0.76	0.54	0.39	0.34	0.31
Ireland	0.57	0.81	1.14	1.17	1.26	1.42	1.72	1.76	1.53	1.02	0.65
Italy	0.53	0.44	0.40	0.34	0.41	0.43	0.35	0.44	0.49	0.43	0.43
Latvia	0.62	0.51	0.81	1.50	1.22	1.21	1.12	1.01	0.79	0.85	0.85
Lithuania	1.19	0.45	0.47	0.48	0.52	0.36	0.40	0.19	0.21	0.31	0.40
Luxembourg	1.50	1.71	2.04	1.46	1.46	1.54	1.57	1.45	1.39	1.28	1.28
Malta	-	1.25	1.08	1.05	1.04	1.05	1.09	1.10	0.94	0.91	0.79
Netherlands	1.36	1.51	1.76	1.82	1.40	1.08	1.23	1.35	1.08	0.82	0.68
Portugal	0.87	0.74	0.87	0.79	0.67	0.88	0.93	1.04	0.79	0.57	0.48
Slovakia	1.90	1.42	1.17	1.28	0.88	0.87	1.07	0.83	0.65	0.80	0.96
Slovenia	-	0.70	0.88	0.68	0.89	0.72	1.09	1.33	1.00	1.13	1.20
Spain	1.26	0.92	1.00	0.94	0.85	0.91	0.99	1.09	0.96	0.77	0.69

Sources: Eurostat and Bundesbank calculations. * Countries where funded pension provision is, to a large extent, recorded in the government sector (such as Luxembourg and Finland) are generally shown to have higher property income in this table.

Deutsche Bundesbank

Euro area: government financial assets*

As a percentage of GDP, market prices

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	34.89	35.44	36.46	42.82	44.98	44.13	47.88	45.15	50.35	51.96	51.49
Belgium	19.88	19.61	24.43	26.43	25.98	26.79	28.13	27.92	29.43	28.99	29.59
Cyprus	27.50	28.18	19.23	22.39	21.89	27.49	31.28	41.56	42.98	42.52	44.57
Estonia	50.12	35.45	33.74	40.72	46.99	42.98	44.54	45.03	44.83	54.93	56.61
Finland	101.32	109.80	88.78	109.18	117.68	105.88	113.28	117.56	124.95	127.74	129.24
France	42.69	43.66	39.16	43.22	42.53	41.42	43.02	44.66	45.77	44.72	44.31
Germany	29.10	24.73	26.84	29.74	36.88	35.32	38.70	37.78	38.24	37.20	36.38
Greece	–	–	–	–	–	–	–	–	–	–	–
Ireland	24.84	28.30	35.90	43.24	37.21	51.05	52.91	52.55	43.71	33.11	30.23
Italy	21.71	22.88	22.63	24.71	24.94	23.74	26.61	27.16	27.94	27.03	27.57
Latvia	23.86	16.87	23.95	35.71	39.04	33.06	33.40	29.31	31.01	24.05	28.26
Lithuania	57.85	30.10	23.69	31.20	32.69	24.58	24.92	22.24	27.25	29.93	29.53
Luxembourg	63.93	70.53	75.88	77.80	77.68	70.91	77.95	79.96	80.71	79.16	77.99
Malta	–	29.66	26.61	29.96	30.36	32.56	35.41	35.89	32.29	31.32	33.63
Netherlands	38.72	24.75	38.28	36.31	35.65	34.83	38.07	36.40	37.26	35.11	34.63
Portugal	26.24	23.09	23.17	25.81	33.07	41.72	48.39	43.96	44.11	41.35	43.47
Slovakia	53.86	21.40	19.18	20.11	19.40	17.11	27.14	28.47	25.08	24.02	23.31
Slovenia	–	47.39	35.53	44.58	47.41	48.05	51.95	65.66	76.97	76.60	68.57
Spain	21.12	24.38	24.88	28.19	27.28	29.76	33.44	35.97	36.66	35.15	33.22

Sources: Eurostat and Bundesbank calculations. * Countries where funded pension provision is, to a large extent, recorded in the government sector (such as Luxembourg and Finland) are generally shown to have higher financial assets in this table.

Deutsche Bundesbank

Euro area: ratio of government property income to government interest expenditure*

%

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	31.35	44.06	37.63	44.98	44.33	43.35	40.23	39.50	40.16	39.78	41.36
Belgium	13.18	20.71	24.26	21.58	25.63	31.65	31.10	36.18	27.65	25.87	26.16
Cyprus	27.49	23.31	27.75	38.34	67.20	37.06	21.95	19.39	56.00	46.97	40.99
Estonia	150.25	832.34	660.41	1,141.42	1,043.81	773.95	809.62	797.18	1,055.12	1,016.15	999.37
Finland	80.33	285.51	321.67	275.19	246.90	241.09	225.53	242.30	237.56	243.96	243.57
France	23.03	29.33	30.21	30.47	28.91	27.35	23.13	24.12	26.64	28.82	29.19
Germany	27.11	25.90	26.90	30.01	28.80	36.30	35.29	35.39	45.91	43.94	39.23
Greece	10.02	17.07	14.59	12.12	10.37	9.06	14.86	13.35	9.76	9.37	9.72
Ireland	24.07	80.26	89.34	58.10	44.48	42.51	41.45	41.17	39.03	38.23	28.05
Italy	8.26	9.14	8.16	7.76	9.59	9.32	6.66	9.08	10.61	10.43	10.95
Latvia	98.21	145.03	146.70	98.88	69.68	68.24	68.16	68.35	55.58	64.45	75.41
Lithuania	80.65	68.71	71.60	39.11	28.85	19.71	20.24	10.62	12.88	20.09	29.46
Luxembourg	347.80	541.90	535.89	361.90	353.89	329.35	300.03	266.84	335.21	380.04	379.20
Malta	84.72	36.07	32.40	32.12	33.86	33.18	36.31	38.17	34.31	36.85	35.73
Netherlands	34.99	77.29	86.48	90.18	79.31	61.43	74.93	88.64	76.09	65.69	62.91
Portugal	29.67	25.03	27.97	26.51	22.74	20.43	19.03	21.43	16.09	12.51	11.37
Slovakia	56.73	102.32	89.71	89.14	68.01	56.97	60.69	44.50	34.46	45.90	58.09
Slovenia	32.60	56.48	80.41	51.82	54.77	38.21	53.82	51.74	30.48	34.51	37.53
Spain	36.75	58.72	64.41	54.99	45.14	37.14	33.15	31.34	27.49	24.98	24.52

Sources: Eurostat and Bundesbank calculations. * Countries where funded pension provision is, to a large extent, recorded in the government sector (such as Luxembourg and Finland) are generally shown to have higher property income in this table. The very high ratio of property income to interest expenditure shown here for Estonia is due to the country's exceptionally low interest expenditure.

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Euro area: arithmetical average returns on government financial assets*

%

Country	1999	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	3.09	4.01	3.15	3.55	2.97	2.78	2.41	2.23	2.08	1.87	1.70
Belgium	4.83	4.34	4.42	3.22	3.61	4.39	4.13	4.28	3.19	2.72	2.59
Cyprus	3.18	2.43	3.16	4.26	6.31	3.30	2.34	1.72	3.68	3.17	2.46
Estonia	1.15	4.07	3.97	5.40	3.20	2.36	2.78	2.06	2.49	1.95	1.38
Finland	2.73	3.83	4.63	3.59	2.95	3.09	2.95	2.67	2.39	2.26	2.04
France	1.69	1.84	2.08	1.75	1.63	1.72	1.42	1.26	1.29	1.30	1.24
Germany	2.90	2.92	2.81	2.75	2.18	2.57	2.20	1.86	2.18	1.85	1.50
Greece	–	–	–	–	–	–	–	–	–	–	–
Ireland	2.67	3.01	3.48	2.82	3.11	3.26	3.33	3.39	3.30	3.09	2.10
Italy	2.20	1.89	1.78	1.42	1.67	1.81	1.36	1.63	1.78	1.58	1.60
Latvia	2.84	3.32	4.07	4.49	3.17	3.60	3.51	3.29	2.68	3.15	3.29
Lithuania	2.24	1.58	1.86	1.61	1.67	1.35	1.67	0.81	0.85	1.08	1.36
Luxembourg	2.44	2.61	2.82	1.87	1.96	2.15	2.13	1.88	1.79	1.64	1.66
Malta	–	4.44	3.98	3.72	3.59	3.40	3.28	3.17	2.90	2.98	2.50
Netherlands	3.70	6.39	5.67	4.81	3.94	3.09	3.38	3.64	2.96	2.30	1.98
Portugal	3.36	3.17	3.79	3.19	2.29	2.34	2.02	2.26	1.80	1.36	1.15
Slovakia	3.94	7.04	6.24	6.40	4.59	4.88	4.90	3.02	2.48	3.34	4.12
Slovenia	–	1.62	2.22	1.66	1.94	1.53	2.16	2.26	1.43	1.50	1.68
Spain	6.22	3.96	4.11	3.47	3.05	3.19	3.08	3.12	2.64	2.19	2.06

Sources: Eurostat and Bundesbank calculations. * Shown here are each country's property income less rental receipts, divided by the mean average of financial assets as at the end of the previous year and the year in question.

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