

Box 4

STOCK MARKET DEVELOPMENTS IN THE LIGHT OF THE CURRENT LOW-YIELD ENVIRONMENT

Stock market developments are important for the formulation of monetary policy for several reasons. First, changes in stock prices can have significant implications for the cost of financing of the corporate sector. Second, they give rise to wealth effects for households. Third, stock markets provide information about future economic developments and the risk outlook as perceived by equity investors, which is useful for cross-checking with survey-based indicators and signals from other financial market segments.

This box analyses recent stock market developments against the background of developments since 2000. It finds no clear link between the increase in stock prices since mid-2012 in the euro area and developments in the same period in expected future earnings. In fact, the increase in stock prices appears to mainly reflect a decline in the compensation for equity risk, which, however, increased in the period 2007-12 and continues to stand above the average level recorded over the last few years.

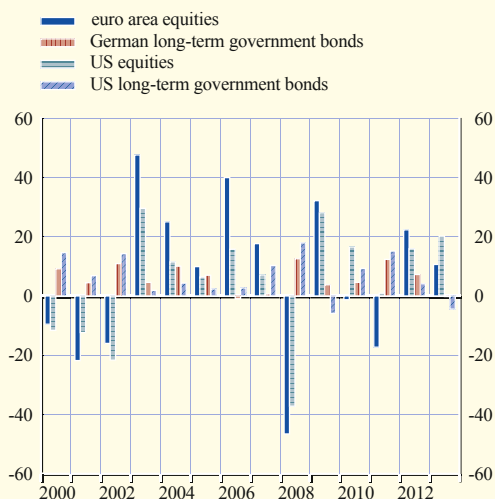
Equity investments have underperformed bond investments since 2000

Historically, returns on equity investments have on average exceeded those on bond investments by a large margin, as documented in an extensive literature on the equity risk premium. For instance, in the period 1974-99 the return on equity investments in the countries that today comprise the euro area averaged 15% per annum, while German bonds returned 8%, despite relatively poor returns for stocks in the period 1974-82 amid the effects of the oil crises. The picture is the same for the United States.

However, in the period 2000-12 the total return on equity investments has been meagre, standing at 3% per annum in the euro area and 2% per annum in the United States,¹ compared with 7% per annum for long-term German and US government bonds (see Chart A). The poor performance of stocks resulted in particular from the stock market crashes that followed the bursting of the dot-com bubble in 2000-01 and the collapse of Lehman Brothers in 2008. Since 2009 stock markets have rebounded, especially in the United States. It appears that

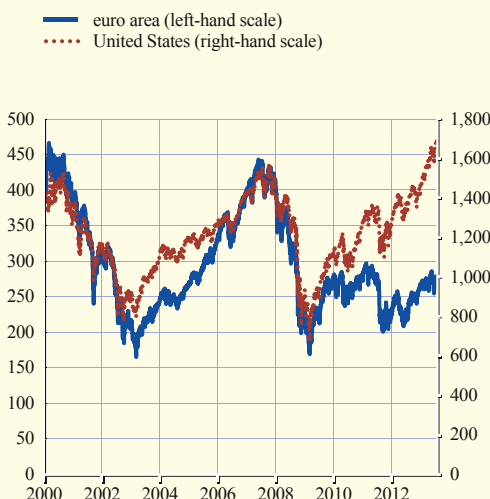
¹ Based on returns on the broad equity indices compiled by DataStream. These indices consist of around 1,400 stocks for the euro area and 1,000 stocks for the United States. In the case of the EURO STOXX index, the total annual return has been close to zero in the period 2000-12, while the total return on the Standard & Poor's 500 index has been 2% per year.

Chart A Returns on stocks and government bonds in the euro area and the United States
(year-on-year percentage changes)



Sources: DataStream and ECB calculations.
 Notes: The stock indices used are the DataStream broad indices; stock market returns include dividends. The return on bonds is the total return on the REX index of current ten-year German government bonds and the Bank of America Merrill Lynch 7-10-year Treasury index for the United States. For 2013, the data refer to the period up to 1 August.

Chart B Stock price indices



Source: DataStream.
 Note: The indices used are the Dow Jones EURO STOXX broad index for the euro area and the Standard & Poor's 500 index for the United States.

stock market developments in the euro area have decoupled somewhat from those in the United States amid the sovereign debt crisis in Europe. However, in the summer of 2012 stock prices in both economic areas began to increase strongly and this trend has continued in 2013, particularly in the United States (see Chart B) where, in absolute terms, stock price indices have risen to levels exceeding the pre-crisis peak. Recently, amid the discussion of tapering-off of quantitative easing in the United States, the stock markets in both economic areas have entered a phase of higher volatility (see Section 2.6), but overall the effect on stock prices has been modest and transitory. By contrast, developments in bond markets, particularly in the United States, have been characterised by relatively strong increases in yields.

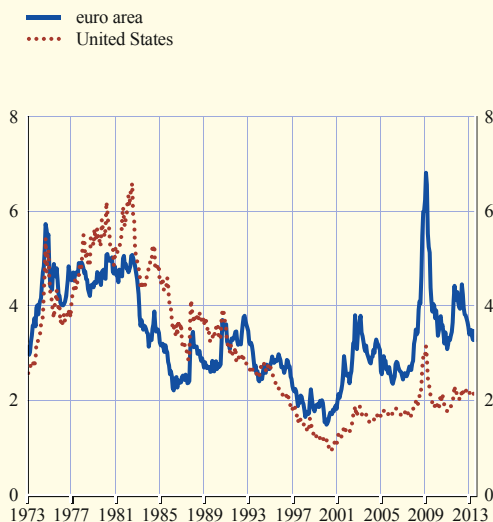
Simple metrics suggest that stock market valuations are in line with historical averages

In order to assess stock market valuations from a historical perspective, Charts C and D show dividend yields and price/earnings ratios from January 1973 to July 2013. The dividend yield on the euro area stock market currently stands around the average level recorded since 1973 (see Chart C). In the United States, the present dividend yield is somewhat below its average level, although it has been drifting upwards since 2000.² Turning to the price/earnings ratio (see Chart D), the euro area stock market has been valued in a range from 10 to 20 times earnings (i.e. earnings in the previous year), except when extreme market conditions have prevailed, such as during the economic crises in the 1970s, the dot-com bubble and in the period after the collapse of Lehman Brothers in 2008. The price/earnings ratio has increased from around 11 in mid-2012 to the current level of 15, which is in the middle part of the above-mentioned range.

² Companies have moved towards distributing cash via share repurchases rather than dividends. This is particularly the case for US-based companies, which have conducted share repurchases of a similar magnitude to the value of dividend payments over the last few years.

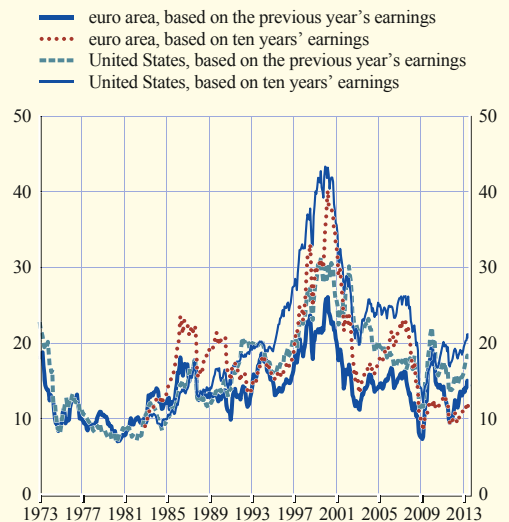
Chart C Dividend yields in the euro area and the United States

(percentages)



Source: DataStream.
 Note: The indices used are the DataStream broad indices.

Chart D Price/earnings ratios in the euro area and the United States based on the previous year's earnings and ten-year average real earnings



Sources: DataStream, OECD, Eurostat and ECB calculations.
 Notes: The indices used are the DataStream broad indices. Price/earnings ratios based on ten years' earnings are calculated using the average of the last ten years' earnings measured at the current period's price level.

Looking at average earnings over the last ten years to reduce the effect of temporary fluctuations in corporate earnings,³ the current valuation of euro area stocks still seems low in a historical context, despite the recent increase in prices. The price/earnings ratio for the United States has tended to be slightly higher than the ratio for the euro area, and this is currently the case. Based on the price/earnings ratio calculated using the last ten years' earnings, US stocks appear to be trading at a much higher valuation than euro area stocks.

Expectations of corporate earnings do not seem to explain stock price increases since mid-2012

Chart E shows the development over time of professional stock analysts' forecasts of earnings for the fiscal years 2012-14, for companies based in the euro area and the United States. Earnings forecasts for euro area companies have been continuously revised downwards since late 2011, in line with projections for the macroeconomy. Looking beyond the short horizon of these projections, longer-term earnings growth expectations for euro area companies have remained broadly unchanged since the summer of 2012.⁴ This suggests that stock price increases since mid-2012 have not been the result of higher earnings expectations either in the short term or in the longer term. In the United States, short-term earnings forecasts have also been revised downwards, albeit to a lesser extent.

As the increases in stock prices in the euro area apparently did not occur as a result of higher projected earnings, the discounting of future cash flows must have changed. The dividend

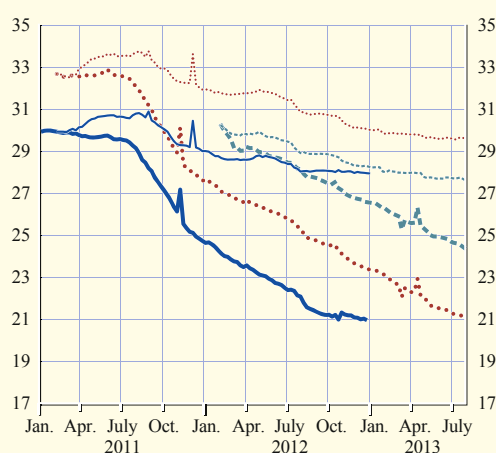
3 For a discussion of the predictive power of this measure, see, for example, Campbell, J.Y., and Shiller, R.J. (1998), "Valuation ratios and the long-run stock market outlook", *The Journal of Portfolio Management*, Winter 1998, Vol. 24, No 2, pp. 11-26.
 4 See, for example, Section 2.5, *Monthly Bulletin*, ECB, June 2013.

Chart E Revisions over time of stock analysts' short-term forecasts of corporate earnings in the euro area and the United States

(weighted earnings per share)

x-axis: time of forecast
y-axis: forecasted weighted earnings per share within a given fiscal year

— 2012 EURO STOXX — 2012 S&P 500
 2013 EURO STOXX 2013 S&P 500
 - - - 2014 EURO STOXX - - - 2014 S&P 500

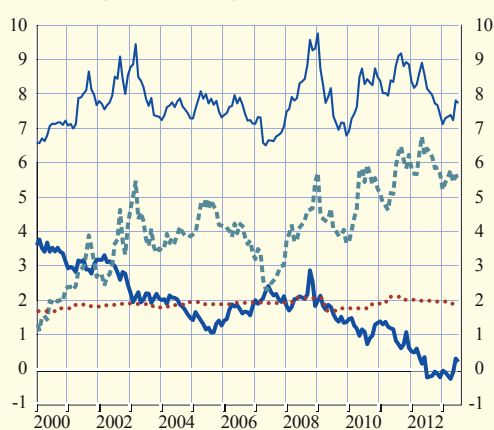


Sources: DataStream, I/B/E/S and ECB calculations.
 Example: The thick red dotted line shows the development in professional analysts' earnings forecasts for the fiscal year 2013 for companies in the EURO STOXX index.
 Notes: The indices used are the Dow Jones EURO STOXX broad index for the euro area and the Standard & Poor's 500 index for the United States. For the United States, for each fiscal year the weighted earnings are rebased. Weighted earnings per share represent the total earnings that would accrue to the holder of one unit of the index.

Chart F Decomposition of the required return on euro area equities into expected long-term inflation, real interest rates on long-term government bonds and the equity risk premium

(percentages per annum)

— long-term real interest rate (1)
 expected long-term inflation (2)
 - - - equity risk premium (3)
 — required return on equity (1+2+3)



Sources: DataStream, I/B/E/S, Consensus Economics and ECB calculations.
 Notes: The long-term real interest rate is the real yield on ten-year euro area government bonds (see also Section 2.4). The figure for expected long-term inflation is from the Consensus forecast.

discount model provides a simple analytical tool to derive a (constant) discount factor for the expected cash flows.⁵ It yields an estimate of the additional return required by investors on an equity investment compared with a low-risk investment in long-term government bonds, i.e. the equity risk premium (see Chart F).⁶ The equity risk premium increased from 2000 to 2005, albeit from a very low level, during the dot-com bubble. From mid-2005 to mid-2007 it declined amid a general low pricing of risk in all major capital market segments. From the summer of 2007, however, the equity risk premium increased strongly, as equity prices declined in the context of the financial crisis. Thereafter, it continued to increase amid a sharp decline in real interest rates. As a result of the stock price increases observed since mid-2012, the equity

5 The model links current stock prices with the present value of future expected dividends. Dividends are modelled to grow according to available professional stock analysts' estimates and subsequently with a long-term potential GDP growth rate. The discount factor that equates the present value of the projected dividends to current stock prices is the required return on the equity investment. The equity risk premium is the difference between that required return and the sum of the long-term real interest rate on AAA-rated government bonds and long-term expected inflation (using the figure from the Consensus forecast). One source of uncertainty regarding the calculation is the use of medium to long-term forecasted dividend growth; see, for example, the box entitled "What is the information content of stock market earnings expectations held by analysts?", *Monthly Bulletin*, ECB, March 2004.

6 For details on different models for deriving an estimate of the equity risk premium, see the article entitled "Valuing stock markets and the equity risk premium", *Monthly Bulletin*, ECB, November 2008.

risk premium has declined somewhat.⁷ The model also shows that despite the current high equity risk premium, the required return on an equity investment (i.e. the sum of expected inflation, the long-term real interest rate and the equity risk premium) is broadly in line with the average level recorded since 2000, owing to the off-setting effect of the low real interest rate.

Evidence of recent inflows into equity investment funds

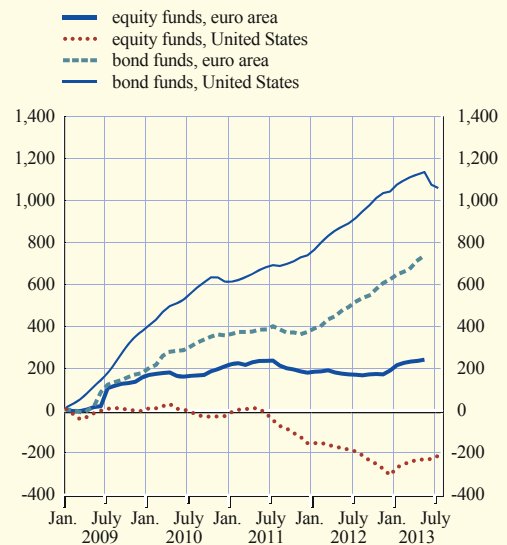
One possible explanation for the decline in the equity risk premium since the summer of 2012 is a shift in investor preferences towards stocks, so as to achieve a higher expected return amid low or even negative real interest rates in this period (see Section 2.6).

In this context, data on net flows in investment funds domiciled in the euro area show that net flows in funds with an equity investment mandate were irregular, while net inflows into bond funds have been almost continuously positive since 2009 (see Chart G). This is likely to be related to a flight to safety and the better return on bonds than stocks generally observed in the previous decade (see Chart A). However, in late autumn 2012 and early 2013⁸ net flows in equity funds turned positive, reaching the fastest pace of growth recorded since around the trough in stock prices in the spring of 2009. This could be related to a search for yield as the equity risk premium remains high on a historical scale and also compared with risk premia on other financial assets, such as corporate bonds.⁹ However, net flows in bond funds were positive over the same period, thus offering no direct evidence of a shift in investor preferences in that period.¹⁰

Data for the United States show that net flows in equity-based funds turned positive in January 2013 after a long period of outflows. Furthermore, the data suggest that investors have withdrawn funds from bond funds amid strong increases in bond yields since early May, while slightly increasing their holdings of equity funds.

Chart G Cumulated net flows in investment funds by investment type since January 2009

(euro area: EUR billions; United States: USD billions)



Sources: ECB and the Investment Company Institute.

Notes: The data are based on the domicile of the investment funds and are not limited to specific geographical areas of investment. The last observation for the euro area is for May 2013. The last observation for the United States is for 24 July 2013. The June and July 2013 observations are preliminary and based on weekly cash-flow estimates. For more details, see the Investment Company Institute's website.

7 The decline in the equity risk premium towards its historical average may be explained partly by reduced perceptions of the risk of extreme events following, in particular, the announcement by the ECB of Outright Monetary Transactions. In this context, see, for example, Weitzman, M. (2007), "Subjective Expectations and Asset-Return Puzzles", *American Economic Review*, 2007, 97(4), pp. 1102-30.

8 The pace of inflows to equity funds abated somewhat from March to May 2013 (the last month for which data are currently available).

9 See, for example, the box entitled "Recent developments in spreads on corporate bonds issued by euro area non-financial corporations", *Monthly Bulletin*, ECB, June 2013.

10 See also Section 2.2 in *Monthly Bulletin*, ECB, June 2013.