

Between 1 and 8 February 2018, the US S&P 500 Index fell by 8.5%. The fall was concentrated in two days' trading – 2 and 5 February – with the biggest correction since 2011 recorded on 5 February. In addition, implied volatility rose significantly, after a lengthy period at historically low levels (see Chart 1). Subsequently, stock prices have tended to recover and volatility has moderated, although neither have returned to the levels recorded before the market turmoil.

Various reports prepared by international organisations, such as the IMF and the ECB and the Banco de España,¹ had warned of the risk of a sharp correction in equity prices, particularly in the

¹ See *Financial Stability Report*, Banco de España, November 2017.

United States. One supporting factor for that view was the strong appreciation of the US stock market in recent years (see Chart 2). Thus, between January 2012 and January 2018, the S&P 500 Index gained 125%, compared with 72% for the EUROSTOXX 50 Index and 35% for the FTSE 100. As a result, in the United States, some of the metrics generally used to measure share prices had moved some distance from their historical median, prompting concern among investors that shares were possibly overvalued (see Chart 3).

In this setting, one catalyst of the stock market correction in the United States was the publication, on 2 February, of figures that showed an unexpected increase in wage growth in the country in

Chart 1
IMPLIED VOLATILITY

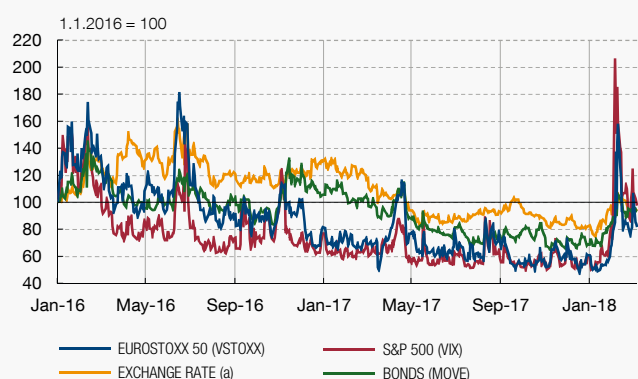


Chart 2
STOCK MARKET INDEXES



Chart 3
STOCK MARKET METRICS (b)

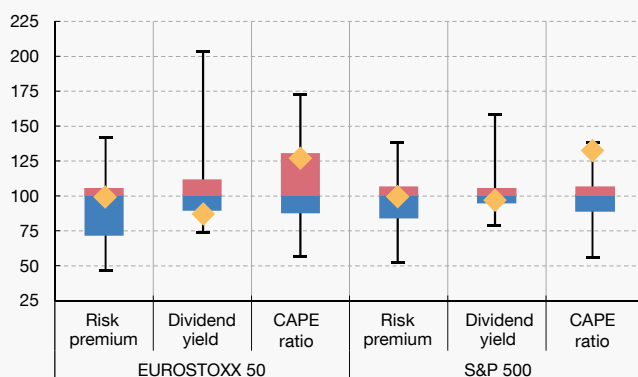
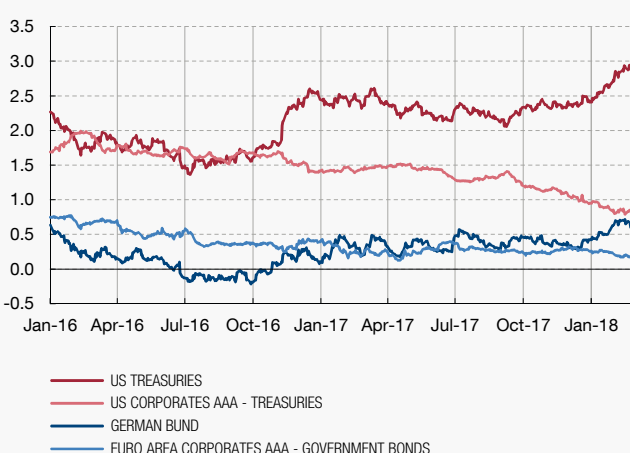


Chart 4
10-YEAR BOND YIELDS



SOURCES: Thomson Reuters, Robert Shiller and Banco de España.

a Average 3-month USD/EUR, USD/GBP and JPY/USD volatility.
 b Metrics obtained since January 2005, taking the median of the distribution, represented by the horizontal line between the blue and red areas, as 100. The upper and lower limits of both areas correspond to the 75th and 25th percentiles. The end of the lines represent the minimum and maximum of the distribution. The green rhombi show the current levels. Last observation: 7 March 2018. Risk premium is calculated by subtracting the corresponding 10-year inflation-indexed bond yield from the real cost of capital of each index, obtained using a dividend discount model. Dividend yield is the dividend of the past year of index firms as a percentage of index capitalisation. CAPE ratio is the cyclically-adjusted price/earnings ratio. The lower the green rhombus value, the higher the overvaluation in the case of risk premium and dividend yield, whereas for the CAPE ratio, the higher the rhombus value the higher the overvaluation.

January (2.9% year-on-year), while unemployment was at its lowest levels since 2000. This unexpected wage growth was interpreted as a sign that inflation could be heading up and, therefore, that official interest rates could rise faster than was previously expected. Indeed, the likelihood of rates rising by 75 basis points (bp) in 2018 had already increased, even before the employment figures were published. The expectation that official interest rates would rise was also reflected in the increase of more than 30 bp in US 10-year sovereign bond yields in January, up to 2.85%. These higher sovereign yields could have prompted some investors to favour debt securities over equities.

There are signs that this episode of stock price correction and heightened volatility may have been amplified by certain market practices. Particularly noteworthy was the surge of 177% in implied volatility (in terms of the VIX Index) in just two sessions, to levels not seen since 2012; this was extraordinarily strong given the scale of the decline in share prices (see Chart 1). Exchange-traded products (ETPs) which replicate the VIX may have contributed to this sharp increase. Although ETPs are moderate in size in aggregate terms, some of their trading practices can have a significant impact on price formation. Thus, given the initial surges in volatility at the start of the trading session on 5 February, investors knew that ETPs would have to buy more VIX futures, either to be able to replicate the index or, in the case of those that had wagered on low volatility, to limit their losses. Accordingly, in anticipation of these rebalancing effects, some market participants may have positioned themselves to benefit from increases in the VIX, triggering a more pronounced climb in this indicator as the session neared its close. Such strategies may in turn have caused a contagion effect on the spot market, owing to trading practices based on the negative correlation between prices on the VIX Index and the underlying share index. Moreover, the fall in share prices could also have been amplified by arbitrage strategies conducted by certain hedge funds, seeking to exploit the close correlation

between the VIX and the underlying shares and derivatives. Lastly, the fact that several lower levels of support based on moving averages were crossed may have triggered sale orders in some algorithm-based trading systems.

The fall in share prices on the US markets spread to other stock markets around the world, mainly the Asian and European markets. Thus, between 1 and 9 February, the euro area's EUROSTOXX 50, the United Kingdom's FTSE 100 and Spain's IBEX 35 all fell by around 7%. The VSTOXX, the implied volatility index associated with the EUROSTOXX 50, also rose significantly, albeit more moderately than its US counterpart (see Chart 1). The correction occurred even though, in comparison with the United States, there was less concern that European markets could be overvalued; this is shown in the metrics generally used to measure share prices, which were close to their historical medians (see Chart 3). In any event, this episode demonstrates that even if European markets are not apparently overvalued, on the metrics analysed in this box, this does not protect them from stress episodes in the US markets. In the weeks following, share price volatility on the European markets tended to return to normal, although without reaching the levels seen before the episode in February, and stock market indexes have recovered slightly, albeit less so than in the United States.

Bond markets were hardly affected by the stock market turmoil (see Chart 4). Thus, in Europe and in the United States, corporate bond spreads over the corresponding sovereign bonds were virtually unchanged in the period. In the euro area, sovereign spreads widened only slightly in the first week of February. Likewise, bonds and exchange rates did not experience the sharp surge in volatility observed in the stock market indexes (see Chart 1). This would be consistent with the argument that the technical elements mentioned above played a major part in the stock market correction, over and above the effect associated with fundamentals.