

Box 6

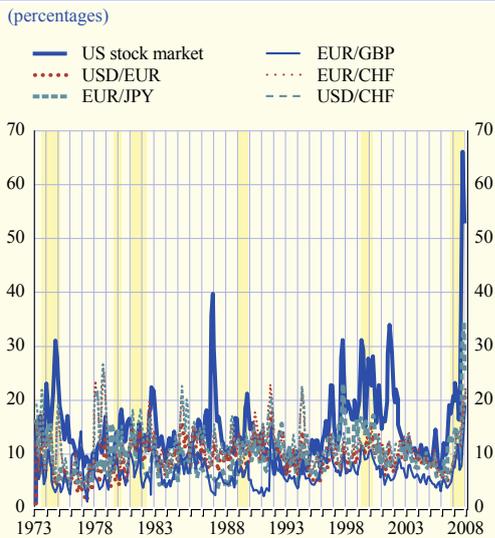
THE RECENT EXCEPTIONAL RISE IN EXCHANGE RATE VOLATILITY

The volatility of financial instruments, measured on the basis of historical returns, has, in recent months, increased across all asset classes. This rebound was particularly sharp by historical standards, and the peaks reached in late 2008 and early 2009 for major equity and foreign exchange markets were the highest recorded values since 1973 (see Chart A).

Cyclical swings in realised volatility have been typical of equity markets, with phases of more pronounced volatility very often associated with economic downturns. By contrast, the historical volatility in the bilateral USD/EUR rate and other key bilateral exchange rate pairs had, until recently, remained relatively stable since the 1970s, displaying little association with the global business cycle or major disruptive events. While there were large swings in the foreign exchange market, peaks and troughs were reached at a relatively gradual pace and did not, therefore, lead to significant increases in realised volatility. Realised volatility was particularly subdued between 2002 and 2007.

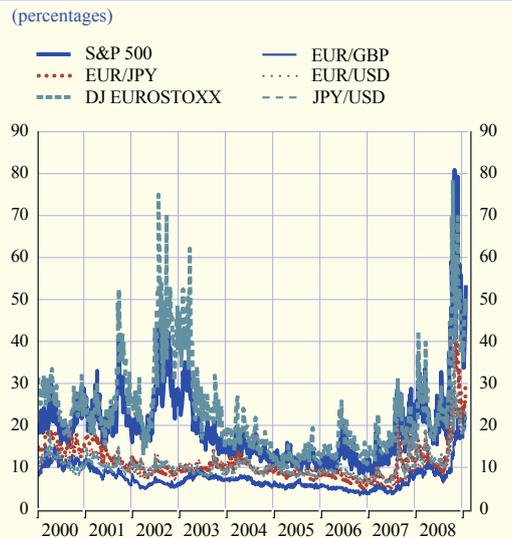
In the recent episode of turbulence, however, foreign exchange volatility among major currency pairs has risen to its highest peak since 1973, reflecting broader and more rapid movements in the main bilateral rates than in previous episodes.

Chart A Historical volatilities



Sources: Thomson Financial Datastream and ECB staff calculations.
 Note: Monthly figures, annualised. Volatilities refer to a three-month horizon, i.e. they are measured as standard deviations of the 60 daily rates of change preceding each month-end. The shaded areas represent recession periods for the US economy. Last observation refers to 28 January 2009.

Chart B Implied volatilities



Sources: Reuters and Thomson Financial Datastream.
 Note: Last observation refers to 28 January 2009. All implied volatilities refer to options with a life to maturity of approximately one month.

A number of useful insights can also be gained by reviewing developments in implied volatility in options markets.¹ In addition to expectations of future realised volatility, implied volatility also provides an indication of the price of uncertainty over the time period spanned by the maturity of the option and therefore reflects the market participants' degree of risk aversion. Looking at recent developments in equity markets, implied volatilities for the US (and similarly for the euro area) markets rose to very high values, especially in the period following the Lehman Brothers' collapse in September 2008, but declined thereafter, a pattern which is comparable to previous periods of market tension, such as after the terrorist attacks on the United States on 11 September 2001 and the phase of rapidly falling equity prices between 2002 and 2003 (see Chart B).

In this respect, while the historical equity market volatility remains high, the rapid retrenchment in implied volatility indicates that the compensation required for bearing volatility risk has decreased, possibly on account of the measures taken by public authorities aimed at stabilising the financial sector and the real economy.

By contrast with developments in the equity market, implied foreign exchange volatility has continued to remain at unprecedented levels in recent weeks. Chart B shows developments in implied volatilities for some key bilateral rates vis-à-vis the euro since the beginning of 2000.

It is difficult to assess the reasons why foreign exchange volatility remains so high at the current juncture compared with previous historical episodes. A possible explanation may relate to the length and depth of the ongoing recession, which is highly synchronised across the globe. In a period of low returns, high uncertainty, high liquidity needs and high risk aversion, market participants may be delaying their positioning in the currency markets until consensus expectations are formed about which economies will be the first to recover from the global downturn. As investments will likely flow towards such areas, their currencies are likely to eventually strengthen. However, uncertainty currently appears to prevail and market participants require a relatively higher compensation to take on exchange rate risk. Another explanation is the difficulty to assess the impact of expansionary fiscal actions undertaken by several governments in reaction to the global financial crisis on the US and other countries' current account positions, thus adding to the uncertainty about the future exchange rate configuration among major currency pairs.

¹ Implied volatility is taken from the prices of currency options. This box refers to at-the-money options, i.e. those whose exercise price coincides with the forward exchange rate over the maturity of the option, obtained by multiplying the spot exchange rate with the interest rate differentials.