Box 2

Recent developments in corporate bond spreads

In the course of this year, the spreads of long-term corporate bond yields over government bond yields have been narrowing, notably in the United States. This process seems to have begun after the decision of the Federal Reserve to lower its target for the federal funds rate on 3 January 2001. Overall, by 1 August, the spread of long-term US AAA corporate bond yields over ten-year government bond yields had narrowed by 40 basis points compared with end-December 2000. Larger absolute declines took place at the lower ends of the US credit quality spectrum. In the euro area, corporate bond spreads have also been declining, albeit to a lesser degree.

Charts A and B show how euro area and US corporate bond spreads have evolved since January 2001. A notable feature of the recent narrowing of corporate bond spreads is that it has taken place in an environment

Chart A: Spreads between high-quality long-term corporate bond yields and government bond yields in the euro area and in the United States

(basis points per annum; daily data)

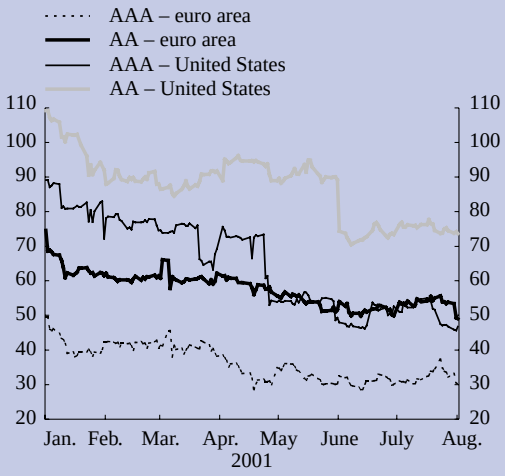
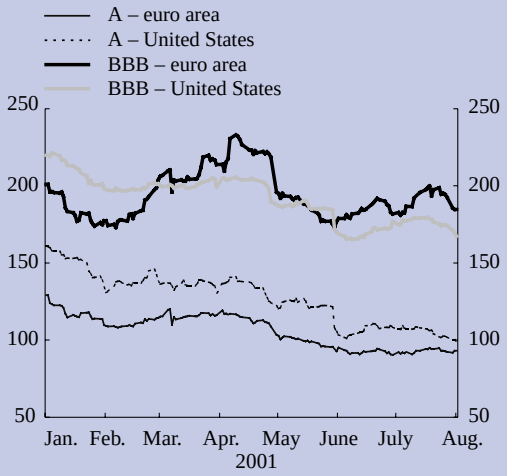


Chart B: Spreads between lower-quality long-term corporate bond yields and government bond yields in the euro area and the United States

(basis points per annum; daily data)



Sources: Bloomberg and ECB calculations.
Note: Corporate bond spreads are calculated as the difference between (seven to ten-year) corporate bond yields and (seven to ten-year) government bond yields, using the indices published by Merrill Lynch.

in which global economic activity has been slowing down, equity prices have dropped further owing to less optimistic corporate earnings prospects and corporate bond issuance has been robust, both in the United States and in the euro area. Typically, it might have been expected that in such an environment corporate bond spreads would have been under some upward pressure. For instance, corporate bond spreads widened in the early 1990s when the US economy was in recession. Corporate bond spreads also often widen during periods of financial market turbulence, as was the case in 1998 and again during the second half of 2000. Often such a widening is taken as a signal of a forthcoming slowdown. Hence, in order to interpret the recent narrowing against the background of weaker global economic growth, it is useful to consider the key factors which drive corporate bond spreads.

Corporate bond spreads can be decomposed into two main components: the market price of credit risk and the credit risk uncertainty premium. The market price of credit risk, and therefore corporate bond spreads, may decrease when the economic outlook is improving. In such circumstances, if market participants expect an improvement in a firm's earnings prospects, they will face a lower risk on their investment, as the corporation is unlikely to face difficulties in repaying its debt. Since default rates tend to decrease when the pace of economic activity accelerates, falling credit risk will, ceteris paribus, tend to cause corporate bond spreads to decline.

Corporate bond spreads also reflect uncertainty among bondholders. The credit risk uncertainty premium, and therefore corporate bond spreads, may decrease when the volatility of firms' earnings decreases. Even if expected average earnings remain unchanged, an increase in the regularity of earnings can render firms less vulnerable to financial distress.

Option-pricing theory can assist in decomposing corporate bond spreads into the aforementioned risk premia. In particular, linking them to other economic variables, such as implied stock market volatility, reveals the importance of uncertainty facing investors. For instance, there are strong theoretical reasons for expecting to find a link between corporate bond spreads and the volatility in equity prices. Such a link can be predicted by considering a firm's common stock to be a call option (i.e. an option to buy) on the net present value of the cash flows which are earned from the firm's assets (i.e. the value of the firm), with an exercise price (i.e. the purchase price) equal to the face value of the firm's debt. Correspondingly, debtholders can be thought of as having a short position (i.e. the sale of an asset which is not owned) on a put option (i.e. an option to sell), again with an exercise price equal to the debt's face value. Among other factors, the valuation of these options reflects the uncertainty about the future value of the underlying assets of the firm. When this uncertainty (i.e. the implied volatility) decreases, the value of the option decreases to the benefit of bondholders and to the disadvantage of shareholders.

The link to implied volatility can be understood if it is recognised that the payoff at maturity to a bondholder from holding a corporate bond resembles the payoff from holding a short position on a put option, where the underlying asset is the value of the firm and the exercise price is represented by the face value of the bond. If the value of the firm (the underlying asset) is lower than the value of the bond (exercise price) at the maturity of the bond, then shareholders will exercise their put option and default on the debt. Additionally, a decline in the volatility of the firm's value decreases the probability of default, thereby leading to a decline in the corporate bond spread. Thus, by lowering the value of the put option which corporate bondholders have granted to shareholders, decreased stock market volatility can lead to a tightening of corporate bond spreads.

It would appear that recent trends in corporate bond spreads, particularly at the lowest end of the credit quality spectrum, can be partly explained by implied stock market volatility. Charts C and D show that broad movements in credit spreads seem to have been in line with broad trends in stock market volatility. In particular, in both the euro area and the United States, corporate bond spreads have declined when volatility has decreased, and vice versa. Hence, although declines in stock prices since the start of 2001 would tend to

Chart C: Long-term corporate bond spreads in the euro area and EURO STOXX 50 implied volatility

(left-hand axis: basis points; right-hand axis: percentages per annum)

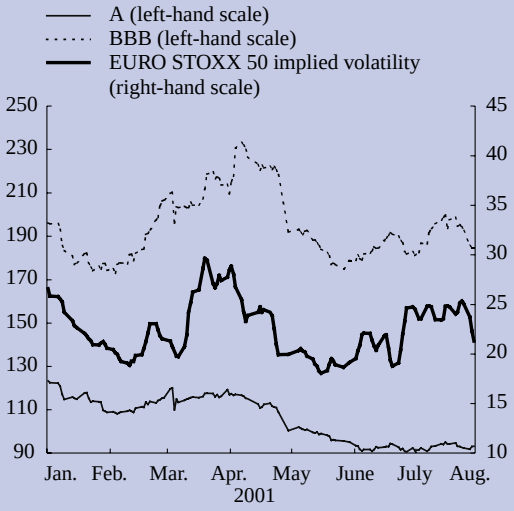
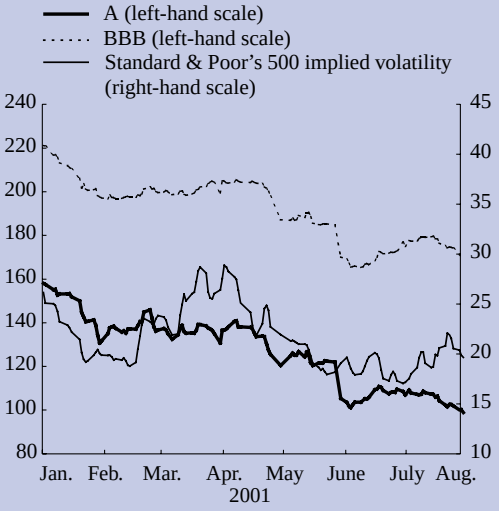


Chart D: Long-term corporate bond spreads in the United States and Standard &Poor's 500 implied volatility

(left-hand axis: basis points; right-hand axis: percentages per annum)



Source: Bloomberg.

suggest that market participants have lowered their expectations of corporate earnings growth, the drop in stock market volatility and narrowing of credit spreads would tend to suggest that they have lowered the degree of uncertainty surrounding their central expectations.

Although euro area corporate earnings have broadly been more favourable than in the United States in the first half of 2001, euro area corporate bond spreads have declined by less than in the United States, particularly at the lowest end of the credit quality spectrum. This seems partly attributable to the special circumstances which have prevailed in the case of some euro area companies which belong to the lower end of the credit quality spectrum. In particular, a large number of the companies in these rating categories belong to the telecommunications sector, which is heavily indebted owing to the high costs of financing UMTS licences.