

Box 2

DETERMINANTS OF THE FALL OF CORPORATE BOND SPREADS IN RECENT YEARS

The spreads of long-term corporate bond yields over government bond yields have narrowed since the end of 2002. The decline was particularly pronounced for the spreads of corporate bonds of relatively low quality (between A and BBB), which are currently trading at historically low levels (see Chart A). This box investigates the factors affecting corporate bond spreads. In particular the strong link between corporate bond spreads and implied stock market volatility is highlighted.¹

The prices of both corporate bonds and government bonds reflect the probability that the bondholders will not be repaid in cases of default. In general, the probability of default is higher for corporate bonds and thus they trade at a price that is lower than the price of a government bond of comparable maturity and coupon payments. The difference in price, which translates into a difference in yield, is often called the corporate bond yield spread. This spread is a measure of the additional premium required by investors in order to incur a credit risk in addition to the so-called “market risk”.

When a company defaults, its assets are used to repay the outstanding claims, with priority given to bondholders over shareholders. However, if the value of the remaining assets is lower than the total value of the debt outstanding, bondholders may not be repaid or be repaid only in part.

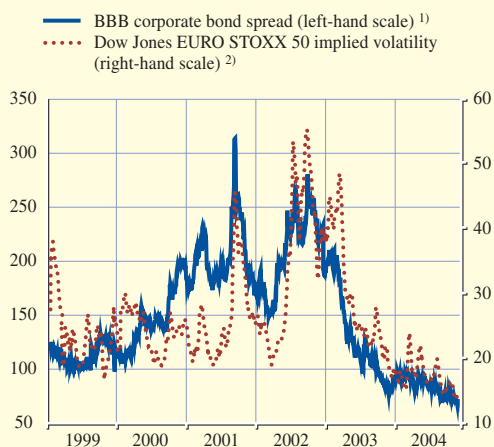
To understand the link between corporate bond spreads and stock market volatility, it is useful to bear in mind that a firm with more volatile assets is more likely to reach the conditions of default since there is a higher probability that the value of the firm will, at a certain point in time, be lower than the value of its outstanding debt. Therefore, when asset volatility is high, bond investors will require additional compensation in the form of a higher yield spread over the market rate. Thus, a positive relationship between corporate bond spreads and asset volatility should be expected.

The volatility of a firm’s assets is generally not known to investors. However, they can calculate the implied volatility from options written on the firm’s equity, which is a measure of the equity’s volatility. Spreads of BBB corporate bond yields over comparable government bond yields and implied volatility extracted from the EURO STOXX 50 index seem indeed to

¹ Option pricing theory provides a rigorous framework to analyse the impact of the factors affecting corporate bond spreads. See R. C. Merton (1974), “On the pricing of corporate debt: the risk structures of interest rates,” *Journal of Finance*, Vol. 29.

Chart A Corporate bond spreads and implied stock market volatility in the euro area

(percentages per annum and basis points; daily data)



Sources: Bloomberg, Thomson Financial Datastream and ECB calculations.

1) Difference between seven to ten-year corporate bond yields and seven to ten-year government bond yields.

2) Expected standard deviation of percentage stock price changes over a period of up to three months, as implied in the prices of options on stock price indices.

Chart B Corporate bond spreads and debt to equity ratio in the euro area

(percentages and basis points; quarterly data)



Sources: ECB and Thomson Financial Datastream.

1) Difference between seven to ten-year corporate bond yields and seven to ten-year government bond yields.

2) Debt includes loans granted by monetary financial institutions and other financial corporations, debt securities issued and pension fund reserves of non-financial corporations. Equity includes quoted shares issued by non-financial corporations.

share common trends (see Chart A). When implied volatility decreases, the corporate bond spreads of risky firms narrow and vice versa.

The probability of default is also related to the firm's indebtedness, which can be measured by the debt-to-equity ratio. When the size of a firm's debt is big compared to the value of its equity, it could be difficult for the firm to meet its debt obligations. Thus, bondholders are likely to require a higher premium as compensation for a higher risk of default. The level of corporate bond spreads should thus be linked to the debt-to-equity ratio. Indeed, over the past few years some co-movement between the aggregate debt-to-equity ratio of euro area corporations and corporate bond spreads has been observed (see Chart B).

Finally, one may conjecture that the low level of euro area corporate bond spreads is also related to the low level of interest rates, which might have had a positive effect on the leverage position of firms. If the value of a firm is affected by the level of interest rates, lower interest rates should imply, for a given level of debt, a lower debt-to-equity ratio. Therefore, the credit spread and the level of interest rates should be positively related. The empirical evidence suggests that this is indeed the case.

Summing up, the current level of corporate bond spreads can in part be linked to the environment of low uncertainty surrounding future profitability, as measured by the implied stock market volatility. In addition, the decline in debt-to-equity ratios in the euro area since the end of 2002, reflecting some improvement in corporate profitability and a cautious debt financing policy, as well as the low level of interest rates, may have contributed to the decline in corporate bond spreads.