Expected interest rate convergence

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In the previous edition of the Quarterly Bulletin, *the authors described the method underpinning the Bank's approach to estimating yield curves for the G7 countries. This article presents an economic application of these curves. It looks at estimated forward rate curves for pairs of countries, in order to assess the interest rate differentials that bond market participants expect to occur at different times in the future. Although the prospect of EMU may account for expected interest rate convergence among some of these countries, there are other factors that could also explain the observed interest rate differentials.*

In the May 1996 *Quarterly Bulletin*,(1) we described the method underlying the Bank's approach to estimating yield curves for the G7 countries. A natural application of these estimated curves is to see how the monetary stance between different countries is expected to evolve over time. In principle, nominal forward short-term interest rates can be considered as comprising the following components:

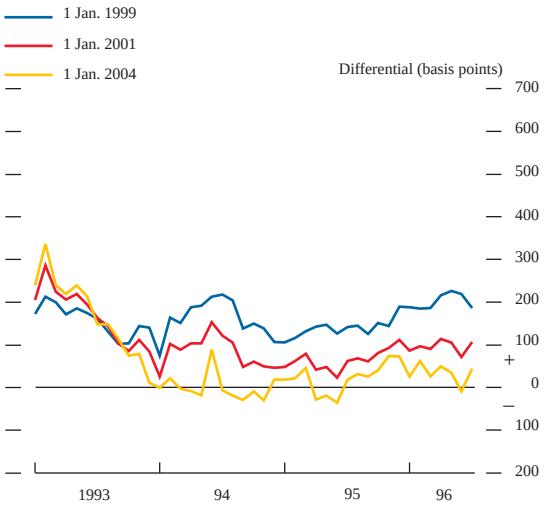
- real interest rate expectations and real interest rate risk premia;
- inflation rate expectations and inflation rate risk premia;
- liquidity premia; and
- default risk premia.

It follows that if there were no risk, liquidity or other premia, then the pure expectations theory of the term structure would hold, and forward interest rates would be unbiased forecasts of future short-term interest rates. In that case, or if any premia are small or stable over time, the implied forward short-term interest rate differential between a pair of countries at a particular maturity may provide information about the short-term interest rate differential expected in the future.

In addition to these theoretical considerations, there are a number of technical issues to be borne in mind when conducting cross-country analysis of forward interest rates. The forward curves in each pair of countries are estimated separately, and may be subject to quite different estimation errors along the maturity spectrum. For example, the curve may be more accurate at the long end for one country than for another. For instance, the relative scarcity of long German bonds makes the long end of the German curve less well defined than the long end of the US curve. Such differences may change from country to country and from day to day. So it is essential to consider these forward rate differentials over a period of time and look at the broad trends, rather than focusing on the exact differentials at specific points in time.

The charts show monthly data for six-month annualised forward short-term interest rate differentials between Germany and the United Kingdom, France, Italy and the United States at the beginning of 1999, 2001 and 2004, as implied by yield curves calculated for those countries. The horizontal axes show the dates at which the forward rates were measured and so, subject to the caveats mentioned above, each chart displays how expectations of the future interest rate differentials between a pair of countries have evolved. The short-term variability in the data mentioned earlier is quite visible.

Chart 1
Differential between UK and German forward rates(a)

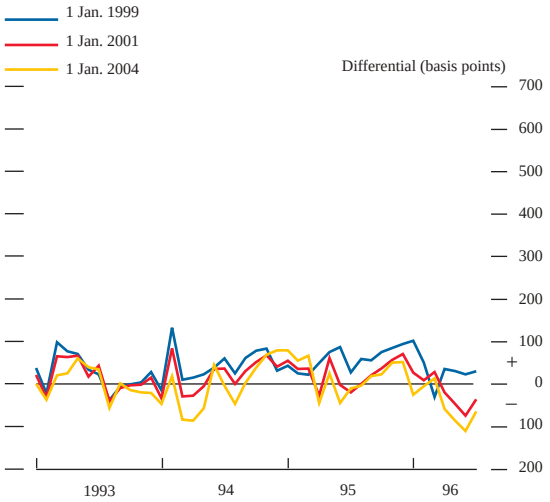


(a) Each monthly observation is taken on the business day nearest to the beginning of the month.

Since early 1994, the implied interest rate differential at the beginning of 1999 between the United Kingdom and Germany has been consistently greater than 100 basis

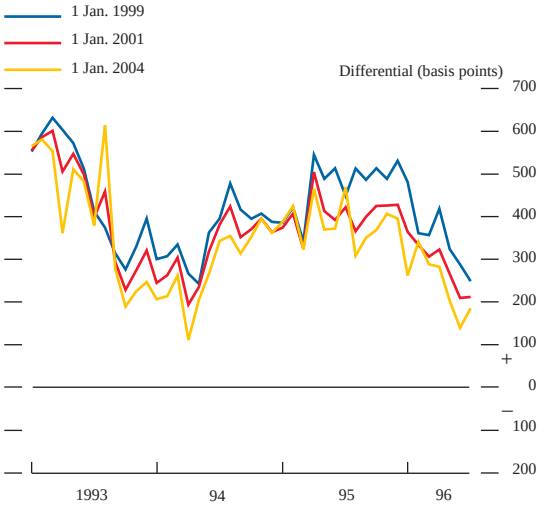
(1) Cooper, N and Steeley J, 'G7 yield curves', *Bank of England Quarterly Bulletin*, May 1996, pages 199–208.

Chart 2
Differential between French and German forward rates[a]



(a) Each monthly observation is taken on the business day nearest to the beginning of the month.

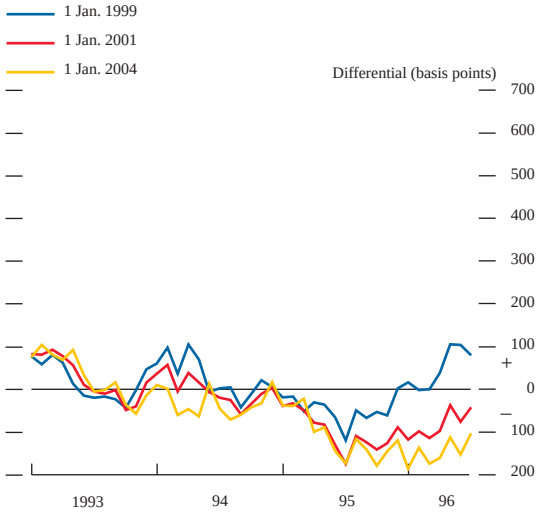
Chart 3
Differential between Italian and German forward rates[a]



(a) Each monthly observation is taken on the business day nearest to the beginning of the month.

points. The implied differentials at the beginning of 2001 and 2004 are, by contrast, smaller. The implied differential between France and Germany at the beginning of 1999 has been consistently smaller than the UK-Germany differential and has recently been less than 50 basis points.[1] Implied interest rate differentials between Italy and Germany are larger than those between the United Kingdom and Germany for all three dates in the future. Recently the differentials have fallen; the current differential implied for

Chart 4
Differential between US and German forward rates[a]



(a) Each monthly observation is taken on the business day nearest to the beginning of the month.

1999 is around 250 basis points. The differential between German and US forward rates has fluctuated around zero.

These patterns of implied interest rate differentials can be interpreted in a number of different ways. One possible interpretation relates to the probabilities attached by the bond market to particular countries joining the European Monetary Union (EMU). EMU is due to start on 1 January 1999, and so from that date the countries taking part will have identical interest rates. The current position of the forward rate differentials among the European countries is consistent with a higher probability—but something short of a complete certainty—being attached to France and Germany entering a monetary union around 1999 than to the United Kingdom and Italy joining at that point. The smaller interest rate differentials between the United Kingdom and Germany implied for more distant dates than 1999 may indicate that the market attaches a greater probability to the United Kingdom joining a monetary union after 1999.

But while the prospect of EMU is a sufficient condition for expected interest rate convergence between countries, it is not a necessary one. The behaviour of the US-Germany differential shows that forward interest rates in two countries may be aligned for reasons quite independent of proposals for monetary union. Leaving aside the possible presence of the various premia which could bias forward interest rates, forward rate convergence could simply indicate that the stance of monetary policy in two countries was expected to be similar in the future.

(1) The negative differentials between France and Germany in 2001 and 2004 probably reflect either estimation problems or a market anomoly, rather than economic factors.