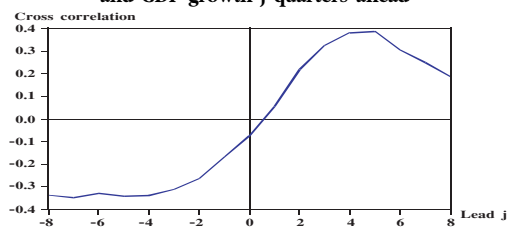


Monetary policy and the term structure of interest rates

In the conduct of monetary policy, a central bank can closely control the short-term money market interest rates such as the overnight rate. However, private sector decisions to consume or invest depend on other interest rates in the financial market such as commercial banks' retail interest rates or long-term yields in the debt securities market. Therefore, the effectiveness of monetary policy relies very much on how changes in a short-term interest rate affect other interest rates in the financial market, as reflected in the term structure of interest rates which characterizes the relationship between short-term and long-term interest rates.¹

From this viewpoint, monetary policy affects long-term interest rates through changes in market expectations regarding short-term interest rates to be set by the central bank in the future. Movements of long-term interest rates thus reflect monetary policy signals that the central bank conveys to the private sector. Therefore, communication to the public and transparency of the central bank's decision-making process are tremendously crucial for the effectiveness of monetary policy.

Chart 1 Correlation between yield spread and GDP growth j quarters ahead



Remark: The line shows the correlation between yield spread and GDP growth (4-quarter real GDP growth) j quarters lead/lag, using monthly data from 1954 to 2005

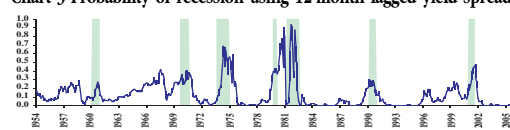
Source: Bank of Thailand

Chart 2 Yield spread and NBER recession dates in the US



Remark: The line shows the yield spread between 10-year and 3-month rates. The shaded areas are NBER recession dates

Chart 3 Probability of recession using 12-month lagged yield spread



Remark: The line shows the probability of recession calculated from a probit model using 12-month lagged yield spread. The shaded areas are NBER recession dates

Source: US Federal Reserve Board, calculations by the Bank of Thailand

The term structure of interest rates and the forecasting of future economic activities

As the term structure of interest rates contains information regarding market expectations of the central bank's stance in setting future short-term interest rates, which in turn depends on future economic conditions, it is probable that the term structure of interest rates could be used to predict future economic trends. In the case of the US where studies on the relationship between the term structure of interest rates and economic conditions have been extensively carried out, it is well accepted that the yield spread between the 10-year Treasury bond and the 3-month Treasury bill is positively correlated with future GDP growth (Chart 1) and can be used to predict economic recessions quite well (Charts 2 and 3). It is worth noting that since 1960 a negative yield spread in the US has always been followed by a US recession within a year.

In the case of Thailand, as the Thai bond market is still relatively small in terms of size and not very liquid, changes in the term structure of interest rates reflect market expectations of future interest rates but, at the same time, can also be influenced by demand and supply factors. Furthermore, contrary

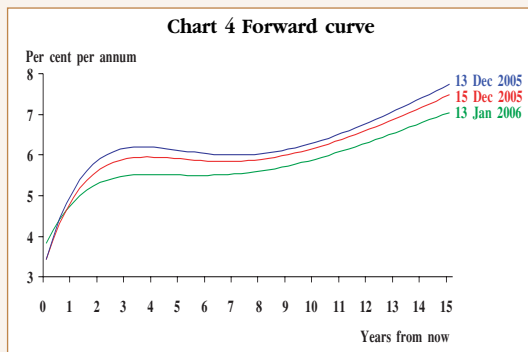
¹ In general, the relationship between short-term interest rates, which are directly under the central bank's control, and long-term interest rates can be explained by the 'expectations theory of the term structure'. It states that arbitrage in the financial market makes long-term interest rates relate to the expected path of future short-term interest rates according to the following equation (for the case where the long-term rate is the 1-year rate and the short-term rate is the 1-month rate):

$$i_{1Y} = \frac{i_t^{1M} + E_t i_{t+1}^{1M} + E_t i_{t+2}^{1M} + \dots + E_t i_{t+11}^{1M}}{12} + \theta \quad (1)$$

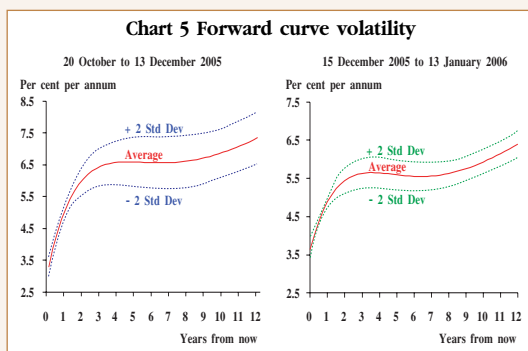
That is, the rate of return on investing in a 1-year government bond (i_{1Y}) should equal to the expected return on investing in a 1-month government bond ($E_t i_{t+j}^{1M}$ for $j = 1, 2, 3, \dots, 11$) rolling-over 12 times. The variable θ reflects the risk from holding longer-term bond (term premium) that investors typically require compensation for.

to the case of the US, it is not possible to fully analyse the relationship between the term structure of interest rates and economic activities in Thailand as bond yield data are quite limited, covering less than one full economic cycle up to the present. Nevertheless, the Thai bond market has already developed to a stage where information embedded in the term structure of interest rates reflecting market expectations of future short-term interest rates can be useful for monetary policy purposes.

An analysis of market expectations from the term structure of interest rates



Source: Bank of Thailand



Source: Bank of Thailand

The starting point in the analysis of market expectations with regard to short-term interest rates' direction is the yield curve of government bonds, which depicts the relationship between government bonds' yields and their remaining maturities. However, as most government bonds with maturity above 1 year pay coupons periodically, their yields do not reflect the true time value of money.² Therefore, to analyse market expectations of future interest rates or the time value of money, we have to extract information embedded in the coupon-paying government bonds yield curve to derive the zero-coupon yield curve that reflects the true time value of money.

The information obtained from the zero-coupon yield curve is then summarized in terms of a forward curve, which shows short-term interest rates that markets expect to prevail in the future. Since the most important factor influencing the path of short-term interest rates is the central bank's monetary policy stance, movements of the forward curve reflect changes in market expectations regarding the future direction of monetary policy.

In the case of Thailand, Chart 4 shows movements of the forward curve in recent months. In particular, the forward curve flattened immediately after the MPC meeting on 14 December 2005 and continued to do so up to 13 January 2006 (latest data). This reflected market expectations that the policy rate tightening would be implemented at a slower pace going forward. In addition, Chart 5 exhibits market uncertainties surrounding the pace of policy rate hikes as measured by the standard deviations of the forward curve. Between 15 December 2005 to 13 January 2006, the uncertainty was less than during the period between 20 October to 13 December 2005, which was the period after the second policy rate hike of 50 basis points.

As information regarding the private sector's expectations of future trend in interest rates plays a crucial role in the analysis of monetary policy transmission mechanism as well as the deliberation of appropriate monetary policy stance, movements in the term structure of interest rates are closely monitored by the MPC.

² For example, bonds that have the same remaining maturities but pay different coupon rates will have different yields in general.