

## The relationship between the Business Sentiment Index and economic activities

From international experience, economic confidence has much impact on the economy. For example, the Consumer Confidence Index (CCI) and the Business Sentiment Index (BSI) move pro-cyclically and are leading indicators of the business cycle. In the case of Thailand, a study on this issue as presented in the April 2004 *Inflation Report* shows that economic confidence is highly correlated with economic activities. Therefore, with a continuous decline in the BSI, the BOT has conducted an analysis of the determinants of the BSI as well as the relationship between the BSI and economic activities, in particular private investment.

### 1. Components of the BSI

In constructing the BSI, the BOT launches a monthly survey of medium and large firms with registered capital of no less than 200 million baht. The survey is comprised of 6 question regarding business performance, total order book, investment, employment, production costs, and production, in terms of both the present situation and the 3-month outlook. The answer to each question has 3 choices: up, unchanged, and down. A decline in the BSI suggests that more people feel that the economic conditions are deteriorating, but it does not imply any magnitude of the deterioration. Qualitative data are subsequently translated into quantitative results using the diffusion index concept. The stable trend of the index is recorded as 50. If the BSI is higher than 50, the majority of the respondents see an improvement in their overall business performance or outlook.

### 2. Determinants of business confidence

When the respondents determine their answers to the survey, many factors are at play, for example, the economic fundamentals and personal feelings. To identify the factors which have important influence on the BSI, a statistical test based on equation (1) is used.<sup>1/</sup>

$$BSI_t = \alpha_0 + \beta_i X_{it} + \epsilon_t \quad \text{equation (1)}$$

where  $BSI_t$  = the Business Sentiment Index

$\alpha_0$  = constant term

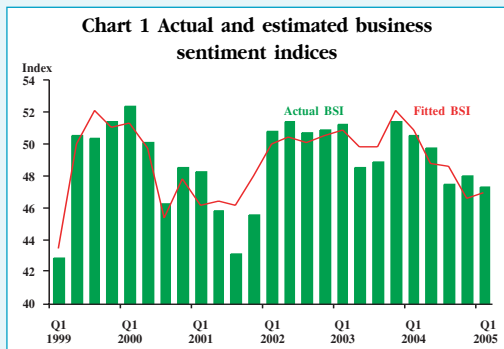
$X_{it}$  = variables which reflect the economic fundamentals

$\epsilon_t$  = residual term

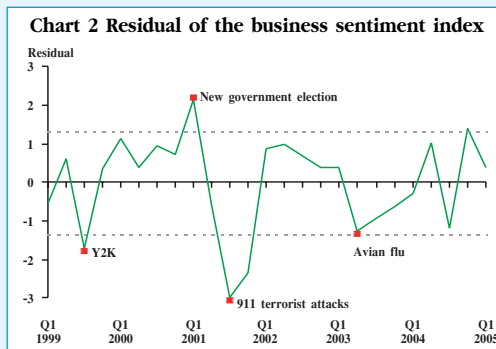
The test finds that a number of economic variables have significant influence on business confidence, including the real interest rate, exchange rate volatility, inflation, and economic growth. The residual term captures in part non-economic factors, including psychological effects, special events, and political views. An exceptionally volatile fluctuation of the residual term indicates the influence of a special event, such as the Y2K concern, the terrorist attacks on 11 September 2001, and the outbreaks of avian flu.

From Charts 1 and 2, the recent decline in the BSI can be explained largely by economic considerations. However, there has been a significant influence from other non-economic factors as well.

<sup>1/</sup> BSI = 48.51 - 0.10 Real MLR - 2.62 FX volatility - 1.15  $\Delta \ln(\text{CPI}_{sa})$  + 0.82  $\Delta \ln(\text{GDPR}_{sa})$   
Adjusted R<sup>2</sup> = 0.73      LM(2) = 0.96 (0.40)



Source: Bank of Thailand



Source: Bank of Thailand

### 3. Relationship between the BSI and economic activities<sup>2/</sup>

In order to test whether or not non-economic variables have an impact on private investment, the residual term from the BSI equation ( $\mathcal{E}_t$ ) is included as an explanatory variable in the private investment equation. The root mean square error (RMSE) from equation (2) is then compared with that from equation (3). The smaller the RMSE is, the better the included explanatory variables can explain private investment behaviour.<sup>3/</sup>

$$\Delta \ln(IPR_{sa})_t = \alpha_0 + \beta_j X_{jt} + \mu_t \quad \text{equation (2)}$$

$$\Delta \ln(IPR_{sa})_t = \alpha_0 + \beta_j X_{jt} + \gamma_i \mathcal{E}_t + \mu_t \quad \text{equation (3)}$$

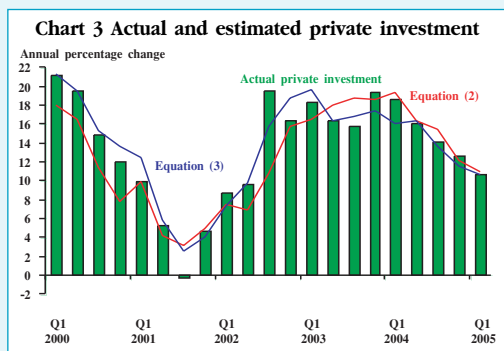
$\Delta \ln(IPR_{sa})_t$  = Quarter-on-quarter growth rate of private investment (seasonally adjusted)

$\alpha_0$  = constant term

$X_{jt}$  = economic variables

$\mathcal{E}_t$  = residual term from the BSI equation (1)

$\mu_t$  = residual term



Source: National Economic and Social Development Board and the Bank of Thailand

For the sample period between 2000 and 2005 Q1, equation (3) outperforms equation (2), as justified by a RMSE of 1.7 per cent against 8.2 per cent (Chart 3). Thus, it can be concluded that non-economic factors in the BSI have an important effect on economic activities, especially when they reflect some event which strongly depresses confidence such as the terrorist attacks on 11 September 2001.

### 4. Conclusion

The BSI captures both economic factors and non-economic factors which have an impact on business confidence. As the BSI can explain private investment behaviour, adverse psychological pressure on the BSI would be a downside risk factor for the private investment outlook.

<sup>2/</sup> The BSI(-1) Granger causes private investment at the 1 per cent significance level, while private investment does not Granger cause the BSI.

<sup>3/</sup> Equation (2)  $\Delta \ln(IPR_{sa}) = 0.01^* \Delta(\text{Real MLR}) - 0.02^* \Delta(\text{FX volatility}) - 2.83^* \Delta(\text{CPI}_{sa}) + 1.02^* \Delta \ln(\text{GDPR}_{sa})$   
RMSE = 8.2

Equation (3)  $\Delta \ln(IPR_{sa}) = 0.01^* \Delta(\text{Real MLR}) - 0.03^* \Delta(\text{FX volatility}) - 0.75^* \Delta(\text{CPI}_{sa}) + 2.46^* \Delta \ln(\text{GDPR}_{sa}) + 0.01 \Delta(\mathcal{E}_t)$   
RMSE = 1.7