

## *Cyclicality and the inflation pass-through*

In general, prices of goods are set according to their cost of production, for example, raw materials and wage, and topped up with a profit margin which varies for each good, depending on the level of competition in its respective industry. As a result, when the cost of production increases across many industries, there is an upward pressure on the general price level, leading to an increase in inflation. The degree of such pressure depends on the nature of the change in the cost of production as well as the ability of producers to pass on that cost increase.

When the rise in the cost of production is temporary, producers usually bear such an increase themselves, allowing the profit margin to decline. This is because there is an administrative cost associated with each price adjustment, making frequent changes undesirable. As a result, producers need to base each price adjustment on their expectation about future cost and inflation. When they expect an increase in the cost of production to be temporary, price will be maintained. However, in times when there is a persistent increase in the cost of production, like in the current situation, there is another factor that affects the pass-through, namely cyclicality. Currently, the Thai economy is growing strongly with strengthening domestic demand and rising income. The interplay between the cost of production and the demand factor has the potential to push future cost and inflation expectation up, thereby inducing producers to more readily pass on the higher cost of production to consumers. This setting is different from the one where economic growth is subdued and producers withhold price adjustments due to fears of sales losses.

One way to statistically measure the impact of cyclicality on the inflation pass-through is to model it with the following equations:

$$\begin{aligned} \pi_t &= \alpha \pi_{t-1} + \sum_{j=0}^1 \beta_j m_{t-j} + \omega k_t + u_t && \text{for normal demand} \\ \pi_t &= \alpha \pi_{t-1} + \sum_{j=0}^1 \beta_j m_{t-j} + \eta_t D_t m_t + \omega k_t + u_t && \text{for strong demand}^{1/} \end{aligned}$$

where  $\pi$  = inflation rate;  $m$  = change in the Producer Price Index (PPI);  $k$  = Capital Utilization (CAPU) rate; and  $D$  = a dummy variable which takes a value of 1 when CAPU is higher than its long-term average level, reflecting pressure from an economic upturn, and 0 when CAPU is equal to or less than its long-term average level. If cyclicality indeed affects the inflation pass-through, the coefficient of this dummy variable, which is an interactive term with the change in PPI, should be positive and statistically significant. Estimating the equations using monthly data from January 2000 - January 2011 yields the following results:

$$\pi_{headline,t} = 0.832\pi_{headline,t-1} + 0.246m_t - 0.194m_{t-1} + 0.003k_t \quad (1)$$

$$\pi_{headline,t} = 0.814\pi_{headline,t-1} + 0.230m_t - 0.182m_{t-1} + 0.026D_t m_t + 0.002k_t \quad (2)$$

$$\pi_{core,t} = 0.887\pi_{core,t-1} + 0.020m_t + 0.003k_t \quad (3)^{2/}$$

$$\pi_{core,t} = 0.893\pi_{core,t-1} + 0.014m_t + 0.010D_t m_t + 0.001k_t \quad (4)^{2/}$$

<sup>1/</sup> Refers to a period when the economy is growing faster than its long-term average rate.

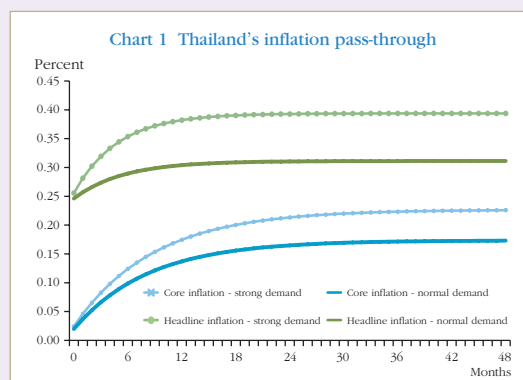
<sup>2/</sup> In the case of core inflation, the coefficient of the first lag of the change in PPI ( $m_{(t-1)}$ ) is not statistically significant and was removed from the estimation.

From equations (1) - (4) above, the cumulative impact of PPI pass-through to headline and core inflation can be calculated for each period and in the long-run using the Dynamic Multiplier Model<sup>3/</sup>. Results are shown in Table 1 and Chart 1.

Table 1: Cumulative impact of a one percentage point change in PPI on headline and core inflation

		Immediate	6 months	12 months	Long-run
Headline inflation	Pass-through for normal demand	0.25	0.29	0.30	0.31
	Pass-through for strong demand	0.26	0.35	0.38	0.39
Core inflation	Pass-through for normal demand	0.02	0.10	0.14	0.17
	Pass-through for strong demand	0.02	0.12	0.17	0.23

Overall, it can be seen that the pass-through occurs quite quickly, especially for headline inflation where the impact stabilizes within the first 12 months. Meanwhile, the pass-through to core inflation occurs slightly slower and less in magnitude due to the fact that goods and services in the core Consumer Price Index basket reflect an indirect rather than a direct pass-through. Nevertheless, core inflation



Source: Calculations by Bank of Thailand

is a better indicator of demand-side inflation pressures compared to headline inflation, thus more precisely captures the inflation pass-through of higher production cost. For example, in the case of oil price, its impact on core inflation reflects the pass-through to transportation costs rather than the direct impact on the retail oil price component in the Consumer Price Index basket.

Moreover, it can be seen that cyclicalty affects the pass-through, as expected, whereby in the period of strong demand, the pass-through to both headline and core inflation, measured by its cumulative impact in the long-run, is higher than in the period of normal demand by approximately 0.08 and 0.06 percent, respectively.

To summarize, in the next period when both the cost of production and output are expected to grow strongly, the pass-through will unavoidably be higher, exerting pressure on inflation. The risk that future cost and inflation expectation will edge up also increases. In this regard, the task of monetary policy is not to control market adjustments, but rather to anchor inflation expectation at an appropriate level. This is because price adjustments ultimately depend on the expectation about future cost of production and inflation. Therefore, a well-anchored inflation expectation is important in preventing over-adjustments of prices, which will negatively impact consumers as well as economic stability in the long-run.

<sup>3/</sup> Disyatat, Piti and Pinnarat Vongsinsirikul, "Monetary policy and the transmission mechanism in Thailand", Journal of Asian Economics, 14 (2003).