



BANK OF THAILAND DISCUSSION PAPER

พัฒนาการเงินเพื่อไทยหลังวิกฤตเศรษฐกิจ

โดย

รุ่ง โปษยานนท์ มัลลิกะมาส และ รัชชานา พงศาปาน

ธันวาคม 2548

E-Mail Address: roongp@bot.or.th runchanp@bot.or.th

ข้อคิดเห็นที่ปรากฏอยู่ในเอกสารวิจัยนี้เป็นความเห็นส่วนตัวของผู้เขียนโดยเฉพาะ
ซึ่งไม่จำเป็นต้องสอดคล้องกับนโยบายของธนาคารแห่งประเทศไทย

The views expressed in this paper are those of the authors and do not necessarily represent those of the Bank of Thailand.

Evolving Inflation Process: The Thai Experience

Roong Poshyananda Mallikamas
Runchana Pongsaparn
Bank of Thailand
December 2005

1. Introduction

Thailand is one of many countries that have enjoyed fairly low and stable inflation since the early 1990s. Between 1990 and 2004, headline inflation averaged 3.9 percent with a standard deviation of 2.5 percent, compared with the average of 6.2 percent with a standard deviation of 5.1 percent during the previous 15 years between 1975 and 1989.

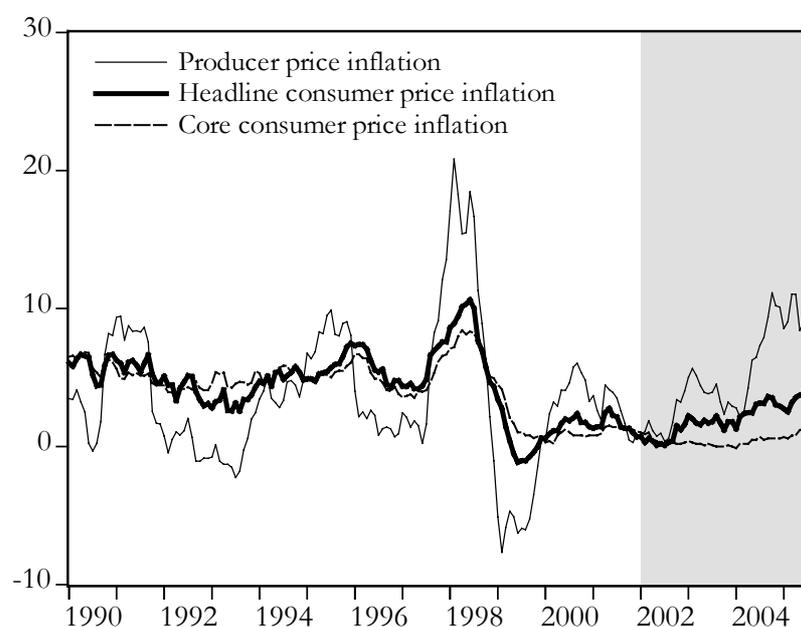
At first glance the experience appears similar to that of other countries (Table 1), except for the period 1995-1999 when inflation edged up as the exchange rate greatly weakened during the financial crisis years whereas inflation elsewhere around the world trended downward. At close inspection, however, Thailand has encountered two peculiar phenomena since 2002. The first is the divergence between producer prices and consumer prices for an extended period of time, and the second is the divergence between headline consumer prices and core consumer prices (Chart 1). The latter, in particular, has generated skepticism over the use of core inflation as a monetary policy target. Therefore, in this paper we try to investigate the two divergences and their explanations. We also contemplate policy implications given the possibly evolving inflation process in Thailand.

Table 1. Inflation around the world

	1975-1989	1990-2004				
		1990-1994	1995-1999	2000-2001	2002-2004	
World	14.7	11.5	22.3	8.3	4.3	3.5
Industrial countries	7.4	2.5	3.6	1.9	2.3	1.8
Developing countries	31.0	26.3	56.0	16.8	6.6	5.6
Asia	8.5	6.2	9.2	6.9	2.0	2.8
Thailand	6.2	3.9	4.8	5.1	1.6	1.7

Source: *International Financial Statistics* (IFS)

Chart 1. Divergence of price measures in Thailand



The paper is organized into six parts. The introduction is followed by the section which presents stylized facts about inflation in Thailand. Section 3 then provides a brief review of the existing literature on the evolving inflation process in Thailand. In Section 4, the behaviors of producer and consumer price inflation are studied in detail with the use of econometric analysis, followed by some discussion on the plausible explanations of the process changes. Section 5 then looks at the implications of the evolving inflation process on monetary policy, before concluding in Section 6.

2. Stylized facts

Tables 2 and 3 provide some simple statistics on producer price inflation,¹ headline consumer price inflation, and core consumer price inflation. Given that the divergences seem to begin around 2002, we separate the data into two periods: pre-2002 and since.

Between 1996 and 2001, all three inflation measures moved together with similar sample means though producer price inflation tended to be the most volatile, followed by headline consumer price inflation and then core consumer price inflation. The relationship between headline and core consumer price inflation was particularly tight, and this comes as no surprise given that core CPI was purposely constructed, using historical data up to 1999, to capture the underlying component of headline CPI while preserving its integrity as a measure of the general cost of living over time.²

Things look somewhat different from 2002 onwards. While producer price inflation and headline consumer price inflation continue to move largely in the same direction, producer prices have accelerated noticeably more than headline consumer prices. This suggests that retail prices have not been able to catch up with production costs, and thus, unless there has been a substantial and continuous productivity gain in the retail sector, profit margins of producers are likely to have been squeezed increasingly over the past 3-4 years. The question is: how long can this squeeze on producers last?

Table 2. Comparison of means and SDs of key price measures

	Mean			Standard deviation		
	Pre-2002		2002-now	Pre-2002		2002-now
	1986-1995	1996-2001		1986-1995	1996-2001	
Wholesale price inflation	4.1	n.a.	n.a.	4.0	n.a.	n.a.
Producer price inflation	n.a.	3.5	5.1	n.a.	6.2	3.4
Headline consumer price inflation	4.3	3.8	2.1	1.6	3.1	1.3
Core consumer price inflation	4.5	3.5	0.5	1.3	2.6	0.5

¹ The producer price index (PPI) dates back only to 1995. Prior to the construction of PPI, another price measure called the wholesale price index (WPI) was used to as a proxy of production cost. *The International Financial Statistics* (IFS) and Chart 1 combine the two series to derive the long time series of producer prices. The authors, however, have some doubt over the appropriateness of this combination. Therefore, our empirical analysis in Section 4 will use only the PPI series, limiting the sample period to 1995 onwards.

² Griffiths and Poshyananda (2000)

Table 3a. Correlation of key price measures between 1996 and 2001

	Producer price inflation	Headline consumer price inflation	Core consumer price inflation
Producer price inflation	1.00	0.77	0.62
Headline consumer price inflation	0.77	1.00	0.95
Core consumer price inflation	0.62	0.95	1.00

Table 3b. Correlation of key price measures between 2002 and August 2005

	Producer price inflation	Headline consumer price inflation	Core consumer price inflation
Producer price inflation	1.00	0.87	0.50
Headline consumer price inflation	0.87	1.00	0.62
Core consumer price inflation	0.50	0.62	1.00

The breakdown of the relationship between headline and core consumer price inflation is yet more obvious. Their correlation of 0.95 during 1996-2001 has fallen sharply to only 0.62 since 2002, and the sample means in the latter period differ by as much as four times. This has sparked much criticism of the use of core consumer price inflation as the monetary policy target under the inflation targeting framework, which has been in operation in Thailand since May 2000.

A number of factors are likely candidates for the explanation of the inflation divergences observed. Two studies by the staff of the Bank of Thailand, namely Buddhari and Chensavasdijai (2003) and Chantanahom et al. (2004), have explored the issue as reviewed in the following section.

3. Literature review

Buddhari and Chensavasdijai (2003) evaluate the degree of exchange rate pass-through in Thailand based on data from the early 1990s to 2003Q1, with the use of the Bank of Thailand's macroeconomic model (BOTMM) and a non-structural vector autoregression (VAR) framework. They find that the inflationary impact of the currency devaluation during the financial crisis was limited and short-lived, and in general the degree of exchange rate pass-through in Thailand is low and diluted along the distribution chain from importers to producers, and finally to consumers. Plausible explanations for the modest pass-through include competition, lower inflation expectation in the face of global disinflation and increased monetary policy emphasis on price stability after the adoption of inflation targeting framework, a shift in the housing market structure from rented accommodation to home ownership, and the non-trivial share of administered prices in the economy. For the estimated period, a distinct feature that emerges is the complete pass-through from producer prices to headline CPI after only eight quarters, which leads to the conclusion that producers eventually pass on most of the cost increases to consumers. However, the authors note, "In light of the continued divergence between headline CPI and PPI in the past few years, this

behavior may have changed as competition became stronger and as producers adopted more severe cost-cutting strategies.”

Chantanahom et al. (2004) also address the issue of diverging headline CPI and PPI. They find that consumer prices used to increase faster than producer prices in the pre-crisis period but that trend has recently reversed. In particular, consumer prices have adjusted less frequently across sectors during the post-crisis period while there has been no change in the frequency of producer price adjustment, and one important reason for the change in the behavior of consumer prices is the large share of administered prices in the CPI basket. However, in the attempt to seek evidence for a change in inflation persistence using the AR approach à la Cecchetti and Debelle (2004), the paper cannot confirm a change in inflation persistence. Once mean shifts are allowed, consumer prices consistently demonstrate no persistence while some persistence is found for producer prices, leading to the conclusion that shocks to the inflation process die down much slower for producer prices as compared to consumer prices. Finally, to address the issue of diverging headline and core consumer price inflation and thus the criticism of the use of core inflation as the monetary policy target, the paper proposes an alternative measure of underlying price pressure using the Kalman’s filter technique. The proposed Kalman’s inflation indicator with time-varying weights suggests more price pressure in the economy than that implied by core inflation since early 2002.

4. Empirical analysis of the inflation process

Our paper revisits the issue of changing inflation process and diverging inflation measures. The method used for empirical analysis is different from those adopted by Buddhari and Chensavasdijai (2003) and Chantanahom et al. (2004). More importantly, the extension of data observations to the most recent period should shed light on the role of likely explanations of the divergences, in particular government price administration and the monetary environment which previously prompted consumers to move away from rented accommodation toward home ownership.

4.1 Method used

In exploring the issue of evolving inflation process in Thailand, we use a multivariate model and data between January 1995 and August 2005 to trace the importance of inflation determinants over time. In particular, the error-correction model (ECM) is used to allow for short-run adjustments toward the long-run equilibrium. The long-run relationship is estimated using an OLS regression on the levels of the variables, each having been found to be integrated of order 1. The residual term is then tested for stationarity to ensure non-spurious relationship.

The short-run ECM relationship is estimated using first differences and one lag of the residual term from the corresponding long-run relationship. The first difference of each potential determinant variable is lagged up to 3 periods, and the general-to-specific approach is adopted to trim down the relationship.

To allow us to observe the evolving process of inflation, should there be one, we employ a rolling regression method on the trimmed down short-run relationship. The rolling window length is originally set at 36 months, which is wide enough to provide an acceptable degree of estimation accuracy yet short enough to roughly capture or suggest a change in the inflation process. As discussed later, however, an important price intervention measure by the government, i.e., the petrol price subsidy, is expected to have some impact on the

inflation process over its effective period, but given that the subsidy started only in January 2004, a window of 36 observations may fail to reveal its full effect. Therefore, we attempt to use narrower windows of 30, 24 and 20 months to better capture the impact, bearing in mind that the precision of the estimation may be partly compromised.

In choosing the determinants of inflation, we explore both demand- and supply-side variables, including world CPI, non-oil import price, world oil price, domestic farm price, exchange rate, minimum wage, minimum lending rate, and output gap. As typical of Thailand, all variables found to be important determinants of producer price inflation are “cost-push” factors. Determinants of headline consumer price inflation are largely “cost-push” as well, except that the impact is transmitted mainly through PPI, or production cost. In other words, our study finds that variables such as world oil price, farm price, and exchange rate are significant in the short-run ECM equation for headline CPI only if PPI is not present. When PPI is included, however, the variable overwhelms the others, leading us to conclude that it has quite comprehensively captured the effect of cost variables and, like Buddhari and Chensavasdijai (2003), that producers typically try to pass on their cost to consumers.

4.2 Producer price inflation

The long-run relationship between PPI and its determinants, seasonal adjusted when appropriate, is as follows:

$$\begin{aligned} \log \text{PPI} = & 1.957 + 0.396 \log (\text{domestic farm price}) + 0.039 \log (\text{Singapore oil price}) \\ & (0.046) \quad (0.011) \quad (0.006) \\ & + 0.193 \log (\text{THB/USD exchange rate}) - 0.007 \text{MLR} \\ & (0.008) \quad (0.001) \end{aligned}$$

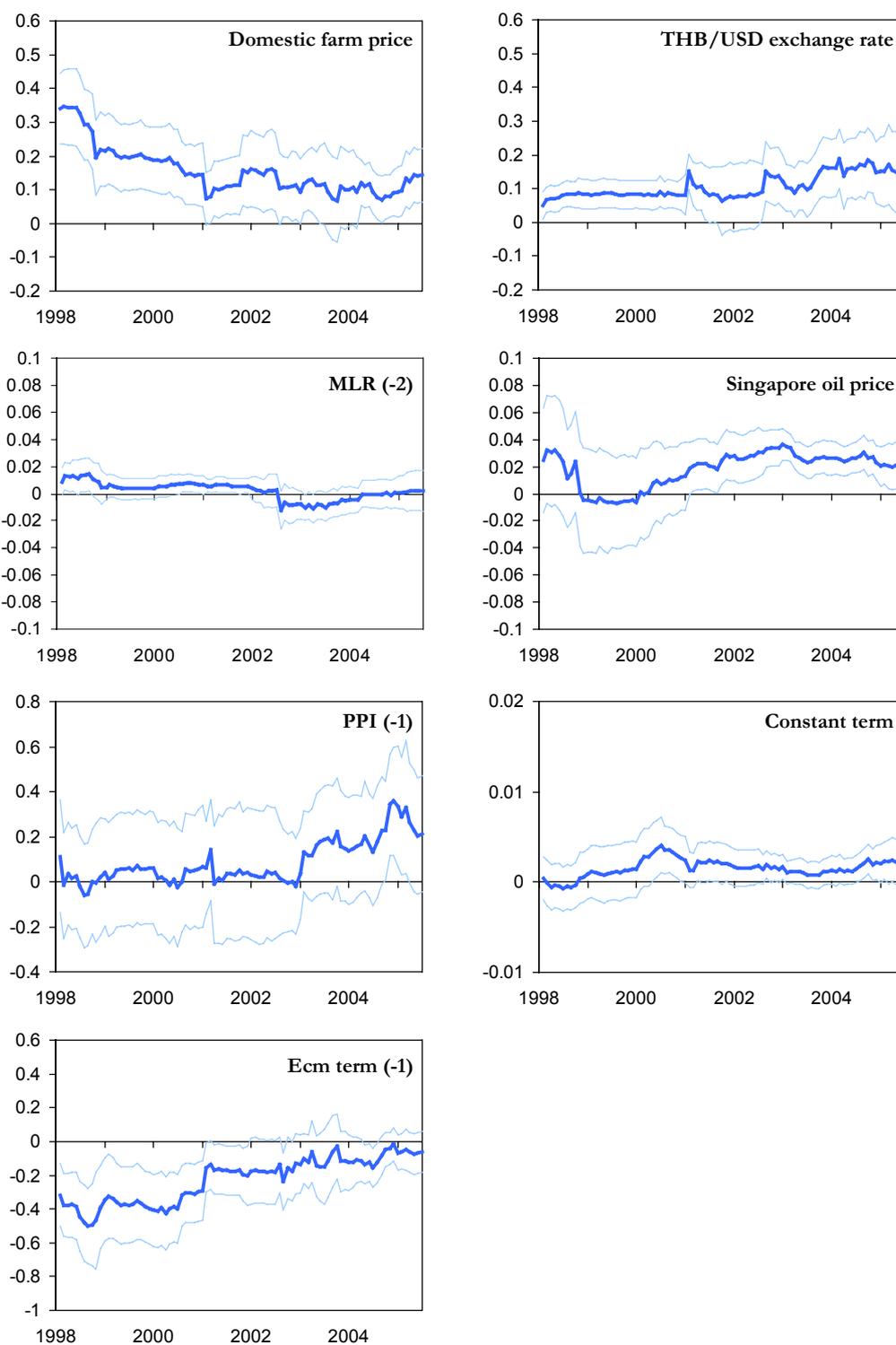
The results of the rolling regression on the short-run ECM equation, with the band representing the 95% confidence interval, are presented in Chart 2.³ All variables are in log-difference form, except MLR which is in first-difference form. Given our interest in the evolving price process since 2002, we focus on the discernible changes in the importance of key PPI determinants.

The estimated sign of MLR is quite interesting, being negative in the long-run relationship with PPI but positive in the short-run ECM equation. We interpret this result as suggesting that in the long run MLR reflects monetary policy stance and thus varies inversely with inflation. However, in the short-run MLR is considered a cost variable to many producers.

³ Since the results presented at a point in time use data going back for three years or so, the interpretation of the timing of the changes must incorporate this time lag.

Chart 2. Coefficient estimates of the short-run producer price equation

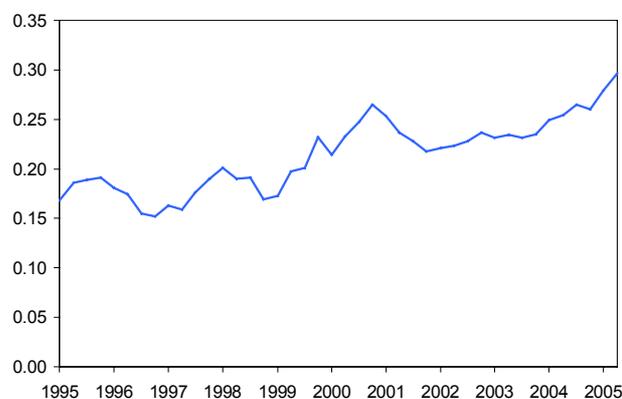
$PPI_t = f(\text{Constant}, PPI_{t-1}, \text{Farm price}_t, \text{THB/USD exchange rate}_t, MLR_{t-2}, \text{Singapore oil price}_t, \text{Ecm term}_{t-1})$
 Window size: 36 months



Key findings:

(1) Since the beginning of this decade, the coefficient of domestic farm price is fairly stable, but the coefficient of exchange rate rises somewhat over the years. The latter can be explained by greater import content in domestic production, as evidenced in Chart 3 by an increasing ratio of imported raw materials and intermediate goods to nominal GDP. On the contrary, the coefficient of lagged MLR is small and statistically insignificant, unlike in the late 1990s when some significance was detected. The decline in the importance of MLR as a cost variable to producers in the most recent period is not surprising given the unprecedented low interest rate environment in Thailand.

Chart 3. Ratio of imported raw materials and intermediate goods to nominal GDP



(2) There is some evidence of a more persistent PPI process in recent years. In the late 1990s, the lagged PPI term was consistently insignificant and the error-correction term suggested a relatively fast adjustment toward the long-run relationship. More recently, however, the lagged PPI term has become larger and occasionally significant, while the significance of the error-correction term has mostly disappeared. The exact timing of the move toward greater persistence is difficult to pin down, but it is likely to have taken place around 1999, coinciding with the enactment of the Prices of Goods and Services Act 1999 under which 20 goods and services are subject to administrative price measures. For these items—including cement, sugar and electricity—the prices are either set directly by the government or need government approval prior to distribution for sale. The degree of persistence is likely to have further increased around 2003-2004 as the Ministry of Commerce established a watch list (Table 4) and asked that the prices of goods and services in the watch list be kept fixed and seek the government's consent before being raised to alleviate the burden on other producers and consumers.

Table 4. Price monitoring by the Ministry of Commerce

	Number of items in the watch list	
	Goods	Services
January 2003	73	20
August 2004	100	20
July 2005	120	20
October 2005*	150	20

* Announced by the Ministry of Commerce

While Chantanahom et al. (2004) note that the frequency of producer price adjustment has not changed from the pre-crisis period, their finding by no means precludes a change in the average magnitude of producer price adjustment. As the cost of many goods and services, including some of those in the PPI basket, has to be justified to the government before their own prices could be raised, it is reasonable to expect smaller upward price adjustments under the government's closer watch. With this, the adjustment toward long-run equilibrium would be delayed and pent-up price pressure is likely to persist, as suggested by the lower absolute magnitude of the coefficient of the ECM term.⁴

⁴ More discussion of the effect of price administration appears in Section 4.3.

(3) A decline in the pass-through from Singapore oil price, which has been used as the benchmark for the ex-refinery price of oil in Thailand, to domestic producer prices is weakly detected. This is also consistent with the government's price intervention measures, in particular the diesel price subsidy that was in place

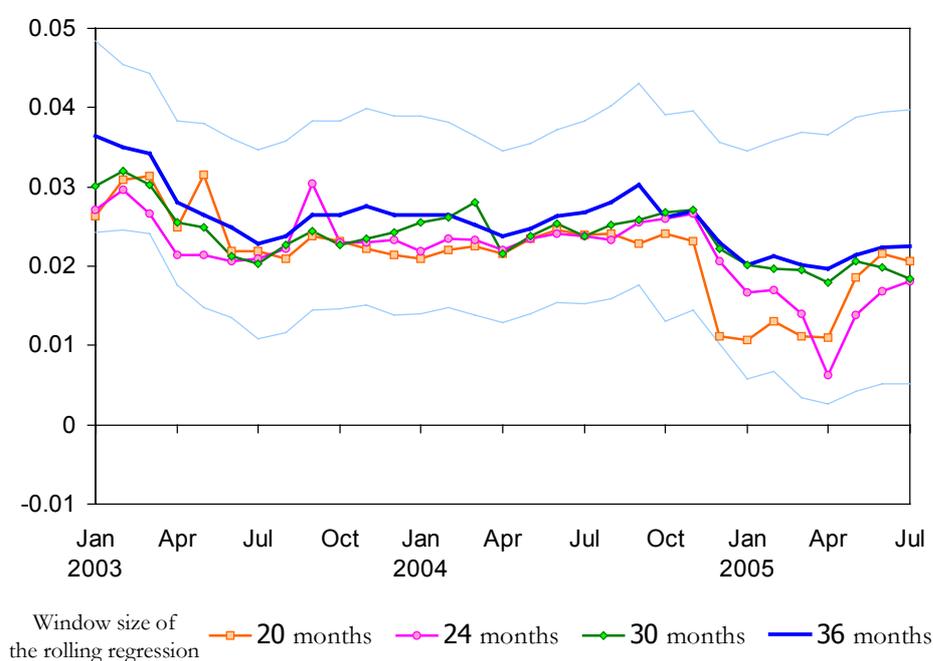
between January 2004 and July 2005, to mitigate cost pressure on domestic producers in the face of high world oil prices (Table 5). As mentioned earlier, however, the rolling window of 36 months may be too wide to fully capture the effect of the temporary petrol price subsidy. Therefore, we also look at narrower windows and discover a stronger indication of the impact of the petrol price subsidy (Chart 4). The use of narrower windows also reveals another interesting information: the pass-through from Singapore oil price to domestic producer prices seems to be picking up during the most recent months. This is consistent with the fact that the petrol price subsidy had been gradually relaxed before ending altogether in July 2005. We therefore conclude that the government's price intervention scheme was effective as evidenced by the change in the domestic price process, but its effectiveness was short-lived in the face of a large and prolonged shock.

Table 5. Petrol price subsidy measures

Date	Measure
10 Jan 2004	Price subsidies started
21 Oct 2004	Full float of unleaded gasoline prices
1 Jun 2005	Managed float of high-speed diesel price
13 Jul 2005	Full float of high-speed diesel price

Source: Ministry of Energy

Chart 4. Comparison of the Singapore oil price coefficient estimates



4.3 Headline consumer price inflation

The long-run relationship between headline CPI and its determinants, seasonal adjusted when appropriate, is as follows:

$$\begin{aligned} \log \text{CPI} = & 0.297 + 0.213 \log (\text{world CPI}) + 0.077 \log (\text{THB/USD exchange rate}) \\ & (0.142) \quad (0.023) \quad (0.008) \\ & + 0.458 \log (\text{minimum wage}) + 0.148 \log \text{PPI} \\ & (0.042) \quad (0.025) \end{aligned}$$

For the short-run ECM equation, we discover that PPI is the only significant determinant of CPI other than its own lagged term and the error correction term.

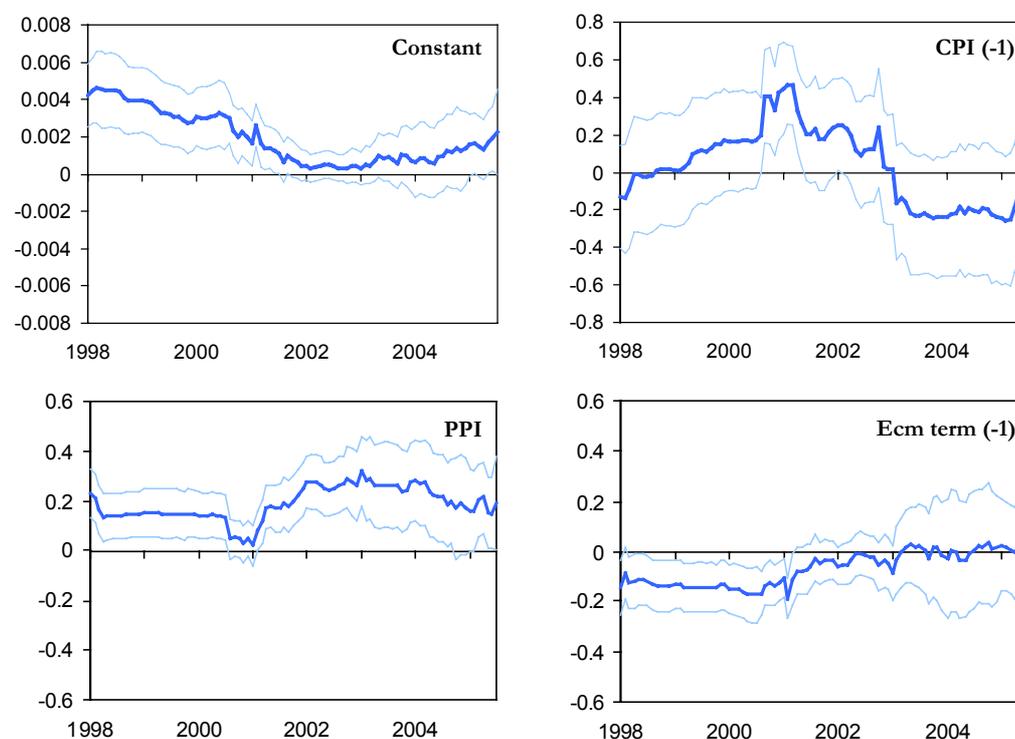
Key findings:

(1) The rolling coefficient estimates of PPI suggest that the pass-through from production costs to retail prices of goods was rather subdued during the financial crisis and a few subsequent years when domestic demand was particularly weak (Chart 5). As domestic demand gathered strength, the pass-through became noticeably stronger, suggesting greater ease for producers to pass on their costs to consumers when demand is relatively strong. However, the pass-through from production costs to retail prices began to decline around 2002-2003 even though demand continued to expand quite robustly. Below we discuss the reasons behind limited ability of producers to pass on costs in recent years.

Chart 5. Coefficient estimates of the short-run headline consumer price equation

$$\text{CPI}_t = f(\text{Constant, CPI}_{t-1}, \text{PPI}_t, \text{Ecm term}_{t-1})$$

Window size: 36 months

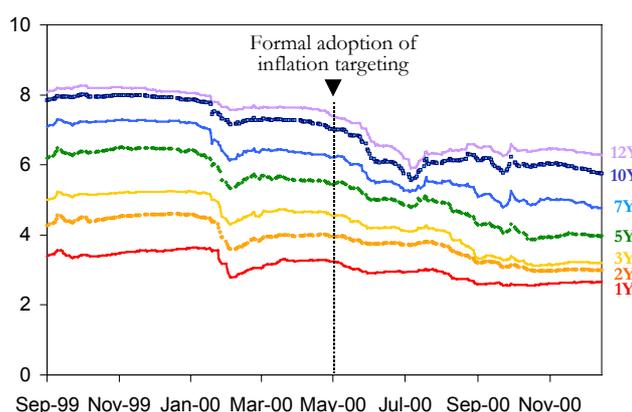


(a) Change in inflation expectation

Some authors like Buddhari and Chensavasdijai (2003) cite lower inflation expectation in the face of global disinflation and increased monetary policy emphasis on price stability with the adoption of an explicit inflation target since May 2000 as a factor that could explain the divergence between producer and headline consumer price inflation. They argue that price increases in a low inflation environment are more noticeable to consumers than in a high inflation environment. Consequently, consumer demand is likely to react more strongly to a producer's price increase, so producers are more reluctant to immediately transfer to consumers the full extent of their cost increases. The pass-through from producer prices to consumer prices thus tends to dissipate in times of low inflation.

Chart 6 provides some evidence that inflation expectations are indeed likely to respond to the adoption of inflation targeting. In Thailand, there was a clear decline in the long-term bond yields after the adoption of the monetary framework.

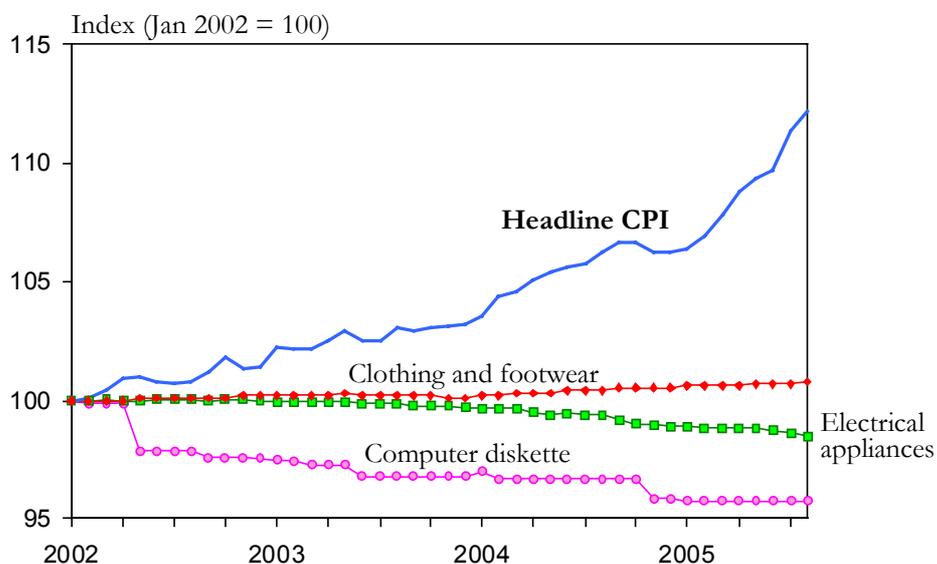
Chart 6. Government bond yields



(b) Intense competition in the retail sector

Competition from abroad, especially China, has driven down the prices of many consumer goods. In the face of such competition, domestic producers are less likely to be able to pass on the full extent of their production cost increase. Goods that are most likely to be affected by this factor include electrical appliances, computer-related items, clothing and footwear (Chart 7).

Chart 7. Prices of goods facing strong external competition



Source: Ministry of Commerce

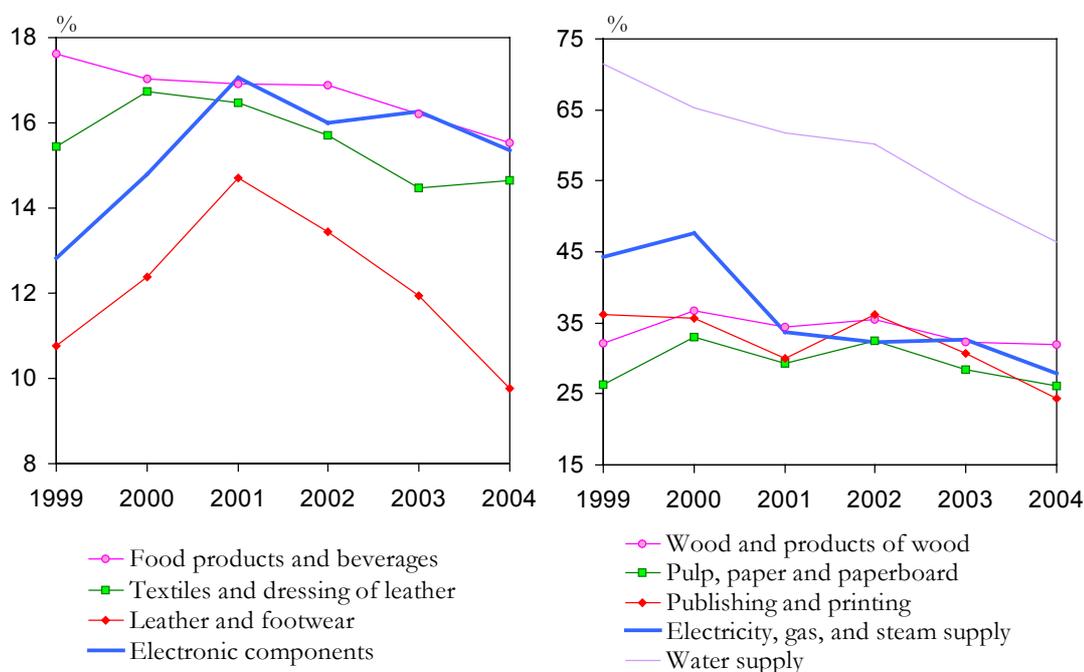
Moreover, competition in the household goods sector has increased with the rapid growth of hypermarkets, which has been boosted in part by globalization as some of the major competitors carry international names like Tesco and Carrefour. This further limits the ability of retail prices to adjust upward even though production costs may have already gone up.

(c) Price administration by the government

Although both producer and consumer prices are monitored by the government, greater attention has been given to consumer prices. As a result, as much as one-third of the CPI basket now belongs to the watch list of the Ministry of Commerce whereas a little less than one-fourth of the PPI basket is similarly monitored. Such price administration has certainly contributed to the wedge between producer and consumer price inflation and rising pent-up price pressure in the economy.

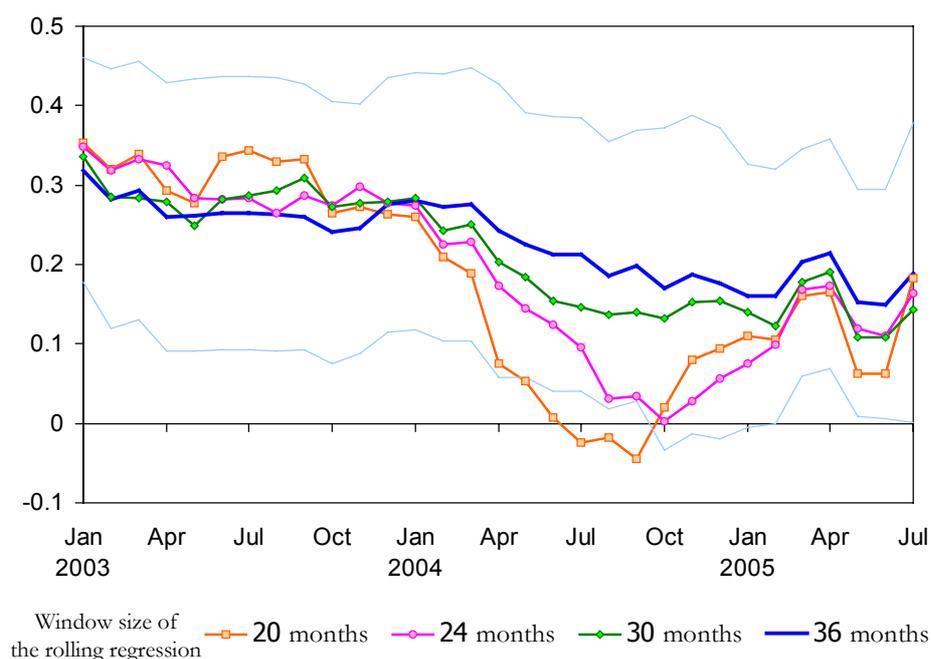
However, some evidence suggests that the effectiveness of price administration by the government is waning. For the past few months, local news has reported an increasing number of producers voicing complaints against the government's request for price fixing, with some refusing to further comply. This comes as no surprise given a continued erosion of their profit margins (Chart 8) as price administration aggravates the pressure already there from intense competition. Our empirical results from the rolling regressions with narrower windows meanwhile indicate a recent pick-up in the pass-through from producer prices to consumer prices (Chart 9), and in doing so confirm that price administration has certainly been a factor behind the divergence between producer and consumer price inflation but its effect is likely to diminish going forward.

Chart 8. Evidence of producers' eroding profit margins



Source: Stock Exchange of Thailand

Chart 9. Comparison of the PPI coefficient estimates



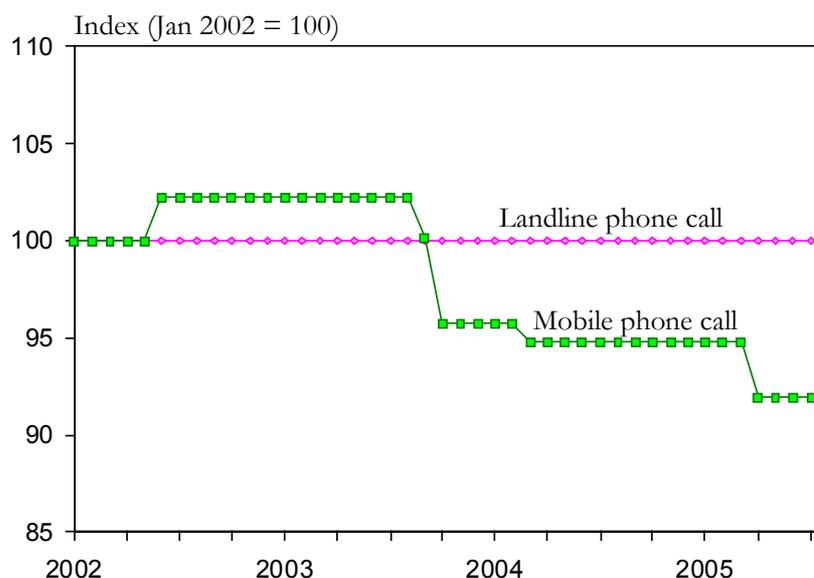
(2) The coefficient of the constant term in the ECM equation is smaller in the latter half of the sample period compared to the first half, although there is some evidence of a rebound in the most recent years. While the PPI coefficient is expected to reflect changes in the price process of *goods*, as discussed above, the coefficient of the constant term is likely to pick up changes in the price process of *services*⁵ that has been driven during the past few years by factors such as deregulation and changes in the monetary environment.

There is evidence that deregulation, for example in the telecommunication sector which has led to freer entry of new mobile phone operators, has driven down service prices (Chart 10). As the PPI basket does not include services (Table 6), this factor contributes to the divergence between producer and consumer price inflation, though the overall impact is likely to be modest given that the combined weight of relevant services in the CPI basket is small.

As for the effect of changing monetary environment, in the wake of the financial crisis that hit Thailand in 1997, once financial market volatility had largely subsided, monetary policy shifted toward an unprecedented accommodative stance to facilitate the recovery of domestic demand. With that, nominal MLR and subsequently real MLR gradually fell to their record lows within the past 25 years (Chart 11). Such low interest rate environment that lasted for a few years, coupled with the economic recovery and rising consumer confidence as well as tax incentives provided by the government to boost the recovery of the real estate market, prompted consumers to draw on cheap mortgage loans and moved away from rented accommodation toward home ownership. As a result, the growth of housing loans accelerated sharply relative to both nominal GDP and total bank loans. Higher relative demand for home ownership was manifested in rising house prices relative to rental rates. In fact, the shift in the housing market structure put significant downward pressure on housing rent, as evidence by its noticeable and sustained fall between 2002 and 2004.

⁵ The cost of providing services is unlikely to be captured by the PPI.

Chart 10. Prices of mobile and landline phone calls



Source: Ministry of Commerce

The CPI basket that included only rent and not the cost of home buying or imputed rent was unable to keep up with this change in consumer behavior. As a result, the true cost of housing was unlikely to be as low as that suggested by the CPI, which accounts partly for the divergence between producer and consumer price inflation as the PPI basket did not suffer from the same problem in the absence of the housing rent component (Table 6).

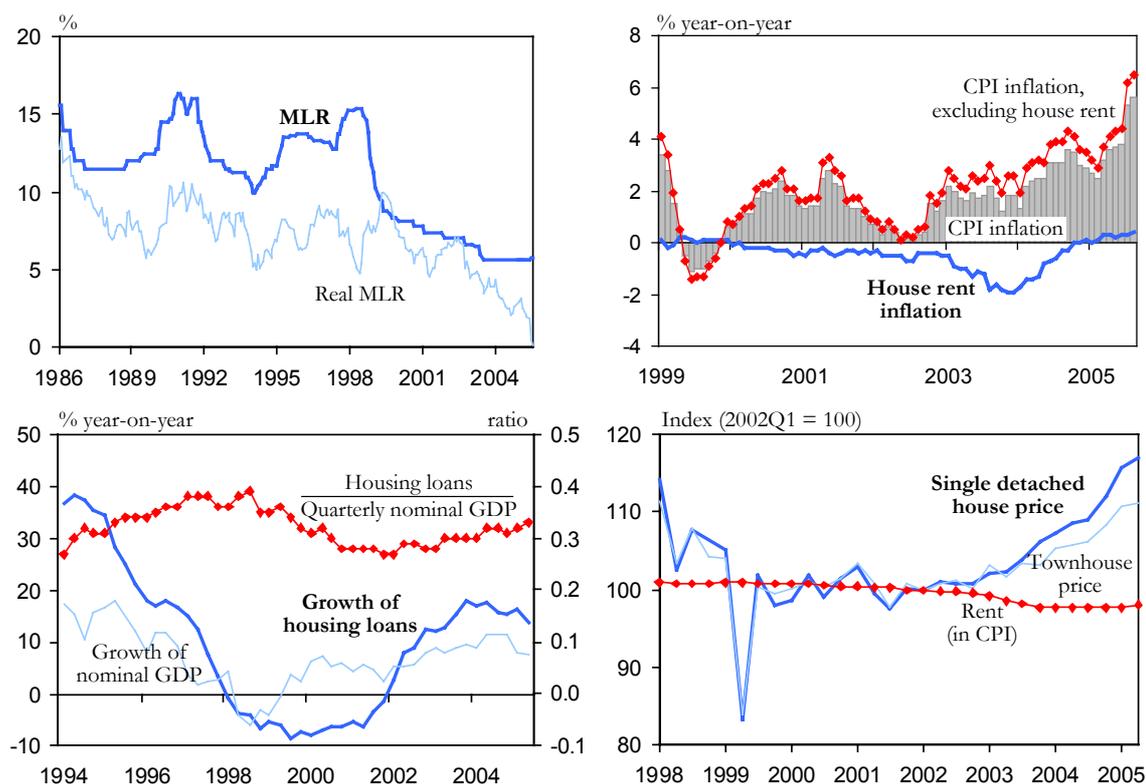
Table 6. Relative weights in the current price indices

	PPI	Headline CPI	Core CPI
Oil and natural gas	8.9	5.3	0.0
Fresh food and agricultural products	24.8	15.0	0.0
Processed food	0.0	21.1	27.7
Services	0.0	34.6	45.4
Transportation ^{a/}	0.0	4.5	5.9
Rent	0.0	16.3	21.4
Others e.g., manufactured goods	66.3	24.0	26.9

^{a/} such as bus fares

Going forward, the inflation divergence due to this factor is expected to mitigate partly as (1) housing demand has moderated of late as much of the adjustment already took place, and (2) the interest rate cycle is turning upward as major commercial banks began to raise lending rates in July 2005. However, the impact of the government's initiative to provide around 300,000 units of low-cost housing to less privileged families by 2007, which up to now 9,000 units have been completed and another 112,000 units are under construction, should be monitored as this scheme may also influence the housing market structure, in part by providing additional incentives to buy rather than rent houses and in part by lowering average house prices.

Chart 11. Changing structure of the housing market



(3) Another finding from the rolling regression on the short-run ECM equation of headline CPI, as shown in Chart 5, is the increase in the magnitude and significance of the coefficient of the lagged dependent term during the years following the 1997 crisis. This suggests that the response of headline consumer price inflation to shocks died down more slowly around the time. One explanation is that the shocks to which the economy had to adjust were so large and hence the adjustment process had to take longer than usual. Subsequently, the rate of adjustment reverted as conditions returned to normalcy. By and large, judging from the low degree of persistence in normal years, the impact of shocks seems to dissipate quickly for consumer price inflation.

(4) Despite a generally low degree of consumer price inflation persistence in Thailand, there appears to be some pent-up consumer price pressure similar to the case of producer prices. We interpret this from the fall in the absolute magnitude and significance of the ECM coefficient⁶ that coincides with the adoption of stronger price monitoring scheme by the government.

4.4 Core consumer price inflation

In this sub-section, we take a closer look at the relationship between headline CPI and core CPI. Using data from 1990 up to the present,⁷ the long-run relationship between the two variables are quite tight.

⁶ Here we make the assumption that there is no change in the long-run equilibrium relationship. Given that the findings from the ECM coefficients of the PPI and headline CPI equations are consistent with each other as well as compatible with the price administration story, which by itself should not cause fundamental changes to the economic structure or the true price process, we consider the assumption quite realistic.

⁷ Since we are not constrained by the availability of PPI data, the sample period is extended back to 1990.

$$\log \text{CORE} = 0.384 + 0.915 \log \text{CPI}$$

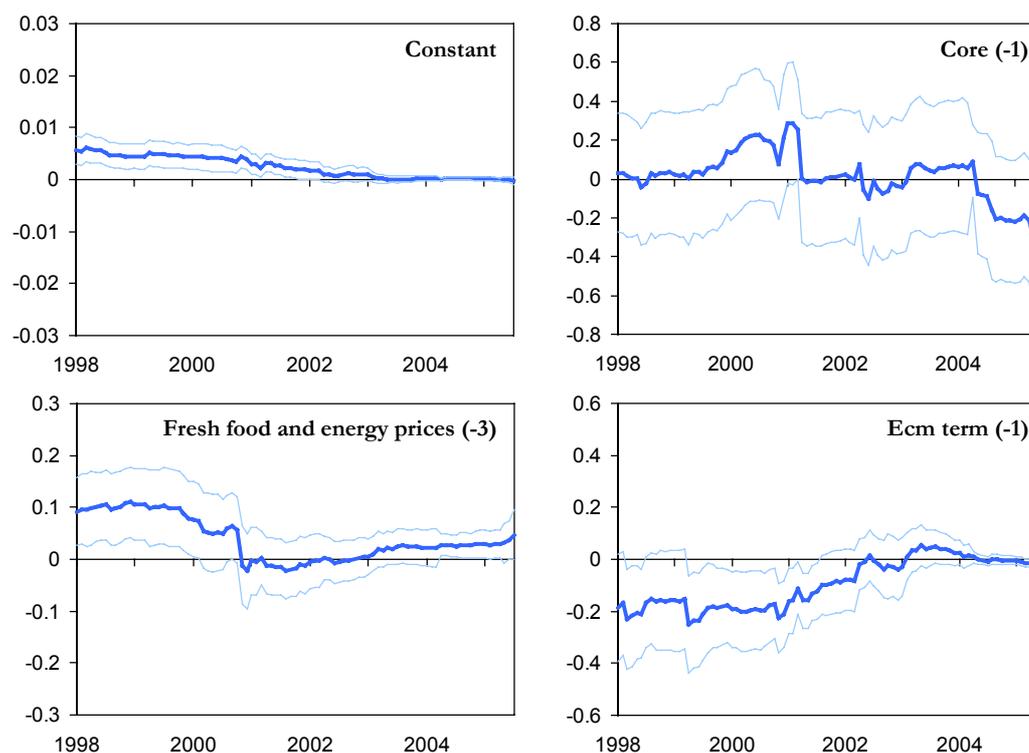
(0.031) (0.007)

The results from the short-run ECM equation are presented in Chart 12.

Chart 12. Coefficient estimates of the short-run core consumer price equation

$$\text{Core}_t = f(\text{Constant}, \text{Core}_{t-1}, \text{Fresh food and energy prices}_{t-3}, \text{Ecm term}_{t-1})$$

Window size: 36 months



Key findings:

(1) Fresh food and energy items are part of the CPI basket but are excluded from the core measure. Given that these items are final consumer goods themselves as well as inputs for other consumer goods—for example rice is an input for a serving of fried rice—a change in the degree of pass-through from fresh food and energy prices to other consumer prices, or the so-called second round effect, can help explain the divergence between headline and core consumer price inflation. From the rolling regression, we discover that the pass-through diminished following the crisis in 1997, which is not surprising given the weakness in demand at the time. However, when demand subsequently recovered, the pass-through rebounded only partially. The change in the degree of pass-through is most likely a result of the same factors that have made it more difficult for producers to pass on costs to consumers: lower inflation expectation, intense competition in the retail sector, and price administration by the government.

(2) As with producer and headline consumer price inflation, we interpret the decline in the absolute magnitude and significance of the ECM coefficient as a delay in the adjustment toward the long-run relationship and hence a sign of pent-up price pressure. The government's price administration scheme is again the most probable reason behind it.

(3) The fall in the coefficient of the constant term suggests that the drift component of core CPI began to moderate around the turn of the decade and eventually reached and stayed close to zero. The adoption of inflation targeting may be an explanation for this. At the same time, it may reflect the fact that services constitute a larger portion of the core CPI basket relative to the headline CPI basket, and may be driven by other factors such as the downward pressure on service prices, similar to the case of headline CPI.

5. Policy implications of the evolving inflation process

From the analysis above, we draw five key conclusions as follows:

(1) For the case of Thailand, the changes in the inflation process have been influenced by the combination of changes in the monetary environment, market openness and competition, and government intervention as summarized in Table 7.

Table 7. Explanations for the changes in the inflation process

Changes in the producer price process	Divergence between producer and headline consumer price inflation	Divergence between headline and core consumer price inflation
(1) Government intervention <ul style="list-style-type: none"> • Petrol price subsidy • Price administration 	(1) Diminished pass-through from production costs to retail prices brought about by <ul style="list-style-type: none"> • Change in inflation expectation • Increased competition in the retail market • Government intervention, especially price administration (2) Changes in the price process of services which do not belong to the PPI basket <ul style="list-style-type: none"> • Deregulation • Changes in the monetary environment and housing market structure 	(1) Diminished pass-through from fresh food and energy prices to other consumer prices brought about by <ul style="list-style-type: none"> • Change in inflation expectation • Increased competition in the retail market • Government intervention, especially price administration

(2) While certain changes such as that of market openness and competition may bring about permanent shifts in the inflation process, the experience of Thailand demonstrates that government intervention in the face of a large and persistent shock like the current wave of world oil price increases is likely to be effective in altering the inflation process only for a limited period of time. Therefore, policy makers must understand that price administration is likely to end up just delaying the pain of adjustment and, as price pressure builds up, will eventually be undermined and overcome by market forces. How soon the scheme will break down depends on many parameters including the existing level of profit margin and the economic agents' ability to adjust in other dimensions such as productivity improvement. Of course, by no means are we suggesting that there is no merit to government intervention in the face of a transitory shock. Nevertheless, policy makers must bear in mind that discerning a transitory shock from a permanent one is often a very difficult task beforehand.

(3) Given what we have said about the effectiveness of government intervention, there is a good chance that the divergence between producer and headline consumer price inflation as well as the divergence between headline and core consumer price inflation will diminish going forward. However, it remains to be seen whether or not the divergences will disappear altogether. For producer and headline consumer price inflation, the divergence may not close given that the inflation process for services, which are not included in the PPI basket but constitute as much as 35 percent of the headline CPI basket, may be fundamentally different from the inflation process of goods. For headline and core consumer price inflation, without a continued gain in productivity or other fundamental factors to sustain the long-run wedge between the prices of fresh food and energy and the rest of the CPI basket, the long-run relationship should remain tight. Nevertheless, there remains the issue of whether or not the possibility of an extended though temporary period of divergence, say of 2-3 years as we have seen, is acceptable in terms of monetary policy transparency and credibility, especially when the general public cares primarily about their cost of living. This issue with a direct implication on the suitability of core consumer price inflation as the policy target should be reviewed by the Monetary Policy Committee.

(4) The experience with falling house rent while other property prices go up demonstrates the limitation of the traditional measure of price pressure in dealing with asset prices. To prevent asset prices from destabilizing the economy, the Monetary Policy Committee should monitor other prices, such as asset prices, in addition to headline and core CPIs.

(5) Finally, the forecasting ability of an econometric model that has been constructed from historical data is limited by the possibility of an evolving inflation process, be it temporary or permanent. In this light, we agree with Chantanahom et al. (2004) that it would be useful for policy makers to devise supplementary indicators, including a measure of pent-up price pressure, and perhaps to undertake a study of price-setting behavior at the micro level to assist in the inflation forecasting task. An indication of pent-up price pressure may necessitate a pre-emptive action by monetary policy even though core consumer price inflation has not picked up strongly. How the supplementary indicators should be designed is beyond the scope of this paper and is left as the topic of another research work.

References

- Buddhari, A and V Chensavasdijai, “Inflation Dynamics and Its Implications for Monetary Policy”, Bank of Thailand Symposium 2003.
- Chantanahom, P, C Poonpatpibul, and P Vongsinsirikul, “Exploring Inflation in Thailand Through Sectoral Price Setting Behavior and Underlying Trend”, Bank of Thailand Symposium, 2004.
- Cecchetti, S and G Debelle, “Has the Inflation Process Changed?”, Paper prepared for the Third BIS Annual Conference, 18-19 June 2004.
- Griffiths, M and R Poshyananada, “Core Inflation in Thailand: Issues, Measurements, and Policy Implications”, Bank of Thailand Symposium 2000.