Exchange Rate Regimes and Persistence of Inflation in Thailand

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Abstract: This study explored the degree of inflation persistence in Thailand using both monthly headline and sectoral CPI indices during the 1985-2012 period. The results showed that the degree of inflation persistence for the headline inflation did not exist under the fixed exchange rate regime, even though some sectoral inflation series exhibited persistence. Under the floating regime, the headline inflation persistence was low, but various sectoral inflation rates showed low to moderate persistence. Therefore, inflation persistence for the entire sample period was caused by the switch from fixed to floating regime. Furthermore, there seemed to be no monetary accommodation of inflation persistence under the floating regime. Based upon the results from this study, inflation targeting implemented in May 2000 to combat inflation might not fully reduce inflation to the target of price stability.

Keywords: Inflation persistence, exchange rate regimes, monetary policy, inflation targeting

JEL classification: C22, E31

1. Introduction

In the context of empirical model, inflation persistence is defined as the speed that inflation converges to the mean after a shock to inflation process. It is the long-run effect of a shock which implies that how long a shock to inflation today will take inflation to return to its previous level (Willis, 2003, and Pivetta and Reis, 2007). Inflation persistence can affect the conduct of monetary policy. Monetary policy that aims at price stability depends on the persistence of inflation, i. e., inflation can be stabilized by central banks in a shorter period following a shock if persistence of inflation is low and vice versa. According to Marques (2005), the degree of inflation persistence is an important factor determining the medium-term orientation of monetary policy.

Monetary policy can accommodate inflation under floating exchange rate regime, but will not accommodate it under fixed exchange rate regime.[1] The main reason behind this notion is that tight monetary policy is exercised in response to a shock to inflation under fixed than under floating regime.

Some empirical studies find that inflation persistence may or may not change across exchange rate regimes. Alogoscoufis (1992) presented the evidence that monetary accommodation and inflation persistence were negligible under fixed exchange rate regimes in contrast to managed exchange rate regimes. On the contrary, Burdekin and Siklos (1999) made an argument that inflation persistence could not be caused by changes in exchange rate regimes. They indicated that other factors, such as wars, oil price shocks, and central bank reforms accounted for changes in inflation persistence. Bleaney (2001) used annual observations over the period 1954-1972 for OECD countries to estimate inflation persistence and found no evidence of greater persistence across exchange rate regimes. Using annual data for 102 developing countries, excluding transition economies, Bleaney and Francisco (2005) found that inflation persistence appeared quite high for both floats and pegs. However, dramatic differences appeared when pegs were divided into hard and soft pegs. Furthermore, inflation persistence was positively correlated with inflation for soft pegs and floats.[2] Cogley and Sbordone (2008) found that variation in the long-run trend component of inflation due to shifts in monetary policy well explained inflation dynamics. Beechey and Osterholm (2012) estimated the path of inflation persistence in the United States over the last fifty years using an ARMA model of inflation with time-varying autoregressive parameter, motivated by the familiar New Keynesian Phillips curve framework. Their results suggested that the Federal Reserve had played an important role in the declining inflation persistence in the United States because it placed increasing weight on inflation stability in recent decades.

There are some empirical studies that analyze both aggregate and sectoral inflation series. Altissimo, et al. (2006) found that aggregate inflation persistence is very high in the Euro area, but very low when using sectoral inflation series. This was due to the influence of transitory sector-specific shocks to inflation. Mladenovic and Nojkovic (2012) employed

[1] This evidence was provided by Alogoskoufis and Smith (1991) who used the data from the United Stated and the United Kingdom.

[2] Fuhrer (2006) demonstrated that intrinsic persistence rather than driving forces should be the dominant source of persistence of inflation.

monthly data of Central and Southeastern European countries in the analysis and found that inflation persistence was high in four countries and low in only two countries. In addition, the New Keynesian Phillips curve approach well explained inflation dynamics of these economies. Apergis (2013) analyzed the degree of inflation persistence in Greece during the 1981-2009 period and found that there was a very moderate degree of inflation persistence for both aggregate and sectoral indices.

Knowing the degree of inflation persistence without knowing its causes might be helpful to the central bank of each economy. Lower degree of inflation persistence indicates that the central bank is able to achieve the target of price stability. An adoption of inflation targeting can help to combat high inflation rate. Nevertheless, Siklos (2008) showed that the introduction of inflation targeting resulted in lower inflation persistence only in some emerging market economies. In the Euro area, inflation persistence significantly decreased by the effective monetary policy of the Euro central banks (Meller and Nautz, 2012). Inflation targeting was adopted by many central banks. However, a strong commitment of inflation targeting might not decrease the degree of inflation persistence, but a credible inflation targeting might lower inflation persistence. Gerlach and Tillman (2012) found that countries in the Asia-Pacific region experienced lower degree of inflation persistence after adopting inflation targeting. The degree of inflation persistence can depend on the exchange rate regimes because domestic inflation shocks can be accommodated by monetary growth only for the floating exchange rate regime. However, there is evidence that suggested that there can be no difference between the degree of inflation persistence between the fixed and flexible exchange rate regimes since there may be various structural breaks during the whole sample period. This issue is still controversial. Noriega et al. (2013) used the data for a sample of 45 countries to detect multiple changes in inflation persistence that might be caused by multiple structural breaks, but found that only half of the countries in their sample exhibit multiple changes in inflation persistence. Recently, Davas and Varga (2014) attempted to detect structural changes and monetary policy regime shifts in the U. S. and Euro area. They found evidence of multiple changes. Inflation persistence tended to be higher in the period of high inflation. At the time of the oil price shocks in the 1970s, inflation persistence in both the U. S. and Euro area was close to unity, but substantially declined thereafter, i. e., the U. S. inflation persistence was close to zero while the Euro inflation persistence declined to 0.4. The countries in the Euro area that joined the currency union could also benefit from sound monetary policy.

Using monthly headline CPI and sectoral CPI data from January 1985 to December 2012 to compute the inflation rates, the present paper found that the degree of inflation persistence was observed in floating exchange rate regime. Monetary accommodation was observed under the fixed regime while the persistence of money growth was observed under the floating exchange rate regime. In addition, the adoption of inflation targeting did not seem to be able to fully reduce inflation and its persistence. The organization of this paper is as follows. Section 2 presents the data and methods of testing inflation persistence and monetary accommodation of inflation. Section 3 presents empirical results, and the final section concludes.

2. Data and Methodology

2.1 Data

Monthly data of aggregated and disaggregated consumer price indices with 2011 base year are collected from Bureau of Trade and Economic Indices, Ministry of Commerce.[3] The period of investigation is from January 1985 to December 2012 with 336 observations. Estimation using monthly data offers higher frequency, and thus more observations. Inflation rates are computed as percentage changes in consumer price indices. The series of broad definition of money is obtained from the Bank of Thailand (BOT) website. The indices of March, June, September, and December are used for the quarterly data in the analysis.

2.2 Methods

2.2.1 Inflation persistence from the univariate autoregression

The measure of inflation persistence is derived from the following equation:

$$\pi_t = a_0 + \sum_{i=1}^{p} a_i \pi_{t-i} + \varepsilon_t \qquad (1)$$

where π is the inflation rate. The optimal lag length (p) is determined by Akaike Information Criterion (AIC). Equation (1) can be re-parameterized to obtain the following equation:[4]

[3] Most studies employed annual and quarterly data so that the rate of inflation would not be too low. However, Beechey and Osterholm (2012) showed that the results of inflation persistence appeared to be robust for both quarterly and monthly U. S. data.

[4] See Pivetta and Reis (2007).

$$\pi_t = \mu + \rho\pi_{t-1} + \sum_{j=1}^{k} \beta_j \Delta\pi_{t-j} + u_t \qquad (2)$$

The coefficient ρ of equation (2) is corresponding to the sum of the coefficients of lagged inflation rates. The cumulative effect of a shocks to the inflation process is given by [1/(1-ρ)]. This indicates that the higher the value of ρ, the higher the cumulative impact of shocks on inflation, which implies that the economy is able to absorb shocks more rapidly. In this case, the paremeter $\rho = \sum_{i=1}^{p} a_i$ can be estimated from equation (2). The optimal lag of first differences can be obtained by AIC.

Since the parameter ρ possesses potential limitations, the half-life indicator can be used to complement the results. This indicator measures the number of periods that a temporary shock displays more than half of its initial impact to the inflation process. To test for the half-life indicator, the estimate of equation (1) is required so as to obtain impulse response function. In the first step, the number of periods should be high. In the second step, the number of periods will be decreased until the impulse response above 0.5 is found. Therefore, the impulse response function is useful in determining how fast the persistence will dissipate.

2.2.2 Monetary accommodation of inflation persistence

There may be monetary accommodation of inflation persistence for the entire period of investigation.[5] The equation that can be used is specified as:

$$m_t = b_0 + b_1\pi_t + v_t \qquad (3)$$

where *m* is the growth rate of money supply. The dummy variable that takes the value of zero under fixed rates and of one under floating rates can be added to equation (3). Without dummy variables, the whole sample period can be divided into 2 sub-periods: the period under the fixed exchange rate regime and the period under the floating exchange rate regime. Equation (3) is defined as a reaction function of money growth to inflation rate that can include lagged variables. The money supply is treated as the policy variable. When the coefficient b_1 is significantly negative, it implies that the central bank will decrease money

[5] Under the fixed exchange rate regime, the domestic prices of a country should be kept in line with foreign prices. Therefore, domestic inflation shocks cannot be accommodated by monetary growth, but this can be done under the floating regime.

supply in response to an inflation shock, and vice versa. If this coefficient is insignificance, there is no monetary accommodation at all. If the whole sample period is divided into the periods of fixed and flexible exchange rate regime, the size of this coefficient should be larger under the floating than the fixed exchange rate regime.

3. Empirical results

The results of unit root test using Phillips and Perron (PP) test with constant and no linear trend are reported in Table 1. The reason for using PP test with constant only is that all inflation series did not exhibit any trend.

Table 1 Results of unit root test

Series	PP test (constant only)
Panel A: Headline CPI)	-14.113 (3)
Panel B: Sectoral inflation rate	
1. Food and non-alcoholic begerages	-18.074 (4)
2. Rice, flour and cereal products	-12.896 (6)
3. Meats, poultry and fish	-9.642 (18)
4. Eggs and dairy products	-11.386 (17)
5. Vegetables and fruits	-21.724 (58)
6. Seasonings and condiments	-9.027 (7)
7. Non-alcoholic beverages	-16.985 (5)
8. Apparel and footware	-17.589 (11)
9. Housing and furnishing	-17.587 (7)
10.Medical and personal care	-17.769 (12)
11.Transportation and communication	-10.969 (16)
12.Recreation and education	-15.428(4)
13.Tobacco and alcoholic beverages	-14.533 (2)
14.Non-food and beverages	-13.525 (4)
15.Raw food and energy	-13.443 (16)
16.Raw food	-14.546 (29)
17.Energy	-12.231 (10)
18.Exclude raw food and energy	-15.619 (12)
Panel C: Money supply (M2)	-17.180 (9)

Note: The number in parenthesis is the optimal Newey-West bandwidth determined by Bartlett Kernel. The null hypothesis of unit root is rejected for all inflation series.

The PP test statistic showed that the null hypothesis of unit root in the series was rejected at the 1 percent level of significance because the test statistics of all series are greater than their respective critical values at the 1 percent level of significant. Therefore, it can be concluded that all inflation series were stationary. The estimates of equations (1) and (2) require that the series be stationary. Thus this requirement was satisfied. Moreover, the stationarity of the series of money growth enabled the estimate of equation (3).

3.1 Inflation persistence for the entire period

The results of inflation persistence from equation (2) are reported in Table 2. The analysis was based on monthly observations of headline consumer price index along with its sectoral components.

Table 2 Results of inflation persistence estimate from January 1985 to December 2012

Series	ρ
Panel A: Headline inflation	0.246***[1]
Panel B: Sectoral inflation	
1. Food and non-alcoholic begerages	-0.022 [1]
2. Rice, flour and cereal products	0.367***[1]
3. Meats, poultry and fish	0.140 [5]
4. Eggs and dairy products	0.280***[3]
5. Vegetables and fruits	-0.751 [3]
6. Seasonings and condiments	0.629***[2]
7. Non-alcoholic beverages	0.195**[1]
8. Apparel and footware	0.601***[3]
9. Housing and furnishing	0.054 [1]
10.Medical and personal care	0.653***[5]
11.Transportation and communication	0.376***[1]
12.Recreation and education	0.155**[1]
13.Tobacco and alcoholic beverages	0.195***[2]
14.Non-food and beverages	0.337***[1]
15.Raw food and energy	0.185***[1]
16.Raw food	-0.157 [3]
17.Energy	0.087 [5]
18.Exclude raw food and energy	0.656***[4]

Note: The coefficient ρ is the degree of inflation persistence estimated from equation (2) while the number in bracket is the lag of the augmented variable. The optimal lag length is determined by AIC from the estimated equation. ***, ** and * denote significance at the 1, 5 and 10 percent respectively.

Table 2 gives the estimates of persistence of nineteen series. Panel A of Table 2 show that the degree of inflation persistence of the head line inflation is 0.246, which was quite low. There were eleven sectoral inflation series that significantly exhibited inflation persistence. For CPI inflation series that excluded raw food and energy, the degree of inflation persistence was 0.656, which was substantially higher than that of the headline inflation. For other sectoral inflation series, the series of medical and personal care, apparel and footware exhibited moderate persistence of inflation with the values of 0.653 and 0.601, respectively. Some series that exhibited lower persistence of inflation than the headline inflation were: (i) rice, flour and cereal product, (ii) eggs and dairy products, (iii) non-alcoholic beverages, (iv)

apparel and footware, (v) transportation and communication, (vi) non-food and beverages, (vii) tobacco and non-alcoholic beverages, and (viii) non-alcoholic beverages, and (ix) raw food and energy. There were 5 sectoral series that did not exhibit inflation persistence. Interestingly, food and energy items were under regular price control by the government. The price control was done when the prices of these items tended to rise, which could affect the purchasing power of the low-income citizens.

Equation (1) was also estimated for the headline inflation series, which exhibited persistence of inflation. The optimal lag length was determined by AIC. The estimates gave impulse response function that provides useful complementary information to the results from the estimates of the ρ parameter. The impulse response of inflation to shocks is shown in Figure 1.

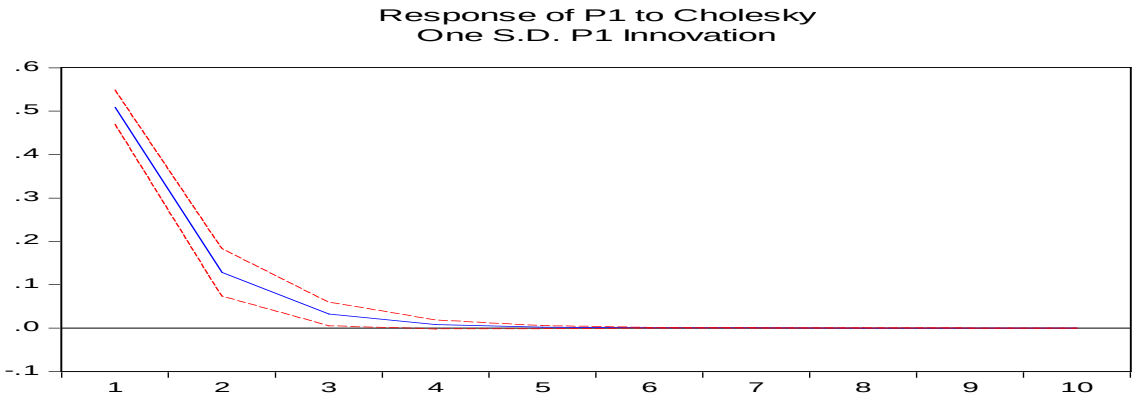


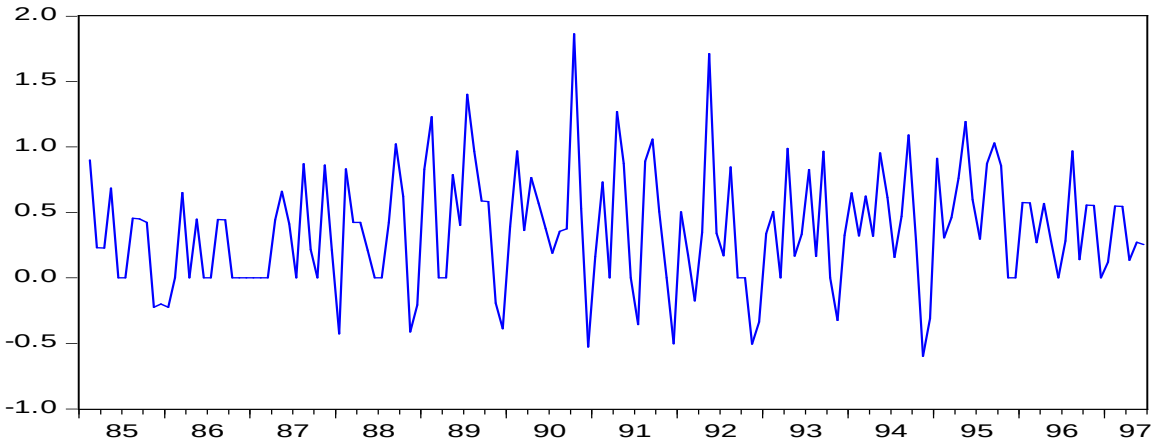
Figure 1. Response of inflation to shocks for the whole sample period

Figure 1 showed that the maximum period that impulse response was above 0.5 was less than 2 months. The shocks to inflation dissipated within 5 months. This evidence confirmed that the degree of inflation persistence was not high during the entire sample period. The low value of parameter ρ indicated the low cumulative impact of shocks on inflation.[6] Therefore, the absorption of shocks was not rapid.

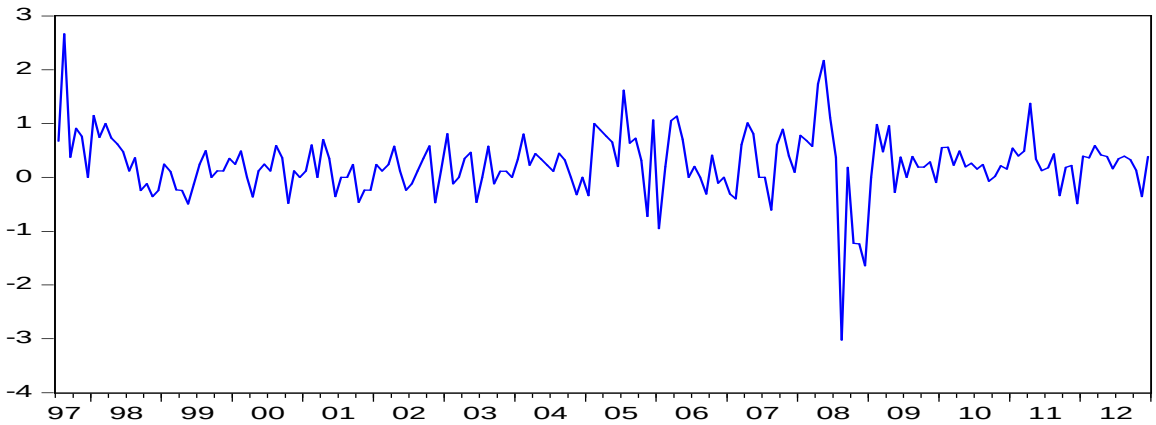
[6] The cumulative impact was 1.326.

3.2 Inflation persistence for the sub-sample periods

The results in Table 2 did not tell how the adoption of the floating exchange rate regime altered the persistence of inflation. In order to distinguish the difference between inflation persistence in the fixed and floating regimes, the dataset was divided for two regimes. The fixed exchange rate regime started from January 1985 to June 1997 while the floating regime started from July 1997 to December 2012. The plots of headline inflation series of the two regimes were illustrated in Figure 2.



a. Inflation (January 1985 to June 1997)



b. Inflation (July 1997 to December 2012)

Figure 2. Inflation under fixed and floating exchange rate regime

It seemed that inflation series was more fluctuating under the fixed than the floating regime. However, the fluctuations might be able to tell only inflation uncertainty, but could not indicate the degree of inflation persistence. The estimated coefficients of inflation persistence were reported in Table 3.

Table 3 Results of inflation persistence estimate for the two sub-periods

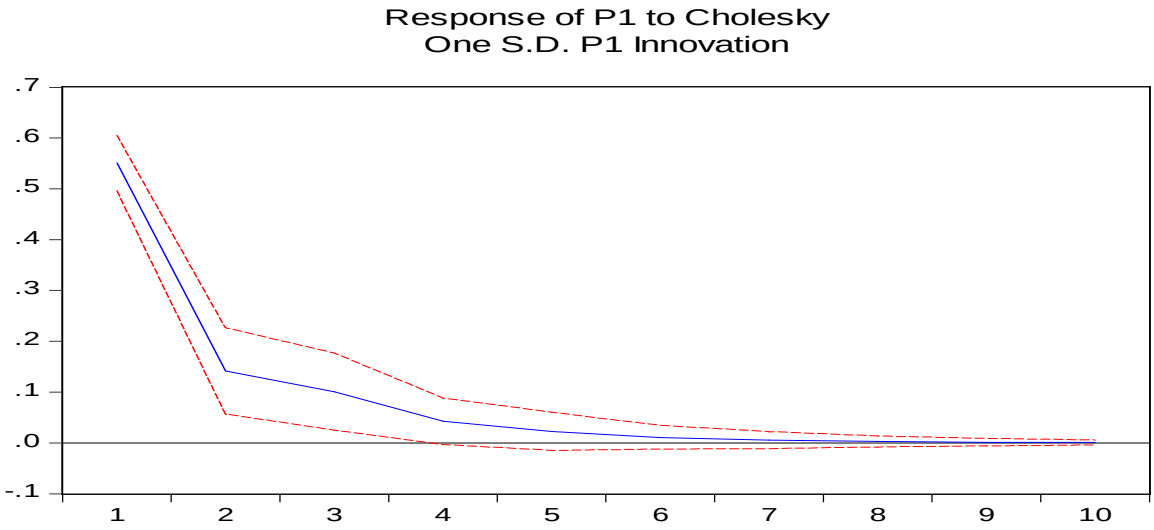
Series	Fixed regime	Floating regime
Panel A: Headline inflation	-0.104 [1]	0.374***[1]
Panel B: Sectoral inflation		
1. Food and non-alcoholic begerages	-0.046 [1]	0.187 [1]
2. Rice, flour and cereal products	0.228*[2]	0.585***[2]
3. Meats, poultry and fish	0.305**[4]	0.313***[1]
4. Eggs and dairy products	0.306***[3]	389***[2]
5. Vegetables and fruits	0.031 [1]	-0.091 [1]
6. Seasonings and condiments	0.587***[2]	0.643***[2]
7. Non-alcoholic beverages	0.201 [1]	0.494***[1]
8. Apparel and footware	0.278***	0.496***[3]
9. Housing and furnishing	0.104 [1]	-0.006 [1]
10.Medical and personal care	0.509***[5]	0.710***[5]
11.Transportation and communication	0.184*[1]	0.420***[1]
12.Recreation and education	0.109 [1]	0.040 [1]
13.Tobacco and alcoholic beverages	0.166**[1]	0.294***[1]
14.Non-food and beverages	-0.005 [1]	0.362***[1]
15.Raw food and energy	-0.021 [1]	0.279***[1]
16.Raw food	-0.253 [1]	-0.101 [3]
17.Energy	0.130 [5]	0.046 [5]
18.Exclude raw food and energy	0.063 [4]	0.680***[4]

Note: The coefficient ρ is the degree of inflation persistence estimated from equation (2) while the number in bracket is the lag of the augmented variable. The optimal lag length is determined by AIC from the estimated equation. ***, ** and * denote significance at the 1, 5 and 10 percent respectively.

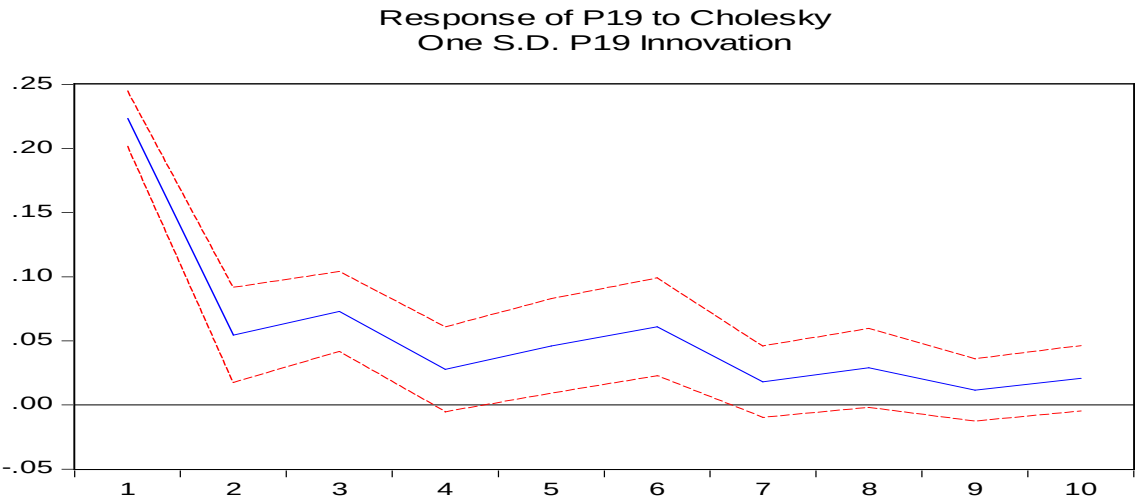
The series were divided into two sub-samples. The results from the estimations gave different results of inflation persistence. The headline inflation coefficients of inflation persistence were -0.104 and 0.374 for the fixed and floating regimes, respectively. The insignificant coefficient inflation persistence before the financial crisis indicated that it was not difficult to control inflation during the fixed regime. The significant coefficient of inflation persistence during the floating regime could stem from the adoption of the floating regime by the central bank, which caused the domestic currency (Thai baht) to substantially depreciate. Under the floating regime, even if the Bank of Thailand had adopted the inflation targeting in May 2000, the inflation persistence increased form zero to 0.374. With low inflation persistence, it should not be too difficult for the Bank of Thailand to combat inflation.

Panel B of Table 3 showed sectoral inflation persistence. Under the fixed exchange rate regime, there were 8 sectorial inflation rates that exhibited low to moderate persistence, but the contribution to persistence of these sectors was not enough to cause the headline inflation to exhibit persistence. Under the floating regime, there were 14 sectorial inflation rates that exhibited low to moderate inflation persistence and the contribution to persistence is enough to cause the headline inflation to exhibit the degree of persistence of 0.374. Therefore, it can be concluded that the adoption of the floating regime can alter the pattern of inflation persistence in the case of Thailand. Interestingly, the inflation series that excluded raw food and energy items exhibited the degree of persistence of 0.680, which was much higher than that of the headline inflation. With the adoption of inflation targeting, inflation persistence is more apparent compared with the fixed regime. This finding was contrary to the finding of Gerlach and Tillman (2012). As a matter of fact, the Thai government regularly imposed price controls on necessary items, such as foods and some energy items, especially fuel. This is the reason while inflation rates of these tow items did not exhibit inflation persistence.

The estimations of equation (1) gave impulse response functions. Response of inflation to shocks under both regimes is illustrated in Figure 3. Under the floating regime, a positive shock dissipated within 6 months for headline inflation (Figure 3a).



a. Response of headline inflation to shocks: July1997 to December 2012



b. Response of inflation (excluding raw food and energy) to shocks: July1997 to December 2012

Figure 3. Impulse response of inflation to shocks between the two regimes

In Figure 3b, response of inflation, excluding raw food and energy, to inflation shocks substantially decreased within 2 months, but did not dissipate after the 10-month period.

3.3 Monetary accommodation of inflation persistence

Monetary accommodation of persistence of inflation can be examined by estimating equation (3). The main objective is to evaluate the claim that monetary policy will be more accommodating under the floating exchange rate regime. Applying the ordinary least square method to equation (3) might not yield convincing results. Therefore, lagged dependent and independent variables could be included in the reaction equation.[7] The results from the estimations for both fixed and flexible exchange rate regimes are reported in Table 4. The Chi-square statistics accepted the null hypothesis of no serial correlation in the residuals of the estimated equations. The F-statistics showed that both equations were valid. The evidence in the present study did not support the notion that monetary accommodation of inflation should be stronger under the floating than the fixed exchange rate regime. This could be seen by the insignificance of the coefficient of current inflation under the floating regime.

[7] Even though Bleaney (2001) found that using lagged rather than current inflation in equation (3) yielded a better fit, current inflation was included in the estimation.

Table 4 Results of the estimations of monetary accommodation of inflation persistence

Dependent variable: m_t		
Independent variable	Fixed regime	Floating regime
Constant	0.616	0.389
	(2.289)**	(3.041)***
m_{t-1}	0.001	-0.006
	(0.002)	(-0.060)
m_{t-2}	0.107	0.086
	(1.331)	(1.286)
m_{t-3}	0.129	0.340
	(1.612)	(4.176)***
m_{t-4}	0.089	0.005
	(1.096)	(0.071)
π_t	-0.508	-0.176
	(-2.821)**	(-1.059)
π_{t-1}	0.095	-0.202
	(0.504)	(-1.182)
π_{t-2}	0.250	0.023
	(1.276)	(0.136)
π_{t-3}	0.372	-0.033
	(2.006)**	(0.112)
π_{t-4}	0.612	0.345
	(3.309)***	(2.112)**
R^2	0.200	0.151
F-statistic	3.766(p=0.000)	3.476(p=0.001)
$\chi^2_{(2)}$	0.716(p=0.699)	1.837(p=0.399)
Number of observations	150	186

Note: The number in parenthesis is t-statistic. ***, ** and * denote significance at the 1, 5 and 10 percent, respectively. D is the dummy variable, m is the growth rate of money supply M2, and π is the inflation rate. $\chi^2_{(2)}$ is the statistic for serial correlation LM test of the null hypothesis of no serial correlation.

It seemed to be obvious that monetary accommodation was lower under the floating exchange rate regime. The presence of monetary accommodation of inflation persistence under the fixed regime seemed to deter inflation persistence According to the results reported in Table 4, there was no evidence of persistence of money growth under the fixed because the coefficients of lagged money growth variable were insignificant. However, the significance of one coefficient of the lagged money growth variable under the floating regime indicated the monetary growth is persistent. This finding suggested that monetary accommodation of inflation persistence was observed under the fixed regime rather than the floating regime.

4. Conclusion

This study examines the inflation persistence of Thailand in 28-year period using monthly data of both headline inflation and its sectoral components. Theoretically, the degree of inflation persistence should be higher under the fixed than the (managed) floating exchange rate regime. However, the evidence from Thailand showed that the degree of persistence of headline inflation was low during the entire period. In addition, the series excluding raw food and energy sectors exhibited a much higher degree of inflation persistence. There were the other 5 sectoral series exhibiting higher degree of inflation persistence than that of the headline inflation series. However, the results did not taking into account of the adoption of floating exchange rate regime.

When the whole sample period was divided into two sub-periods for the fixed and floating exchange rate regimes, the results showed that the degree of inflation persistence substantially increased from the fixed to flexible exchange rate regime. For sectoral persistence, more sectoral inflation series showed low to moderate degree of inflation persistence after adopting the floating exchange rate regime. The floating regime thus altered the pattern of inflation persistence. In addition, the impact of inflation targeting implemented in May 2000 might not help to fully reduce the degree of inflation persistence. Instead, the Thai government regular price controls on necessary items, such as foods and energy, might be more helpful to alleviate inflation and thus its persistence. In addition, the claim that monetary policy was more accommodative under the floating exchange rate regime was not supported. Based upon the results from this study, the increased persistence of inflation after adopting the floating regime should cause more difficulties for monetary authorities to successfully control inflation in line with the target by imposing various measures to counter inflationary pressure caused by recent oil crises.

References

Alogoskoufis, G. S., 1992. “Monetary accommodation, exchange rate regimes, and inflation persistence,” Economic Journal, 102(412), 461-480.

Alogoskoufis, G. S., and Smith, R. P., 1991. “The Phillips curve, the persistence of inflation, and the Lucas critique: evidence from exchange rate regimes,” American Economic Review, 81(6), 1254-1275.

Altissimo, F., Bilke, L., Levin, A., Matha, T., and Mojon, B., 2006. “Sectoral and aggregate inflation dynamics in the Euro area,” Journal of the European Economic Association, 4(2-3), 585-593.

Apergis, N., 2013. “The stylized facts of Greek inflation: new evidence on persistence,” Panoeconomicus, 60(1), 51-71.

Beechey, M., and Osterholm, P., 2012. “The rise and fall of U. S. inflation persistence,” International Journal of Central Banking, 8(3), 55-86.

Bleaney, M. F., 2001. “Exchange rate regimes and inflation persistence,” IMF Staff Papers, 47(3), 387-402.

Bleaney, M. F., and Francisco, M. 2005. “Inflation persistence and exchange rate regimes: evidence from developing countries,” NIPE Working Paper, No. 1/2005.

Burdekin, R. C. K., and Siklos, P. L., 1999. “Exchange rate regimes and shifts in inflation persistence: does nothing else matter?,” Journal of Money, Credit and Banking, 31(2), 234-247.

Cogley, T., and Sbordone, A., 2008. “Trend inflation, indexation, and inflation persistence in the New Keynesian Phillips curve.” American Economic Review, 98(6), 2101-2126.

Davas, Z. and Varga, B., 2014. “Inflation persistence in Central and Eastern European countries,” Applied Economics, 45(13), 1437-1448.

Fuhrer, J. C., 2006. “Intrinsic and inherited inflation perisistence,” Journal of Money, Credit and Banking, 27(6), 975-984.

Gerlach, S. and Tillman, P., 2012. “Inflation targeting and inflation persistence in Asia-Pacific,” Journal of Asian Economics, 23(4), 360-373.

Marques, C. R., 2005. “Inflation persistence: facts or artifacts?,” Banco de Portugal/Economic Bulletin, Summer, 69-79.

Meller, B. and Nautz, D., 2012. “Inflation persistence in the Euro area before and after the European Monetary Union,” Economic Modelling, 29(4), 1170-1176.

Mladenovic, Z., and Nojkovic, A., 2012. “Inflation persistence in central and southeastern Europe: evidence from univariate and structural time series approaches,” Panoeconomicus, 59(2), 235-266.

Noriega, A. E., Capistran, C. and Ramos-Francia, M., 2013. “On the dynamics of inflation persistence around the world,” Empirical Economics, 44(3), 1243-1265.

Pivetta, F., and Reis, R., 2007. “The persistence of inflation in the United States,” Journal of Economic Dynamics and control, 31(4), 1326-1358.

Siklos, P. L., 2008. “Inflation targeting around the world,” Emerging Markets Finance and Trade, 44(6), 17-37.

Willis, J. L., 2003. “Implications of structural changes in the U. S. economy for pricing behavior and inflation dynamics,” Economic Review, First Quarter, Federal Reserve Bank of Kansas City.