Macroeconomic Policy Regimes in the Philippines

By

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The Philippines has undergone several economic regimes since it regained independence in 1946. These have been the causes and, sometimes, the consequences of varied (and, sometimes, volatile) economic policy episodes throughout that period. The sum of these growth episodes and their macroeconomic manifestations describe the development of the Philippine economy since the Second World War. The characterization of those regimes and their attendant economic developments provide a rich backdrop for learning the lessons of applied macroeconomic policies for the country. In this paper, we review the economic regimes and episodes starting from the late 1940's to the first decade of the new millennium. We end with some statistical tests that indicate the macroeconomic impact of the policies undertaken and important lessons for macroeconomic management.

1950's: maintenance of exchange rate

Before the Second World War the Philippines was still a colony of the United States and its monetary system was a currency board administered by the largest bank in the country, the Philippine National Bank that exchanged foreign currency at the rate of Php 2:1 USD. After regaining independence, the country maintained the pre-war rate to follow the stipulation of an agreement (Bell Trade Act, 1946) between the United States and the Philippines just before the return of independence. However, even after the Philippine Central Bank was set up in 1949 and even after the agreement lapsed in 1956; the central bank continued fixing the exchange rate at that level[1]. Currency controls were instituted and foreign exchange trading was done through the central bank which allocated the available supply according to a 5-classification system that inadvertently favored the production of luxury consumption goods, among others.

Monetary and other macroeconomic policies were adjusted to try to maintain the exchange rate. Monetary policy was kept tight and stringent fiscal controls were in

[1] Years later, around 1970 in a lecture that the author attended, when he was asked why, the Central Bank governor of that time, Miguel Cuaderno, replied that he wanted to keep the cost of importing machinery for investments low.

place to keep inflation under control. External shocks to the economy such as sudden disruptions in supply from typhoons, for example, were translated into inflationary episodes. The ultimate effect was a slowing in growth (after the exuberant period of initial import substitution), the formation of a currency black-market, corruption in the central bank, and volatile prices.

1960's: decontrol of the Philippine peso, exchange rate targeting still

Towards the end of the 1950's, the central bank was forced to allow multiple exchange rates in response to the increasing pressures from various sectors including the exporters. In 1961, the monetary board lifted direct controls on foreign currency trading. The banking system was slowly allowed direct transactions in currency trading. But, all foreign exchange earnings still had to be surrendered, this time to the banks, deposits abroad were still prohibited, and foreign exchange for imports were bought from the banks. Multiple exchange rates were maintained up to the middle of the decade through the retention of margin requirements and differential fees. In 1965, the exchange rates were unified at P3.95:USD1, almost twice the target exchange rate of a decade earlier. However, currency trading was still under tight control and the central bank continued to keep monetary policy tight to help maintain the exchange rate. In other words, the object of monetary policy was still subservient to an exchange rate target.

The assumption of a new president in 1966 signaled fiscal activism as the government started to float bonds in significant volumes and use the fiscal deficit to build up infrastructure. This, and significant government current expenditures for the presidential elections in 1969, led to a very high inflation rate. By 1970, the Philippine peso could no longer be maintained and was "floated" to P6.91:USD1. This devaluation in turn led to another round of inflation that plagued the policy makers for some time. During the 1960's, the favored monetary instruments remained the same, RR changes and rediscounting, although financial instruments started to develop with the formation of the bond market.

1970's: fiscal aggressiveness, accommodating monetary policy, & access to internal financial credit, net domestic assets targeted

The fiscal deficit and resulting devaluation with its attendant inflationary episode and did not discourage the government from expansionary government expenditure. Political change came with the imposition of martial law in September 1972. High world prices of its main exports, coconuts and copper early in the decade and increasing access to international credit both official and commercial allowed the country to

continue its expansionary fiscal activities. Monetary and exchange rate policy were secondary to fiscal expansionism. The Yom Kippur oil shock of 1973 increased imports costs of oil and the resulting depreciation of the peso introduced an exchange rate shock that adversely affected the macroeconomy.

Central Bank reforms in 1976 tightened its activities and financial sector developments allowed it to gradually increase its use of new instruments. Inflationary pressures were strong throughout the decade. Monetary policy was accommodative and the exchange rate was allowed to gradually shift in response to inflationary pressure. Net domestic assets were the operational target of the central bank towards the end of the decade. However, the macroeconomic situation was relatively weak and the oil crisis of 1979 triggered strong inflation and worsened a nascent debt problem for the country.

1980's: currency stabilization and financial reforms, monetary programming practiced

The 1980's started with a weakened macroeconomy for the country and a festering debt problem that was later worsened by the outbreak of the Latin American debt problem increasing international financial risk aversion. The assassination of a popular opposition leader led to capital flight and the declaration of a moratorium international debt payments in October 1983. The resulting disruption led a very deep recession in 1984-85 where the per capita income declined by 18%. Income per person in 1981 would not be reached until 1991. During this currency crisis the central bank went into various policies and instruments like forward transactions that later caused it tremendous losses. Instead of being explicitly recognized, these losses were lodged in three adjustment accounts that were then "capitalized." However, while these capitalized losses earned nothing, their counterpart liabilities were paying interest. The distorted balance sheets prevented the Central Bank from using policy instruments. So, monetary supply was controlled by the national government selling bonds and depositing the proceeds with the Central Bank to sterilize liquidity in a phenomenon that became to be known as "inside-out money."

The arrival of a new government allowed recovery and reform efforts were revived. Both fiscal and monetary policy were restrictive as the government strove to close a large fiscal deficit which was feeding the economy with liquidity and the technical bankruptcy of the central bank severely restricted its options. Monetary control was essentially achieved by the government floating bonds and depositing the proceeds with the central bank. The central bank practiced monetary programming during this period as part of the IMF program started with the stabilization program of 1986. During this period, the Philippine Dealing System was set up to make trading of securities and

currency more efficient. The decade ended with the economy slowing down as a result of a serious coup d'état and fiscal tightness to control inflation.

1990's: easing currency worries, peso liberalization, Asian financial crisis

The nineties started slow as fiscal consolidation was being completed. However, soon economic stabilization allowed the government to reorganize the central bank (New Central Bank Act of 1993) and continue its financial reforms. The currency management was liberalized in November 1991 and the steady inflow of foreign currency started to strengthen the peso. Inflation slowly declined and increasing currency inflows allowed a steadily more expansionary investment push.

The liberalization of the peso freed the government from the foreign exchange constraint. The government committed to reducing the inflation rate to single digit levels and towards the middle of the decade the monetary board was able to negotiate for a more flexible application of the monetary program. Thus, during the latter half of the decade a mild semblance of inflation targeting was implicitly initiated. This monetary regime was continued even in the face of the Asian financial crisis in 1997 as the economy escaped the worst parts of the contagion. Rather than apply very stringent monetary constraints, the monetary board allowed the currency to depreciate. As a result, while inflation increased for a while output recovered rapidly and the economy stabilized speedily. However, regulatory forbearance allowed the banks to carry bad assets longer and the banking system took longer to regain strength and the credit channel was narrow.

2000's: accommodating BOP surplus + global crisis, shift to inflation targeting

The decade started slowly as the banks' overhang of non-performing assets and risk aversion persisted. However, the increasing availability of foreign exchange and the strengthening of the peso couple with relative fiscal space allowed gradual easing of inflationary pressures. Economic growth steadily increased, interrupted only by the global crisis. Nevertheless the economy avoided an outright recession although the loss of its export markets has adversely affected its manufacturing sector.

The fiscal picture strengthened after an initial scare. An attempt at economic stimulus in response to the global crisis brought back fiscal concerns. Early in the decade the central bank explicitly declared inflation targeting as its monetary regime. The benign inflation picture partly attributable to the strong peso has aided its realization. The absence of major fiscal worries has also been helpful.

Three crises & monetary responses

During the last several decades since the Second World War the country underwent some crises that also indicate what monetary policies are possible and would likely be used. These crises also need to be taken into account for at least two reasons: first, these events could have distorted policy regimes from their normal mode as they responded to the crises; and, second, these crises are culminations of overall macroeconomic policies that may be common factors affecting the monetary regimes and other macroeconomic instruments. Any judgment on the effectiveness of monetary regimes, therefore, has to consider both the negative and positive effects of these events. Empirically, the dates of these crises may also help clarify results of statistical results.

1983 moratorium, economic crisis and economic reforms

The worst economic crisis for the country happened with the moratorium on international debt payments in 1983. International debt substantially exceeded available reserves and resistance from creditors to additional credit required the moratorium for orderly programming of the payments. The monetary response was very stringent monetary policies which led to an economic collapse. To rein in liquidity, the central bank raised its repurchase rates to around 50%. The supply-side contraction led to very high inflation, at one time measured at 45%. As mentioned earlier, in 1984-85, per capita decline was -18%.

The arrival of a new government allowed rehabilitation efforts and a gradual return to normalcy. After an initial recovery burst, the economy's limitations allowed only gradual improvement. It would take a decade for the economy to re-attain the per capita income of 1981. This was the country's lost decade.

The change of government, however, afforded an opportunity to introduce economic reforms that, from hindsight, seems to have initiated a shift in macroeconomic regime. After the initial recovery due, among other things, to the abolition of the agricultural monopolies, the stimulus provided by the Community Emergency Development Program (CEDP) started in mid-1986, and the returning confidence & credibility of the new government, inflation started to rise and the national government fiscal deficit started to widen as expenditures in social services increased significantly. These twin difficulties hounded the new government which had to undergo a fiscal stabilization program under an International Monetary Fund (IMF).

Additional reforms, however, included the institution of the regional wage boards which shifted the wage setting mechanism from an annual, highly-politicized process which significant uncertainty to a disaggregated system where regions considered location-specific inflation statistics and demand situations. The actions on trade reform including the revival of the import liberalization program culminated in Executive Order 470 which streamlined the tariff system into broad classes of commodities with a few important exceptions. This in turn facilitated the country's offer to the Uruguay Round multilateral trade negotiations. In early 1992, the Philippines signed the ASEAN Free Trade Agreement to round the industrial and trade changes during the Aquino administration. Among the most prominent economic reforms of that time was the liberalization of the foreign exchange mechanism to 40% retention by foreign exchange earners of their foreign revenues, increasing to 100% retention after a year. This, coupled with the trade and industrial reforms, essentially changed the character of internal and external economic and business relations.

Further changes with indirect impact on industrial and macroeconomic efficiency started with the reenactment of Administrative Code in 1987, the Comprehensive Agrarian Reform Program (CARP), the Build-Operate and Transfer (BOT) Law in 1991, and the Local Government Code in 1991.

In the following years, the Ramos administration continued the implementation of the reforms and added the liberalization of certain key industries including the telecommunications and interisland shipping industries. It also enacted the Oil Deregulation Act and the EPIRA law essentially liberalizing the mechanisms for the oil industry and the energy sector and ratified the Uruguay Round Multilateral Agreement setting up the World Trade Organization (WTO). In the finance industry, the New Central Bank Act setting up the *Bangko Sentral ng Pilipinas* (BSP) and the new General Banking Act. The succeeding administrations added the Roll on-roll off (RORO) policy and various bilateral trade agreements. ****

Asian Financial crisis

The policy response to the Asian Financial crisis in 1997 was different from the monetary and foreign exchange moves in 1983. After an initial attempt to fight the markets by selling foreign currency, the monetary board allowed the exchange rate to adjust to the contagion. As a result, the exchange rate moved from P24.6:USD1 to around P35:USD1. After an initial interest rate increase in anticipation of an inflationary spiral and the lower than expected inflationary injection, prices and interest rates started to stabilize. Production continued and the economy was relatively unscathed during the crisis. However, regulatory forbearance may have unnecessarily lengthened

the recovery of the banking system. As a result, the credit channel was clogged for longer than warranted and growth may have been slower than otherwise.

2007 global financial crisis

The financial conservatism engendered by the experience of the Asian Financial Crisis insulated the financial system from major exposure to the structured financial instruments when the Global Financial Crisis came. The main impact of the global crisis came through the Philippines' trade exposure to developed economies that suffered from the global crisis. The government attempted an economic stimulus package when the crisis struck. However, this resulted in fiscal uncertainty in the first half-decade of this millennium when the fiscal deficit rose to 3.7% of GDP in 20007. Fortunately, in late 2010 the new government was able to recover and reassure observers about its ability to manage the fiscal deficit.

The global crisis had minimal impact from a monetary point of view, aside from heightened watchfulness as everybody observed how far the contagion would spread. The financial effect has been through the impact on increased commodity (and ultimately oil) prices as the depreciation of the dollar has induced natural resource producer to increase the dollar price of their products. Since the Philippines is still largely anchored on the dollar, volatility in the dollar value has had impact on the economy. The drastic decline in exports, though, has been quite harrowing for the manufacturing sector as the exports of electronic products have declined by more than 30%. Otherwise, the inflow of OFW remittances have been maintained, increasing exports of processed agricultural products, and the enlarging BPO sector have been beneficial.

Philippine Macroeconomic Regimes

The forgoing discussions provide a framework for classifying the whole post-WWII period into explicit and implicit macroeconomic regimes. These are listed in Table 1 below:

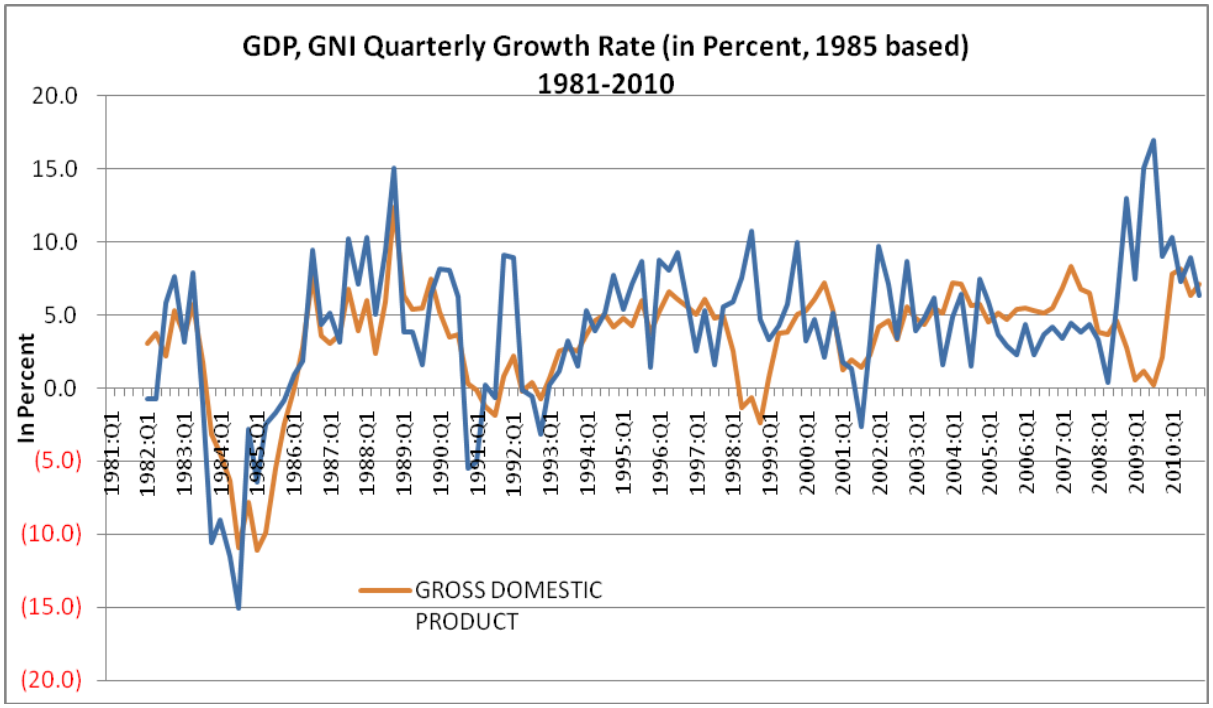
Table 1: Macroeconomic Regimes in the Philippines	
1949 – 1960	Fixed exchange rate; fiscal and monetary support exchange rate policy
1961 – 1970	Decontrol of peso; regulated currency system remain through banks
1970 – 2001	Peso floated; managed currency system
1970 – 1982	a: monetary target – net domestic assets
1983 – 2001	b: monetary target – monetary aggregate (m3)
	1983 – 1992: inside-out money
	1993 – 2001: new Bangko Sentral ng Pilipinas
2002 - present	Inflation targeting

To put these regimes in perspective, we look at the semi-decadal average growth rate in GDP since 1950 (Table 2). A few critical points are worth noting. Note how the "exuberant growth" pointed out by Power-Sicat (1965) in the early 1950's started to decelerate within the decade as import-substituting industries filled up production behind import controls and high tariff walls, until the peso (the Philippine currency) was slowly liberalized in the early 1960's. The aggressive fiscal stance[2], fueled by international financial borrowing in the 1970's provides a higher growth rate than the 1960's. However, the 1979 oil crisis, the explosion of the Latin American debt crisis and the resulting international financial risk aversion led to the moratorium on the payment of international Philippine debt in 1983. That started a rather long period of restructuring that is reflected on a GDP growth rate that has been rising very gradually.

[2] See Appendix Graph 1 depicting how the share of National Government revenue and expenditure increased dramatically starting 1973 (after martial law was imposed on September 21, 1972).

Table 2: GDP Growth Rates, by period

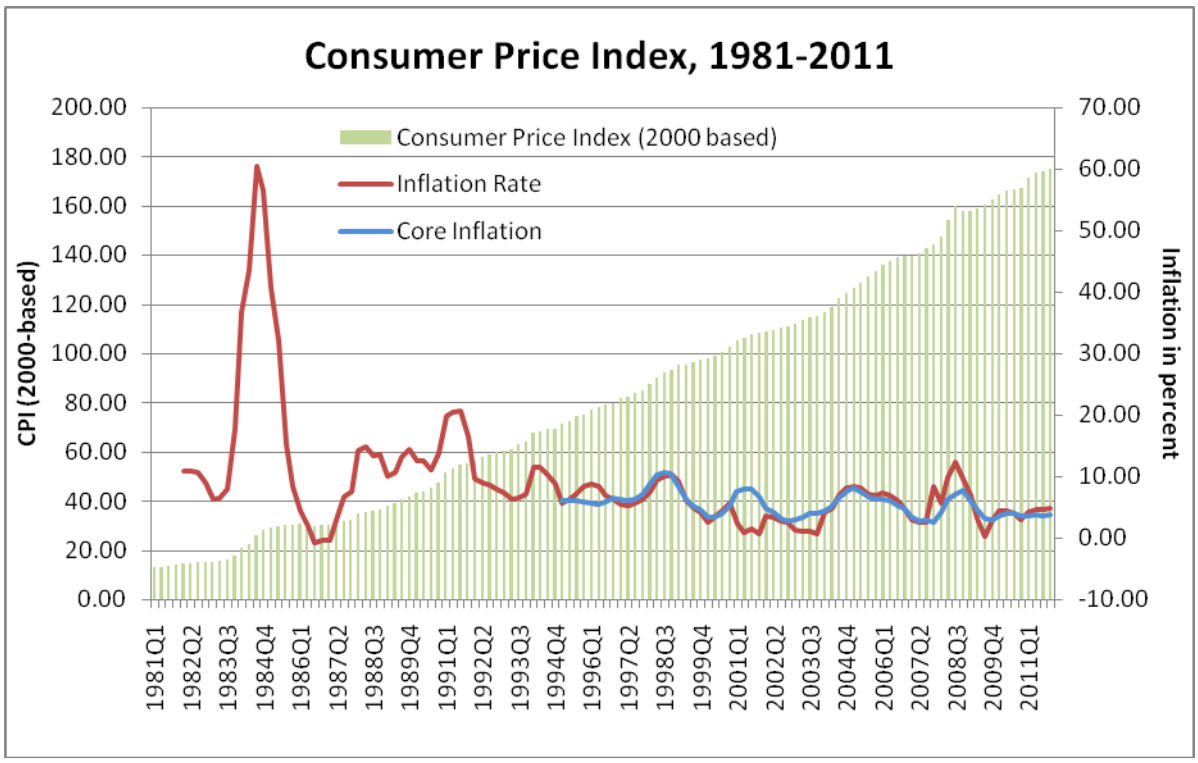
Period	Average growth rate	
	Arithmetic average	Geometric growth
1951 – 1955	8.077873	8.06575
1956 – 1960	4.811227	4.789204
1961 – 1965	5.232597	5.226052
1966 – 1970	4.623305	4.621992
1971 -1975	5.783792	5.769649
1976 – 1980	6.073875	6.064983
1981 - 1985	-1.14262	-1.27469
1986 – 1990	4.744648	4.734138
1991 - 1995	2.188378	2.166715
1996 – 2000	3.963874	3.934533
2001 - 2005	4.493234	4.482186
2006 - 2010	4.90376	4.877452



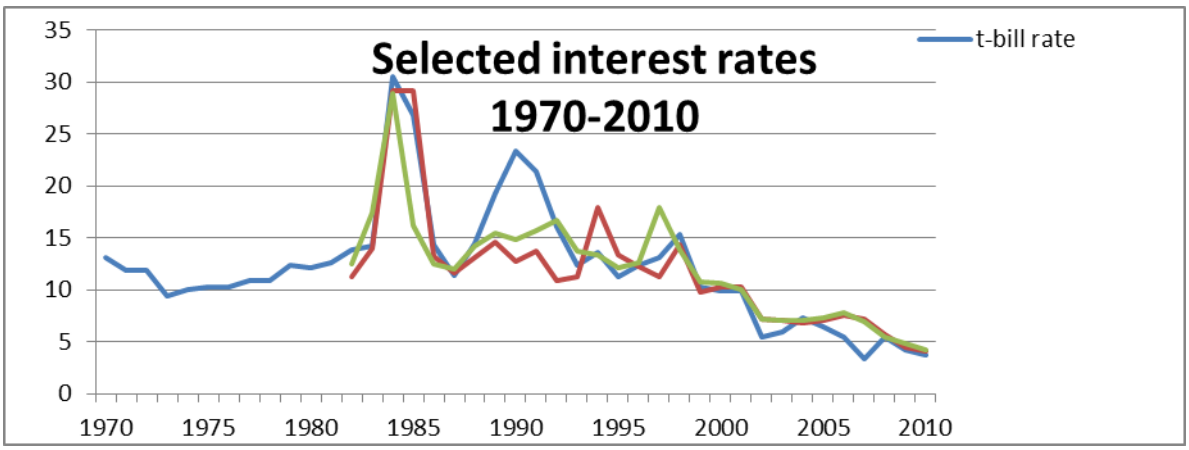
Headline inflation during the whole Second World War reflects the varying levels of government activism. Table 3 shows how the low and stable inflation levels during the controlled peso period (1950's) changed when government activism heightened in the 1970's. The economic collapse in 1984-85 introduced a prolonged period of economic stabilization where the government had to balance growth with much lowered fiscal capabilities as the massive buildup of public debt had to be pared down as a percentage of total GDP and when the government's low credit rating meant higher financing costs. This restrictive credit environment, coupled with a few regional and international crises, implied supply-side constraints that were sometimes reflected in higher inflation and inflationary expectations. Thus, the return to macroeconomic discipline took some time and was not effectively felt until the last several years.

Table 3: Headline Inflation Rates, by period

Period	Average growth rate	
	Arithmetic average	Geometric growth
1961 – 1965	3.77	3.71
1966 – 1970	5.37	5.25
1971 -1975	17.39	17.01
1976 – 1980	12.29	12.22
1981 - 1985	20.66	19.75
1986 – 1990	8.67	8.54
1991 - 1995	10.37	10.27
1996 – 2000	6.45	6.44
2001 - 2005	5.37	5.35
2006 - 2010	5.08	5.06



The inflation levels are duly reflected in the market interest rates that prevailed throughout the period. The graph below indicates that a monotonic decline in market interest rates started after the Asian Financial Crisis in 1997 and gradually took hold as continued policy discipline and improving inflationary expectations are manifested in market interest rates. Note that this was happening even as the GDP growth rate was volatile in response to the various international crises, i.e. the 2000 dot-com crash of the United States and the 2007 Global Financial Crisis aside from the Asian Financial Crisis.



The foregoing description of the main macroeconomic variables during the whole period has been provided in order to show the environment where monetary policy operated. The post-World War II period for the Philippines has been a kaleidoscope of changing policies and overall macroeconomic stance. As mentioned in previous paragraphs, a dominant and very strong position in another policy area can sometimes restrict the possible policies that can be followed or implemented in monetary policy and, therefore, may restrict the available instruments/tools and posture as well as overall monetary policy, as what happened in the 1950's when both monetary and fiscal policy ended up being secondary to the fixed exchange rate regime that the government adhered to. In the same vein, the very aggressive fiscal stance of the 1970's also implied an accommodative monetary policy.

Role of macroeconomic regimes: was inflation targeting effective?

Given the overall macroeconomic background provided above, we examine the more specific question of the effectiveness and significance that inflation targeting played in the Philippine situation. We perform the analysis on quarterly data from 1980 to 2010. We examine the mean inflation over the whole period and for the sub-periods assuming a break in the years for 2 events: first, the formation of the new central bank (now called the *Bangko Sentral ng Pilipinas*) in 1993; and, second, in implementation of inflation targeting in early 2002. We focus on the 1980-2010/2011 period. For this sub-section, we use quarterly data.

Mean inflation level, volatility and persistence of inflation

Table 4 shows the mean inflation levels and the standard deviation of inflation during these periods. We notice that there has been a monotonic decrease in the average inflation rate. However, there is a reversal when comparing the standard deviation of the inflation rates from the whole sub-period of the new central bank (1993-2010) as against the shorter sub-period of implementation of inflation targeting (2002-2010). We note, as suggested in an earlier section, that this whole 1980-2010 period is marked by economic upheavals in the early part (1984-85) and the later period (2007-2008) where we experienced the global crisis. The Asian Financial Crisis, though, was also present in the midst of this period (1997-1998).

The estimates of inflation persistence also show a reversal in the latter, inflation targeting, period.

Table 4: Headline Inflation rates			
	Inflation		Persistence Estimates
	Mean	Std. Dev.	
Headline inflation rates:			
Whole period	9.12	8.49	0.9039124
Old Central Bank: monetary targeting	14.77	12.09	0.8551406
New Bangko Sentral: Monetary targeting	7.51	1.94	0.3014408
New Bangko Sentral: Inflation targeting	4.99	2.21	0.7686057

To control for the effect of the business cycle on the observed decline in the headline inflation rate, we introduce the natural logarithm of GDP into the autoregressive estimation. We also add 2 dummy variables: Dum1 is equal to one starting 1993 (when the Philippine Central Bank was reorganized and re-capitalized; and, Dum2 is equal to one starting 2002 when inflation targeting was implemented by the new *Bangko Sentral ng Pilipinas*. Controlling for the business cycle, we first introduced Dum1 and Dum2 separately. Although they have the right signs, both dummies are statistically insignificant. And when we introduce the two dummies simultaneous, both retain the right signs but remain statistically insignificant. The overall conclusion we can get from these initial results are that while there has been a decline in the inflation rate over the last 20 years, it cannot be statistically identified with the reorganization of the monetary authorities or the change in the monetary regime.

Table 5: Statistics on Dummy Variables for Two Temporal Breaks				
Variable	First run	2nd Run	3rd Run	4th Run
Constant	5.888117012 (2.41160)	6.039392180 (2.52027)	5.780318513 (2.16945)	6.022211804 (2.28300)
Ln GDP	-0.000012919 (-1.53498)	-0.000007641 (-0.81987)	-0.000011660 (-1.04627)	-0.000007506 (-0.64455)
Dum1		-1.845932154 (-1.16730)		-1.843499244 (-1.15344)
Dum2			-0.338554097 (-0.18432)	-0.036748322 (-0.02049)

Evidence from Exchange rate pass-through estimates

We also analyze the impact of macroeconomic regimes by studying the underlying trends of key macroeconomic magnitudes such as inflation. This examination is based on a hypothesis proposed by Taylor (2000) and further specified by Choudhri and Hakura (2001) that in a low-inflation environment, the pricing power of suppliers is weaker and, therefore, their ability to pass on higher costs of external shocks such as exchange rate movements is curtailed[3]. We use this framework to check the assertion that inflation targeting provides a very useful framework for effective monetary policy implementation and may be mainly responsible for the lower inflation rates that have been observed in several countries. An examination of the inflation record after the inflation targeting framework has been established in comparison with other periods should be indicative of the framework's effectiveness for policy making and may provide an indirect test of the assertion.

Here I show the pass-through coefficients for the various periods under different monetary regimes. In Table 6, the estimates are made with a break introduced when the Philippine Central Bank is reorganized into the *Bangko Sentral ng Pilipinas*. The

[3] This also follows up an earlier study conducted by Lamberte (2002) that examined whether the Philippines was "ready" for the implementation of inflation targeting. To carry out the tests I first re-estimated Lamberte's equations using more recent data (but on the same sample period) and a slightly changed numbers for the foreign price index of import sources as well as the break point; Lamberte breaks the period in 1993 while we do it in 1992. The comparison between Lamberte's and my estimates for his sample period are shown in the appendix. While the coefficients differ, the general conclusion of a reduction in exchange rate pass-through is retained in our data.

Chow-test for a break in the parameter stability before and after the formation of the BSP is also very significant.

Table 6: Exchange Rate Pass Through to Domestic Prices (Using the formation of Bangko Sentral as the period break) Dependent Variable: Ln CPI		
	Monthly	Result of Chow Test (F statistic)
Lags = 2		
1. Total sample: 1980 – 2011	-0.12147	F(8,365)= 4.77329 with Significance Level 0.00001355
2. CBP period: 1980 – 1992	-0.21941	
3. BSP period: 1993 – 20011	-0.00216	
Lags = 3		
1. Total sample: 1980 – 2011	-0.14785	F(8,364)= 4.62490 with Significance Level 0.00002145
2. CBP period: 1980 – 1992	-0.25246	
3. BSP period: 1993 – 20011	-0.02119	
Lags = 4		
1. Total sample: 1980 – 2011	-0.08464	F(8,363)= 5.53963 with Significance Level 0.00000127
2. CBP period: 1980 – 1992	-0.25786	
3. BSP period: 1980 – 1992	-0.03837	

In Table 7, we run the same equations, this time using the implementation of inflation targeting to break the years into two periods. While the coefficients show the same trend as in the previous set of regressions, the statistical significance of the (Chow) test on parameter stability is no longer significant. Thus, while the trend of declining pass-through is retained, the break is no longer as discernible as when the break used is the formation of the *Bangko Sentral*. A tentative conclusion, maintaining the Taylor hypothesis that the low inflation environment dampens exchange rate pass-through, is

that the declining pass-through is part of a general improvement in price movements that is a common influence for inflation-related changes. Further, this trend antedates inflation-targeting and is continuing. As a result, the implementation of inflation targeting accentuates but did not cause the decline in pass-through.

Table 7: Exchange Rate Pass Through to Domestic Prices

(Using implementation of Inflation Targeting as the period break)

Dependent Variable: Ln CPI

	Monthly	Result of Chow Test (F statistic)
Lags = 2		
1. Total sample: 1980 – 2011	-0.12147	F(8,365)= 0.78848 with Significance Level 0.61309187
2. Pre-IT period: 1980 – 2001	-0.13784	
3. IT period: 2002 – 20011	-0.00459	
Lags = 3		
1. Total : 1980 – 2011	-0.14785	F(8,364)= 0.85070 with Significance Level 0.55856355
2. Pre-IT period: 1980 – 1992	-0.16942	
3. IT period: 2002 – 20011	-0.00571	
Lags = 4		
1. Full sample: 1980 – 2011	-0.15112	F(8,363)= 2.09233 with Significance Level 0.03577432
2. CBP period: 1980 – 1992	-0.1772	
3. BSP period: 2002 – 20011	-0.00957	

Evolution of the price pass-through impact: Recursive least squares

With indications that the decline in inflation is more significant at an earlier period, we push the period further backward. For this exercise, we estimate the price pass-through with the use of recursive least-squares showing the evolution of the ultimate pass-through coefficient over the time period under review.

The results for the recursive least-squares estimation of the pass-through equation is shown in Table 8. Graphs of the evolution of these coefficients of the estimation using a 2-lag framework are also shown in Graph __[4]. The analysis indicates that a significant shift in coefficients started around the middle of the 1980's and evolved further in succeeding periods, ending in the current low-inflation environment. This break point coincides with the initial reforms and the continuing changes over the next decades as recounted in the section on macroeconomic regimes above. These parallel developments provide presumptive evidence of the beneficial effects of the macroeconomic reforms carried out by the Philippine government under succeeding administrations over the past more than quarter of a century.

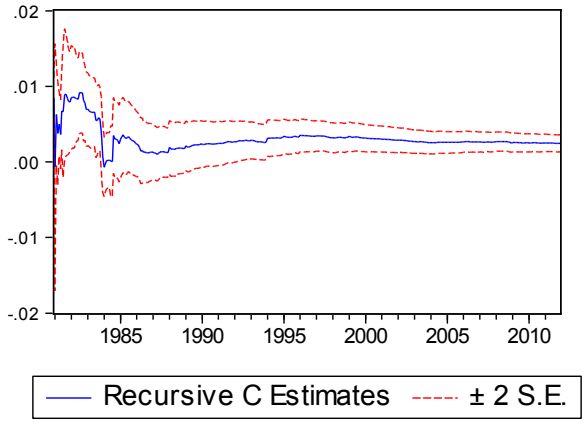
[4] The complete results for the 2-, 3-, and 4-lag estimations together with the accompanying evolution charts are shown in appendix 3.

A. Resursive Least-Squares
With a 4-period lag:

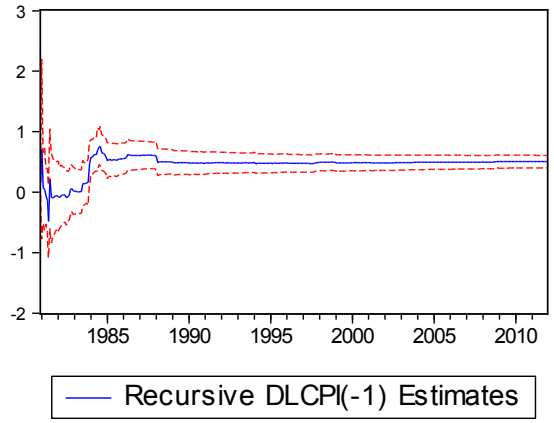
Dependent Variable: DLCPI
Method: Least Squares
Date: 11/16/12 Time: 00:00
Sample (adjusted): 1980M06 2011M12
Included observations: 379 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001486	0.000575	2.584887	0.0101
DLCPI(-1)	0.478147	0.050497	9.468806	0.0000
DLCPI(-2)	0.024386	0.055902	0.436221	0.6629
DLCPI(-3)	-0.109477	0.055620	-1.968306	0.0498
DLCPI(-4)	0.194785	0.047911	4.065549	0.0001
DLNEER	-0.027777	0.015851	-1.752436	0.0805
DLNEER(-1)	-0.094254	0.016464	-5.724783	0.0000
DLNEER(-2)	0.024075	0.017163	1.402734	0.1615
DLNEER(-3)	-0.042603	0.017178	-2.480093	0.0136
DLNEER(-4)	-0.010556	0.016670	-0.633223	0.5270
DLMPRICE(-1)	0.000783	0.032481	0.024109	0.9808
DLMPRICE(-2)	0.038497	0.032704	1.177133	0.2399
DLMPRICE(-3)	0.091306	0.032166	2.838547	0.0048
DLMPRICE(-4)	0.139351	0.031607	4.408911	0.0000

R-squared	0.456670	Mean dependent var	0.007098
Adjusted R-squared	0.437318	S.D. dependent var	0.010515
S.E. of regression	0.007888	Akaike info criterion	-6.810768
Sum squared resid	0.022709	Schwarz criterion	-6.665319
Log likelihood	1304.641	Hannan-Quinn criter.	-6.753047
F-statistic	23.59870	Durbin-Watson stat	2.033990
Prob(F-statistic)	0.000000		



Recursive C Estimates ± 2 S.E.



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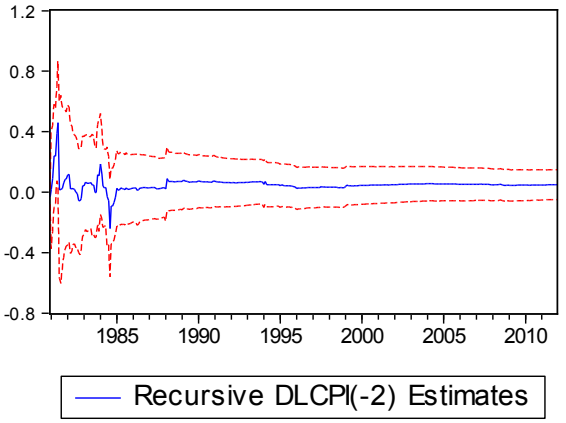

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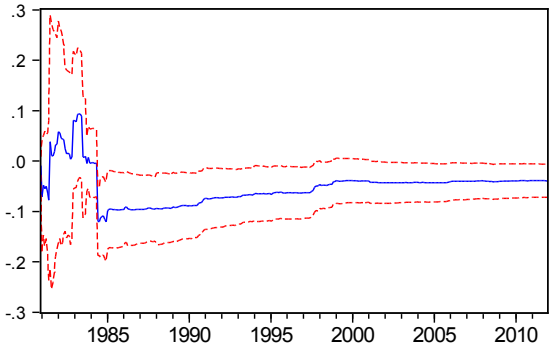
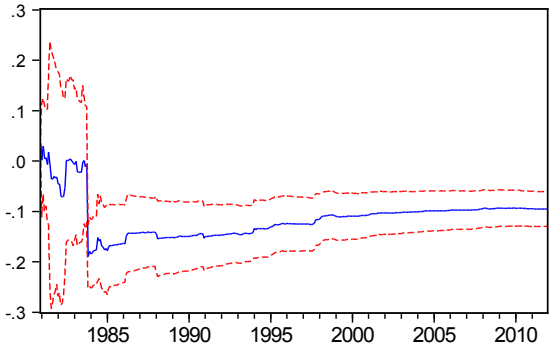
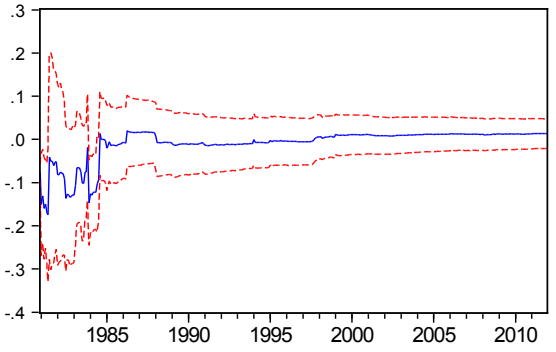


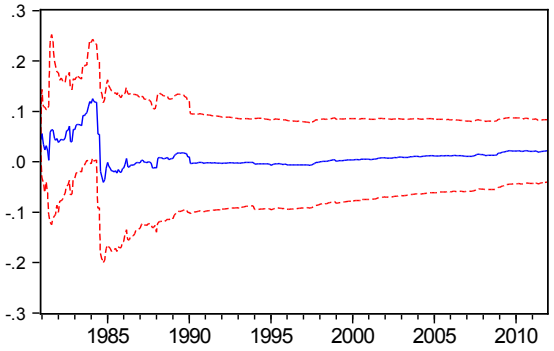
Recursive DLNEER Estimates



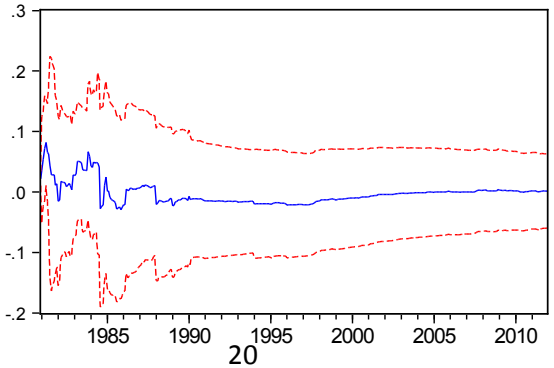
Recursive DLNEER(-1) Estimates



Recursive DLNEER(-2) Estimates



Recursive DLMPRICE(-1) Estimates



Recursive DLMPRICE(-2) Estimates

Preliminary lessons

Some preliminary lessons may be gleaned from this initial review of macroeconomic policy regimes from the Philippine experience. It is best to remember why explicit choice of the policy regime is useful. It provides the public with some concrete targets expectations can converge. At the same time a scorecard is available by which authorities can gain credibility. Convergence of expectations avoids uncertainty (and losses from trial and error). Credibility, on the other hand, makes convergence easier to achieve. It incorporates political credibility as shown by the present situation in both the US and Japan.

We hasten to add some caution in these early observations. These conclusions are tentative but, perhaps more important, may only fit the conditions of the Philippines.

1.0 The choice of objective or target may already condition the available choices for the policy regime. For example, when the government decided that it would keep the exchange rate of the Philippine peso fixed at a specific level, it meant that monetary and price considerations would be secondary to the main objective. Monetary programming or inflation targeting would no longer be a viable program.

2.0 Monetary programming was too restrictive for the Philippines. Even from the very simple objective of price stability alone, announcing a monetary program and, therefore, adhering to it assumed that extraneous events would not materially affect the policy choices. As we noticed in the early 1990's, an increase in confidence leading to a larger demand for money would not be accommodated by a fixed monetary program. The consequence of adhering to the original program would be either higher interest rates and/or unnecessarily lower output. Abandoning the original monetary targets would risk the loss of credibility of the monetary authorities.

3.0 Targeting net domestic assets was more flexible than monetary programming as it promised the flexibility to accommodate foreign asset inflow without harming the programmed target. However, one may actually want to adjust net domestic assets if foreign currency inflows threaten to inflate money supply beyond acceptable price bounds, i.e. the inflow of foreign assets spill over to domestic assets. Still, abandoning the NDA target may risk losing credibility.

4.0 Inflation targeting seems to be the best of the available choices. It provides the flexibility for the monetary authorities to maneuver while providing a concrete

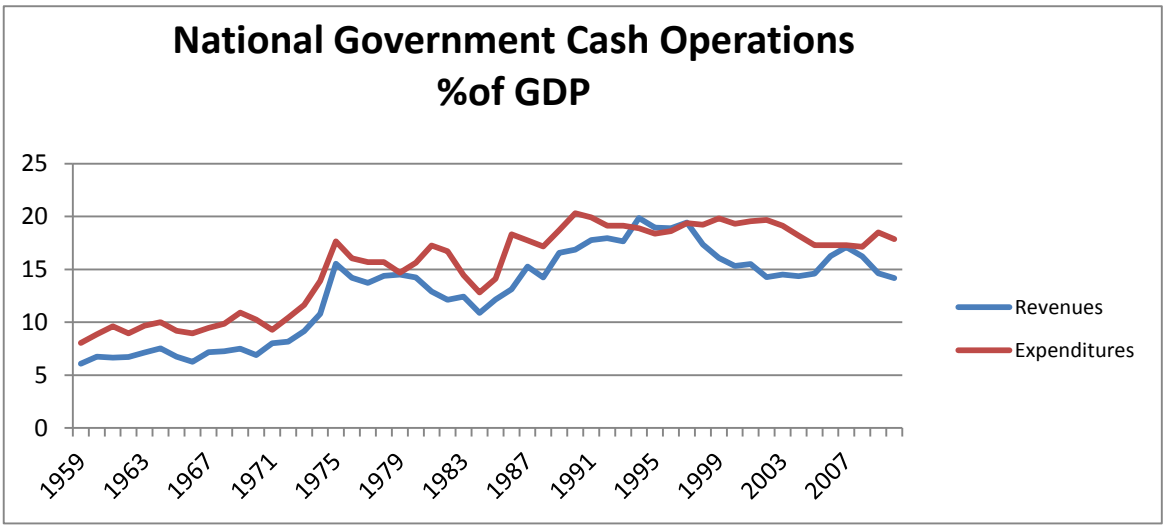
target for expectations to converge. Outside observers can try to project the policy responses as the indicator variables change, allowing authorities leeway for adjustments without harming their credibility.

However, in the experience of the Philippines, the overall orientation of macroeconomic policy is probably the most important ingredient for a favourable outcome. The flexibility of inflation targeting can fit very well into astute economic policy making. But it still is just part of a broader approach. It must fit into and is most effective as a part of an overall policy program that makes fiscal, monetary, and other policies convergent. Our findings show that inflation targeting fit very well into an improving macroeconomic picture and probably reinforced it. But it cannot wholly explain the whole phenomenon.

In another paper (Paderanga, 2009), I also explore the beneficial effects of the increasingly significant inflows of Overseas Filipino Workers' remittances during this period. Initial estimates indicate that OFW remittances were consistent with declining inflation and interest rates and strengthening of the Philippine peso. Currency developments clearly contributed to declining inflation through the import content of domestic production. Extensions of this paper and further refinements of the analysis on remittances will explore the contributions of these additional considerations.

5.0 However, inflation targeting has been criticized as still being insufficient for "black swan events" like the Global Financial Crisis. There is a search for an improved version that will keep the good points of inflation targeting but allow more flexibility in addressing massive shocks. Nominal GDP targeting has been suggested. This promises more flexibility than inflation targeting in that it is a combination of inflation and output growth that authorities aim for with the limited possibility of tradeoffs within some bound. However, it is still to be seen whether the additional target will not harm the achievability of expectations convergence or whether the public will take it as too much wriggle room. Other complications may also lie hidden. Further thinking surely will be required.

Appendix



Appendix Graph 1:
National Government Cash Operations, as % of GDP

Appendix Table 1A: Exchange Rate Pass Through to Domestic Prices Lamberte's Estimates Dependent Variable: Ln CPI		
	Monthly	Result of Chow Test (F statistic)
A. Lags = 2		
4. Total sample: 1980 – 2001	(0.5616)	
5. CBP period: 1980 – 1993	(0.7233)	3.37*
6. BSP period: 1994 – 20011	(0.2263)	
B. Lags = 3		
4. Total sample: 1980 – 2001	(0.5426)	
5. CBP period: 1980 – 1993	(0.7051)	2.55*
6. BSP period: 1994 – 20011	(0.3145)	
C. Lags = 4		
1. Total sample: 1980 – 2001	(0.4899)	
2. CBP period: 1980 – 1993	(0.6442)	2.07**
3. BSP period: 1994 – 2001	(0.1117)	
* significant at 1% level; ** significant at 5% level		

Appendix Table 1B: Exchange Rate Pass Through to Domestic Prices Our data & estimates with Lamberte sample period Dependent Variable: Ln CPI		
	Monthly	Result of Chow Test (F statistic)
Lags = 2		
1. Total sample: 1980 – 2001	-0.13784	F(8,245)= 3.74770 with Significance Level 0.00036874
2. Pre-IT period: 1980 – 1992	-0.21941	
3. IT period: 1993 – 2001	0.008785	
Lags = 3		
1. CBP period: 1980 – 2001	-0.16942	F(8,244)= 3.62200 with Significance Level 0.00053202
2. Pre-IT period: 1980 – 1992	-0.25246	
3. IT period: 1993 – 2001	-0.01452	
Lags = 4		
1. CBP period: 1980 – 2001	-0.1772	F(8,243)= 3.63616 with Significance Level 0.00051163
2. CBP period: 1980 – 1992	-0.25786	
3. BSP period: 1993 – 2001	-0.03717	

Appendix Table 2: Pass-through regressions

Appendix Table 2A: Regressions on LnCPI replicating Lamberte's analysis on our data

	FULL SAMPLE			PRE-INFLATION TARGETING			POST-INFLATION TARGETING		
Variable/lags	2	3	4	2	3	4	2	3	4
DLCPI1	0.504006	0.512397	0.478147	0.484788	0.493634	0.448066	0.533753	0.532926	0.527326
DLCPI2	0.049437	0.021233	0.024386	0.049073	0.015337	0.022391	0.019135	0.048203	0.058467
DLCPI3		-0.01046	-0.10948		-0.00423	-0.10366		-0.09442	-0.02913
DLCPI4			0.194785			0.222046			-0.11476
DLNEER	-0.03933	-0.03348	-0.02778	-0.04302	-0.03531	-0.02916	-0.007	-0.00881	-0.00559
DLNEER1	-0.09548	-0.09913	-0.09425	-0.10322	-0.10919	-0.10385	-0.0354	-0.03285	-0.03495
DLNEER2	0.013337	0.027561	0.024075	0.008402	0.023646	0.01396	0.037809	0.035676	0.030503
DLNEER3		-0.0428	-0.0426		-0.04857	-0.04602		0.000277	0.004493
DLNEER4			-0.01056			-0.01213			-0.00403
DLMPRIC1	0.021577	0.044752	0.000783	0.007779	0.03563	-0.03465	0.071701	0.082466	0.080064
DLMPRIC2	0.00197	0.030538	0.038497	-0.00412	0.024434	0.037658	0.010252	0.03041	0.033341
DLMPRIC3		0.070723	0.091306		0.068761	0.092079		0.061623	0.059997
DLMPRIC4			0.139351			0.178958			-0.02375
R-BAR^2	0.376431	0.389508	0.437318	0.357675	0.369539	0.43607	0.298097	0.302993	0.294868
DW-STAT	1.9882	2.0491	2.034	1.9908	2.0562	2.0274	1.9959	1.9966	1.9579

Appendix Table 2B: Regressions on LnCPI with the break at 1993 (formation of Bangko Sentral ng Pilipinas)

	FULL SAMPLE			CBP PERIOD			BSP PERIOD		
Variable/lags	2	3	4	2	3	4	2	3	4
DLCPI1	0.504006	0.512397	0.478147	0.485053	0.49233	0.452549	0.27357	0.287504	0.270196
DLCPI2	0.049437	0.021233	0.024386	0.067651	0.04081	0.042657	-0.0292	-0.04491	-0.02698
DLCPI3		-0.01046	-0.10948		-0.01925	-0.12176		-0.00935	-0.03594
DLCPI4			0.194785			0.228692			0.043327
DLNEER	-0.03933	-0.03348	-0.02778	-0.06687	-0.06129	-0.05353	-0.00739	-0.00346	-0.00578
DLNEER1	-0.09548	-0.09913	-0.02778	-0.14223	-0.14612	-0.13955	-0.02807	-0.0307	-0.02684
DLNEER2	0.013337	0.027561	0.024075	-0.01031	0.002165	-0.00882	0.033299	0.043386	0.039947
DLNEER3		-0.0428	-0.0426		-0.04723	-0.04971		-0.03042	-0.01954
DLNEER4			-0.01056			-0.00625			-0.02617
DLMPRIC1	0.021577	0.044752	0.000783	-0.0015	0.022904	-0.04083	0.061049	0.060834	0.077428
DLMPRIC2	0.00197	0.030538	0.038497	-0.01561	0.009957	0.024015	0.010633	0.035187	0.032885
DLMPRIC3		0.070723	0.091306		0.054309	0.077715		0.079612	0.091568
DLMPRIC4			0.139351			0.169387			0.037005
R-BAR^2	0.376431	0.389508	0.437318	0.44319	0.44746	0.511742	0.467832	0.481462	0.489035
DW-STAT	1.9882	2.0491	2.034	1.9955	2.037	1.9926	1.7229	1.7847	1.785

Appendix Table 2C: Regressions on LnCPI with the break at 2002 (Implementation of Inflation Targeting).

	FULL SAMPLE			PRE-INFLATION TARGETING			POST-INFLATION TARGETING		
Variable/lags	2	3	4	2	3	4	2	3	4
DLCPI1	0.504006	0.512397	0.478147	0.484788	0.493634	0.448066	0.533753	0.532926	0.527326
DLCPI2	0.049437	0.021233	0.024386	0.049073	0.015337	0.022391	0.019135	0.048203	0.058467
DLCPI3		-0.01046	-0.10948		-0.00423	-0.10366		-0.09442	-0.02913
DLCPI4			0.194785			0.222046			-0.11476
DLNEER	-0.03933	-0.03348	-0.02778	-0.04302	-0.03531	-0.02916	-0.007	-0.00881	-0.00559
DLNEER1	-0.09548	-0.09913	-0.09425	-0.10322	-0.10919	-0.10385	-0.0354	-0.03285	-0.03495
DLNEER2	0.013337	0.027561	0.024075	0.008402	0.023646	0.01396	0.037809	0.035676	0.030503
DLNEER3		-0.0428	-0.0426		-0.04857	-0.04602		0.000277	0.004493
DLNEER4			-0.01056			-0.01213			-0.00403
DLMPRIC1	0.021577	0.044752	0.000783	0.007779	0.03563	-0.03465	0.071701	0.082466	0.080064
DLMPRIC2	0.00197	0.030538	0.038497	-0.00412	0.024434	0.037658	0.010252	0.03041	0.033341
DLMPRIC3		0.070723	0.091306		0.068761	0.092079		0.061623	0.059997
DLMPRIC4			0.139351			0.178958			-0.02375
R-BAR^2	0.376431	0.389508	0.437318	0.357675	0.369539	0.43607	0.298097	0.302993	0.294868
DW-STAT	1.9882	2.0491	2.034	1.9908	2.0562	2.0274	1.9959	1.9966	1.9579

Appendix 3: Recursive least-squares Price pass-through estimates with evolution graphs

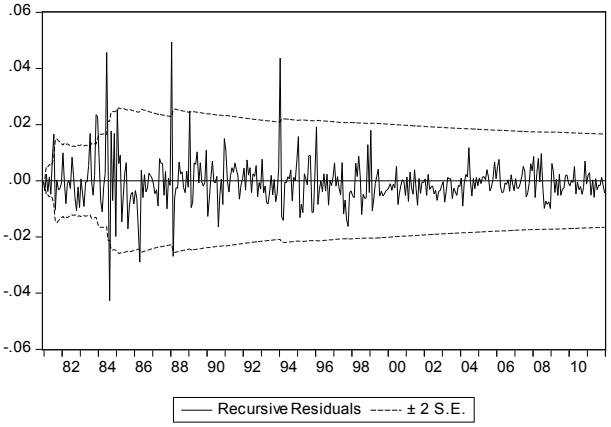
PRICE PASS-THROUGH RESULTS USING FULL SAMPLE (1980 to 2011)

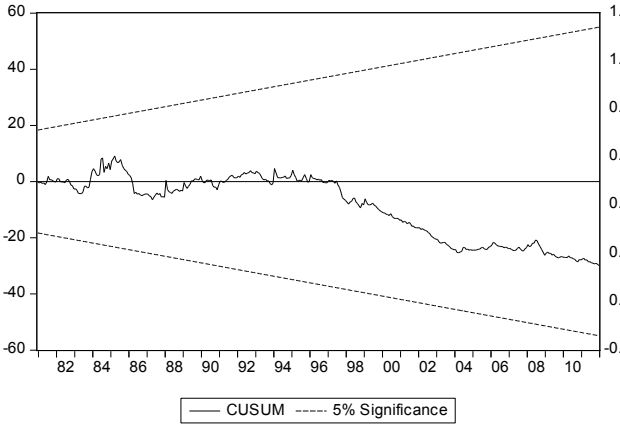
B. With a 2-period lag:

Dependent Variable: DLCPI
Method: Least Squares
Date: 11/16/12 Time: 00:00
Sample (adjusted): 1980M04 2011M12
Included observations: 381 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002437	0.000558	4.365201	0.0000
DLCPI(-1)	0.504006	0.051959	9.700132	0.0000
DLCPI(-2)	0.049437	0.049097	1.006934	0.3146
DLNEER	-0.039330	0.016377	-2.401539	0.0168
DLNEER(-1)	-0.095478	0.017154	-5.565872	0.0000
DLNEER(-2)	0.013337	0.017181	0.776251	0.4381
DLMPRICE(-1)	0.021577	0.030985	0.696367	0.4866
DLMPRICE(-2)	0.001970	0.030768	0.064035	0.9490

R-squared	0.387918	Mean dependent var	0.007116
Adjusted R-squared	0.376431	S.D. dependent var	0.010491
S.E. of regression	0.008284	Akaike info criterion	-6.728166
Sum squared resid	0.025598	Schwarz criterion	-6.645377
Log likelihood	1289.716	Hannan-Quinn criter.	-6.695318
F-statistic	33.77075	Durbin-Watson stat	1.988201
Prob(F-statistic)	0.000000		


.06
.04
.02
.00
-.02
-.04
-.06
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
Recursive Residuals ----- ± 2 S.E.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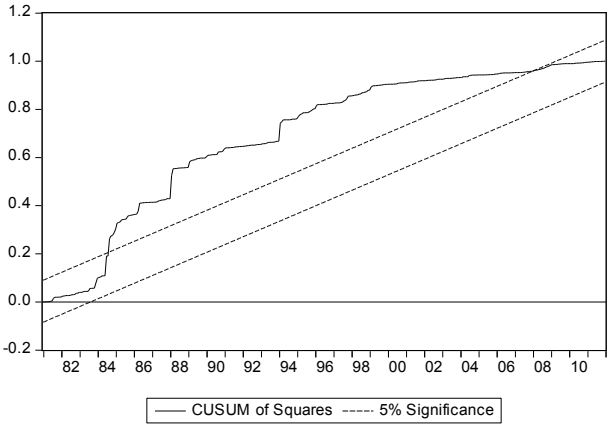
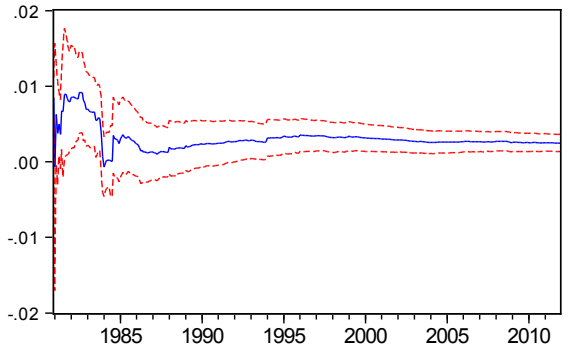
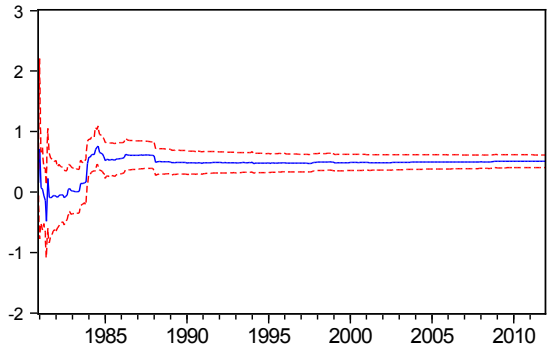
40
20
0
-20
-40
-60
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
CUSUM ----- 5% Significance

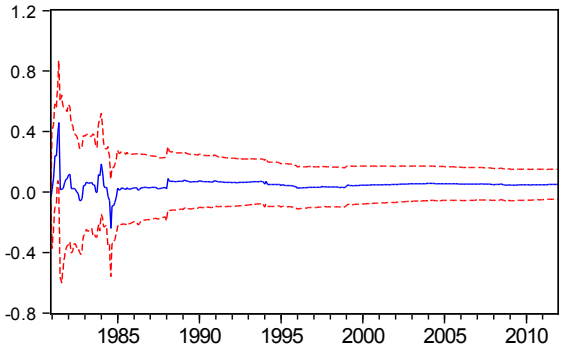

1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
CUSUM of Squares ----- 5% Significance



Recursive C Estimates ± 2 S.E.



Recursive DLCPI(-1) Estimates



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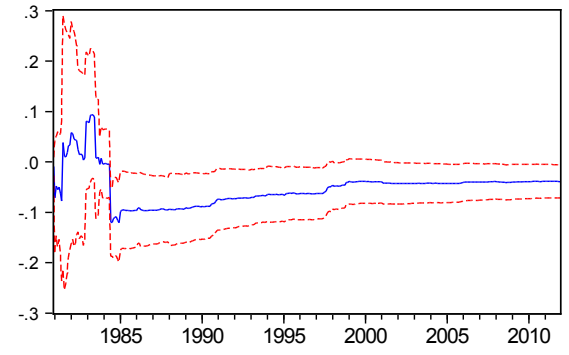
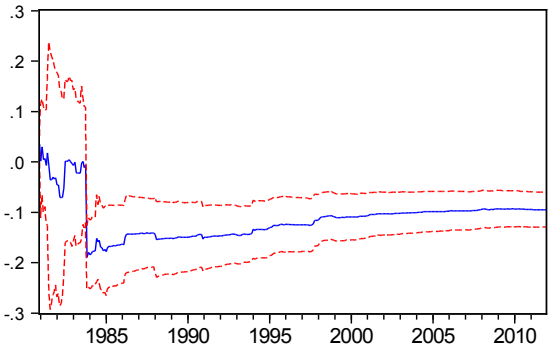


Recursive DLNEER Estimates



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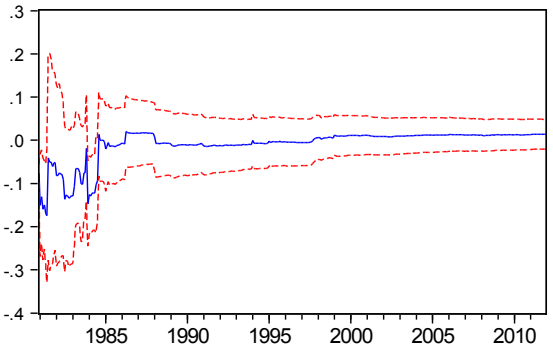

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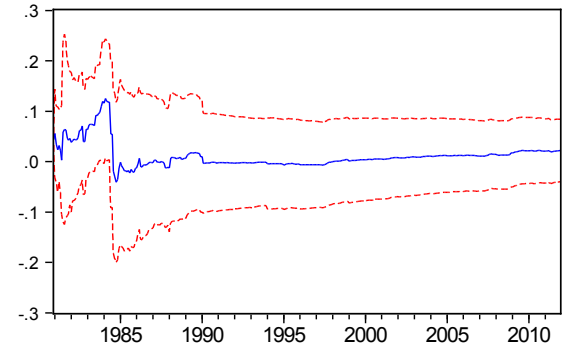
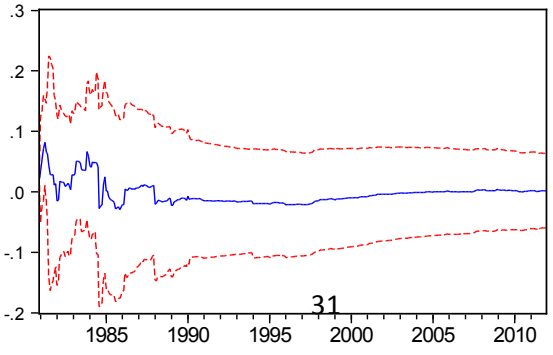


Recursive DLMPRICE(-1) Estimates



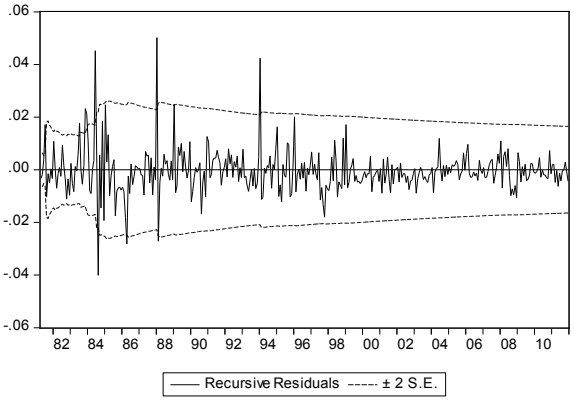
Recursive DLMPRICE(-2) Estimates

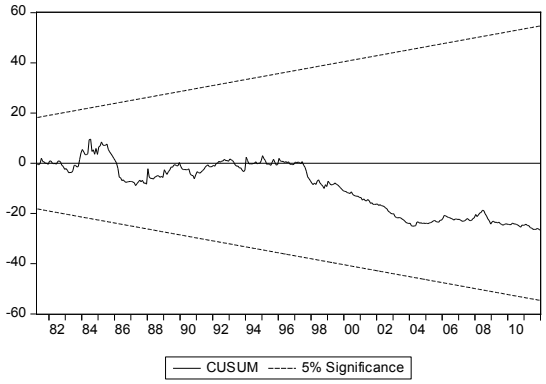
B. **With a 3-period lag:**

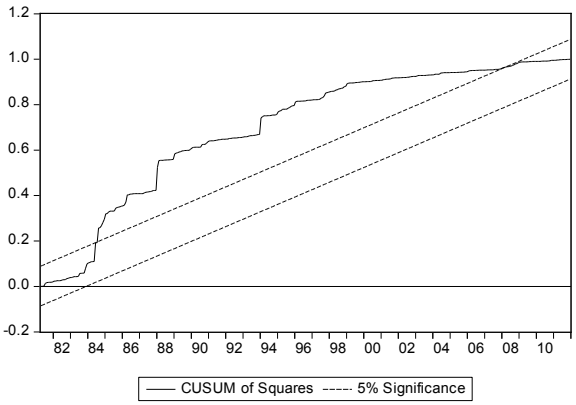
Dependent Variable: DLCPI
Method: Least Squares
Date: 11/16/12 Time: 00:00
Sample (adjusted): 1980M05 2011M12
Included observations: 380 after adjustments

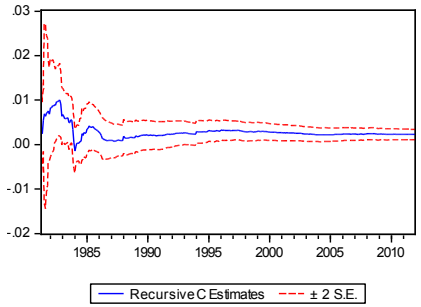
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002252	0.000579	3.886227	0.0001
DLCPI(-1)	0.512397	0.051645	9.921513	0.0000
DLCPI(-2)	0.021233	0.057629	0.368439	0.7128
DLCPI(-3)	-0.010463	0.049333	-0.212082	0.8322
DLNEER	-0.033479	0.016369	-2.045249	0.0415
DLNEER(-1)	-0.099130	0.017050	-5.814048	0.0000
DLNEER(-2)	0.027561	0.017736	1.553959	0.1211
DLNEER(-3)	-0.042802	0.017118	-2.500390	0.0128
DLMPRICE(-1)	0.044752	0.032496	1.377167	0.1693
DLMPRICE(-2)	0.030538	0.032516	0.939165	0.3483
DLMPRICE(-3)	0.070723	0.031774	2.225836	0.0266

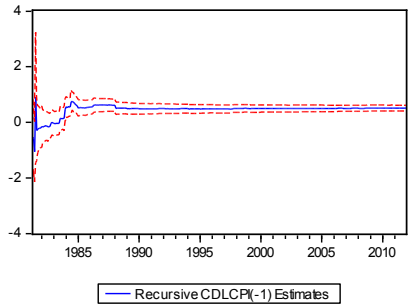
R-squared	0.405616	Mean dependent var	0.007106
Adjusted R-squared	0.389508	S.D. dependent var	0.010503
S.E. of regression	0.008206	Akaike info criterion	-6.739359
Sum squared resid	0.024848	Schwarz criterion	-6.625301
Log likelihood	1291.478	Hannan-Quinn criter.	-6.694100
F-statistic	25.18107	Durbin-Watson stat	2.049100
Prob(F-statistic)	0.000000		

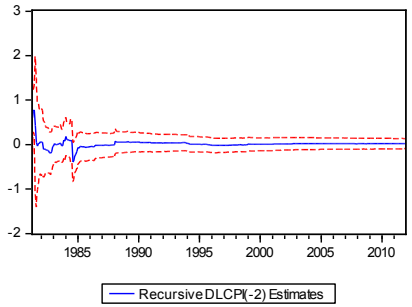







Recursive C Estimates
± 2 S.E.


Recursive CDLCPI(-1) Estimates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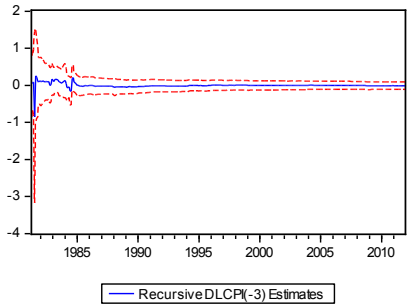
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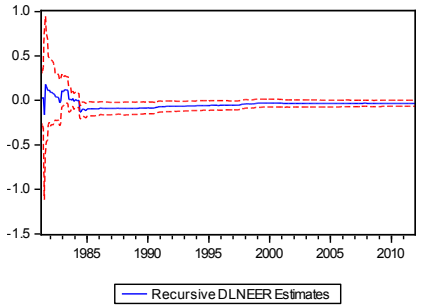
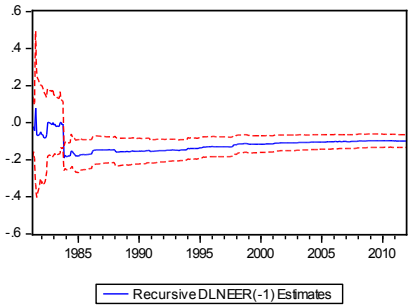
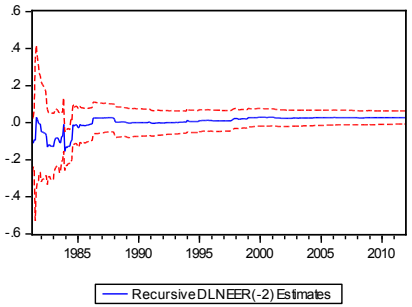

Recursive DLNEER Estimates


Recursive DLNEER(-1) Estimates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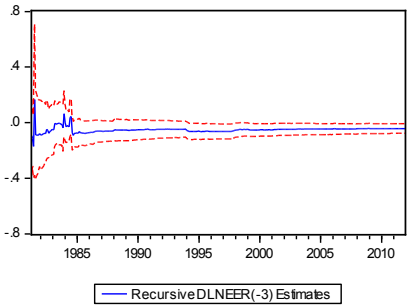
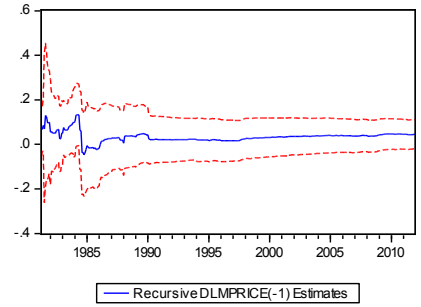
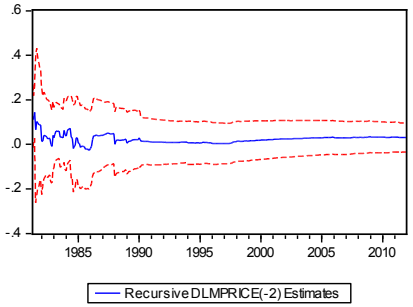

Recursive DLNEER(-3) Estimates


Recursive DLMPRICE(-1) Estimates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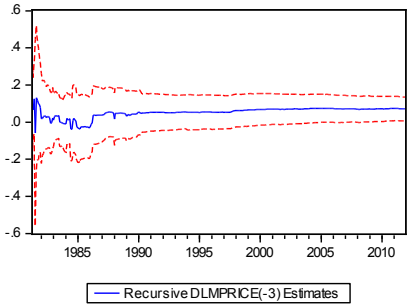
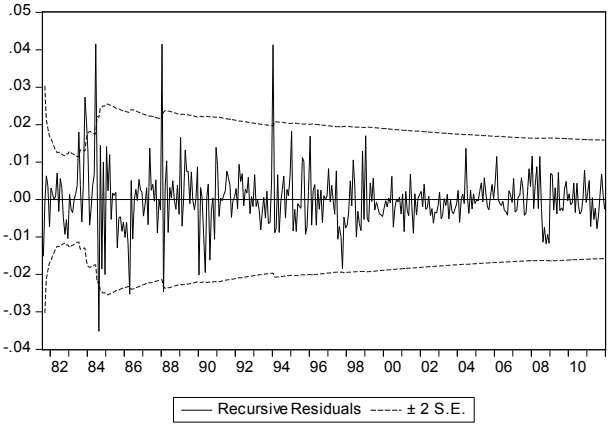

Recursive DLMPRICE(-3) Estimates

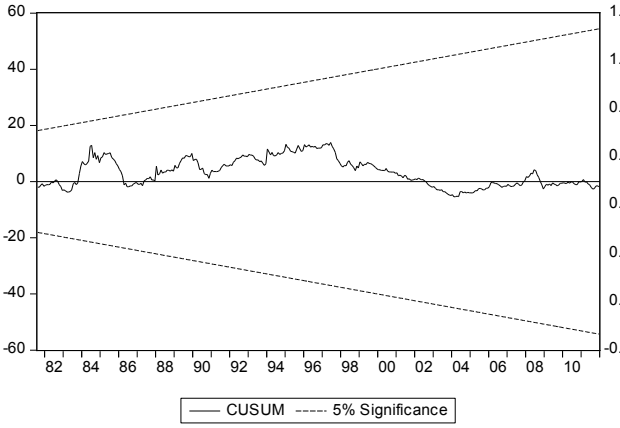
D. With a 4-period lag:

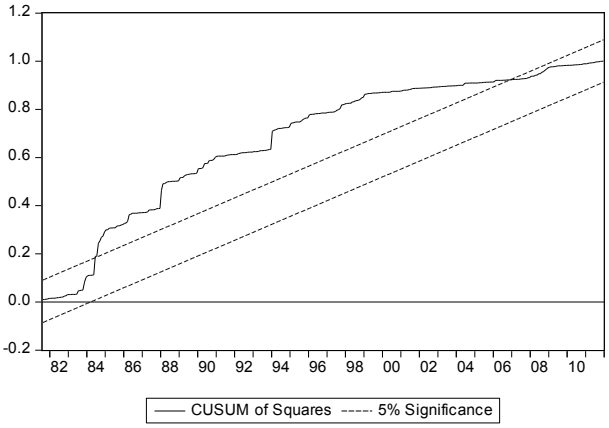
Dependent Variable: DLCPI
Method: Least Squares
Date: 11/16/12 Time: 00:00
Sample (adjusted): 1980M06 2011M12
Included observations: 379 after adjustments

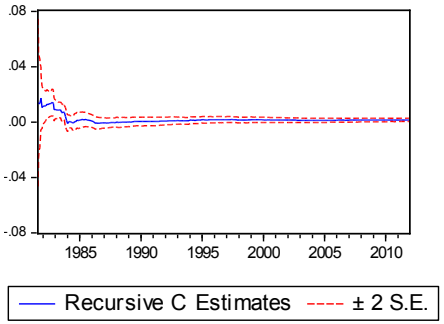
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001486	0.000575	2.584887	0.0101
DLCPI(-1)	0.478147	0.050497	9.468806	0.0000
DLCPI(-2)	0.024386	0.055902	0.436221	0.6629
DLCPI(-3)	-0.109477	0.055620	-1.968306	0.0498
DLCPI(-4)	0.194785	0.047911	4.065549	0.0001
DLNEER	-0.027777	0.015851	-1.752436	0.0805
DLNEER(-1)	-0.094254	0.016464	-5.724783	0.0000
DLNEER(-2)	0.024075	0.017163	1.402734	0.1615
DLNEER(-3)	-0.042603	0.017178	-2.480093	0.0136
DLNEER(-4)	-0.010556	0.016670	-0.633223	0.5270
DLMPRICE(-1)	0.000783	0.032481	0.024109	0.9808
DLMPRICE(-2)	0.038497	0.032704	1.177133	0.2399
DLMPRICE(-3)	0.091306	0.032166	2.838547	0.0048
DLMPRICE(-4)	0.139351	0.031607	4.408911	0.0000

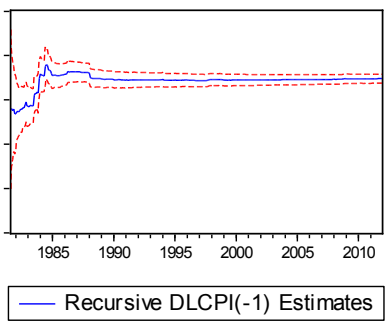
R-squared	0.456670	Mean dependent var	0.007098
Adjusted R-squared	0.437318	S.D. dependent var	0.010515
S.E. of regression	0.007888	Akaike info criterion	-6.810768
Sum squared resid	0.022709	Schwarz criterion	-6.665319
Log likelihood	1304.641	Hannan-Quinn criter.	-6.753047
F-statistic	23.59870	Durbin-Watson stat	2.033990
Prob(F-statistic)	0.000000		

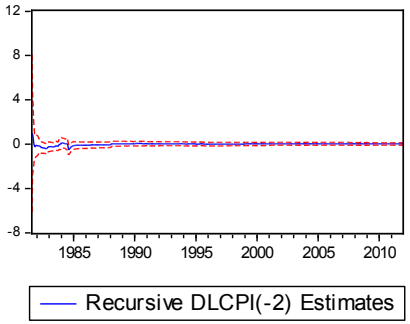

.05
.04
.03
.02
.01
.00
-.01
-.02
-.03
-.04
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
Recursive Residuals ----- ± 2 S.E.

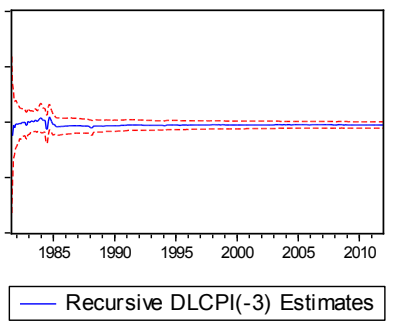

60
40
20
0
-20
-40
-60
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
CUSUM ----- 5% Significance

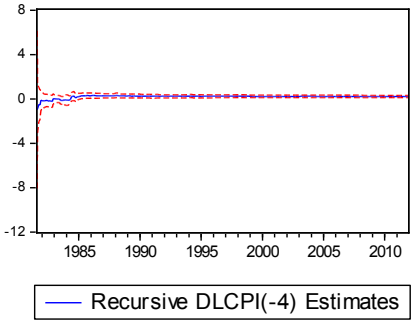

1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
CUSUM of Squares ----- 5% Significance

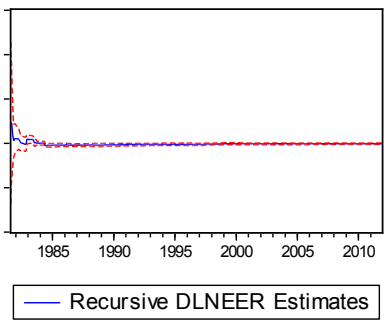

Recursive C Estimates
± 2 S.E.

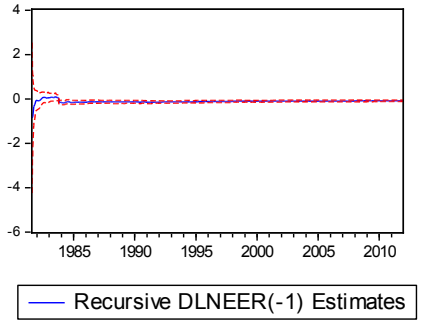

Recursive DLCPI(-1) Estimates

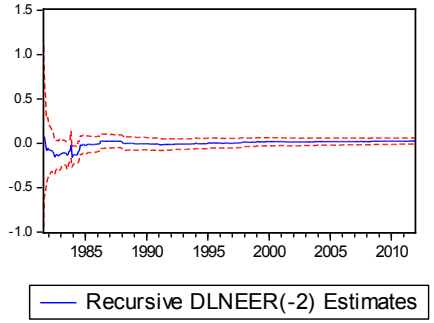

Recursive DLCPI(-2) Estimates

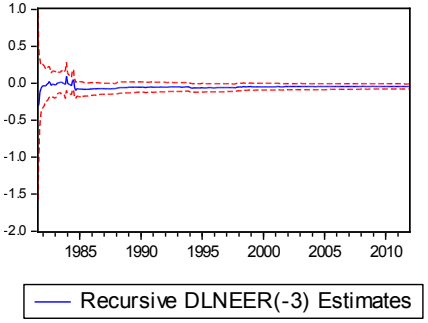

Recursive DLCPI(-3) Estimates

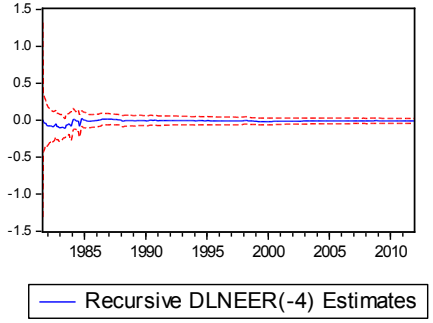

Recursive DLCPI(-4) Estimates


Recursive DLNEER Estimates


Recursive DLNEER(-1) Estimates


Recursive DLNEER(-2) Estimates


Recursive DLNEER(-3) Estimates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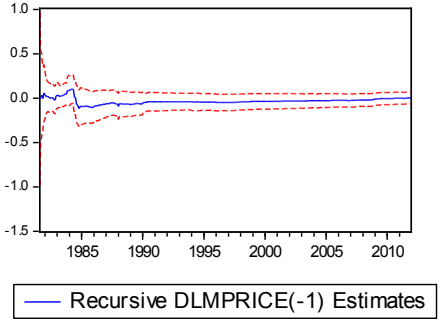
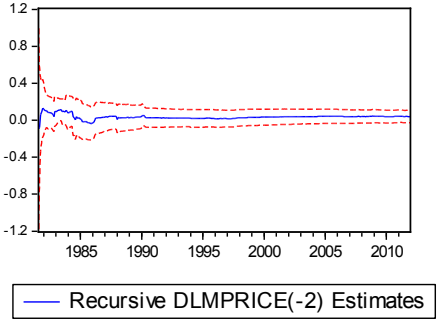

Recursive DLMPRICE(-1) Estimates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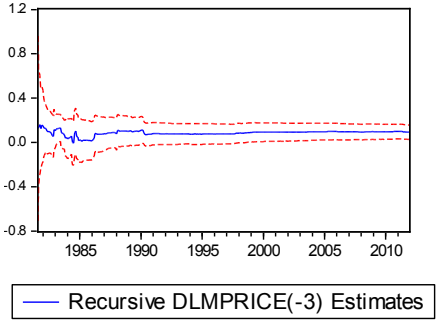
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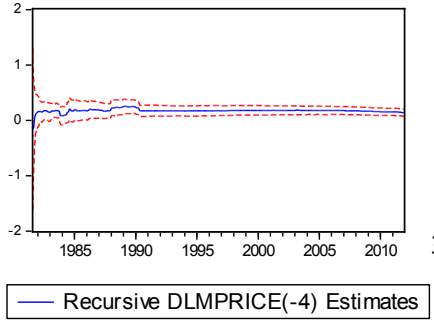
Recursive DLMPRICE(-4) Estimates

REFERENCES

Choudhri, Ehsan U. and Dalia S. Hakura (2001) "Exchange Rate Pass-Through to Domestic Prices: Does the Inflationary Environment Matter?" IMF Working Paper # 194, December.

Kuo, Biing-Shen and Su-Ling Peng, "Price Pass-Through, Household Expenditure, and Industrial Structure: The Case of Taiwan" in Takatoshi Ito and Andrew K. Rose (editors) 2011. Commodity Prices and Markets, East Asia Seminar on Economics, Volume 20. (Chicago: U of Chicago Press. February): pp. 237 - 255

Lamberte, Mario B. (2002). "Central Banking in the Philippines: Then, Now and the Future," Paper presented to Perspective Paper Symposium Series, Philippine Institute for Development Studies. Makati: Metro Manila: August 22.

Mishkin, Frederic (2004). "Can Inflation Targeting work in emerging economies?" Paper presented to an IMF Conference to honor Guillermo Calvo, April.

Mishkin, Frederic and Klaus Schmidt-Hebbel (2007). "Does Inflation Targeting make a difference?" National Bureau of Economic Research, Working Paper No. 12876. January.

Paderanga, Cayetano Jr. (2009). "The Macroeconomic and Sectoral Impact of OFW Remittances," Discussion Paper # 2009-03, University of the Philippines School of Economics, June.

Taylor, John B. (2000). "Low Inflation, Pass-Through, and the Pricing Power of Firms," European Economic Review, vol 44, no. 7. June

Winkelried, Diego (2011) "Exchange rate pass-through and inflation targeting in Peru," Working Papers 2011-012, Banco Central de Reserva del Perú, July 1