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Gold Prices and Inflation

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Abstract

Using data for 14 countries over the 1994 to 2005 period, we assess the leading indicator properties of gold at horizons ranging from 6 to 24 months. We find that gold contains significant information for future inflation for several countries, especially for those that have adopted formal inflation targets. This finding may arise from the manner in which inflation expectations are formed in these countries, which may result in more rapidly mean-reverting inflation rates. Compared to other inflation indicators for Canada, gold remains statistically significant when combined with variables such as the output gap or the growth rate of a broad monetary aggregate.

JEL classification: E31, E44
Bank classification: Inflation and prices; Exchange rates

Résumé

À l'aide de données portant sur 14 pays et couvrant la période 1994-2005, l'auteur évalue les propriétés du prix de l'or comme indicateur avancé à des horizons allant de 6 à 24 mois. Il constate que le prix observé de l'or contient de l'information utile sur l'évolution future de l'inflation dans plusieurs pays, en particulier là où des cibles d'inflation explicites ont été adoptées. Ce résultat pourrait être lié au mode de formation des attentes d'inflation dans ces pays, lequel pourrait faire revenir plus rapidement le taux d'inflation à la moyenne. Lorsqu'il est comparé à d'autres indicateurs de l'inflation au Canada, le prix de l'or reste statistiquement significatif même s'il est accompagné de variables telles que l'écart de production ou le taux de croissance d'un agrégat monétaire au sens large.

Classification JEL : E31, E44
Classification de la Banque : Inflation et prix; Taux de change

1. Introduction

Several leading indicators are monitored by central banks and other agents in the economy in order to forecast the inflation rate. Variables such as exchange rates, inventories and durable consumption, to name but a few, are closely monitored and scrutinized in order to determine whether the economy is accelerating or decelerating in order to determine future movements in the rate of inflation. Financial asset prices have also been found to possess useful leading inidcator properties since their rates of return should embed inflation expectations, but their predictive power has been found to hold only for some periods, and only for certain countries; e.g. see Stock and Watson (2003) for a survey.

One financial asset that has received little attention of late as a leading indicator is the price of gold. In fact, gold is more often analysed as a commodity, but unlike other commodities it has the historical distinction of also being used as a store of value and hedge against inflation. If viewed as a financial asset, one may therefore wish to determine whether it should be monitored as a leading indicator of inflation. Recent studies that have examined various leading indicators for inflation, such as as Stock and Watson (1999), Cecchetti, Chu and Steindel (2000), Boivin and Ng (2006) and Banerjee and Marcellino (2006) have not considered the price of gold as a candidate leading indicator. However, with the general concensus emerging from these studies being that it is difficult to find a leading indicator for inflation that can consistently outperform a random walk, re-considering the price of gold at this time can be a worthwhile exercise.

One of the possible reasons why gold has received scant attention is that some authors have noted that its indicator properties for inflation deteriorated during the 1980s relative to the 1970s. For example, Garner (1995) found that the R^2 statistic on an equation linking the current inflation rate to lagged gold prices dropped from 0.43 over the 1973 to 1994 period to 0.02 over the 1983 to 1994 period. A problem cited by the author with the use of gold as an indicator is that inflation expectations by market participants may simply be wrong if they are formed using incorrect information, such as poorly measured initial estimates of key macro variables.

Mahdavi and Zhou (1997) examined the predictive power of gold and other commodity prices within the context of an error-correction framework. A cointegrating relationship was found between commodity prices and the CPI, whereas none was found between gold and the CPI. In an inflation forecasting exercise, the price of gold performed poorly as an indicator of inflation. The possible reasons given were: (1) Short-term movements in the price of gold are too volatile to properly explain small changes in the price level; and (2) The role of gold as an inflation hedge may have diminished with the growth of the financial futures markets.

On the other hand, studies such as Kolluri (1981), Laurent (1994) and Ghosh *et al.* (2002) have all argued that gold could still be a good long-run inflation hedge.

A similar trait shared by the above studies is the focus on U.S. data. Since gold is priced in U.S. dollars, the usual practice is to determine whether it can actually help predict U.S. inflation. This paper is somewhat more general, differentiating itself from other papers in the literature in the following manners. First, our empirical work uses data from 14 different countries, allowing us to assess for which countries, if any, gold could potentially serve as a useful indicator of inflation. Because we use international data, we further emphasize that the indicator properties of gold prices should be assessed in conjunction with exchange rate movements, as what should matter for any non-U.S. economy are the domestic currency returns of gold. Further, if gold serves as a hedge against inflation, we may find that investors would be interested in holding foreign financial assets whose returns are not highly correlated with those of domestic assets. Gold satisfies this property for all countries with the exception of the United States.

Second, we assess gold's indicator properties over several horizons, ranging from 6 to 24 months, since we wish to determine whether gold is more suitable as a short-run or longer-run indicator of inflation. Finally, our sample spans the period 1994 to 2005, which is a time span for which the indicator properties of gold have not yet been assessed. This period is of particular interest since inflation has been low and stable for many countries, with the consequence that locating a leading indicator that can capture small deviations of inflation from its mean has been a serious challenge.

The short conclusion of this study is that gold price movements are significant determinants of inflation across several countries up to two full years in advance. Gold seems to be most significant for developed countries that have formally adopted inflation targets. Although the reasons behind this finding are uncertain, we conjecture that the inflation targets adopted by several countries may have improved the formation of inflation expectations by market participants. As a result the inflation rates in these countries tend to be mean-reverting over this sample, and so financial assets whose returns embed inflation expectations may prove to be more reliable indicators of inflation in inflation-targeting countries.

In the next section we provide a brief overview of the world gold market, and present the equation used to assess the leading indicator properties of gold. In Section 3 we present our data, and discuss some of the time-series properties of inflation rates across countries. Empirical results are presented in Section 4, while Section 5 concludes.

2. Gold Prices and Inflation

At $1.5 Trillion, the world gold market capitalisation in 2003 was only 17% that of the New York Stock Exchange, but with a turnover of $4.5 Trillion it is highly liquid and operates 24 hours per day.[1] Gold is a peculiar asset, since it is both a commodity used, for example, in the production of jewelery and industrial applications, and a financial asset, where it can be used as a store of value. It is unrivaled as the ultimate tangible store of value, since it has a psychological advantage over other assets stemming from its use for this purpose spanning several centuries.[2]

As a financial asset, which represents about 12% of the gold market, the demand for gold would be a function of the current and expected price of gold, the opportunity cost of holding gold (which could be the rate of return on a risk-free asset, such as U.S. Treasury bills), income, expected future inflation, and overall financial market stress.

From a macroeconomic perspective, our interest in gold prices lies in the embedded inflation expectations. Specifically, we wish to establish whether gold price movements can, to any degree, lead future movements in future inflation. In theory, increases in inflation expectations reduce the perceived purchasing power of money, so agents would divest themselves of money and increase their holdings of gold. This increase in the demand for gold would cause gold prices to rise, so higher gold prices

[1] Source: World Gold Council, www.gold.org.

[2] Artwork is another tangible asset that can be used as either a good or as a store of value, and its price has been compared to overall inflation; see e.g. Stein (1977) and Hodgson and Vorkink (2004). However, gold has the added advantage of being homogeneous and highly liquid.

should signal higher future inflation rates. As surveyed by Stock and Watson (2003), several studies have explored the indicator properties of financial assets for future inflation, but no recent studies have considered gold as a possible candidate variable.

Our objective is to extract information regarding future inflation from observed gold prices. We first define the inflation rate as the *k*-period annualized percentage change in the Consumer Price Index (*P*) or any other closely-related price index:

$$p_t = [\log P_t - \log P_{t-k}] \times 1200 / k , \qquad (1)$$

where *k* can take the values 6, 12, 18 or 24. Using monthly data, this implies that we try to explain movements in inflation for periods ranging from 6 to 24 months.

Following Tkacz (2004) and others, we can decompose the *k*-period inflation rate into nominal and real rates of return on a financial asset:

$$p_t = R_t - r_t \qquad (2)$$

Normally one would assume that (2) applies only to bond rates, but in practice this can be used for any financial asset. Agents, as a minimum, would require that the nominal rate of return on an asset will compensate for the eroding effects of inflation on purchasing power. As a result, R_t above can refer to the nominal *k*-period annualized rate of return on gold, and r_t its real *k*-period rate of return. This is a similar strategy as that used by, for example, Kolluri (1981) and Culp (2001).

Note that, for any particular country, the inflation rate is computed using domestic currency prices. As a hedge against inflation, investors must consider the rate of return on gold expressed in terms of domestic currency units. Since the price of gold is determined in world markets and is priced in U.S. dollars, the price of gold must first be multiplied by the prevailing exchange rate prior to computing its rate of return. We henceforth denote the domestic rate of return on gold by R_t^D, and R_t will be reserved to denote the U.S. dollar rate of return on gold. With *G* denoting the price of gold (per ounce) in U.S. dollars and *E* representing the domestic currency / U.S. dollar exchange rate, the international (U.S.) and domestic annualized *k*-period rates of return on gold are respectively

$$R_t = [\log G_t - \log G_{t-k}] \times 1200/k \quad (3)$$

$$R_t^D = [\log(G_t \times E_t) - \log(G_{t-k} \times E_{t-k})] \times 1200/k \,. \quad (4)$$

Equation (4) can alternatively be written as

$$R_t^D = [\log G_t - \log G_{t-k}] \times 1200/k + [\log E_t - \log E_{t-k}] \times 1200/k \text{ , or}$$

$$R_t^D = R_t + \dot{E}_t \quad (5)$$

where $\dot{E}_t$ is the annualized k-period percentage change in the exchange rate.

To establish whether the k-period rate of return on gold contains information about realized inflation over the next k periods, we can estimate the following equation for the United States:

$$p_t = a + bR_{t-k} + e_t \quad (6)$$

and

$$p_t^D = a + bR_{t-k}^D + e_t$$

or

$$p_t^D = a + b_1 R_{t-k} + b_2 \dot{E}_{t-k} + e_t \quad (7)$$

for the other countries, where (7) stems directly from the decomposition of the domestic currency unit rate of return of gold. In both (6) and (7) e_t is an i.i.d. error term that captures inflation movements that are unexplained by the included variables.

In the above framework, if agents expect inflation to increase, they will want to reduce the impact that this loss of purchasing power will entail by increasing their demand for gold, thereby increasing the price and rate of return on gold. As a result, we expect b in (6) and b_1 in (7) to be positive. A depreciation of the exchange rate, meanwhile, as represented by an increase in E (and thus a positive $\dot{E}$), should have a positive impact on inflation for two reasons. First, it will increase the domestic rate of return on gold; second, it will increase import prices, which should be reflected in the domestic inflation rate. As a result, we expect b_2 in (7) to be positive as well.

3. Data

The premise that gold prices should embed inflation expectations and therefore lead inflation, as discussed in the previous section, is an assertion that should hold across several countries if gold is priced in domestic currency units. For this reason, in this section we begin with an investigation of whether gold can explain inflation across a broad cross-section of 14 countries. The countries are grouped together as (i) OECD countries with inflation targets (Australia, Canada, European Union[3], Mexico, New Zealand, Norway, Sweden and the United Kingdom); (ii) Some OECD countries without inflation targets (Japan and the United States); and (iii) Non-OECD countries (Brazil, China, India and Israel). This grouping of countries is roughly similar to that of Levin *et al.* (2004) in their assessment of inflation-targeting. Note that we group the member countries of the European Central Bank together, since exchange rate data for individual members such as France and Germany end in December 1998. Furthermore, this grouping allows us to determine whether there are marked differences in the relationship between gold and inflation among countries that share similar monetary policy frameworks.

In this study we use monthly data spanning the period September 1994 to December 2005. This choice is motivated by two factors. First, Garner (1995) and others have already studied the period up to 1993. Second, as with Levin *et al.* (2004), we wish to consider a period for which inflation-targeting was broadly adopted. In September 1994 Australia formally adopted inflation targets, so most countries under the inflation-targeting group were targeting inflation throughout this sample. The precise dates for the adoption of inflation targets are presented in Table 1, where we note that the E.U. and Mexico adopted targets in 1999, while Norway did so in 2001. Since targets were not in place for these countries throughout the whole sample, the leading indicator properties of gold may not be the same for these countries as for those that have targeted inflation throughout the whole sample period.

Our gold price series is the monthly average of daily observed prices in U.S. dollars per ounce. Inflation rates are computed using the Consumer Price Index (Retail

[3] We use "European Union" to denote the countries that have adopted the Euro as their currency; we analyze two E.U. countries that have retained their own currencies (Sweden and the United Kingdom) separately.

Price Index for the U.K.) for all countries, but we also consider various measures of Core inflation for selected countries where available. Finally, exchange rates are obtained from the IMF *International Financial Statistics* database. Precise data availability is provided in Table 1.

In Table 2 we present the mean and standard deviations of the inflation rates at each horizon k, as well as results of the DF-GLS unit root test of Elliott, Rothenberg and Stock (1996), which tends to have better size and power relative to the standard ADF unit root test.

The unit root tests show that the construction of the inflation rates for different horizons k yield different conclusions regarding the presence of a unit root. However, with the exception of Brazil, China and Israel, the inflation rates of all other countries are stationary for at least one of the four transformations. Different conclusions regarding the presence of a unit root may be affected by the MA(k-1) process that is introduced when constructing the inflation rates, and therefore inference about the presence of a unit root may be inconclusive over this 11-year period for some countries.

We also note that results can differ markedly when analyzing either Total or Core CPI. For example, Total CPI inflation appears stationary for the United States, whereas CPI excluding Food and Energy prices appears to be non-stationary. A similar observation was made by Levin *et al.* (2004). The consequence of unit roots for our study is that modeling a non-stationary variable using stationary regressors will almost surely yield poor results as the regression equations (6) and (7) will be unbalanced. We will proceed under the maintained assumption that the inflation rates are mean-reverting, but leave it for future work to construct models that exploit the possible I(1) features of inflation rates in countries such as Brazil, China and Israel, and for CPIXFE inflation in the United States.

4. Empirical Results

4.1 International Data

Garner (1995) confirmed that the predictive power of gold for inflation declined drastically in the United States during the 1980s. In fact, this result is true for most countries. As a result, we wish to analyze here whether the predictive content of gold for inflation has returned since the beginning of the 1990s, in particular since the advent of inflation-targeting among several countries.

Inflation-targeting may improve the predictive power of gold, and indeed of other financial assets, for inflation by serving as an anchor for inflation expectations. If inflation targets are credible and accepted by financial market participants, then the expectations errors might be smaller in countries that have formal inflation targets in place, and thus may produce smaller errors e_t in (7), and hence higher R-squared statistics.

An estimation issue that needs to be adressed is the MA(k-1) process that is introduced in the error term of (6) and (7) due to our use of overlapping data. We address this issue in two different manners. First, when the model is estimated using OLS, we follow the usual practice of reporting t-statistics that have been corrected using the Newey and West (1987) covariance matrix. Alternatively, we directly obtain estimates of the MA parameters using the simple estimator proposed by Galbraith and Zinde-Walsh (1994), and use the resulting covariance matrix to estimate (6) and (7) using feasible generalized least squares (FGLS), as suggested by Zinde-Walsh and Galbraith (1991). For larger values of k (18 and 24), we usually find that the t-statistics estimated using FGLS tend to be more conservative than those obtained using the Newey-West correction. However, both methods often agree on whether the gold parameter is significant for a given country at a given horizon, and so we will focus on the OLS estimates in our analysis without loss of generality.

In Tables 3 through 6 we present parameter estimates for all countries, for k = 6, 12, 18 and 24 months, respectively. These results are further summarized in Table 7. We find that, for the inflation-targeting countries, the rate of return on gold is both significant and of the correct sign for at least one horizon for most of the countries. The 12-month horizon appears to be the one for which gold is significant for the most countries, although a notable exception is the significance of gold at the 24-month horizon for the U.K.

To interpret the estimated parameters, consider CPIXFET for Canada at k = 12: If the world price of gold rises by 10% this period, then the observed inflation rate in

Canada will be 0.25% higher over the next twelve months. If this increase in the price of gold is joined by a 5% appreciation in the Canadian dollar (lower *E*), then this will almost exactly offset the impact of gold on inflation. In other countries the effect is far more drastic: In New Zealand, the first country to have implemented inflation targets, a 10% increase in the world price of gold will lead to a 1.1% increase in the inflation rate in 24 months, if the exchange rate remains constant. In general, we observe that the parameter on the rate of return on gold appears to be higher for some of the smaller inflation-targeting economies in our sample (e.g. New Zealand, Australia, Sweden). This might be related to the degree to which these countries might be affected by movements in world inflation expectations, although such an assertion would have to be formally tested in future work.

For the major OECD countries without formal inflation targets, Japan and the United States, we find that the explanatory power of gold for inflation is generally much weaker. We find that gold is a significant predictor of U.S. CPI inflation at $k = 12$, although the fit of this particular equation is relatively modest. Gold is insignificant at all horizons for Japan.

For our group of major non-OECD countries, we find that gold is signifcant and of the correct sign for China at horizons 6 and 12. The parameter signs are somewhat high, with a 10% appreciation in the price of gold leading to a 1.2% increase in the inflation rate in China over the next 12 months; however, the quality of these estimates may be affected by China's exchange rate, which was fixed throughout much of our estimation period.

In Figures 1 through 6 we present the actual fitted inflation rates for some of these countries at selected horizons. For Canada (Figures 1 and 2) we find that the fitted values capture the major turning points in observed inflation rates relatively well. The spike in observed inflation rates in early 2003 was known to have been caused by a strong increase in automobile insurance premiums around that time. For the European Union, New Zealand and Sweden (Figures 3 to 5) the fitted values follow the overall trends in the inflation rate, although some temporary spikes in observed inflation are not captured by the estimated equation. For the United States (Figure 6) the equation captures the general trend in CPI inflation, but does a relatively poor job of capturing the higher-frequency turning points in observed inflation compared to the other countries. The overall fit is somewhat higher than that reported by Garner (1995) from 1983 to 1994, but the conclusion remains that gold is a relatively weak predictor of U.S. inflation.

Overall, we can conclude that gold is a significant predictor of inflation for many developed inflation-targeting countries. The optimal horizons, however, vary across countries, although 12 and 18 months seem to be the most common. Given that these correspond to some of the more interesting horizons for policy-makers, the price of gold may add some value to debates about the direction of inflation in these countries.

Given that these are reduced-form equations, the issue of parameter stability should also be assessed. In Tables 3 to 6 we document any structural breaks using the endogenous structural break test of Andrews (1993). Breaks occur in several models, so any users of these relationships would have to scrutinize the sources of the breaks in more detail. However, it should be noted that for some countries breaks seldom occur, as with the equation for RPIXMT inflation in the United Kingdom.

4.2 Gold vs. Other Indicators for Canada

In this section we compare gold to other commonly-used inflation indicators for Canada. We choose to analyze Canada in more detail for two reasons: First, the in-sample results reported in Table 4 for $k = 12$, which is one of the more useful horizons for decision-makers, showed that gold was significant at predicting inflation for Canada while the in-sample fit was among the highest of all countries at this horizon. Second, the Bank of Canada adopted formal inflation targets in 1991 (with the current 1 to 3 per cent target band in place since 1993), so we have a slightly longer sample over which to analyze the contribution of gold to explaining inflation in an inflation-targeting regime.

We depart from the spirit of equation (7) somewhat, and consider how certain indicators, lagged 4 quarters, can explain observed year-over-year inflation rates. This should help us determine the extent to which gold should be used as an indicator of inflation in Canada. We conduct our analysis at a quarterly frequency in this section since we wish to consider how the price of gold compares to the output gap as an indicator of inflation, which is only available quarterly. The output gap is obtained from the Bank of

Canada[4], while broad money (M2++) and the overnight rate are taken from the *Bank of Canada Review*. Given the influence of the U.S. economy on Canadian economic activity, we also consider the lagged U.S. inflation rate as a predictor of Canadian inflation. To determine whether the explanatory power of gold for Canadian inflation arises due to general movements of commodity prices, we include the price of oil as another candidate variable. The transformations applied to money and the price of oil are similar to that applied to the price of gold, given by (3). We also extend our sample slightly to cover the period 1993q1 to 2006q1 in order to have a larger number of observations during Canada's inflation-targeting regime.

The inflation rates that we consider are for the Core CPI and CPIXFET. Some of the notable findings which are reported in Table 8:

- The gold parameter remains statistically significant for all equation specifications, and for both inflation rates;
- Lagged Canadian inflation, lagged U.S. inflation and the percentage change in the price of oil are insignificant;
- Some of the best in-sample fit is achieved when combining the price of gold and the exchange rate with M2++;
- The parameters of all these models are found to be stable over this period.

Taken together, the above suggests that the inflation dynamics in Canada may be driven by factors that go above and beyond domestic economic activity. In particular the the price of gold and, to a slightly lesser extent the exchange rate, appear to be robust explanatory variables, as their statistical significance do not vanish in the presence of other variables. This can be further observed in Figure 7, where the actual and fitted Canadian CPIXFET inflation rates, using quarterly data, are plotted. The fitted values are obtained from the simple model that regresses inflation against gold, the exchange rate and broad money growth. Again, with the exception of the early 2003 spike caused by

[4] It should be noted that the output gap measure is computed over the full-sample, so this particular variable is constructed using ex post information about inflation, which should therefore give it an advantage over other indicators; see St-Amant and van Norden (1997) for a discussion.

large increases in automobile insurance premiums, the equation captures most of the turning points a full year in advance. This suggests that these variables have good explanatory power for inflation over this sample, revealing that they could possibly be useful leading indicators of Canadian inflation.

5. Conclusion

This paper argues that, if gold is viewed as a financial asset, its price movements might contain useful information regarding the future path of inflation. Using data for 14 countries beginning in 1994, we find that gold prices lead inflation in many countries up to two years in advance. Its performance as a statistically significant indicator is most pronounced for OECD countries that have adopted inflation targets. We conjecture at this point that the advent of inflation targets may have improved the formulation of inflation expectations for these countries, and thus financial asset prices may prove to be more reliable indicators of inflation in these countries if expectations errors have diminished.

A deeper comparison of gold prices with other inflation indicators for Canada demonstrates that gold remains statistically significant when it is paired with other variables, such as money, the output gap, U.S. inflation or the price of oil. This leads us to believe that the inflation dynamics in Canada are more complex than a standard Phillips-Curve story would suggest, and so further research could focus on better understanding the structural relationship between gold an inflation.

On the empirical front, the equation used to link the price of gold to future inflation presented in this paper is very simple. As such, with data on prices, gold and exchange rates, researchers can easily replicate the results presented here, or perform the estimation using data for other countries not analyzed in the present paper. Alternatively, one could explore the usefulness of more complex functional forms to link gold and the exchange rate to future inflation if one suspects non-linearities may be present in the relationship. Finally, it would be useful to assess whether gold is a useful predictor of inflation in a broader out-of-sample forecasting exercise. This was not performed here due to the relatively short sample that we analyze, but it may prove feasible in the future as more data points become available in the inflation-targeting regime. We leave all of the above as areas for future research.

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Table 1: Data

Country	Inflation Rates	Sample	Inflation Targets*
OECD Countries with Inflation Targets			
Australia	CPI	1994:9 – 2005:12	Sep 1994
Canada	CPI, Core CPI, CPI exc. Food, Energy & Indirect Taxes	1994:9 – 2005:12	Feb 1991
European Union	CPI	1994:9 – 2005:12	Jan 1999
Mexico	CPI, Core CPI	1994:9 – 2005:12	Jan 1999
New Zealand	CPI	1994:9 – 2005:12	Mar 1990
Norway	CPI	1995:1 – 2005:12	Mar 2001
Sweden	CPI	1995:1 – 2005:12	Jan 1993
United Kingdom	RPI, RPI exc. Mortgage Interest and Taxes	1994:9 – 2005:12	Oct 1992
OECD Countries without Inflation Targets			
Japan	CPI, Core CPI	1994:9 – 2005:12	--
United States	CPI, CPI exc. Food & Energy	1994:9 – 2005:12	--
Non-OECD Countries			
Brazil	CPI	1994:9 – 2005:12	Jun 1999
China	CPI	1994:9 – 2005:12	--
India	CPI	1994:9 – 2005:12	--
Israel	CPI	1994:9 – 2005:12	Jan 1992

* See Rose (2006) for target dates.

Table 2: Summary Statistics for Inflation Rates

Country	*k* = 6			*k* = 12			*k* = 18			*k* = 24		
	Mean	Std Dev.	Unit Root	Mean	Std. Dev.	Unit Root	Mean	Std. Dev.	Unit Root	Mean	Std. Dev.	Unit Root
OECD Countries with Inflation Targets												
Australia	2.64	1.85	-2.23*	2.63	1.53	-2.03*	2.59	1.18	-2.24*	2.59	1.18	-1.39
Canada	2.05	1.19	-3.17*	1.96	0.88	-0.50	1.89	0.58	-0.42	1.89	0.58	0.23
Canada (CORE)	1.77	0.63	-2.35*	1.77	0.44	-1.79*	1.79	0.32	-1.62*	1.79	0.32	-1.81*
Canada (XFET)	1.63	0.72	-2.31*	1.64	0.50	-1.70*	1.66	0.33	-2.48*	1.66	0.33	-1.84*
E.U.	1.94	0.85	-2.22*	1.95	0.50	-1.30	1.98	0.47	-1.16	1.98	0.47	-0.79
Mexico	12.6	11.3	-1.53	12.7	9.94	-3.04*	12.8	8.51	-2.15*	12.8	8.52	-2.75*
Mexico (CORE)	12.3	11.7	-1.53	12.4	10.2	-3.52*	12.5	8.76	-2.21*	12.5	8.76	-2.72*
New Zealand	2.16	1.40	-1.83*	2.11	1.09	-1.59	2.04	0.77	-2.52*	2.04	0.77	-0.92
Norway	1.77	1.99	-2.69*	1.78	1.07	-1.53	1.85	0.67	-0.90	1.85	0.67	-1.17
Sweden	1.45	1.22	-2.47*	1.44	0.82	-1.61	1.49	0.58	-2.01*	1.49	0.58	-2.01*
U.K.	2.58	1.31	-1.44	2.60	0.74	-2.28*	2.57	0.45	-1.03	2.57	0.45	-0.52
U.K. (XMT)	2.15	0.97	-3.31*	2.15	0.42	-0.77	2.14	0.28	-1.81*	2.14	0.28	-1.64*
OECD Countries without Inflation Targets												
Japan	-0.06	1.26	-2.12*	-0.05	0.83	-1.55	-0.00	0.68	-1.41	-0.00	0.68	-0.42
Japan (CORE)	-0.03	1.16	-1.39	-0.02	0.76	-1.20	0.02	0.62	-1.21	0.02	0.62	-0.24
U.S.	2.55	0.94	-2.16*	2.51	0.70	-1.67*	2.48	0.46	-2.06*	2.48	0.46	-1.07
U.S. (XFE)	2.26	0.50	-1.17	2.29	0.44	-0.90	2.32	0.40	0.11	2.32	0.40	1.06
Non-OECD Countries												
Brazil	14.3	33.8	1.08	23.3	57.9	0.37	38.9	78.8	-0.00	38.9	78.8	-0.20
China	-1.71	4.86	-1.54	-1.50	4.30	-1.33	-1.07	3.58	-1.22	-1.07	3.58	-1.42
India	5.83	5.58	-2.08*	5.60	3.26	-1.93*	5.51	2.43	-2.20*	5.51	2.43	-2.36*
Israel	4.49	4.87	-0.25	4.68	4.28	0.25	5.09	3.96	-0.33	5.09	3.96	0.98

We present test statistics for the DF-GLS unit root test of Elliott, Rothenberg and Stock (1996). The asymptotic critical values for rejecting the unit root hypothesis are -1.62 (10% level) and -1.95 (5% level). A constant (but no trend) is included in the DF-GLS regressions. Lags are set to equal *k* for each test. (*) denotes significance at the 10% level.

Table 3: k = 6 months, September 1994 to December 2005

$$p_t^D = a + b_1 R_{t-k} + b_2 \dot{E}_{t-k} + e_t$$

Country	OLS with Newey-West Covariance Matrix					Feasible GLS		
	Constant	Gold	Exch. Rate	$\overline{R}^2$	Structural Break	Constant	Gold	Exch. Rate
OECD Countries with Inflation Targets								
Australia	2.62 (8.19)	5.83 (2.09)	3.68 (1.34)	0.11	--	2.63 (16.3)	4.47 (3.60)	3.05 (2.35)
Canada (CPI)	2.03 (10.9)	1.82 (1.26)	0.84 (0.56)	0.02	--	2.03 (20.0)	1.59 (1.94)	0.81 (0.61)
Canada (CORE)	1.77 (17.9)	0.87 (1.17)	1.54 (1.48)	0.03	--	1.77 (34.7)	0.91 (2.12)	1.79 (2.54)
Canada (XFET)	1.63 (14.2)	0.95 (0.98)	1.85 (1.84)	0.03	--	1.63 (26.1)	0.55 (1.19)	1.61 (2.11)
European Union	1.92 (15.7)	1.36 (1.98)	-0.87 (-1.07)	0.09	--	1.92 (27.4)	1.29 (2.17)	-0.72 (-1.12)
Mexico	9.89 (7.00)	-22.4 (-4.82)	26.5 (6.86)	0.39	1999:5	9.73 (12.2)	-22.2 (-4.19)	28.1 (9.30)
Mexico (CORE)	9.28 (6.77)	-23.3 (-5.33)	29.1 (7.13)	0.44	1999:7	8.99 (11.7)	-25.0 (-4.77)	31.9 (10.8)
New Zealand	2.11 (8.26)	1.68 (1.13)	-1.32 (-0.62)	0.07	2000:3	2.13 (16.0)	0.79 (0.89)	-1.18 (-1.36)
Norway	1.78 (5.82)	-2.19 (-1.07)	-0.86 (-0.24)	0.00	--	1.79 (9.19)	-2.96 (-2.09)	-1.24 (-0.72)
Sweden	1.45 (7.23)	0.41 (0.39)	1.74 (0.97)	0.01	--	1.46 (12.0)	-0.16 (-0.18)	1.53 (1.46)
United Kingdom	2.44 (13.6)	-1.48 (-1.14)	-8.02 (-5.03)	0.22	--	2.47 (21.4)	-1.36 (-1.71)	-6.82 (-5.28)
United Kingdom (XMT)	2.12 (14.1)	-0.34 (-0.48)	-1.79 (-1.29)	0.01	--	2.13 (25.2)	-0.53 (-0.82)	-1.65 (-1.58)
OECD Countries without Inflation Targets								
Japan	-0.05 (-0.20)	-0.25 (-0.15)	1.97 (2.48)	0.05	1998:5	-0.03 (-0.23)	-0.70 (-0.80)	1.80 (2.25)
Japan (CORE)	-0.01 (-0.05)	-0.17 (-0.10)	1.09 (1.46)	0.01	1997:12	0.02 (0.16)	0.60 (0.845)	0.90 (1.28)
United States	2.53 (15.9)	1.43 (1.50)	--	0.04	--	2.54 (27.8)	0.87 (1.51)	--
United States (XFE)	2.27 (26.0)	-0.80 (-1.70)	--	0.04	2002:4	2.27 (48.1)	-0.59 (-1.98)	--
Non-OECD Countries								
Brazil	5.16 (2.97)	25.1 (1.94)	29.8 (2.97)	0.56	1997:7	5.26 (2.08)	23.3 (1.57)	32.3 (11.7)
China	-2.07 (-2.44)	8.56 (2.29)	13.6 (5.74)	0.21	--	-1.97 (-4.70)	5.67 (2.30)	11.3 (4.34)
India	5.53 (7.55)	-6.21 (-1.56)	11.3 (0.90)	0.05	1998:12	5.55 (9.22)	-4.00 (-1.32)	12.5 (1.93)
Israel	4.19 (4.71)	-4.54 (-1.18)	10.1 (1.23)	0.04	1999:7	4.51 (9.02)	-3.81 (-1.92)	2.71 (0.82)

Corrected t-statistics in parentheses. *Structural Break* is the most likely date at which a break occurs in the relationship at the 95% significance level according to the Andrews (1993) parameter stability test; (--) indicates that no break was located at the 95% significance level. Gold and exchange rate parameters are multiplied by 100 to improve readability.

Table 4: *k* = 12 months, September 1994 to December 2005

$$p_t^D = a + b_1 R_{t-k} + b_2 \dot{E}_{t-k} + e_t$$

Country	OLS with Newey-West Covariance Matrix					Feasible GLS		
	Constant	Gold	Exch. Rate	$\overline{R}^2$	Structural Break	Constant	Gold	Exch. Rate
OECD Countries with Inflation Targets								
Australia	2.58 (6.28)	3.58 (0.88)	1.03 (0.28)	0.03	1999:12	2.62 (11.1)	-1.71 (-1.56)	0.73 (0.56)
Canada (CPI)	1.92 (11.5)	2.46 (1.31)	1.05 (0.37)	0.06	--	1.89 (15.3)	1.86 (2.00)	1.81 (1.11)
Canada (CORE)	1.74 (22.6)	2.14 (3.29)	3.26 (3.03)	0.23	2001:3	1.75 (33.7)	0.92 (2.17)	2.01 (2.71)
Canada (XFET)	1.60 (23.0)	2.54 (3.54)	5.38 (4.31)	0.35	2002:4	1.61 (30.8)	1.30 (3.01)	2.88 (3.77)
European Union	1.91 (19.4)	3.38 (3.46)	1.21 (1.51)	0.36	2000:1	1.96 (30.9)	1.43 (3.09)	0.35 (0.68)
Mexico	9.19 (5.31)	-23.0 (-2.63)	33.6 (7.86)	0.44	1999:8	10.1 (11.9)	-16.9 (-3.00)	23.1 (6.84)
Mexico (CORE)	8.87 (4.88)	-25.5 (-2.81)	33.8 (7.00)	0.44	1999:12	9.81 (11.2)	-18.6 (-3.17)	23.3 (6.61)
New Zealand	2.04 (8.42)	3.79 (2.33)	-1.03 (-0.50)	0.21	2000:6	2.07 (13.9)	1.49 (1.94)	-0.53 (-0.62)
Norway	1.80 (9.08)	1.91 (1.13)	7.14 (4.19)	0.28	--	1.81 (14.6)	1.09 (1.02)	6.71 (5.41)
Sweden	1.43 (9.96)	5.22 (2.97)	5.65 (4.21)	0.28	--	1.44 (15.8)	2.84 (3.14)	3.29 (3.50)
United Kingdom	2.52 (15.9)	0.62 (0.44)	-4.62 (-2.07)	0.19	1999:1	2.55 (28.8)	0.88 (1.65)	-1.41 (-1.65)
United Kingdom (XMT)	2.14 (24.2)	1.13 (1.53)	0.50 (0.36)	0.06	--	2.13 (42.6)	0.93 (2.23)	0.38 (0.57)
OECD Countries without Inflation Targets								
Japan	0.02 (0.05)	0.34 (0.21)	2.92 (1.47)	0.12	1999:12	0.04 (0.36)	-0.20 (-0.26)	1.50 (2.31)
Japan (CORE)	0.05 (0.16)	-0.15 (-0.11)	2.25 (1.07)	0.09	1998:5	0.09 (0.79)	-0.10 (-0.25)	0.80 (1.76)
United States (XFE)	2.30 (21.5)	-1.14 (-1.12)	--	0.07	2001:9	2.31 (33.2)	-0.59 (-2.53)	--
Non-OECD Countries								
Brazil	2.01 (0.85)	55.6 (1.75)	39.1 (2.46)	0.51	2003:11	4.60 (0.81)	39.9 (1.16)	42.4 (9.16)
China	-1.31 (-1.39)	11.9 (2.41)	-10.9 (-2.12)	0.13	1998:2	-0.91 (-1.64)	-3.24 (-1.28)	-8.08 (-3.33)
India	6.25 (7.24)	-18.3 (-2.17)	-14.5 (-0.87)	0.27	1999:5	6.07 (14.5)	-10.4 (-3.78)	-9.63 (-1.72)
Israel	4.52 (3.85)	-8.24 (-0.95)	6.26 (0.40)	0.05	1998:8	4.67 (7.98)	-3.85 (-2.12)	5.03 (1.65)

See notes to Table 3.

Table 5: k = 18 months, September 1994 to December 2005

$$p_t^D = a + b_1 R_{t-k} + b_2 \dot{E}_{t-k} + e_t$$

Country	OLS with Newey-West Covariance Matrix					Feasible GLS		
	Constant	Gold	Exch. Rate	$\bar{R}^2$	Structural Break	Constant	Gold	Exch. Rate
OECD Countries with Inflation Targets								
Australia	2.52 (6.02)	5.68 (1.27)	5.20 (1.55)	0.07	2000:6	2.54 (11.4)	0.63 (0.53)	-0.29 (-0.22)
Canada (CPI)	1.93 (10.4)	0.09 (0.05)	-1.32 (-0.44)	0.00	2000:5	1.89 (14.7)	0.16 (0.20)	-1.78 (-1.28)
Canada (CORE)	1.73 (19.2)	1.82 (2.27)	2.77 (3.23)	0.19	2001:5	1.77 (28.8)	0.24 (0.56)	0.59 (0.78)
Canada (XFET)	1.58 (18.5)	1.46 (2.16)	5.00 (5.40)	0.30	2001:4	1.61 (28.7)	-0.03 (-0.06)	1.40 (1.82)
European Union	1.92 (18.1)	3.96 (4.30)	1.75 (2.79)	0.33	2000:5	1.99 (24.5)	1.16 (2.11)	-0.83 (-1.36)
Mexico	9.63 (3.64)	-10.4 (-0.51)	28.7 (4.38)	0.24	2000:4	11.1 (11.5)	-6.27 (-1.06)	10.4 (2.92)
Mexico (CORE)	9.35 (3.34)	-12.9 (-0.61)	28.5 (4.03)	0.22	2000:5	10.7 (10.8)	-6.10 (-1.06)	10.6 (2.99)
New Zealand	2.04 (11.3)	8.83 (3.51)	3.14 (2.86)	0.40	2000:6	2.06 (21.8)	2.79 (3.32)	-1.11 (-1.41)
Norway	1.82 (12.6)	-4.51 (-2.54)	-0.02 (-0.01)	0.25	--	1.81 (18.0)	-4.27 (-3.15)	0.06 (0.04)
Sweden	1.47 (10.7)	5.39 (2.99)	5.96 (3.67)	0.35	2001:3	1.44 (13.8)	2.07 (1.97)	2.47 (2.28)
United Kingdom	2.57 (19.6)	2.56 (3.04)	-1.18 (-0.51)	0.16	2000:5	2.56 (18.4)	1.91 (2.06)	0.57 (0.46)
United Kingdom (XMT)	2.12 (26.7)	1.38 (2.18)	0.31 (0.25)	0.08	--	2.10 (28.7)	1.24 (2.09)	0.46 (0.58)
OECD Countries without Inflation Targets								
Japan	0.06 (0.17)	1.18 (0.62)	2.88 (1.40)	0.11	1999:10	0.05 (0.32)	1.80 (1.90)	1.20 (1.47)
Japan (CORE)	0.05 (0.15)	1.13 (0.58)	2.31 (1.12)	0.07	2000:1	0.11 (0.72)	1.30 (2.13)	0.90 (1.57)
United States	2.48 (16.5)	1.92 (1.48)	--	0.10	--	2.51 (24.6)	0.44 (0.78)	--
United States (XFE)	2.30 (18.3)	-0.70 (-0.59)	--	0.02	2003:2	2.31 (27.1)	-0.00 (-0.03)	--
Non-OECD Countries								
Brazil	0.70 (0.21)	-43.3 (-0.86)	44.4 (2.22)	0.44	2002:10	11.4 (1.32)	-51.9 (-1.32)	44.1 (7.27)
China	-0.46 (-0.49)	5.75 (1.21)	-24.0 (-4.88)	0.32	1999:9	-0.57 (-1.11)	1.59 (0.62)	-8.41 (-3.91)
India	6.67 (7.81)	-16.2 (-3.01)	-26.6 (-1.61)	0.15	1999:12	6.22 (11.0)	-2.32 (-0.70)	-10.8 (-1.66)
Israel	4.55 (3.46)	-5.08 (-0.41)	6.87 (0.30)	0.01	2000:1	4.86 (7.53)	1.35 (0.70)	2.91 (0.87)

See notes to Table 3.

Table 6: *k* = 24 months, September 1994 to December 2005

$$p_t^D = a + b_1 R_{t-k} + b_2 \dot{E}_{t-k} + e_t$$

Country	OLS with Newey-West Covariance Matrix					Feasible GLS		
	Constant	Gold	Exch. Rate	$\bar{R}^2$	Structural Break	Constant	Gold	Exch. Rate
OECD Countries with Inflation Targets								
Australia	2.35 (6.81)	5.95 (1.35)	12.1 (2.13)	0.28	2000:6	2.53 (14.9)	0.68 (0.56)	2.46 (1.77)
Canada (CPI)	1.93 (9.14)	-1.29 (-0.81)	-2.05 (-0.55)	0.01	2000:8	1.89 (11.8)	-0.93 (-1.02)	-0.93 (-0.59)
Canada (CORE)	1.74 (14.4)	1.36 (1.18)	2.95 (1.70)	0.12	2002:1	1.79 (24.4)	-0.65 (-1.33)	0.79 (0.90)
Canada (XFET)	1.56 (13.2)	0.46 (0.51)	4.75 (3.04)	0.21	2002:4	1.62 (20.0)	-0.61 (-1.56)	1.99 (3.03)
European Union	1.96 (13.8)	2.70 (2.13)	1.96 (1.97)	0.10	2000:10	2.08 (25.1)	-1.22 (-2.20)	-0.24 (-0.44)
Mexico	10.1 (2.74)	6.92 (0.23)	25.5 (2.56)	0.16	2000:9	11.0 (11.1)	4.12 (0.94)	8.48 (3.20)
Mexico (CORE)	9.85 (2.52)	3.73 (0.12)	25.3 (2.37)	0.14	2000:8	10.8 (10.9)	4.61 (1.12)	7.45 (2.95)
New Zealand	2.05 (13.2)	10.8 (3.03)	6.85 (2.46)	0.46	2000:9	2.08 (27.0)	6.00 (5.17)	3.26 (3.26)
Norway	1.78 (20.5)	-8.41 (-6.09)	-3.88 (-3.38)	0.56	--	1.80 (59.9)	-8.41 (-10.5)	-3.73 (-3.73)
Sweden	1.46 (10.0)	2.40 (1.19)	4.17 (2.93)	0.17	2001:3	1.46 (14.5)	-1.35 (-1.48)	-0.26 (-0.27)
United Kingdom	2.60 (26.3)	2.74 (6.70)	-0.76 (-0.47)	0.24	--	2.56 (35.6)	0.52 (0.88)	-0.76 (-1.10)
United Kingdom (XMT)	2.13 (41.1)	1.61 (3.11)	1.60 (1.26)	0.24	--	2.13 (57.1)	0.95 (2.58)	0.97 (2.05)
OECD Countries without Inflation Targets								
Japan	0.10 (0.32)	0.96 (0.38)	1.49 (0.74)	0.07	2000:2	0.10 (0.64)	-0.80 (-0.92)	-0.30 (-0.55)
Japan (CORE)	0.08 (0.27)	0.83 (0.36)	0.77 (0.39)	0.02	2000:9	0.10 (0.79)	-0.70 (-1.15)	-0.30 (-0.67)
United States	2.48 (19.6)	0.88 (0.57)	--	0.02	2001:9	2.50 (43.2)	0.28 (0.50)	--
United States (XFE)	2.31 (16.0)	-0.82 (-0.69)	--	0.02	2003:5	2.35 (29.8)	-0.30 (-1.02)	--
Non-OECD Countries								
Brazil	-1.14 (-0.17)	-151.4 (-1.12)	40.6 (2.27)	0.38	2002:11	49.7 (5.40)	-52.3 (-1.23)	0.00 (3.52)
China	-0.08 (-0.09)	-4.72 (-0.68)	-25.8 (-3.80)	0.36	2003:8	-0.26 (-0.51)	-6.95 (-2.50)	-5.44 (-2.43)
India	5.12 (5.98)	1.11 (0.15)	8.38 (0.39)	-0.01	2000:6	5.28 (8.90)	3.31 (1.16)	10.5 (2.36)
Israel	3.71 (2.38)	2.31 (0.14)	22.3 (0.81)	0.03	2000:10	5.35 (8.26)	-1.67 (-0.79)	-0.65 (-0.21)

See notes to Table 3.

Table 7: Summary of Fitted Models, In-sample, September 1994 to December 2005

Country	$k=6$			$k=12$			$k=18$			$k=24$		
	R_{t-k}	$\dot{E}_{t-k}$	$\overline{R}^2$	R_{t-k}	$\dot{E}_{t-k}$	$\overline{R}^2$	R_{t-k}	$\dot{E}_{t-k}$	$\overline{R}^2$	R_{t-k}	$\dot{E}_{t-k}$	$\overline{R}^2$
OECD Countries with Inflation Targets												
Australia	5.83*	3.68	0.11	3.58	1.03	0.03	5.68	5.20	0.07	5.95	12.1*	0.28
Canada	1.82	0.84	0.02	2.46	1.05	0.06	0.09	-1.32	0.00	-1.29	-2.05	0.01
Canada (CORE)	0.87	1.54	0.03	2.14*	3.26*	0.23	1.82*	2.77*	0.19	1.36	2.95	0.12
Canada (XFET)	0.95	1.85	0.03	2.54*	5.38*	0.35	1.46*	5.00*	0.30	0.46	4.75*	0.21
E.U.	1.36*	-0.87	0.09	3.38*	1.21	0.36	3.96*	1.75*	0.33	2.70*	1.96*	0.10
Mexico	-22.4*	26.5*	0.39	-23.0*	33.6*	0.44	-10.4	28.7*	0.24	6.92	25.5*	0.16
Mexico (CORE)	-23.3*	29.1*	0.44	-25.5*	33.8*	0.44	-12.9	28.5*	0.22	3.73	25.3*	0.14
New Zealand	1.68	-1.32	0.07	3.79*	-1.03	0.21	8.83*	3.14*	0.40	10.8*	6.85*	0.46
Norway	-2.19	-0.86	0.00	1.91	7.14*	0.28	-4.51*	-0.02	0.25	-8.41*	-3.88*	0.56
Sweden	0.41	1.74	0.01	5.22*	5.65*	0.28	5.39*	5.96*	0.35	2.40	4.17*	0.17
U.K.	-1.48	-8.02*	0.22	0.62	-4.62*	0.19	2.56*	-1.18	0.16	2.74*	-0.76	0.24
U.K. (XMT)	-0.34	-1.79	0.01	1.13	0.50	0.06	1.38*	0.31	0.08	1.61*	1.60	0.24
OECD Countries without Inflation Targets												
Japan	-0.25	1.97*	0.05	0.34	2.92	0.12	1.18	2.88	0.11	0.96	1.49	0.07
Japan (CORE)	-0.17	1.09	0.01	-0.15	2.25	0.09	1.13	2.31	0.07	0.83	0.77	0.02
U.S.	1.43	--	0.04	2.56*	--	0.15	1.92	--	0.10	0.88	--	0.02
U.S. (XFE)	-0.80	--	0.04	-1.14	--	0.07	-0.70	--	0.02	-0.82	--	0.02
Non-OECD Countries												
Brazil	25.1	29.8*	0.56	55.6	39.1*	0.51	-43.3	44.4*	0.44	-151.4	40.6*	0.38
China	8.56*	13.6*	0.21	11.9*	-10.9*	0.13	5.75	-24.0*	0.32	-4.72	-25.8*	0.36
India	-6.21	11.3	0.05	-18.3*	-14.5	0.27	-16.2*	-26.6	0.15	1.11	8.38	-0.01
Israel	-4.54	10.1	0.04	-8.24	6.26	0.05	-5.08	6.87	0.01	2.31	22.3	0.03

* denotes significance at the 5% level.

Table 8: Canada, Gold and Other Indicators, Quarterly, 1993q1 to 2006q1

k = 4 quarters

Regressors	Core Inflation			CPIXFET Inflation		
	Parameters	$\overline{R}^2$	Break	Parameters	$\overline{R}^2$	Break
• Gold • Exch Rate	0.020 (2.33) 0.034 (3.10)	0.21	--	0.024 (3.17) 0.049 (3.89)	0.34	--
• Gold • Exch Rate • Output Gap	0.019 (2.28) 0.029 (2.53) -7.68 (-0.87)	0.21	--	0.025 (3.39) 0.053 (5.15) 6.80 (1.16)	0.35	--
• Gold • Exch Rate • M2++	0.020 (2.31) 0.015 (1.23) 0.146 (2.32)	0.33	--	0.024 (3.10) 0.034 (2.68) 0.111 (1.74)	0.40	--
• Gold • Exch Rate • Lagged Inflation	0.020 (2.62) 0.035 (3.02) -0.029 (-0.16)	0.19	--	0.029 (3.95) 0.053 (4.31) -0.217 (-1.59)	0.37	--
• Gold • Exch Rate • Overnight Rate	0.017 (2.16) 0.031 (2.92) -0.068 (-1.53)	0.27	--	0.023 (3.30) 0.047 (4.10) -0.033 (-0.69)	0.35	--
• Gold • Exch Rate • Lagged U.S. CPI Inflation	0.019 (2.22) 0.035 2.99) -0.004 (-0.09)	0.19	--	0.023 (3.42) 0.050 (3.82) -0.030 (-0.53)	0.34	--
• Gold • Exch Rate • Lagged U.S. XFE Inflation	0.020 (2.30) 0.034 (2.96) 0.009 (0.19)	0.19	--	0.023 (3.24) 0.051 (3.91) -0.050 (-0.97)	0.34	--
• Gold • Exch Rate • Oil	0.020 (2.34) 0.035 (3.60) 0.000 (0.08)	0.19	--	0.024 (3.22) 0.048 (5.17) -0.000 (-0.12)	0.33	--
• Gold • Exch Rate • Output Gap • M2++ • Lagged Inflation • Overnight Rate • Lagged U.S. XFE Inflation • Oil	0.021 (2.40) 0.012 (0.78) -11.27 (-0.99) 0.163 (2.11) -0.080 (-0.53) 0.033 (0.66) -0.018 (-0.33) 0.001 (0.29)	0.27	--	0.022 (3.17) 0.036 (2.56) 16.35 (1.98) 0.115 (1.86) 0.041 (0.34) -0.031 (-0.51) -0.035 (-0.77) -0.003 (-1.03)	0.41	--

Estimated using OLS with Newey-West covariance matrix. Corrected t-statistics are in parentheses. All variables are lagged by k = 4 quarters. Andrews (1993) test conducted to test for evidence of a structural break; (--) indicates that there is no evidence of a structural break at the 95% level.

Figure 1

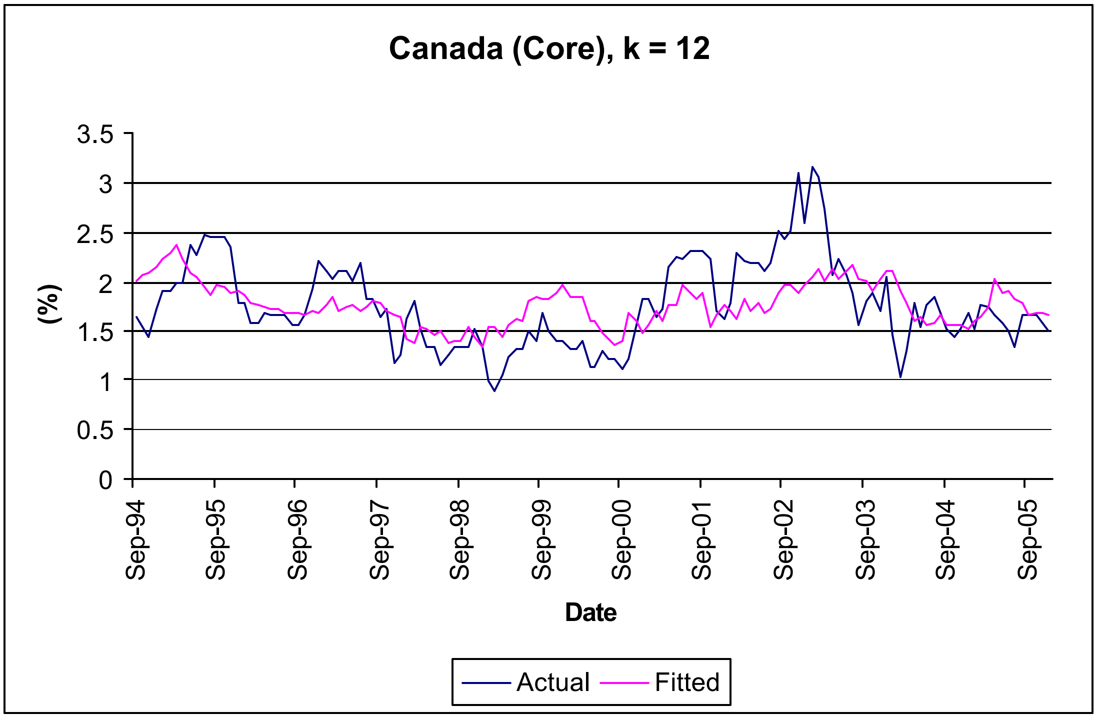


Figure 2

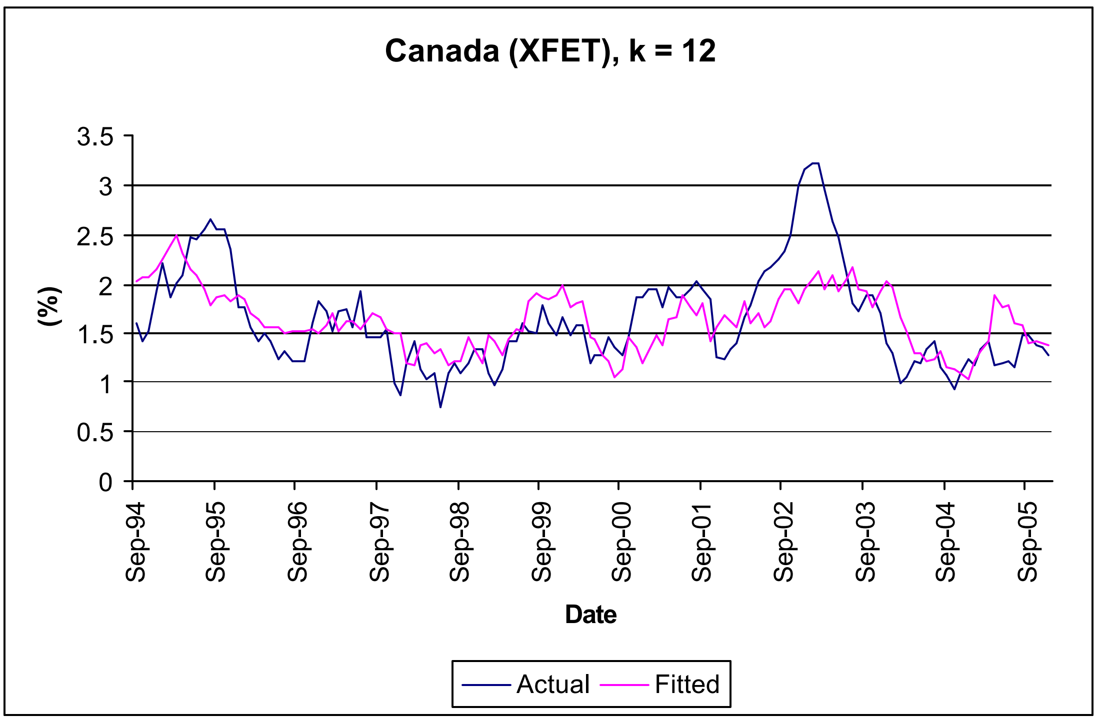


Figure 3

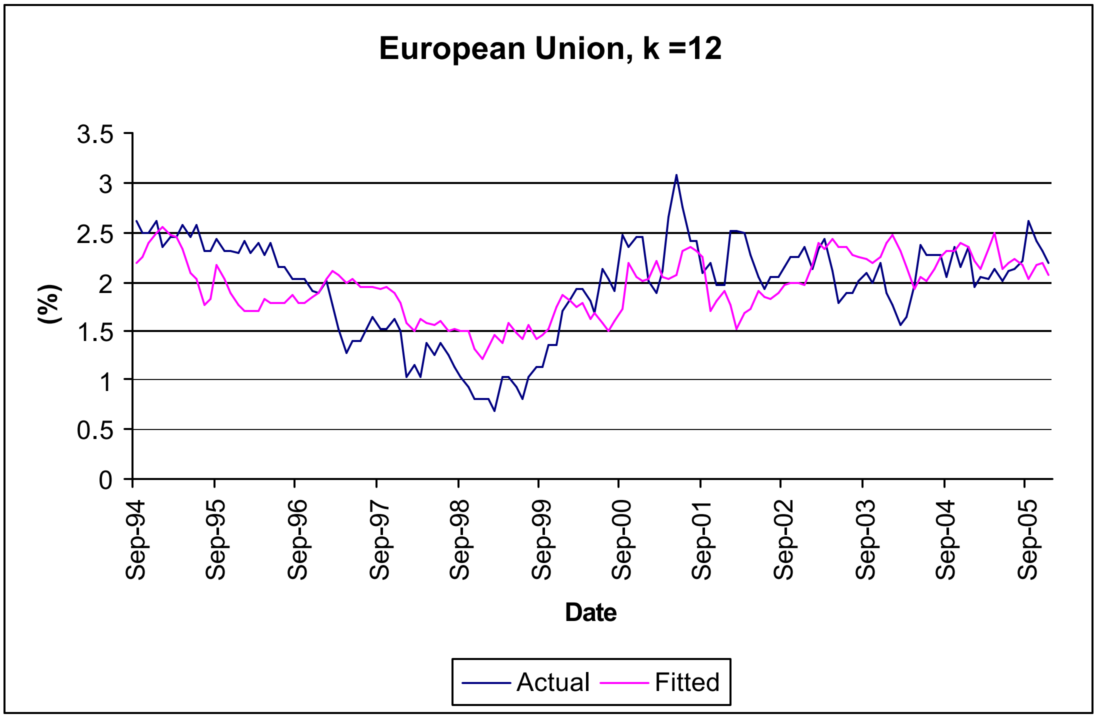


Figure 4

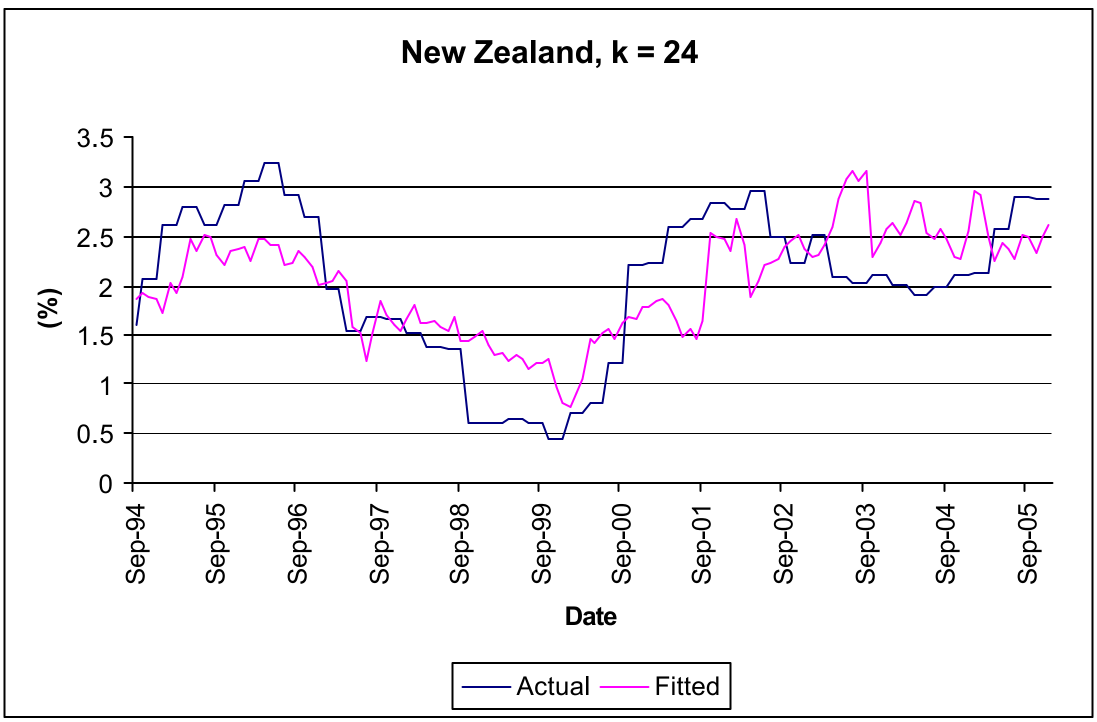


Figure 5

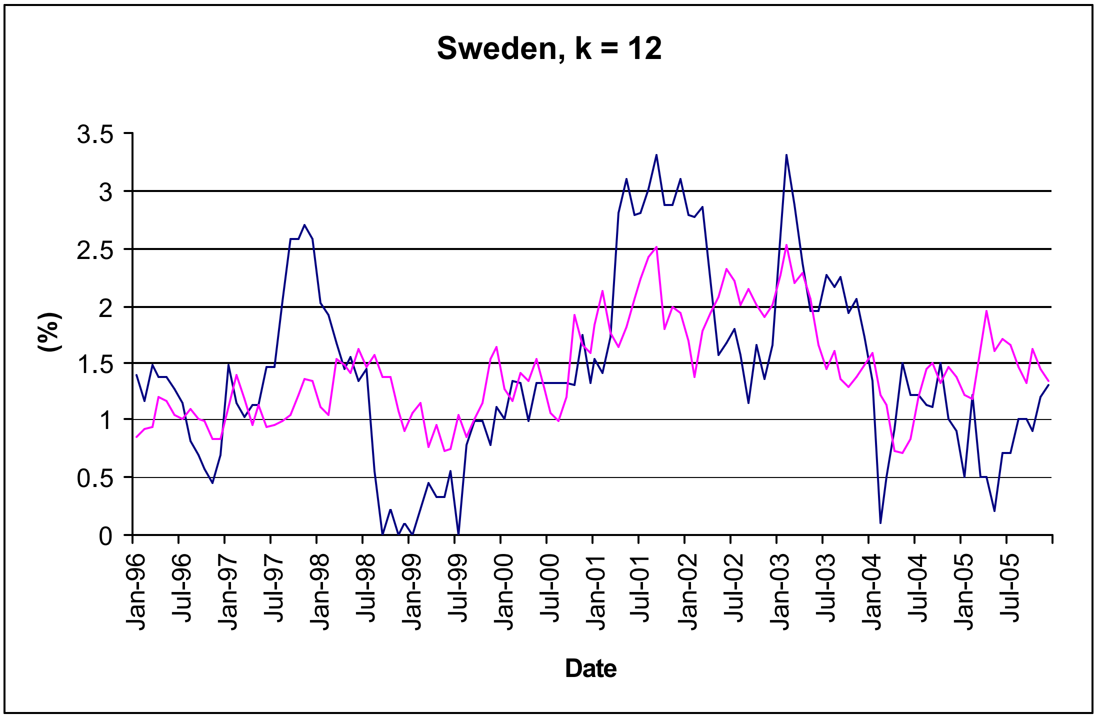


Figure 6

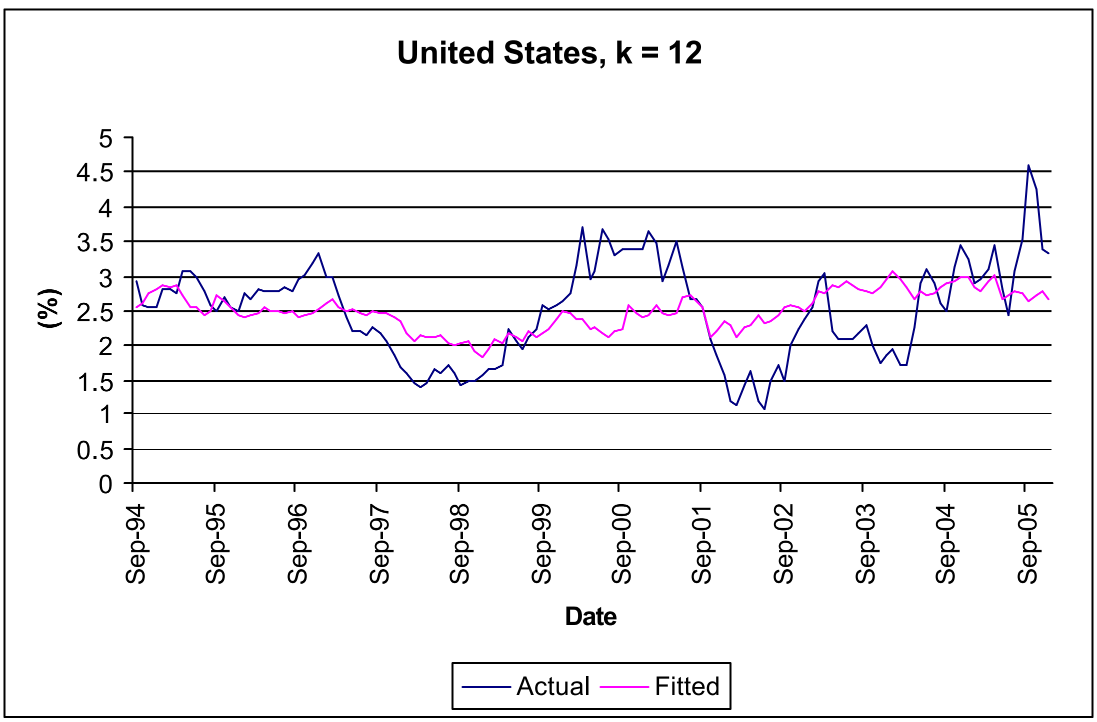
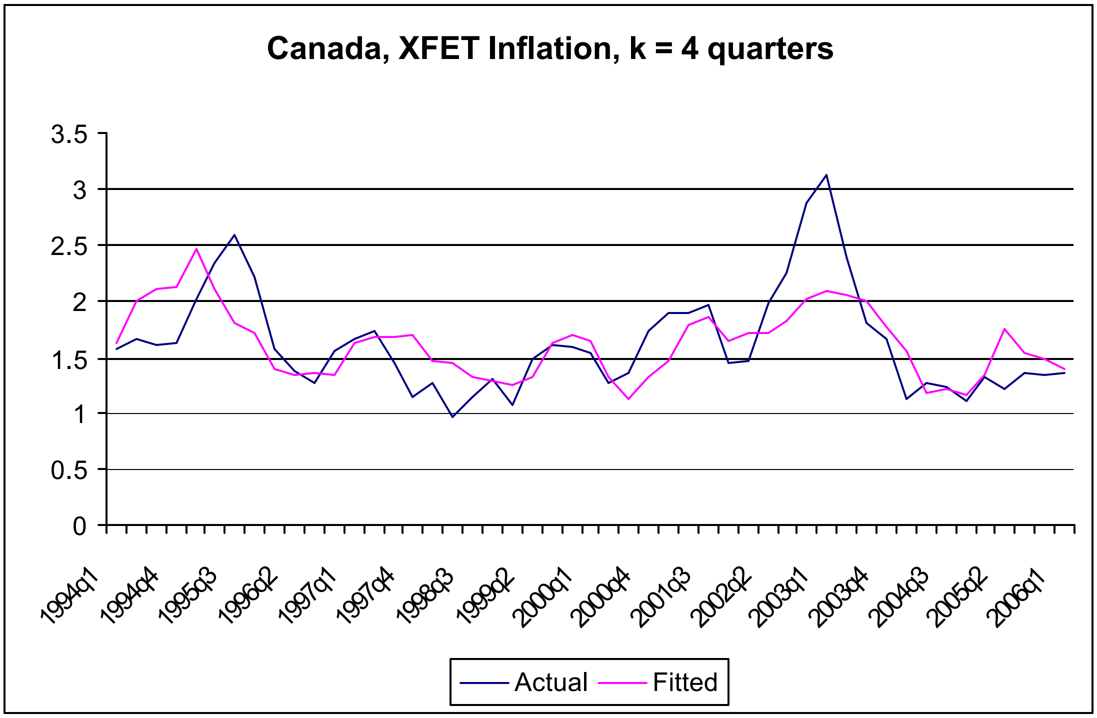


Figure 7


Canada, XFET Inflation, k = 4 quarters
3.5
3
2.5
2
1.5
1
0.5
0
1994q1
1994q4
1995q3
1996q2
1997q1
1997q4
1998q3
1999q2
2000q1
2000q4
2001q3
2002q2
2003q1
2003q4
2004q3
2005q2
2006q1
Actual
Fitted