Inflation Targeting under Imperfect Policy Credibility based on ARIMBI

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Outline

Summary of the Paper Data and Evidence for Some Other Countries Extensions

Summary of the Paper

- Important to model credibility for forecasting and policy analysis
- Especially important during the transition from high inflation to low inflation
- Significant international evidence that shows upward bias in inflation expectations does disappear and we observe weaker indexation once a track record is established

Summary of the Paper

- I like the approach in the paper. Look at all information that is available for Indonesia
- Also agree with the main conclusion, which is to build a nonlinear model of the inflation process.
- Spend the rest of my time looking at data and some evidence to try to motivate this.

Canada

It took several years to anchor long-term inflation expectations to the target. Laxton, Douglas, Nick Ricketts, and David Rose, 1993, "Uncertainty, Learning and Policy Credibility," *Economic Behavior and Policy Choice Under Price Stability*, Proceedings of a Conference held at the Bank of Canada, 30–31 October.

Canadian Data on Long-Term Nominal Yields, Real Yields, and Inflation Expectation



CANADA

| <u>Mean</u> | <u>1975M1-1991M1</u> | <u>1991M2-2006M5</u> | <u>1995M12-2006M5</u> |
|-----------------------|----------------------|----------------------|-----------------------|
| CPI inflation | 7.1 | 2.1 | 2.1 |
| Real GDP growth | 2.9 | 3.1 | 3.4 |
| Unemployment rate | 8.9 | 8.6 | 7.7 |
| 10-year interest rate | 10.8 | 6.3 | 5.4 |
| | | | |
| Standard Deviation | | | |
| CPI inflation | 2.9 | 1.3 | 0.9 |
| Real GDP growth | 3.8 | 2.0 | 1.9 |
| Unemployment rate | 1.7 | 1.6 | 1.0 |
| 10-year interest rate | 2.0 | 1.6 | 0.9 |

United Kingdom

Long-term inflation expectations became anchored quickly to the target after May 1997 when the UK announced central bank instrument independence, a welldefined point target and the creation of an MPC

United Kingdom: Retail Price Index Inflation Expectations 10 Years Ahead¹ (Percent)



Source: Bank of England.

¹The definition and magnitude of the target changed in January 2004. It is now set at 2.0 percent and is expressed in terms of the year-on-year percent change in the HICP (Harmonized Index of Consumer Price). This is consistent with an estimate of 2.8 percent for the RPI (Retail Price Index), which is the definition used for the indexed bonds.

Israel

Easier to lose credibility than to gain it.

Argov, E., N. Epstein, P. Karam, D. Laxton, and D. Rose, 2007, "Endogenous Monetary Policy Credibility in a Small Structural Model of Israel," IMF Working Paper 07/207 (August 2007),

Israel: Policy Rate, Inflation, and Exchange Rate 2001-04



Sources: Bank of Israel; Central Bureau of Statistics; and IMF staff estimates.

Israel: Growth, Real Interest Rate, and Unemployment Rate 2001-04



Sources: Bank of Israel; Central Bureau of Statistics; and IMF staff estimates.

1/ Policy rate minus expected inflation one year ahead.

2/ A broad (monthly) index that proxies for real GDP developments.

Some Existing Literature

- Using survey data from Consensus Economics Levin, Natulucci and Piger (LNP: 2004) show that long-term inflation expectations (LTE) are better anchored in a group of 5 industrial IT countries (Australia, Canada, New Zealand, Sweden and the UK) than in a group of seven non-IT countries (US, Japan, Denmark, France, Italy and the Netherlands)
- LNP show that LTE still moves with a 3-year moving average of past inflation in these non-IT countries

Some Existing Literature

 Batini and Laxton (2005) extend the LNP results to consider emerging-market economies and find that revisions in LTE at long horizons depend on changes in headline inflation in a sample of non-IT countries, while revisions in IT countries are not related to either changes in headline inflation or LNP's measure of trend inflation

Table 1. Emerging Country Pooled Regression Estimates of the Effects of Inflation Developments on Revisions in Inflation Forecasts at Different Horizons (*Sample 2003:Q2–2005:Q2*)

| | Inflation- Targeting | Non-Inflation- Targeting |
|------------------------|--------------------------------|-------------------------------|
| 3 years ahead: | | |
| Year-on-year inflation | 0.05 (t=1.33; sign.=0.215) | 0.27 (t=2.59; sign.=0.032) |
| Trend inflation | 0.14 (t=1.22; sign.=0.254) | 0.17 (t=2.41; sign.=0.043) |
| 2 years ahead: | | |
| Year-on-year inflation | 0.10 (t=2.80; sign.=0.021) | 0.08 (t=0.78; sign.=0.458) |
| Trend inflation | 0.21 (t=-1.32; sign.=0.218) | 0.54 (t=5.49; sign.=0.001) |
| 1 year ahead: | | |
| Year-on-year inflation | 0.22 (t=6.98; sign.=0.000) | 0.58 (t=4.30; sign.=0.003) |
| Trend inflation | 0.34 (t=1.10; sign.=0.3027) | 0.21 (t=2.24; sign.=0.055) |

Sources: Consensus Economics, and IMF, International Financial Statistics.

Note: Estimation methodology based on Levin, Natalucci, and Piger (2004). Estimates obtained from STATA with robust standard errors.

Table 1. Emerging Country Pooled Regression Estimates of the Effects of Inflation Developments on Revisions in Inflation Forecasts at Different Horizons

(Sample 2003:Q2–2005:Q2)

| | Inflation- Targeting | Non-Inflation- Targeting |
|------------------------|---|--------------------------------|
| 6–10 years ahead: | | |
| Year-on-year inflation | 0.03 $(t = 0.89; sig = 0.396)$ | 0.25 (t = 3.48; sig =0.008) |
| Trend inflation | 0.04 (<i>t</i> = 0.55; sign.=0.596) | 0.01 (t=0.13; sign.=0.900) |
| 5 years ahead: | | |
| Year-on-year inflation | 0.07 (t=1.56; sign.=0.152) | 0.23 (t=5.50; sign.=0.001) |
| Trend inflation | -0.16 (t=-1.11; sign.=0.296) | 0.05 (t=0.65; sign.=0.535) |
| 4 years ahead: | | |
| Year-on-year inflation | 0.03 (t=0.54; sign.=0.604) | 0.30 (t=2.76; sign.=0.025) |
| Trend inflation | -0.12 (t=-1.13; sign.=0.286) | 0.02 (t=0.32; sign.=0.760) |

Sources: Consensus Economics, and IMF, International Financial Statistics.

Note: Estimation methodology based on Levin, Natalucci, and Piger (2004). Estimates obtained from STATA with robust standard errors.

Some Existing Literature

- Using estimates of LTE derived by comparing yields in indexed and conventional bonds Gurkayank, Sack and Swanson(GSS: 2005) show that LTE responds excessively to news in the US
- In 2 other papers they show that this "excess sensitivity" does not exist in 4 IT countries (UK, Sweden, Canada and Chile)

Future Extensions

Nonlinear model of credibility (lagged indexation and bias) and a loss function.

Alichi, A., H. Chen, K. Clinton, C. Freedman, M.J. Johnson, O. Kamenik, Turgut Kisinbay, and D. Laxton, 2009, "Inflation Targeting Under Imperfect Policy Credibility," IMF Working Paper 09/94 (April 2009)