

**Discussion of
“Policy Responses to Exchange Rate Movements”
by Laurence Ball**

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**Bank of Canada Conference on “International Experience with
the Conduct of Monetary Policy under Inflation Targeting”**

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Outline

- Ball's Paper
- Ball's Model
- DSGE Models
- Inflation Response to ER shocks
- Should Monetary Policy respond to ER Shocks?
- Should Forex Interventions respond to ER Shocks?
- Should Fiscal Policy respond to ER and Commodity-Price Shocks?
- Conclusion

Ball's paper

Paper's two main points (“twists”):

1. *PM should respond differently to changes in commodity prices than to changes in demand for foreign exports*

Yes, I agree, because the effects of ER shocks and commodity shocks on inflation (and output) are very different - as shown by optimizing DSGE models, not stylized “textbook” models.

2. *In addition to MP, other policies should be used to counter-act ER and commodity shocks:*

2.1 Conventional fiscal policy

May be: depends on (optimal) fiscal rule

2.2 Government interventions in commodity futures

Why? Where is the distortion?

Ball's model

Ball's 2 (3) – equation “textbook” features:

- No micro foundations (no welfare analysis possible; no private reactions to policy shifts)
- No nominal variables (hence no monetary policy)
- No intertemporal budget constraints (hence no fiscal policy)
- No asset structure (hence no intervention policies)
- No dynamics (no difference between short and long-term shocks; no stationary full-employment equilibrium different from short-term unemployment equilibrium)
- No uncertainty (no difference between anticipated and non-anticipated shocks)

Hence not useful for the questions at hand.

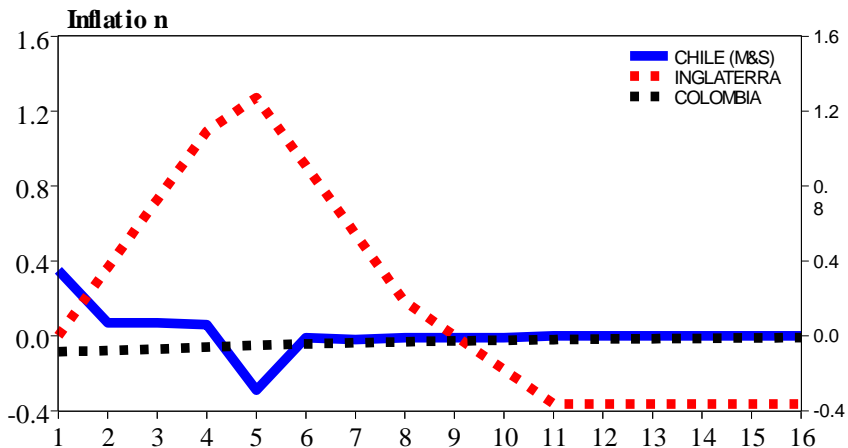
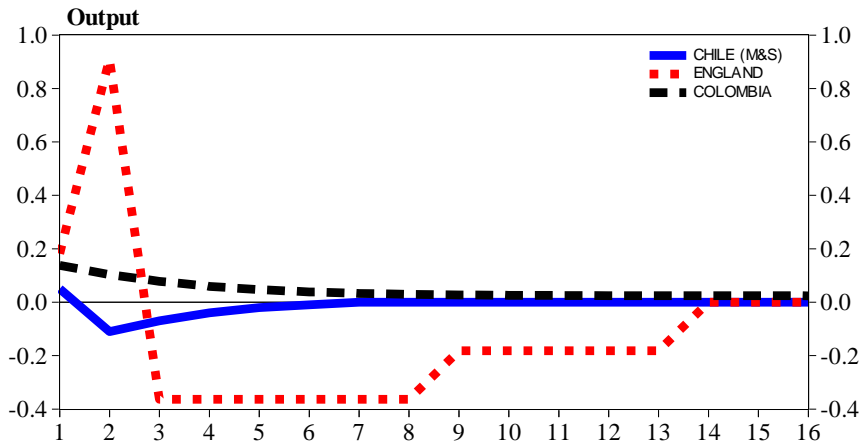
Alternative: DSGE models

As opposed to Ball's assertion, micro-founded DSGE models:

- are NO black boxes: they allow modelers and policy makers to go through different transmission mechanisms, which are absent from “textbook” models
- e.g., transmission mechanisms of ER shocks in DSGE models include:
 - Endogenous monetary (and fiscal) policy response
 - Output (and resource allocation) effects
 - Effects on interest rate structure (deviations from UIP)
 - Balance sheet and country-risk effects
 - Inflation pass-through
- And do NOT a horrible job in fitting current regimes and data, as discussed below.

Simulations from DSGE models

- **Output and inflation responses to temporary oil shocks in 3 country DSGE models (different transmission mechanisms):**



- **Chile (oil importer):** contractionary and inflationary).
- **UK (oil importer):** expansionary because of large external demand response to endogenous ER devaluation).
- **Colombia (oil exporter):** expansionary and non-inflationary.

Forecasting Ability of DSGE Models

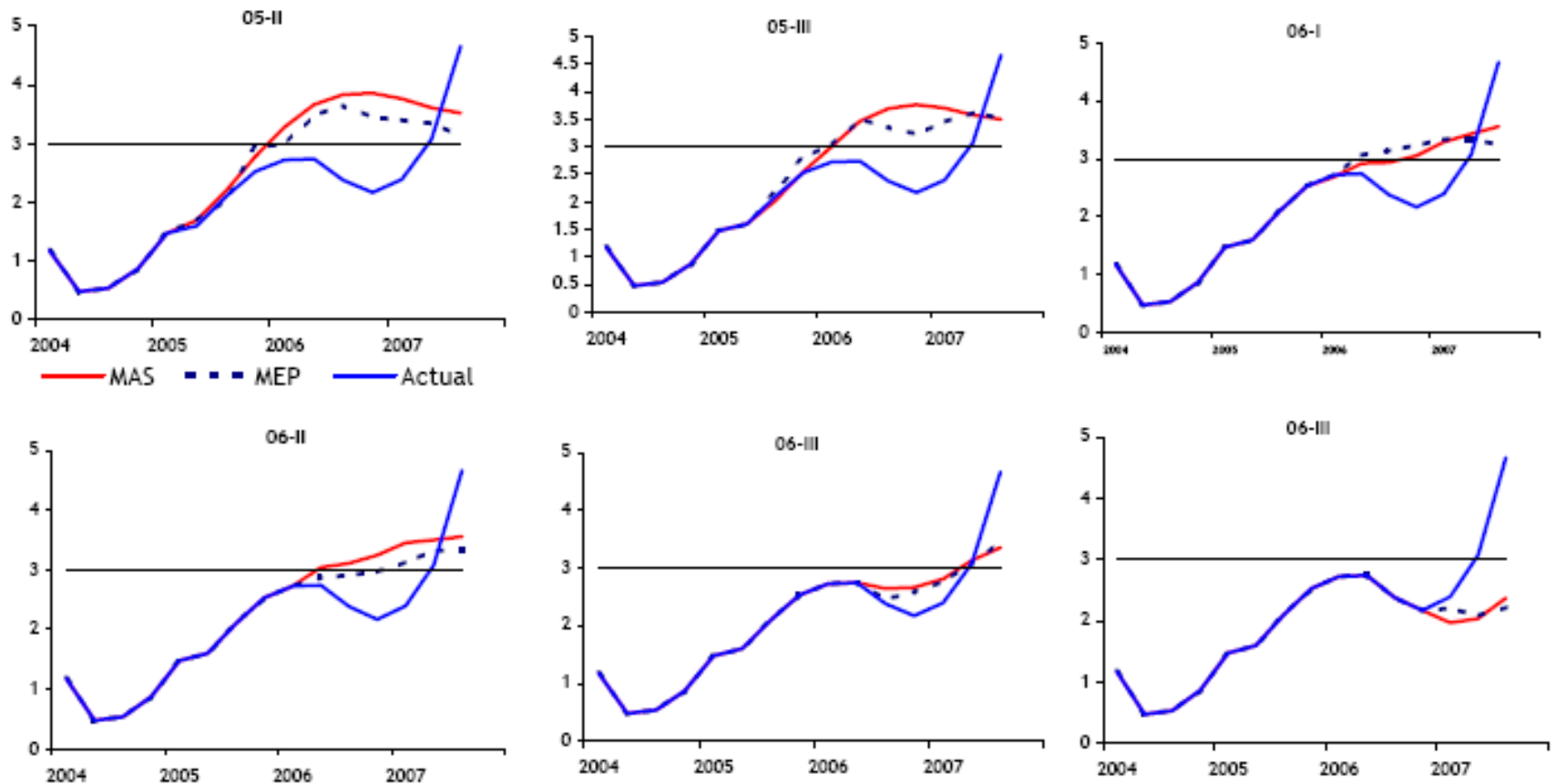
- Smets & Wouters (2004) show that Bayesian DSGE models compare well with a-theoretical VARs.
- Adolfson et al. (2005) evaluate an open economy DSGE model for the Euro area against a wide range of statistical models, concluding that the DSGE performs very well (among other variables) for key open-economy variables such as the RER, exports and imports.
- Del Negro et al. (2004) find that the degree of misspecification in large-scale DSGE models is no longer so large as to prevent their use in day-to-day policy analysis.
- Dib et al (2004) document out-of-sample forecasting accuracy of a NK model for Canada and find that it compares favorably to the forecasts based on an unrestricted VAR benchmark.

Forecasting Ability of Chile's DSGE Model

- Medina and Soto (2006) compare the forecasting ability of the Central Bank's DSGE model that of the ad hoc Keynesian model (MEP) and to alternative time-series models.

Forecasting Ability of Chile's DSGE Model

- Recent inflation forecasts based on the DSGE Model (MAS) are similar – bad – to those based on the Keynesian (DSGE) model:



Forecasting Ability of Chile's DSGE Model

- However, forecasts of Chile's DSGE model are at least as good (and often much better) than those based on time-series models:

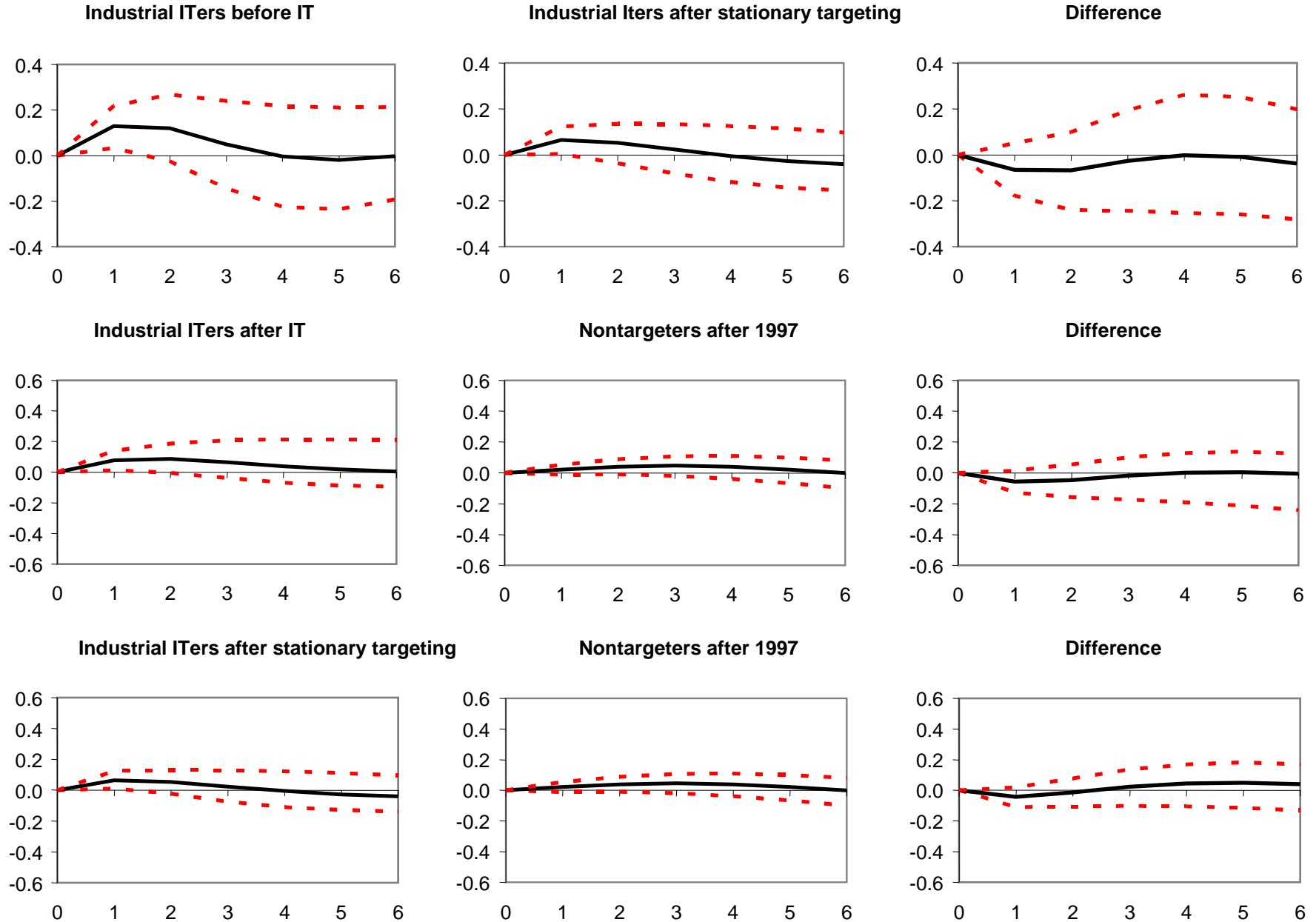
RMSE over different horizons

	Horizon	MAS	VAR(1)	VAR(2)	VAR(3)	VAR(4)	BVAR(1)	BVAR(2)	BVAR(3)	BVAR(4)
GDP growth	1	1.029	1.058	1.101	1.127	1.178	0.937	0.940	0.971	0.965
	4	0.737	0.722	0.719	0.820	0.891	0.832	0.815	0.911	0.873
	8	0.678	0.798	0.824	0.842	0.966	0.854	0.837	0.941	0.894
	12	0.537	0.786	0.806	0.810	1.029	0.903	0.886	1.052	0.993
Inflation	1	0.282	0.314	0.355	0.370	0.418	0.342	0.343	0.353	0.358
	4	0.448	0.370	0.392	0.396	0.448	0.383	0.382	0.397	0.403
	8	0.445	0.439	0.421	0.418	0.427	0.418	0.412	0.423	0.413
	12	0.390	0.469	0.431	0.413	0.442	0.409	0.398	0.408	0.396
RER	1	3.485	6.494	6.646	6.420	6.563	6.354	6.400	6.204	6.192
	4	6.495	8.452	8.718	8.267	8.426	8.877	9.161	8.802	8.616
	8	7.243	11.393	12.307	11.878	12.096	12.907	13.455	13.218	12.716
	12	6.474	14.360	15.401	15.324	16.109	16.540	17.337	17.338	16.490
Interest Rate	1	0.248	0.382	0.370	0.400	0.379	0.398	0.400	0.415	0.420
	4	0.304	0.617	0.584	0.734	0.578	0.610	0.607	0.679	0.699
	8	0.345	0.784	0.772	0.841	0.749	0.790	0.798	0.826	0.827
	12	0.411	0.887	0.885	0.891	0.887	0.891	0.916	0.913	0.912

Inflation Response to Exchange-Rate Shocks

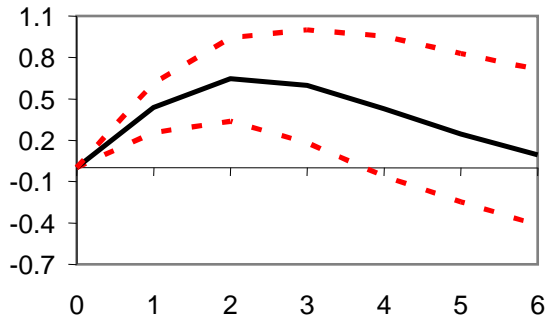
- Mishkin and Schmidt-Hebbel (2007) test for differences in the dynamic response of inflation to oil price and exchange rate shocks in the world sample of 21 inflation-targeting countries (and separately in industrial and emerging-economy IT countries), compared to a control group of 13 non-IT industrial countries (US, Japan, 11 European countries)
- Findings:
 - Inflation responds somewhat less (but not significantly less) to ER shocks after IT adoption in industrial IT countries
 - However, the pass-through is the same in industrial ITers and non-ITers – not significantly different from zero.
 - Exchange-rate to inflation pass-through has declined marginally but not significantly with IT adoption in emerging-market economies. However it remains significantly larger than zero.
 - Therefore the pass-through is significantly higher in emerging-country ITers than in both ITers and non-ITers in industrial countries.

Response of Inflation to a Shock in the Exchange Rate

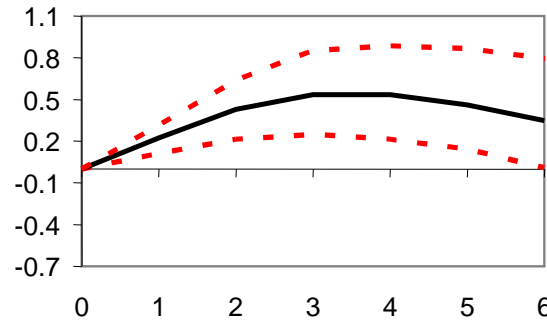


Response of Inflation to a Shock in the Exchange Rate

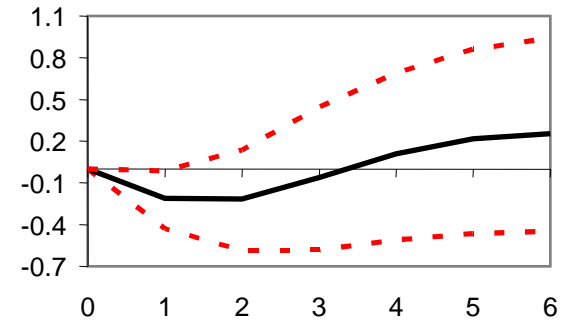
Emerging ITers before IT



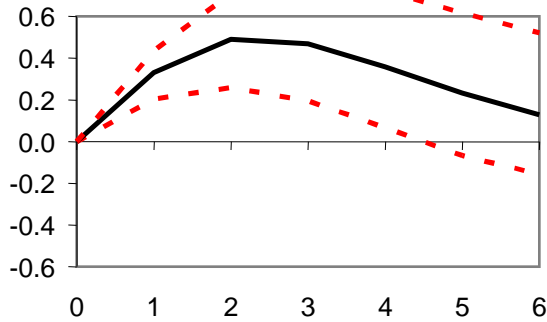
Emerging ITers after stationary targeting



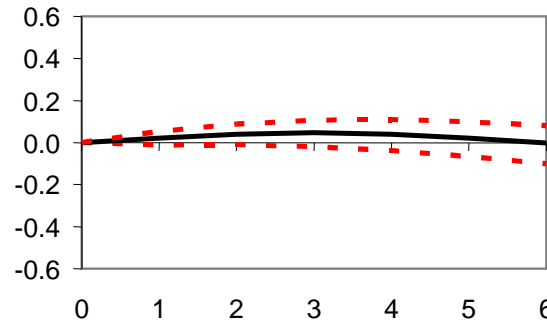
Difference



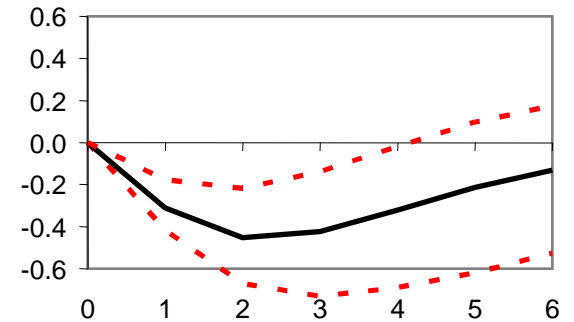
Emerging ITers after IT



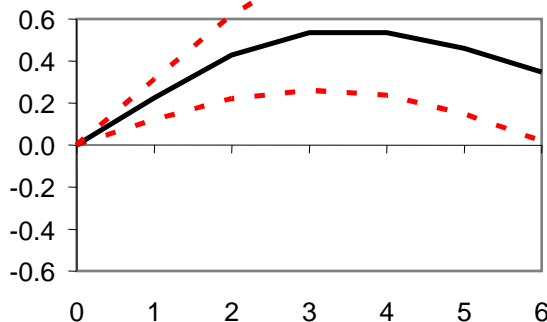
Nontargeters after 1997



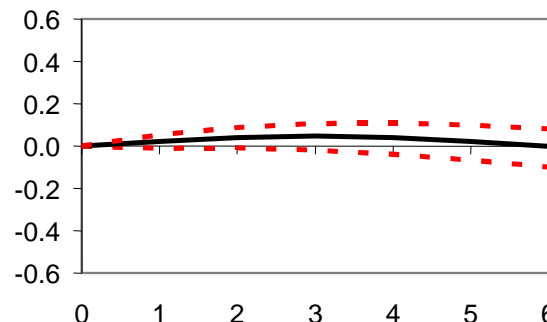
Difference



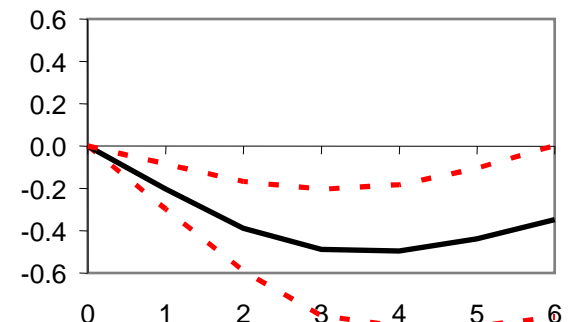
Emerging ITers after stationary targeting



Nontargeters after 1997



Difference



Should MP respond to ER shocks?

- Old question, linked to the more general question about optimal MP response to asset-price shocks
- Minority view (before July 2007): yes
- Majority view: not directly, only indirectly by considering their effects on inflation (and output) forecasts
- I will not jump into this long-standing debate here
- Yet the current crisis is fueling a fresh look into the debate.

Should Forex Intervention respond to ER shocks?

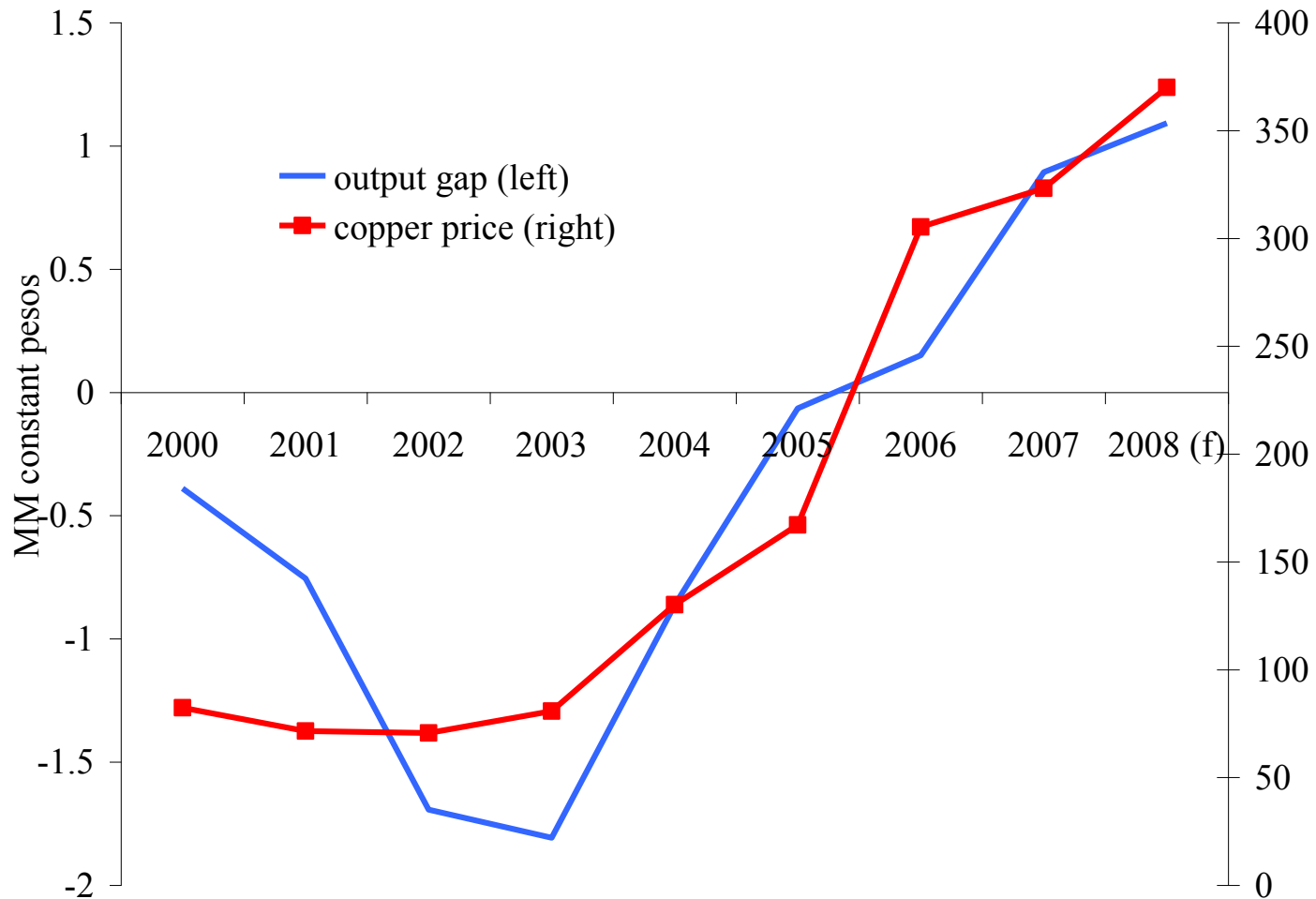
- Another old question that divides clean floaters from dirty floaters
- Little international evidence supporting forex intervention effectiveness
- Reserve Bank of New Zealand: (to my knowledge) the only central bank that has made explicit a compelling rationale for forex interventions under exceptional circumstances, identifying four conditions (exceptional situation, market conformity, MP consistency, likelihood of success). Has not identified ex-ante the way its interventions take place
- Central Bank of Chile: (to my knowledge) the only central bank that has made explicit ex-ante the way its interventions take place (instruments, period of intervention, total amount). Has not made explicit a policy of conditions for interventions.

Should Fiscal Policy respond to ER and Commodity-Price Shocks?

- Leaning-against-the-wind portfolio interventions by governments in spot forex or commodity markets, or in forex futures or commodity futures markets (as recommended by Ball) should be subject to stringent conditions, similar to those established by the RBNZ for its forex interventions.
- However, a completely different sort of fiscal policy response is regarding the decision if exchange-rate or commodity windfalls (or any other meaningful shock affecting the government budget) should be spent or saved.
- Since 2001 Chile's government has implemented a government expenditure rule consistent with estimated trend permanent government income. It implies a 100% marginal propensity to save each year's government revenue windfalls derived from copper-price and GDP deviations from estimated trend values.

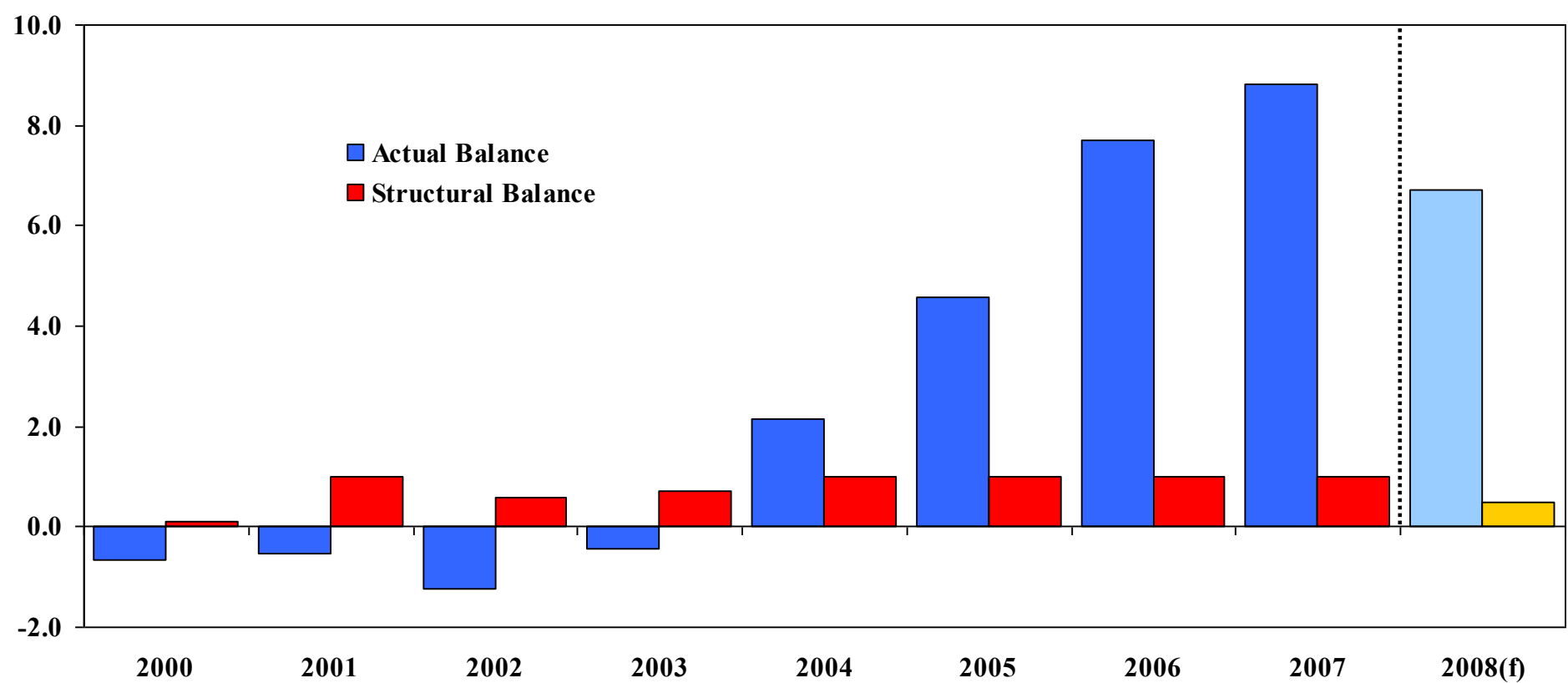
Chile's Fiscal Rule (1)

Copper Price and Output Gap in Chile, 2000-2008



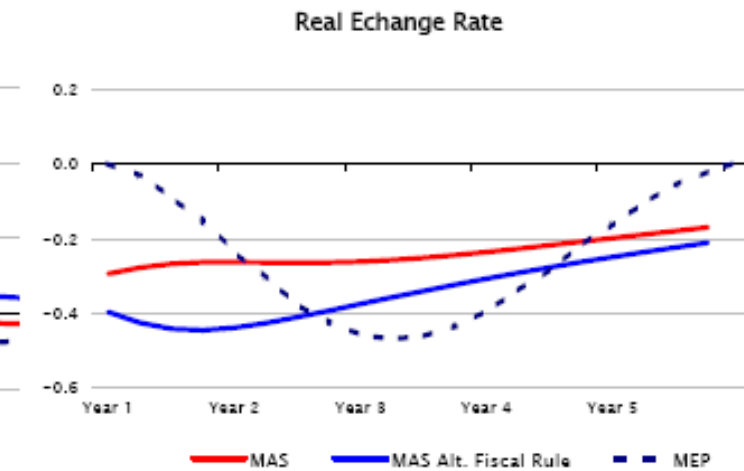
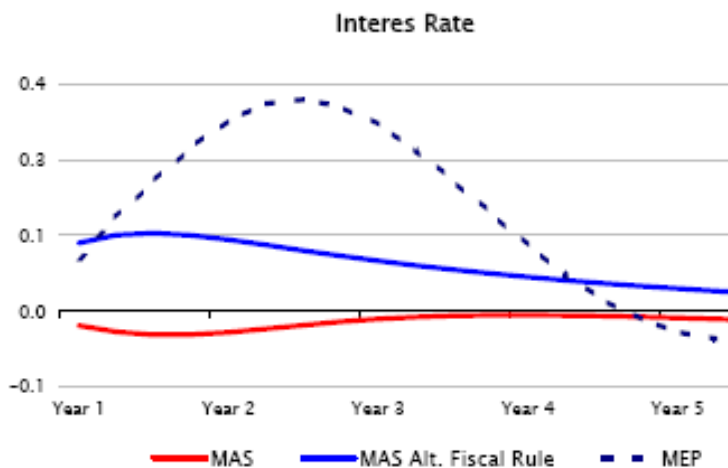
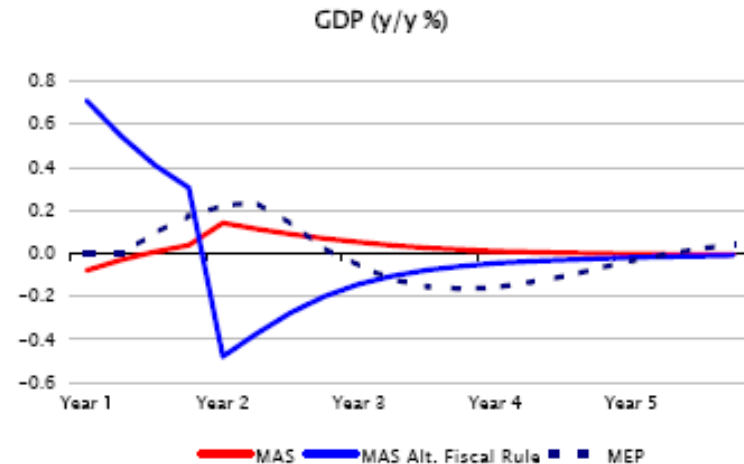
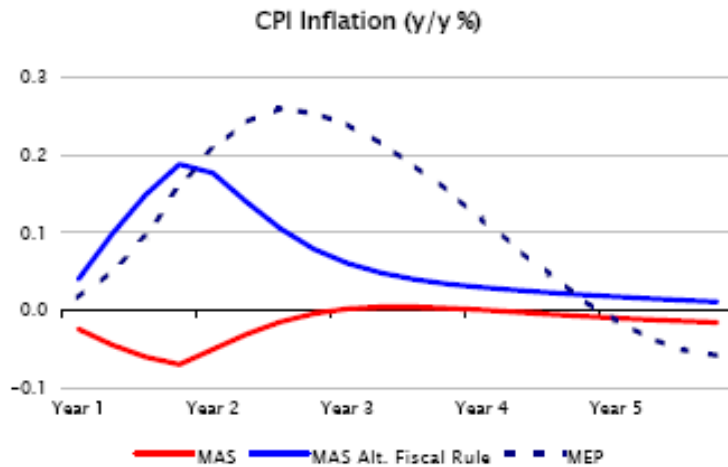
Chile's Fiscal Rule (2)

Actual Fiscal Surplus and Structural Fiscal Surplus (Ratios to GDP, 2000-2008)



Chile's Fiscal Rule (3)

**Chile's Fiscal Rule contributes significantly to Macro Stability:
Dynamic Response to Copper-Price Shock**



Conclusion

- We ought to exercise much care in recommending policy reactions to exchange-rate and commodity-price shocks.
- Optimal policy reactions should depend on an assessment of:
 - (1) Shock magnitude (strong presumption of disequilibrium?)
 - (2) Estimated shock persistence
 - (3) Policy objectives and reaction functions
 - (4) Policy coherence (e.g., forex interventions in New Zealand)
 - (5) Adequate gauge of policy effectiveness
 - (6) Quantitative assessment of effects of shock and policy reactions on macro variables and welfare levels.
- This can be done – partly with the help of DSGE models.

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