Discussion of

“Can Oil Prices Forecast Exchange Rates?”

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June 15, 2011

The views expressed in this presentation represent the author’s own and should not be attributed to the Bank of Canada.
Canada's net exports
millions of $current, SA

Source: Statistics Canada.
Decomposition of Canada's Energy Exports

% of total energy exports

Crude petroleum  Natural gas  Other energy

Source: Statistics Canada.
Note: The figure updates Figure 3 in Issa, Lafrance and Murray (2008)
Oil Prices and the Canadian Dollar

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- Structural break in empirical relationship between energy prices and CAD in early 1990s (Issa, Lafrance, and Murray 2008).
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- Structural break in empirical relationship between energy prices and CAD in early 1990s (Issa, Lafrance, and Murray 2008).

- Change in energy policies at national and provincial level in 1992/93 led to large net direct investment flows.
Outline

1. Reconciling high- and low-frequency results

2. Economic significance of forecast-accuracy improvements

3. Nonlinear models

4. Other comments
Reconciling High- and Low-Frequency Results

Oil price increases → USD revenue increases (inelastic oil demand)
→ Demand for CAD increases
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• Is a model based on macroeconomic fundamentals the right way to think about the response of the CAD to oil price shocks at high frequency?
Reconciling High- and Low-Frequency Results

• Explaining high-frequency behavior of oil prices and exchange rates based on, say, equity flows seems to open the door to the Chen, Rogoff, and Rossi (2010) logic.
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• **Portfolio channel**: Returns on Canadian assets adjust to reflect shifts in expectations about developments in global commodity markets, causing a capital inflow and CAD appreciation.
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- **Portfolio channel**: Returns on Canadian assets adjust to reflect shifts in expectations about developments in global commodity markets, causing a capital inflow and CAD appreciation.

- But this suggests using CAD to forecast oil prices at daily frequency.
  - Evidence of ex ante forecastability from CAD to oil prices at monthly (Alquist, Kilian, and Vigfusson 2011).
Economic Significance of Forecast-Accuracy Improvements

- Oil-price model statistically outperforms interest-rate model relative to a random walk.
Figure 1(a). Oil Price Model. Forecasting Ability in Daily Data

Diebold–Mariano Rolling Test - Daily Data

- Benchmark: RW w/o drift
- Benchmark: RW w/ drift
- 5% Critical value

In-sample window size as fraction of total sample size

DM statistic
Figure 2. The Interest Rate Model.

Panel A: Diebold–Mariano Rolling Test – Daily Data

Panel B: Diebold–Mariano Rolling Test – Monthly Data

Panel C: Diebold–Mariano Rolling Test – Quarterly Data

In–sample window size as fraction of total sample size
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- Larger than improvements for a set of fundamentals-based models at quarterly frequency (Cheung, Chinn, and Garcia Pascual 2005).

- Smaller than improvements for USD/EUR rate (0.81-0.96) using ex-ante order flow at 1- to 20-day horizon for 3-year sample period (Evans and Lyons 2005).
Nonlinear Models

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4-Quarter Ahead Recursive Forecasts of Cumulative Real GDP Growth

4-Quarter Ahead Recursive MSPE Ratio Relative to AR(4) Benchmark
Other Comments

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- But in presence of unmodeled structural change both out-of-sample and in-sample model selection methods may select model with larger MSPE than true model (Inoue and Kilian 2005).
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2. Use of Pseudo Out-of-Sample Forecasts

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   • But in presence of unmodeled structural change both out-of-sample and in-sample model selection methods may select model with larger MSPE than true model (Inoue and Kilian 2005).

     — Intuition: Forecaster’s loss function differs from loss functions implicit in model selection criteria.
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• Given the sensitivity of nonlinear model’s forecast accuracy improvements to sample period, unsurprising that it does not work well for the CAD.