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**Comment on:**  
**Automated Short-Run Economic Forecast  
(ASEF)**

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# Summary of ASEF

1. Automated process
2. Assess economic activity from numerous and timely indicators
3. Large set of forecasting equation
  - Combination of forecasts and assessment of risk
4. Main advantages
  - Fast, timely, flexible, ensure consistency and not costly to operate
5. Main disadvantages
  - Difficult to track down the macro story

# Monitoring Canadian Economic Development

1. Forecast (2-quarters-ahead) and follow the main economic variables
  - Variables: GDP and its components, inflation and labour market variables
    - Each cycle begins with the quarterly NAC publication
    - Limited use of models, especially at the disaggregated level
    - Mostly a judgment-based forecast driven by the data and an overall assessment of current economic conditions
2. As monthly data for the current quarter are published, we reassess our forecast (nowcasting)
  - On a monthly basis or following Monetary Policy needs
  - Mostly based on judgment + some mapping equations

# Monitoring Canadian Economic Development

1. This judgment based approach has been used for several years
2. Still staff face some challenges
  - Time consuming approach (80%-90%)
    - Level of details and frequency of monitoring update
    - Leaves little time for interesting and needed analysis on current economic issues
  - Labour intensive (6 economists + 1 principal researcher)
  - Hard to maintain the consistency: interpretation of the data and evolution of changes
  - Very difficult for junior staff: no systematic approach

# Time for a change

1. Currently we are working on developing an automated process which hopefully will resolve some of the challenges faced by our group
2. Key elements of our project:
  - A. Core quarterly forecasting model for the main variables of interest
  - B. Nowcasting equation for the main variables of interest
    - Indicators
    - Monthly dynamics
  - C. Forecast comparison and evaluation
    - Best combination at any point in time – given the flow of data
  - D. Global evaluation
    - New vs. old approach
  - E. Real time data
  - F. Other models

# An example: Consumption

## A. Core quarterly forecasting model

- ECM:
  - Main variables: real interest rate, real income and different measures of wealth
  - Model structure chosen based on in-sample fit (adjusted  $R^2$  around 64%)
  - Sample: 1982:1 to 2007:2
  - Out-of-sample forecast accuracy
    - Model re-estimated every quarter (extended window)
    - RMSE and hit ratio calculated over 2001Q1-2007Q2
  - Evaluation
    - RMSE = 1.7% (q/q at A.R.)
    - Hit ratio = 73%

# An example: Consumption

## B. Nowcasting equation 1

- Indicators
  - Quarterly forecast based on 6 indicators (retail trade, car sales, travel, recreation activity, accommodation and food, and weather)
  - Rolling window of 10 years (adjusted  $R^2$  around 70%)
  - Monthly forecast: 3 months average
    - Could be improved
  - Evaluation

	0 month	1 month	2 month	3 month
RMSE	2.1	1.7	1.3	1.2
Hit ratio	42%	46%	62%	77%

# An example: Consumption

## B. Nowcasting equation 2

- Monthly dynamic
  - Quarterly forecast based on **snapshot** (assuming t-1 level for the remaining month/months of the quarter)
  - Again forecast accuracy improved with more information

	0 month	1 month	2 month	3 month
RMSE	4.5	2.7	2.0	---
Hit ratio	35%	58%	77%	---

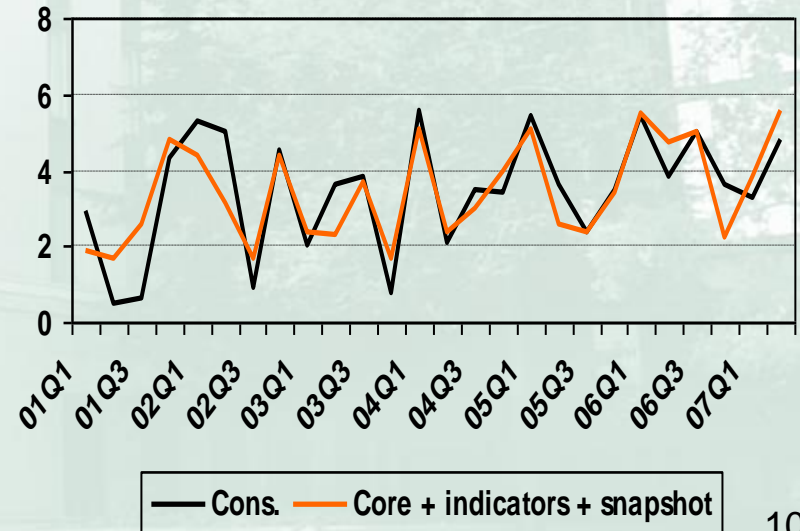
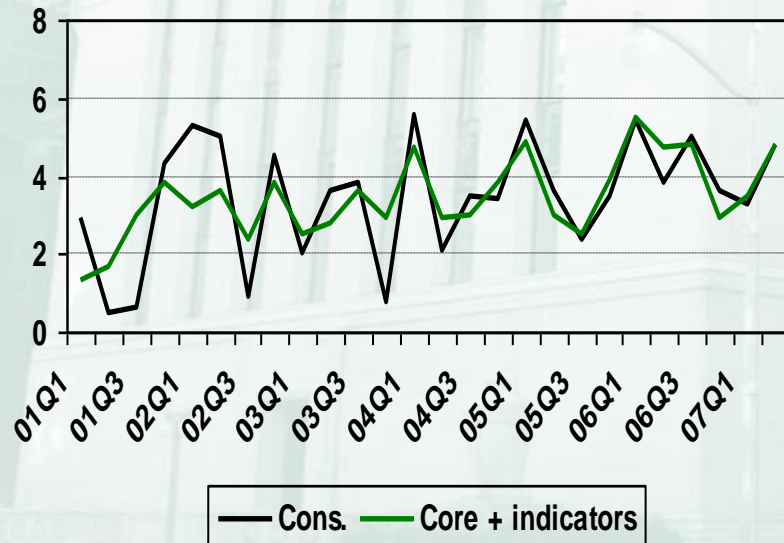
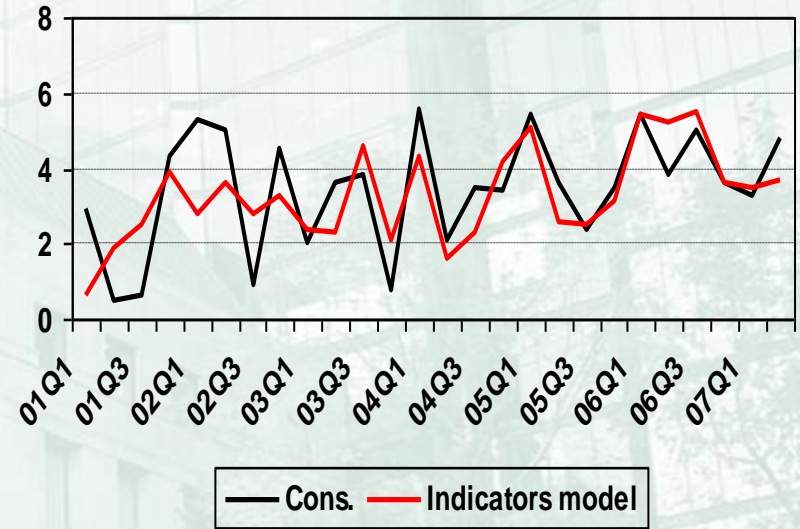
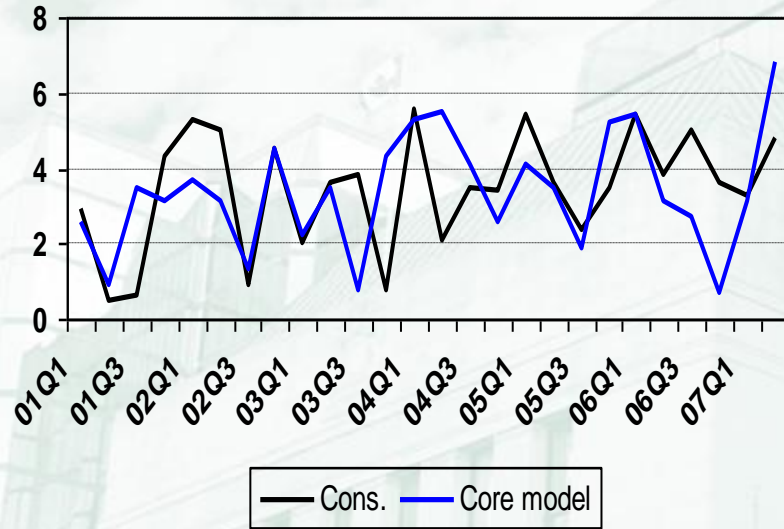


# An example: Consumption

## C. Forecast comparison and evaluation

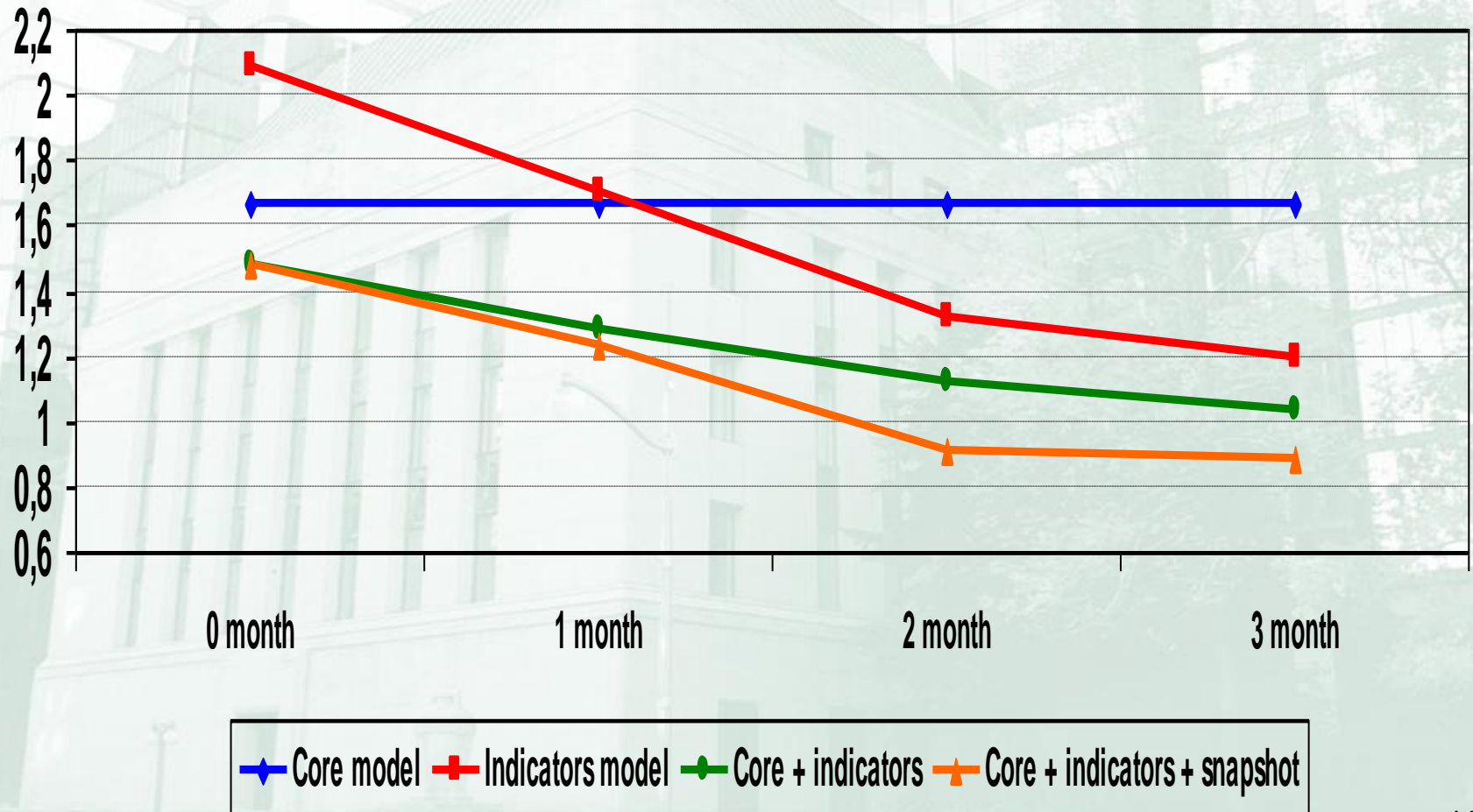
- Which model or combination gives the best RMSE (and hit ratio) at any point in the quarter?
  1. Core model
  2. Indicators model
  3. Core model + indicators model
  4. Core model + snapshot + indicators model

# An example: Consumption



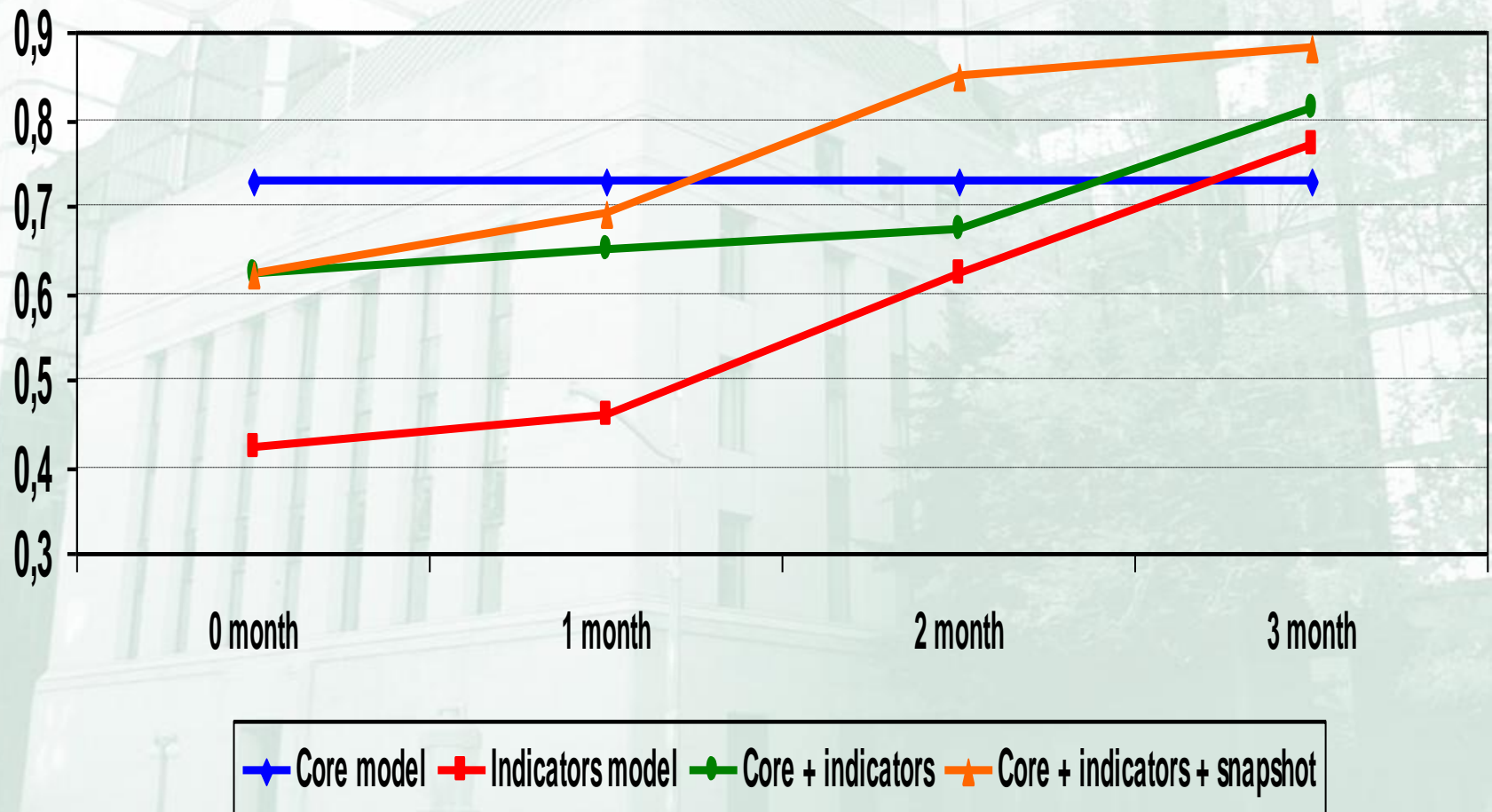
# An example: Consumption

## C. Forecast evaluation (RMSE)



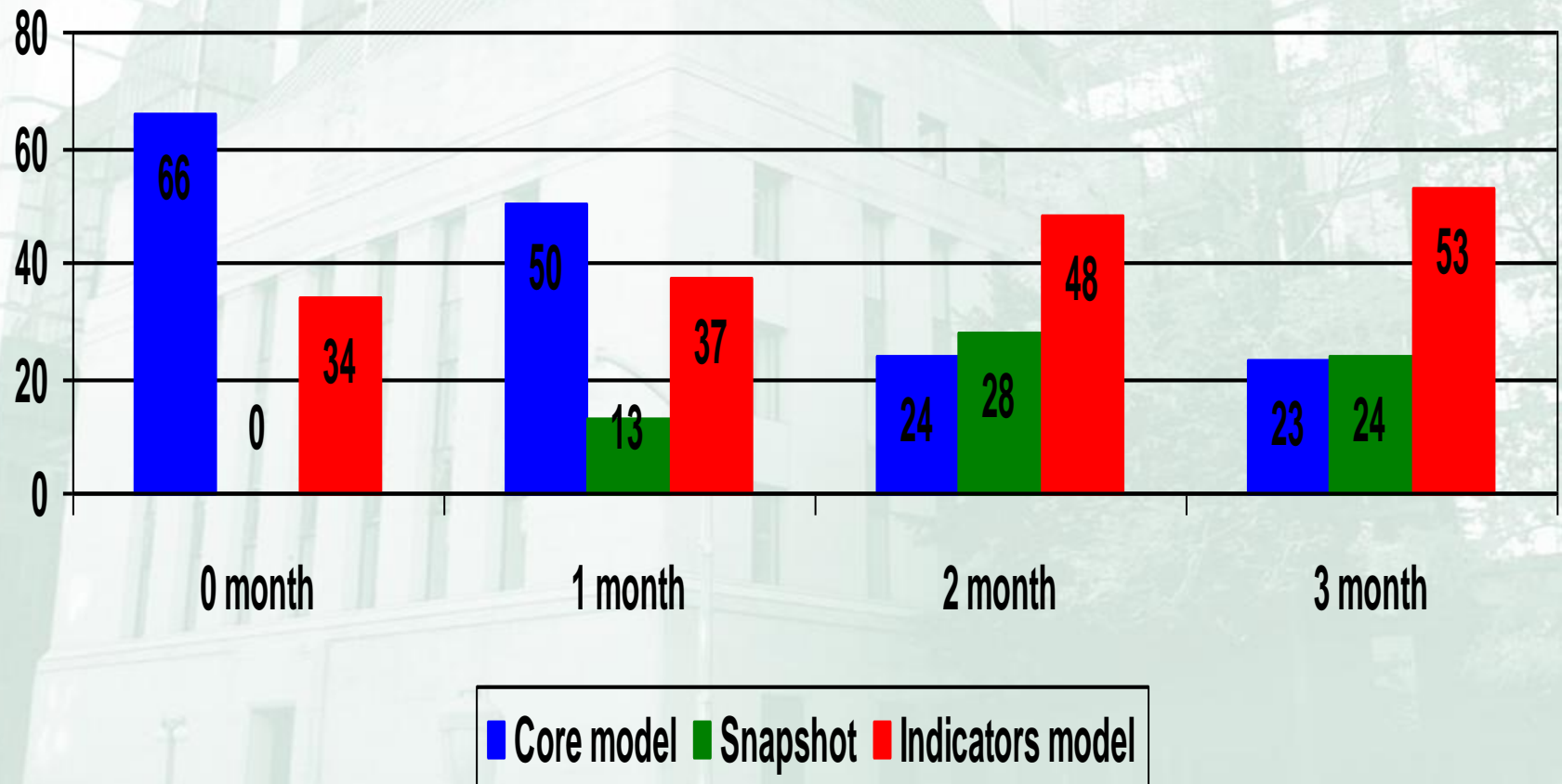
# An example: Consumption

## C. Forecast evaluation (hit ratio)

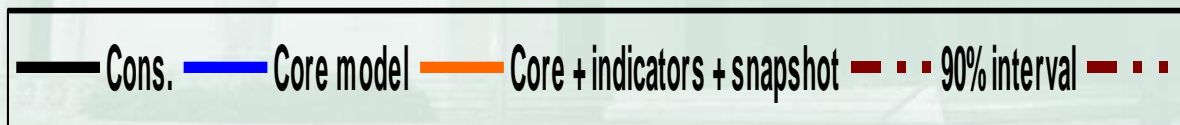
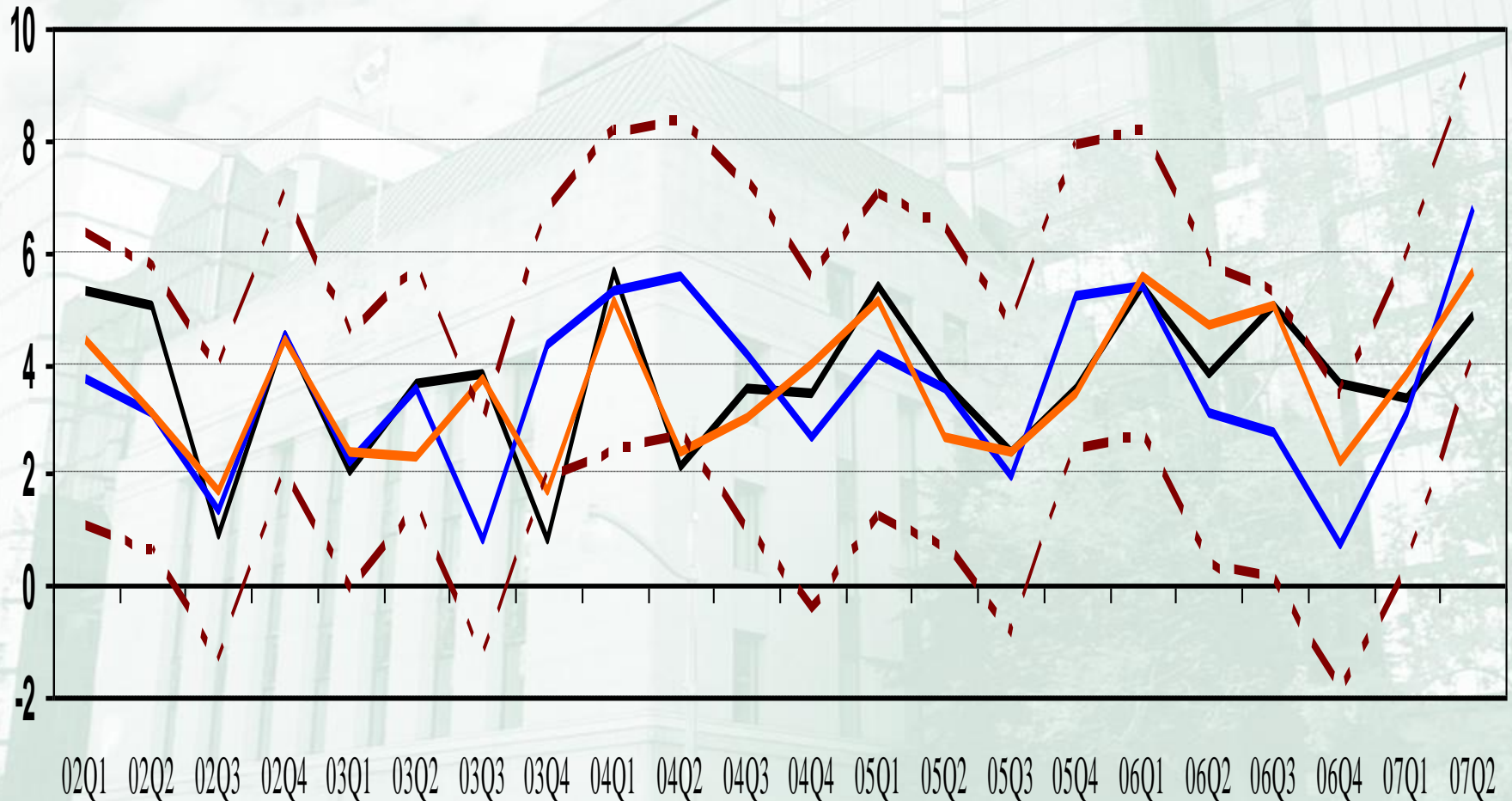


# An example: Consumption

## C. Forecast combination: model weights



# An example: Consumption



# Conclusion

- Advantages of the new approach:
  - Faster and timely
  - Story easy to tell (fundamentals + monthly indicators)
  - Systematic approach
  - Less judgment needed
    - Make our judgment explicit = we can evaluate it
  - Leaves more time for analyzing others economic issues
  - Improves the forecast accuracy throughout the quarter
    - Reduces the RMSE by roughly half
    - Increases the hit ratio by 15 ppt

# Future Work

1. Are we gaining in terms of forecast accuracy?
  - New vs. old approach (judgment based)
2. Should also be done with
  - Real time and survey data
3. All this will be done for GDP and his main components
  - Aggregate approach vs. component approach
4. Improving monthly forecasts