

The Continued Importance of Large-Scale Models in Macroeconomic Forecasting

Gabriel Ehrlich and Aditi Thapar

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Some History of Macro Forecasting

- Tinbergen Model (1936)
- Klein-Goldberger Model (1955)
- “Large-scale” models proliferated rapidly (Wharton, Brookings, etc.)
- Critiques:
 - Lucas (1976): statistical relationships may be poor guides to policymaking
 - Sims (1980): the assumptions in large-scale models are often “incredible”

The Situation Today

- Large-scale, judgment-based models remain the dominant paradigm among professional forecasters
- Government
 - Federal Reserve FRB/US model (semi-structural approach with expectations), staff forecast
 - Congressional Budget Office
- Private Sector
 - IHS Global Insight
 - Macroeconomic Advisers

The Situation Today

- Victor Constancio, Vice President of the European Central Bank, September 2017:

“...we were just recently faced with the decision of enhancing the multi-country (MC) model of the euro area. Which paradigm should we adopt?”

... We have decided to adopt a semi-structural approach ... At its core, the new ECB-MC model is designed along the lines of the Federal Reserve’s FRB/US model.”

Q: Why have large-scale macro models proven so resilient, despite theoretical criticisms?

A: They provide a straightforward way for analysts to incorporate policy changes and other current events before they show up in the economic data.

Compare Various Forecasts of Real GDP

- Judgment-based forecasts from individual forecasting groups
 - Federal Reserve Board's Tealbook (previously Greenbook) forecasts
 - University of Michigan's RSQE forecasts
- Consensus forecasts: average forecasts from various professional forecasters
 - Survey of Professional Forecasters (SPF)
 - Blue Chip Economic Indicators forecast (BC)
- Vector Autoregression (VAR) based
 - Monetary VAR: includes GDP, prices, interest rate
 - Fiscal VAR: includes Government spending, government revenues, GDP

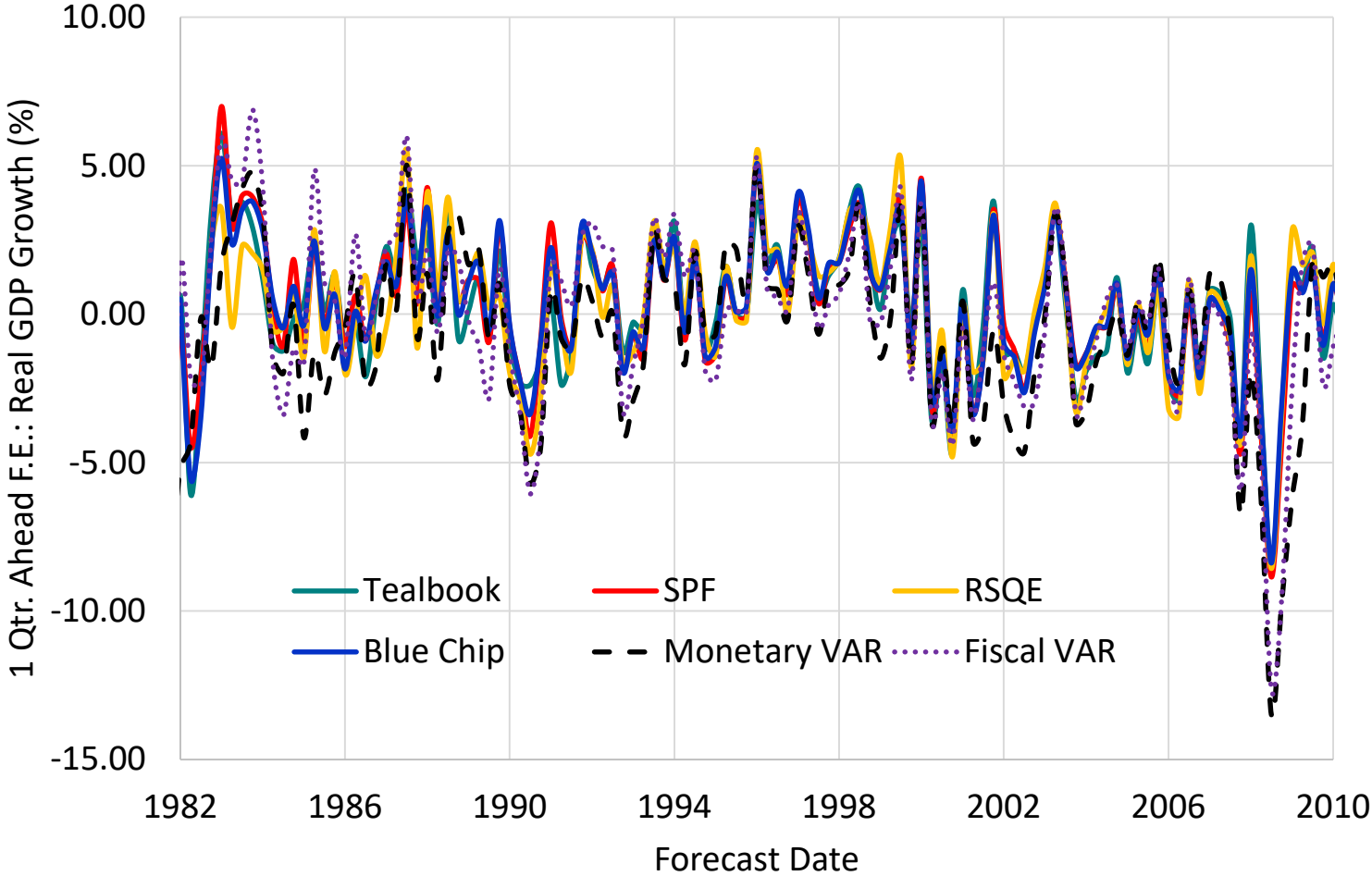
Forecast Evaluation

- Consider absolute forecast errors of GDP at various horizons
- Defined as,

$$|FE_{t,t+i}^Y| = |Y_{t+i} - E_t Y_{t+i}| ,$$

where, $FE_{t,t+i}^Y$ is the absolute difference between the actual value of Y in period $(t+i)$ and the forecast formed in period t of Y in period $(t+i)$.

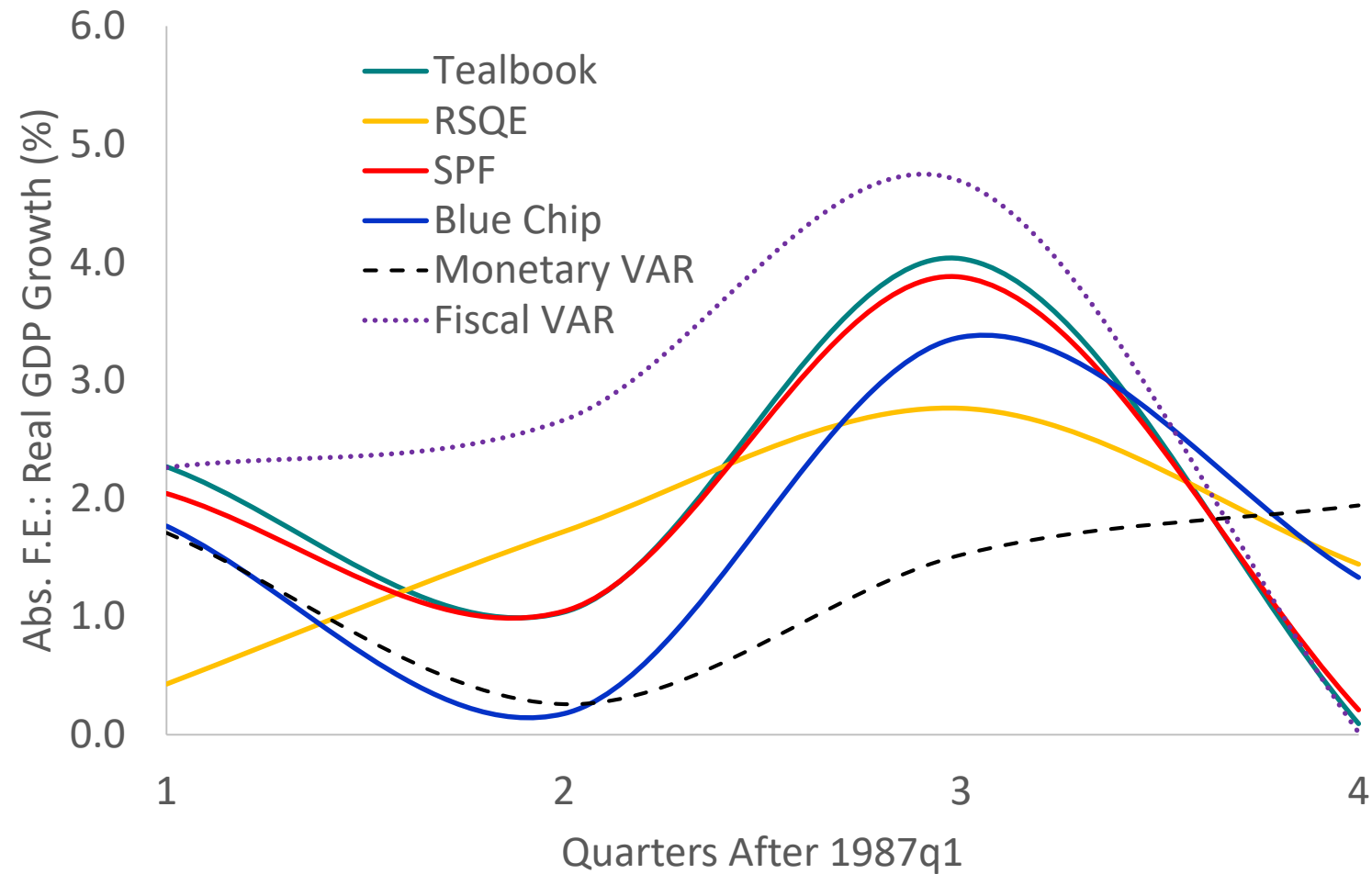
One Quarter Ahead Forecasts Errors



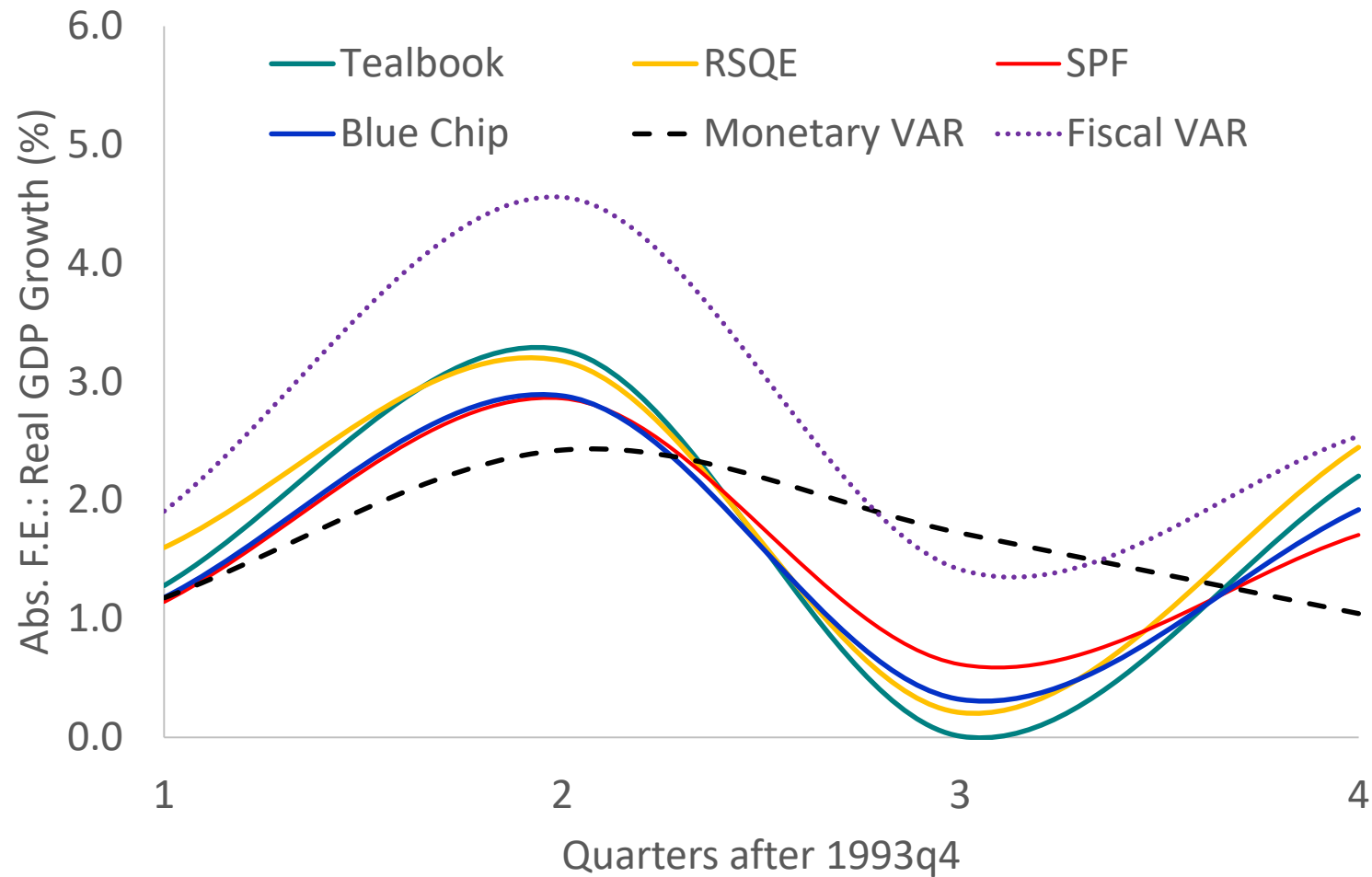
One-quarter ahead Forecast Errors (1982-2010)

	Mean	Root Mean Squared Error	Mean Absolute Error
Tealbook	0.26	2.37	1.87
SPF	0.30	2.40	1.86
RSQE	0.31	2.41	1.92
BC	0.33	2.31	1.82
Monetary VAR	-0.61	3.01	2.26
Fiscal VAR	-0.04	2.97	2.24

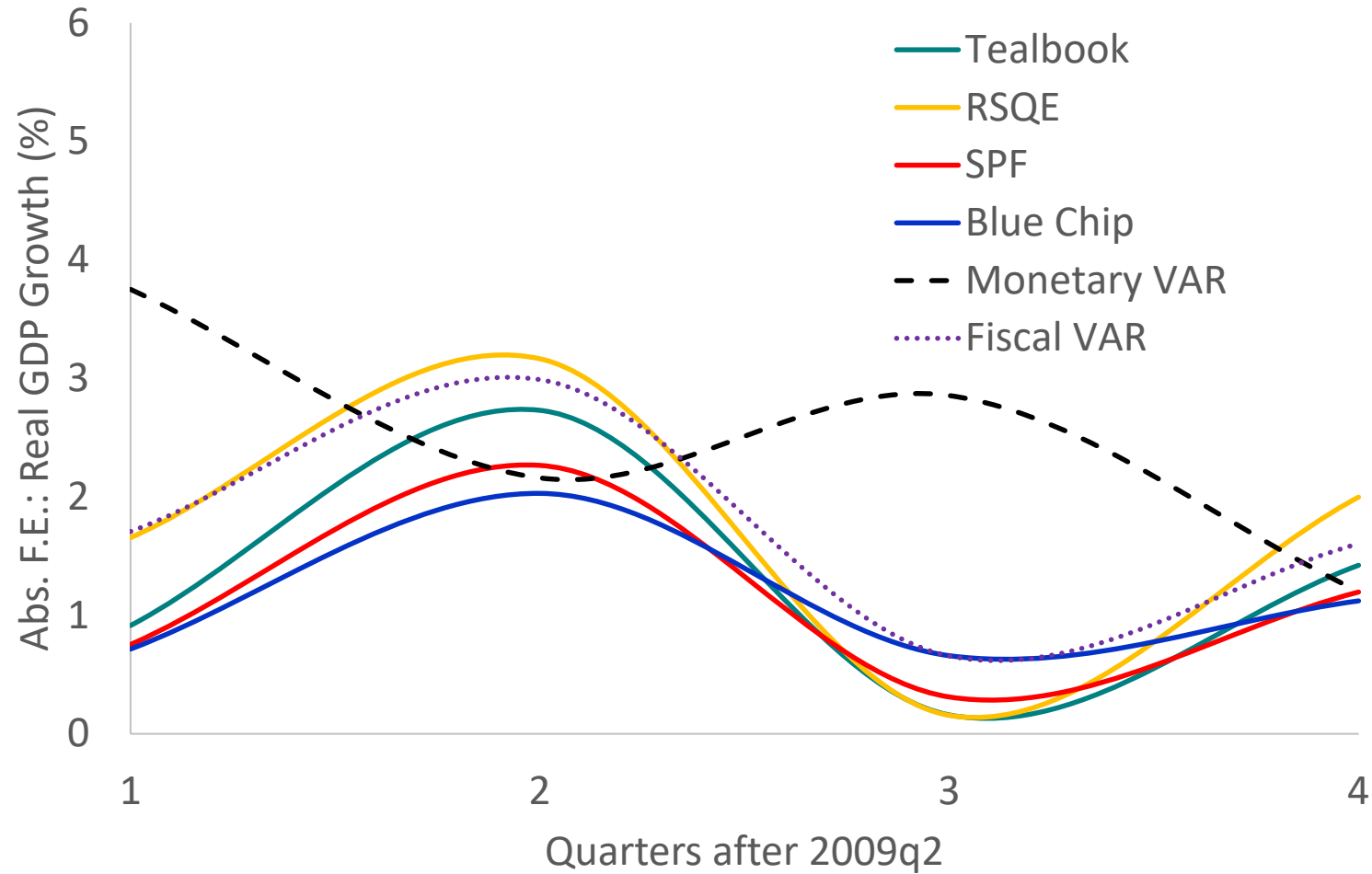
Tax Reform Act of 1986



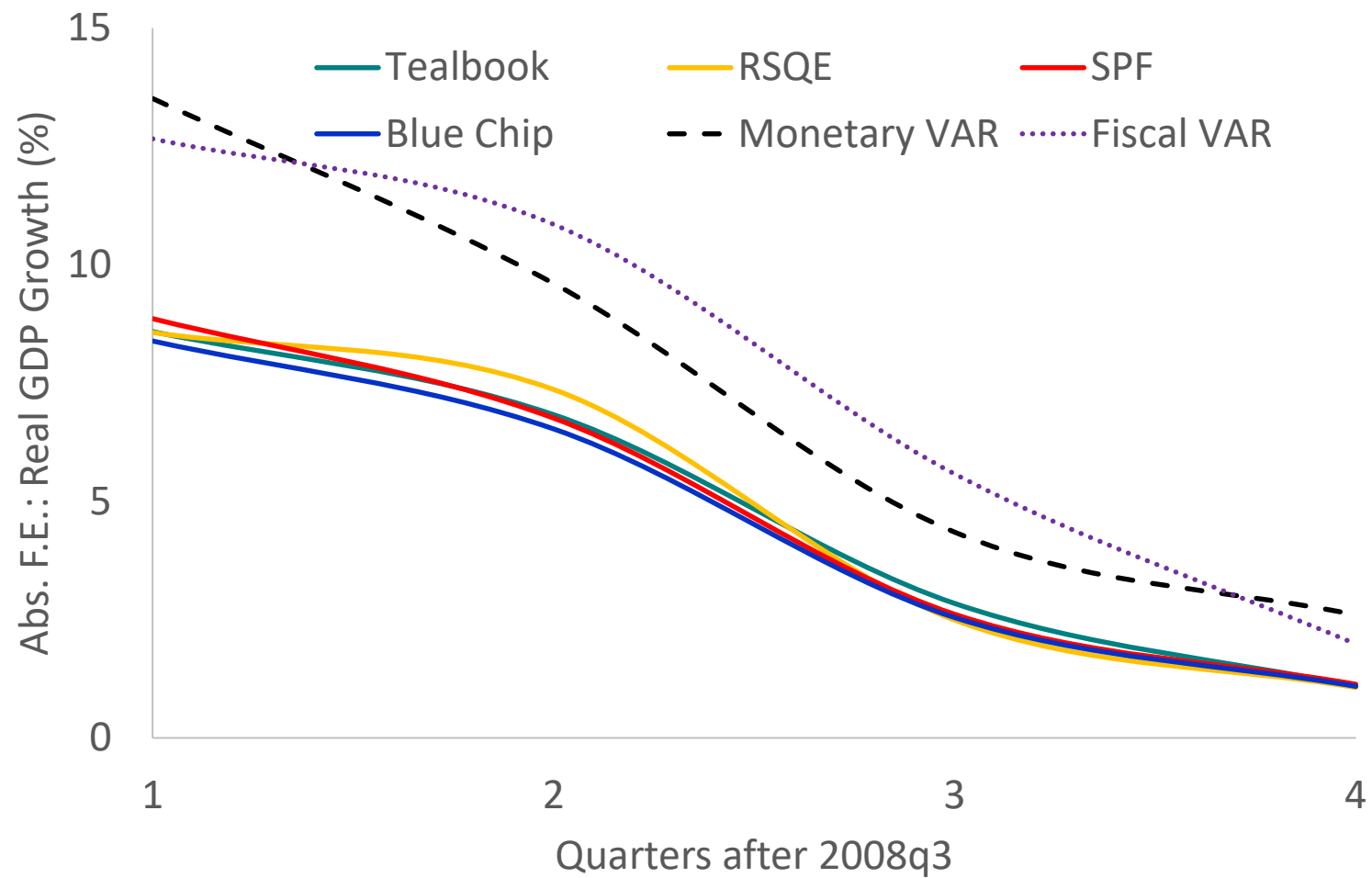
Omnibus Budget Reconciliation Act of 1993



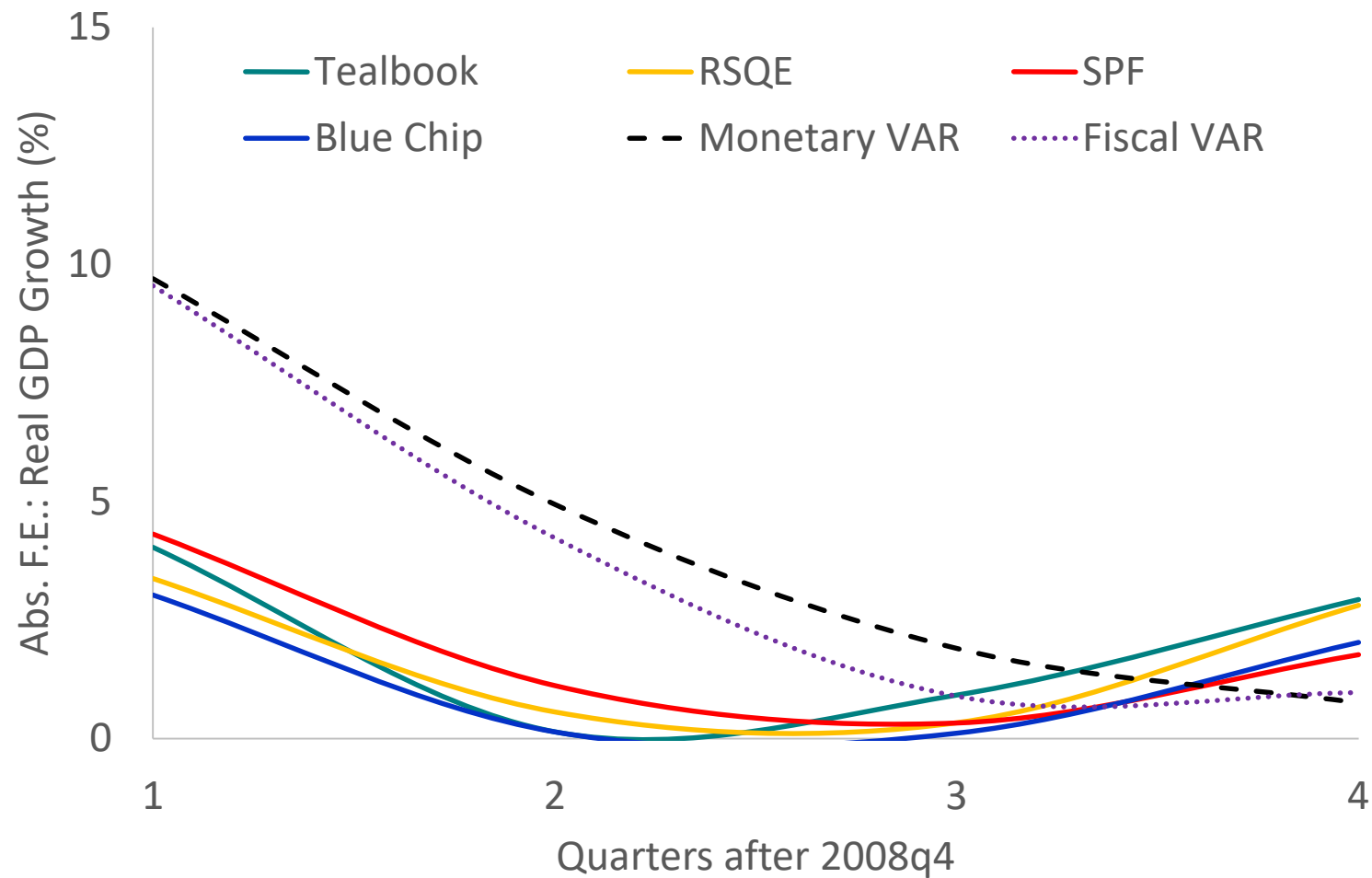
American Recovery and Reinvestment Act of 2009



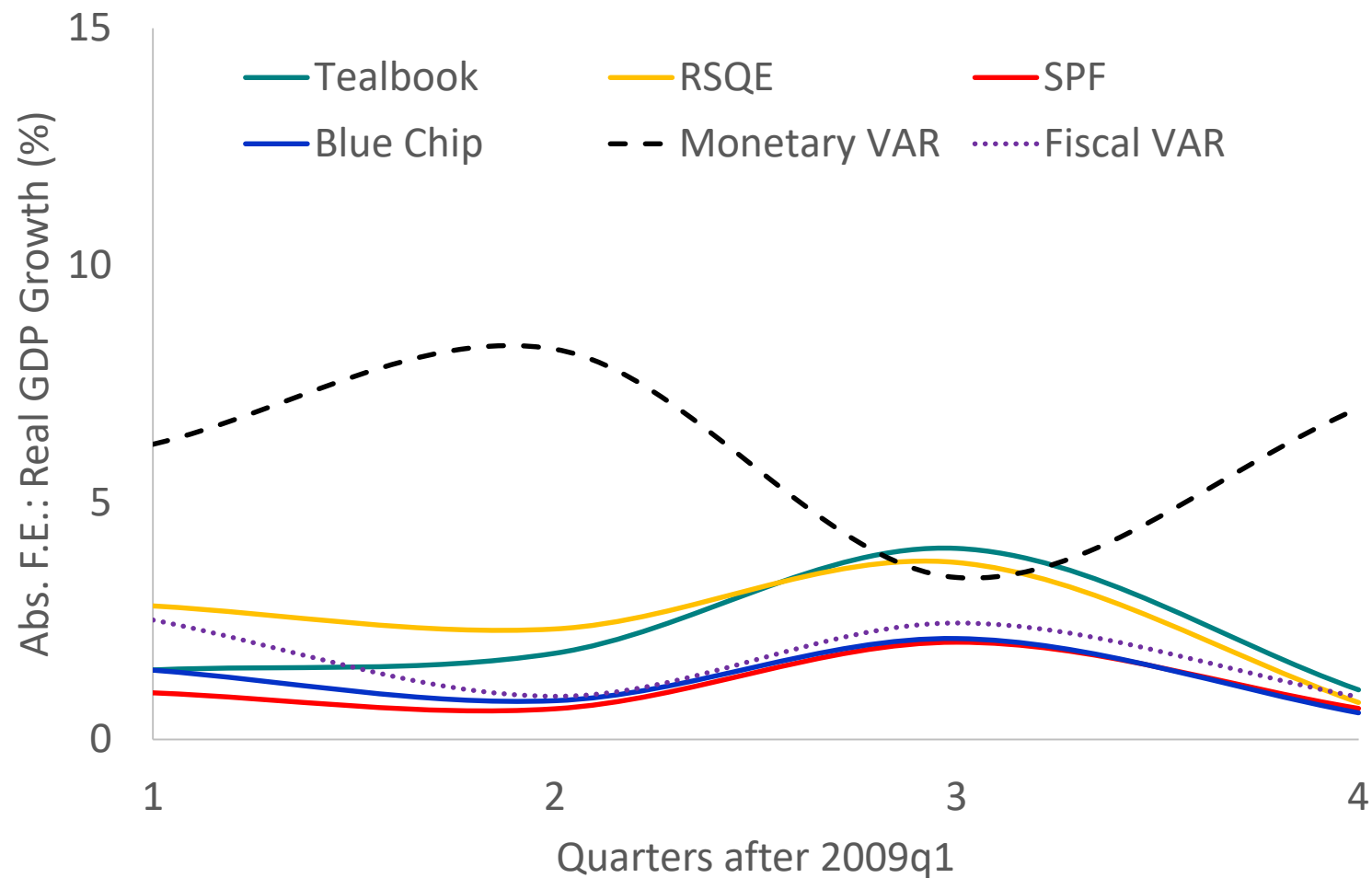
Leading up to the ARRA—2008q3



Leading up to the ARRA—2008q4



Leading up to the ARRA—2009q1



Fiscal Policy—A Major Boost to the Outlook

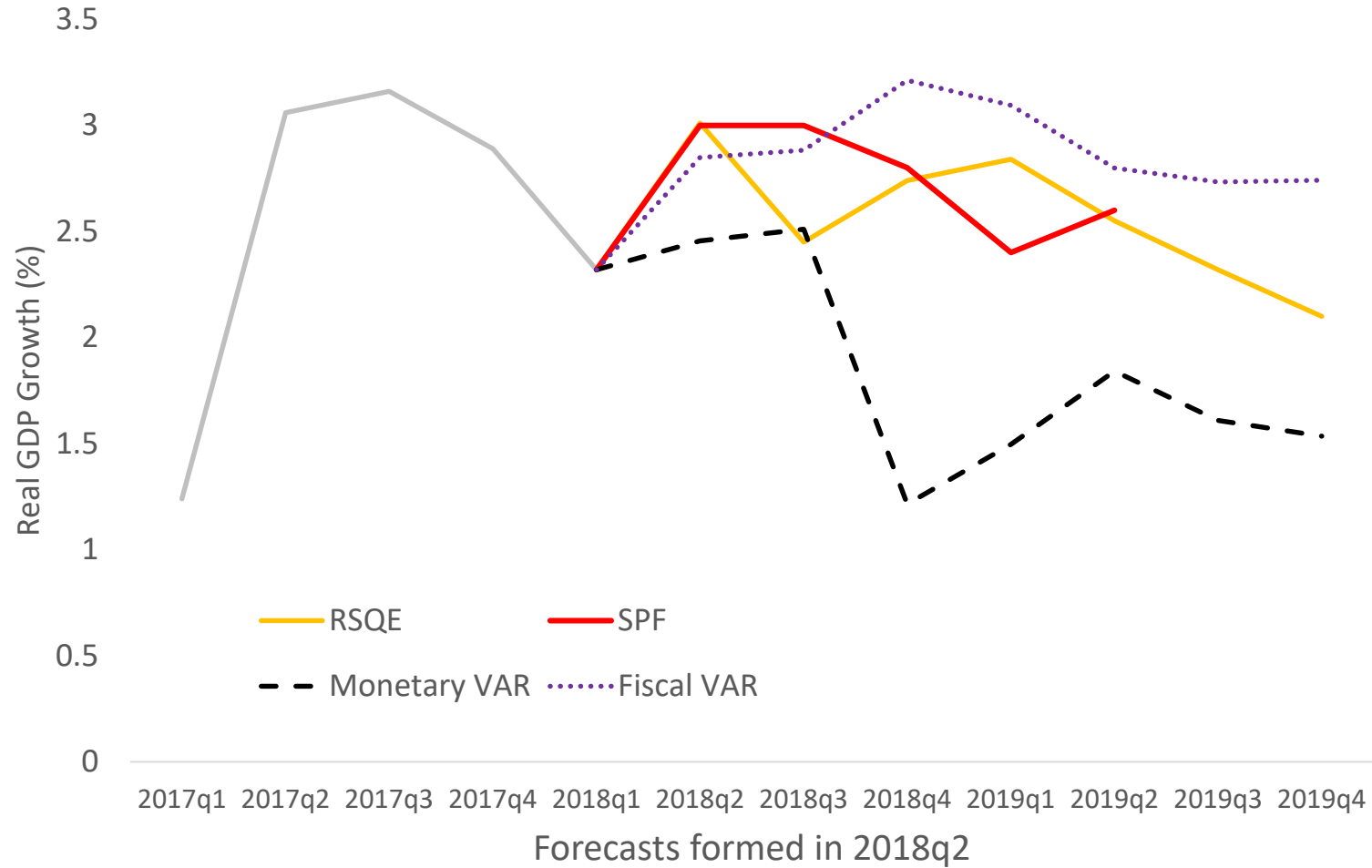
➤ Tax Cuts and Jobs Act

- \$1.5 trillion in new deficits over 2018–27
- Boosted our GDP forecast by ~0.2pp in 2018–19

➤ Bipartisan Budget Act of 2018 & The Omnibus

- Authorized almost \$300 billion in new spending during fiscal 2018–19
- More than 12 percent increase in discretionary caps compared to 2017
- It will take time to ramp up government spending
- Lifted our GDP forecast by 0.2pp in 2018, 0.3pp in 2019, and 0.1pp in 2020

Current Forecasts





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