



Let's Get Fiscal: Extending the Small Macroeconometric Model of the Philippine Economy

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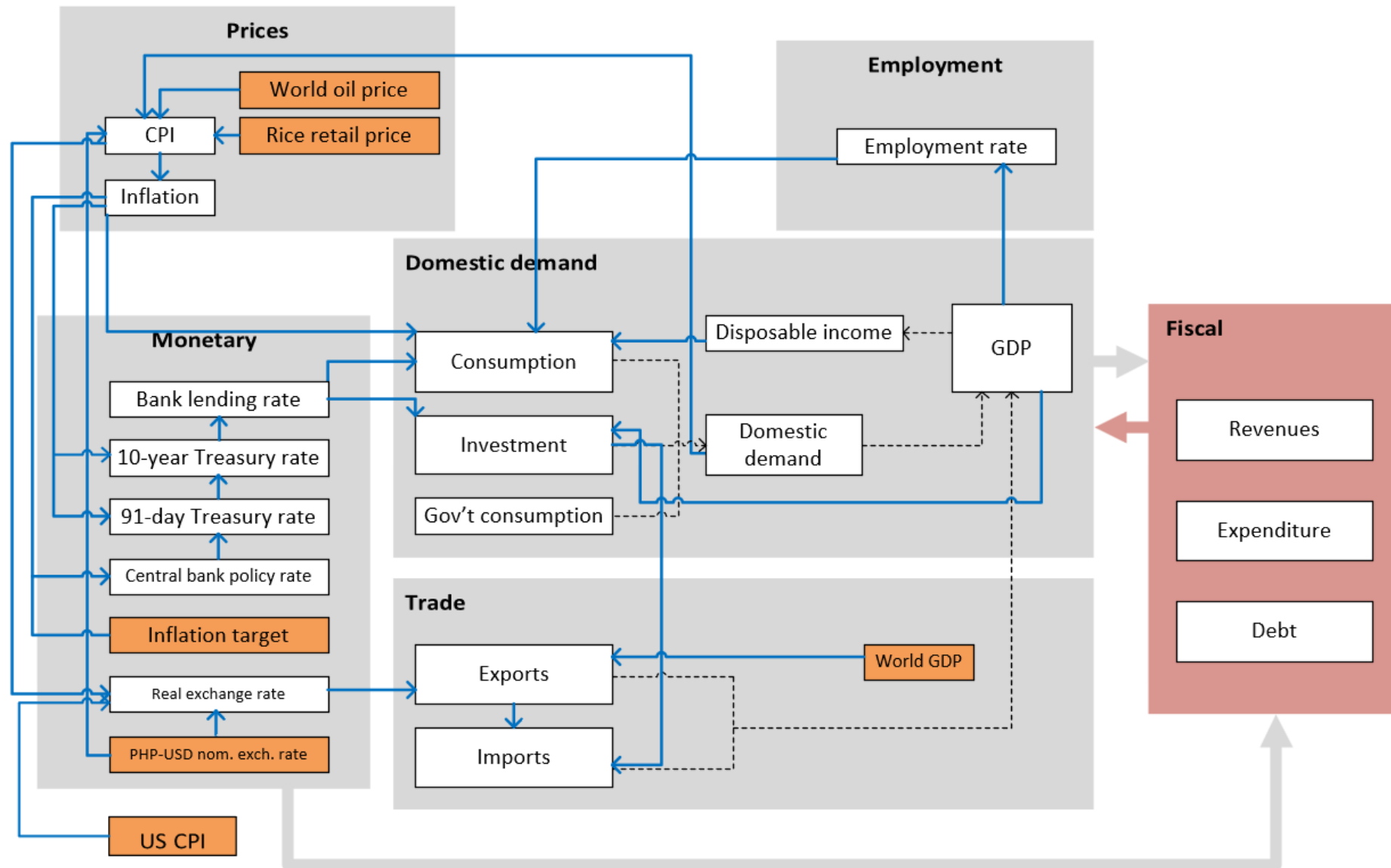
Introduction

- Extension of small macroeconomic model built in mid-2022 (Debuque-Gonzales & Corpus, 2022, 2023).
- Research gap: Scarcity of working full-system macroeconomic models of the Philippine economy.
- Goal: Macro model for policy analysis with good degree of forecasting power.
- Strategy: Start with small core (demand-side), gradually add features.
- Philosophy: Pragmatic: balance between theoretical rigor and empirical realism.
- Fiscal block added late 2022.
- Key issues: Deficits and debt, then relatedly, rising interest rates, and exchange rate depreciation.

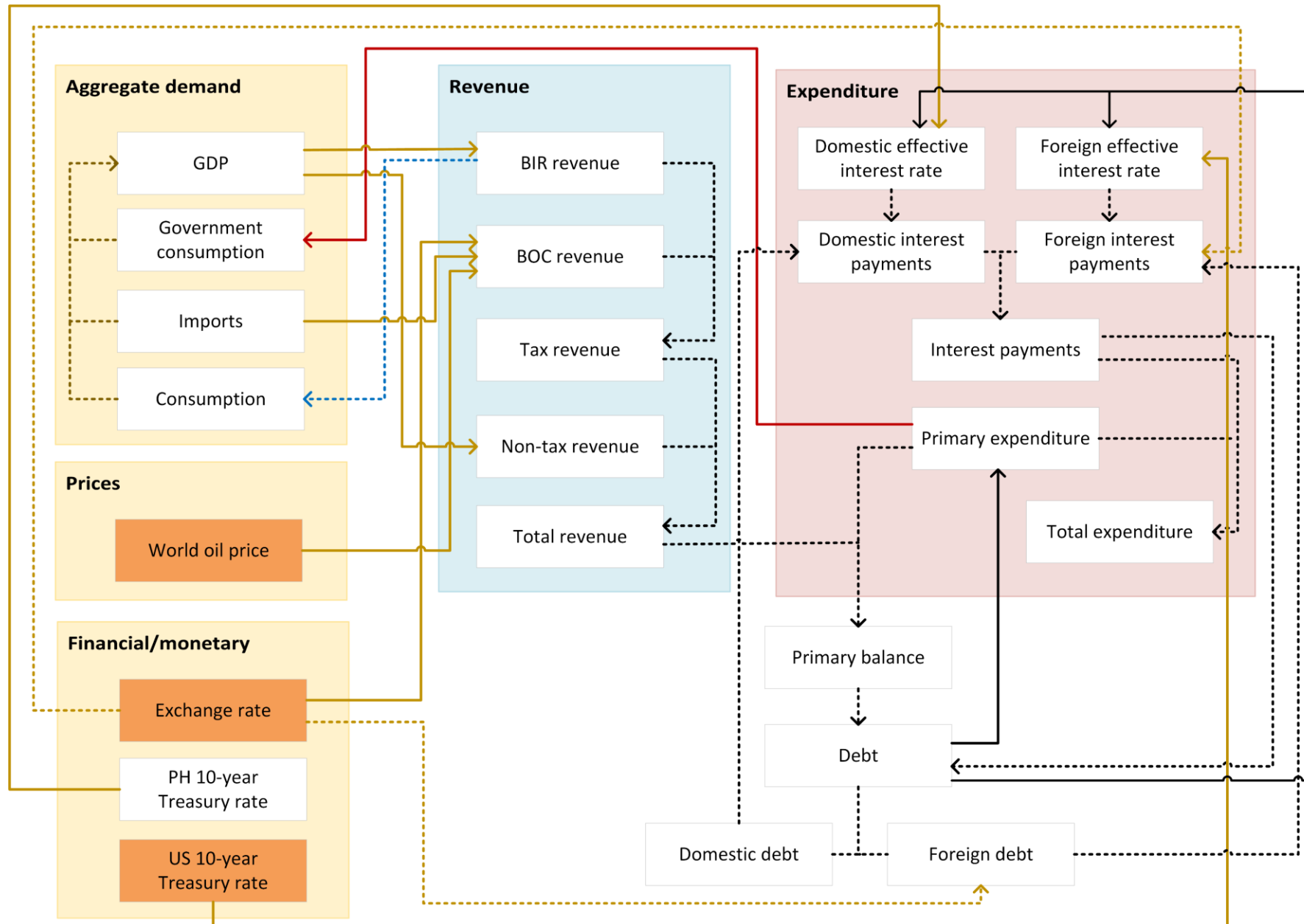
Model overview

- Blocks: 6
 - Domestic demand
 - Trade
 - Employment
 - Prices
 - Monetary/financial
 - Fiscal
- Equations: 38 (18 behavioral, 20 identities)
- Data: 2002Q1–2019Q4
- Estimation: Autoregressive distributed lag – Error correction model (ARDL-ECM)

Model structure



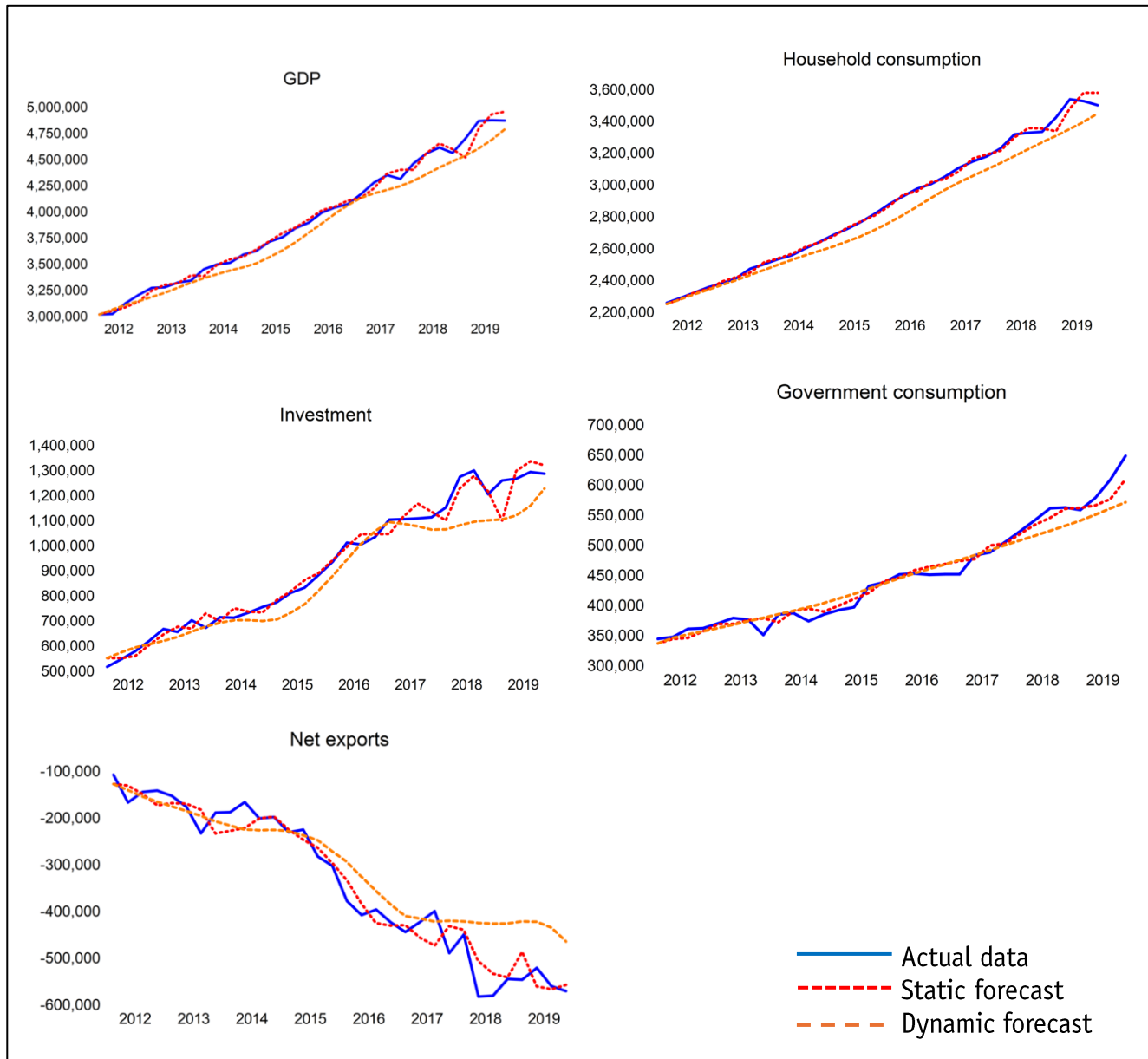
Fiscal block structure



In-sample forecasts

- 2012Q1 – 2019Q4
- Static and dynamic forecasts
- Forecast accuracy evaluation
 - Mean Absolute Percentage Error (MAPE)
 - Mean Absolute Error (MAE)

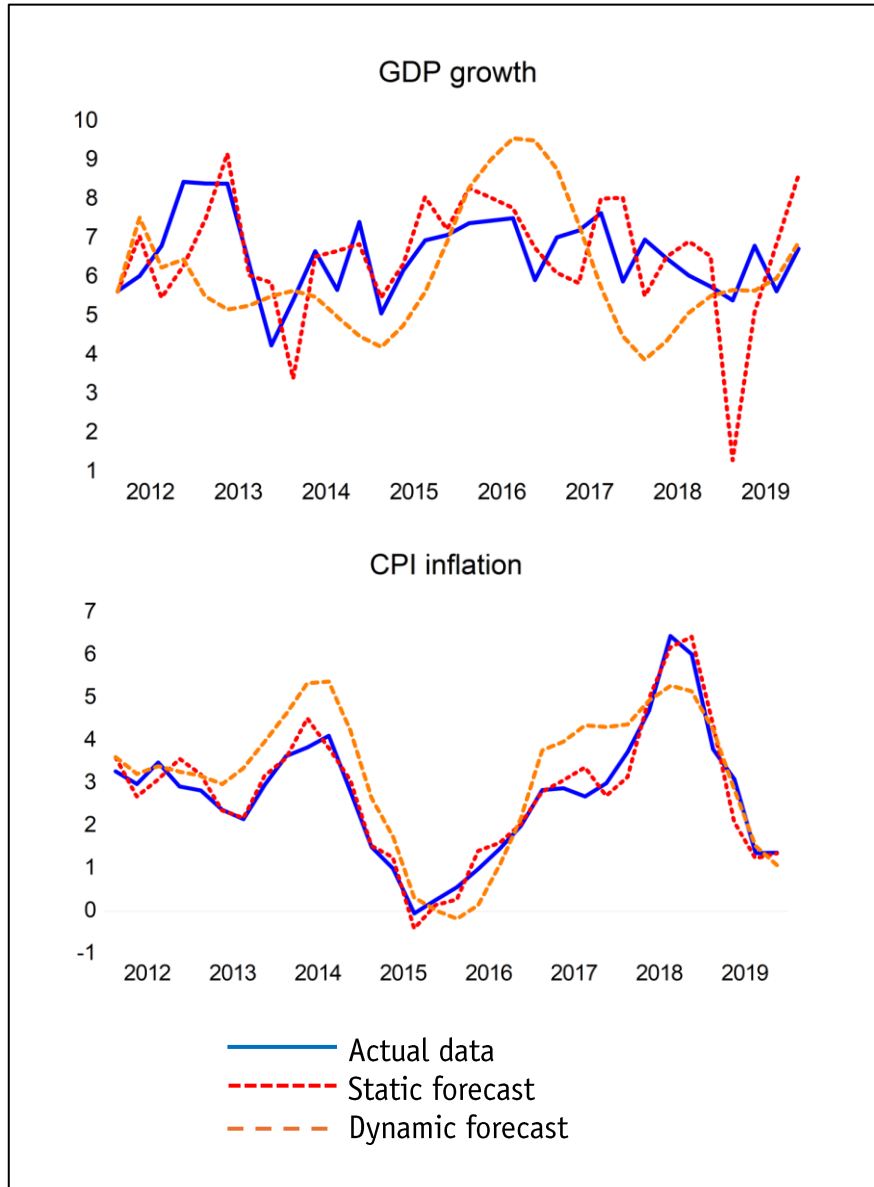
In-sample simulations: Aggregate demand



Mean absolute percentage error (MAPE), percent

	Static forecast	Dynamic forecast
GDP	0.97	2.45
Household consumption	0.60	2.39
Investment	3.20	6.06
Gov't consumption	2.40	3.31
Exports	2.03	2.54
Imports	2.49	4.38
Net exports	9.94	14.65

In-sample simulations: GDP growth and inflation rate



Mean absolute error (MAE), percentage points

	Static forecast	Dynamic forecast
GDP growth	1.03	1.34
CPI inflation	0.30	0.72

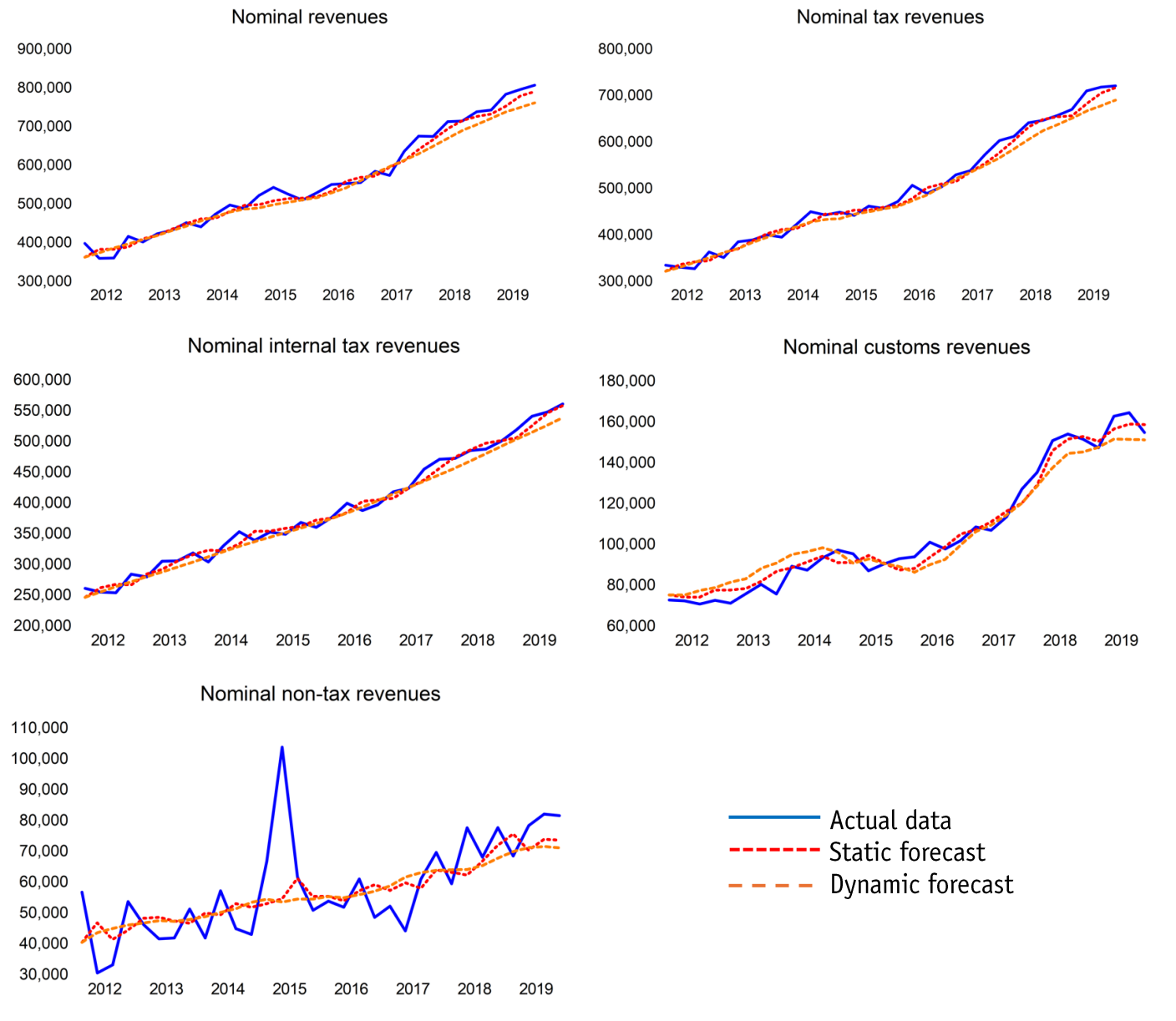
In-sample simulations: Policy and market interest rates



Mean absolute error (MAE), percentage points

	Static forecast	Dynamic forecast
Central bank policy rate	0.20	0.38
91-day Treasury rate	0.30	0.95
10-year Treasury rate	0.40	1.00
Bank lending rate	0.10	0.55
Real 91-day Treasury rate	0.38	0.71
Real 10-year Treasury rate	0.49	0.89
Real bank lending rate	0.34	0.52

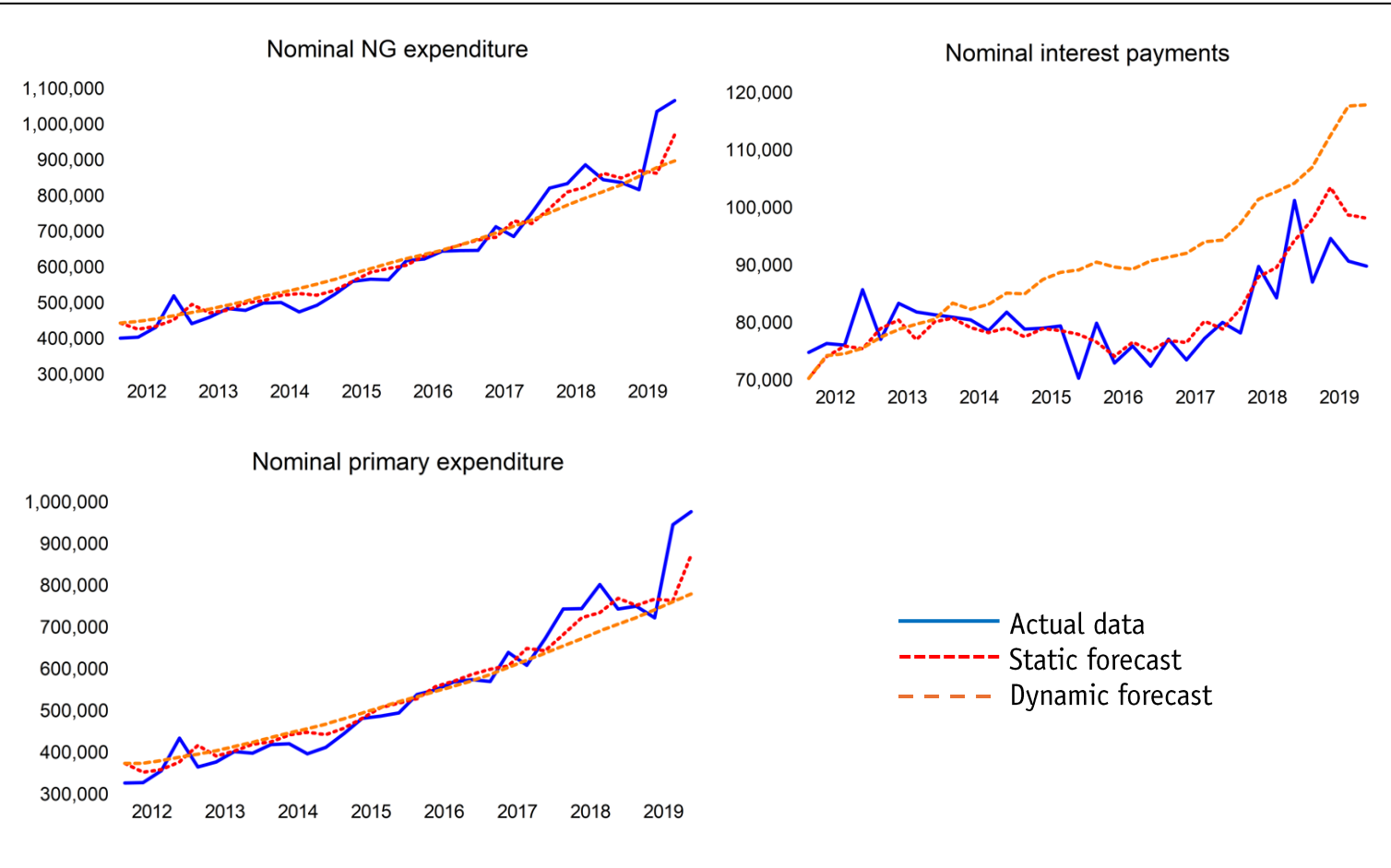
In-sample simulations: Revenues



Mean absolute percentage error (MAPE), percent

	Static forecast	Dynamic forecast
Nominal revenues	3.04	3.73
Nominal tax revenues	2.34	3.01
Nominal internal tax revenues	2.56	2.87
Nominal customs revenues	4.10	6.13
Nominal nontax revenues	15.07	15.10

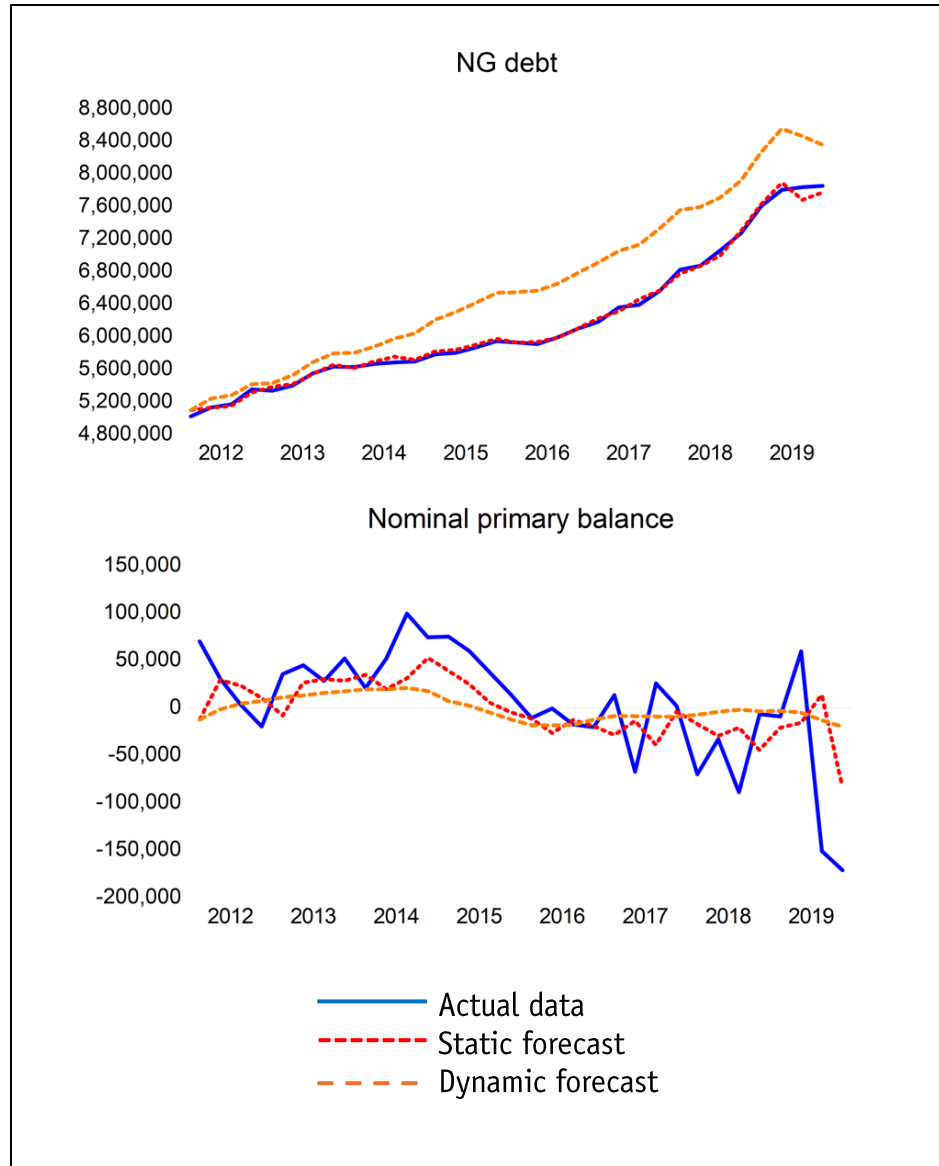
In-sample simulations: Expenditure



Mean absolute percentage error (MAPE), percent

	Static forecast	Dynamic forecast
Nominal NG expenditure	4.97	6.32
Nominal interest payments	4.19	13.46
Nominal primary expenditure	5.72	7.34

In-sample simulations: Debt and primary balance



Mean absolute percentage error (MAPE), percent

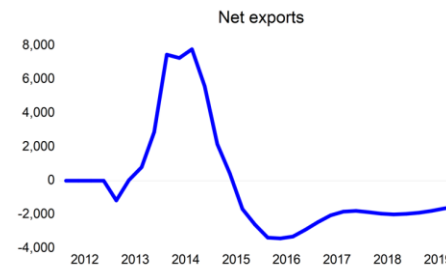
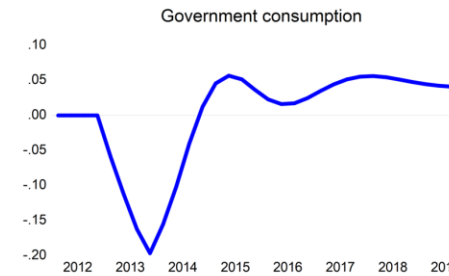
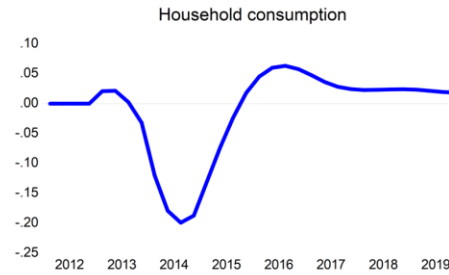
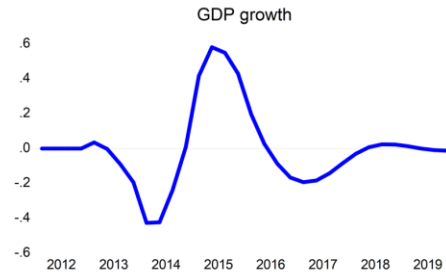
	Static forecast	Dynamic forecast
National government debt	0.58	7.23

Impact analysis

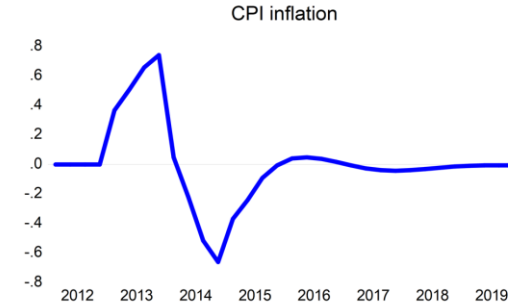
1. World oil price shock (20% increase vs. actual world oil price in 2013)
2. Primary spending shock (10% increase in primary spending vs. actual primary spending in 2013)
3. Exchange rate shock (10% fall in PHP/USD exchange rate vs. actual exchange rate in 2013)

Impact analysis 1: World oil price shock

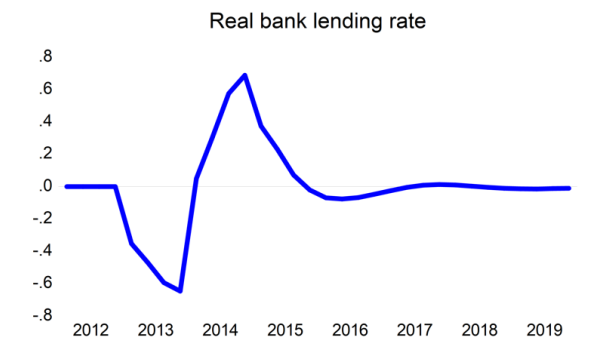
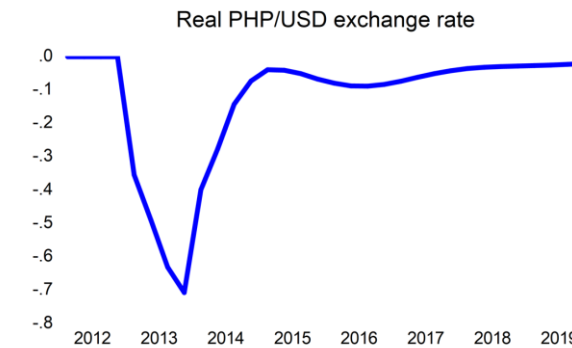
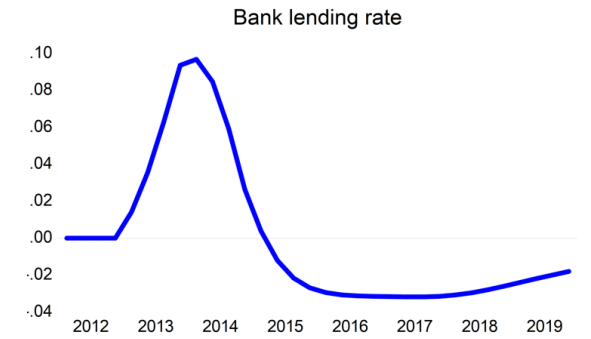
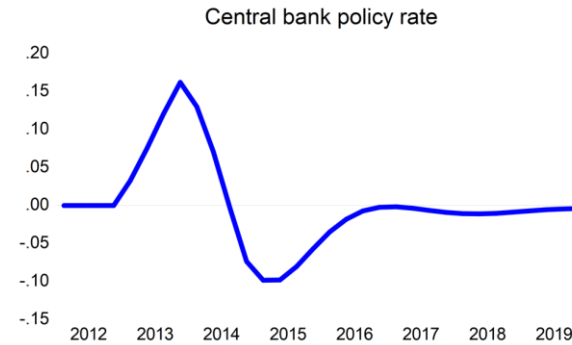
Aggregate demand



Prices

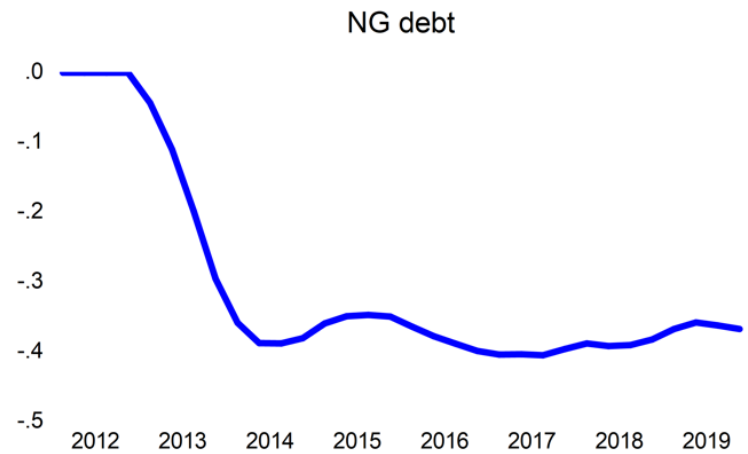
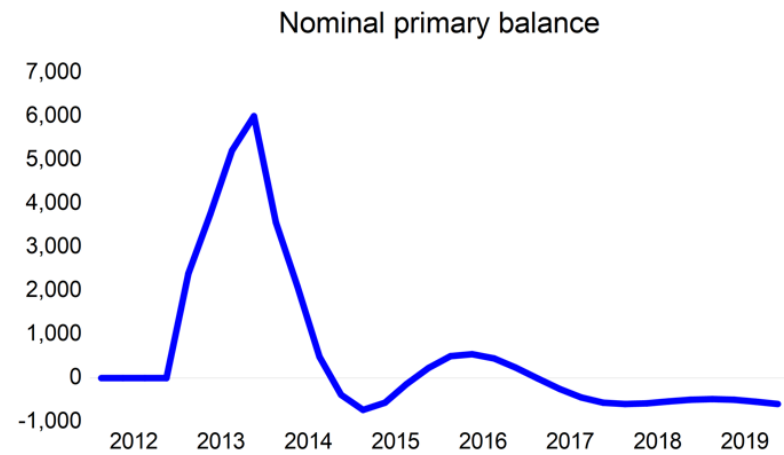
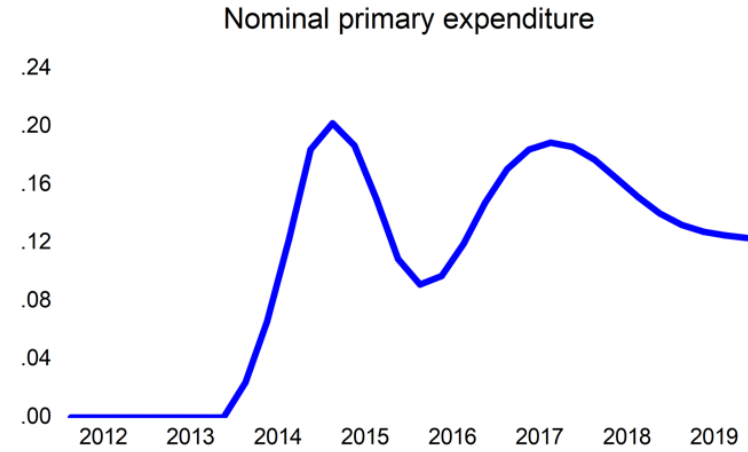
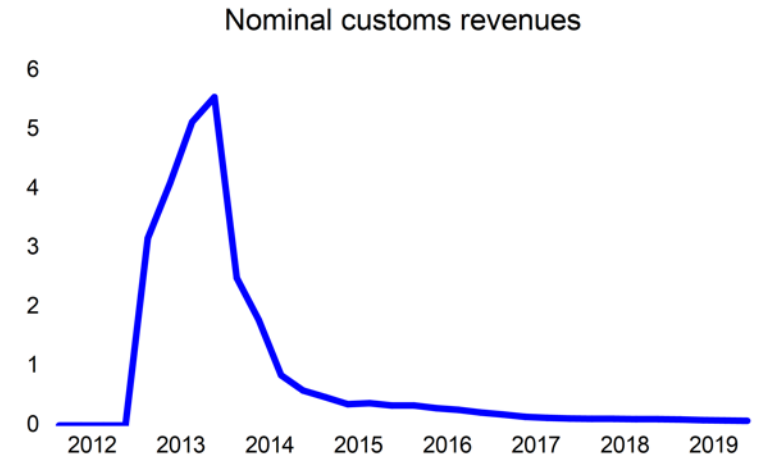


Monetary/financial



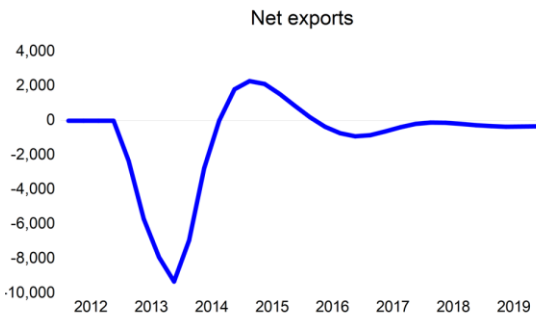
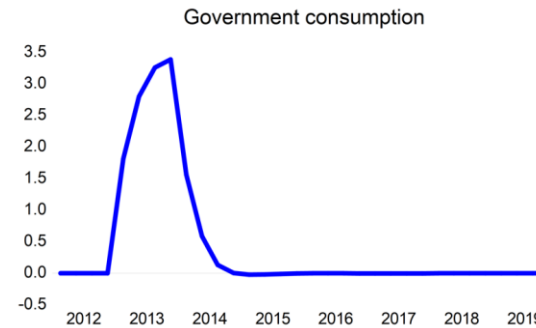
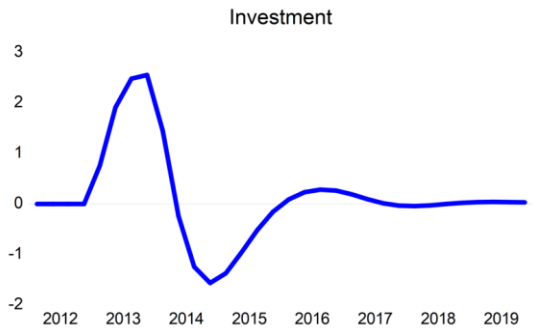
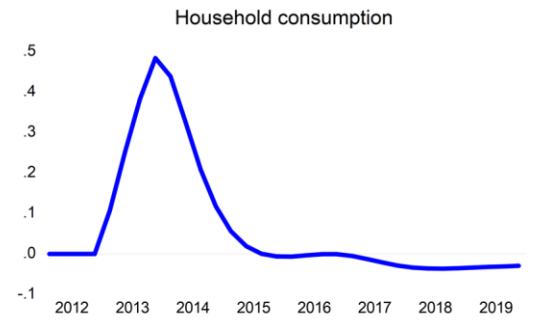
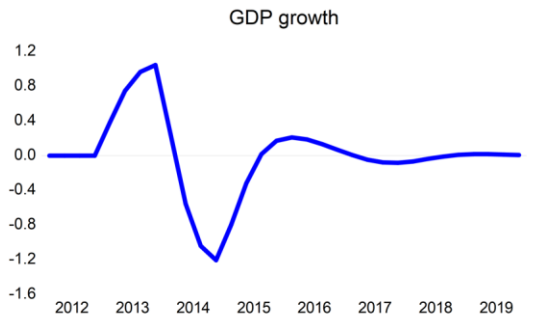
Impact analysis 1: World oil price shock

Fiscal

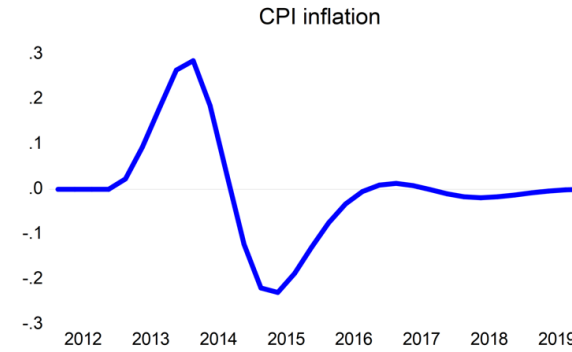


Impact analysis 2: Primary spending shock

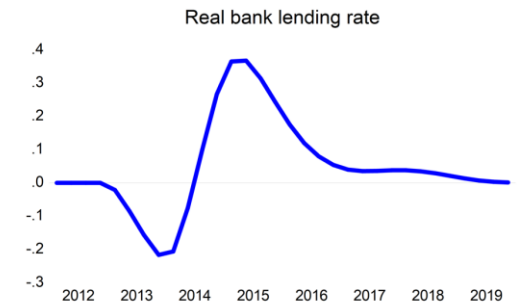
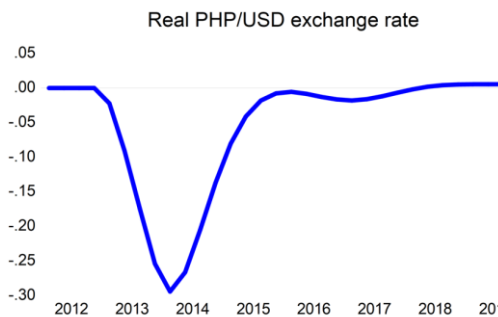
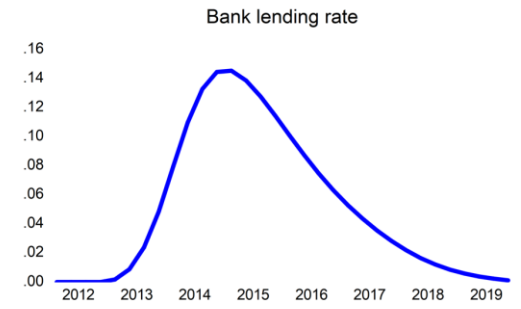
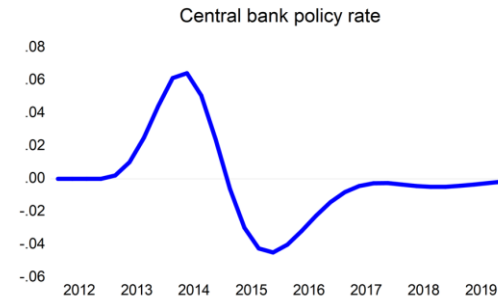
Aggregate demand



Prices

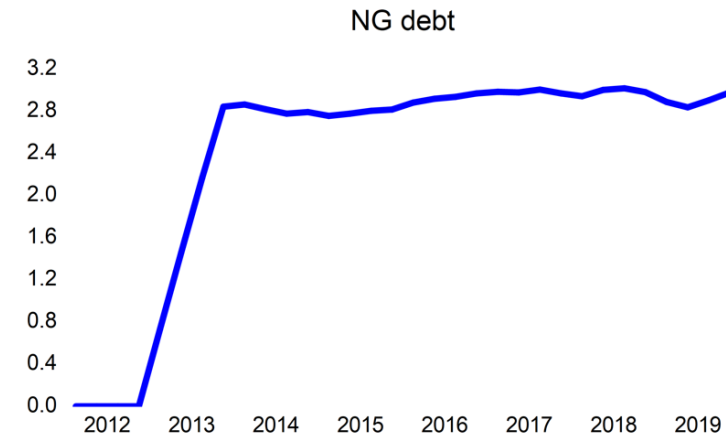
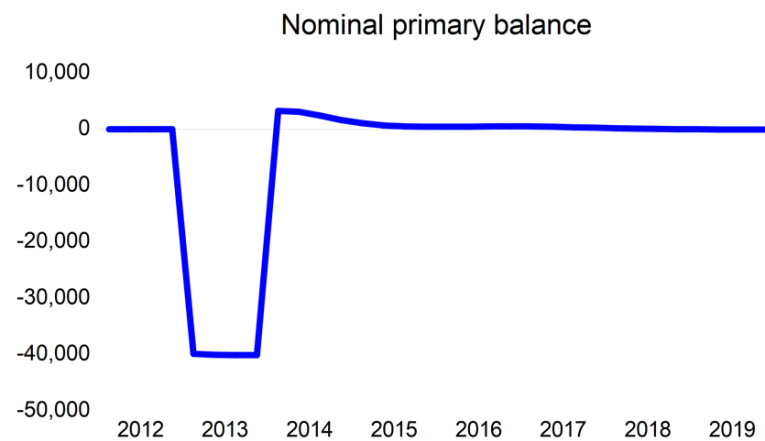
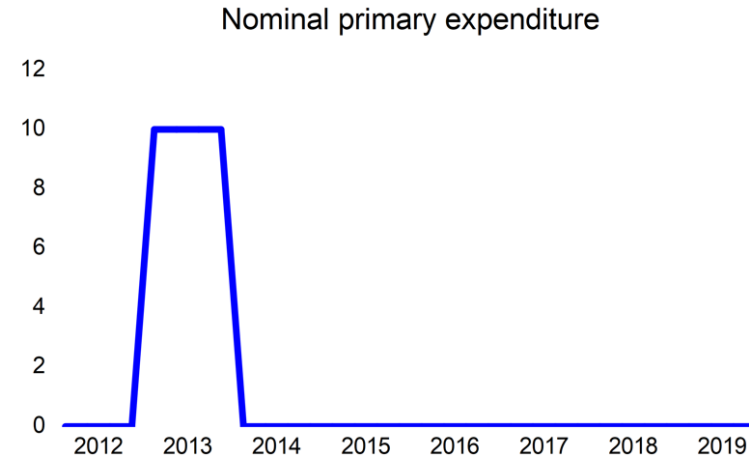
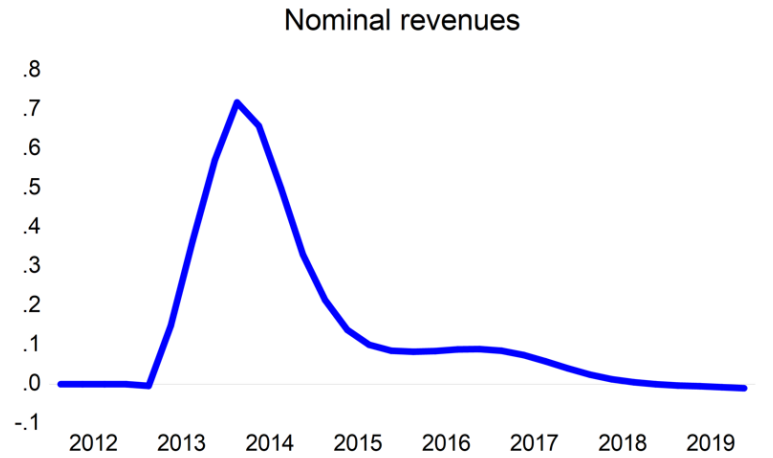


Monetary/financial



Impact analysis 2: Primary spending shock

Fiscal



Conclusion

- The addition of a fiscal block to the small model brings us closer to a macroeconometric model that is useful for policy simulation and analysis.
- In-sample forecasts show acceptable levels of forecast accuracy for most variables, though much can still be improved.
- Simulation exercises also show the model's usefulness for analyzing the effects of exogenous shocks and policy changes.
- Next steps for model development can include:
 - Adding a more detailed financial block
 - Modelling the aggregate supply side
 - Strengthening linkages between blocks
 - Incorporating expectations
 - Including key features of the Philippine economy (e.g., remittances, BPOs)

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Thank you!