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Title: MARTIN Has Its Place: A Macroeconometric Model of the Australian Economy

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Description

This 'read me' file contains details of the code and data used in RDP 2019-07. Publically available plotting data for figures appearing in the RDP can be found in the spreadsheet: rdp-2019-07-graph-data.xls. Data are not available for Figure 5 due to 3rd party provider agreement.

The results reported in this RDP were generated using EViews 10.

Disclaimer

The programs and workfiles in this folder are intended for academic and personal use only.

Anyone who uses the code should cite the paper.

Note on data sources

The version of MARTIN used at the RBA makes use of a number of proprietary data sources that are not available for public release. In order to allow us to provide a public version of the model, we have replaced these data series with simulated data. This allows users to simulate the model and produce impulse response functions similar to those provided in the model documentation. However, it will not be possible to replicate the estimated equations that use these data series, unless the user has their own access to these data series.

Also note that because MARTIN is a nonlinear model its dynamic properties depend on the model's initial conditions. Hence, the scenarios produced in this code will not exactly match those plotted in the discussion paper accompanying the model, which are constructed using the internal version of the model.

The names and mnemonics of the data series where we have used simulated data are:

Expected earnings (eq_e)

Earnings yield (ibey)

Housing prices (ph)

Real housing prices (rph)

Year-ended housing price inflation (pi_ph)

Overseas price level (wp)

Year-ended overseas inflation (pi_wp)

Brent oil prices (wpoil)

Australian dollar oil prices (wpoil)

Nominal 2-year government bond yield (n2r)

Nominal 10-year government bond yield (n10r)

Real 2-year government bond yield (r2r)

Neutral interest rate (rstar)

World export price (wpx)

World real 2-year interest rate (wr2r)

World real 2-year interest rate spread to the Australian 2-year interest rate (wr2sp)

Major trading partner GDP (wy)

Quarterly growth rate of Australian trading partner GDP (qpc_wy)

World real policy rate (wrr)

World real policy rate spread to the Australian cash rate (wrsp)

Directory structure

'martin_public.wf1' – Eviews workfile containing MARTIN and accompanying data

'martin_rdp_irfs_public.prg' – Eviews program file to simulate MARTIN and produce IRFs

'Shock_profile.xlsx' – Excel file with shock profile for housing price scenario

'Subroutines' – Folder including subroutines used to run scenarios

- 'sub1_inputs.prg' – Defines the shocks and the variables to track

- 'sub2_solve.prg' – Solves the model to match the desired shock profile.

How to run the code to generate scenarios

Executing the file 'martin_rdp_irfs_public.prg' will open the workfile containing MARTIN and produce the scenario impulse response functions from the documentation paper.

The code runs five scenarios:

- s1 => A 100 bps increase in the cash rate sustained for four quarters

- s2 => A 10 % RTWI appreciation sustained for four quarters

- s3 => A 100 bps increase in the cash rate sustained for four quarters with the real exchange rate held fixed

- s4 => A 100 bps increase in the cash rate sustained for four quarters with the real exchange rate, housing prices and the earnings yield held fixed

- s5 => A gradual and temporary 5 per cent fall in housing prices, holding the cash rate and exchange rate fixed throughout the scenario.

In the first four scenarios the size of the deviation from baseline is constant for a number of quarters, after which variables follow their endogenous path. For these cases all of the information about the scenarios is contained in the worfkile.

In scenario 5 the size of the deviation of housing prices from its baseline varies across the scenario. We import this profile from the Excel file 'Shock_profile.xlsx'.

Variables from the baseline simulation are denoted with the suffix _0. Variables from scenario X are denoted with the suffix _sX. The effect of the scenario is given by the deviation of a variable in scenario X from its value in the baseline simulation.

For example, the response of the cash rate (in bps) in scenario 1 is ncr_s1 - ncr_0. Similarly, the response of real GDP (in per cent deviations) in scenario 2 is (y_s2/y_0)*100-100.

Other details

The code is designed to run in Eviews 10. While we expect that the codes should run in earlier and more recent versions of Eviews, it is possible that some of the Eviews-defined functions are not identical and thus may not yield identical results.

The MARTIN model object is called M_MARTIN and located within martin_public.wf1

Reference material

Lovicu G-P (2017), 'Calculating Import Intensity Using the ABS Input-Output Tables', Unpublished manuscript, Reserve Bank of Australia, 15 November.

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