

Forecasting

OGResearch

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Where are we

- We followed the usual steps in macroeconomic forecasting
 1. Pick the right model blueprint for the job
 2. Do research about the country, modify the model to fit the country characteristics
 - We've skipped lots of material here, e.g. parameter calibration
 3. Do research on the current situation in the country
 4. **SKIPPED:** Set initial condition for the forecast
 5. **REMAINING:** Use suitable shocks in the model to best represent the current and expected situation in the country

Review of model equations

- Standard QPM, equations for the trends are AR(1) processes
- We changed modeling of the FX rate:
 - CBA manages the FX rate, pure UIP is not suitable
 - We replace the UIP with a “policy rule”

$$\begin{aligned}
 s_t &= \kappa_1 * ((s_{t-1} + \Delta s_t^{tar} - \kappa_2 \widehat{z}_t) \\
 &\quad + (1 - \kappa_1) (E_t[s_{t+1}] + (i_t^* + prem_t - i_t)/4 - \kappa_3 \widehat{oil}_t)) \\
 \Delta s_t^{tar} &= \Delta \bar{z}_t + \pi_t^{tar} - \bar{\pi}_t^*
 \end{aligned}$$

- κ_1 close to 1
- Note that the ultimate target here is still inflation
- We added influence of oil:
 - Oil trend influences the REER trend and the output potential
 - Oil gap influences the domestic demand (output gap) and the FX rate

Review of AZ story

- High dependence on oil for GDP growth, REER
- Policy preference for stable FX rate, but occasional adjustments, not a strict fixed FX rate
- Interest rates not relevant before 2014

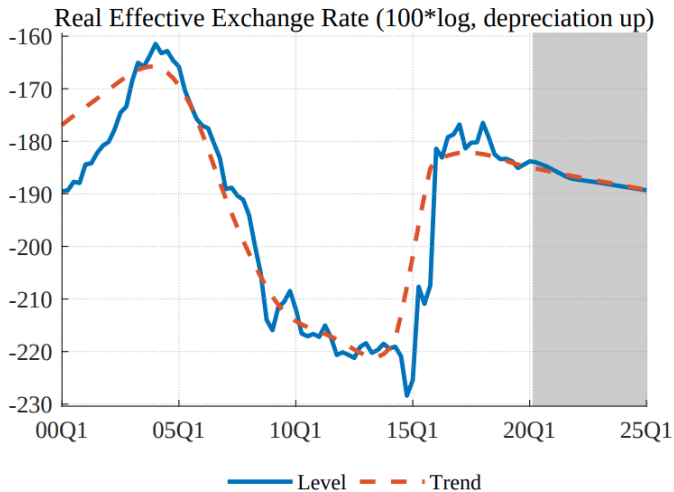
The 2014-2016 oil shock

- Oil price drop impacted all variables in the economy
- Drop in exports => need to reduce imports and pressure on FX reserves => real depreciation => nominal depreciation (rather than decreasing price level)
 - Also, depreciations of the trading partners required nominal FX depreciation (but not real depreciation)
- Imports becoming more expensive relative to domestic production => CPI goes up, but less than the FX depreciation
- Lower incomes, banking sector troubles, less employment => declining domestic demand

Initial conditions etc.

- We will not bother with analyzing and tuning initial conditions
 - No time, lots of work, ...
 - We'll just trust the model to get it more or less right
- We won't calculate the necessary REER adjustment, the impact on GDP, ...not difficult, but time consuming

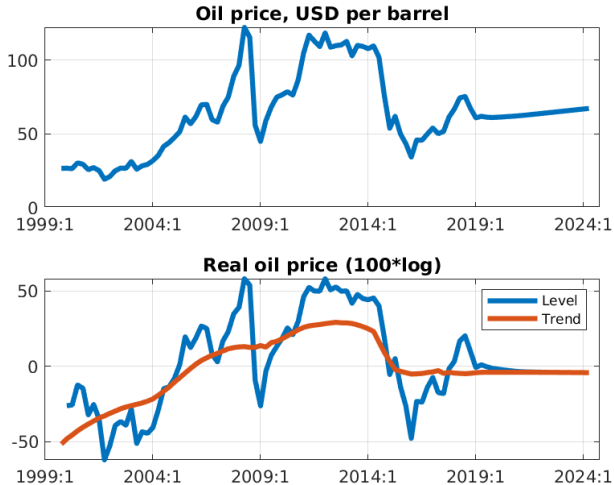
REER depreciated by about 35%



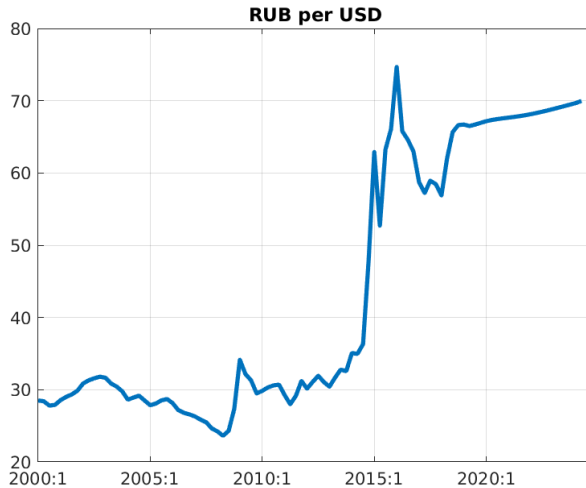
External assumptions

- Our model is not supposed to forecast oil price, RUB per USD, ...
- We will impose the actual paths (slight cheating) as hard tunes
- External assumptions are important and common source of forecast error
- QPM model is usually a part of a wider forecasting system

External assumptions: oil price



External assumptions: RUB per USD



Forecasting exercises

- First, we'll examine the initial conditions
 - History (filter) period ends in 2014Q4
 - Forecast starts in 2015Q1
- Second, we'll examine the "plain forecast", just external assumptions without any judgment
- Third, we'll identify where the forecast is wrong (in our view)
- Fourth, we'll impose the soft tunes = shocks
 - We use a special CSV file for that
- Repeat third and fourth step until we are satisfied
- Important: we need to understand what the shocks represent!

Which shocks can we consider?

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- Strong, permanent depreciation of the REER: shocks to REER trend
- Drop in GDP growth:
 - Temporary: shocks to gap
 - Permanent: shocks to potential output growth
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About the final project

- Two parts: the forecast and the text
- Forecast = forecast report from generated by the codes
- Text = approx 1.5 page explaining the rationale behind the text
 - Audience is your macroeconomics teachers: do not know QPM, but understand jargon and economics
 - I'll provide examples in Study materials; you should not put so many numbers and so much background, go for something similar but simpler (e.g. Master's vs Bachelor's thesis)
 - Describe the whole forecast period - immediate shocks + long term trends
 - Test if you really understand what drives the numbers
- To be done in groups again (the previous grouping or a new one)
- Deadline May 20, 8pm
- Ask questions by email / Skype