How to handle macroeconomic scenarios in the SEERMAP project?

Mihály A. Kovács

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About OGResearch

- Founded in 2009
- Provides macroeconomic forecasting and consulting expertise to private and public institutions around the globe.
- Main areas
  - Macroeconomic analysis and forecasting
  - Consulting services
  - Tailored solutions

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Main clients so far

- TCX(Currency Exchange Fund)
- International Monetary Fund
- European Bank of Reconstruction and Development
- Eurasian Development Bank
- Smaller projects for Word Bank, commercial banks and think-tanks

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Questions to be answered

- Whether it is feasible that these countries finance decarbonisation strategies by themselves or they need foreign financial help?
- Whether decarbonisation in SEE countries leads to net macroeconomic gains?

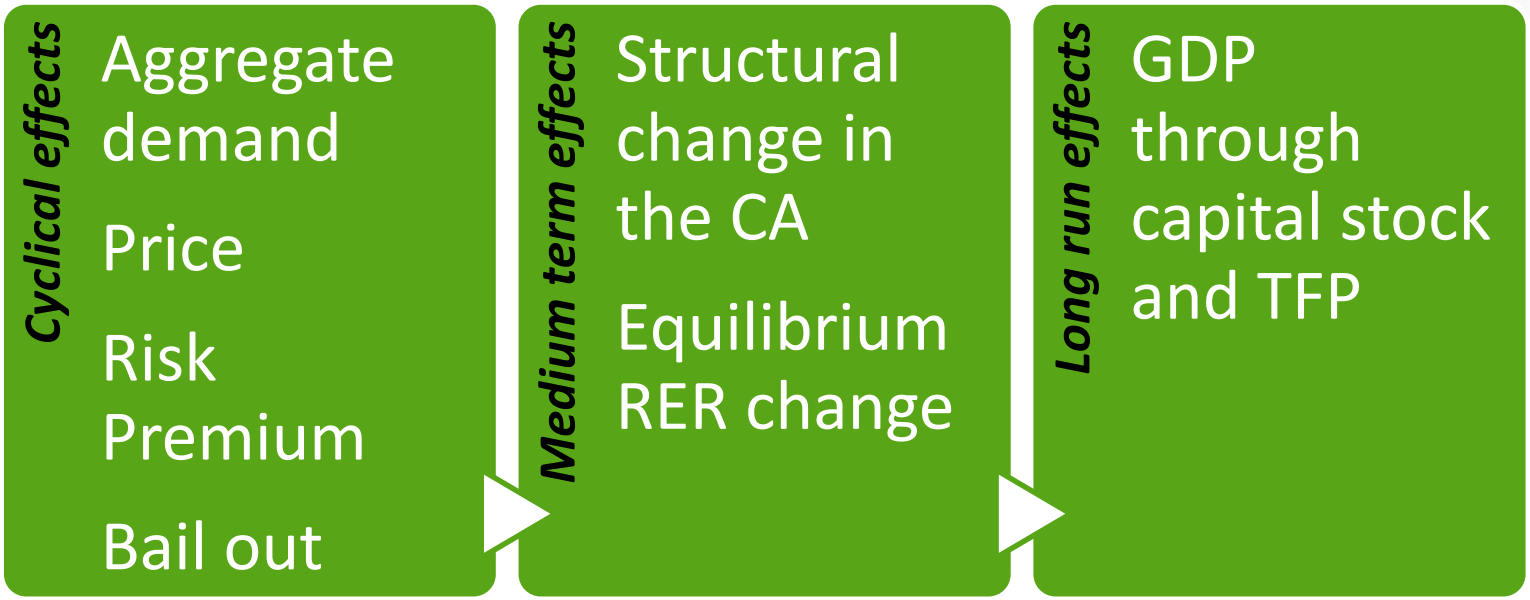
Main assumption

- We think in terms of decarbonisation like a government investment shock which implements frontier technology
  - bit like foreign direct investment (FDI): adds capital and technology
  - but financing is not necessarily secured (like with FDI)

Effects on different horizons

- **Cyclical effects:** Valid on a horizon of up 5 years, but die out in the medium term
- **Medium to long run effects:** Change the macro picture persistently
  - It is very important that these effects are captured and calibrated properly as these largely determine *net gains* on our horizon
  - Typically we don’t have long enough samples to estimate these relationship

Effects on different horizons



Cyclical effects

- **Aggregate demand effect**
  - Investment into renewable energy (also net extra maintenance) increases demand hence GDP and employment
- **Price effect**
  - Investments are partially financed from cross financing/feed-in tariffs which means an increase in regulated household energy prices
  - It is open question whether corporates are excluded from the costs of decarbinsation like it has been done in most EU countries

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Cyclical effects

- **Risk premium channel**
  - Higher government financing could lead to higher risk premium
- **Bail out of fossil firms**
  - Renewable energy support could lead to financial problems of fossil fuel producers which might require budget support

Medium term external balance effect due to structural change

- As renewable energy production is more domestically generated, energy imports could decline for net energy importers like the SEE region
- This improves the external balance, quite persistently

Medium term real exchange rate (RER) effect

- A persitsent change in the current account changes home to foreign prices i.e. the equilibrium RER.
- If the central bank keeps the inflation target, nominal exchange rate should change permanently which changes the existing FX debt stock through revaluation

Long term GDP and employment effects

- This effect significantly determines the *net gains* from decarbonisation while the elasticities are quite uncertain
- We need to be able to tell to what extent renewable investment changes productive capacities by accounting GDP gains in a framework of an aggregate production function of capital, labor and productivity (TFP)

Scenarios to be considered

- Baseline: starting from IMF WEO
  - Contains projections for practically all the variables we need
  - Published twice a year
  - Contains data until 2021, afterwards we fix growth rates (GDP, inflation) or ratios (current account, budget balance) at values of last 3 years
  - Maybe some adjustment is needed to be in line with the EU reference scenario

Scenarios to be considered

- Alternative decarbonisation scenarios based on the Belgrade definition
- Additionally suggested to multiply all alternative scenarios based on macro
  - Debt financing of decarbonisation/tariff hikes
    - Increases budget deficit and hence government and external debt. Not sure if it is sustainable.
  - Foreign transfers/tariff hikes
    - No increase debt, hence sustainability is less of an issue

Where inputs from local partners would be most valuable

- Information on the structure of household/retail energy prices
  - Important to determine to what extent feed in tariffs increase consumer prices and what share of renewable investment could be financed from higher tariffs
- Information on fossil fuel producers' financial position
  - Important to give a rough picture on the size of government bailout

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Thank you!

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Back-up slides

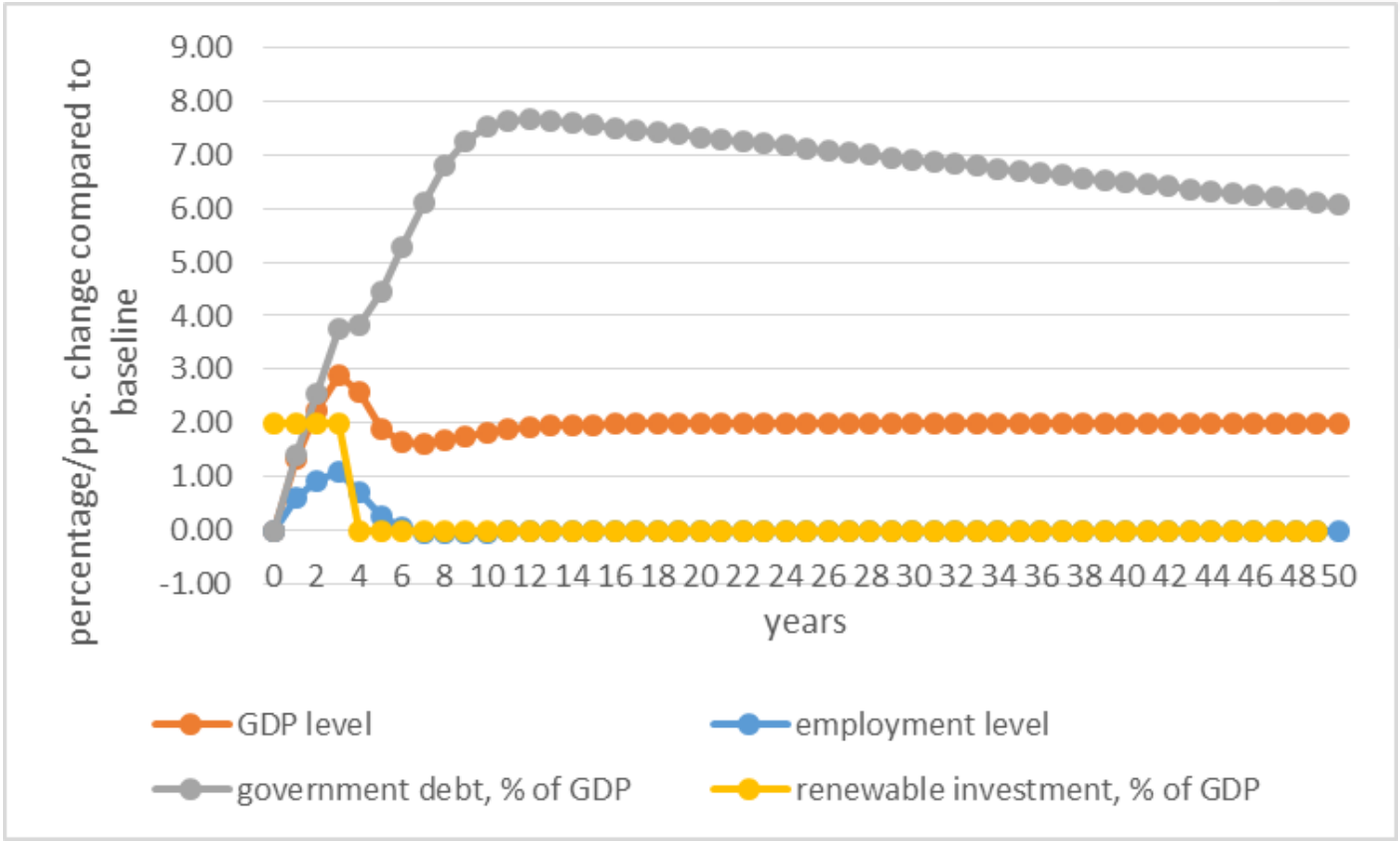
How to account for long run GDP and employment effects?

- *Capital*: Easiest to calculate based on the extra investment plus assumption of capital elasticities.
- *Labor:* Maybe in the medium term but no LR effects as employment is determined by supply side by then (demography, skill composition, transfer system)
- *TFP:* based on the literature on FDI to TFP as in the long run the technology transfer element rather than own innovation seems important.

Calibration

- Our starting point is a medium term macro-fiscal model calibrated for Hungary (see Baksa-Kovács(2015))
- We add some extra features
  - External accounts
  - Employment
- We recalibrate this model to the individual countries based on SVAR-s, although the available data is scarce for most of the countries

Illustrative effects of renewable investment shock financed from government debt



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