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Debt Sustainability Analysis

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Outline

- **Debt Sustainability Analysis**
    - Scenario Analyses and Stress Tests
        - Practice in Turkish Treasury
    - Remarks on Debt Sustainability Analysis

Debt Sustainability Analysis

- Traditionally, DSA is used as a tool to
  - assess future course of the debt burden under a baseline scenario
  - measure sensitivities of debt stock to standardized macroeconomic shocks
  - provide amount of primary surplus need for stabilizing debt ratio under certain macro assumptions
- Simple DSA framework does not consider
  - debt profile (Interest rate, currency and maturity structure of debt stock)
  - contingent liabilities
  - types of investor base (Share of non-residents)

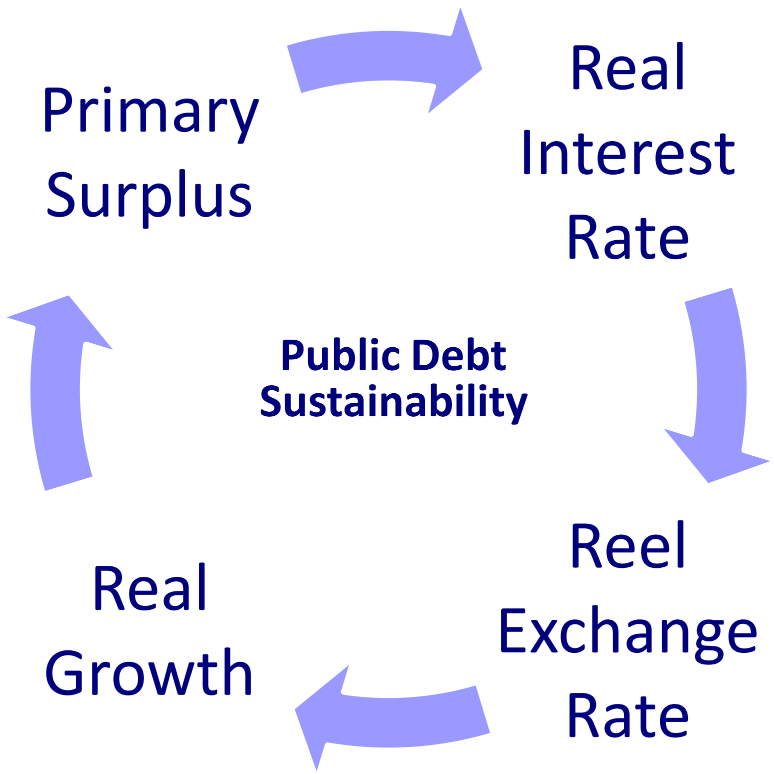
Risk-based Debt Sustainability Analysis

How important, useful and urgent is this for debt management?

- A stress test framework for public debt management should ideally
  - consider possible risks arising from contingent liabilities
  - have a robust structure to cover tail risks and interdependence among shocks.
  - Include forward looking scenarios
- These features are traditionally important for EMs, after global financial crisis crucial for all countries

Design of the Shocks in Sustainability Analysis

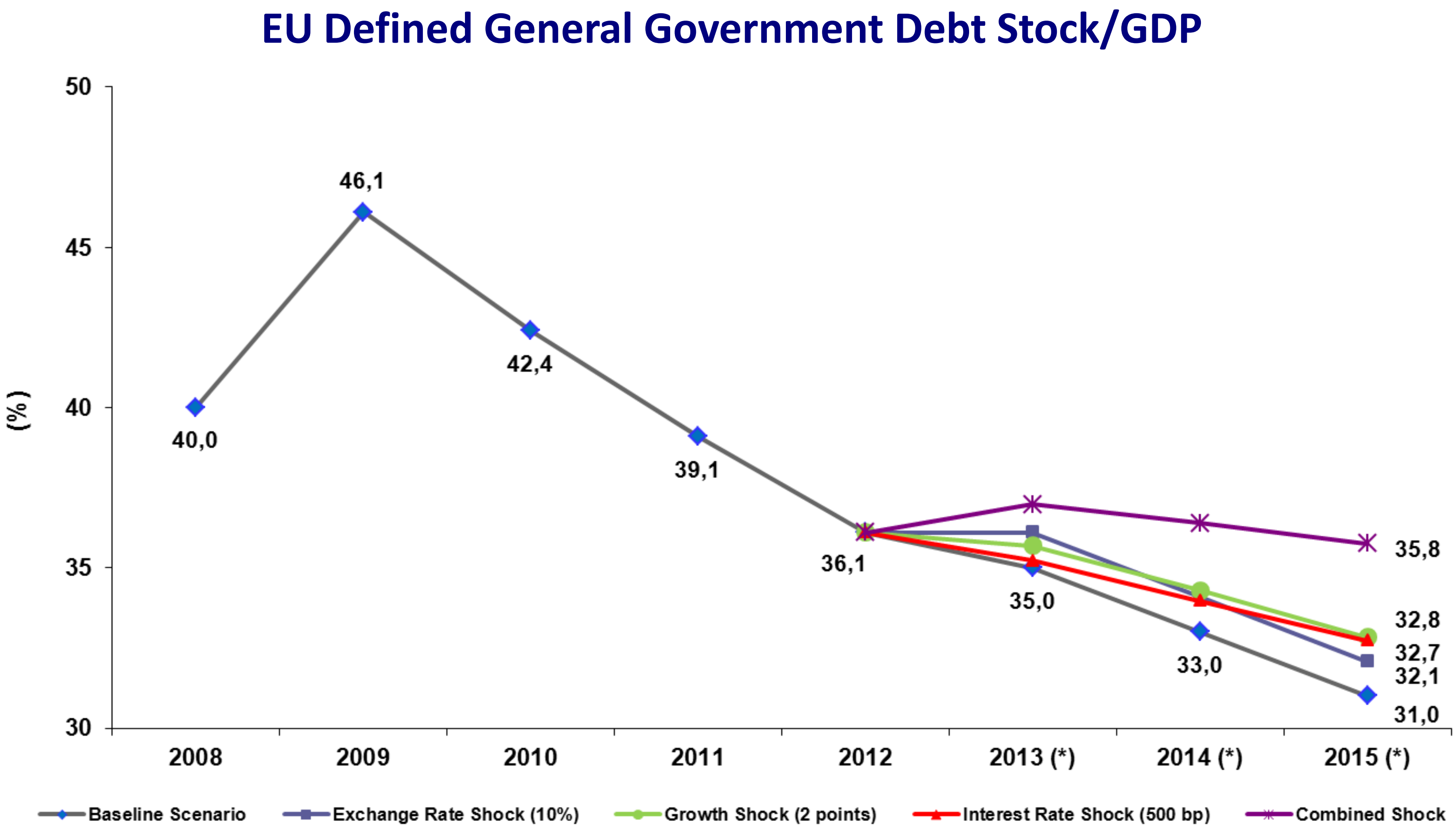
- Interrelation between exchange rates, interest rates, primary surplus, real growth and budget dynamics
- Effects of real GDP growth on budget dynamics
- Particular attention to contingent liabilities
- Calibration of scenarios addressing country specific exposures



Practice in Turkish Treasury: Scenario Analyses and Stress Testing

- Scenario analyses and stress tests are performed through
  - Simple accounting approach on the debt accumulation
  - Spread sheet model that relies on scenario analyses where certain macro-economic or market scenarios are created by means of expert judgment, market analysis etc.
  - Stochastic simulation model for tail risks
- The results are shared with the public in line with the predictability and transparency principles

Practice in Turkish Treasury: Debt Sustainability Analysis



(*) 2013-2015 MTP Projections

Practice in Turkish Treasury: Sensitivity of Gross Public Debt to Shocks

	2001	2012
Change in real exchange rate app/dep by 5 percentage points	+ / - 2.2 points	+ / - 0.5 points
Change in TRY interest rate by*		
10 percent	+ / - 2.0 points	+ / - 0.2 points
25 percent	+ / - 5.0 Points	+ / - 0.5 points
Change in GDP growth rate by 2 percentage points	+ / - 1.5 points	+ / - 0.7 points
Change in Primary Surplus/GDP ratio by 1 percentage point	+ / - 1.0 points	+ / - 1.0 points

(*) Reflects percent change in TRY interest rate in succeeding years.

Note: The effects of scenarios on “Gross Public Debt Stock/GDP” ratio (as defined by ESA standards) measured by deviations from baseline scenarios based on end-2001 and end-2012 stock realizations.

Practice in Turkish Treasury: Assessment of Tail Risk

- In addition to normal distribution scenarios, stochastic environment is enriched with fat tails, asymmetric errors, yield curve shifting scenarios
- We try to cover all potential uncertainty side of a financial time series
- Forward-looking scenarios can be generated based on
  - Medium-Term Program (MTP) Targets
  - Central Bank Inflation Targets
  - Market expectations
    - Implied option volatilities
    - Forward rates

Remarks on Debt Sustainability Analysis

- Better risk assessment of public debt requires improvement in DSA, specifically:
  - Interest rate, currency and maturity structure of debt stock
  - Risks arising not only from direct liabilities but also from contingent liabilities
  - Tail risks
  - Interdependence among shocks

  should be taken into account.

- Sharing the methodology and the results of these analyses with public in accordance with the transparency principles is another aspect to focus www.treasury.gov.tr