

# Public Sector Balance Sheet Strength and the Macro Economy

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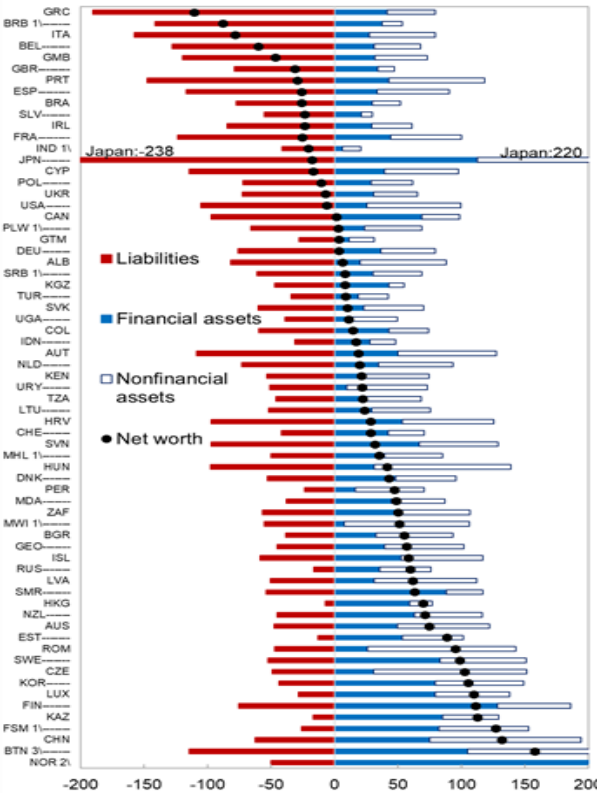
# Outline

- I. **Measures of Public Sector Balance Sheet (PSBS) Strength:**
  - Size of Balance Sheet, Solvency, Risk-adjusted Assets and Liabilities, Net Liquidity, Forex Exposure, Natural Hedge
- II. **Macroeconomic Implications:**
  - Sovereign Bond Yields
  - Recovery and Fiscal Policy
- III. **Policy Implications: Evolution of PSBS in Kazakhstan**
- IV. **Summary**

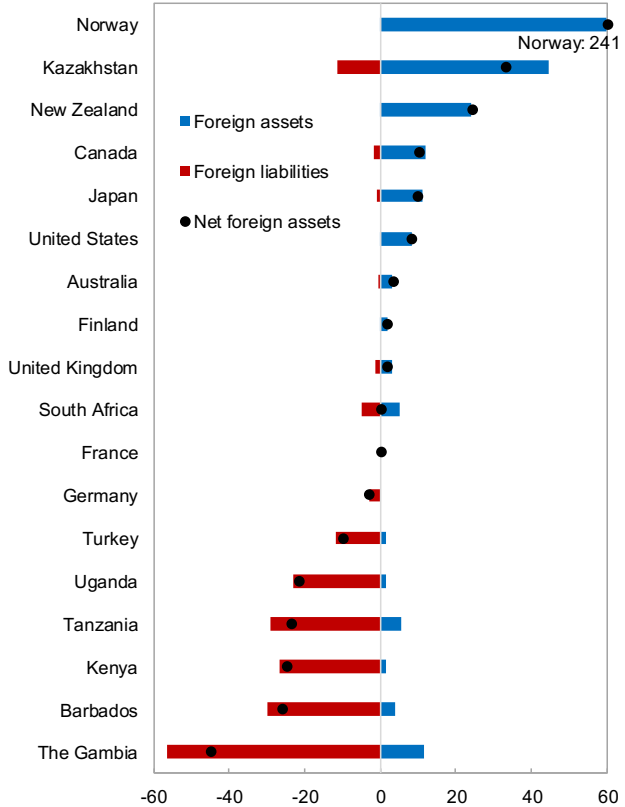
# I. Measures of PSBS Strength

## Better Assessment of Exposures to Risk

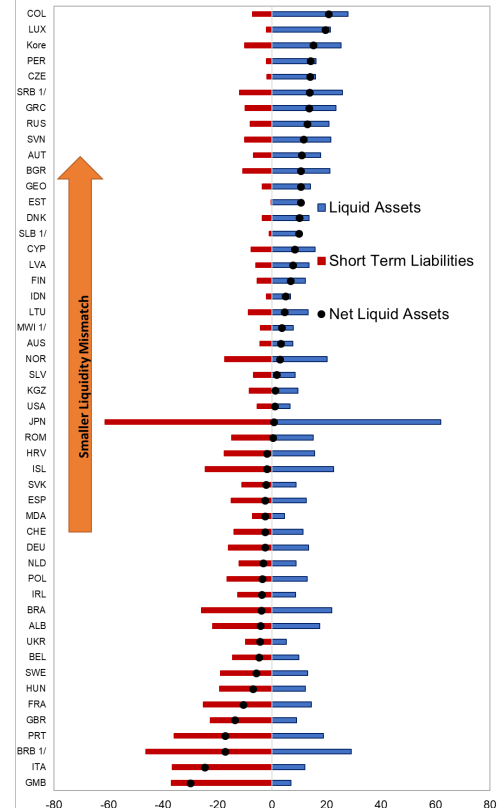
Total Assets and Liabilities (percent of GDP)



Forex Assets and Liabilities (percent of GDP)



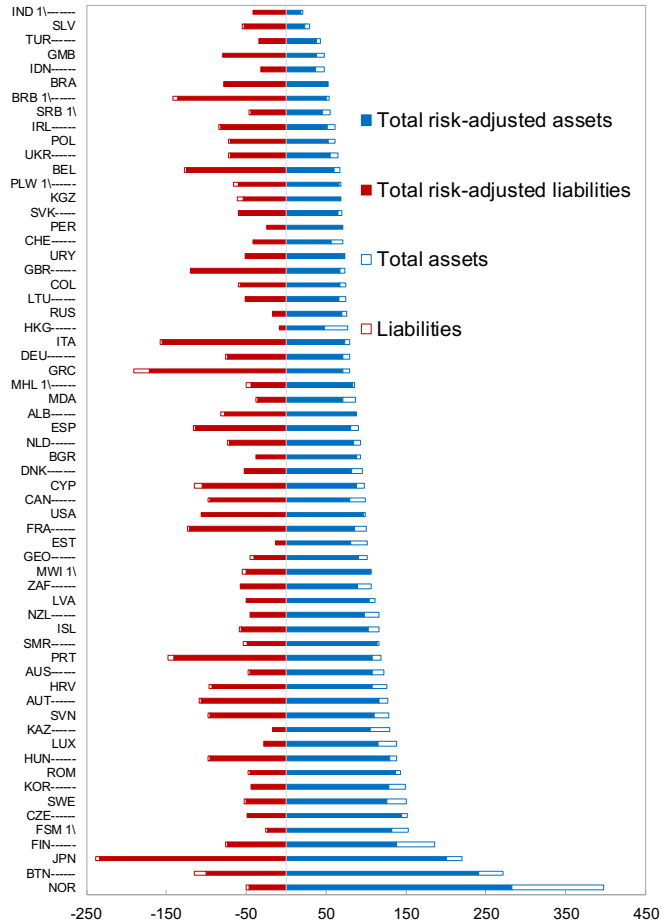
Liquid Assets and Liabilities (percent of GDP)



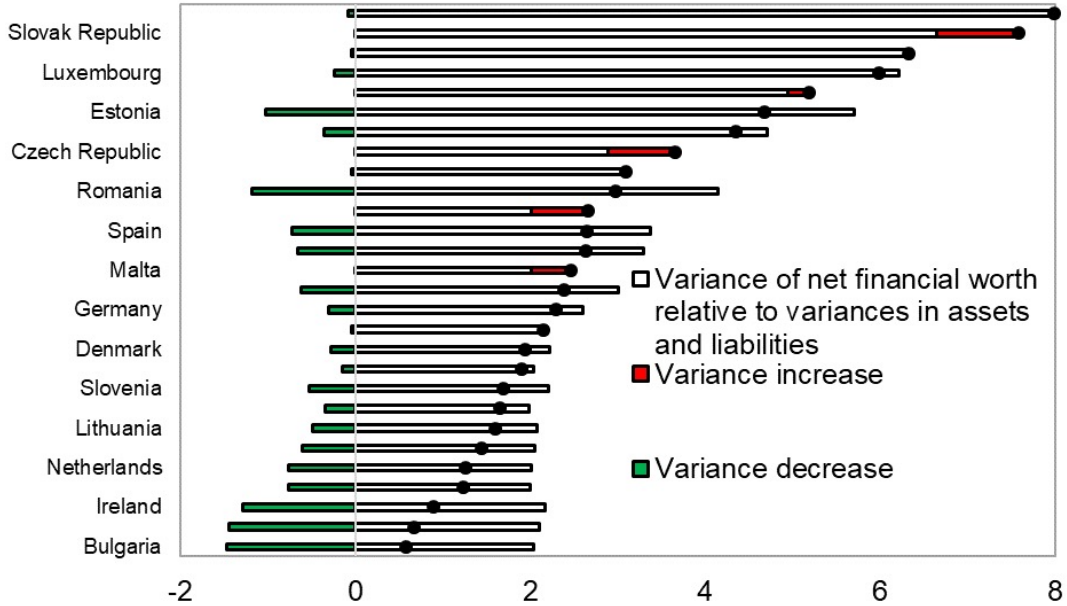
# I. Measures of PSBS Strength

## Better Assessment of Exposures to Risk

### Risk Adjusted Assets and Liabilities (percent of GDP)



### Natural Hedge within the Balance Sheet



## II. Macro Implications: Sovereign Bond Yields

### Fixed Effects Model

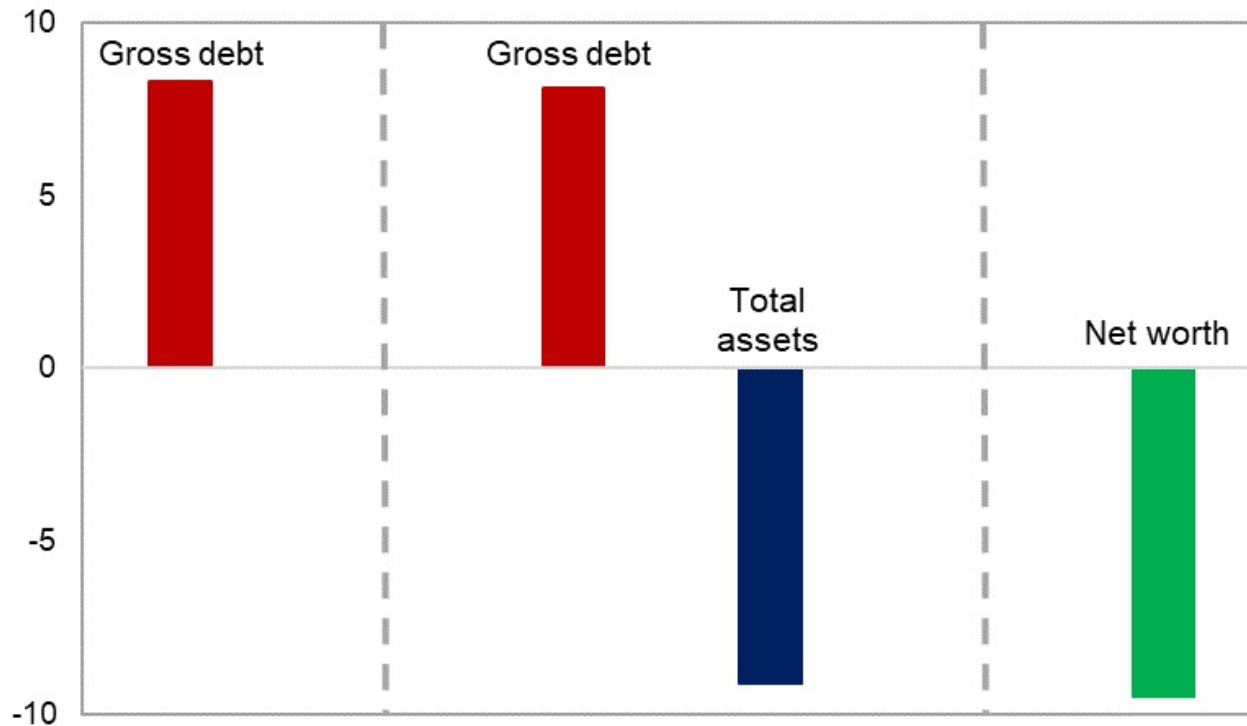
$$y_{it} = \beta x_{it} + \gamma z_{it} + c_i + \lambda_t + \epsilon_{it}$$

- ▶  $y_{it}$ : Long-term government bond yield of country  $i$  in year  $t$
- ▶  $x_{it}$ : Balance sheet variable: general government gross debt, total assets, financial assets, net worth, and net financial worth
- ▶  $z_{it}$ : Controls variables: real per capita GDP growth, US 10-year bond yield, average inflation rate, short-term interest rate, and general government primary balance.
- ▶  $c_i$  and  $\lambda_t$ : country and time fixed effects

## II. Macro Implications: Sovereign Bond Yields

Stronger balance sheet → lower interest

Impact of 10 ppt of GDP change on yields  
in Advanced Economies (in bps)



## II. Macro Implications: Recovery and Fiscal Policy

### Local Projections Model

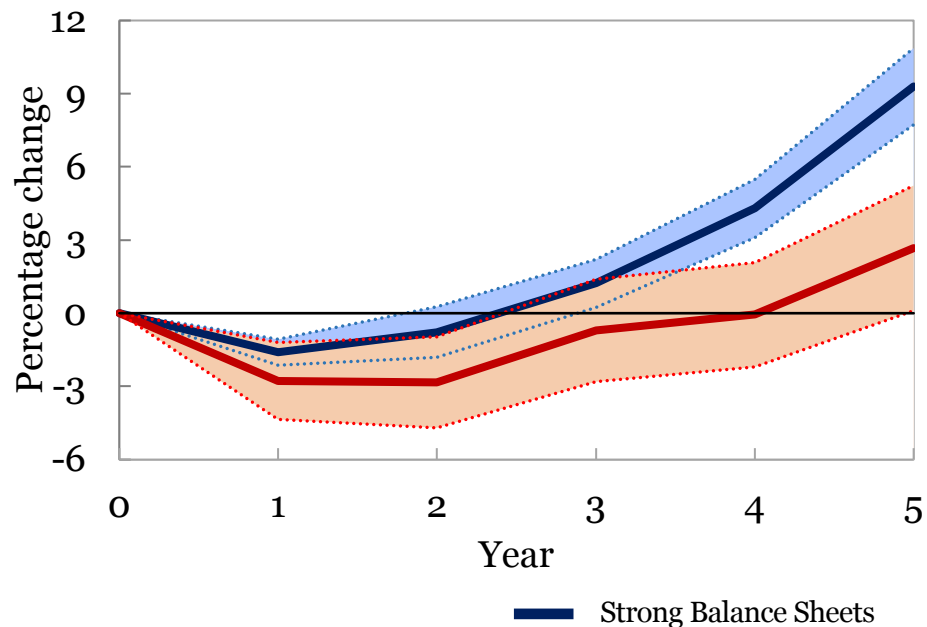
$$\begin{aligned} y_{i,p+h} - y_{i,p} &= \theta_S d_{i,p}^S + \theta_W d_{i,p}^W \\ &+ \beta_h^{S,Pr} (d_{i,p}^S x_{i,p}^{Pr}) + \beta_h^{W,Pr} (d_{i,p}^W x_{i,p}^{Pr}) + \beta_h^{S,Pu} (d_{i,p}^S x_{i,p}^{Pu}) + \beta_h^{W,Pu} (d_{i,p}^W x_{i,p}^{Pu}) \\ &+ \beta_h^{S,PrPu} (d_{i,p}^S x_{i,p}^{Pr} x_{i,p}^{Pu}) + \beta_h^{W,PrPu} (d_{i,p}^W x_{i,p}^{Pr} x_{i,p}^{Pu}) \\ &+ \sum_{l=1}^L \gamma_{h,l} Y_{i,p-l} + \alpha_{i,h} + \epsilon_{i,p+h} \end{aligned}$$

- ▶  $y_{i,p+h} - y_{i,p}$ : Cumulative growth rate in GDP or real government spending in country  $i$ ,  $h$  years after the business cycle peak.
- ▶  $d_{i,p}^S, d_{i,p}^W$ : Dummy variables for strong and weak balance sheets.
- ▶  $x_{i,p}^{Pr}, x_{i,p}^{Pu}$ : Average annual change in five years before the peak of private debt, and the level of public debt as a percent of GDP at the peak
- ▶  $Y_{i,p-l}$ : Set of lagged control variables: two lags of real per capita GDP growth rates, government expenditures, public debt and private debt.
- ▶  $\alpha_{i,h}$ : are country-year fixed effects such that  $\sum_{i=1}^N \alpha_{i,h} = 0$

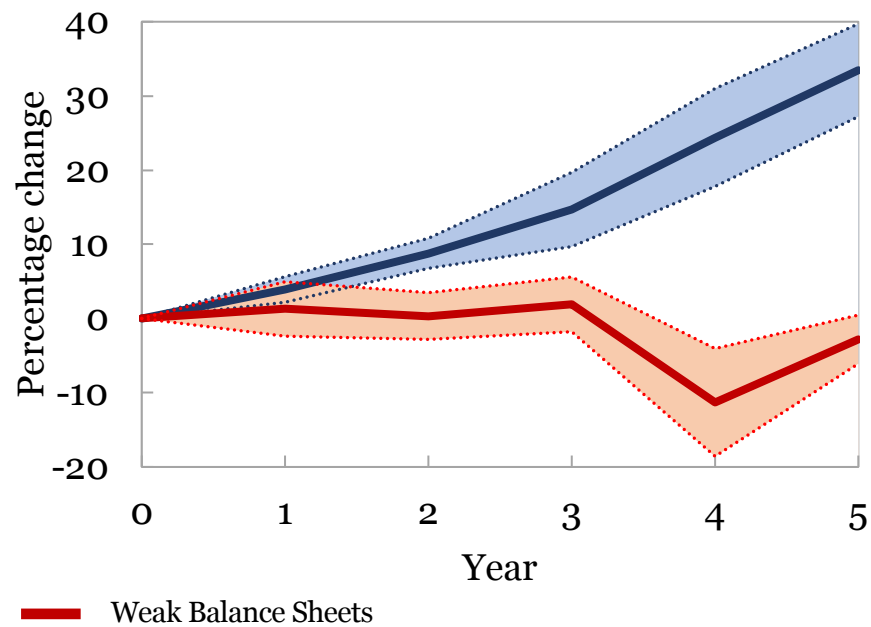
## II. Macro Implications: Recovery and Fiscal Policy

Stronger balance sheet → Greater resilience

### Real GDP per Capita Following Recessions (in percent)



### Real Government Expenditure per Capita Following Recessions (in percent)

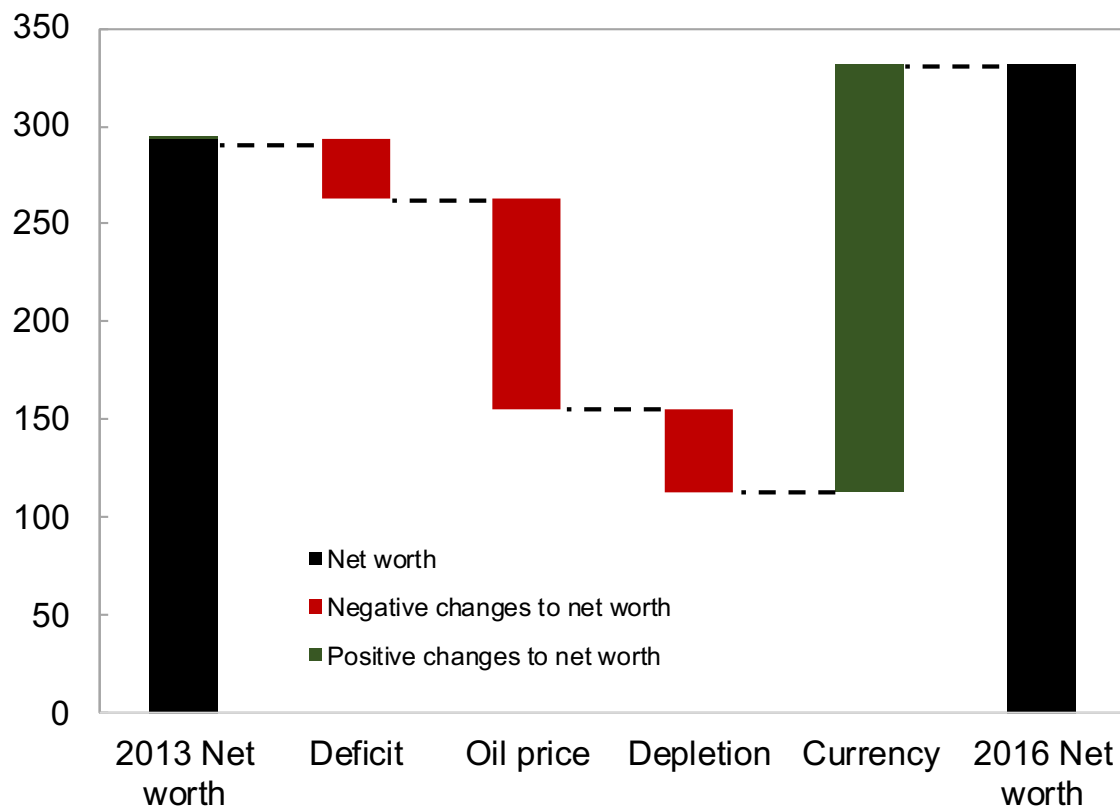


Note: Shaded area represents 90 percent confidence interval.



### III. Policy Implications: Evolution of PSBS in Kazakhstan

Kazakhstan: Evolution of Net Worth  
(percent of 2016 GDP)



## IV. Summary

- Assessment of government fiscal position should pay attention to assets as well as liabilities:
  - Measures of PSBS Strength
- Balance Sheets are macro-relevant:
  - Financial markets consider governments' asset positions in addition to debt levels in determining borrowing costs
  - Countries with stronger balance sheets experience shallower and shorter recessions
- Fiscal policy debate could be enriched by enhancing transparency and deepening our knowledge of the overall balance sheet
  - Importance of building resilience and buffers to counter the adverse effects of economic downturns