Macroeconomic Impacts of GST Restructuring and Trade Shocks in India: An Assessment

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Outline

- Background
- Salient macroeconomic trends in recent times
- Conceptual framework and choice of variables
- Findings

Part I

Background

Indian economy passing through rapid changes in global and domestic policy front since the beginning of 2025

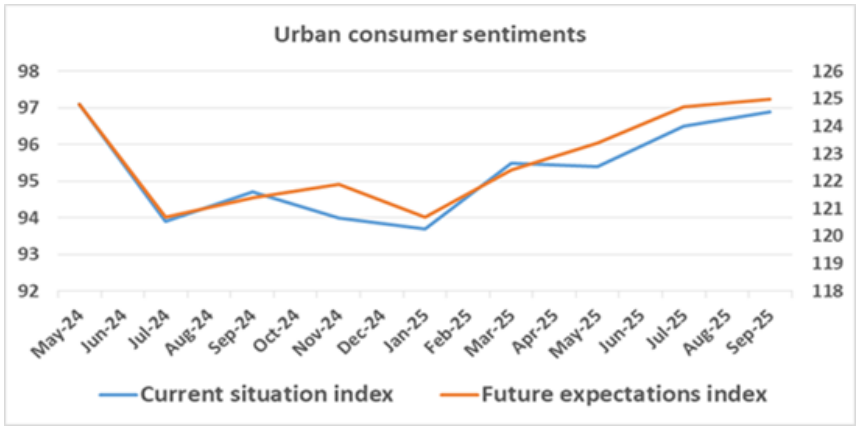
- Initial imposition of 25% tariff on Indian goods by US later double to 50% effective from August 27, 2025
- To counter tariff effects & boost domestic demand, GST rate restructured to obtain a lower effective rate from September 22, 2025

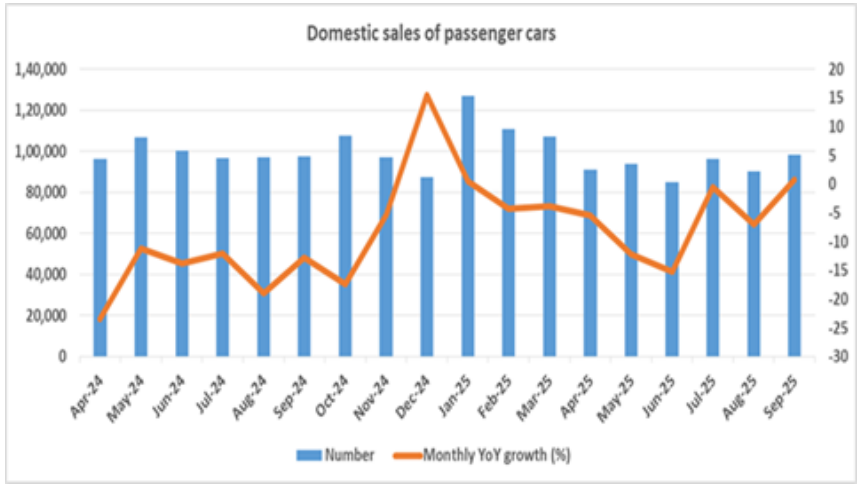
Old GST rate structure	New GST rate structure
0%: For essential items like fresh fruits, vegetables, milk, and food grains	**Nil Rate (0%):** Essential items, medicines, and educational supplies
5%: Common goods like packaged food, footwear below Rs. 500, spices, and tea	**Merit Rate (5%):** Applies to essential items, replacing the earlier 5% and 12% slabs such as packaged, processed food
12%: Processed foods, butter, cheese, ghee, fruit juices, and apparel above Rs. 1000	
18%: Services, cosmetics, ice cream, pasta, stationery, and steel products	**Standard Rate (18%):** Replaces the previous 18% and 28% slabs, covering a large number of goods and services, including consumer durables
	Special Rate (40%): A new, higher rate for luxury goods and "sin" items like tobacco products, online gambling

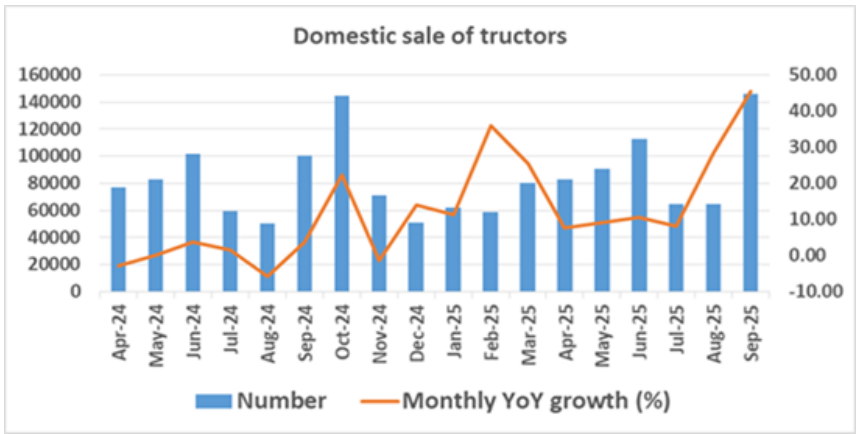
Part II

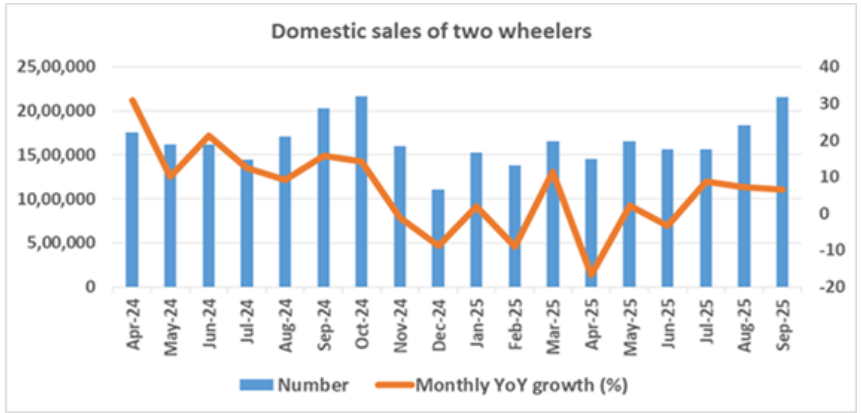
Salient macroeconomic trends in India recent time

Domestic Consumption demand improving for urban, while mixed picture for rural areas









Rural-urban gap in FMCG growth narrowing as urban demand recovery gains

Robust investment growth, mainly driven by public sector

Value of project cost (Rs. Million)

Year/Quarter	Public & private combined (YoY, %)	Public (YoY, %)	Private (YoY, %)
2024-25 Q1	-0.55.2	-63.0	-50.3
2024-25 Q2	-32.2	-50.2	30.2
2024-25 Q3	-27.1	-42.6	16.6
2024-25 Q4	-33.6	-39.3	-25.5
2025-26 Q1	**224.5**	**551.6**	**73.3**
2025-26 Q2	**27.9**	**41.2**	**10.2**

Source: CMIE Capex

Non-POL export growth moderating due to trade related uncertainties, while automobile exports growth increased due to front loading

Month	Non-POL	Pearls, precious, semi-precious stones	Drug formulations, biologicals	Gold and other precious metal jewellery	Readymade garments (RMG) of cotton including accessories	Motor vehicle/cars
Apr 2025	10.25	-5.54	0.72	49.98	19.14	36.46
May 2025	4.36	-34.6	9.03	11.34	14.14	18.74
Jun 2025	2.84	-29	6.46	9.06	4.95	4.18
Jul 2025	14.15	19.73	15.63	46.1	6.5	15.91
Aug 2025	6.73	0.88	5.82	35.39	-4.63	**31.16**
Sep 2025	5.52	-1.54	2.85	-0.43	-6.78	**32.48**

Source: CMIE Economic Outlook

Questions

- How does external demand shock affect GDP growth in India
- What are the impacts of an expected GST rate cut on consumption, GDP growth, and on revenue, expenditure and public borrowing to GDP ratios?
- What would be the possible range of GDP growth projections for 2025-26 under different scenarios regarding US GDP growth movements in near future?

Part III

Conceptual framework

Conceptual framework

- **Reduced form micro-founded New-Keynesian model (Gupta and Steinbach, 2013; Banerjee and Bhattacharya, 2025)**
- **Updated with consumption tax and government budget constraint**
- Small open economy
- Household consumes, saves in one internationally traded bond, supplies unit labour to production unit
- Production unit: Firms
- UIP condition driving real exchange rate dynamics
- Govt. borrows to finance gap between revenue and spending & debt servicing
- Tax financed public spending used as an input in production
- Inputs and goods market clearing, current account & net foreign assets dynamics
- Central bank determines nominal interest rate following a Taylor type rule
- Foreign block driven by exogenous shocks

Household & Firm

- Consumes home produced and imported goods
- Intertemporal optimisation endogenously determines current consumption and savings: savings not determined by an exogenous rate
- Saves in domestic govt bond and one internationally traded bond

$$\text{Max} \quad U = \sum_{t=0}^{\infty} \beta^t \frac{C_t^{1-\sigma}}{1-\sigma} \tag{1}$$

$$\text{sj. to} \quad (1+\tau^{gst})P_t C_t + B_t = W_t + (1+i_t)B_{t-1} \tag{2}$$

$$\text{where} \quad C_t = \left[\alpha^{\frac{1}{\eta}} C_{d,t}^{\frac{\eta-1}{\eta}} + (1-\alpha)^{\frac{1}{\eta}} C_{f,t}^{\frac{\eta-1}{\eta}}\right] \tag{3}$$

- Monopolistically competitive firms
- Source of nominal rigidity: Staggered price setting by firms due to menu cost

Log-linearised reduced form equations

- Dynamic IS curve from combining consumption and bond Euler

$$\begin{aligned} c_t &= \frac{1}{1+\gamma_h} c_{t+1} + \frac{\gamma_h}{1+\gamma_h} c_{t-1} - \left[\frac{1-\gamma_h}{1-\gamma_h}\right]\left[\frac{1}{\sigma}\right][i_t - E_t\pi_{t+1}] \\ &+ \left[\frac{1-\gamma_h}{1-\gamma_h}\right]\left[\frac{1}{\sigma}\right][\tau^{gst}_{t+1} - \tau^{gst}_t] + \epsilon^d_t \end{aligned} \tag{4}$$

- NK-Phillips curve for home goods

$$\pi^h_t = \left[\frac{\delta_h}{1+\delta_h\beta}\right]\pi^h_{t-1} + \left[\frac{\beta}{1+\delta_h\beta}\right]E_t\pi^h_{t+1} + \left[\frac{(1-\theta_h)(1-\beta\theta_h)}{\theta_h(1+\delta_h\beta)}\right]mc_t \tag{5}$$

- NK-Phillips curve for imported goods

$$\pi^f_t = \left[\frac{\delta_f}{1+\delta_f\beta}\right]\pi^f_{t-1} + \left[\frac{\beta}{1+\delta_f\beta}\right]E_t\pi^f_{t+1} + \left[\frac{(1-\theta_f)(1-\beta\theta_f)}{\theta_f(1+\delta_f\beta)}\right]\psi_t \tag{6}$$

Log-linearised reduced form equations

- Real marginal cost of domestic production

$$mc_t = \hat{y}_t + \alpha s_t + \epsilon_t^p \quad (7)$$

- Deviation from Law of One Price

$$\psi_t = q_t - (1-\alpha)s_t \quad (8)$$

- CPI inflation

$$\pi_t = \alpha\pi_t^h + (1-\alpha)\pi_t^f \quad (9)$$

- UIP condition

$$E_t q_{t+1} - q_t = (i_t - E_t\pi_{t+1}) - (i_t^* - E_t\pi_{t+1}^*) \quad (10)$$

- Terms of trade dynamics

$$s_t - s_{t-1} = \pi_t^f - \pi_t^h \quad (11)$$

- Production technology determined by unit labour and public spending

$$\begin{aligned} y_t &= g + \epsilon_t^a \\ y_t &= \hat{y}_t + y_t^p \quad (12) \end{aligned}$$

Log-linearised reduced form equations

- Goods market clearing

$$y_t = (1-\alpha)c_t + \alpha\eta(2-\alpha)s_t + \alpha y_t^* + \alpha\eta\psi_t \quad (13)$$

- Equation (4) and (8 to 13) and assumption that potential output does not change in short run, implies current output determined by expectation (+), real interest rate (-), real exchange rate (-), and foreign output (+) & inflation (+)
- Closing the model with Central Bank's interest rule and Govt budget constraint

$$\begin{aligned} i_t &= \rho i_{t-1} + (1-\rho)[\phi_y \hat{y}_t + \phi_\pi E_t \pi_{t+1} + \epsilon_t^i] && (5) \\ b_t - b_{t-1} &= g_t - r_t + [i_t - (y_t - y_{t-1})]b_{t-1} + \epsilon_t^b && (6) \end{aligned}$$

- Foreign block varies following an AR(1) process

Part IV

Estimation strategy

Baysian VAR framework: Limitations & advantages

- Empirical estimation of transmission of shocks using Baysian VAR (BVAR) framework, **not** full structural system estimation
- Estimate the model for quarterly frequency
- **BVAR framework:** Unknown parameters treated as random variables with prior distribution
- Advantages of BVAR framework
  - GST data available from July 2017 giving us only **32** observations
  - Prior combined with likelihood function from data produces more robust model, especially for small datasets
  - Addresses issue of over parametrisation
  - Addresses issue of unstable estimated parameters due to non-stationarity of variables that arises in classical VAR model estimation

Estimation strategy: Limitations & advantages

- Algorithms sampler (Marcov-Chain Monte Carlo (MCMC)) used to generate a sequence of random samples representative of the posterior distribution
- Prior distribution updated with information from data to create posterior distribution
- Samples used to perform model analysis, such as generating impulse response functions and forecast error variance decompositions

Variables and Data

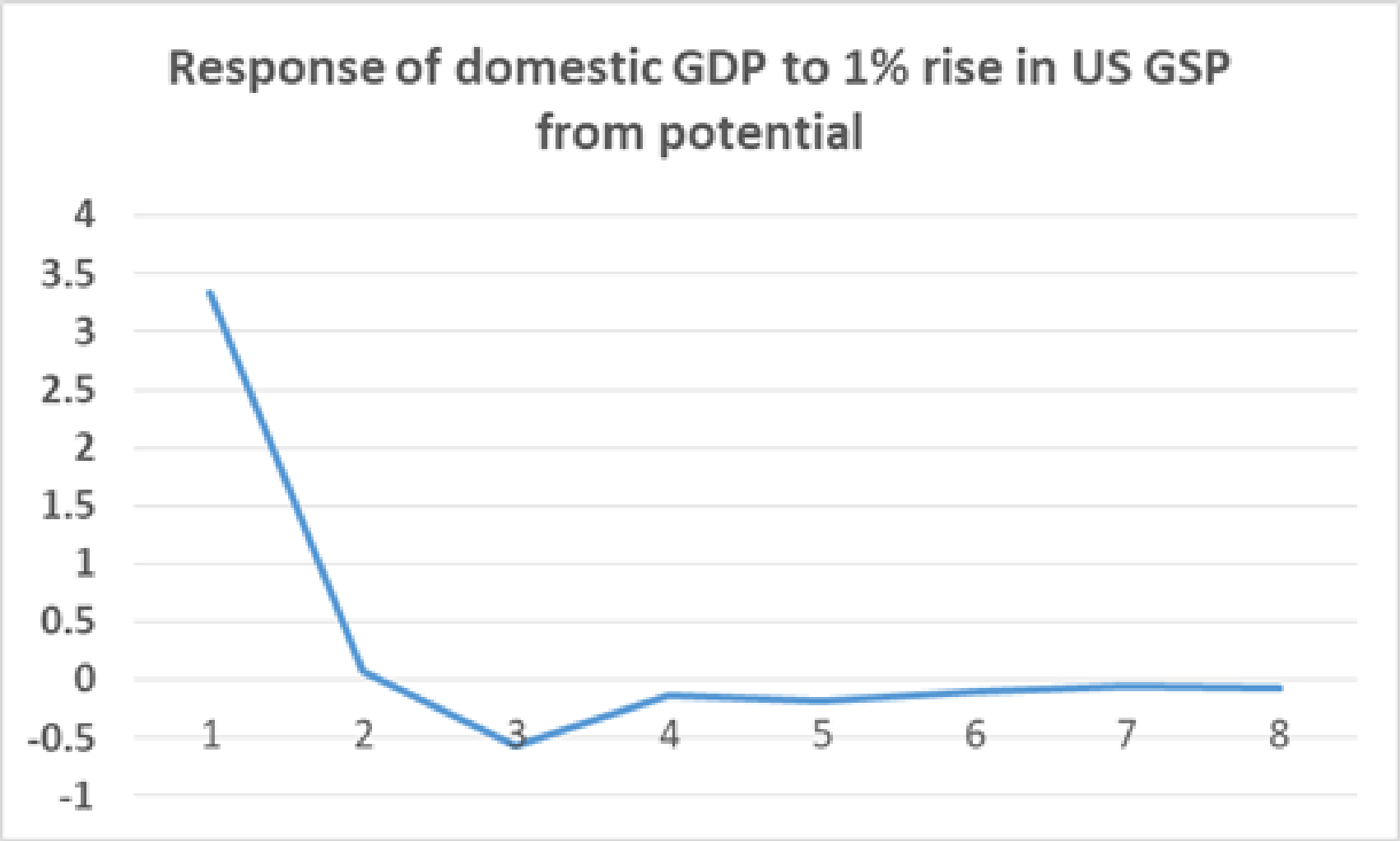
- Foreign block represented by US output gap, inflation and Fed policy rate sourced from Federal Reserve Bank of St. Louis
- Effective GST rate represented by GST collection to Consumption
- Domestic out put & inflation represented by Real GDP in 2011-12 base and CPI India respectively, sourced from NSSO
- Real effective exchange rate for 6 currency basket sourced from CMIE Economic Outlook
- RBI's Household survey based inflation expectation & Repo rate sourced from CMIE Economic Outlook
- Fiscal variables sourced from Controller General of Accounts (CGA)

Part V

Findings

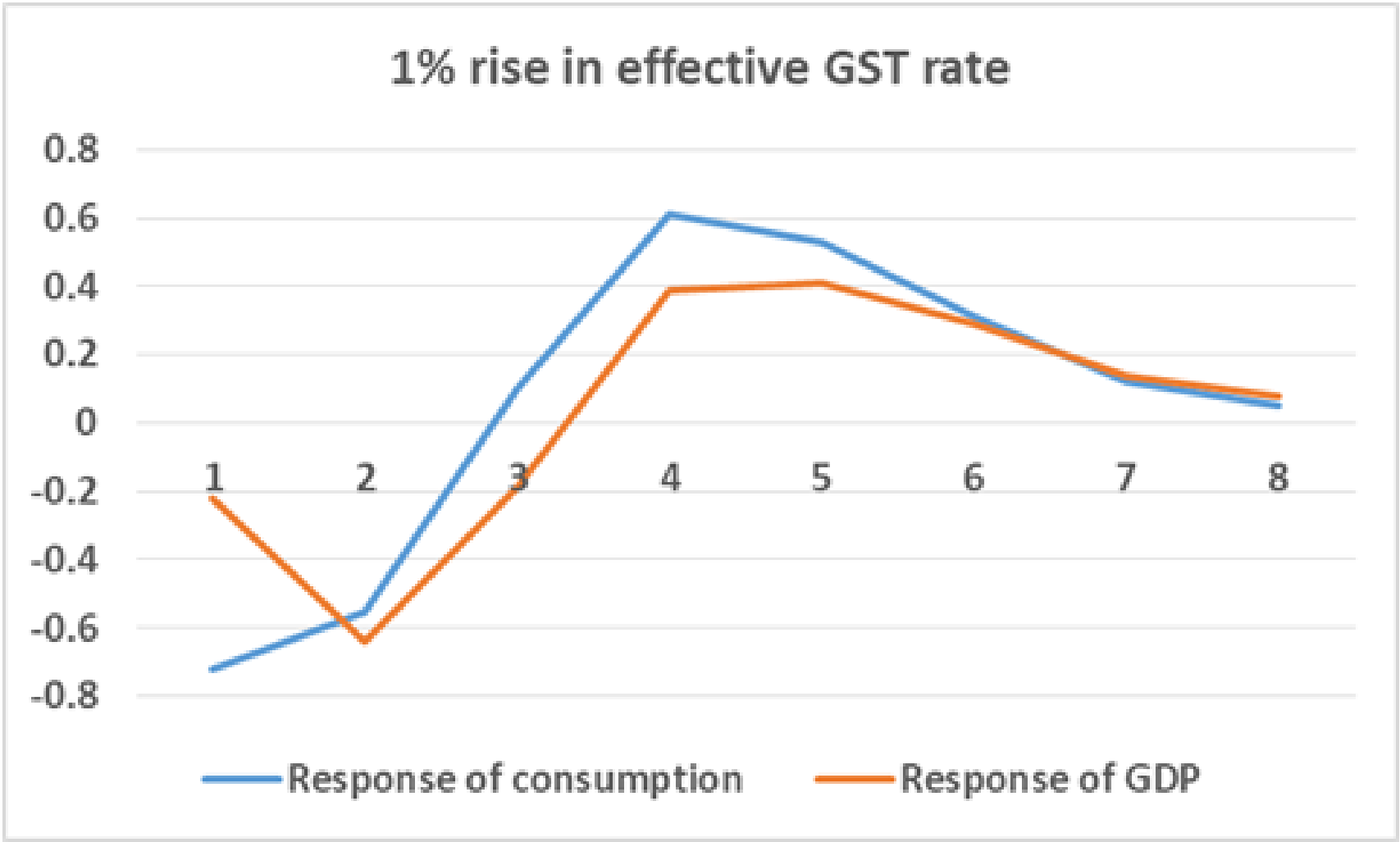
Median Impulse response of GDP to change in US GDP gap

High but transitory effect of external demand shock



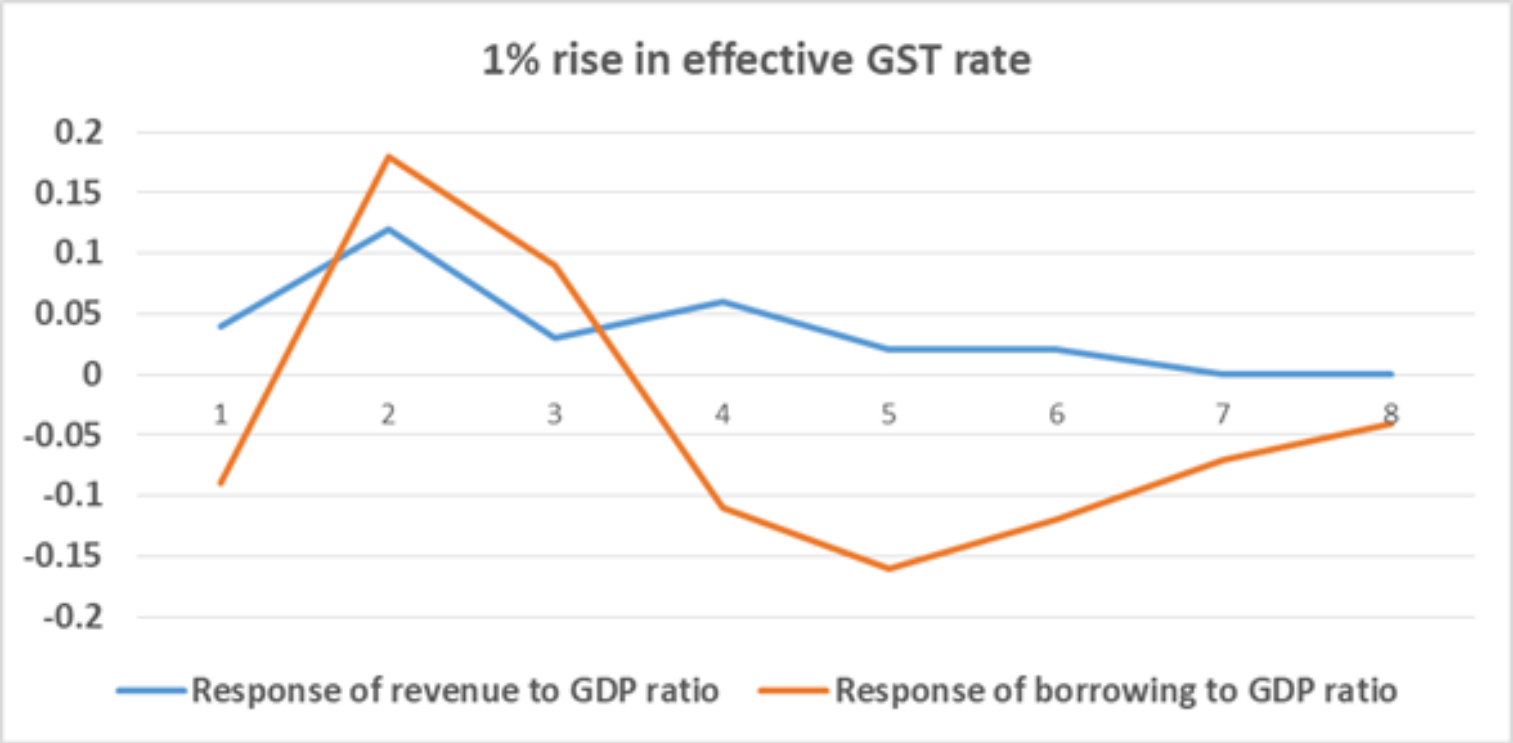
Median Impulse response of consumption and GDP to change in effective GST rate

Impact of GST rate cut moderate but persistence for a longer period of time



Median Impulse response of Revenue to GDP ratio to change in effective GST rate

- Revenue to GDP increases moderately for a longer period of time
- Borrowing initially declines as revenue rises, followed by a rise as debt servicing becomes easier
- Finally declines as impact on revenue subsides



Growth outcome of India for FY 2025-26 will crucially depend on degree and direction of change in the external demand

Alternative growth Scenarios for FY 26 (with GST restructuring & Trade shock): GDP growth forecast at 6.0–8.8% for FY 25-26

Baseline	**Optimistic view: Effective GST rate declines by 1%, U.S. output 1% above potential**	**Pessimistic view: Effective GST rate declines by 1%, U.S. output 1% below potential**	**Effective GST rate declines by 1%, U.S. output near the potential**
7.1	8.8	6.0	7.4

Thank you