

# TOPIC 9

## **SUSTAINABILITY AND RISK**

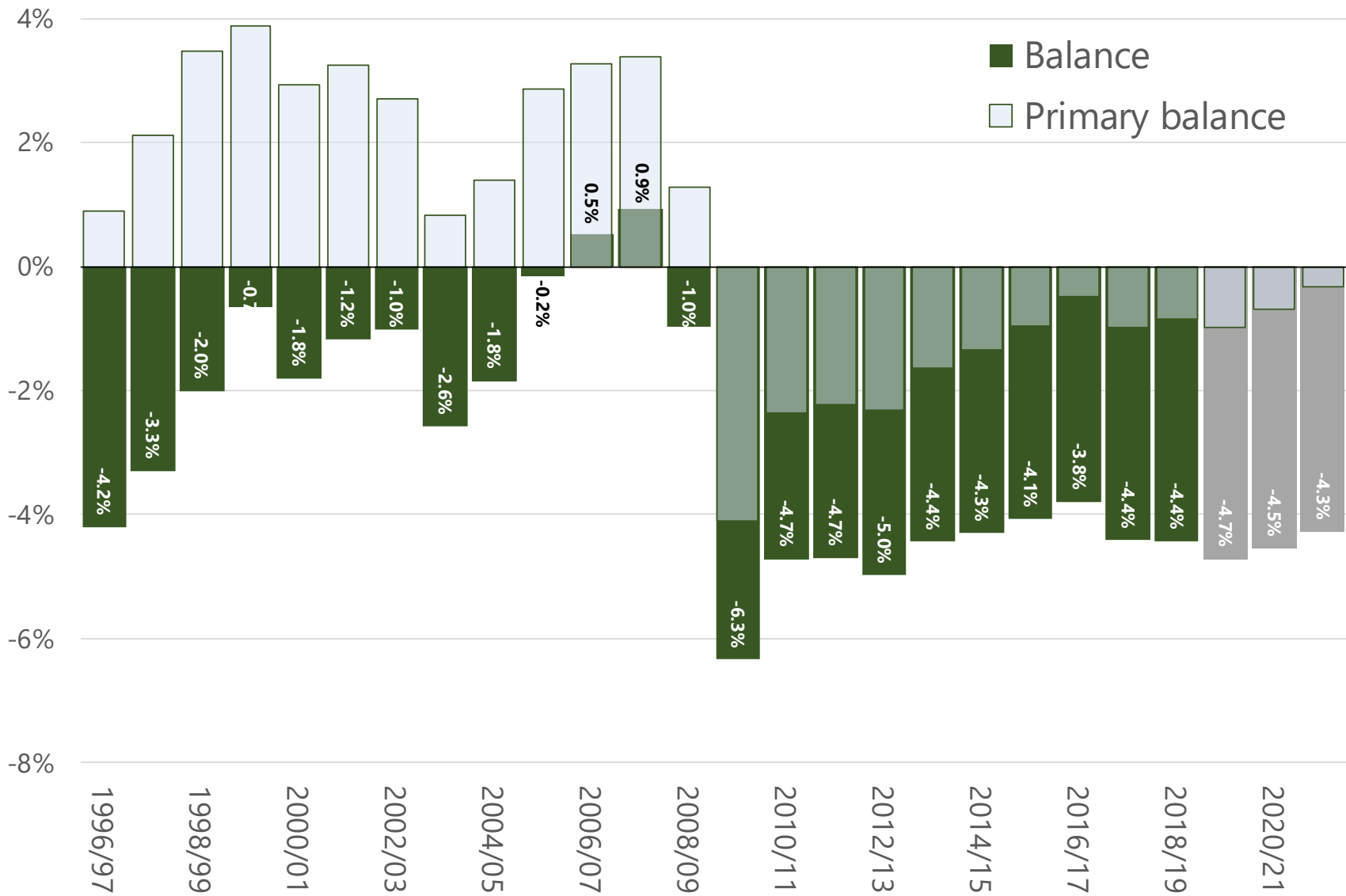


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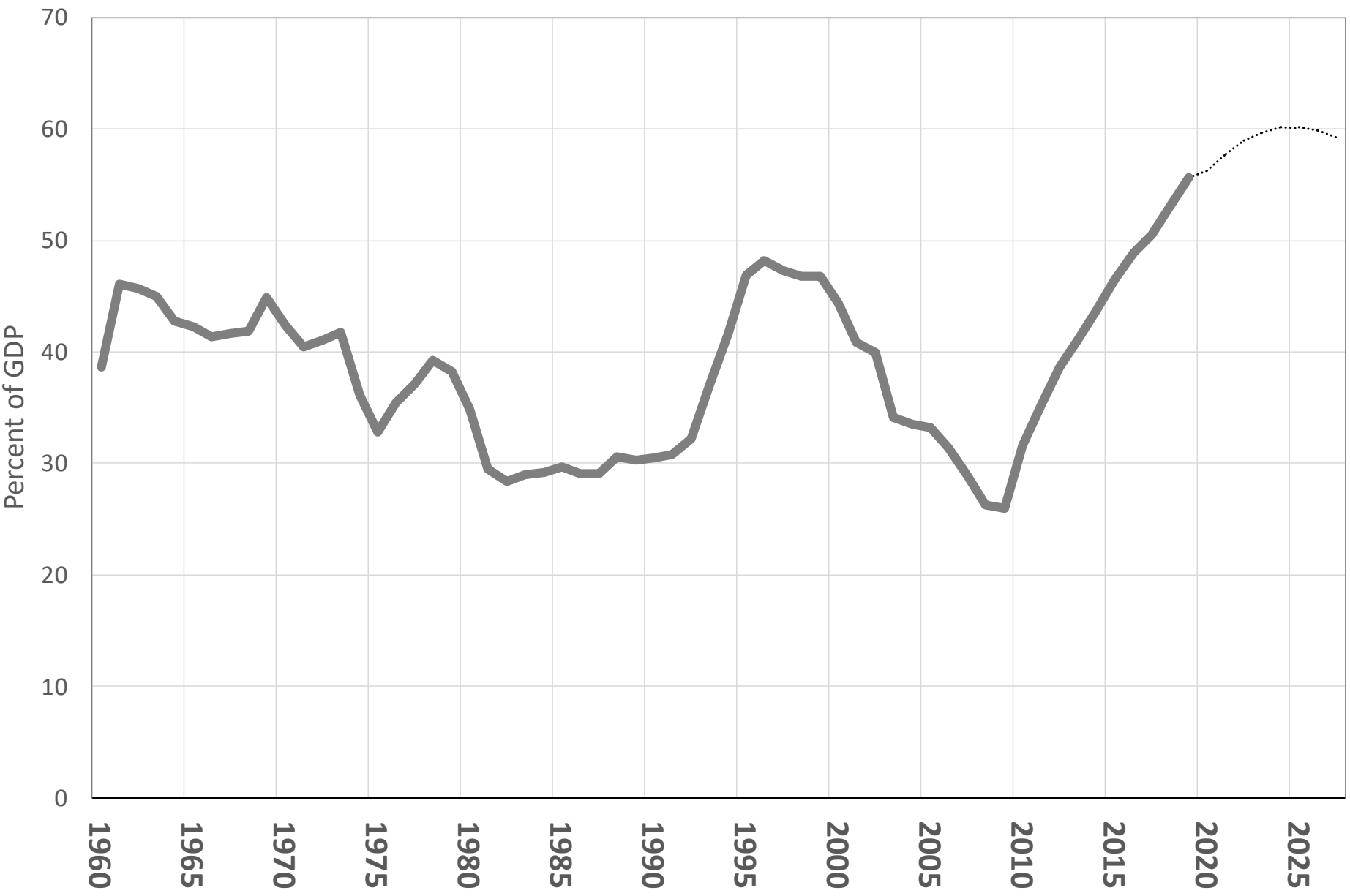
- **Deficit financing** (choices with consequences)
  - Money creation and inflation
  - Domestic borrowing
  - Foreign borrowing
  - Running down assets:
    - Accumulated surpluses (including foreign reserves)
    - Increase non-debt obligations (e.g. unfunded pension liabilities)
    - Incur hidden liabilities (e.g. accruals)
    - Privatisation and other asset disposals
- **Debt issues**
  - Fiscal sustainability?
  - Inter-generational equity
  - Debt service costs and the budget
  - Public debt, growth, and interest rates
  - Debt, confidence and multiple equilibria
  - Fiscal balance and sector balances

# Composition of the budget deficit



Source Data: National Treasury

# South Africa Debt-to-GDP ratio 1960 to 2027



- How the deficit is financed impacts on the resulting macroeconomic imbalance because it leads to a change in asset stocks held by various agents in the economy
- Budget identity can be written

$$G + iB \equiv T + \Delta B + \Delta H$$

- In each period government must finance its expenditure (G) and pay interest on the stock of bonds issued.
- The deficit (a flow) leads to an accumulation of debt (a stock)
- Eventually these changing stocks must have some impact on the economy
- A broader set of financing instruments include the following:

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**Financing****Macro imbalance**

Budget deficit = Printing money

Inflation

+ Foreign reserve use

Exchange rate crisis

+ Foreign borrowing

External debt crisis

+ Domestic borrowing

Real interest rates and/or explosive debt dynamics

# Government's budget constraint

- In any period (e.g. one year) the *nominal* budget identity must be true:

$$G + iB \equiv T + \Delta B + \Delta H$$

*Uses of funds*                  *Source of funds*

- Assume that monetary financing is off the table, then:  $G + iB \equiv T + \Delta B$
- Rearranging, the deficit is the same as the change in the stock of debt

$$\Delta B \equiv [G - T] + iB$$

*Change in the stock of debt*                  *Budget deficit*

*Primary balance*                  *Interest payments*

- Note  $\Delta B$  refers to the change in the stock of issued bonds
- But in broader terms, we should think of it as a change in the net worth of government, which can take place through the issuance of various types of liabilities and the running down of assets

$$(\Delta B + e\Delta B^f + \Delta L + \Delta L^H) - \Delta A \equiv [G - T] + iB$$

# Flows and stocks: the deficit and debt dynamics

- We are interested in the *nominal* stock of debt ( $B$ ) relative to *nominal* GDP ( $yP$ )

$$\frac{\Delta B}{yP} \equiv \frac{G - T}{yP} + \frac{iB}{yP}$$

$$\frac{\Delta B}{yP} \equiv d + ib$$

- We want to identify  $\Delta b$  the change in the debt to GDP ratio and how it relates to the deficit (i.e. the change in the nominal stock of debt)

$$b \equiv \frac{B}{yP} \longrightarrow B \equiv byP$$

$$\Delta B \approx (\Delta b)yP + b(\Delta y)P + by(\Delta P)$$

- Divide through by nominal GDP:

$$\frac{\Delta B}{yP} \approx (\Delta b) + \frac{\Delta y}{y}b + \frac{\Delta P}{P}b$$

$$\frac{\Delta B}{yP} \equiv d + ib \longrightarrow d + ib = \Delta b + (g + \pi)b$$

$$\Delta b = d + (r - g)b$$

- The debt-to-GDP ratio is a function of the primary balance and the difference between growth and inflation

Fisher equation

$$1 + r = \frac{1 + i}{1 + \pi}$$

Growth in nominal GDP

$$Y_t = Y_{t-1}(1 + \pi)(1 + \gamma) \longrightarrow \frac{Y_{t-1}}{Y_t} = \frac{1}{(1 + \pi)(1 + \gamma)}$$

Government's  
cash flow identity

$$G_t + iB_{t-1} \equiv T_t + \Delta B + \Delta H$$

*Uses of funds* *Source of funds*

where  $\Delta B \equiv B_t - B_{t-1}$

Don't print money!

$$[G_t - T_t] + iB_{t-1} = B_t - B_{t-1}$$

Rearrange to isolate  $B_t$

$$B_t = (1 + i)B_{t-1} + [G_t - T_t]$$

*Last year's debt stock plus interest* *Primary deficit*

Divide through by nominal GDP

$$\frac{B_t}{Y_t} = \frac{(1 + i)B_{t-1}}{Y_t} + \frac{[G_t - T_t]}{Y_t}$$



$$\frac{B_t}{Y_t} = \frac{(1+i)B_{t-1}}{Y_t} + \frac{[G_t - T_t]}{Y_t}$$

Lower case indicates ratio to GDP

$$b_t = \frac{(1+i)B_{t-1}}{Y_t} + d_t$$

Divide and multiply by last years nominal GDP

$$b_t = \frac{(1+i)B_{t-1} Y_{t-1}}{Y_{t-1} Y_t} + d_t$$

Substitute from the Fisher equation

$$b_t = \frac{(1+i)b_{t-1}}{(1+\pi)(1+\gamma)} + d_t$$

...nearly there

$$b_t = \frac{(1+r)}{(1+\gamma)} b_{t-1} + d_t$$

Difference it to get the change in  
debt-to-GDP ratio

$$\Delta b_t = (\phi - 1)b_{t-1} + d_t$$

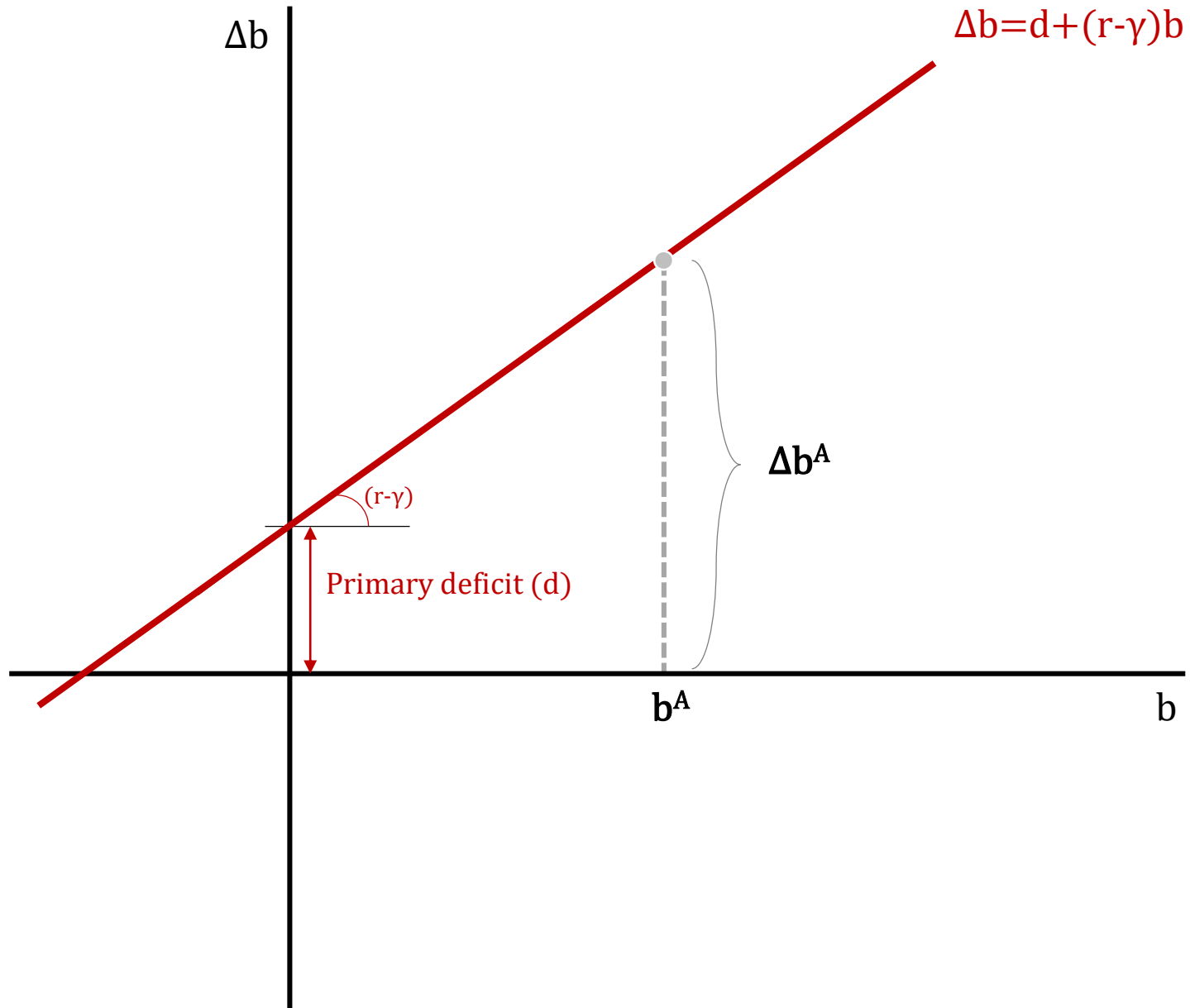
$$\phi = \frac{(1+r)}{(1+\gamma)}$$

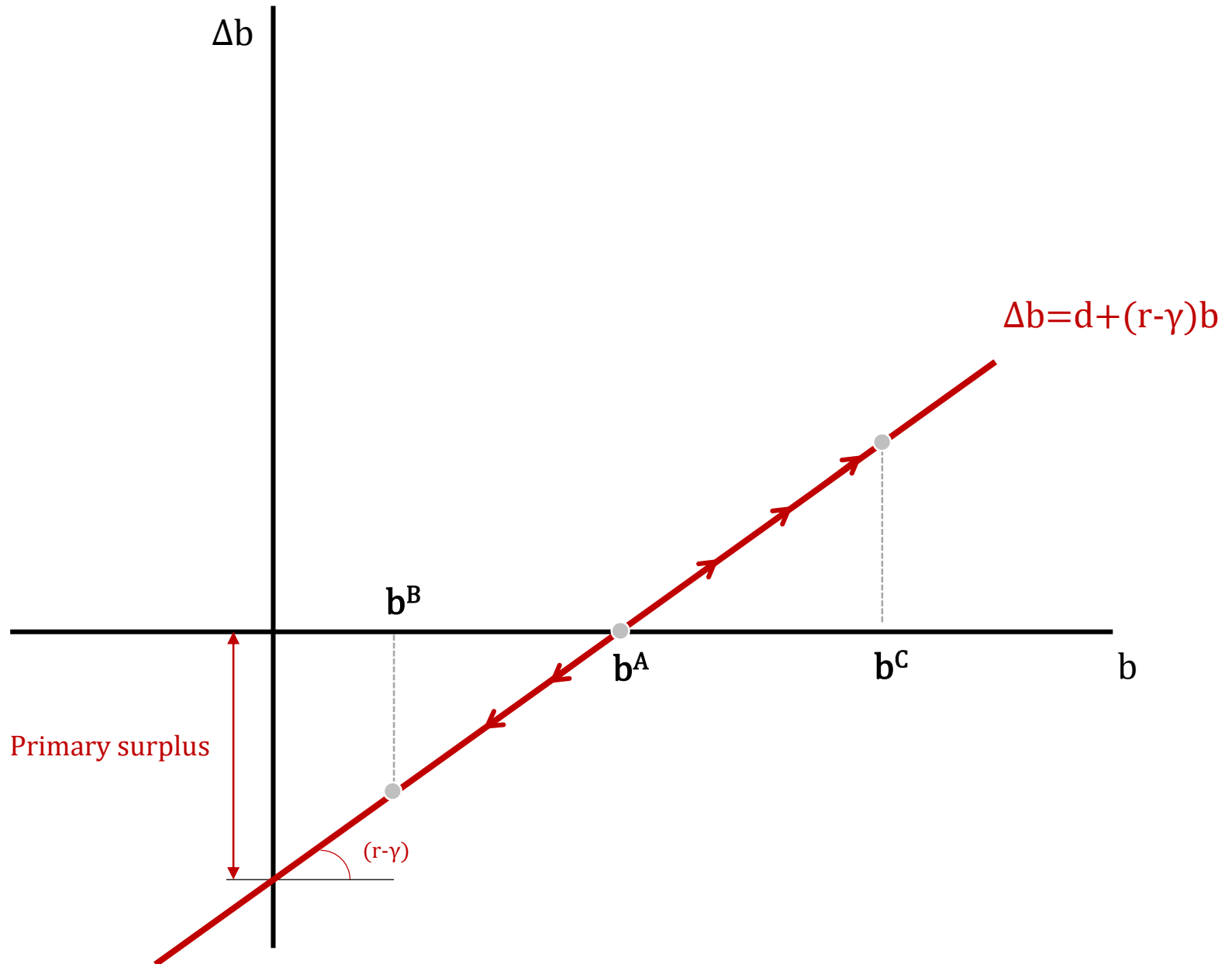
$$\phi - 1 = \frac{(r - \gamma)}{(1+\gamma)}$$

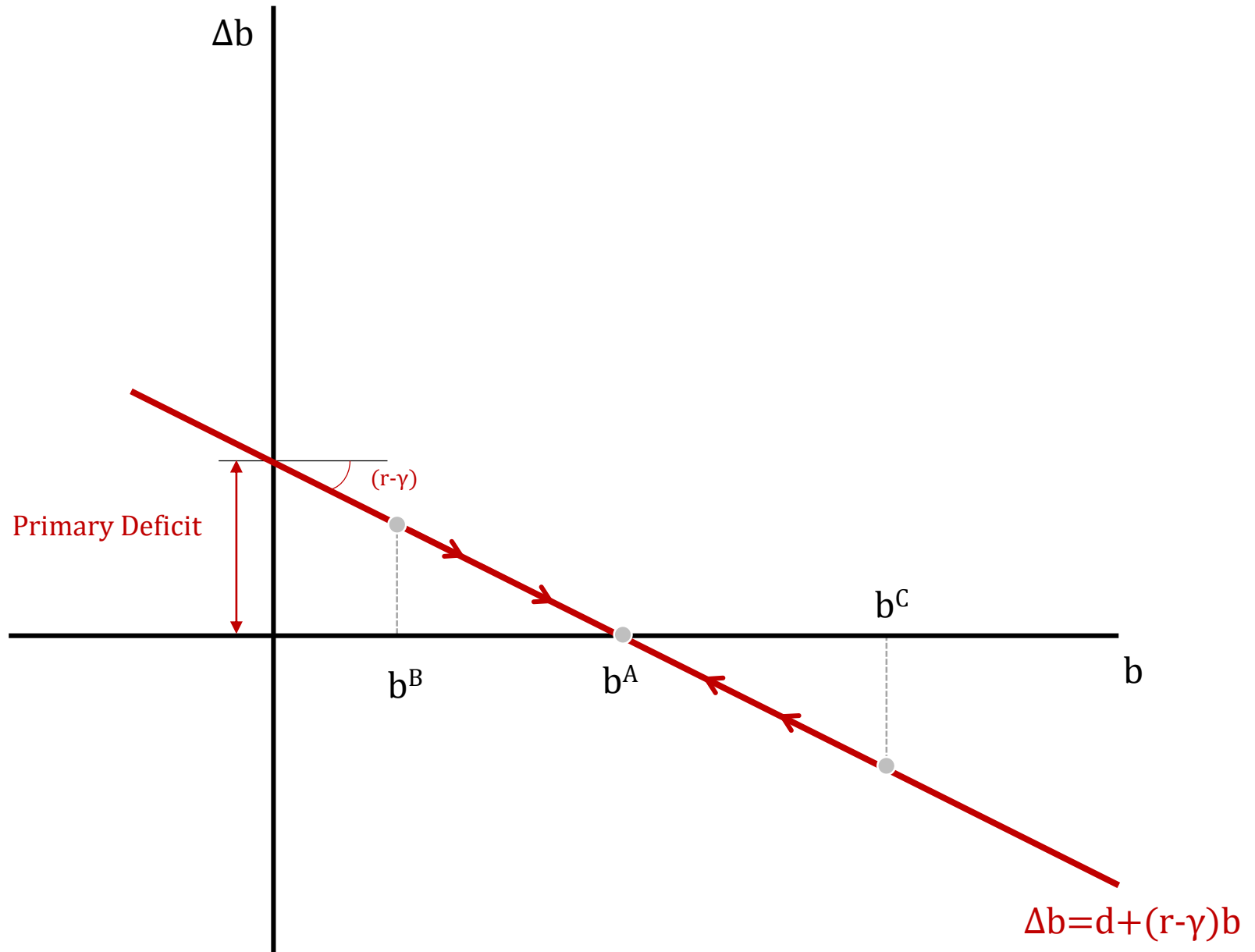
- We took a nominal, annual cash-flow identify that government faces:  $G_t + iB_{t-1} \equiv T_t + \Delta B$
- An reformulated it to get a real, dynamic debt equation:

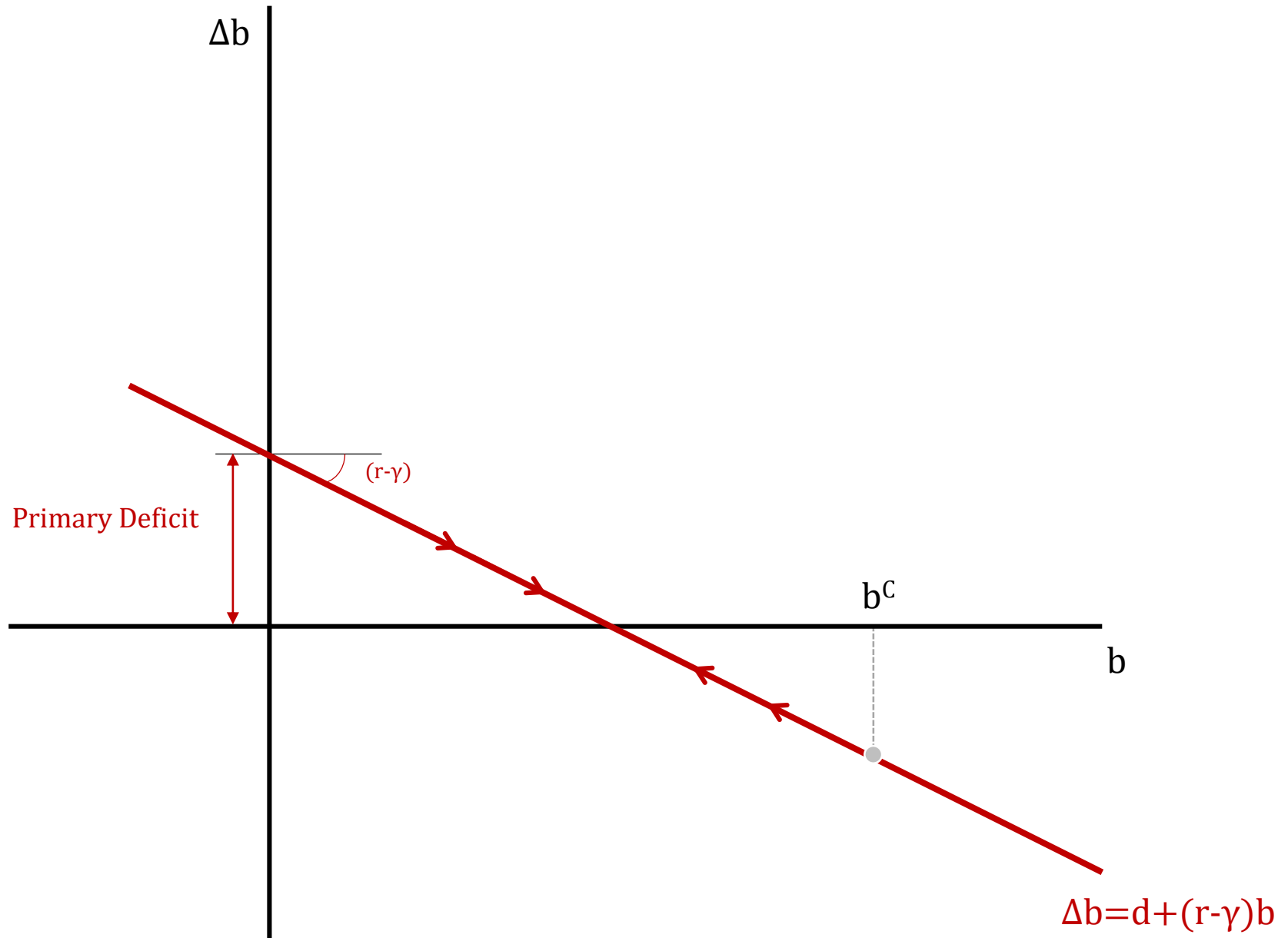
$$\Delta b_t = (\phi - 1)b_{t-1} + d_t \qquad \Delta b_t = \frac{(r - \gamma)}{(1 + \gamma)} b_{t-1} + d_t$$

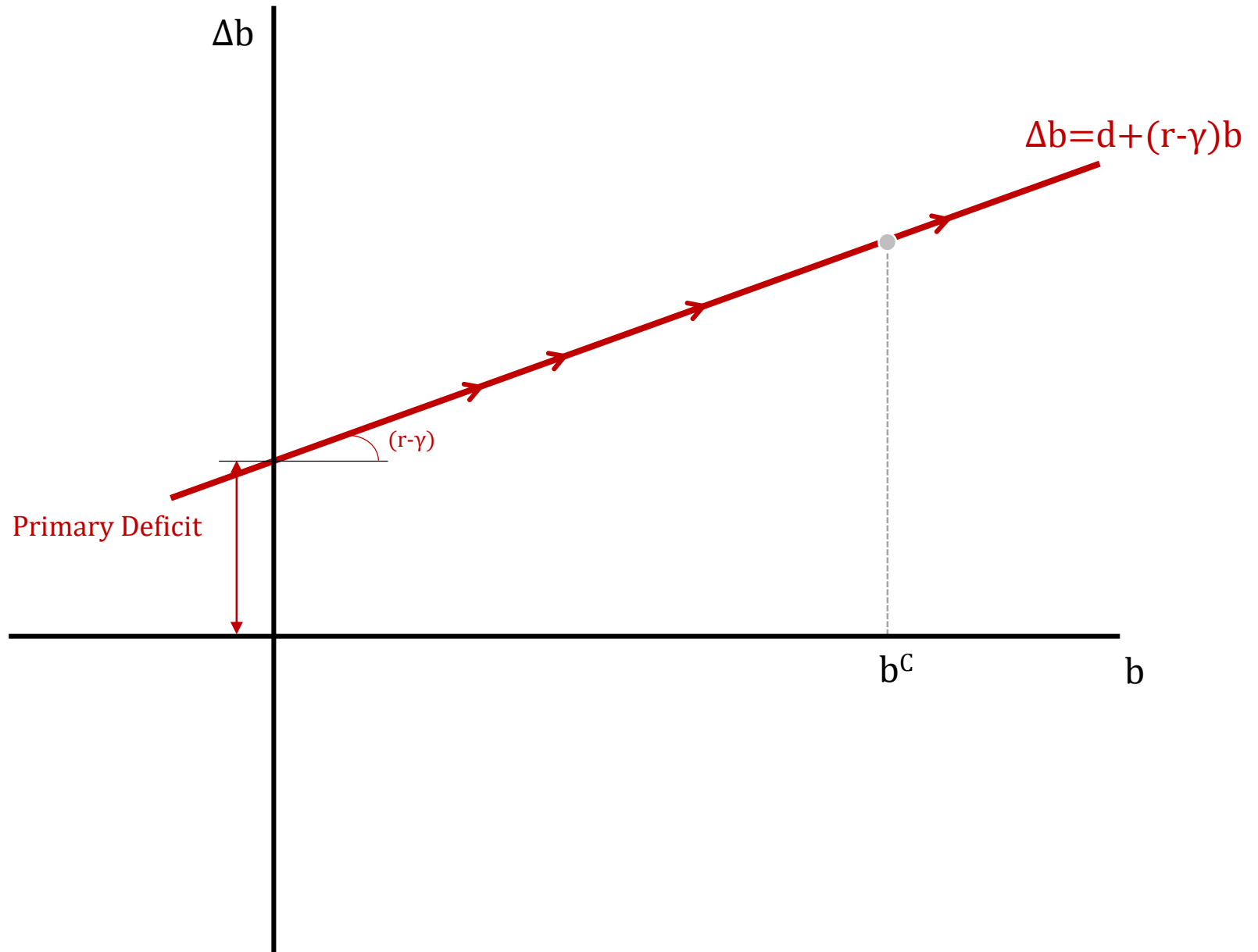
- It shows that the real dynamics of the debt-to-GDP ratio is a product of
  - The primary deficit (as a share of GDP)
  - The real interest rate ( $r$ ) (NB: Which  $r$ ?)
  - The growth of real GDP ( $\gamma$ )
  - The existing stock of debt to GDP ( $b_{t-1}$ )
- If the primary deficit is zero,  $r$  and  $\gamma$  will determine debt dynamics (i.e.  $\Delta b_t$ )
  - If  $r > \gamma \Rightarrow \phi > 0 \Rightarrow \Delta b_t > 0$ 
    - With interest rates above the growth rate, interest payments on existing debt are rising faster than GDP. In order to stabilise the debt ratio we need to offset this with a primary surplus
  - If  $r < \gamma \Rightarrow \phi < 0 \Rightarrow \Delta b_t < 0$ 
    - Economic growth can reduce the burden of debt even without a primary surplus. Put another way, we can run a primary deficit and debt will remain stable.

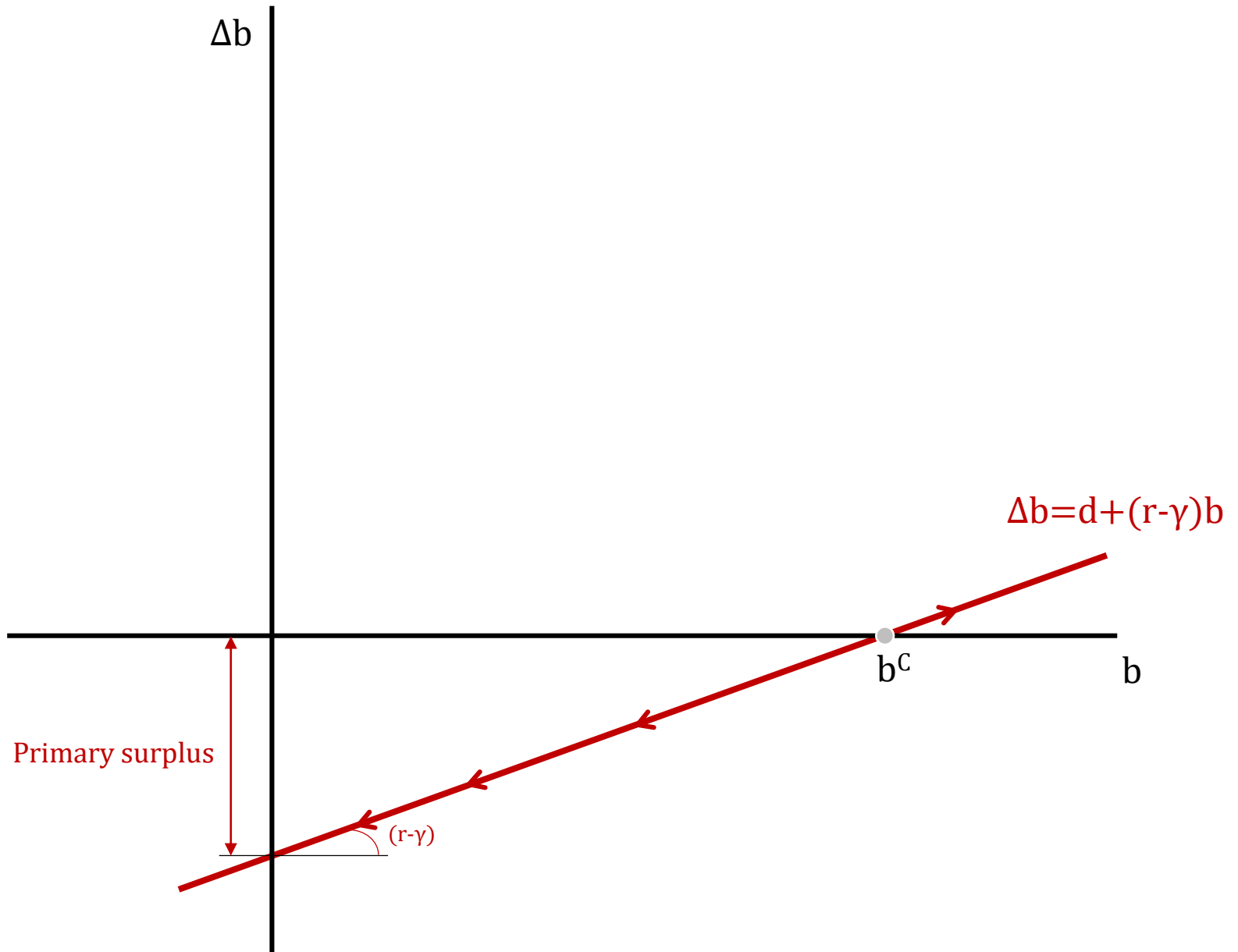






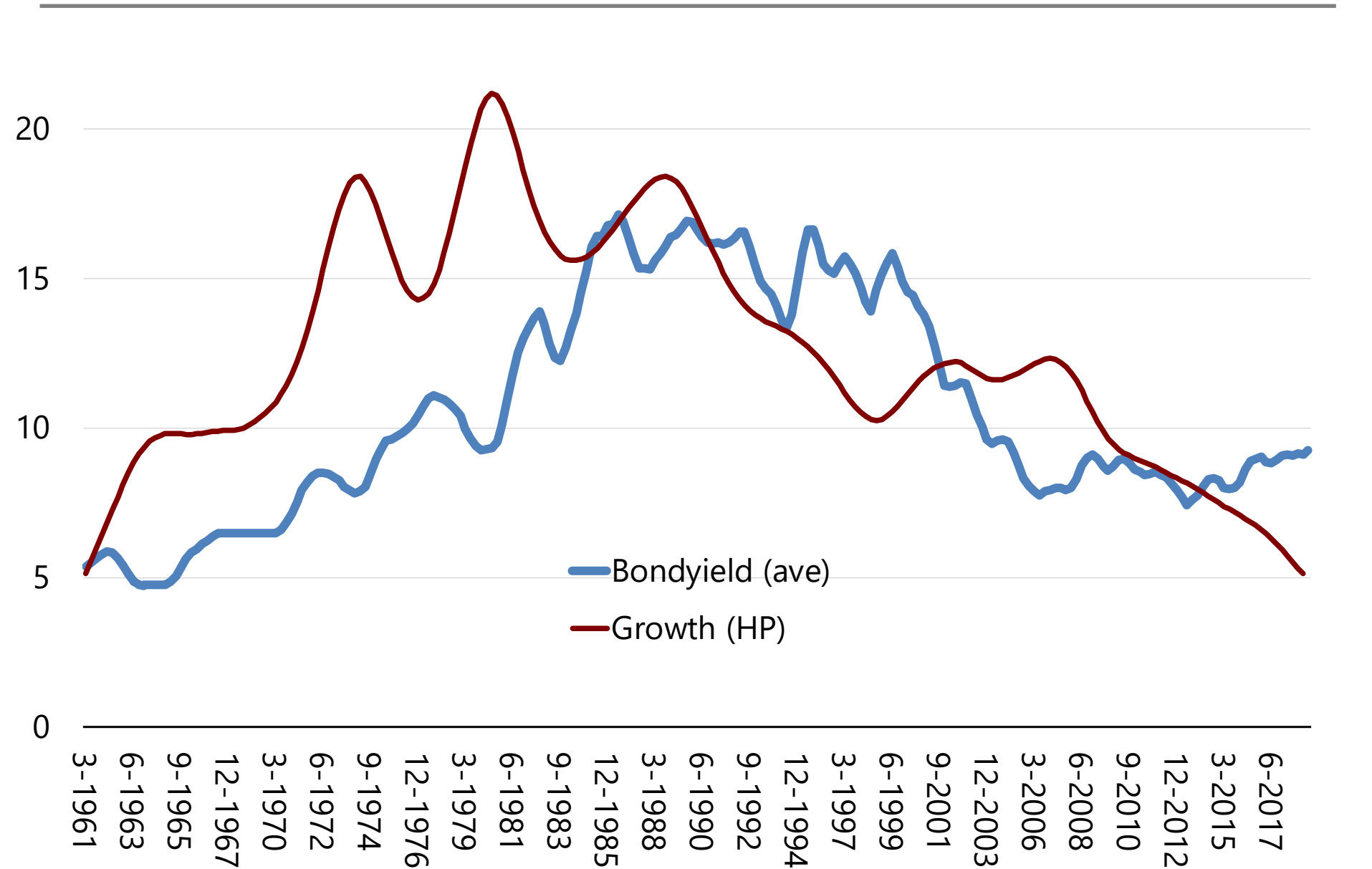


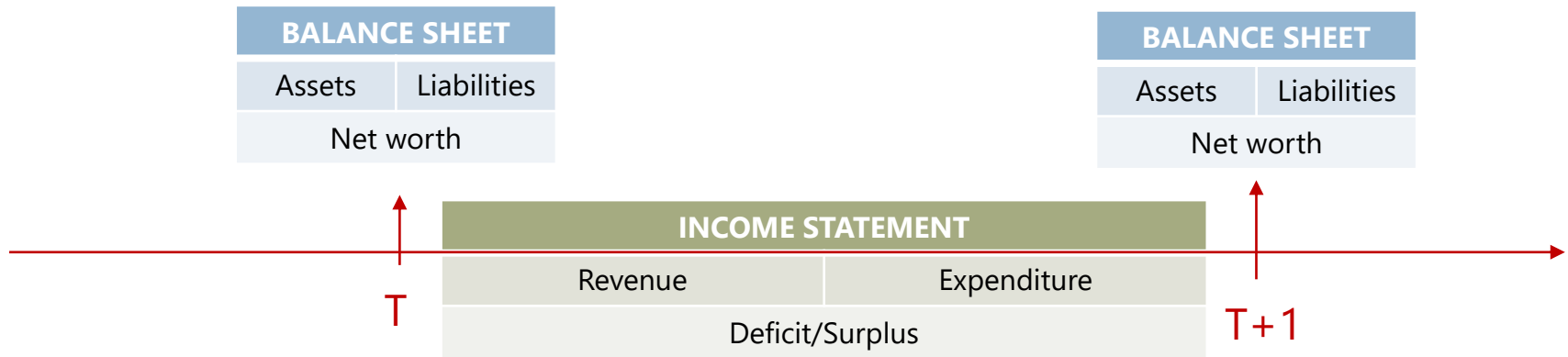






# Nominal growth and the bond yield





## Stocks

- Wealth
- Financial and economic wealth
- Capital stock
- Investment position
- Debt
- Ownership of assets

## Flows

- Output = Income
- Expenditure on Consumption or investment
- Exports and Imports
- Savings
- Income (Salaries, Profits, Rents, Taxation)

## General Government Balance Sheet

Assets	Liabilities
Financial Assets	Debt
Nonfinancial Assets	Nondebt

## Public Sector Balance Sheet

Assets	Liabilities
Financial Assets	Debt
Nonfinancial Assets	Nondebt
Public Corporation Assets	Public Corporation Liabilities

## Intertemporal Public Sector Balance Sheet

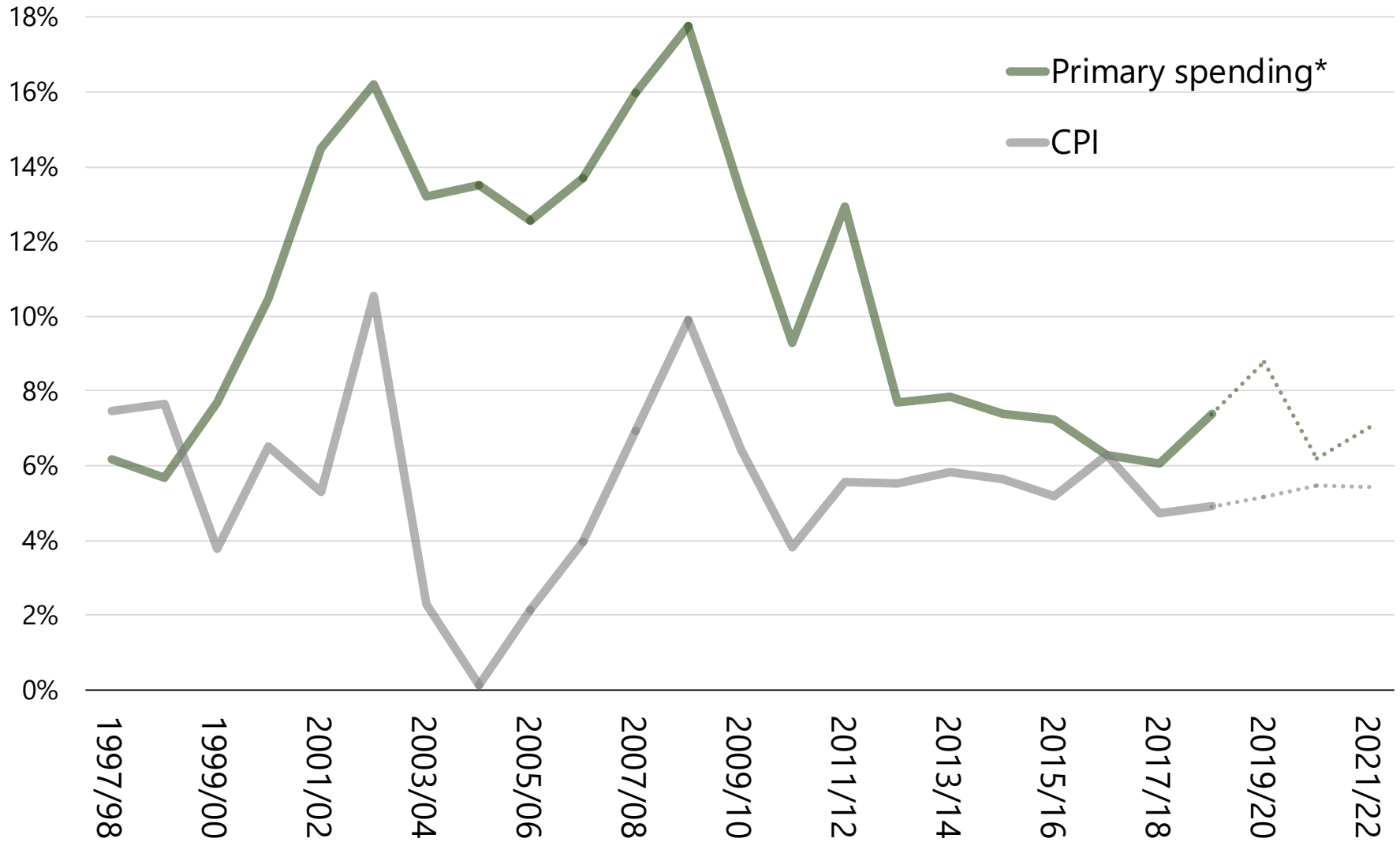
	Assets/Inflows	Liabilities/Outflows
Past	Financial Assets	Debt
	Nonfinancial Assets	Nondebt
	Public Corporation Assets	Public Corporation Liabilities
Future	Future Revenues	Future Spending

# Major risks and contingent liabilities

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- Global recession is looming
- State-owned companies (solvency vs liquidity crises): Eskom, SAA, SABC, SANRAL, Prasa, Denel
- Local government finances (feeding through into broader fiscal challenges)
- Debt roll-overs and the gross financing requirement
- Higher education financing
- Fiscal risks displaced into public-finance and social risks
  - Space to compress compensation budgets is limited
  - Rising debt-service costs crowding-out real spending
  - Quality of public management
- Drive towards capital spending and successive rounds of “reprioritisation” could exacerbate these risks (and is unlikely to simulate growth).

# Spending growth



\* Payments excluding debt service costs, payments for financial assets, provision for Eskom and self-funding transfers

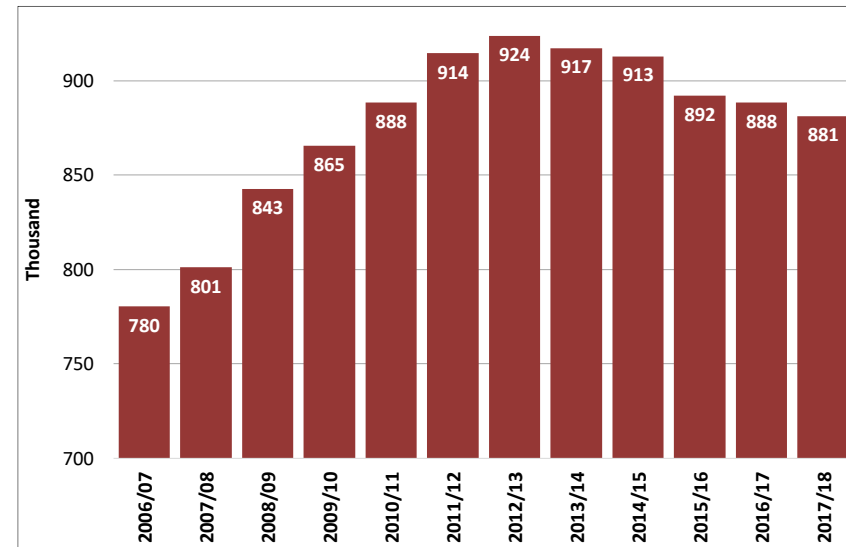
# Compensation spending

Three critical trends :

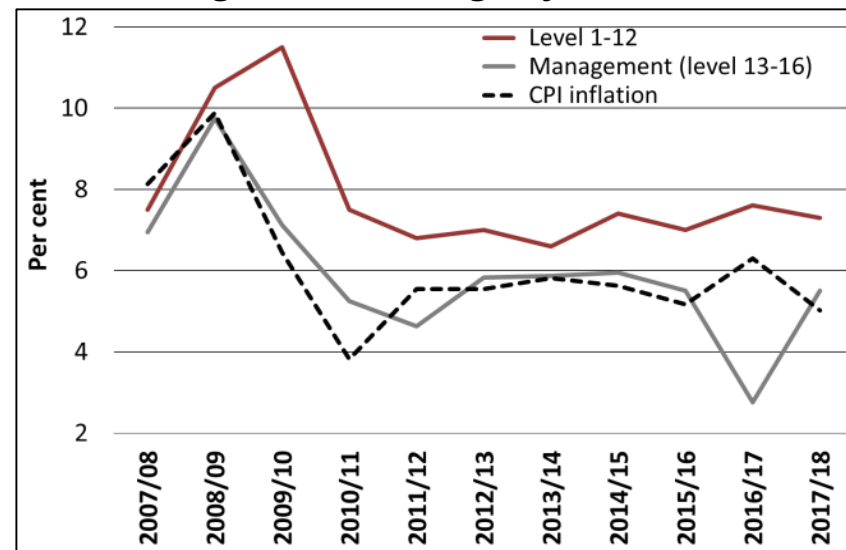
- Compensation crowding out other budgets
- Stable and falling headcounts imply growing pressure on delivery
- Compression of the wage structure as higher end salaries are held down

Department/Sector	2008/09 % of Total	2016/17 % of Total
<b>National</b>	<b>57.7%</b>	<b>67.7%</b>
Correctional services	63.0%	66.9%
Defence	38.2%	57.3%
Justice	54.1%	55.9%
Police	70.0%	76.6%
<b>Provincial health departments</b>	<b>57.0%</b>	<b>63.2%</b>
Eastern Cape	58.0%	65.6%
Free State	64.7%	64.1%
Gauteng	52.0%	62.2%
KwaZulu-Natal	58.9%	63.1%
Limpopo	58.9%	71.0%
Mpumalanga	58.5%	63.2%
North West	56.6%	62.0%
Northern Cape	51.1%	53.1%
Western Cape	56.3%	58.9%
<b>Total consolidated expenditure</b>	<b>32.4%</b>	<b>35.3%</b>

## Headcount: provincial government

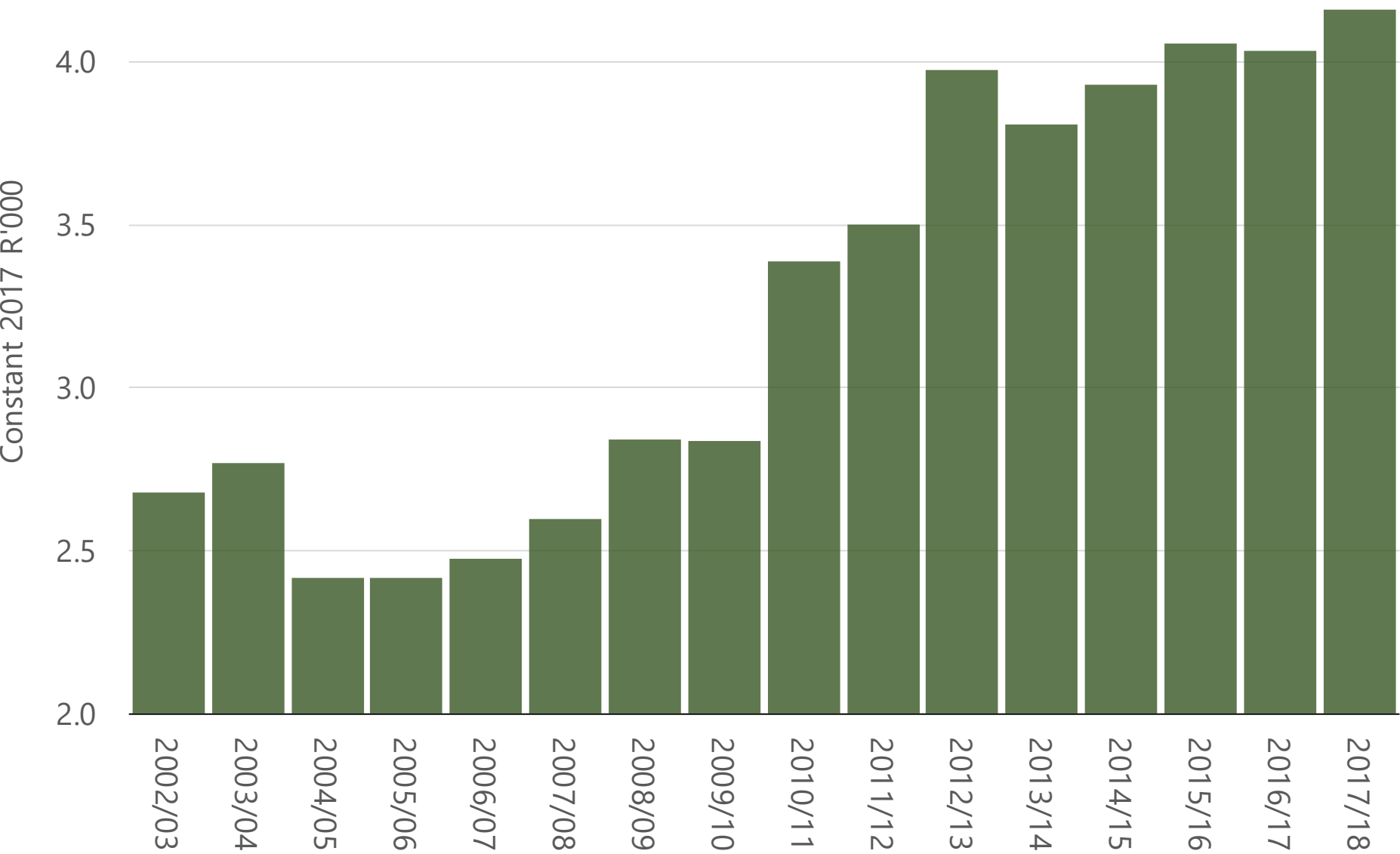


## Average cost of living adjustments and CPI



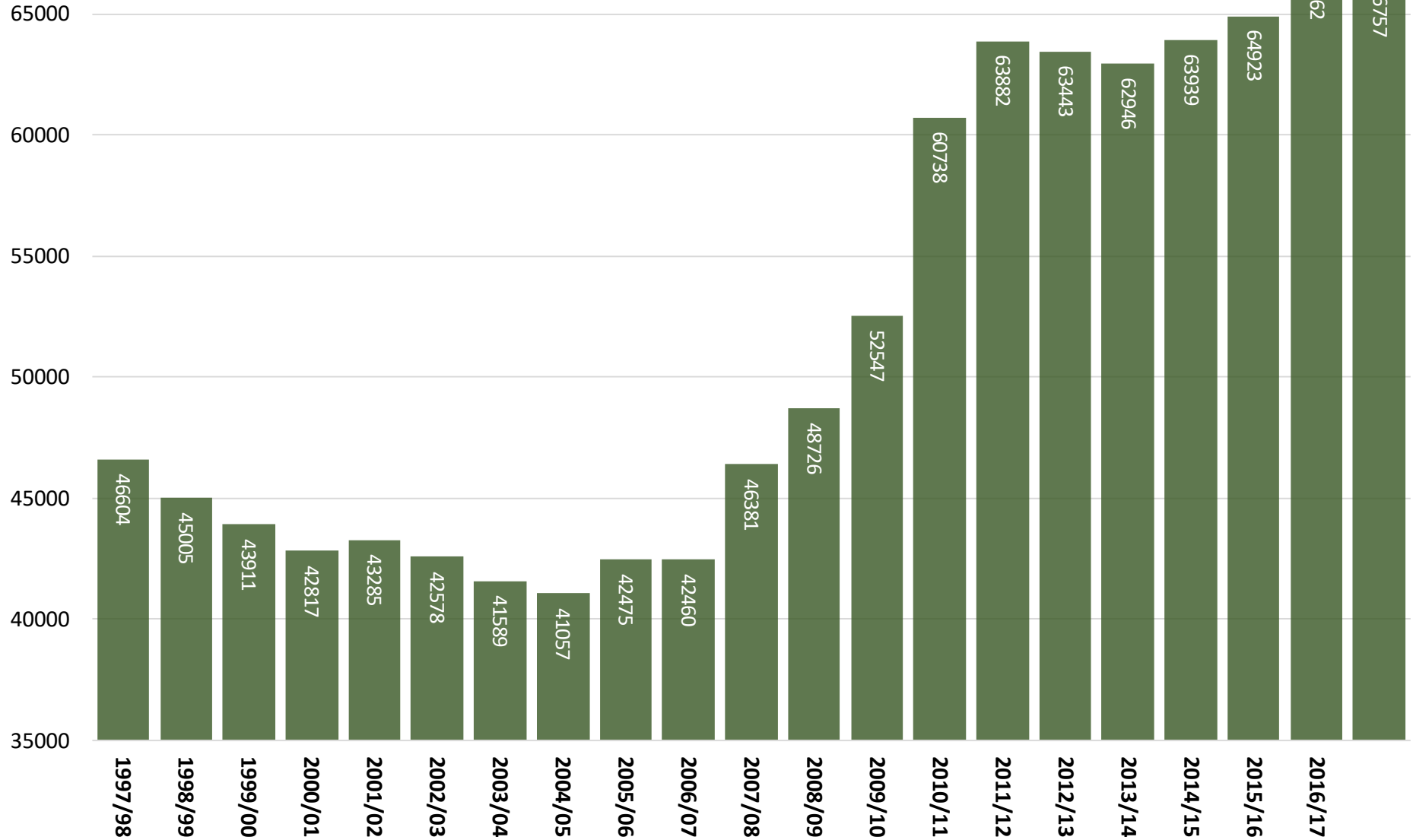
# Gauteng health department: Resource envelope

Real per capita spending



# Gauteng health department: Employment surge

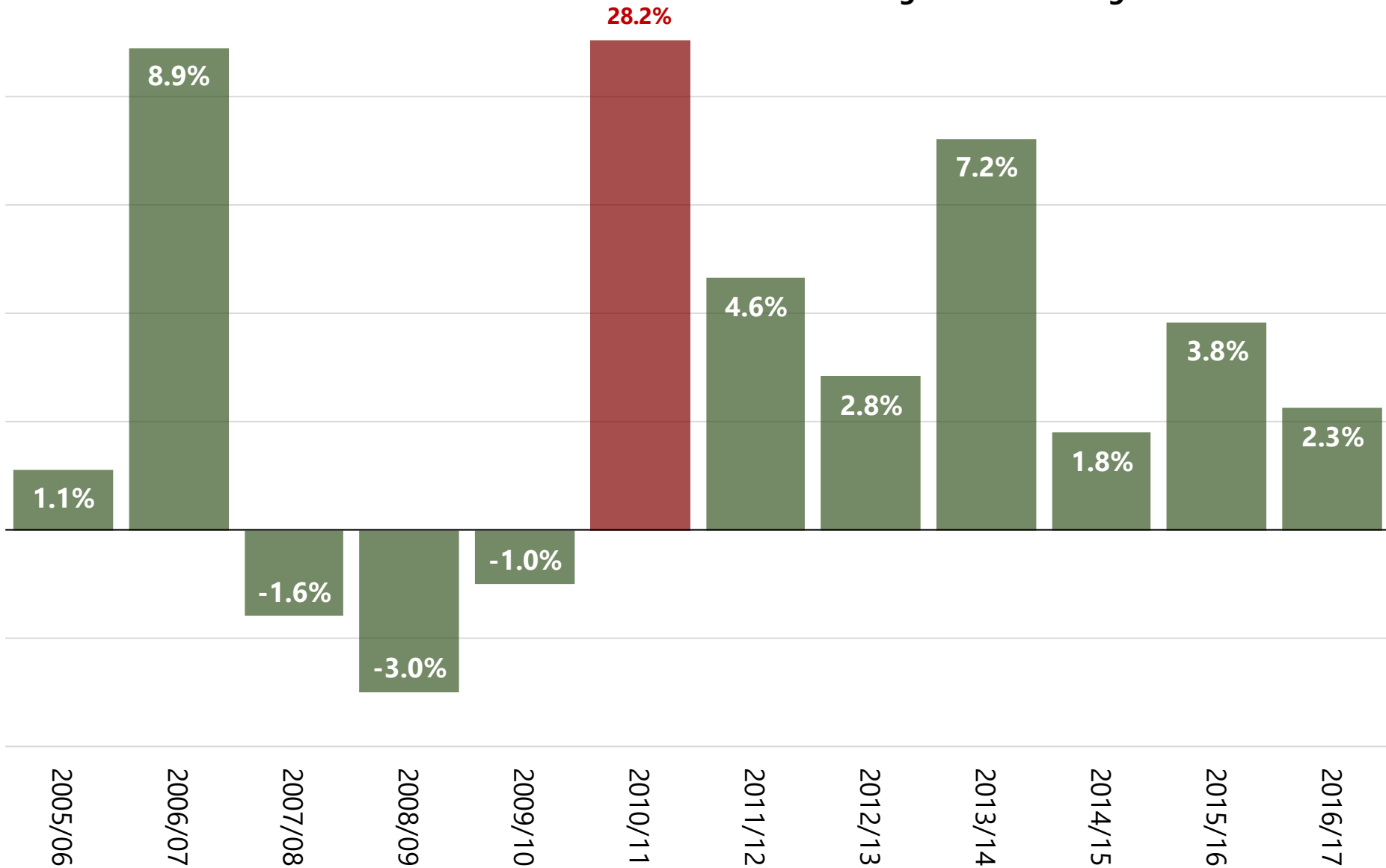
## Total headcount (1997 – 2017)





# Gauteng Health Department: Wage shock

Real growth of average remuneration



- Over the last decade there has been a very large increase in resources available to the health sector in Gauteng
- This has been absorbed by increased costs – especially a wage shock - and a surge in employee headcounts
- Within the available resource envelope there have been significant shifts:
  - Away from goods and services towards compensation
  - Away from central and provincial hospitals towards district and primary health services
  - Away for conditional grants towards funding from the equitable share
- Infrastructure and equipment budgets have frequently been underspent, despite the acute needs
- Gauteng primary health care services are amongst the most expensive and underutilized in the country
- The demand burden on provincial and central hospitals has continued to grow, despite a shrinking share of the budget

- Added to this has been a significant increase in medico-legal claims
- The consequence has been a rising hidden deficit on goods and services budgets in central hospitals
- This has disrupted service provision

## **Ave. annual real growth in spending** 2006/7 – 2016/17

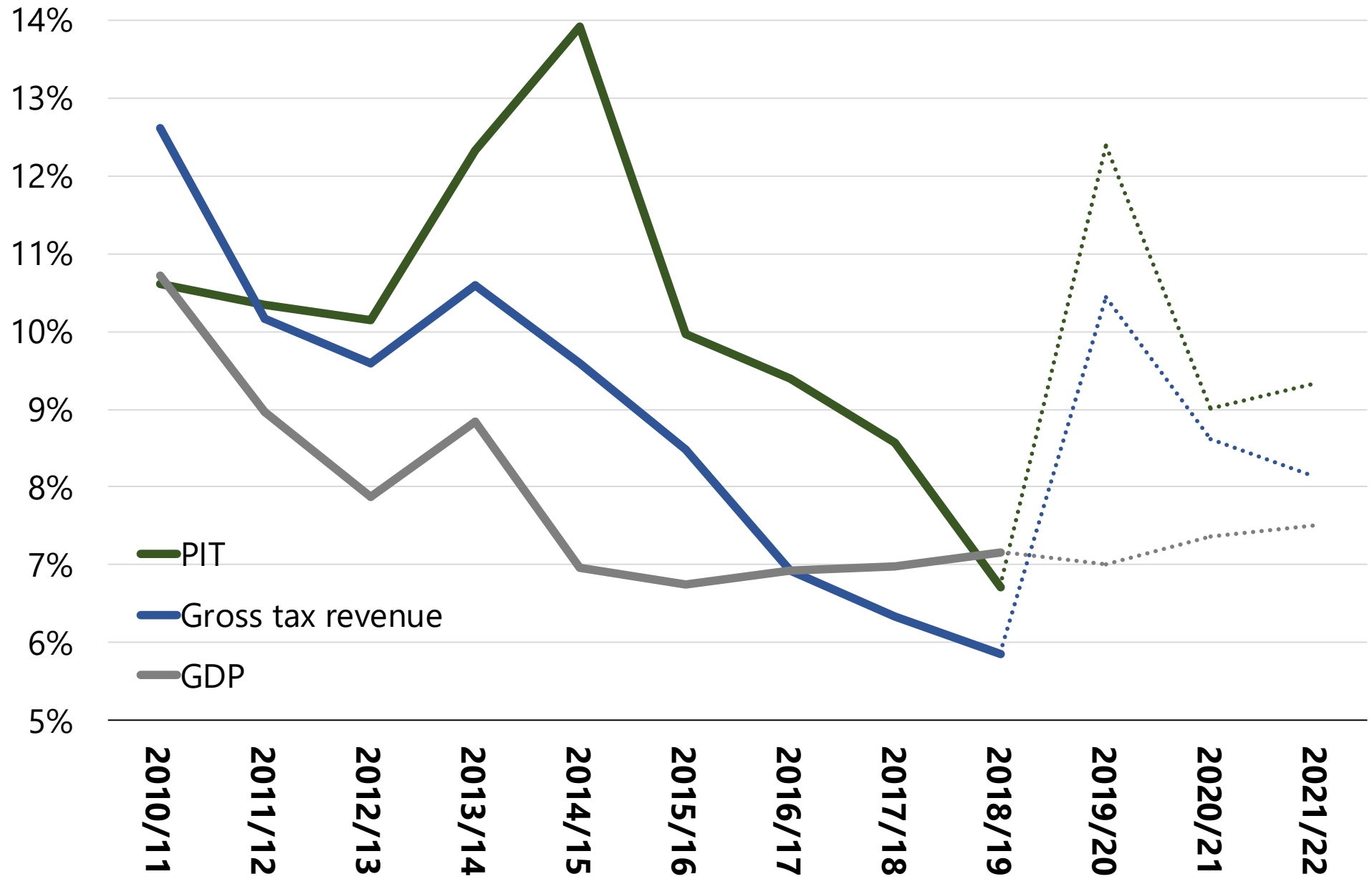
Compensation of employees	9.3%
Goods and services	4.2%
Transfers and subsidies	1.1%
Capital assets	-0.4%
<b>TOTAL SPENDING</b>	<b>6.6%</b>

# Revenue: budget projections and outcomes

## Under-collection (+ve) relative to original budget projection

	2015/16		2016/17		2017/18		2018/19	
	R bn	%	R bn	%	R bn	%	R bn	%
Personal income tax	5.8	1.5%	16.5	3.7%	21.1	4.4%	13.9	2.8%
Corporate income tax	10.9	5.4%	-6.1	-3.1%	1.3	0.6%	19.6	8.5%
Value-added tax	2.7	0.9%	12.1	4.0%	14.8	4.7%	23.3	6.7%
Fuel levy	0.1	0.1%	1.7	2.7%	-0.0	-0.1%	2.1	2.8%
Customs duties	-4.6	-11.0%	8.5	15.7%	3.5	6.6%	-2.4	-4.5%
Specific excise duties	-0.6	-1.7%	2.2	5.9%	2.5	6.3%	-0.2	-0.4%
Dividend withholding tax	-1.7	-7.4%	-6.5	-26.1%	5.7	16.6%	1.0	3.2%
Other taxes	-1.3	-2.7%	2.4	4.6%	0.3	0.5%	-0.1	-0.2%
<b>Gross tax revenue</b>	<b>11.3</b>	<b>1.0%</b>	<b>30.7</b>	<b>2.6%</b>	<b>49.0</b>	<b>3.9%</b>	<b>57.3</b>	<b>4.3%</b>

# Nominal growth of PIT, gross revenue and GDP

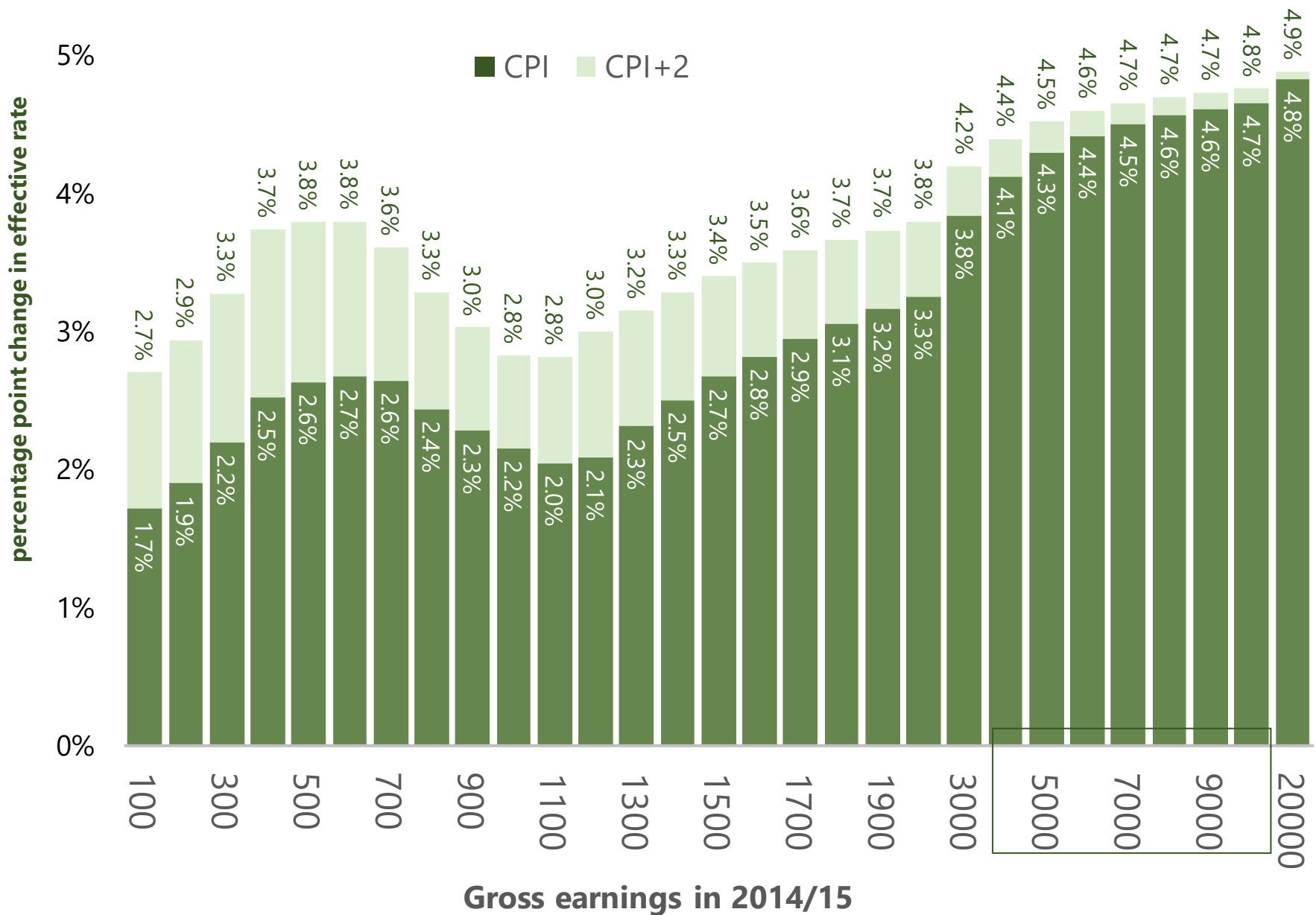


## Frequent resort to fiscal drag

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	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>
Threshold	4.2%	1.8%	1.0%	3.2%	1.1%
1	4.2%	3.4%	1.0%	3.1%	0.0%
2	4.2%	3.3%	1.0%	3.1%	0.0%
3	4.2%	3.4%	1.0%	3.1%	0.0%
4	4.2%	0.0%	1.0%	0.0%	0.0%
5	4.2%	0.0%	1.0%	0.0%	0.0%
6				0.0%	0.0%
<b>CPI</b>	<b>5.2%</b>	<b>6.3%</b>	<b>4.7%</b>	<b>4.9%</b>	<b>5.2%</b>

# Distributive impact of fiscal drag



- South Africa's debt-to-GDP ratio has been rising for the last decade, and looks set to continue rising.
- Rising public debt means:
  - Upward pressure on interest rates
  - An increasingly regressive fiscal structure as transfers to the rich exceed transfers to the poor
  - Rising dependence on finance capital both domestic and foreign
  - Rising vulnerability to macroeconomic crisis
- Since the global crisis, government has sought to slow the increase in debt but keeping primary expenditure constant as a share of GDP, and raising the tax-to-GDP ratio.
- This has not worked, and there is now no credible plan to stabilize the increase in debt. The current budget deficit is unlikely to be reversed, as this would require unacceptable political choices, and the ongoing crisis of the broader public sector balance sheet (i.e. SOCs) looks set to widen the deficit in the years ahead.
- At the same time:
  - Aggregate expenditure restraint which is not backed by political choices about resource allocation is leading to a sharp erosion in the quality of frontline public services. Most critically, budget restraint without wage restraint is undermining the public finances.
  - Rising taxes and slowing government consumption are contributing to slow growth
- A sudden and significant tightening of fiscal policy would slow the economy further, deepen the crisis in frontline public service provision and potentially not slow the debt trajectory.
- Fiscal expansion is unlikely to succeed (in boosting domestic demand), if not backed by private investor confidence and credibility with private finance (domestic and global). A loosening of fiscal policy is likely to be fully offset by a contraction in private investment and a sharp tightening of external financial conditions, leading to higher interest rates and potentially worsening the growth outlook.

