ECON 202 · Macroeconomics-I*

Student Notes

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Contents

The Measurement and Structure of the National Economy

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Learning objectives. After this chapter you should be able to differentiate the three approaches to national income accounting; explain how GDP is measured; discuss aggregate saving and its relation to wealth; work with real GDP, price indexes, and inflation; and define real and nominal interest rates.

2.1 National Income Accounting

The *national income accounts* are an accounting framework for measuring current economic activity. Three alternative approaches give exactly the same measurement of aggregate output: the **product approach** (the amount of output produced), the **income approach** (the incomes generated by production), and the **expenditure approach** (the amount of spending by purchasers). They must be equal *by definition*: any output produced is purchased by someone and generates income for someone. This is the **fundamental identity of national income accounting**,

$$\text{total production} = \text{total income} = \text{total expenditure}. \tag{2.1}$$

The key concept in the product approach is **value added**: the value of a producer's output minus the value of the inputs it buys from other producers. Summing value added across firms avoids double-counting. A modern supply-chain illustration makes the idea concrete: Dell buys parts abroad for \$600 and sells the machine to a retailer for \$900, adding \$300 of value; the retailer sells it to the consumer for \$1,000, adding the last \$100. The two value-added figures sum to \$400, exactly the final \$1,000 price net of the \$600 of imported parts, and that \$400 is what enters GDP. (Acemoglu–Laibson–List)

A short history. Before World War I no country could measure aggregate activity. Simon Kuznets built the first US accounts for Congress in **1934**; GDP became the international standard at **Bretton Woods (1944)** and was standardised by the UN's **SNA (1953)**. (class slides)

Example 2.1.1 (The juice economy: all three approaches agree) OrangeInc grows oranges: revenue \$35,000 (\$10,000 to households, \$25,000 to JuiceInc), wages \$15,000, taxes \$5,000. JuiceInc buys \$25,000 of oranges and sells juice for \$40,000; wages \$10,000, taxes \$2,000.

	Total output	Purchased inputs	Value added
OrangeInc	\$35,000	\$0	\$35,000
JuiceInc	\$40,000	\$25,000	\$15,000
GDP (product)			**\$50,000**

Income = wages \$25,000 + profits \$25,000 = \$50,000. *Expenditure* = final goods = fresh oranges \$10,000 + juice \$40,000 = \$50,000. The wrong answer \$35,000 + \$40,000 = \$75,000 double-counts the oranges.

2.2 Gross Domestic Product

2.2.1 The product approach

GDP is the *market value of final goods and services newly produced within a nation during a fixed period of time.* Each phrase does work. **Market value** lets us add unlike goods by valuing them at market prices; the cost is that GDP misses non-market activity (homemaking, environmental quality, resource depletion), only partly adjusts for the underground economy, and values government services at their cost of production. **Newly produced** means only current-period output counts. **Final** goods (not **intermediate** goods used up in the period) are what we want: a rancher sells \$2 of meat to McDonald's, which sells a \$6 hamburger, and GDP rises by \$6, not \$8. (Mankiw 12E) Capital goods count as final because they are not used up in the period, and **inventory investment** (the change in unsold goods and materials) is also treated as a final good. Summing value added does all of this automatically.

Two accounting conventions surprise students. First, **imputed rent**: owner-occupiers are treated as renting the house to themselves, so an estimate enters GDP as both expenditure and income. Second, "investment" means *new* capital: building a new house or a Tesla factory is investment, but buying an existing Victorian house or a share of stock is not. (Mankiw 12E)

2.2.2 GNP versus GDP

GNP is output produced by *domestically owned* factors, wherever located; GDP is output produced *within a nation.* They differ by net factor payments from abroad,

$$\text{GDP} = \text{GNP} - NFP, \tag{2.2}$$

where NFP is payments to domestically owned factors abroad minus payments to foreign factors at home. Engineering revenue on a road a US firm builds in Saudi Arabia is US GNP (a US factor) but Saudi GDP (built in Saudi Arabia). The gap is about 0.2% for the United States but much larger elsewhere: Kuwait, which holds large foreign assets, has GNP roughly **10%** above its GDP. (Acemoglu–Laibson–List) The same market-value boundary explains a different gap: the informal economy is largest exactly where it is *missed*, at about a quarter of GDP in India. (Acemoglu–Laibson–List)

2.2.3 The expenditure approach

Total spending on final goods produced within the nation splits into four categories, the **income–expenditure identity**:

$$Y = C + I + G + NX. \tag{2.3}$$

Consumption C ($\approx 2/3$ of US GDP) covers durables, nondurables, and services. **Investment** I ($\approx 1/6$) is business fixed, residential, and inventory investment. **Government purchases** G ($\approx 1/5$) buy currently produced goods and services; transfers (Social Security, welfare) and interest on the debt are *not* purchases, because no current production is exchanged. **Net exports** NX = exports − imports; imports are subtracted because they were produced abroad but already counted inside C, I, and G.

2.2.4 The income approach

Adding up income generated by production gives **national income** = compensation of employees + proprietors' income + rental income + corporate profits + net interest + taxes on production and imports + business transfers + surplus of government enterprises. Then, stepping down the ladder,

$$\text{national income} + \text{stat. discrepancy} = \text{NNP};$$
$$\text{NNP} + \text{depreciation} = \text{GNP}; \qquad \text{GNP} - NFP = \text{GDP}.$$

2.2.5 GDP and economic well-being

Because GDP counts only marketed activity, it omits home production, leisure, and the environment, and it can count some "bads" as growth. That is why every serious treatment pairs GDP with its critics. Robert Kennedy put it sharply in 1968: GNP "counts air pollution and cigarette advertising … yet does not allow for the health of our children … or the joy of their play." (Acemoglu–Laibson–List) The boundary is genuinely arbitrary: if a man *marries his housekeeper*, measured GDP falls, because paid work becomes unpaid; adding household production would raise German GDP by about a third. (Dullien et al.) And because GDP is a *convention*, it can jump without any real change: Ireland's GDP grew **26.3%** in 2015 on the back of multinational tax moves alone. (Dullien et al.)

Why GDP survives its critics. It is one comparable number that tracks jobs, tax revenue, and poverty; the IMF, World Bank, and credit ratings are all wired to it; and no rival commands consensus. So the alternatives tend to sit alongside GDP rather than replace it: HDI (1990), the GPI, Bhutan's Gross National Happiness, and the Stiglitz–Sen–Fitoussi Commission (2009). (Dullien et al.; class slides)

2.3 Saving and Wealth

A household's **wealth** is its assets minus its liabilities; **national wealth** is the sum of households', firms', and governments' wealth. Saving is the flow that builds this stock: saving = current income − current spending, and the saving rate = saving/current income. **Private saving** is private disposable income minus consumption, and **government saving** is net government income minus purchases:

$$S_{\text{pvt}} = (Y + NFP - T + TR + INT) - C, \qquad S_{\text{govt}} = (T - TR - INT) - G. \quad (2.4)$$

S_{govt} is the budget surplus (a deficit is $-S_{\text{govt}}$). **National saving** is their sum, and a useful simplification appears because TR, INT, and T enter one line with a + and the other with a −, so they cancel:

$$S = S_{\text{pvt}} + S_{\text{govt}} = Y + NFP - C - G = \text{GNP} - C - G. \quad (2.5)$$

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1: Stock vs. flow, the classic picture: the water in a bathtub is a *stock*; the water from the tap is a *flow*. Wealth is a stock; saving is the flow that changes it. (Mankiw 12E)

Substituting the income–expenditure identity into national saving gives the **uses-of-saving identity**. With the current account $CA = NX + NFP$,

$$S = I + CA, \qquad S_{\text{pvt}} = I + (-S_{\text{govt}}) + CA. \quad (2.6)$$

Private saving finances three things: investment I, the government budget deficit $-S_{\text{govt}}$, and lending abroad CA. Over time, **national wealth** = domestic physical assets + net foreign assets, and national saving ($S = I + CA$) is what raises it.

2.4 Real GDP, Price Indexes, and Inflation

Nominal variables are measured in current dollars, so a change may reflect prices *or* quantities; **real** variables value output at the prices of a fixed base year and so reflect only quantities. The distinction matters for any comparison over time: President Taft's $75,000 salary in 1909 is about $2.13 million in today's dollars, several times a modern president's pay. (Acemoglu–Laibson–List)

Example 2.4.1 (Computers and bicycles)

	Yr 1	Yr 2	%Δ
Computers (qty)	5	10	+100
Bicycles (qty)	200	250	+25
Computer price	$1200	$600	−50
Bicycle price	$200	$240	+20
Nominal total	$46,000	$66,000	+43.5

Real GDP growth depends on the base year: valued at Year-1 prices it is 34.8% (Laspeyres); at Year-2 prices, 29.4% (Paasche). To avoid the choice, the BEA uses **chain-weighting**, the geometric mean of the two, which gives 32.06%, close to their simple average.

A price index measures the average level of prices relative to a base year. The **GDP deflator** = 100×(nominal/real GDP) covers everything in GDP and its basket changes each year (Paasche-type). The **CPI** is a monthly index for a *fixed* basket of consumer goods (reference base 1982–84), updated only periodically (Laspeyres-type). The Fed's preferred measure is the **PCE** price index (and core PCE, excluding food and energy).[2] Inflation is the growth rate of the price level, $\pi_{t+1} = \Delta P_{t+1}/P_t$; although built differently, the CPI and the deflator move closely together.

2: In the EU the harmonised index is the **HICP**, built for cross-country comparability under Eurostat rules, not a single national CPI. (Dullien et al.)

The Boskin Commission found the CPI biased upward by 1–2 percentage points a year, for two reasons: quality change is hard to measure, and a fixed basket ignores **substitution** toward goods that become relatively cheaper. The two indexes bracket the truth: the fixed-basket CPI (Laspeyres) *over*states the cost of living, while the changing-basket deflator (Paasche) *under*states it. Robert Gordon puts the total CPI bias at "at least 1% per year." (Mankiw 12E) If inflation is overstated, real incomes have grown faster than measured, and indexed payments like Social Security are over-adjusted.

2.5 Interest Rates

An interest rate is the return a borrower promises a lender. The **nominal** rate i is the rate at which the nominal value of an asset grows; the **real** rate is the rate at which its purchasing power grows:

$$r = i - \pi. \tag{2.7}$$

Because lending decisions are made before inflation is known, what matters for behaviour is the **expected** real rate, $r = i - \pi^e$, which equals the realised real rate only when $\pi = \pi^e$. A practical corollary: when inflation turns out higher than expected, the **borrower gains and the lender loses**, because the loan is repaid in cheaper money.

People dislike inflation viscerally, not just through the algebra: in Shiller's 1996 survey of households in Brazil, Germany, and the US, **85%** said higher prices make them "a little angry," usually blaming firms, as in coverage of inflation-racked Argentina. (class slides; Shiller 1996)

2.6 Quick reference (cheat sheet)

Every identity below descends from one idea: *production* = *income* = *expenditure*.

2.6.1 Symbols and terms

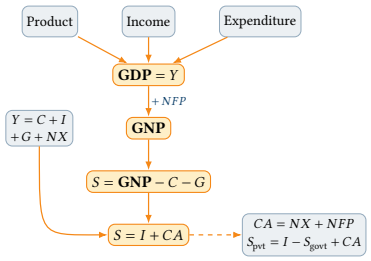
Y	GDP: output produced *within* the country
C	Consumption (durables, nondurables, services)
I	Investment = fixed + inventory
G	Government *purchases* of goods & services
NX	Net exports = exports − imports
NFP	Net factor payments *from* abroad
GNP	Output by domestically *owned* factors; $NNP = GNP -$ deprec.
T, TR	Taxes; transfers (pensions, welfare; *not* in G)
INT	Interest on government debt (*not* in G)
S	National saving = $S_{\text{pvt}} + S_{\text{govt}}$
CA	Current account = $NX + NFP$
P, π	Price level (base 100); inflation
i, r	Nominal, real interest rate

2.6.2 Four distinctions that trap people

- **Value added** = output − inputs bought from other firms ⇒ prevents double-counting.
- **Final vs. intermediate**: decided by *use*, not the object; capital goods count as *final*.
- **Stock vs. flow**: a stock is measured at a point (wealth, capital, money); a flow, per period (GDP, income, S, I).
- **Identity vs. equation**: an identity is true by definition; a behavioural relation like $C = a + bY$ must be estimated from data.

2.6.3 The identity ladder

$$\text{production} = \text{income} = \text{expenditure} \tag{2.1}$$
$$\text{GDP} = \text{GNP} - NFP \tag{2.2}$$
$$Y = C + I + G + NX \tag{2.3}$$
$$S_{\text{pvt}} = (Y + NFP - T + TR + INT) - C \tag{2.6}$$
$$S_{\text{govt}} = (T - TR - INT) - G \tag{2.7}$$
$$S = S_{\text{pvt}} + S_{\text{govt}} = \text{GNP} - C - G \tag{2.8}$$
$$S = I + CA \tag{2.10}$$
$$\text{deflator} = 100 \times (\text{nominal}/\text{real})$$
$$\pi_t = (P_t - P_{t-1})/P_{t-1}$$
$$\text{chain} = \sqrt{L \times P}$$
$$r = i - \pi \;\; (= i - \pi^e \text{ if } \pi = \pi^e)$$



The map. Add NFP to go GDP → GNP; strip C, G to get saving; saving flows to I, the deficit, or abroad. All hold by definition.

2.7 Solved problems

Each problem has a strategic *hint* in the margin and a short cue on each part; try it before reading the solution.

Exercise 2.7.1 (Kwaki — computing GDP) In Kwaki people produce canoes, fish for salmon, and grow corn. In one year they produced 5000 canoes but, in a recession, sold only 4000. Each canoe cost \$1000 to make; the ones sold were priced at \$1250. They fished \$30m of salmon and used \$3m of it as fertiliser for corn. They grew and consumed \$55m of corn. What was Kwaki's GDP?

Hint. GDP is the market value of all *final* goods made this period. Unsold output is not lost: it is *inventory investment*, valued at production *cost*, not the intended price. A good used up making another good is *intermediate*. Output consumed by its own producer still counts.

Solution.

- **Canoes:** sold $4000 \times \$1250 = \$5$m; unsold $1000 \times \$1000 = \$1$m (inventory, at cost). Total \$6m.
- **Salmon:** \$30 − \$3 = \$27m (the \$3m fertiliser is intermediate).
- **Corn:** \$55m in full (own-consumption counts; the fertiliser is already inside it).

GDP = 6 + 27 + 55 = \$**88m**.

Exercise 2.7.2 (ABC–XYZ — the three approaches agree) ABC builds \$140m of components (labour \$70m, interest \$7m, taxes \$14m) and sells all of it to XYZ. Using them, XYZ builds four supercomputers at \$56m each (components \$35m, labour \$14m, taxes \$7m per machine), sells three at \$70m, and carries the fourth as a \$56m inventory increase.

(a) Show the product, expenditure, and income approaches give the same GDP. *[Cue: product counts only final output; expenditure is fixed plus inventory investment; income sums factor payments and taxes across both firms.]*

(b) Redo it if ABC also pays \$35m for *imported* chips. *[Cue: imported inputs are foreign output, so they cut domestic value added; ask how much of GDP that removes.]*

Hint. All three approaches must coincide. Components one firm makes and another uses up are *intermediate*: do not add them on top of the final good. Unsold final output is inventory investment, at cost. Income sums wages, profit, interest, and taxes across *every* firm. Imported inputs are foreign output, so they reduce domestic GDP.

Solution (a). Components are intermediate, so count only XYZ's final output.

- **Product:** $3 \times \$70 + 1 \times \$56 = \$266$m.
- **Expenditure:** investment \$210m (sold) + inventory \$56m = \$266m.
- **Income:** wages $70 + 56 = \$126$m; profit $49 + 42 = \$91$m (ABC: $140 - 70 - 7 - 14 = 49$; XYZ: $266 - 140 - 56 - 28 = 42$); interest \$7m; taxes $14 + 28 = \$42$m. Sum = \$266m.

GDP = \$**266m** by all three methods. *(b)* The \$35m of imported chips is foreign output, so it is subtracted: GDP = 266 − 35 = \$**231m**.

Exercise 2.7.3 (National accounts from components) Given $I = 40$, $G = 30$, GNP = 200, $CA = -20$, $T = 60$, $TR = 25$, $INT = 15$, factor income from abroad = 7, factor payments abroad = 9, and government investment zero, find:

(a) consumption C *[rearrange $Y = C + I + G + NX$; use GDP for Y]*;
(b) net exports NX *[$NX = CA - NFP$, not CA itself]*;
(c) GDP *[$GDP = GNP - NFP$; mind the sign of NFP]*;
(d) net factor payments NFP *[income from abroad − payments abroad]*;
(e) private saving S_{pvt};
(f) government saving S_{govt} *[negative just means a deficit]*;
(g) national saving S *[$= S_{pvt} + S_{govt}$; check $S = I + CA$]*.

Solution (worked in identity order, not the order asked).

(d) $NFP = 7 - 9 = -2$; (c) GDP = GNP $- NFP = 202$;
(b) $NX = CA - NFP = -18$; (a) $C = \text{GDP} - (I + G + NX) = 150$;
(e) $S_{\text{pvt}} = (Y{+}NFP{-}T{+}TR{+}INT) - C = 30$; (f) $S_{\text{govt}} = (T{-}TR{-}INT) - G = -10$;
(g) $S = S_{\text{pvt}} + S_{\text{govt}} = 20$.

Hint. Work in identity order, not the order asked: NFP, then GDP, then NX, then C, then saving. Subtracting a negative *adds*. Do *not* set $NX = CA$; they differ by NFP.

Open-economy check: $S = I + CA \Rightarrow 20 = 40 + (-20)$, which holds.

Exercise 2.7.4 (Fruit — nominal, real, and the deflator) An economy produces apples, bananas, and oranges. Base year: 3000 bags of apples at \$2, 6000 bunches of bananas at \$3, 8000 bags of oranges at \$4. Current year: 4000 apples at \$3, 14000 bananas at \$2, 32000 oranges at \$5. Find:

- **(a)** nominal GDP each year and its percentage rise *[each year at its own prices]*;
- **(b)** real GDP each year and its percentage rise *[current quantities at base-year prices]*;
- **(c)** the GDP deflator each year and the percentage price change *[100×nominal/real; base = 100]*;
- **(d)** whether the nominal rise is mostly prices or quantities *[compare real growth with deflator growth]*.

Solution. Nominal: base = 3000(2) + 6000(3) + 8000(4) = \$56,000; current = 4000(3) + 14000(2) + 32000(5) = \$200,000, a rise of about 257%. Real (base-year prices): current = 4000(2) + 14000(3) + 32000(4) = \$178,000, up about 218%. Deflator: base = 100, current = $100 \times 200/178 \approx 112.4$, so prices rose about 12.4%. The nominal jump is mostly **quantity** growth (218%), not prices (12.4%): oranges quadrupled and bananas more than doubled.

Hint. Nominal GDP uses each year's *own* prices; real GDP uses *base-year* prices for both years; deflator = 100× nominal/real. In the base year nominal = real, so its deflator is 100.

Exercise 2.7.5 (Fisher — real interest and who gains) Loretta lends Ted \$500,000 at a nominal rate of 8%; both expect inflation of 2%. **(a)** Find the expected real rate *[$r = i - \pi^e$]*. **(b)** If inflation is actually 3%, what is the real rate, and who gains? *[use actual π; a realised rate below expectations favours the borrower]* **(c)** If it is 1%? *[a realised rate above expectations favours the lender]*

Solution. With $i = 8\%$ fixed: **(a)** $r = i - \pi^e = 8 - 2 = 6\%$. **(b)** $\pi = 3\% \Rightarrow r = 5\% < 6\%$, so **Ted (the borrower) gains**: he repays in cheaper dollars. **(c)** $\pi = 1\% \Rightarrow r = 7\% > 6\%$, so **Loretta (the lender) gains**. Unexpected inflation helps borrowers; unexpectedly low inflation helps lenders.

Hint. Fisher: real = nominal − inflation. The principal does not affect the *rate*. The nominal rate is fixed by contract, so only actual inflation changes across the parts.

Sources: Acemoglu, D., Laibson, D., & List, J., *Macroeconomics* (Global ed.), Pearson. Dullien, S., et al., *Macroeconomics in Context: A European Perspective*. Mankiw, N. G. (2023), *Macroeconomics*, 12th ed., Worth. The main text follows Abel, Bernanke & Croushore, *Macroeconomics*, and is not cited in the body.

2.8 Case study: is India's 7.8% growth real?

This case applies the machinery of Chapter 2 to a live dispute. In August 2026 the government reported that real GDP grew **7.8%** in the April–June quarter, the fastest in over a year. Within days three economists —

Subhash Garg, Kaushik Basu, and Raghuram Rajan — publicly questioned the figure. None of them disputed the raw data, and all were reading the same release. The disagreement is entirely about the concepts in §2 – 4: the gap between nominal and real GDP, the **GDP deflator**, and the choice of **base year**.

2.8.1 The three numbers

The release gave two growth rates: **nominal GDP** grew 10.3% (output at this year's prices) and **real GDP** grew 7.8% (adjusted for price change). Since the deflator is 100 × (nominal/real), its growth rate is the inflation used to convert one into the other. The gap here, 10.3−7.8 = 2.5 percentage points, is roughly the deflator inflation used to strip prices out, and the reported implicit deflator is about 2.3%.[3]

Nominal growth 10.3% − price adjustment 2.5% = real growth 7.8%.
Divide a given rupee rise by a *small* price index and the real figure it leaves behind looks large.

3: Exact figures come from the MoSPI Q1 2026–27 release. The subtraction 10.3 − 7.8 = 2.5 is a close approximation; the reported implicit deflator (≈ 2.3%) differs slightly because the deflator is the ratio of nominal to real GDP, not exactly the difference of their growth rates.

2.8.2 Real GDP is a residual

We never observe real GDP directly. We observe rupees (nominal GDP), then *divide* by a price index; real growth is whatever is left. This is exactly the fruit exercise from this chapter, run on national data with a political stake attached: there, a 257% nominal rise turned out to be mostly quantity once the 12.4% price change was divided out. The India dispute is the same operation, and every critic is really arguing about the size of that price adjustment.

2.8.3 Why a 2.3% deflator is unusual

Recall that the deflator covers the whole economy, so it need not equal the CPI. This quarter, though, it came in below *every* common price gauge: consumer inflation (CPI) ran above 4% and wholesale inflation (WPI) above 9%, yet the deflator was only 2.3%. The main reason is **double deflation** in manufacturing, where output prices and input prices are deflated separately. This year input costs rose faster than the prices factories could charge, so manufacturing's measured price index *fell* and its real output jumped. The method is textbook-correct, but it records a squeeze on producers' margins as a burst of real growth — which is the critics' central worry: the price index in the denominator may not match the inflation firms and households actually face. (MoSPI clarification; press coverage)

2.8.4 Why the base year matters (Garg's argument)

A price index means something only against its own base. This year India moved its base from **2011–12** to **2022–23**. **Subhash Garg**, a former finance secretary, notes that last year's April–June GDP, first announced at Rs 86 lakh crore, was revised to Rs 80 lakh crore on the new base; this year's is Rs 88 lakh crore. Measured against the revised Rs 80, nominal growth is 10.3%; against the old Rs 86, only 2.6%. But those two figures sit on *different* base years, so subtracting one from the other is a category

error, like subtracting feet from metres (compare the Laspeyres/Paasche split in the computers-and-bicycles example). Hold the base fixed and growth is 7.8%. Garg's 2.6% is the marked-wrong answer; notably, he does *not* dispute the deflator itself.

2.8.5 Two further doubts

Kaushik Basu accepts Garg's arithmetic as the sharpest critique he has seen but locates the real problem further back: India's **investment rate** has fallen from above 38% to below 34% and stayed there, which is not the profile of an economy about to accelerate. **Raghuram Rajan** adds a demand-side check: if output truly grew 7.8%, the accompanying jobs, private investment, and foreign inflows should be visible, and they are not; he too suspects the inflation measure is set too low to trust the real figure that emerges from it.

2.8.6 What a careful reader should conclude

- The 7.8% is **correctly calculated**. It is not fabricated.
- Garg's 2.6% is **wrong**, because it mixes two base years.
- But the number is probably **generous**. Had the deflator matched the ~ 4% that consumers paid, real growth would land nearer 6%. Honest arithmetic can still mislead when the inflation input is too low.

The one-line lesson. A real growth rate depends entirely on the price index buried inside it. When someone hands you one, ask what they divided by.

2.8.7 Questions for discussion

1. Nominal GDP grew 10.3% and real grew 7.8%. Show that the implied price adjustment is about 2.5 percentage points, and explain why the officially reported deflator (2.3%) is close but not identical.
2. The deflator (2.3%) was below both CPI (> 4%) and WPI (> 9%). Give one reason it can diverge from both. Does divergence prove manipulation?
3. If the "true" deflator were 4%, recompute real growth. How much of the 7.8% is a story about quantities, and how much about the price index?
4. Using Laspeyres and Paasche, explain why comparing GDP levels across two different base years is a mistake. Whose argument does this answer?
5. Basu and Rajan accept the 7.8% is correctly computed yet still doubt the economy is strong. What evidence *outside* GDP would you check to decide?

Hints. Q1: subtract the growth rates, $10.3 - 7.8 = 2.5$; the exact deflator uses 100×nominal/real and gives 2.3%. Q3: real $\approx 10.3 - 4 = 6.3\%$, so about 1.5 points of the headline is really the low price index. Q4: an index is defined only against its own base.

Sources: MoSPI, *Provisional Estimates of GDP, Q1 2026–27* (Aug. 2026); reporting on the Garg/Basu/Rajan exchange in the Indian financial press. Figures are for teaching; verify against the primary release before citing them elsewhere.