MASTER NOTES | ALL FOUR SESSIONS | CONCEPTS, FIGURES, PRACTICE MCQs + EXAM CHEAT CODE

Market Economies & Macroeconomic Policies

Master Notes - The Complete Module in One Book: Measurement and Money, Policy and Demand, Supply and Expectations, the Open Economy and Exchange Rates

ABOUT THESE MASTER NOTES

This book brings together the notes of all four sessions of the module taught by **Prof. Ankit Kumar** (Economics Group, IIM Calcutta) to EPBM-32 between 30 August and 27 September 2026. It keeps everything the session notes contained - every explanation, worked number, classroom example, figure and manager's takeaway - in the order it was taught, so that the four Sundays read as one continuous story: how an economy is measured, how money is made, how governments and central banks steer demand, what limits them, and how the rupee meets the world. It is written for someone meeting economics for the first time: plain words first, a familiar example before any formula, and what each idea means for a business that makes products and for one that sells services. Each session ends with about 25 practice questions chosen to cover every topic; a mixed bank of 120 more, drawn from the whole module, follows the last session; and the book closes with an Exam Cheat Code - the formulas, pairs, traps and numbers on a few pages. Where a topic came up in more than one class it is explained once, where it was first taught, and pointed to afterwards.

01
Session 1: Measuring the Economy, and Money

02
Session 2: Steering Demand

03
Session 3: Supply, Expectations and the Open Economy

04
Session 4: Exchange Rates and the World Outside

05
Mixed Question Bank: 120 questions across the module

06
Exam Cheat Code: formulas, pairs, traps, numbers

217
Practice questions in all, each with its reason

66
Figures, numbered by session

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THE WHOLE MODULE IN FOUR QUESTIONS

Session 1: How do we measure an economy, and what is money? **Session 2:** How is demand steered - by the central bank and by the budget? **Session 3:** What limits that steering, and what changes when the economy is opened to the world? **Session 4:** How do exchange rates work, and what should a firm do about them? If you can answer these four in your own words by the last page, the notes have done their job.

i How to Read These Notes

These notes are long because nothing has been left out. They are also built so that you never have to read all of it at once. Every section opens with a two-line lead that says what it is about, tells its story in plain words, and closes with a dark box saying what the idea means on a manager's desk. Pick the route that matches the time you have.

If you have	Read this	What you will have at the end
A weekend - the full read	The four sessions in order, figures included. Do the practice questions after each session before moving on.	The whole module as one story, with every number worked out
Ninety minutes - revision	The lead under each section banner, the light boxes, and the One-breath Summary that closes section 15 of each session.	Every idea refreshed, without the examples
The evening before the exam	The Exam Cheat Code at the back, then the Mixed Question Bank - reading the reason under each answer.	Formulas, traps and numbers at your fingertips
Ten minutes before a meeting	The dark Manager's Takeaway boxes of the section you need, and the "questions to take back to work".	What the idea means for a product or a service business

The colour key

The same few building blocks are used on every page. Once you know them you can find what you want by colour.

2.05 A section title

Section banner. A new topic. The number is session.section, so 2.05 is Session 2, Section 05. Text and questions refer to sections this way.

KEY IDEA / GOOD TO KNOW

Light box with a teal bar. The idea itself: a definition, a rule, a worked example, or a "Good to know" that goes one step beyond the class.

MANAGER'S TAKEAWAY

Dark teal box. What the idea means at work, always with one example from a product business and one from a service business.

CONCEPT TRAP

Navy box. A mistake that is easy to make - two words that sound alike, a number read the wrong way round.

"A line from class."

Light box in italics. A line worth remembering from the class, paraphrased from the recording.

Column	Column
Row label	entry

Table with a teal header. Comparisons, step-by-step workings and class questions with their answers.

Figure 2.5: what the picture shows

Figure. Every diagram is numbered session.figure and has a one-line caption saying what to take from it.

Answer: (b) - the reason, in one line

Practice question. Four close options; the shaded strip gives the answer and the reason.

The module at a glance

Part	The question it answers	The idea to keep	Page
Session 1	How do we measure an economy, and what is money?	GDP, inflation and interest rates; banks create money by lending; the RBI steers its quantity and its price	4
Session 2	How is demand steered?	The multiplier is in the banks' hands; fiscal and monetary policy shift aggregate demand; falling prices are worse than rising ones	47
Session 3	What limits policy, and what happens when the economy is opened?	Supply, expectations and the Phillips curve; disinflation; S - I = X - M; the real exchange rate	85
Session 4	How do exchange rates work, and what should a firm do?	Invoicing and pricing power; regimes and reserves; the dollar's politics; resilience as a design choice	119
Question Bank	Can I answer when the topics are mixed up?	120 questions from all four sessions, each pointing to the section to revise	145
Cheat Code	What must I be able to recall in the exam hall?	Formulas, easily confused pairs, cause and effect, numbers, traps	169

FOUR SMALL THINGS TO KNOW

Finding your way. Each session opens with a list of its own sections and their page numbers, and the PDF carries a bookmark for every section. **Numbers and data** are as they stood in early October 2026, when these notes were written. **Rs.** is used for the rupee throughout, and lakh and crore as in Indian usage. **Lines in quotation marks** are paraphrased from the class recordings, not verbatim.

SESSION 1 OF 4

Measuring the Economy, and Money

GDP, Inflation, Interest Rates, Money, and How the RBI and Banks Create It

Sunday, 30 August 2026 | Prof. Ankit Kumar | Live online session

WHAT THIS SESSION COVERS

The foundations. How an economy is measured - GDP, its four buyers, value added, nominal against real - how inflation is measured and what is in India's basket, why only the real interest rate matters, what money is and what stands behind the rupee, and how the central bank and commercial banks between them create it.

1.01	Why Managers Study Macroeconomics	4	**1.09**	What Is Money?	24
1.02	GDP: Sizing an Economy	6	**1.10**	What Backs the Rupee?	26
1.03	Y = C + I + G + NX: Who Buys the Output	9	**1.11**	The Central Bank's Two Levers: OMO, QE, QT	29
1.04	The Value-Added Method	12	**1.12**	Repo, Reverse Repo and Liquidity	32
1.05	Nominal vs Real GDP	14	**1.13**	How Banks Create Money	34
1.06	Measuring Inflation: The CPI	17	**1.14**	Why Banks Are Fragile	37
1.07	What India Buys: The CPI Weights	18	**1.15**	Product, Service and the Manager's Desk	39
1.08	Interest Rates: Real vs Nominal	22	**1.16**	Practice Questions for Session 1	42

1.01 Why Managers Study Macroeconomics

Your company's strategy is something you choose. Your customer's budget, the EMI on your loan, the cost of your imported components and the speed at which your salary loses value are chosen for you - by the economy. The professor opened with a simple promise: four classes that make that outside world readable.

Think of a ship's captain. He does not control the weather, but he would be a fool to sail without reading it. Your firm is the ship: its products, its people and its prices are in your hands. Macroeconomics is the weather: growth, inflation, interest rates and the rupee. You cannot change any of them, yet every one of them changes your results. The aim of this module is not to turn managers into economists. It is to make sure the weather report stops sounding like a foreign language.

Three reasons a manager needs this subject

The reason given in class	In plain words	What it looks like on a manager's desk
Analyse the boundary conditions	The economy sets the limits inside which every business plays: how fast demand can grow, what money costs, what a rupee buys.	A plan to grow 25% a year in an economy growing 6 to 7% means taking business away from somebody. Budget for a fight, not for a rising tide.
Analyse the contemporary economic condition	Read where we are right now - growth, inflation, interest rates, the currency - instead of where we were when the last plan was written.	When to hire, when to lock in a loan, when to hold a price and when to raise it.
Comprehend the words and signals of policymakers	Central bankers and finance ministers speak in a code. Markets move on a single sentence.	Read the signal before it reaches your P&L: a rate hike announced today is a costlier loan and a more cautious customer a few months from now.

Decoding the signals: sentences from the first ten minutes

To show what "signals of policymakers" means, the professor put a series of quotes and headlines on the screen. Each is one sentence, and each moved money somewhere in the world. Here they are, translated.

The signal	Who, when	What it actually says	What a manager does with it
"The chances of a soft landing are likely to diminish."	Jerome Powell, US Fed Chair, September 2022	A soft landing means bringing inflation down without a recession. He was warning that rates would keep rising even at the cost of one.	Dollars get costlier and American customers cautious. An Indian IT firm should expect slower deal closures.
"Stagflation concerns rise"	US newspaper headline, September 2025	Stagnation plus inflation: prices rise while growth and jobs weaken. The worst mix, because the cure for one worsens the other.	Demand falls while costs rise. Protect margins and stress-test the budget.
"...reserve losses and imported inflation."	RBI Governor Shaktikanta Das, November 2022	When the US raises rates, money leaves emerging markets. The rupee weakens, the RBI sells dollars to steady it, and imports become costlier.	An importer of components hedges the currency. An exporter enjoys a tailwind.
"Rupee at 90: no targeted band, market will decide."	RBI Governor Sanjay Malhotra, December 2025	The RBI will not defend any particular level of the rupee. It will only smooth out violent moves.	Do not build a budget on the belief that the RBI will hold a number for you.
Two photographs: a President and a Fed Chair	President Trump and Jerome Powell, 2025	Governments want low rates now; central banks are meant to look further ahead. The quarrel is over the central bank's independence.	When that independence is in doubt, expect rates and currencies to swing more.

The freshest example was two days old. At the Jackson Hole conference on 28 August 2026 the new Fed Chair, Kevin Warsh, said he was still worried about inflation and kept the door open to further rate hikes. Translation: global money stays costly, and emerging-market currencies stay under pressure.

Two institutions run the policies behind all of these sentences. The **government** decides taxes and public spending: that is **fiscal policy**. The **central bank** - the RBI in India, the Federal Reserve ("the Fed") in the US - decides how much money there is and what it costs: that is **monetary policy**. The professor's label for the pair was "two benevolent dictators": each has enormous power and each believes it is acting for the public good. The photographs showed what happens when the two disagree in public.

THE TEST OF THIS MODULE

By the end of the fourth class, each of the sentences above should read like plain English. The professor's half-joking version of the goal: after these four classes you should not need "WhatsApp University" to explain economic news to you.

The map of the four sessions

The module has four sessions. Roughly the first two and a half stay inside the domestic economy: how it is measured, how money and banks work, and what the RBI and the government do about growth and inflation. The remaining one and a half open the borders: exchange rates, capital flows, and why the rupee and the dollar move the way they do. Session 1 lays the foundation - the measuring instruments (GDP, inflation, interest rates) and the plumbing (money, the central bank, banks). The class ran as a conversation, and many of the best explanations came out of participants' questions, so these notes keep those questions in.

MANAGER'S TAKEAWAY

You cannot change the weather, but you can stop being surprised by it. A product company reads macro to time capacity, inventory and price increases. A service company reads it to judge client budgets, wage pressure and currency risk on contracts. In both, the manager who can decode a central banker's sentence sees the next two quarters earlier than the one who cannot.

1.02 GDP: Sizing an Economy

Before anyone can say an economy is doing well or badly, there has to be a number for its size. The question on the slide was: in what way can we quantify the size of the economy, and how it is performing? The answer is GDP - and every word in its definition is doing a job.

Imagine you own an orchard that grows apples and oranges and also runs a small juice stall at the gate. How big was your business this year? You cannot add 500 apples to 300 oranges to 2,000 glasses of juice; the units do not match. The only common unit is money. Value everything at the price it actually sold for, and add it up. Now do the same for 140 crore people and every farm, factory, shop, clinic and office in the country. That total is Gross Domestic Product.

"The market value of the final goods and services produced in a country during a given period."

The definition of Gross Domestic Product (GDP) used in class

The professor took the definition apart phrase by phrase. Change any one phrase and you are no longer measuring GDP.

GDP = the MARKET VALUE of all FINAL GOODS AND SERVICES produced WITHIN A COUNTRY in a GIVEN PERIOD

MARKET VALUE	FINAL	GOODS AND SERVICES	WITHIN THE COUNTRY	IN A GIVEN PERIOD
COUNTED Valued at the price it actually sells for	**COUNTED** The car that reaches its end user	**COUNTED** Phones, haircuts, cab rides, classes	**COUNTED** A foreign firm's plant in India	**COUNTED** What was produced this quarter or year
LEFT OUT Unpaid housework, anything never sold	**LEFT OUT** The nuts and bolts already inside it	**LEFT OUT** Cash transfers, buying shares	**LEFT OUT** An Indian firm's plant abroad	**LEFT OUT** Resale of goods made earlier

Change any one of the five phrases and you are measuring something other than GDP.

Figure 1.1: The five phrases of the GDP definition - what each one lets in and what it keeps out.

Phrase	What it means	Everyday example
Market value	Everything is converted into rupees at the price it sold for. That is what lets us add cars to haircuts. The cost: whatever is never sold in a market gets left out.	A cook you pay Rs. 8,000 a month is in GDP. The same meals cooked by a family member are not.
Final	Only goods and services that reach their end user. Intermediate goods - things used up in making something else - are skipped, because their value is already sitting inside the final price.	Tyres sold to Maruti for new cars: intermediate. A tyre you buy to replace a worn one: final.
Goods and services	Things you can touch and things you cannot.	A phone, and the mobile plan that runs on it. Services are roughly half of everything India produces.
Produced within a country	Geography, not nationality. If it was made on Indian soil it is India's GDP, whoever owns the factory.	Samsung's phone plant in Noida counts in India's GDP. An Infosys office in Texas counts in America's.
In a given period	Only what was produced in that quarter or year. GDP is usually reported every three months and every year.	A flat built in 2015 and resold today adds nothing new - except the broker's fee, which is a service produced today.

The classroom test: "Does this count?"

The class tested the definition the way one tests any rule: by throwing awkward cases at it. Most of these came from participants.

The case	In India's GDP?	Why
A factory makes nuts and bolts and sells them to a car maker.	Not separately	They are intermediate goods. Their value is already inside the price of the car. Counting both would count the same steel twice.
The case that comes with your new spectacles.	Not separately	The optician bought the case and built its cost into your bill. Buy a case on its own from a shop, and that sale is a final good.
India imports a phone and pays the foreign seller in rupees.	No	GDP asks where a thing was produced, not which currency paid for it. The phone was made abroad.

The case	In India's GDP?	Why
A firm imports parts worth Rs. 100, assembles them here and exports the product for Rs. 120.	Rs. 20	Only the value added on Indian soil is India's production.
Tata Motors owns Jaguar Land Rover, which builds its cars in the UK.	No	The cars are produced in Britain, so they are British GDP. The profits and dividends sent home to India are part of India's national income - a different measure (see the note below).
A government transfers Rs. 10,000 into each beneficiary's bank account before an election.	No	It is a transfer payment: money moved from one pocket to another, with nothing produced in exchange. It enters GDP only when the recipient spends it on something newly produced.
You sell an old flat through a broker. You book a cab on an app.	Flat: no. Brokerage: yes. Ride: yes	The flat was produced years ago. The broker's service was produced now. The ride is a final service: its whole fare counts - the driver's share and the platform's commission together.
A company that is making losses.	Yes	GDP measures production, not profit. If the firm sold services worth Rs. 100 crore using Rs. 60 crore of bought-in inputs, it added Rs. 40 crore of value - even if its salary bill pushed it into a loss.
Aliens from Mars open a factory in Pune.	Yes	The professor's extreme case. Who owns the factory does not matter. Where the production happens does.

GOOD TO KNOW - THREE FINE POINTS BEYOND THE CLASS

1. A machine is a final good. A lathe bought by a factory is not used up in making one batch of output, so it is not an intermediate good. It is a capital good, counted in full as investment. **2. GDP versus national income.** GDP counts what is produced inside the border. Gross National Income (GNI) is GDP plus the income Indians earn abroad minus the income foreigners earn here. Jaguar Land Rover's dividends are in India's GNI, never in its GDP. **3. A few unsold things are estimated and included.** Statisticians add the food a farmer grows and eats himself, and the rent an owner would have paid for the house he lives in. Unpaid housework is still left out.

The joke that explains what GDP is not

Two economists are out for a walk. The first says to the second, "I will pay you Rs. 100 to do something thoroughly unpleasant." The second does it and pockets the money. A little later the second, feeling foolish, makes the first the same offer; the first does it and gets the Rs. 100 back. They walk on. "We have both done something unpleasant," says one, "and neither of us is a rupee richer." "True," says the other, "but we have just added Rs. 200 to GDP." (The classroom version is a good deal less polite, but the economics is identical.) Two paid services were produced and sold, so GDP rose by Rs. 200. Nobody is better off.

CONCEPT TRAP: GDP IS NOT WELFARE, WEALTH OR PROFIT

GDP counts priced production during a period. It is a flow, like a salary - not a stock, like a bank balance, so it is not wealth. It includes wages and rent as well as profit, so it is not profit. And it counts whatever is paid for, useful or not: a traffic jam that burns fuel raises GDP; a parent's unpaid care for a child adds nothing. A rising GDP tells you the economy is producing more. It does not tell you who got it, or whether anyone is happier.

MANAGER'S TAKEAWAY

GDP is the size of the pie your industry is cut from. A product company - a paint maker, say - can for years grow faster than GDP only by taking share or entering new categories; its board should know which of the two the plan assumes. A service company exporting from India is itself part of GDP: a Bengaluru team that monitors a customer's plant in Texas and bills in dollars is producing in India, so its work counts in India's GDP as an export of services. And remember the loss-making firm: a business can add a great deal of value to the economy and still not be profitable. GDP and your P&L answer different questions.

1.03 Y = C + I + G + NX: Who Buys the Output

Everything that is produced is bought by someone. So one way to measure GDP is to stand at the nation's cash counter and ask a single question of every sale: who paid? It turns out there are only four kinds of buyer.

Letter	The buyer	What it covers	Examples
C Consumption	Households	Everyday spending on goods and services (but not the purchase of a new house).	Groceries, a phone bill, school fees, a food-delivery order, a haircut.
I Investment	Firms, and households buying new homes	Spending today that helps produce output tomorrow.	Machines, factories, software, R&D, new houses, and stock produced but not yet sold.
G Government purchases	Central and state governments	What the government buys or produces itself. It does not include transfers such as pensions and cash schemes - nothing is produced in exchange for those.	Salaries of teachers and police, defence equipment, running a government hospital.
NX Net exports	The rest of the world	Exports minus imports.	IT services and medicines sold abroad, minus crude oil and electronics bought from abroad.

THE IDENTITY: Y = C + I + G + NX

Y is GDP. The equation is an identity - true by definition, the way Assets = Liabilities + Equity is true in accounting. Every rupee of output must have been bought by a household, a firm, the government or a foreigner. If a firm cannot sell what it made, the unsold stock is treated as bought by the firm itself (inventory investment), so the two sides always match.

Why are imports subtracted? Not because imports are "bad" for GDP. When you buy an imported phone, the purchase is already sitting inside C. But the phone was not produced in India, so it must be taken out again. Subtracting imports simply removes foreign production that slipped in through C, I and G.

Investment has three parts - and none of them is the stock market

Part of I	What it is	Example
Business fixed capital	Plant, machinery, buildings, software and R&D that a firm will use for years.	A new assembly line; a data centre; a monitoring platform a services firm builds for its own use.
Residential investment	Newly built homes.	A new apartment tower in Whitefield. (A resale flat is not new production.)
Change in inventories	Goods produced this year but not yet sold.	Diwali stock built up in September. When it sells in October, inventories fall and consumption rises by the same amount - nothing is counted twice.

CONCEPT TRAP: "INVESTMENT" HERE IS NOT WHAT YOUR BROKER MEANS

Buying shares, mutual fund units, government bonds or a resale flat is financial investment: you have swapped one asset (cash) for another, and somebody else has done the opposite. No new machine, building or software exists because of it. In macroeconomics, investment means creating new productive capacity. Your SIP becomes investment only when a company uses the money to build something.

India's bill, split four ways

The class looked at the official table for 2016-17. The year is old; the proportions are the lesson, and they have changed little since.

Component (as named in the national accounts)	Letter	Rs. crore	% of GDP
Private final consumption expenditure	C	89,27,010	58.8
Government final consumption expenditure	G	17,69,036	11.7
Gross fixed capital formation	I	41,17,674	27.1
Change in stocks (inventories)	I	3,28,198	2.2
Valuables (mostly gold and jewellery)	I	1,66,287	1.1
Exports of goods and services	X	29,11,700	19.2
Less: imports of goods and services	M	-31,33,081	-20.6
Statistical discrepancy	-	96,886	0.6
GDP at current prices	**Y**	**1,51,83,710**	**100.0**

Who bought India's output in 2016-17 (share of GDP at current prices)



NX -1.4 Net exports = exports 19.2 - imports 20.6 = -1.4. India buys more from the world than it sells to it.

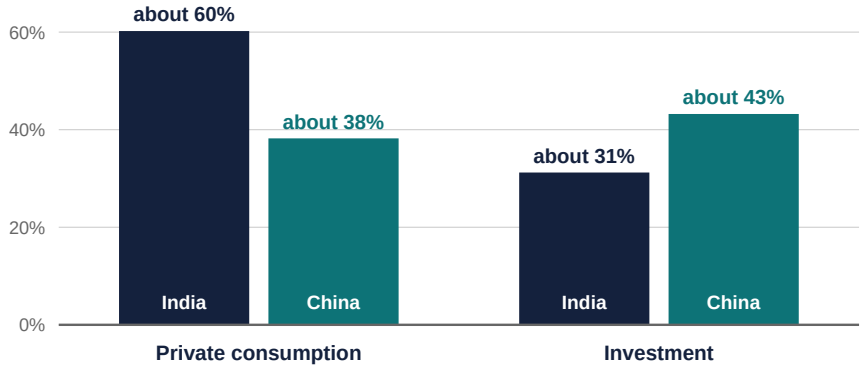
Check: 58.8 + 30.4 + 11.7 - 1.4 + 0.6 (statistical discrepancy) = 100 (to rounding). Source: CSO table used in class.

Figure 1.2: India's output by buyer, 2016-17. Households are by far the biggest customer of the Indian economy.

Three things to notice. First, almost 59 paise of every rupee of output is bought by households: India is a **consumption-driven** economy. Second, G is only about 12% because it covers the government's day-to-day purchases; the roads and railways it builds are counted inside I, and its pensions and subsidies are transfers and are counted nowhere until the recipient spends them. Third, net exports are slightly negative: India buys a little more from the world than it sells to it.

India and China: two different engines

Share of GDP, 2022 (approximate values read from the CEIC charts shown in class)



INDIA: consumption-driven
Households buy ~60 paise of every rupee of output.
Trade: usually a deficit.

CHINA: investment-driven
Over 40% of output goes into factories, housing, infrastructure.
Trade: usually a surplus.

Figure 1.3: India runs on household consumption; China runs on investment. Approximate 2022 values.

The comparison charts shown in class make the contrast plain. In India, private consumption has stayed at around 55 to 60% of GDP for two decades; in China it is under 40%. Investment is the mirror image: over 40% of China's output goes into factories, housing and infrastructure, against about 30% in India. India's own investment share climbed to roughly 40% around 2007 to 2011 and has slipped since. Trade follows from this: a country that produces far more than its households consume must sell the rest abroad, so China runs a trade surplus (it peaked at 8 to 9% of GDP around 2007), while India usually runs a deficit.

Two worries came up in the discussion. One: India's investment share has fallen from its peak, and private companies in particular have been slow to build new capacity, leaving government spending on infrastructure to do the heavy lifting. Two: household saving - the pool of money that ultimately funds investment - has been sliding as a share of income as families borrow more. An economy cannot keep investing more than it saves without borrowing from abroad.

MANAGER'S TAKEAWAY: FIND YOUR LETTER

Ask which of the four buyers pays your bills, because each letter moves to a different rhythm. C: an FMCG company, a retailer, a consumer app - watch household incomes, food inflation and EMIs. I: a capital-goods maker, an industrial-automation firm, an enterprise software or cybersecurity services provider selling to plants - watch interest rates and corporate capital spending. G: a defence supplier, an infrastructure contractor - watch the Union Budget. NX: an IT services exporter, a pharma exporter - watch growth in the US and Europe, and the rupee. Most firms sell to more than one letter; knowing the mix tells you which headline to worry about.

1.04 The Value-Added Method

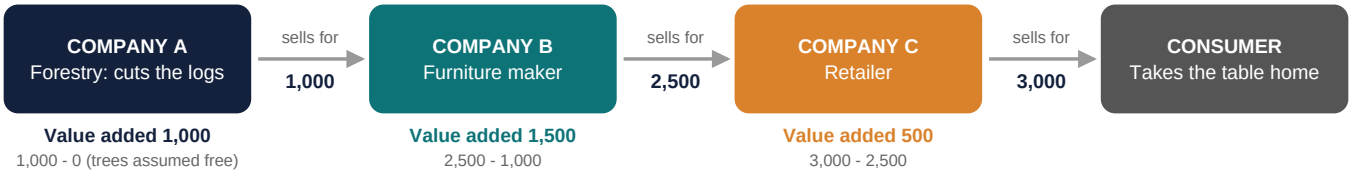
There is a second road to the same GDP number. Instead of standing at the final cash counter, walk down the supply chain and, at each stop, count only what that stop added.

Start with the samosa seller outside your office. He buys potatoes, flour, oil and gas worth Rs. 6 and sells the samosa for Rs. 15. The Rs. 6 was produced by farmers, millers and refiners. What *he* added is Rs. 9 - the work of turning raw material into something you want at four o'clock. That Rs. 9 pays for his labour, the rent for his spot and whatever profit is left.

VALUE ADDED - THE DEFINITION FROM THE SLIDE

Value added is the value of a firm's output minus the value of the intermediate goods it used to produce that output. Put differently: sales revenue minus the cost of non-labour inputs bought from other firms. Wages are not subtracted - the work of a firm's own people is exactly the value it adds.

The furniture chain worked out



Value added 1,000
1,000 - 0 (trees assumed free)

Value added 1,500
2,500 - 1,000

Value added 500
3,000 - 2,500

Add the VALUE ADDED at each stage:



= 3,000 = price of the final good = GDP

Add every SALE instead (the log gets counted three times):



= 6,500

Rs. 6,500 changed hands. Only Rs. 3,000 of new value was created. Turnover is not GDP.

Figure 1.4: The classroom example. Adding value added at each stage gives the price of the final good; adding every sale counts the log three times.

Stage	Sales price	Cost of material inputs	Value added
Company A - forestry: cuts and sells the logs	1,000	0	1,000
Company B - furniture maker	2,500	1,000	1,500
Company C - retailer, sells to the consumer	3,000	2,500	500
Total	**6,500**	**3,500**	**3,000**

Rs. 6,500 changed hands along the chain, but only Rs. 3,000 of new value was created - and Rs. 3,000 is exactly the price the final customer paid. That is no coincidence. The value of a final good already contains the value of every intermediate good that went into it, which is why counting both would be double counting.

Now you try (the exercise from class). A farmer grows wheat and sells it to a miller for $1. The miller turns it into flour and sells it to a baker for $3. The baker makes a loaf and sells it to an engineer for $6. The engineer eats the bread. Value added: farmer 1, miller 3 - 1 = 2, baker 6 - 3 = 3. GDP = 1 + 2 + 3 = 6, which is the price of the loaf.

> **TWO ROADS, ONE NUMBER**
>
> GDP = value of final goods produced = sum of value added at every stage of production. The expenditure method (Section 1.03) counts at the last cash counter. The value-added method counts along the chain. Both must give the same total.

Why bother with a second road? Because it shows where value is created

Adding value added firm by firm lets statisticians say how much each sector contributes. India reports this as Gross Value Added (GVA) for agriculture, industry and services.

Share of India's GDP by sector (gross value added, % - approximate, from the CEIC chart shown in class)

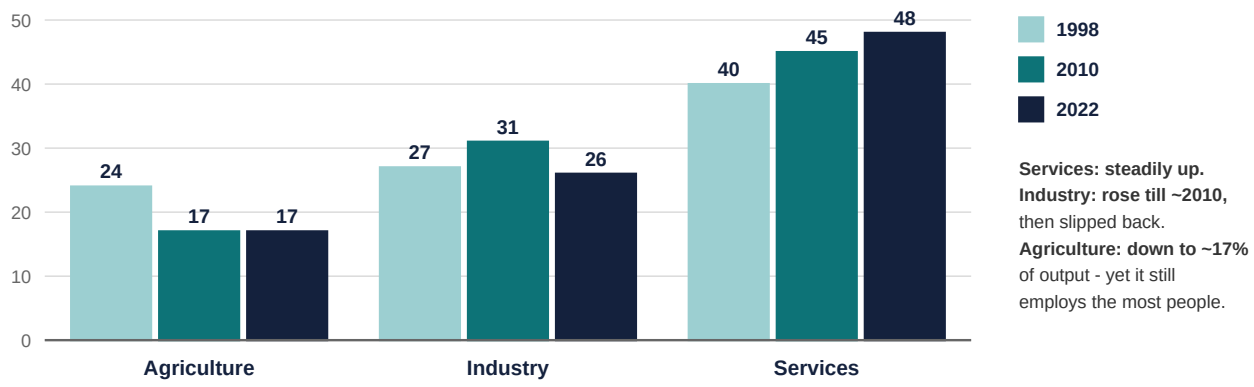


Figure 1.5: Services now produce nearly half of India's output. Industry's share rose until about 2010 and then slipped back.

The uncomfortable fact sits in the first group of bars. Agriculture produces about 17% of India's output but still employs roughly 45% of its workers. Nearly half the workforce shares about a sixth of the income, so value added per worker on the farm is a fraction of what it is elsewhere. The normal route out - the one China took - is for workers to move from farms into factories. That is why industry's stalled share is the real worry in the chart: the factory jobs that should absorb people leaving agriculture are not appearing fast enough.

GOOD TO KNOW - GVA AND GDP ARE COUSINS, NOT TWINS

GDP = GVA + taxes on products - subsidies on products. GVA is what producers received for what they made; GDP is what buyers paid, which includes taxes such as GST. That is why the two growth rates differ a little in every release. For April-June 2026, for example, real GVA grew 8.2% and real GDP grew 7.8%.

CONCEPT TRAP: TURNOVER IS NOT VALUE ADDED

A trading company with revenue of Rs. 1,000 crore that buys its goods for Rs. 980 crore adds Rs. 20 crore to GDP. A 200-person software firm with revenue of Rs. 100 crore and bought-in inputs of Rs. 10 crore adds Rs. 90 crore. The smaller company contributes more than four times as much. Size by revenue and size by contribution are different rankings.

MANAGER'S TAKEAWAY

Know your own value added: revenue minus everything you buy from other firms. For a product company that assembles imported kits, it may be 15 paise in the rupee - which is why "assembled in India" and "made in India" are different claims, and why moving up the chain into components and design matters. For a service company it is most of the invoice: a managed security service's revenue, less tool licences, cloud and subcontractors, is mainly the judgement of its analysts. Value added per employee is the honest productivity measure for both, and outsourcing does not create value - it only moves it to someone else's books.

1.05 Nominal vs Real GDP

GDP is prices multiplied by quantities. So it can rise for two very different reasons: the country produced more, or everything simply became costlier. Only the first makes anyone better off, and the whole point of this section is to tell the two apart.

Take an economy that produces just five apples. Last year an apple sold for Rs. 20, so GDP was Rs. 100. This year it again produces five apples, but the price has doubled to Rs. 40. GDP is now Rs. 200. Has the economy doubled? Not one extra apple was grown.

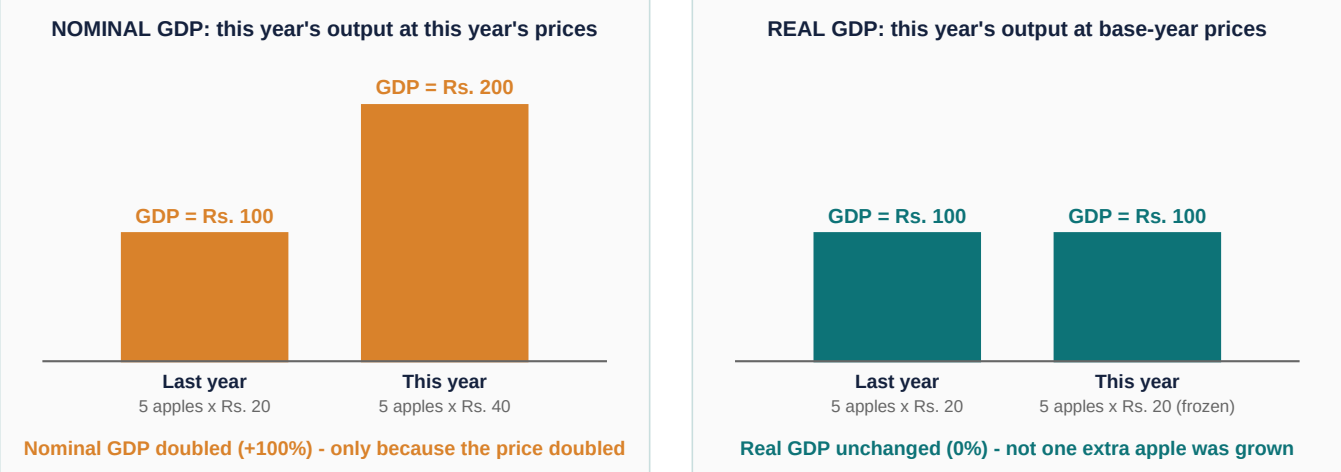


Figure 1.6: The same five apples. Nominal GDP doubles because the price doubled; real GDP, valued at last year's price, does not move.

	Nominal GDP	Real GDP
Prices used	This year's prices (current prices)	The prices of a fixed base year (constant prices)
It changes when	Prices change, or quantities change, or both	Only when quantities change
Official name in India	GDP at current prices	GDP at constant prices
What it is good for	Anything counted in today's rupees: tax collections, company revenues, debt as a share of GDP, the rupee size of a market	Anything about real progress: growth, living standards, comparing one year with another

THE RULE FROM THE SLIDE

Changes in nominal GDP can be due to changes in prices or changes in quantities. Changes in real GDP can only be due to changes in quantities, because real GDP is built with constant base-year prices. When a newspaper says "the economy grew 7.8%", it means real GDP.

The base year - and who chooses it

Real GDP needs a reference year whose prices are frozen. The government's statistics ministry chooses it, and replaces it roughly once a decade. On 27 February 2026 India released a new GDP series with **2022-23** as the base year, replacing 2011-12. A base year goes stale because the economy changes shape: in 2011-12 there was no UPI, no quick commerce and hardly any streaming, and the relative prices of things like data and televisions have collapsed since.

A participant asked the natural question: can a government pick a convenient base year to make growth look better? The short answer from class was that officials have far less freedom than people imagine. The base has to be a normal year - no drought, no pandemic - for which fresh, large surveys exist, and the method follows an international rulebook. A new base changes the measured history; it cannot be tuned to produce a chosen answer.

GOOD TO KNOW - THE GDP DEFLATOR

Divide nominal GDP by real GDP and multiply by 100, and you get the GDP deflator: the average price of everything the country produces, relative to the base year. In the apple economy it is 200 / 100 x 100 = 200, meaning prices have doubled. Section 1.06 returns to it as one of India's three inflation measures.

Decoding a headline: "India will grow at 10 per cent"

The class looked at a news report in which the Chief Economic Adviser spoke of India becoming a 5 trillion dollar economy. Targets of that kind, and the growth assumed in every Union Budget, are stated in **nominal** terms. A useful rule of thumb:

NOMINAL GROWTH = REAL GROWTH + INFLATION (APPROXIMATELY)

"About 10% growth" is typically about 6 to 6.5% of real growth plus about 4% of price rise. The latest numbers fit the pattern: in April-June 2026 India's nominal GDP grew 10.3% and real GDP grew 7.8%. The gap of roughly 2.5 points is prices. A dollar target adds a third moving part - the rupee-dollar rate.

The professor's own reading of the trend: real growth of **6 to 7%** is India's normal cruising speed now. A quarter at 7.8% is above that trend, not the new floor.

The question on your desk	Use	Why
Next year's revenue budget in rupees	Nominal	Your invoices are in current rupees, and so is nominal GDP.
Is my market really growing, or only its prices?	Real	Strip out price rise to see volumes.
Was my salary hike a raise?	Compare with CPI inflation	A 6% hike with prices up 5% is a 1% raise.
Will the government collect more tax?	Nominal	GST and income tax are charged on rupee values.
Is the country's debt burden rising?	Nominal	Debt is a rupee amount; compare it with rupee GDP.
Are we better off than ten years ago?	Real, per person	Only quantities per head measure living standards.

Production is income: why GDP per person matters

Picture a biscuit factory that adds Rs. 100 of value in a day. Where does the Rs. 100 go? Perhaps Rs. 60 to workers as wages, Rs. 10 to the landlord as rent, Rs. 10 to the bank as interest, and Rs. 20 to the owner as profit. Every rupee of value added lands in somebody's pocket as income. So a country's production and its income are the same number seen from two sides - which gives a third way to measure GDP: add up all incomes. It is also why GDP divided by population, **GDP per capita**, is used as a rough measure of the average person's income. India's total GDP is among the largest in the world; its GDP per person is far down the list. Both statements are true, and they answer different questions: how big is the market, and how rich is the customer?

How fast can an economy grow? The idea of convergence

Why does the United States celebrate 2% growth while India is disappointed with 6%? Because a poorer economy has room to catch up. It can copy technology that already exists and add machines where there were none, and each addition yields a lot. A rich economy must invent the next thing before it can grow. The same logic applies inside India: a poorer state such as Bihar can grow faster in percentage terms than Maharashtra. But watch the base. With rounded, illustrative numbers: 10% growth on an income of Rs. 60,000 per person adds Rs. 6,000, while 6% on Rs. 2,80,000 adds Rs. 16,800. The poorer state grows faster and the gap in rupees still widens for many years. A percentage means nothing until you know what it is a percentage of.

MANAGER'S TAKEAWAY: ALWAYS ASK "NOMINAL OR REAL?"

If your sales grew 9% in a year when your prices rose 5%, you sold only about 4% more. If the market grew 10% in rupees and you grew 8%, you lost share while celebrating. A product company should split every growth number into price and volume before praising anyone. A service company with multi-year contracts should ask the same of its renewals: a contract renewed at the same rupee price is a price cut in real terms. Set targets against the nominal growth of your sector, and judge performance on the real number.

1.06 Measuring Inflation: The CPI

Section 1.05 separated "more output" from "higher prices". This section measures the second half. Inflation is a sustained rise in the general level of prices - not the price of onions this week, but the cost of living as a whole, month after month. To measure it you need a price index, and India publishes three.

Measure	What it tracks	How often	What it is used for
GDP deflator	The prices of everything produced in the country: consumer goods, machines, government services. The only measure that covers all goods and services produced in the economy.	Quarterly, with GDP	Turning nominal GDP into real GDP. The broadest price measure.
Consumer Price Index (CPI)	The price of a standard basket of goods and services bought by a typical household - including imported items.	Monthly	The cost of living. It is the measure the RBI is legally asked to keep near 4%, within a band of 2 to 6%.
Wholesale Price Index (WPI)	Prices from the seller's side: what producers and wholesalers receive. In India it covers goods only - no services.	Monthly	An early warning. If producers are getting higher prices today, retailers will be charging more soon, and CPI follows.

How the CPI is built - three steps

Step 1. Survey households to find out what a typical family actually buys. That shopping list, with quantities, is the **basket**. **Step 2.** Every month, collect the prices of every item in the basket and work out what the whole basket costs. **Step 3.** Compare with the base period:

> **THE FORMULA**
>
> CPI in any period = (cost of the basket in that period / cost of the same basket in the base period) x 100. Inflation is then the percentage change in the CPI from one period to the next.

The classroom exercise. The basket is 20 pizzas and 10 compact discs. (The professor remarked that the CDs give away the age of the slide - today it would be a streaming subscription.) Use 2002 as the base year.

Year	Price of a pizza	Price of a CD	Cost of the basket (20 pizzas + 10 CDs)	CPI	Inflation
2002	Rs. 10	Rs. 15	20 x 10 + 10 x 15 = Rs. 350	100.0	-
2003	Rs. 11	Rs. 15	220 + 150 = Rs. 370	105.7	5.7%
2004	Rs. 12	Rs. 16	240 + 160 = Rs. 400	114.3	8.1%
2005	Rs. 13	Rs. 15	260 + 150 = Rs. 410	117.1	2.5%

How each number is reached: CPI for 2003 = 370 / 350 x 100 = 105.7. Inflation in 2003 = (105.7 - 100) / 100 = 5.7%. Inflation in 2004 = (114.3 - 105.7) / 105.7 = 8.1%. Inflation in 2005 = (117.1 - 114.3) / 114.3 = 2.5%. Notice that the quantities never change - the basket is fixed - so the index moves only because prices move.

CONCEPT TRAP: FALLING INFLATION IS NOT FALLING PRICES

Between 2004 and 2005 inflation fell from 8.1% to 2.5%. Prices did not fall: the basket still became costlier, from Rs. 400 to Rs. 410. It only became costlier more slowly. Also note that 2005 inflation is 2.5%, not 2.8 - you divide the change in the index by the earlier index, you do not just subtract.

What do the weights mean?

Every item in a CPI carries a weight, and the slide answered what the weight signifies in one line: it is the share of spending on that item in total spending. In the base year the family spends Rs. 200 of its Rs. 350 on pizza, so pizza's weight is 200 / 350 = 57%, and the CDs' weight is 43%. The weight decides how hard a price change hits the index. A 10% rise in pizza lifts this CPI by 5.7%; a 10% rise in CDs would lift it by only 4.3%. That is exactly what happened in 2003. In India's real CPI, food carries the largest weight, which is why a bad tomato season can move the national inflation number.

CPI and the GDP deflator: three differences worth knowing

	CPI	GDP deflator
Machines and other capital goods	Left out - households do not buy them	Included - they are produced here
Imported consumer goods	Included - if families buy them, their prices count	Left out - they were not produced in India
The basket	Fixed until the base year is revised	Changes every year with whatever the country produces
A quick example	Imported smartphones get costlier: CPI rises, the deflator does not.	Indian-made machine tools get costlier: the deflator (and WPI) rise, CPI does not.

MANAGER'S TAKEAWAY: WHICH INFLATION IS YOURS?

Your customers feel CPI. Your purchase department feels something closer to WPI - steel, chemicals, fuel, packaging. When WPI runs ahead of CPI, a product company is being squeezed: its costs are rising faster than the prices consumers will accept, and margins give way unless it reprices or redesigns. A service company's main cost is salaries, so its inflation is wage inflation, and salary expectations follow CPI. In both cases, write the index into long contracts: an escalation clause linked to a published index protects you without a negotiation every year.

1.07 What India Buys: The CPI Weights

A CPI basket is more than a statistical device. It is a photograph of how a country spends its money. In early 2026 India replaced its 2012 photograph with a 2024 one, and the two pictures laid side by side amount to a consumer-research report that no private firm could afford to commission.

The new series has 2024 as its base year (2024 = 100). Its weights come from the government's large household consumption survey of 2023-24, and its items are grouped according to the United Nations classification known as **COICOP 2018** (Classification of Individual Consumption According to Purpose). Adopting the UN grouping makes India's CPI directly comparable with CPIs around the world.

The six broad groups, 2012 against 2024

Group	Rural 2012	Rural 2024	Urban 2012	Urban 2024	Combined 2012	Combined 2024
Food and beverages	54.18	44.80	36.29	34.26	45.86	40.10
Pan, tobacco and intoxicants	3.26	3.73	1.36	2.07	2.38	2.99
Clothing and footwear	7.36	7.12	5.57	5.46	6.53	6.38
Housing	NA	5.53	21.66	19.78	10.07	11.88
Fuel and light	7.94	5.96	5.58	4.91	6.84	5.49
Miscellaneous (mostly services)	27.26	32.86	29.54	33.52	28.32	33.15

CPI weights, all-India combined: how Rs. 100 of household spending is split

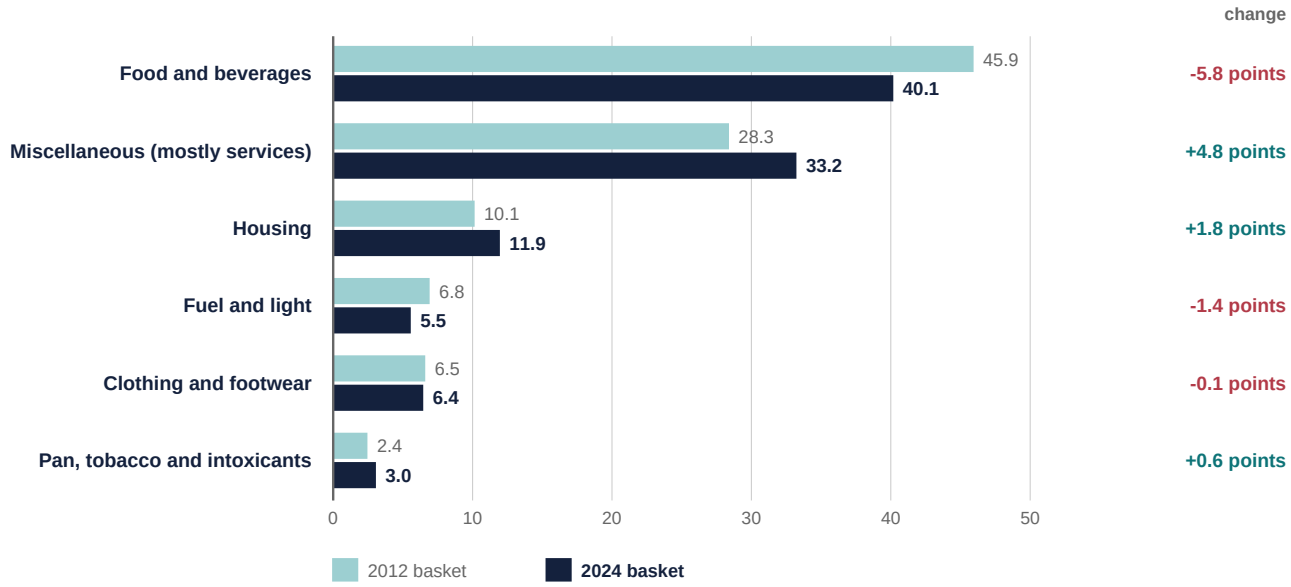


Figure 1.7: How Rs. 100 of household spending is split, all-India combined. Food loses almost six points; services gain almost five.

Reading 1 - food's share has fallen sharply. In the combined basket it drops from 45.9 to 40.1; in rural India from 54.2 to 44.8. Families are not eating less. Their incomes have grown, and the extra rupees have gone elsewhere.

Reading 2 - the extra has gone to services. "Miscellaneous" - health, education, transport, communication, personal care - is the biggest gainer, up from 28.3 to 33.2.

Reading 3 - rural housing appears for the first time. The 2012 column shows "NA" and the 2024 column shows 5.53. NA does not mean villagers spent nothing on housing; it means the old series did not compile a rural housing index at all. The new survey captured rural rents. The professor's point was that the label "rural" hides a lot: many places that are rural on paper - his example was the Sarjapur Road belt outside Bengaluru, panchayat land now lined with rented apartments - are urban in every way that matters to a household budget.

Reading 4 - urban families spend a smaller share on housing and fuel than before. Urban housing falls from 21.7 to 19.8 and fuel and light falls in both rural and urban baskets. Incomes grew faster than rents and energy bills.

Engel's law: the richer you get, the smaller the share you spend on food

Give a child Rs. 10 and all of it goes on toffees. Give the same child Rs. 100 and he does not buy ten times the toffees; most of the extra goes on other things. Stomachs have limits; wants do not. This pattern - as income rises, the *share* of income spent on food falls, even though the rupee amount may rise - is called Engel's law, and it is one of the most reliable regularities in economics. The table from class shows it across countries.

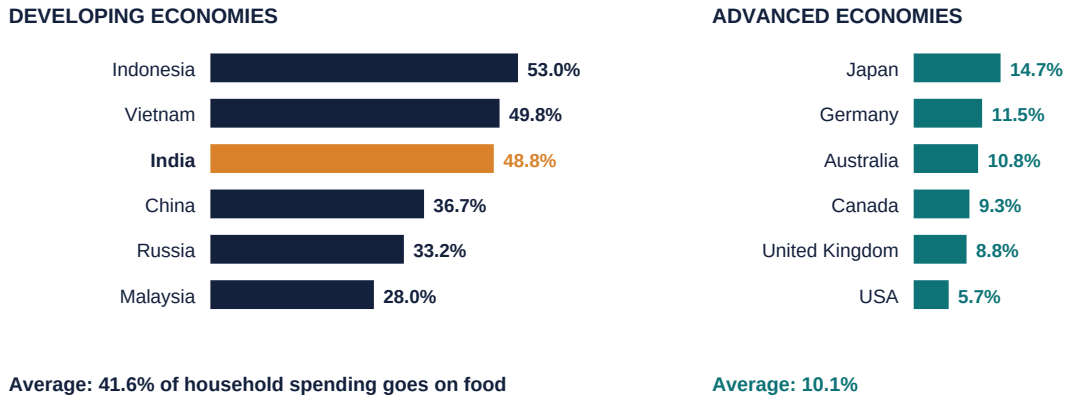


Figure 1.8: Share of food in total household spending. Developing economies average 41.6%; advanced economies 10.1%.

A country's food share is therefore a quick, honest indicator of how rich its households are. India's falling food weight is Engel's law at work inside one country over twelve years.

The finer picture: twelve divisions under the UN classification

Division (COICOP 2018)	Rural 2012	Rural 2024	Urban 2012	Urban 2024	Comb. 2012	Comb. 2024
Food and beverages	50.92	41.98	32.81	30.25	42.62	36.75
Paan, tobacco and intoxicants	3.26	3.73	1.36	2.07	2.38	2.99
Clothing and footwear	7.36	7.12	5.57	5.46	6.53	6.38
Housing, water, electricity, gas and other fuels	7.98	11.76	27.29	25.00	16.89	17.67
Furnishings, household equipment and maintenance	3.63	4.61	3.70	4.30	3.66	4.47
Health	6.84	6.76	4.82	5.28	5.90	6.10
Transport	5.65	8.64	7.13	8.99	6.39	8.80
Information and communication	2.82	3.65	3.91	3.56	3.32	3.61
Recreation, sport and culture	1.46	1.36	1.63	1.71	1.55	1.52
Education services	2.47	2.38	4.72	4.52	3.51	3.33
Restaurants and accommodation services	3.25	2.84	3.49	3.98	3.25	3.35
Personal care, social protection and miscellaneous	4.36	5.15	3.57	4.90	4.01	5.04

Food looks smaller here (42.6 and 36.8) than in the six-group table (45.9 and 40.1) for a simple reason: the UN classification moves eating out into its own division, "restaurants and accommodation services". Add the two back together and the totals match. What the finer table shows:

What moved	The numbers	What it says about the Indian household
Transport - the biggest riser	Combined 6.4 to 8.8; rural 5.6 to 8.6	More vehicles, more fuel, more travel. Rural India has caught up with urban India on mobility.
Personal care and miscellaneous	Rural 4.4 to 5.15; urban 3.6 to 4.90	The rural share is now slightly higher than the urban one. The village is a personal-care market in its own right.
Furnishings and household equipment	Combined 3.7 to 4.5	Appliances and home improvement are taking a larger slice in both rural and urban homes.
Information and communication	Rural 2.8 to 3.6; urban 3.9 to 3.6	The smartphone and data reached the village, while cheaper data cut the urban share.
Health	Combined 5.9 to 6.1	Barely moved in twelve years.
Restaurants and accommodation	Rural 3.2 to 2.8; urban 3.5 to 4.0	Eating out is growing as an urban habit.

MANAGER'S TAKEAWAY: THE BASKET IS A MARKET MAP

The single largest message of the new basket is that rural India is converging on urban spending patterns. For a product company this is a growth map: two-wheelers and their fuel, personal care, home appliances and phones are where the rural household's additional rupee is going, while staple food is where it is not. For a service company the map points to telecom, transport, repair and maintenance, and eating out in cities. A share that is shrinking is not a market that is shrinking - food spending in rupees still rises - but it is a market growing more slowly than the customer's income.

Headline and core inflation

The number reported every month is **headline** inflation: the price change of the whole basket. Economists also watch **core** inflation: the same basket with food and fuel taken out. The reason is that food and fuel prices jump around for reasons that have little to do with the underlying state of the economy.

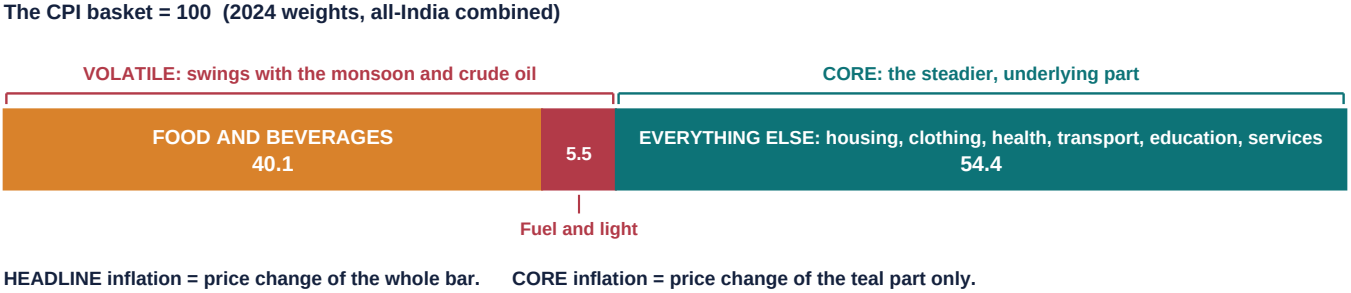


Figure 1.9: Food and fuel make up about 46% of the 2024 basket. Core inflation tracks the remaining 54%.

Why food prices swing	Why fuel prices swing
The monsoon. A weak or badly timed monsoon cuts the crop. **The cobweb pattern.** Tomatoes are costly this year, so every farmer plants tomatoes; next year there is a glut and the price crashes; so fewer plant, and the price spikes again. **Perishability.** Vegetables cannot be stored to smooth supply. **Thin futures markets.** There are few forward prices to guide planting decisions.	**Imported crude.** India imports most of its oil, so the price is set by world markets and wars, not by anything happening in India. **The rupee.** Oil is paid for in dollars; a weaker rupee makes the same barrel costlier.

The chart shown in class made the split visible. Between mid-2023 and mid-2024 food inflation ran at about 8% and briefly touched 10.6% during a vegetable price spike, while core inflation slid steadily from about 5% to almost 3%. Headline inflation sat in between, near 5% for most of the period. Anyone who looked only at the headline would have thought prices were under pressure everywhere; in fact the pressure was in the kitchen. The latest reading: headline CPI inflation was 4.82% in August 2026, with food at 5.95%.

WHY THE SPLIT MATTERS FOR INTEREST RATES

The RBI's target is headline inflation, but its tool - the interest rate - works on demand. A higher interest rate cannot grow one extra tomato. So when headline inflation is high only because of vegetables, the RBI may "look through" it. When core inflation rises, price pressure is broad and a rate hike becomes likely. A manager who wants to guess the next rate decision should look at core, not the headline.

1.08 Interest Rates: Real vs Nominal

So far everything has been measured at a point in time. Finance begins the moment time enters the picture - when someone has money today and wants it tomorrow, or needs money today and will have it only tomorrow.

The professor's definition of the whole subject was this: finance is about moving purchasing power across time. A saver earns more than she needs today and *postpones* consumption. A borrower needs more than he has today and *pre-pones* it. Finance is the bridge between the two.

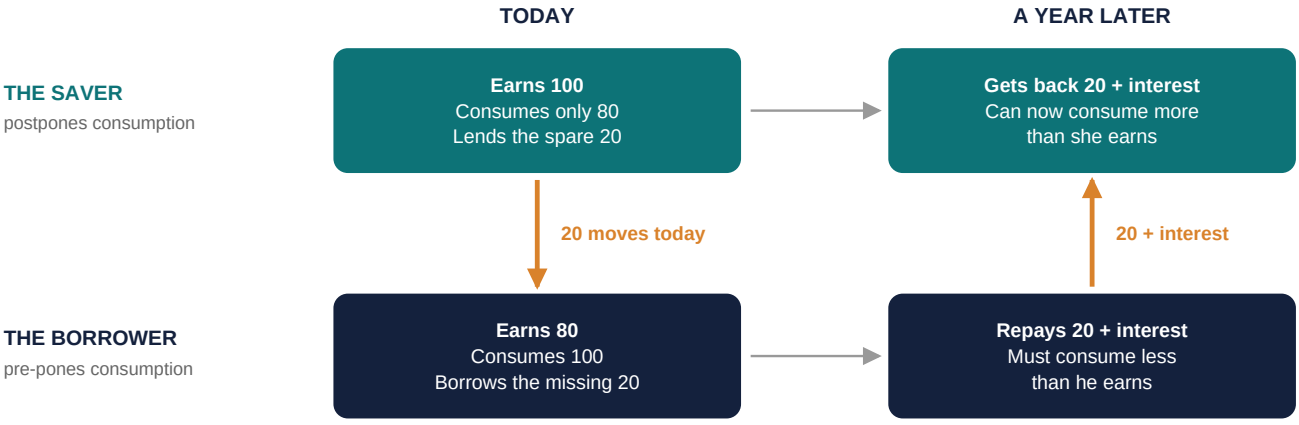


Figure 1.10: Every financial transaction moves consumption across time. Interest is the price of that movement.

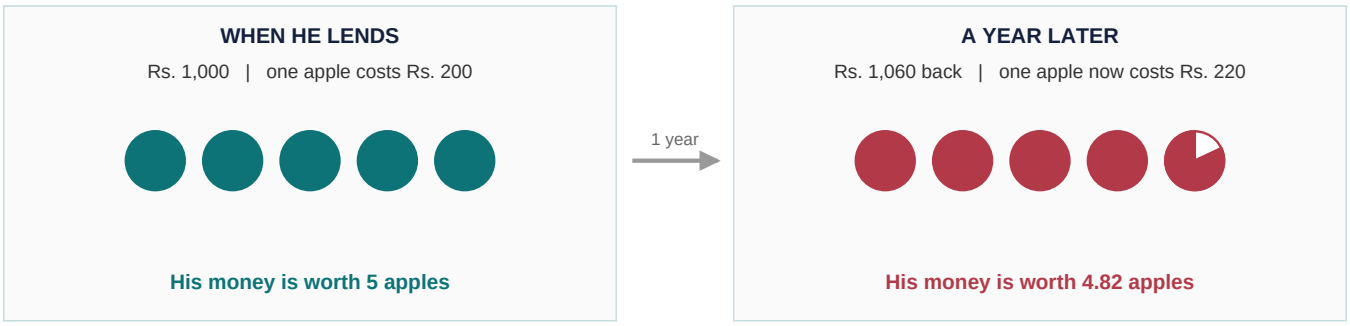
Branch of finance	Who is moving money across time	Everyday example
Household finance	Families	A home loan: live in the house now, pay over twenty years. A retirement SIP: consume less now, more later.
Corporate finance	Companies	Borrow today to build a plant; repay from the cash the plant earns tomorrow.
Public finance	Governments	Borrow today by issuing bonds; repay out of future taxes.
International finance	Countries	A country that imports more than it exports is borrowing from the rest of the world.

> *"Interest rate is nothing but the price of money."*
>
> **On what an interest rate really is**

The slide said the same thing more formally: an interest rate is the cost of borrowing, the price paid for the rental of funds - and, seen from the other side, the return for holding a debt security such as a bond. Rent is the right mental picture. You rent a flat and pay the owner for the use of it; you rent money and pay the owner interest.

The apple loan: why the quoted rate can fool you

A man lends Rs. 1,000 for a year at 6%. On the day he lends, an apple costs Rs. 200, so he is giving up five apples' worth of spending. A year later he gets back Rs. 1,060. But apples now cost Rs. 220. His Rs. 1,060 buys 1,060 / 220 = 4.82 apples.



In rupees he is up 6% (nominal). In apples he is down 3.6% (real). Rule of thumb: 6% - 10% = -4%.

Figure 1.11: The lender has more rupees and fewer apples. He was paid interest, and he still became poorer.

	Nominal interest rate	Real interest rate
What it measures	The growth of your money in rupees	The growth of your money in purchasing power
Allowance for inflation	None	Inflation removed
In the apple loan	+6%	About -3.6% (5 apples became 4.82)
Where you see it	On every bank board, loan offer and bond	Nowhere - you have to work it out

THE FISHER EQUATION

Nominal rate = real rate + expected inflation. So: real rate = nominal rate - expected inflation. (On the class slide the letter r is labelled "nominal" by a slip; i is the nominal rate and r is the real rate.) The slide's example: a one-year loan at 4% when you expect 6% inflation gives a real rate of 4 - 6 = -2%.

A second example from class. A borrows Rs. 10,000 from B at 5% while inflation is 10%. A year later B receives Rs. 10,500, but what Rs. 10,000 bought last year now costs Rs. 11,000. B's real return is about -5%. A, the borrower, has gained: he repays in rupees that are worth less than the ones he borrowed. **Unexpected inflation quietly moves wealth from lenders and savers to borrowers** - and the largest borrower in any country is its government.

Two refinements. First, the word *expected*: when a loan is signed nobody knows next year's inflation, so lenders set rates on what they expect. This is why central banks work so hard to keep people's expectations steady. Second, the subtraction is a rule of thumb. The exact calculation for the apple loan is 1.06 / 1.10 - 1 = -3.6%, against -4% from simple subtraction. For the small numbers we usually deal with, the shortcut is close enough.

What a low real rate does - and what happened after COVID

When the real interest rate is low, there is more reason to borrow and invest and less reason to save and lend; when it is high, the reverse. India lived through the first case recently. In May 2020 the RBI cut its policy rate to 4% and held it there for two years, while inflation ran at around 6%. The real policy rate was roughly minus 2%. A fixed deposit paying 5% was losing purchasing power every year, home loans at under 7% were the cheapest in a generation, and savers moved in large numbers into shares, mutual funds and property. Today the picture is closer to neutral: a policy rate of 5.25% against inflation of 4.82% leaves a real rate of about +0.4%.

CONCEPT TRAP: EVERY RATE YOU ARE QUOTED IS NOMINAL

The 7% on a fixed deposit, the 8.5% on a home loan, the 8% salary increment, the 12% sales growth in the review deck - all are nominal. Subtract inflation before you feel anything about them. And remember tax: a 7% deposit taxed at 30% leaves 4.9%, which against 5% inflation is a real return of just below zero.

MANAGER'S TAKEAWAY

Real rates decide when to build and when to wait. A product company weighing a new line should compare the project's return with the real cost of borrowing: when real rates are low or negative, capacity is cheap to finance; when they are high, cash is valuable and projects must clear a higher bar. A service company should apply the same lens to contracts: a three-year deal at a flat rupee price loses about 5% of its real value every year at 5% inflation - by year three the same invoice buys about 9% less. And credit given to customers is money lent at 0%: ninety days of free credit in an 8% world is a 2% discount nobody negotiated.

1.09 What Is Money?

We have been valuing everything in rupees without asking the obvious question: what is a rupee, and why does a piece of printed paper - or a number on a phone screen - buy lunch?

Start with a world without money. A barber wants rice. He must find a rice farmer who wants a haircut - today, and of about the same value. Economists call this the **double coincidence of wants**, and it is why barter economies stay small. Money breaks every trade into two halves: the barber sells a haircut to anyone for money, and later buys rice from anyone with money.

THE DEFINITION FROM THE SLIDE

Money is the stock of assets that can be readily used to make transactions. Note what this leaves out: your income (a flow, not a stock) and your wealth as a whole (your house is wealth, but you cannot pay a restaurant bill with it).

The three jobs of money

Function	What it means	The everyday test
Medium of exchange	We use it to buy things.	Will the chai stall accept it?
Store of value	It carries purchasing power from the present into the future.	Will it buy roughly the same amount next year?
Unit of account	It is the common yardstick in which prices, salaries and debts are measured.	Are prices on the menu written in it?

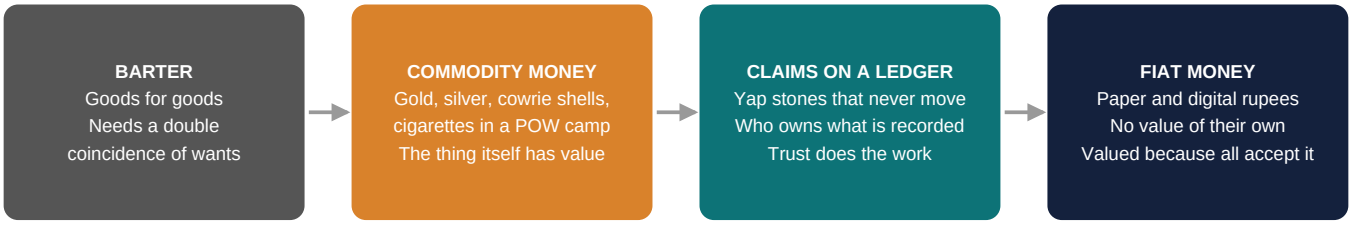
Anything that does all three jobs is money, whatever it is made of. Anything that fails them is not, whatever anyone calls it. Run four candidates through the test:

Candidate	Medium of exchange	Store of value	Unit of account	Verdict
The rupee today	Yes - everywhere in India	Reasonable - loses 4 to 5% a year to inflation	Yes	Money
Cigarettes in a prisoner-of-war camp	Yes - inside the camp	Yes, until somebody smokes them	Yes - prices were quoted in cigarettes	Money (commodity money)
Bitcoin	Rarely - few sellers accept it	Poor - it can move 10% in a day	No - even Bitcoin's own price is quoted in dollars	An asset, not yet money
A currency in hyperinflation	Reluctantly	No - it loses value by the day	Fails - price tags cannot keep up	Money that has stopped working

GOOD TO KNOW - "LEGAL TENDER" IS A SEPARATE QUESTION

Legal tender is what the law says must be accepted in settlement of a debt. It is a legal status, not an economic one. Bitcoin is legal to hold and trade in India and its gains are taxed, but it is not legal tender. El Salvador made it legal tender in 2021 and withdrew the requirement in 2025. A law can declare something legal tender; only people's behaviour can make it money.

From barter to fiat: how money evolved



Each step removes friction from trade - and leans a little more on trust.

Figure 1.12: Four stages of money. At each step the object matters less and the shared belief matters more.

Commodity money has value in itself: gold and silver coins, the cowrie shells that circulated in parts of India for centuries, the cigarettes that served as currency in prisoner-of-war camps during the Second World War. If nobody accepts it as money, you can still wear the gold or smoke the cigarette.

The stones of Yap take the next step. On this Pacific island, money took the form of huge stone discs, some too heavy to move. So nobody moved them. When a stone changed owners, the community simply remembered that it now belonged to someone else. In the best-known account, one large stone sank to the sea floor while being brought to the island - and everyone agreed that its owner was just as rich as before, and the stone on the seabed went on being used in payments. (In the version told in class, a storm carried the stones away and the islanders carried on from their record of who owned what. The lesson is identical.) **Money is the record, not the object.** Your bank balance is a Yap stone: you have never seen it, yet a ledger says it is yours and everyone accepts the ledger.

Fiat money completes the journey. The class saw a banknote from China's Yuan dynasty, printed around 1287, whose text says that the note can circulate in the provinces without an expiry date and that counterfeiters will be put to death. That is the meaning of fiat - money by order of the state. It has no value of its own; a Rs. 500 note costs a few rupees to print. Digital rupees are the same thing in another form: UPI is only the pipe, the money moving through it is still fiat.

> *"Everyone values fiat money because they expect everyone else to value it."*
>
> **The slide that explains why paper buys lunch**

MANAGER'S TAKEAWAY: MONEY IS TRUST, AND YOU MAY BE ISSUING SOME

Loyalty points, store credit, gift cards, airline miles and prepaid cloud credits are private near-money: they work as a medium of exchange inside your own world. A product company's gift cards and a service company's prepaid credits are both promises - liabilities on the balance sheet - and they hold value only as long as customers believe you will honour them. Devalue the points once without warning and you will see a small version of what happens to a currency that loses trust: people rush to spend it, and then stop wanting it.

1.10 What Backs the Rupee?

If a Rs. 500 note has no value of its own, what stands behind it? Take one out and read it: "I promise to pay the bearer the sum of five hundred rupees", signed by the Governor of the RBI. Pay with what? Follow the promise down the chain.

A promise to pay is a debt. So the note in your pocket is a **liability** of the Reserve Bank of India: the RBI owes you. Like any organisation, the RBI has a balance sheet, and against what it owes it holds assets. Those assets are overwhelmingly bonds issued by governments - the Government of India's and foreign governments' - plus some gold.

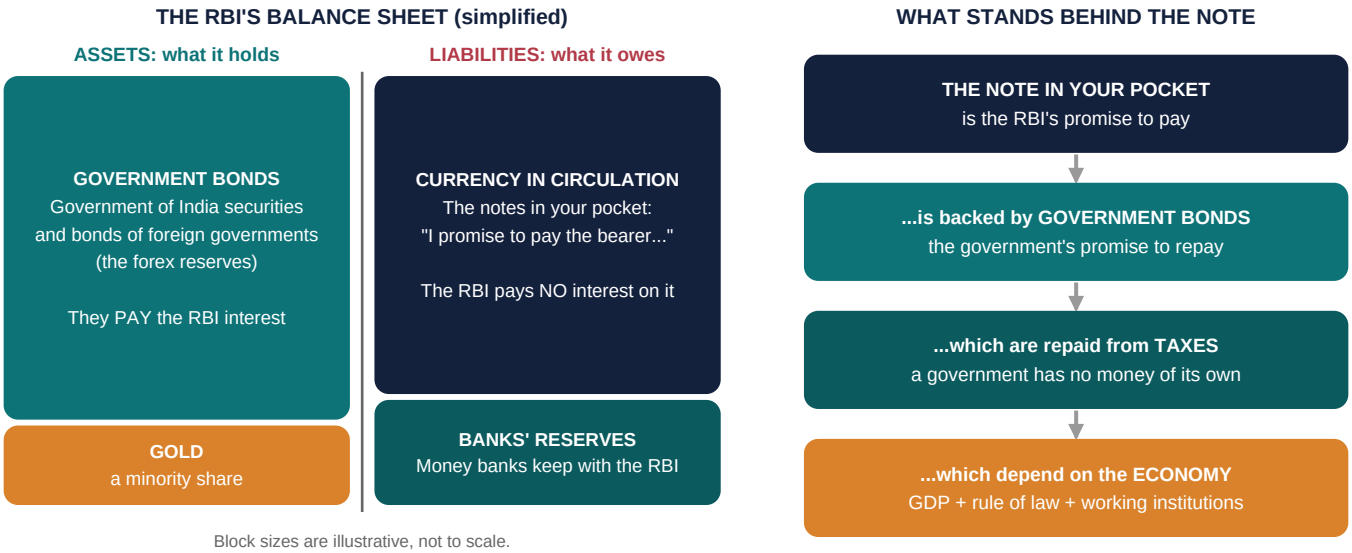


Figure 1.13: The RBI's balance sheet in outline, and the chain of promises that stands behind a currency note.

Now follow the chain on the right of the figure. The note is backed by the RBI's assets, which are government bonds. A government bond is the government's promise to repay. A government has no money of its own; it repays out of taxes. Taxes come out of the income people earn - out of GDP. And people can earn, and be taxed, only where contracts are enforced and institutions work.

> *"The currency in your pocket is ultimately backed by the economy itself."*
>
> **On what stands behind a rupee note**

> **GOOD TO KNOW - THE REAL BALANCE SHEET, AND THE GOLD QUESTION**
>
> **Size.** The RBI's balance sheet stood at Rs. 91.97 lakh crore on 31 March 2026. **Composition.** In practice about three-quarters of its assets are foreign-currency assets (mostly bonds of foreign governments, the country's forex reserves) and gold; roughly a quarter are domestic, mainly Government of India bonds. The logic of the chain does not change: a US Treasury bond is the US government's promise, backed by American taxpayers. **Gold.** The rupee is not backed by gold. Since 1957 the law has required the RBI to hold a minimum of only Rs. 200 crore in reserves (Rs. 115 crore of it in gold) - a token amount. The RBI holds about 880 tonnes of gold by choice, as one asset among many.

Why taxes make the rupee work: the idea of a sovereign currency

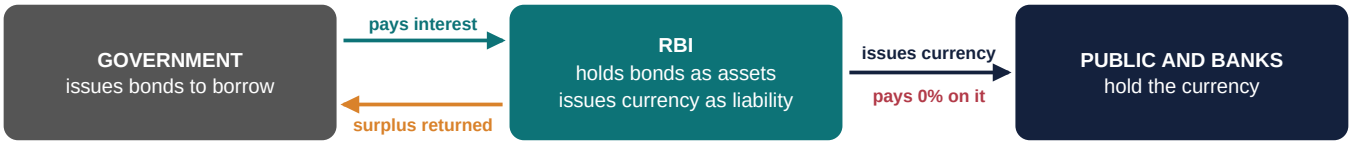
You can buy vegetables with a favour and pay a friend in dollars, but you cannot pay GST or income tax in gold, dollars or Bitcoin. Tax must be paid in rupees. That one rule creates a permanent demand for rupees: everyone who owes tax needs them. It also explains a power that only a national government has. The Government of India borrows in rupees, and rupees are issued by its own central bank, so it can always find the rupees to repay. A company cannot do that. A state government cannot. A country that has borrowed in dollars cannot - which is how Sri Lanka ran out of dollars and defaulted in 2022.

The same logic explains the United States, which owes tens of trillions of dollars and still borrows easily: the debt is in dollars, the US issues dollars, and the rest of the world wants to hold them. Which raised a question in class: China's economy is enormous, so why is the yuan not the world's reserve currency? The professor's answer was that size is not enough. People hold a currency in which they trust the rules: courts that enforce contracts against

the state, and the freedom to take your money out when you want it. A reserve currency is backed by an economy *and* by the rule of law.

Seigniorage: the profit in issuing money

Look again at the RBI's balance sheet. On its liabilities - the currency in everyone's pocket - it pays no interest. On its assets - the bonds - it earns interest. Borrowing at 0% and lending at 6 or 7% is a very good business. This profit from issuing money is called **seigniorage**. After meeting its expenses and setting aside reserves, the RBI hands the surplus to its owner, the Government of India.



The RBI earns interest on its assets and pays none on currency. The difference is its profit (seigniorage).

Surplus handed to the Centre: Rs. 2.11 lakh crore (2023-24), Rs. 2.69 lakh crore (2024-25), Rs. 2.87 lakh crore (2025-26).

In practice the profit also includes large gains from foreign-exchange operations.

Figure 1.14: The seigniorage loop. Much of the interest the government pays on bonds held by the RBI comes back to it as the RBI's surplus.

Financial year	Surplus transferred by the RBI to the Centre	Comment
2021-22	Rs. 30,307 crore	The year discussed in the news reports linked on the slides: the transfer was cut by about 70%.
2022-23	Rs. 87,416 crore	
2023-24	Rs. 2.11 lakh crore	A record at the time.
2024-25	Rs. 2.69 lakh crore	Helped by large gains on dollars sold from the reserves.
2025-26	Rs. 2.87 lakh crore	The highest so far.

The swings are a reminder that the RBI's profit is not only seigniorage. In recent years the larger part has come from foreign-exchange operations: dollars bought long ago at Rs. 60 or 70 and sold at Rs. 85 or 90 leave a gain. For the Budget, the transfer is a significant source of non-tax revenue - which is why the size of the RBI's cheque makes headlines every May.

CONCEPT TRAP: "THEN WHY NOT JUST PRINT MORE?"

Because the backing is the economy, and printing does not add to the economy. If the quantity of money doubles while the quantity of goods stays the same, prices rise until the extra money is absorbed. Everyone holding rupees loses purchasing power - inflation is a tax nobody voted for. A government that can always repay in its own currency can still destroy the value of what it repays. Section 1.11 shows the rule India adopted to stop itself from doing this.

MANAGER'S TAKEAWAY

Every currency you invoice in is a claim on some country's institutions. A product exporter prices in dollars for a reason: buyers and banks everywhere trust the system behind it. A service exporter selling software subscriptions into a country that is short of dollars learns the other side - the customer is willing and has local money, but the dollars to pay your invoice cannot be found. Before signing a long contract abroad, ask what backs the currency you will be paid in, and how easily it converts. The same question, turned inward, applies to your own promises: a warranty or a service credit is worth exactly what your ability to deliver is worth.

1.11 The Central Bank's Two Levers: OMO, QE, QT

Money, like anything else, has a price - in fact it has three, depending on what you measure it against. Managing those prices is the central bank's whole job, and it has only two levers to do it with: how much money there is, and what it costs to borrow.

Money priced against...	The price is called	Who feels it
Time (money today versus money tomorrow)	The interest rate	Every borrower and every saver
All goods and services	The price level - and its rate of change, inflation	Every household
Other currencies	The exchange rate (taken up in the later sessions)	Importers, exporters, travellers, anyone with a foreign loan

The slides gave three short definitions that the rest of the session leans on. The **money supply** is the quantity of money available in the economy. **Monetary policy** is the control over that money supply. And the **central bank** - the RBI - is the institution that conducts monetary policy, oversees the banking system and regulates the money supply.

Now the one relationship that ties quantity to price. When there is more of anything, its price falls. Money is no exception: **when the money supply rises, the interest rate falls; when the money supply shrinks, the interest rate rises.** So the central bank can work from either end. It can change the quantity of money and let the price adjust (this section), or announce the price at which it will lend and supply whatever quantity is needed to hold that price (Section 1.12). They are two handles on the same tap.

ONE PIECE OF PLUMBING YOU NEED FIRST: RESERVES

Just as you keep an account with a bank, every bank keeps an account with the RBI. The balance in that account is the bank's **reserves**. Reserves plus the currency notes in circulation are called the **monetary base** (or reserve money). This is the only money the RBI creates directly, and it can create it with a keystroke: by crediting a bank's account.

Lever one, the quantity: open market operations

An open market operation (OMO) is the purchase or sale of government bonds by the central bank. Suppose the RBI buys a government bond from a bank. It pays by adding to that bank's reserve account - money that did not exist a moment earlier. The bank now has more reserves and can make more loans. To pull money out, the RBI does the reverse: it sells bonds from its own stock, the buying bank pays out of its reserves, and those reserves vanish.

Operation	What the RBI does	Monetary base	Money supply	Interest rates	Used when
OMO purchase	Buys government bonds from banks and pays with newly created reserves	Rises	Rises	Fall	Money is tight or growth is weak
OMO sale	Sells government bonds; banks pay from their reserves	Falls	Falls	Rise	Too much money is chasing too few goods

This is where money is truly "printed" - not at a press, but in the moment the central bank buys an asset and pays with reserves it has just created.

The same lever at full stretch: quantitative easing and tightening

Ordinary OMOs are small and routine. **Quantitative easing (QE)** is the same operation on a huge, pre-announced scale. It was invented for a specific problem: once a central bank has cut its interest rate to almost zero, the price lever is stuck - you cannot cut below the floor. The only thing left is quantity. So the central bank announces that it will buy a very large amount of bonds, creating money to pay for them. "Easing" means making credit easier; "quantitative" means doing it by quantity rather than by price. **Quantitative tightening (QT)** is the reverse: the central bank sells bonds, or simply lets them mature without replacing them, and the money it created disappears. Figure 1.15 shows both on the balance sheet.

The two charts shown in class tell the story in one glance each. The US Federal Reserve's balance sheet was under 1 trillion dollars before the 2008 crisis, reached about 4.5 trillion by 2015 after three rounds of QE, jumped again in 2020 and peaked near 9 trillion in 2022, and has been shrinking under QT since. The RBI's balance sheet grew from roughly Rs. 44 lakh crore at the start of 2020 to about Rs. 64 lakh crore by early 2022 as it pumped money into the economy during COVID.

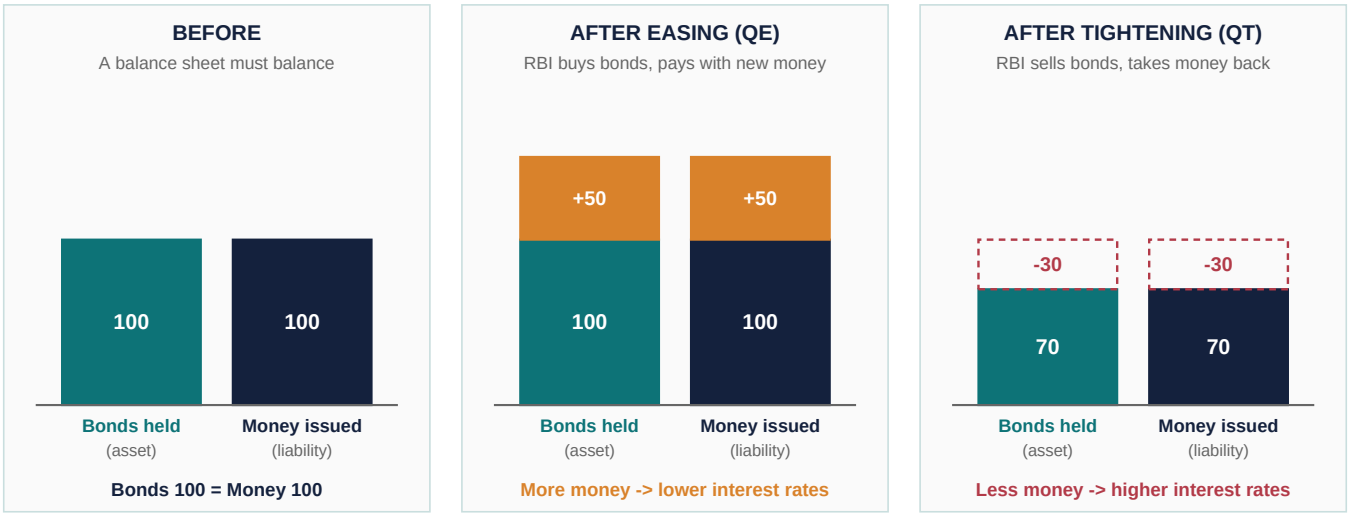


Figure 1.15: QE and QT on the central bank's balance sheet. Both sides grow together under QE and shrink together under QT.

GOOD TO KNOW - DID INDIA DO QE?

The RBI never used the label, and India's policy rate never reached zero. But in 2021 it ran the Government Securities Acquisition Programme (G-SAP), under which it committed in advance to buy a stated amount of government bonds - Rs. 1 lakh crore in one quarter and Rs. 1.2 lakh crore in the next. A pre-announced quantity is the hallmark of QE. The difference between an ordinary OMO and QE is one of scale and intent: an OMO manages day-to-day liquidity; QE is meant to push down long-term interest rates when the short-term rate can go no lower.

Questions from the class

The question	The answer
Is a repo-rate hike the same thing as QT?	No. A rate hike raises the price of money; QT reduces its quantity. Both tighten, but they are different levers, and a central bank can use one without the other.
Does the central bank buy only government bonds?	The RBI, yes - government securities only. The US Fed went further: after 2008 it bought bonds backed by home loans, and in 2020 it even set up facilities to buy corporate bonds. India has no such practice.
Why does the RBI not simply buy bonds directly from the government?	Because that would be printing money to pay for government spending. The RBI buys only in the secondary market - from banks and others who already hold the bonds. The professor's phrase for a direct purchase was a "public display of affection" between a central bank and its government: something a credible central bank does not indulge in.
Can ordinary people buy the same bonds?	Yes. Through the RBI's Retail Direct facility an individual can buy the same government bonds and Treasury bills that banks buy.
When the government sells a bond, is that printing money?	No. A bond sold to a bank, an insurer or a saver moves existing money from the buyer to the government. New money appears only when the central bank buys a bond and pays with newly created reserves.

GOOD TO KNOW - THE RULE THAT STOPS THE PRINTING PRESS

Until the 1990s the Government of India could cover its deficit automatically by issuing special Treasury bills to the RBI, which paid with new money. An agreement between the RBI and the finance ministry phased this out, and automatic monetisation ended in April 1997. Since 2006 the fiscal responsibility law has also barred the RBI from buying government bonds at the time they are first issued, except in defined emergencies. This is the answer to the trap in Section 1.10: India tied its own hands.

MANAGER'S TAKEAWAY: WATCH THE BALANCE SHEET, NOT ONLY THE RATE

When central banks are creating money, it has to go somewhere: share prices, property and start-up valuations rise and funding is easy - the boom of 2020-21. When they drain it, the tide goes out - the funding winter of 2022-23. A product company planning a large plant should raise long-term money while liquidity is plentiful rather than when it needs it most. A service company feels the cycle through its clients: technology and security budgets in the US expanded with easy money and were cut hard when it ended, and Indian IT and SaaS order books followed a few quarters later.

1.12 Repo, Reverse Repo and Liquidity

The lever you hear about every two months is the price lever: the repo rate. It is the one number in this module that reaches your EMI, and the name hides a very simple transaction.

Anyone who has seen a gold-loan shop already understands a repo. You hand over your gold, you get cash, and later you return the cash with interest and take your gold back. A **repo** - short for **repurchase agreement** - is a gold loan in which the gold is a government bond, the borrower is a bank and the lender is the RBI. The bank, short of cash, sells a bond to the RBI today and agrees to buy it back shortly, often the next day, at a slightly higher price. The difference is the interest, and the rate of that interest is the **repo rate**.

A **reverse repo** is the same deal with the roles swapped. A bank with spare cash parks it with the RBI, takes a bond as security, and gets its cash back later with interest.

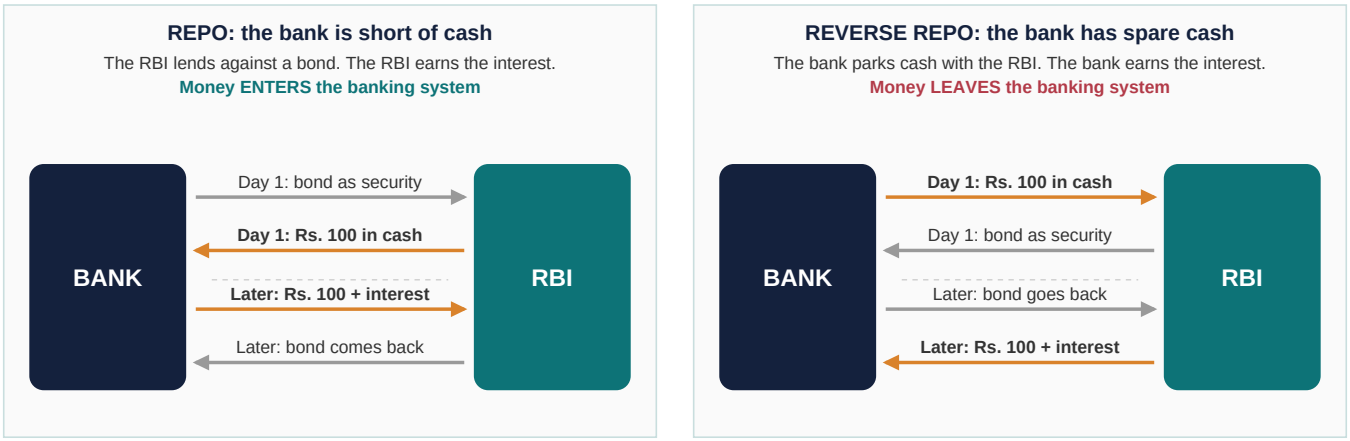
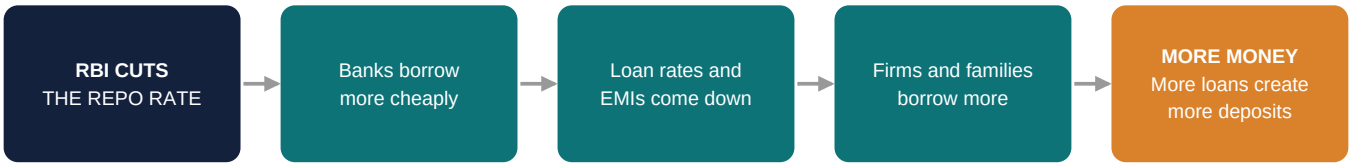


Figure 1.16: Repo and reverse repo are mirror images. In a repo the RBI lends and money enters the system; in a reverse repo the bank lends and money leaves.

	Repo	Reverse repo
The bank's situation	Short of cash	Has spare cash
Who lends to whom	The RBI lends to the bank	The bank lends to the RBI
Who holds the bond as security	The RBI	The bank
Who earns the interest	The RBI	The bank
Effect on money in the banking system	Adds money (injects liquidity)	Removes money (absorbs liquidity)
The rate today	Repo rate: 5.25%	In practice banks now park cash at the Standing Deposit Facility: 5.00%

From the repo rate to your EMI: transmission

Why does the price of an overnight loan between the RBI and a bank matter to anyone else? Because it is the banks' own cost of money at the margin, and they pass it on.



Run the same chain backwards for a rate hike. Each link takes time, so the full effect arrives with a lag.

Figure 1.17: How a repo-rate cut travels through the economy. Economists call this chain monetary transmission.

The class slide showed the same chain in textbook form (the US calls its version of this rate the discount rate): a lower rate leads banks to borrow more from the central bank, which raises the monetary base and so the money supply; a higher rate does the opposite. Notice that even the "price" lever ends up changing the quantity of money - two handles, one tap.

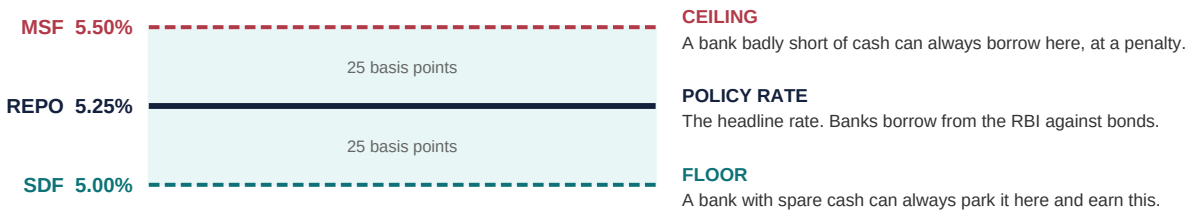
Where the repo rate has been

When	Repo rate	What was happening
Early 2020	5.15%	Before the pandemic.
May 2020	4.00%	Emergency cuts as COVID shut the economy. Held here for two years.
May 2022 to February 2023	Raised in steps to 6.50%	Inflation had crossed the 6% ceiling; the RBI tightened.
2025	Cut in steps to 5.25%	Inflation had cooled; the RBI eased to support growth.
As on 1 October 2026	5.25%	Unchanged since December 2025. The next decision is due on 7 October 2026.

On the chart shown in class, the reverse repo line drops to 3.35% in 2020 and then runs flat for years. That is not because nothing happened. In April 2022 the RBI stopped using the fixed reverse repo as its main tool for absorbing cash and introduced the **Standing Deposit Facility (SDF)**, where banks can park money without the RBI having to hand over bonds as security. The old rate was simply left where it was.

The corridor: a floor, a ceiling and the policy rate between them

The RBI's interest-rate corridor (rates as on 1 October 2026)



Overnight lending between banks is steered to stay inside the band, close to the repo rate.

Figure 1.18: The RBI's rate corridor. A bank can always borrow at the ceiling and always deposit at the floor, so market rates stay in between.

The three rates work as a set. A bank with spare cash would never lend it to another bank for less than 5.00%, because it can get that from the RBI. A bank short of cash would never pay another bank more than 5.50%, because it can borrow from the RBI's **Marginal Standing Facility (MSF)** at that rate. So the overnight rate at which banks lend to one another stays inside the band, and the RBI adds or removes liquidity every day to keep it close to the repo rate. The whole arrangement is called the **Liquidity Adjustment Facility (LAF)**. When the RBI "cuts rates by 25 basis points", the entire corridor moves down by a quarter of a percentage point.

One more chart from class showed the amount of money banks had parked with the RBI through the reverse repo window. It was negligible before 2020 and enormous through 2020 and 2021. The RBI had flooded the system with money, but with the economy shut, banks had few borrowers they wanted to lend to - so the money came straight back and sat with the RBI. A central bank can make money available. It cannot make people borrow it.

CONCEPT TRAP: A LIQUIDITY AUCTION IS NOT QE

Headlines such as "RBI injects Rs. 1 lakh crore through a variable rate repo auction" sound like money printing. They are not. Variable rate repo (VRR) and variable rate reverse repo (VRRR) auctions are short-term loans, from overnight to a couple of weeks, that reverse automatically: the cash goes back and the bond comes home. QE and OMO purchases are outright - the central bank owns the bond and the money stays out until the bond matures or is sold. Short-term and self-reversing versus outright and lasting: that is the difference.

THE TWO LEVERS, SUMMARISED

Price lever: the repo rate and the corridor around it. Quantity levers: open market operations, QE and QT, and the cash reserve ratio that Section 1.13 explains. They are not independent - more quantity means a lower price - but the RBI announces its stance through the price.

MANAGER'S TAKEAWAY

Mark the dates of the RBI's Monetary Policy Committee in your calendar: six meetings a year, each one a possible change in what money costs. Loans linked to the repo rate reprice within about a quarter; deposit rates follow more slowly. For a product company whose customers buy on EMI - cars, two-wheelers, appliances, homes - the repo rate is a demand forecast: a one percentage point fall on a Rs. 50 lakh, 20-year home loan cuts the EMI by about Rs. 3,200 a month, and showrooms feel it. For a service company the effect is quieter but real: the cost of working capital while waiting for clients to pay, and the rate at which a long contract's future payments are valued today.

1.13 How Banks Create Money

Here is the fact that surprises almost everyone. Most of the money in the economy was not created by the RBI. It was created by ordinary commercial banks, every time they made a loan.

The reason is a simple observation about depositors: they do not all want their money back on the same day. A bank that has taken Rs. 100 in deposits knows that on any normal day only a few rupees will be withdrawn. So it keeps a fraction ready and lends out the rest. This is **fractional reserve banking**: banks keep a fraction of deposits as reserves and use the remainder to make loans.

THE RESERVE RATIO

The reserve ratio R is the fraction of deposits that a bank holds as reserves: R = reserves / deposits. The central bank sets a legal minimum; a bank may hold more if it wishes. In the classroom example a bank with deposits of 100 holds reserves of 10 and loans of 90, so R = 10 / 100 = 10%. In India the minimum is the **Cash Reserve Ratio (CRR)**, currently 3%: cash a bank must keep with the RBI, earning nothing. Banks must separately hold 18% of deposits in government bonds and similar safe assets (the Statutory Liquidity Ratio, SLR).

A bank's position is written as a **T-account**: what it owns (assets) on the left, what it owes (liabilities) on the right. A deposit is something the bank owes to the depositor, so it is a liability. Reserves and loans are what the bank holds against it, so they are assets.

Three worlds, one hundred rupees

Suppose there is Rs. 100 of currency in the economy. How much money exists? It depends on the banking system. (The slides use dollars; the logic is the same in any currency.)

The world	What happens to the Rs. 100	Money supply = currency + deposits
1. No banks	People hold it as cash.	100 + 0 = **100**
2. Banks that keep 100% reserves	People deposit the Rs. 100. The bank locks all of it in its vault and lends nothing. It is a locker service.	0 + 100 = **100**. Banks make no difference.
3. Fractional reserve banks (R = 10%)	People deposit the Rs. 100. The bank keeps Rs. 10 and lends Rs. 90 to a borrower.	The depositor still has 100 in her account. The borrower has 90 in his hand. 90 + 100 = **190**

How did Rs. 100 become Rs. 190? Nobody printed anything. The depositor's balance is still Rs. 100 and she can spend it whenever she likes. The borrower has Rs. 90 and he can spend that too. Both are money, both exist at once.

> *"When banks make loans, they create money."*
>
> **The line on the slide that surprises everyone**

The cascade: one deposit, many loans

The story does not stop at 190. The borrower spends his Rs. 90, and the shopkeeper who receives it deposits it in a second bank. That bank keeps 10% and lends the rest. The next shopkeeper deposits in a third bank. And so on.

Round	Bank	New deposit received	Kept as reserves (10%)	Lent out
1	First bank	100.00	10.00	90.00
2	Second bank	90.00	9.00	81.00
3	Third bank	81.00	8.10	72.90
4	Fourth bank	72.90	7.29	65.61
...	and so on	...	...	...
Total	**All banks**	**1,000**	**100**	**900**

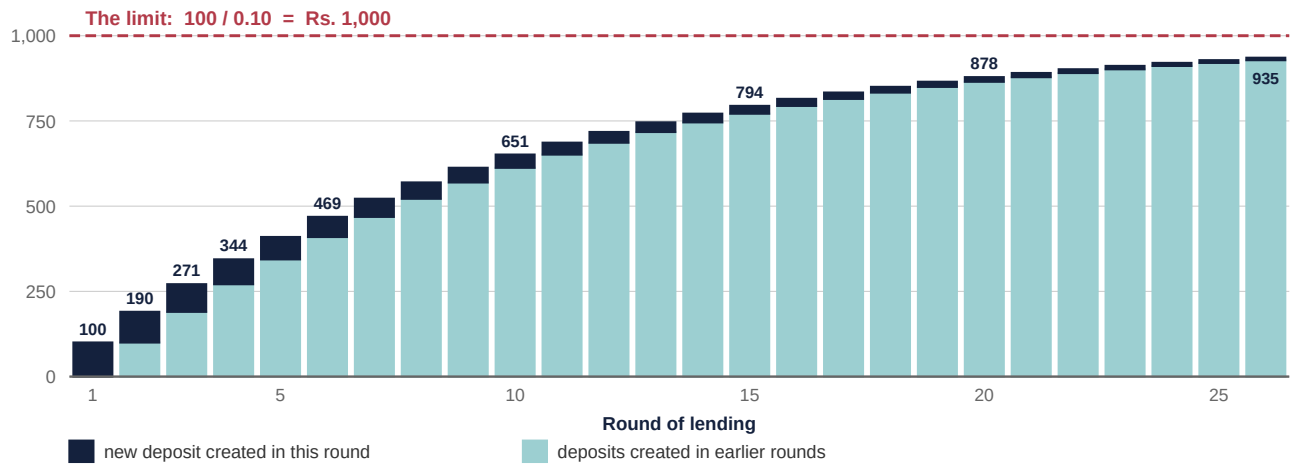


Figure 1.19: Deposits pile up round after round, each addition smaller than the last, approaching a limit of Rs. 1,000.

THE MONEY MULTIPLIER = 1 / R

With a reserve ratio of 10%, the multiplier is 1 / 0.10 = 10: Rs. 100 of reserves supports Rs. 1,000 of money. Raise R to 20% and the multiplier falls to 5. Cut R to 5% and it rises to 20. This is why the CRR is a policy lever: when the RBI lowered it from 4% to 3% during 2025, about Rs. 2.5 lakh crore that banks had to keep idle became available to lend.

Look at the totals row once more. The reserves kept by all the banks add up to exactly 100: the original currency has ended up, in full, in bank vaults, and Rs. 1,000 of deposits sits on top of it. This gives the two layers of money in any modern economy. **Base money** (currency plus bank reserves) is created by the central bank. **Broad money** (currency plus deposits) is several times larger, and the difference is created by commercial banks.

CONCEPT TRAP: MONEY IS NOT WEALTH

The slide put it in one line: a fractional reserve banking system creates money, but not wealth. The borrower who received Rs. 90 also took on a debt of Rs. 90. His spending power is higher today; his net worth is unchanged. The economy has become more liquid - more can be bought and sold - but no richer. Wealth comes from producing more, which is Sections 1.02 to 05.

From the textbook to the real world

With India's CRR at 3%, the formula predicts a multiplier of about 33. The actual figure is about 6: the RBI's reserve money is roughly Rs. 49 lakh crore, and broad money (the measure called M3) is roughly Rs. 299 lakh crore. The gap is explained by two caveats that the slide deck lists as a critique and takes up in the next session.

The textbook assumes	In reality	Effect on the multiplier
Every loan comes back to a bank as a deposit	People keep part of their money as cash. A rupee kept in a wallet or a cupboard stops multiplying.	Lower
Banks lend every rupee they are allowed to	Banks must also hold 18% in government bonds (SLR), and they hold back when they are cautious or when good borrowers are scarce.	Lower

GOOD TO KNOW - IN PRACTICE, LOANS CREATE DEPOSITS

The textbook tells the story as deposit first, loan second. A working bank does not wait. When it approves your loan, it simply credits your account: a new deposit appears at that instant, created by the loan. The bank finds the reserves it needs afterwards, borrowing them from other banks or from the RBI at around the repo rate. That is the modern view, set out by the Bank of England in 2014, and it explains why central banks steer the economy through the price of reserves - the repo rate - rather than by rationing their quantity. The multiplier is best read as a ceiling on what banks can create, not a forecast of what they will.

MANAGER'S TAKEAWAY: CREDIT IS MONEY

If banks create money by lending, then the mood of bank lending is the money supply your customers live in. When banks and finance companies lend freely, a product company's dealers can stock up and its customers can buy on EMI; when lenders pull back - as they did after a large finance company defaulted in 2018 - sales of bikes, tractors and trucks fall even though nobody's income has changed. A service company sees it in collections first: when clients' credit lines tighten, invoices get paid later, well before orders are cancelled. Watch bank credit growth the way you watch your own order book.

1.14 Why Banks Are Fragile

The same arrangement that lets banks create money makes every bank breakable. The bank in Section 1.13 has promised its depositors Rs. 1,000 whenever they ask for it. It holds Rs. 100.

On an ordinary day this is not a problem. A few depositors withdraw, a few others deposit, and Rs. 100 is more than enough. Now run a thought experiment. A rumour spreads - a forwarded message, or one post from a popular finance influencer saying that the bank is in trouble. The rumour may be completely false. It does not matter. Each depositor reasons the same way: if others withdraw and I wait, there may be nothing left for me; if I withdraw and the rumour is false, I have lost nothing. So everyone goes to the bank at once.

The first Rs. 100 is paid out. After that the bank's only assets are loans - a twenty-year home loan here, a five-year business loan there. It cannot ask those borrowers to repay this afternoon. It can try to sell the loans in a hurry, at a heavy discount. A bank that was perfectly sound in the morning is insolvent by evening. This is a **bank run**, and it is a self-fulfilling prophecy: the belief that the bank will fail is what makes it fail.



Short-term money funding long-term loans: a maturity mismatch built into every bank.

Figure 1.20: A bank owes money that can be demanded today and owns loans that come back over years.

MATURITY MISMATCH

Banks borrow short and lend long. Their liabilities (deposits) can be withdrawn at once; their assets (loans) are repaid slowly. This gap is called maturity mismatch. It is not a flaw in a badly run bank - it is what banking is. A bank is solvent only as long as its depositors believe it is. Banking runs on faith.

A run in the age of the smartphone. In March 2023 Silicon Valley Bank in the United States had put much of its depositors' money into long-dated bonds, which lost value when interest rates rose. Word spread through start-up founders' message groups and social media. Depositors tried to pull out about 42 billion dollars in a single day, without anyone standing in a queue. The bank was shut by regulators the next morning. A run that once took weeks now takes hours.

What stands between a rumour and a collapse

Defence	How it works
Deposit insurance	In India each depositor is insured up to Rs. 5 lakh per bank. Small depositors have no reason to run.
Lender of last resort	A sound bank facing a run can borrow from the central bank against good assets - the MSF window of Section 1.12 is the everyday version.
Reserve and liquidity rules	CRR, SLR and related rules force banks to keep a cushion of cash and easily sold bonds.
Supervision and capital	Regulators inspect banks and require owners to keep enough of their own money at risk.

The puzzle the class ended on: can banks be "short of deposits"?

Newspapers regularly report that banks are struggling to raise deposits while their lending grows faster. After Section 1.13 this should sound odd. Every loan creates a deposit, so the banking system as a whole cannot run out of deposits by lending. What an individual bank can run short of is the right *kind* of deposit: stable, low-cost money that stays put - salary accounts, small savings, long fixed deposits - as opposed to money that can leave at a tap. The contest among banks is for stable deposits, not for the total amount. The professor left the full answer for the next session, along with the critique of the multiplier, how small India's bank credit is next to other emerging economies, and what stablecoins mean for all of this.

MANAGER'S TAKEAWAY

First, your company is a depositor. Above the insured limit, money in a bank is an unsecured loan to that bank; firms that kept all their cash in Silicon Valley Bank could not be sure of paying salaries that week. Spread balances across banks and write it into treasury policy. Second, maturity mismatch is not only a bank's disease. A product company that funds a ten-year plant with ninety-day borrowings must refinance every quarter, and one bad quarter in the credit market can sink it. A service company that has signed long leases and built a large permanent team against contracts that clients can cancel at thirty days' notice is carrying the same gap. Third, confidence is an asset that sits on no balance sheet: for a bank, a payments firm or a security services provider, a rumour handled badly can start a run by customers. Match the life of your money to the life of what it pays for, and protect trust before you need it.

1.15 Product, Service and the Manager's Desk

The session was taught on apples, pizzas and a hundred-rupee deposit. The ideas do not care what the product is. Here is each of them transplanted into a product business and a service business, followed by what they mean for the way you run a team.

Concept	Product-based company	Service-based company
GDP and its four buyers (C, I, G, NX)	A paint or appliance maker sells mainly into C, with some I through builders. It should track household incomes and new housing.	An IT services exporter sells into NX. Growth in the US and Europe and the rupee matter more to it than Indian consumption.
Value added, not turnover	A phone assembler may book Rs. 10,000 of revenue per phone and add Rs. 1,500 of value. Moving into components and design raises the second number.	In a consulting or managed-services firm, value added is most of the invoice and most of it is salaries. Value added per employee is the productivity measure.
Nominal versus real	An FMCG company reporting 9% sales growth with 5% price increases grew its volumes by about 4%. Report both.	A multi-year contract renewed at the same rupee price is a real price cut. Build escalation into the contract.
CPI, WPI and margins	A car maker whose steel and rubber costs (WPI) rise faster than the prices buyers accept (CPI) is in a margin squeeze.	For an IT or BPO firm the cost that matters is wage inflation. Link billing rates to an index, not to goodwill.
The CPI basket as a market map	Two-wheeler, personal-care and appliance makers: the rural household is spending a rising share on transport, personal care and furnishings.	Telecom, repair services and restaurants: services have gone from 28% to 33% of the basket, and eating out is an urban growth habit.
The real interest rate	Compare a new plant's return with the real cost of borrowing. Negative real rates in 2020-21 made capacity unusually cheap to finance.	Ninety days of credit to a client is a loan at 0%. Price it into the contract or shorten it.
Money is trust	A retailer's gift cards and loyalty points are liabilities. Devalue them without warning and customers stop wanting them.	Airline miles and prepaid service credits work the same way. Choose the invoicing currency with the paying country's institutions in mind.
Repo rate and transmission	For sellers of cars, appliances and homes, EMI-driven demand follows the repo rate a quarter or two later.	Lenders and fintechs reprice directly. Everyone else feels it in the cost of working capital.
QE, QT and the funding cycle	Raise long-term money for a plant when liquidity is plentiful, not when you need it most.	Clients' technology and security budgets widen and narrow with global liquidity, and so do start-up valuations.
Banks create money - and can break	Dealer finance and consumer loans drive sales, so watch bank credit growth. Spread treasury balances across banks.	Collections slow when clients' credit lines tighten. Do not fund long commitments with short money.

The manager's checklist from this session

#	Discipline	What it looks like on Monday morning
1	Ask "nominal or real?" of every growth number	Split sales growth into price and volume. Compare your growth with the nominal growth of your sector.
2	Know your letter	Work out which of C, I, G and NX pays your bills, and watch what drives that letter.
3	Measure value added, not turnover	Revenue minus everything bought from other firms, per employee. That is your real contribution and your real productivity.
4	Read core inflation, not only the headline	Core tells you whether price pressure is broad, and therefore where interest rates are heading.
5	Think in real rates	Subtract inflation from every return, salary hike, price increase and loan rate before reacting to it.
6	Put an index in every long contract	An escalation clause tied to CPI or WPI protects both sides and removes an annual argument.
7	Keep the monetary policy calendar	Six dates a year. Review floating-rate loans, pricing and promotions around them.
8	Watch liquidity and bank credit	Central-bank balance sheets and credit growth tell you whether money will be easy or scarce for you and your customers.
9	Match the life of your money to the life of your assets	Long-lived assets and commitments need long-term funding. Short money for long assets is a bank run waiting to happen.
10	Protect trust before you need it	Spread deposits across banks, and make only those promises - points, credits, warranties - that you can always honour.

The dashboard: where the numbers stand (as on 1 October 2026)

Indicator	Latest reading	How to read it
Real GDP growth	7.8% (April-June 2026)	Above the 6 to 7% that the professor called India's normal pace.
Nominal GDP growth	10.3% (April-June 2026)	The rate at which rupee incomes and revenues are growing economy-wide.
CPI inflation	4.82% in August 2026; food 5.95%	Above the 4% target, inside the 2 to 6% band; the highest since December 2024.
Repo rate	5.25%	Unchanged since December 2025. The next decision is due on 7 October 2026.
Real policy rate	About +0.4%	Repo rate minus inflation: mildly positive.
Corridor	SDF 5.00%, MSF 5.50%	The floor and ceiling around the repo rate.
CRR and SLR	3% and 18%	Cash banks must keep with the RBI, and the share of deposits they must hold in safe bonds.
Money multiplier	About 6	Broad money of about Rs. 299 lakh crore on reserve money of about Rs. 49 lakh crore.

Indicator	Latest reading	How to read it
RBI balance sheet	Rs. 91.97 lakh crore (31 March 2026)	Up about 20% in a year.
RBI surplus transfer	Rs. 2.87 lakh crore (2025-26)	A record contribution to the government's revenue.

The sharpest lines of the session

"Changes in real GDP can only be due to changes in quantities."

On telling growth apart from price rise

"Interest rate is nothing but the price of money."

On what every borrower and saver is really quoting

"Everyone values fiat money because they expect everyone else to value it."

On why paper works

"The currency in your pocket is ultimately backed by the economy itself."

On what stands behind the rupee

"When banks make loans, they create money."

On where most money comes from

"A fractional reserve banking system creates money, but not wealth."

On the difference between being liquid and being rich

ONE-BREATH SUMMARY

GDP is the market value of the final goods and services produced inside a country in a period; you can reach it by adding what the four buyers spend (C + I + G + NX), by adding value added along every supply chain, or by adding incomes, and all three give the same number. Nominal GDP mixes prices and quantities; real GDP holds prices at a base year so that only quantities move it. Inflation is the change in a price index - the CPI for households, the WPI for sellers, the deflator for everything produced - and India's new CPI basket shows a country spending less of each rupee on food and more on services, as Engel's law predicts. An interest rate is the price of money across time, and only the real rate, after inflation, says whether a saver gained. Money is whatever serves as medium of exchange, store of value and unit of account; today it is fiat, a promise of the RBI backed by government bonds, taxes and finally the economy and its institutions. The RBI steers it with two levers - quantity (open market operations, QE and QT, the CRR) and price (the repo rate and its corridor). Commercial banks then multiply the RBI's base money by lending, which creates money but not wealth, and which leaves every bank owing on demand what it has lent for years - the fragility that Session 2 picks up.

1.16 Practice Questions for Session 1

Twenty-five questions chosen from this session's full question bank so that every section, and every kind of question - a definition, a calculation, an application, a trap - appears at least once. The options are close on purpose: several are true statements that answer a different question. Read the one-line reason under each answer even when you got it right. More questions on this session are in the Mixed Question Bank after Session 4.

Q1. Stagflation describes an economy with:

(a) High growth together with high inflation, as in an overheating economy

(b) Falling prices together with falling output, as in a depression

(c) Rising prices together with weak growth and rising unemployment

(d) Stable prices together with stagnant wages over several years

Answer: (c) - Stagnation plus inflation - the mix in which the cure for one problem makes the other worse.

Q2. A tyre maker sells tyres to a car company, which fits them to new cars. In GDP the tyres are:

(a) Counted twice - once when sold as tyres and once inside the price of the car

(b) Counted once, as the car company's investment in equipment

(c) Counted only if the finished car is exported rather than sold in India

(d) Not counted separately - their value is already inside the price of the car

Answer: (d) - They are intermediate goods; counting them again would be double counting.

Q3. India imports a phone and pays the foreign seller in rupees. What is added to India's GDP?

(a) Nothing - the phone was produced abroad, and the currency of payment is irrelevant

(b) The full price of the phone, because the payment was made in rupees

(c) A reduction equal to the price of the phone, because imports are subtracted

(d) Half the price of the phone, shared between the two countries

Answer: (a) - GDP asks where the good was produced. The purchase enters consumption and is removed again as an import.

Q4. Why are imports subtracted in the GDP identity?

(a) C, I and G already include spending on imported goods, which were not produced in the country

(b) Imports displace domestic production, so each rupee imported destroys a rupee of output

(c) Imports are paid for in dollars, which have to be removed from a rupee total

(d) The government taxes imports, and taxes are not part of production

Answer: (a) - Subtracting imports only removes foreign production that entered through C, I and G.

Q5. A sweet maker produces extra stock in September for Diwali, and it is still unsold when the quarter ends. In that quarter's GDP the stock is:

(a) Left out until it is sold

(b) Counted as inventory investment

(c) Counted as consumption

(d) Counted twice - now and again when sold

Answer: (b) - Unsold output is treated as bought by the firm itself. When it sells, inventories fall and consumption rises.

Q6. A forestry company sells logs for 1,000 to a furniture maker, who sells furniture for 2,500 to a retailer, who sells it to a consumer for 3,000. The contribution to GDP is:

(a) 6,500

(b) 3,500

(c) 3,000

(d) 500

Answer: (c) - GDP is the value of the final good: 3,000, which equals 1,000 + 1,500 + 500 of value added.

Q7. An economy produces 5 apples in both years, and the price rises from Rs. 20 to Rs. 40. Then:

(a) Nominal and real GDP both double

(b) Nominal GDP is unchanged and real GDP doubles

(c) Both are unchanged

(d) Nominal GDP doubles and real GDP is unchanged

Answer: (d) - Nominal GDP goes from 100 to 200 on price alone; at base-year prices output is still 100.

Q8. A firm's sales grew 9% in a year in which its prices rose 5%. Its volume growth was about:

(a) 4%

(b) 14%

(c) 9%

(d) 5%

Answer: (a) - Rupee growth is roughly price growth plus volume growth, so 9 - 5 = 4.

Q9. The CPI is 114.3 in 2004 and 117.1 in 2005. Inflation in 2005 is:

(a) 17.1%

(b) 2.8%

(c) 2.5%

(d) 14.3%

Answer: (c) - (117.1 - 114.3) / 114.3 = 2.5%. Subtracting the two index numbers gives 2.8, which is the trap.

Q10. Inflation falls from 8.1% to 2.5%. This means that prices are:

(a) Falling

(b) Unchanged

(c) Back at their base-year level

(d) Still rising, but more slowly

Answer: (d) - Lower inflation is a slower rise. Prices fall only when inflation is negative.

Q11. Engel's law states that:

(a) As income rises, spending on food falls in rupees

(b) Food prices rise faster than incomes

(c) The poor spend a smaller share of income on food than the rich

(d) As income rises, the share of income spent on food falls

Answer: (d) - The share falls even though the rupee amount usually rises.

Q12. Core inflation is:

(a) Inflation in food and fuel only

(b) Wholesale price inflation

(c) Headline inflation with food and fuel taken out

(d) Inflation in services only

Answer: (c) - Core strips out the two most volatile groups to show the underlying trend.

Q13. A one-year loan carries a nominal rate of 4% and inflation is expected to be 6%. The real interest rate is:

(a) 10%

(b) 2%

(c) -10%

(d) -2%

Answer: (d) - 4 - 6 = -2%. The lender gets back less purchasing power than he lent.

Q14. A borrows Rs. 10,000 from B at 5% while inflation runs at 10%. Who gains?

(a) B, because he earns 5% interest on money that would otherwise lie idle

(b) A, because he repays in rupees that buy less; B's real return is about -5%

(c) Neither, because the interest received exactly offsets the inflation

(d) Both, because the loan allowed A to spend and B to earn

Answer: (b) - Unexpected inflation favours the borrower.

Q15. Money is defined as:

(a) The stock of assets that can be readily used to make transactions

(b) The income a person earns over a year from all sources

(c) The total wealth a person owns, including house and shares

(d) The gold and foreign currency held by the central bank

Answer: (a) - Income is a flow, and most wealth - a house, say - cannot be used to pay a bill.

Q16. Seigniorage is:

(a) The fee the government pays the central bank to have currency notes printed

(b) The central bank's profit: interest earned on its assets, none paid on currency

(c) A tax collected from commercial banks on the deposits that they hold

(d) The interest the government pays to all the holders of its bonds

Answer: (b) - Liabilities at 0%, assets earning interest: the difference is seigniorage.

Q17. Quantitative easing (QE) is best described as:

(a) Raising the policy interest rate in large, pre-announced steps to fight inflation

(b) Large, pre-announced bond purchases by the central bank when the policy rate is near its floor

(c) A large, pre-announced government spending programme funded by fresh borrowing

(d) Cutting the cash reserve ratio to its legal minimum in a single, pre-announced step

Answer: (b) - When the price lever is stuck near zero, the central bank works through quantity.

Q18. The government sells Rs. 10,000 crore of new bonds to banks and mutual funds. As a result:

(a) Rs. 10,000 crore of new money is created, because bonds are a form of money

(b) The money supply rises by the multiplier times Rs. 10,000 crore

(c) Existing money moves from the buyers to the government; no new money is created

(d) The RBI's balance sheet expands by Rs. 10,000 crore

Answer: (c) - Money is created only when the central bank buys bonds with new reserves.

Q19. The correct order of transmission after a repo-rate cut is:

(a) Loan rates fall, then banks' cost of funds falls, then borrowing rises, then the RBI cuts

(b) Deposits rise, then banks' cost of funds falls, then the RBI cuts, then loan rates fall

(c) Banks' cost of funds falls, loan rates fall, borrowing rises, and more loans create more money

(d) Borrowing rises, then loan rates fall, then banks' cost of funds falls, then money shrinks

Answer: (c) - The chain runs from the RBI to banks to borrowers, with a lag at each step.

Q20. In the classroom cascade with R = 10%, the third bank receives a deposit of Rs. 81. It keeps and lends:

(a) Rs. 8.10 and Rs. 72.90

(b) Rs. 9 and Rs. 81

(c) Rs. 8 and Rs. 73

(d) Rs. 7.29 and Rs. 65.61

Answer: (a) - 10% of 81 is 8.10; the remaining 72.90 is lent. The last option is the fourth bank.

Q21. The actual multiplier is far below 1 / CRR mainly because:

(a) The RBI limits bank lending to a fixed multiple of capital each year

(b) Deposits created by loans are not counted in the money supply

(c) The effective CRR is far higher than the announced 3%

(d) People hold part of their money as cash, and banks do not lend all they are allowed to

Answer: (d) - These are the two points of the critique on the slides: cash leakage and banks holding back.

Q22. Maturity mismatch in a bank means:

(a) Short-term deposits are funding long-term loans

(b) Long-term deposits are funding short-term loans

(c) Its assets and liabilities are in different currencies

(d) Its lending and deposit rates differ

Answer: (a) - Banks borrow short and lend long - it is what banking is.

Q23. A bank has deposits of 1,000, reserves of 100 and sound loans of 900. Depositors demand 300 in one day. The bank:

(a) Pays easily, because sound loans can be counted as cash when depositors ask

(b) Cannot pay from its reserves and may fail, because good loans cannot quickly be turned into cash

(c) Recalls enough of its loans from borrowers the same afternoon to pay everyone

(d) Is closed automatically by the RBI, because its reserves are below 30% of deposits

Answer: (b) - A solvent bank can still be illiquid.

Q24. Deposit insurance in India covers each depositor up to:

(a) Rs. 1 lakh per bank

(b) Rs. 5 lakh per bank

(c) An unlimited amount

(d) Rs. 50 lakh per bank

Answer: (b) - Above that limit, money in a bank is an unsecured claim on the bank.

Q25. Real GDP growth is 7.8%, CPI inflation is 4.82% and the repo rate is 5.25%. Which statement is true?

(a) The real policy rate is negative, because inflation is close to the repo rate

(b) Inflation is below the 4% target, so the RBI has room to cut

(c) The real policy rate is mildly positive, and inflation is above target but inside the band

(d) Nominal growth must be below real growth, because inflation is positive

Answer: (c) - 5.25 - 4.82 is about +0.4%, and 4.82% lies between 4% and 6%.

SESSION 2 OF 4

Steering Demand

The Money Multiplier in Practice, Stablecoins, Business Cycles, Inflation and Deflation, Fiscal Policy and Aggregate Demand

Sunday, 13 September 2026 | Prof. Ankit Kumar | Live online session

WHAT THIS SESSION COVERS

How demand is steered. Why the money multiplier is in the hands of the banks, what stablecoins and tokenised money change, and how to read the argument over India's GDP numbers. Then the working toolkit of policy: business cycles and the output gap, potential GDP, technology and jobs, money and inflation in the short and the long run, deflation, fiscal policy, the Keynesian multiplier and the aggregate demand curve.

2.01	Two Layers of Money: M = m x B	47	**2.09**	Money and Inflation: Short Run vs Long Run	63
2.02	When the Multiplier Stalls: India's COVID Lesson	49	**2.10**	Deflation and Involution: When Prices Fall	66
2.03	Tokenised Money: Three Roads	51	**2.11**	Why Markets Do Not Self-Correct	68
2.04	Stablecoins: Bank, Fund or Threat?	53	**2.12**	Fiscal Policy: Spending, Deficits, Surpluses	70
2.05	The GDP Debate: New Method, "2% Inflation"	56	**2.13**	The Keynesian Multiplier and Tax Cuts	73
2.06	Business Cycles and the Output Gap	58	**2.14**	Aggregate Demand and What Shifts It	75
2.07	What Drives Potential GDP	60	**2.15**	Product, Service and the Manager's Desk	77
2.08	Technology, AI and Jobs	62	**2.16**	Practice Questions for Session 2	80

2.01 Two Layers of Money: M = m x B

Session 1 ended with a single Rs. 100 deposit turning into Rs. 1,000 of money as banks lent it on, round after round. Session 2 began with the question that follows: if money is made in two places - at the RBI and inside banks - who is really in charge of how much there is?

The professor started from a remark made a fortnight earlier at Jackson Hole, the annual gathering in the United States where the world's central bankers take stock. Kevin Warsh, the new chair of the US Federal Reserve, revived an idea central bankers had stopped stressing for years: money matters, and one should watch how much of it is being created. The professor's gloss was that there are two quantities to watch, because money enters an economy in two steps.

	Layer 1: base money (B)	Layer 2: total money supply (M)
What it is	Currency notes plus the reserves banks keep with the RBI. Also called the monetary base or reserve money.	Currency plus all the deposits in banks. The money households and firms actually spend.
Who creates it	The RBI, on its own balance sheet.	Commercial banks, each time they turn a deposit into a loan.
Who controls it	The RBI, directly.	Nobody directly. It depends on how much banks lend and people borrow.
In the classroom example	Rs. 100	Rs. 1,000 (with a 10% reserve ratio)

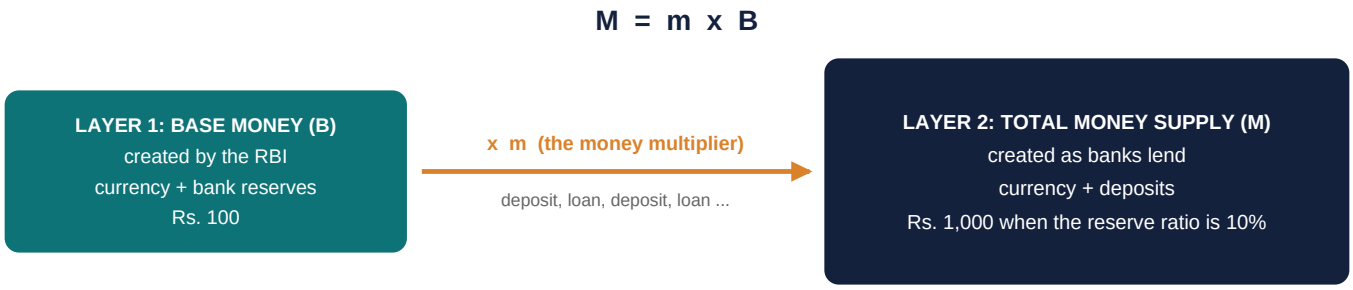


Figure 2.1: Money is made in two steps. The RBI makes the base; banks multiply it.

THE FORMULA: M = m x B

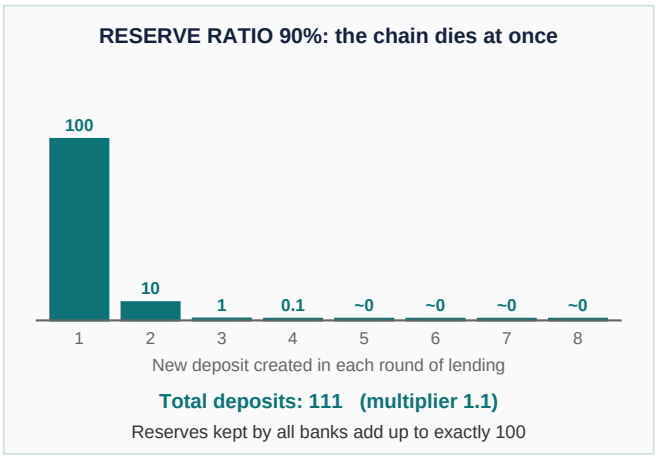
Total money supply (M) equals the money multiplier (m) times the monetary base (B). B is in the direct control of the central bank. Small m comes from the churning of the same money through the banking system - loan, deposit, loan, deposit. Session 1 gave m its textbook ceiling: 1 divided by the reserve ratio.

A picture helps. Think of the RBI as a dairy and of banks as tea stalls. The dairy decides how many litres of milk go out each morning. The tea stalls decide how many cups of tea each litre becomes. The town drinks tea, not milk - and the number of cups depends on both the dairy and the stalls.

The reserve ratio decides how long the chain runs

To show what the multiplier really is, the professor ran the Session 1 cascade again with an absurdly high reserve requirement of 90%. You deposit Rs. 100 of cash. The bank must keep Rs. 90 and can lend only Rs. 10. That Rs. 10 is deposited somewhere; Rs. 9 is kept and Rs. 1 is lent. And so on.

Round	New deposit	Kept as reserves (90%)	Lent out (10%)
1	100.00	90.00	10.00
2	10.00	9.00	1.00
3	1.00	0.90	0.10
4	0.10	0.09	0.01
Total	**111.11**	**100.00**	**11.11**



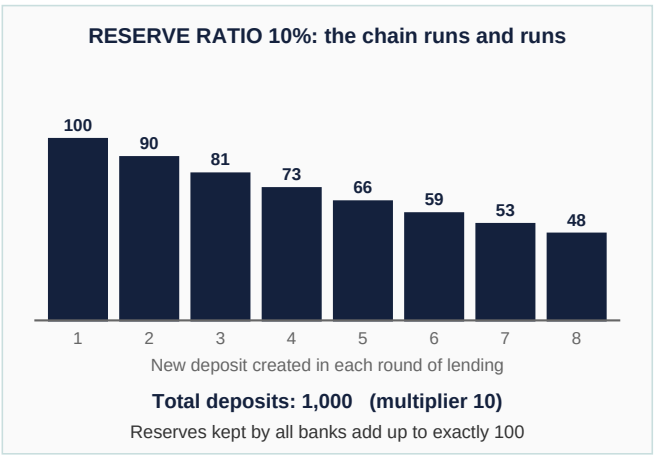


Figure 2.2: The same Rs. 100 of base money. A high reserve ratio kills the chain in three rounds; a low one keeps it running.

Two things stand out. First, **add up the reserves and you always get back to 100** - the original cash - whatever the percentage. The base does not grow or shrink as it passes through banks; it only gets locked up as reserves, a little in each round. Second, the lower the reserve requirement, the more rounds the chain runs before the base is fully locked up, and the more deposits are created along the way: Rs. 111 at 90%, Rs. 1,000 at 10%.

What the RBI was doing when it cut the CRR

During 2025 the RBI cut the cash reserve ratio sharply, from 4% to 3%. The professor asked the class to read the move through the formula. The monetary base did not change: not one new rupee was created by the RBI. What changed is that every bank had to lock up a little less of each deposit and so had a little more to lend, and the chain ran longer. More money was created by banks; the money created by the central bank stayed the same. A CRR cut works on m, not on B.

What moves	Works on	Who decides
Open market purchases and sales of bonds, QE and QT	B - the base	The RBI
The cash reserve ratio (CRR)	The ceiling on m	The RBI
The repo rate	The price of reserves, and through it the appetite to lend and borrow	The RBI
Willingness of banks to lend	The actual m	Banks
Willingness of firms and families to borrow	The actual m	Borrowers
How much money people keep as cash	The actual m (cash in a wallet stops multiplying)	The public

MANAGER'S TAKEAWAY: THE ANNOUNCEMENT IS B, YOUR EXPERIENCE IS m

What the RBI announces is the base and the rules. What reaches your business is what banks do with them. A product company feels m in whether its dealers get inventory finance and its customers get loans; a service company feels it in whether clients' working-capital lines are being renewed or squeezed. So read two things together: the RBI's policy statement, and the monthly numbers on bank credit growth. If the first says "easy" and the second says "flat", believe the second.

2.02 When the Multiplier Stalls: India's COVID Lesson

The formula hides an assumption: that when the RBI adds to the base, banks obligingly multiply it. In 2020 India ran the experiment at full scale - and the banks did not oblige.

Go back to the first lockdown. The government needs to spend far more than it collects, so it issues bonds. Institutions buy them - the professor's example was LIC. The RBI then buys bonds from such holders and pays with newly created reserves. This is the quantitative easing of Session 1: easing credit by expanding the *quantity* of money. Suppose Rs. 1 lakh crore arrives in the banking system this way. That is Rs. 1 lakh crore of fresh deposits sitting with banks. What do you expect banks to do with it? Lend it - and start the chain.

"But suppose the bankers are hell-bent that they will not lend," the professor said. They had reasons. They were still carrying bad loans from the previous decade. In a locked-down economy few borrowers looked safe. And an Indian banker carries a particular fear: that a loan which goes bad years later will bring investigators to his door asking how he cleared the file. A banker who does not lend is never asked that question.

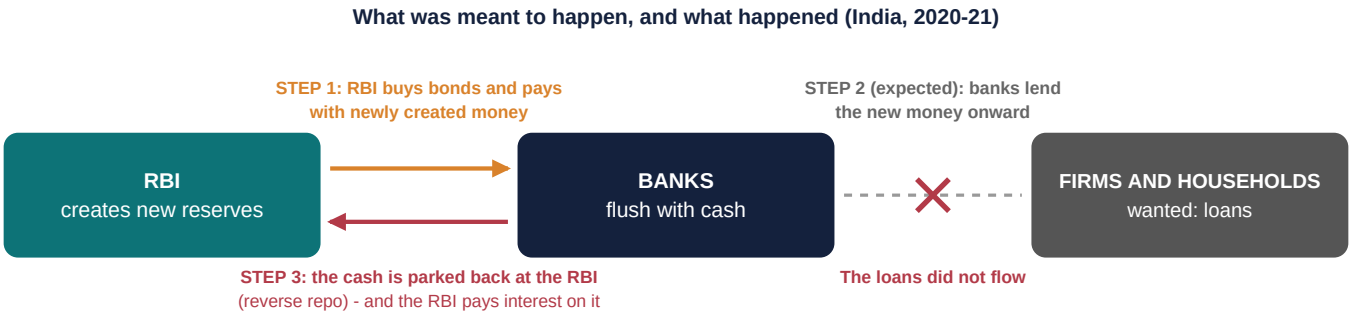


Figure 2.3: The RBI created the money and the banks sent it straight back. The middle of the chain - lending - did not happen.

So the banks were left holding a mountain of cash. Some went into government bonds, but the RBI itself was buying those, and there is a limit to how many a bank wants. The rest went to the one place that takes any amount without question: the RBI's own deposit window. Session 1 introduced it as the reverse repo (it has since been replaced by the Standing Deposit Facility): a bank with spare cash parks it at the RBI and earns interest. The chart shown in class is striking. For years the amounts parked were small. In 2020 they shot up many times over and stayed high through 2021.

> *"The RBI was printing money and giving it to the banks. The banks were putting the same money back with the RBI - and the Governor had to pay interest on it. He was paying interest on his own money."*
>
> **On India in 2020-21 (paraphrased from class)**

The evidence: credit barely moved

Every country flooded its banks with money during COVID. The difference lay in what the banks did next.

Bank credit to the private non-financial sector, % of GDP (table shown in class)

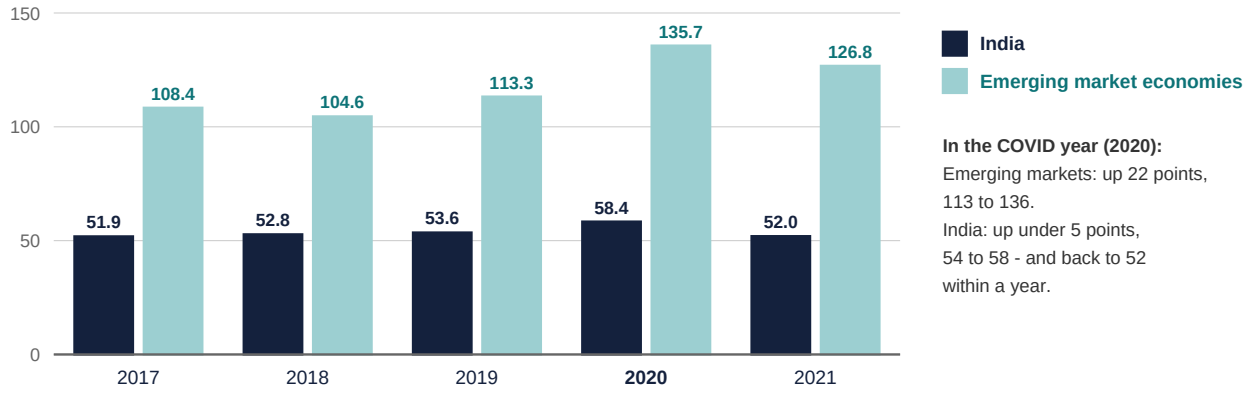


Figure 2.4: In the COVID year bank credit jumped by 22 points of GDP in emerging markets as a group, and by under 5 in India.

In emerging economies as a group, bank credit to businesses and households rose from 113% of GDP to 136% in a single year. In India it rose from about 54% to 58% and was back at 52% a year later - lower than before the pandemic. The base had been expanded; the multiplier had quietly shrunk to offset it. The same table makes a second point worth carrying forward: India's bank credit, at around half of GDP, is small by the standards of its peers.

THE LESSON IN ONE LINE: THE MULTIPLIER IS IN THE HANDS OF THE BANKS

An increase in the monetary base does not guarantee an increase in the money supply. Banks can absorb a sudden push of liquidity simply by not lending it, and the multiplier adjusts downwards. The RBI controls B. It does not control m.

The professor pointed the class to a paper by two former RBI hands, Viral Acharya and Raghuram Rajan, whose title says it all: "Liquidity, Liquidity Everywhere, Not a Drop to Use". Their argument is that flooding banks with central bank reserves does not by itself put money where the economy can use it. (In class the title was recalled from memory as "...not a single drop to drink"; the idea is the same.)

Questions from the class

The question	The answer
Is a large reverse-repo balance bad for the economy?	It is a symptom, not the disease. It tells you that money meant to become loans is sitting idle at the RBI. Each parking is short - a day or a week - but when the total stays high for months, transmission is not working.
Was it only the fear of bad loans? Banks park money with the RBI even now.	Banks always face swings in their cash: a sudden inflow one week, a shortage the next. They cannot turn an inflow into sound loans overnight. That is exactly why the Liquidity Adjustment Facility exists - whatever a bank's position, it can adjust it at the RBI. What was unusual in 2020 was the size and the persistence.
What did the government do about it?	It pushed banks to lend, and finally removed their fear directly: lend to small businesses, it said, and I will stand guarantor. Credit-guarantee schemes for MSMEs were the result.
Why does this matter after COVID?	Because it reveals a permanent feature. India is a bank-driven economy, and banks can slow down the central bank's push. That is one reason for the recent effort to build a deeper corporate bond market, where companies borrow directly from savers without waiting for a bank's yes.

MANAGER'S TAKEAWAY: LIQUIDITY IN THE SYSTEM IS NOT LIQUIDITY IN YOUR ACCOUNT

Headlines about "record surplus liquidity" describe the banks' position, not yours. In 2020 a product company could read that the system was awash with cash while its dealers were being refused inventory loans and its sales were stalling. A service company saw clients stretch payments from 45 days to 90 because their own credit lines were frozen. The practical lessons: keep more than one source of funds (a second bank, commercial paper or bonds if you are large enough, supply-chain finance, customer advances); and when the government offers a guarantee scheme, move quickly - it exists precisely because banks will not lend without it.

2.03 Tokenised Money: Three Roads

Money has changed its form before - from coins to paper to entries in a bank's computer. The professor's claim was that it is changing form again right now, that the younger generation is talking about it, and that most executives have not yet noticed.

Start with what the new technology actually adds. In Session 1 the islanders of Yap kept track of who owned which stone in a shared record that everyone accepted. A **blockchain** is that idea in software: a ledger shared across many computers, on which a digital token can pass from A to B to C, with every movement recorded, checked by the network and visible to all. There is no single book-keeper who can be slow, closed for the weekend or switched off.

The practical gain is speed. A large payment from India to the United States travels today through a chain of banks exchanging messages and can take a day or two. The same value moving as a token on a blockchain arrives in minutes or hours, at any time of day - which is why the technology is not going away.

The first tokens on these rails were cryptocurrencies such as Bitcoin, and Session 1 showed why they fail as money: nobody will price a salary in something that moves 10% in a day and is issued by nobody in particular. So the world asked a better question: why not send the money we already trust - dollars, rupees, euros - over the new rails? Someone has to turn that money into tokens. **Who should do that job?** The world has split three ways.

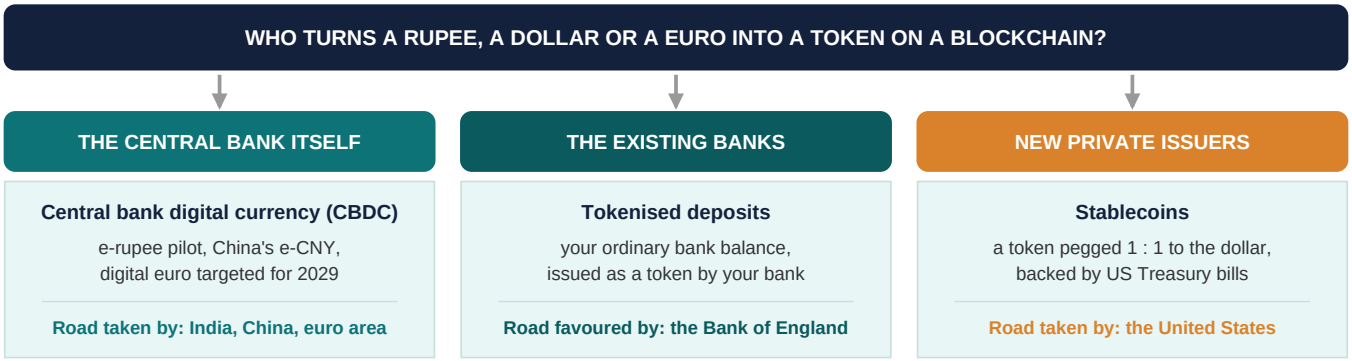


Figure 2.5: One question, three answers. The answer a country picks decides who earns from the new money and who controls it.

	Central bank digital currency (CBDC)	Tokenised deposits	Stablecoins
Who issues the token	The central bank	Existing commercial banks	New private issuers, often not banks
What you are holding	A claim on the central bank - a digital banknote	Your ordinary bank deposit, in token form	A claim on the issuer, backed by a pool of safe assets
Who favours it	India, China and the euro area	The United Kingdom: the Bank of England's Governor has said he would much rather banks took this road	The United States, which passed the GENIUS Act in July 2025 and has ruled out a digital dollar from the Fed
Where it stands	India's e-rupee is in pilot; the digital euro is targeted for a pilot in 2027 and first issue in 2029	Being tested by large banks	About 270 billion dollars in circulation by mid-2026, almost all pegged to the dollar

The British worry explains the middle road. If people move their money out of bank deposits into tokens issued by someone else, banks have less to lend, and the credit creation of Sections 2.01 and 2.02 shrinks. Tokenising the deposit itself keeps the money inside the banking system. The American view is the opposite: the central bank should stay out, and the market should decide who does the job best.

The professor's own reading was blunt. It is very hard to fight an innovation that the market itself is driving, and officials are rarely the ones who innovate. That leaves other central banks with a headache: take the stablecoin road themselves, or move faster with something of their own.

Questions from the class

The question	The answer
What does "tokenised" actually mean?	Today a payment is either paper changing hands or two banks editing their own private records - a few bits changed in my account and in yours. A token is a digital claim written on a shared ledger. Whoever holds the token holds the claim, and its journey from A to B to C can be traced by anyone.
My money is already digital. How is this different from UPI?	UPI money is digital but not tokenised. It is still entries in the banks' own books, moved by messages between them. A tokenised rupee would itself live on a shared ledger. A digital currency need not be on a blockchain at all.
Can a stablecoin always be turned back into ordinary money?	That is the whole promise: hand back one coin, get one dollar. Section 2.04 looks at what stands behind the promise.

MANAGER'S TAKEAWAY

For most companies the first contact with tokenised money will be in cross-border payments. A product company paying an overseas supplier, or a service company collecting from a client in another time zone, today waits days and pays fees at each bank along the way; settlement in minutes changes working capital and treasury routines. Before that reaches you, three questions are worth asking your bank and your finance team: which of the three forms are our counterparties starting to use, what do Indian rules currently allow, and who inside the company would hold the keys. The last question is a security problem as much as a finance one.

2.04 Stablecoins: Bank, Fund or Threat?

Of the three roads, the stablecoin has moved fastest. The class therefore looked at it closely: how it works, how its issuer makes money, what kind of institution it really is, and why central banks outside America are uneasy.

A **stablecoin** is a crypto token built to avoid Bitcoin's flaw. Its value is pegged to a currency - almost always the US dollar - so that one coin is always worth one dollar, while keeping the advantage of moving quickly over a blockchain.

How the issuer earns: a business model in four steps

Step	What happens	On the issuer's books
1	You hand the issuer 1 dollar.	It now owes you 1 dollar: a liability.
2	It gives you 1 stablecoin, which you can send to anyone, anywhere, in minutes.	The coin is the receipt for that liability.
3	It uses your dollar to buy short-term US government bonds.	An asset that earns interest - say 4% a year.
4	Whenever anyone returns the coin, the issuer pays out 1 dollar. No interest is paid to the holder.	The liability costs it nothing.

The issuer earns on its assets and pays nothing on its liabilities. If that sounds familiar, it should: it is the RBI's seigniorage from Session 1, in private hands. An issuer with 100 billion dollars of coins outstanding and Treasury bills yielding 4% collects about 4 billion dollars a year for doing very little.

What the GENIUS Act put into law

Question	What the law says
Who may issue?	Only licensed "payment stablecoin issuers", under federal or state supervision.
What must stand behind each coin?	One dollar of reserves for every dollar of coins: cash, bank deposits, US Treasury bills of about three months or less, and similar safe, short-term assets.
May the issuer lend the money out?	No. Reserves may be held only in the permitted safe assets.
May it pay interest to coin holders?	No. Issuers are barred from paying holders interest or yield.
What if the issuer fails?	Coin holders have the first claim on the reserves, ahead of every other creditor.
What must it disclose?	The size and make-up of its reserves, every month.

The debate: if it walks like a bank, is it a bank?

Before the law was passed, America argued over a simple question, and the professor put the same question to the class: these firms take money from the public and promise to give it back on demand - are they not banks? Participants found the two differences themselves: a stablecoin issuer pays no interest, and, more important, **it does not lend**.

Congress accepted the second view. Even if you insist on calling it a bank, it is a bank with a 100% reserve requirement - and Session 1's "World 2" showed that such a bank adds nothing to the money supply. The professor's verdict was that a stablecoin issuer is closest to a **money market fund**, the kind of mutual fund that pools savers' cash and puts it into Treasury bills and repos.

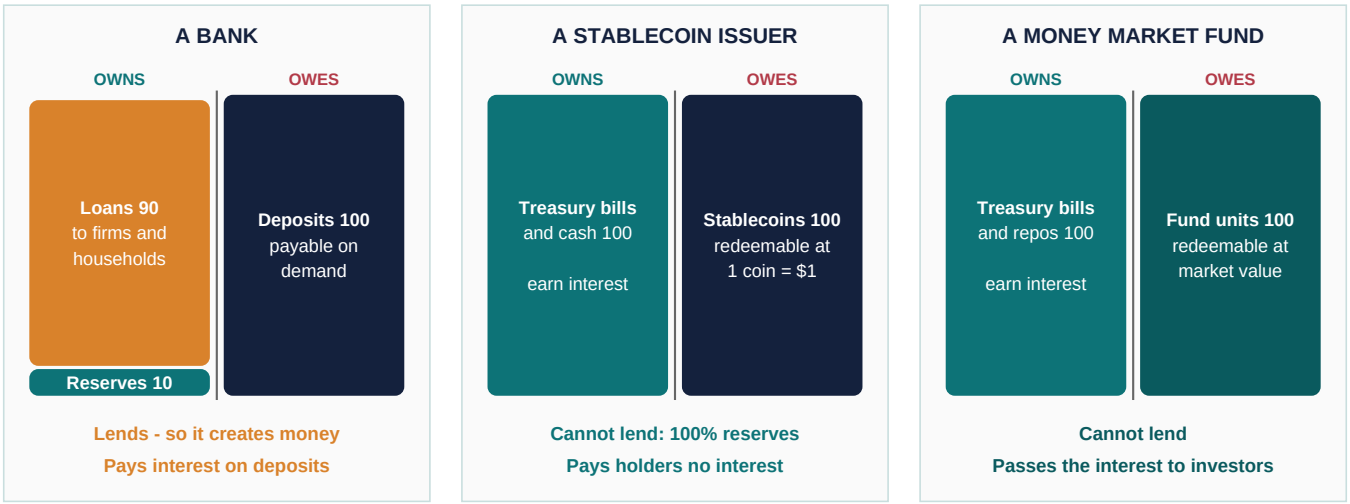


Figure 2.6: Three institutions that take your money. Only the bank lends it on, and so only the bank creates money.

	Bank	Stablecoin issuer	Money market fund
Takes money from the public	Yes	Yes	Yes
Promises it back at face value	Yes, on demand	Yes: 1 coin for 1 dollar	No: at the day's market value, usually close to par
Makes loans	Yes	No	No

	Bank	Stablecoin issuer	Money market fund
Creates money through the multiplier	Yes	No	No
How much is kept in safe assets	A fraction (the reserve ratio)	100%	100%, in short-term securities
Pays a return to the customer	Interest on deposits	Nothing	Passes the interest on
Protection if it fails	Deposit insurance up to a limit	First claim on the reserves	None

Why the rest of the world is uneasy

The worry	In plain words
Dollarisation	Today most Indians need dollars only if they import, export or travel. A dollar token on a phone changes that. If 10 crore people each kept even 50 dollars in stablecoins, that would be 5 billion dollars of new demand for the dollar - and of savings that have left the rupee. The professor's picture: a shopkeeper short of rupees offers you stablecoins as change, and you say fine, I trust the dollar.
Loss of control	The repo rate and the CRR work on rupee money. Money that has moved into dollar tokens is beyond the RBI's reach.
Deposits leaving banks	Money held in tokens is money not held in bank deposits, so banks have less to lend.
The head start	The dollar is already being tokenised by private firms. Europe's own digital currency is three years away. It is hard for an official project to catch a market that is already moving.

One participant reasoned that a world flooded with dollar tokens must make the dollar cheaper. The professor turned it around. Every stablecoin in someone's wallet is a real dollar parked in US government bonds. More stablecoins mean **more demand for dollars**, not more supply, so the dollar strengthens - and the US government finds more buyers for its debt. That is why Washington is enthusiastic. Asked why the Act was passed now, his answer was that America decided private firms would do the job, stepped back, and is already a year ahead of everyone who chose the official road.

CONCEPT TRAP: "STABLE" IS A PROMISE, NOT A GUARANTEE

A stablecoin is not a bank deposit. There is no deposit insurance, and the coin is worth one dollar only as long as the reserves are sound and can be reached. In March 2023 a leading dollar stablecoin briefly traded below one dollar because 3.3 billion dollars of its reserves were sitting in Silicon Valley Bank on the weekend that bank failed - the bank run of Session 1 reaching into the crypto world. The new law exists to make such episodes less likely. It does not make them impossible.

MANAGER'S TAKEAWAY

Treat stablecoins as a development to watch closely, not a product to adopt blindly. A product exporter may soon meet overseas buyers who prefer to settle in dollar tokens because it is faster and cheaper for them; a service company with freelancers or small clients abroad will meet it sooner. In India the rules are cautious and still evolving, so the first call is to compliance, not treasury. The strategic point is larger: payments, remittances and treasury services are businesses whose margins come from slowness and fees, and those margins are what this technology attacks. If your company earns from moving money, it is a threat; if it pays to move money, it is an opening.

2.05 The GDP Debate: New Method, "2% Inflation"

Before moving on, the professor paused the syllabus to deal with a row that was all over the news: can India's new GDP numbers be believed? He did not take a side. He used the row to test whether Session 1 had sunk in - because every confusion in the public debate is a confusion between terms we already know.

The background: in February 2026 the government released a new GDP series with 2022-23 as the base year (Section 1.05). Under it, the size of the economy in rupees came out *smaller* than under the old series, while growth rates stayed high. Critics cried foul. The class took the puzzles one at a time.

Puzzle 1: how can a change of base year change nominal GDP?

It cannot. The base year matters only for *real* GDP - it is the year whose prices are frozen. Nominal GDP is this year's output at this year's prices and does not use a base year at all. What actually happened is that, along with the base year, the government changed the **method** by which GDP is calculated. The smaller number comes from the new method, not from the new base.

What changed in the method	In plain words
Double deflation replaced single deflation	A better way of removing price changes from a firm's value added (explained in the box below). The main change in manufacturing, and what most large economies already do.
The informal economy is estimated differently	The formal economy files returns and can be measured. The informal economy - the street vendor, the small workshop - has to be estimated. The new series uses fresh surveys of small enterprises and of employment, and administrative databases (the professor mentioned provident-fund records), instead of assuming the informal sector moves in step with the formal one.
New data sources and new products	An economy that now runs on GST returns, digital payments and app-based services is measured with data that did not exist in 2011-12.

A participant asked whether every country follows one method. Broadly yes - there is an international rulebook - but each country adapts the details to its own structure, and revisions like this one are routine whenever the base year is changed.

GOOD TO KNOW - SINGLE AND DOUBLE DEFLATION, WITH A BISCUIT MAKER

Last year a biscuit maker sold biscuits worth Rs. 100 and used flour worth Rs. 60: value added Rs. 40. This year it makes exactly the same biscuits from the same flour. The biscuit price is unchanged, but flour is 10% cheaper, so inputs cost Rs. 54 and value added in rupees is Rs. 46 - up 15%. Did real production grow? No. **Single deflation** divides the Rs. 46 by one price index; if that index is the biscuit price, which has not moved, it reports real growth of 15%. **Double deflation** values output and inputs separately at last year's prices: 100 minus 60 is 40, the same as before - growth of zero, which is the truth. Whenever input prices and output prices move differently, single deflation misreads a change in margins as a change in production.

Puzzle 2: did the economy grow 10% or 2.6%?

A participant put the number that was doing the rounds: GDP "reduced from 86 to 80". Here is what lies behind it. For April-June 2025, nominal GDP was about Rs. 86 lakh crore under the old series and about Rs. 80 lakh crore under the new one. For April-June 2026 it is Rs. 88.27 lakh crore, measured the new way.

Compare 88.27 with 86 and growth is a dismal 2.6%. Compare it with 80 and growth is 10.3%. The first comparison mixes a number measured with the new ruler and a number measured with the old one. The professor's verdict was blunt: it makes no economic sense. You cannot compare figures built on different methods; put both years on the same footing first, and then compare.

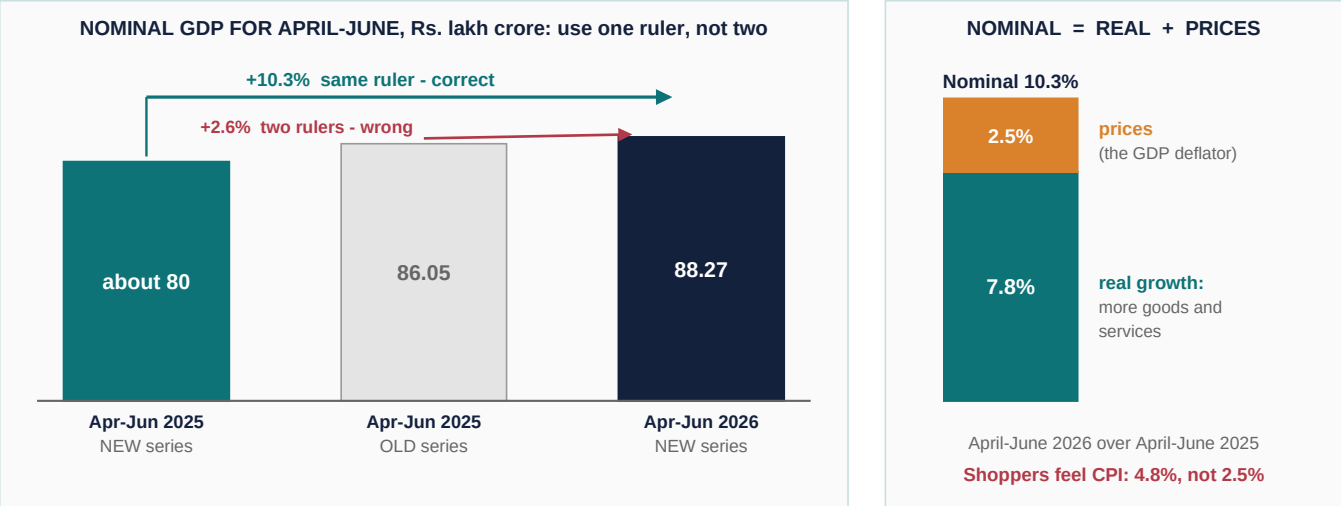


Figure 2.7: Left - growth must be measured with one ruler. Right - what the 10.3% is made of.

Puzzle 3: is inflation really only 2%?

Now apply the Session 1 rule that nominal growth is roughly real growth plus price rise. Nominal GDP grew 10.3%, real GDP 7.8%. So the prices of what India produces rose by only about 2.5%. "That is where the debate really is," the professor said. He asked the class, in Hindi, how many believed that inflation was 2%. Not one hand went up.

The class already had the tool to resolve it. The 2.5% comes from the **GDP deflator**. What people feel is the **CPI**, which was 4.8% in August. Session 1 listed how they differ: the deflator covers everything produced in India, including machines and government services, and leaves out imports; the CPI covers what households buy, wherever it was made. The two numbers can honestly differ.

	What the data says	What people feel
The measure	GDP deflator: about 2.5%	CPI: 4.8%
It covers	Everything produced in India	The household shopping basket
Imported goods	Left out	Included
If the gap persists for many quarters	One reading: the prices of what we import are rising faster than the prices of what we make - imported inflation.	The other reading: the new method may be understating price rise. That is a fair question, and only more quarters of data will answer it.

One participant asked whether the numbers were being manufactured. The reply was firm: do not say that unless you have proof, and there is none. The method is published - complex, but published. The useful question is not about motives but about method: what changed, and what does it do to the numbers?

Two smaller points that came up

GDP has no basket. A participant complained that the government had not disclosed the new "basket". Only a price index such as the CPI has a basket. GDP is the market value of *all* final goods and services; there is nothing to pick and choose.

The base effect. Because last year's level is now lower, this year's percentage growth comes out a little higher. "Base small, percentage growth high" - that is arithmetic, not manipulation, and it cannot repeat: next year the comparison is new series against new series. It is the same logic that lets India grow faster than the United States, and that made Bihar - the professor's example - the fastest-growing large state of the past decade: a low starting point leaves more room to grow.

CONCEPT TRAP: FOUR CHECKS BEFORE YOU BELIEVE A GROWTH NUMBER

1. Nominal or real? 2. Are both years measured on the same series and the same method? 3. Which price measure removed the inflation - the deflator or the CPI? 4. Is a low base flattering the percentage? A headline that fails any of the four is not wrong data; it is a wrong comparison.

MANAGER'S TAKEAWAY

Every company meets this problem in its own accounts. When a firm changes how it recognises revenue or reorganises its segments, it restates last year before reporting growth; a manager who compares this year's restated number with last year's unrestated one will reach the wrong conclusion in either direction. Apply the same discipline to outside data. A product company sizing its market as a share of GDP must rebuild the model on the new series, because the denominator has shrunk. A service company benchmarking its price increases should use the CPI or its own category's prices, not the 2.5% in the GDP deflator - its customers and employees live in the CPI.

2.06 Business Cycles and the Output Gap

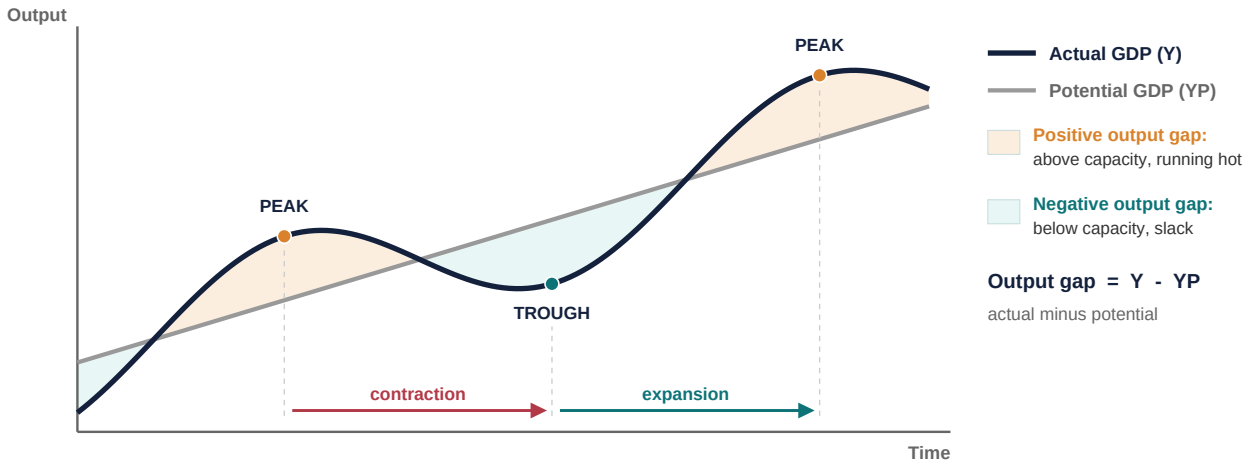
With the detours done, the class turned to the main road: how does an economy move through time? The first fact is that it never moves in a straight line.

Think of a long drive on a highway. Your average speed may be 60 km an hour, but you are almost never doing exactly 60. You speed up on an open stretch, slow behind a truck, speed up again. An economy is the same. Over decades it grows along a trend; in any given year it is running a little faster or a little slower than that trend. The speeding up and slowing down is the **business cycle**.

THE DEFINITION (BURNS AND MITCHELL)

Arthur Burns and Wesley Mitchell, the two economists who first proved the pattern from data, defined business cycles as fluctuations in aggregate economic activity in which many economic activities expand and contract together, in a recurring but not periodic fashion. Two phrases matter. **Together**: it is not one industry having a bad year, it is most of them at once. **Recurring but not periodic**: cycles keep coming, but not on a timetable - nobody can say the next downturn is due in March.

Term	Meaning
Trend, or potential GDP (YP)	What the economy is able to produce with its capital, labour and technology. The long-run path.
Expansion (boom)	The stretch from a trough to a peak: activity is rising.
Peak	The turning point where expansion ends.
Contraction (recession)	The stretch from a peak to a trough: activity is falling.
Trough	The turning point where contraction ends.
Output gap	Actual output minus potential output: Y - YP.



The trend is what the economy can produce; the wave is what it actually produces.

Figure 2.8: The business cycle. Actual output winds around potential output; the distance between the two is the output gap.

The output gap: is the economy running hot or cold?

Potential GDP is the economy's capacity. Sometimes the economy produces above it - factories on overtime, everyone who wants a job has two offers. Sometimes it produces below it - idle machines, idle people. The difference is the single most useful number in policy.

The American example. After the pandemic the United States was the textbook case of a positive gap. The Fed chairman of the time, Jerome Powell, kept pointing out that there were far more job openings than people looking for work - close to two openings for every unemployed person at the peak in 2022. An economy with more jobs than workers is producing above its capacity, and the Fed's response was to raise interest rates to cool it. The professor's view is that America is running above potential even now, with unemployment near 4%. That, he suggested, is why the fear of AI taking jobs is a far louder conversation in India than in America: there the worry is still too few workers, not too few jobs.

	Positive output gap (Y above YP)	Negative output gap (Y below YP)
In one word	Overheating	Slack
Jobs	More vacancies than people; wages bid up	More people than vacancies; unemployment rises
Prices	Under upward pressure	Under downward pressure
What policy tries to do	Cool demand	Lift demand
How business feels	Orders are easy, hiring is hard	Hiring is easy, orders are hard

The professor showed India's own chart from 1995 onward: actual GDP weaving above and below its trend, usually by a few per cent, and then one violent plunge in 2020.

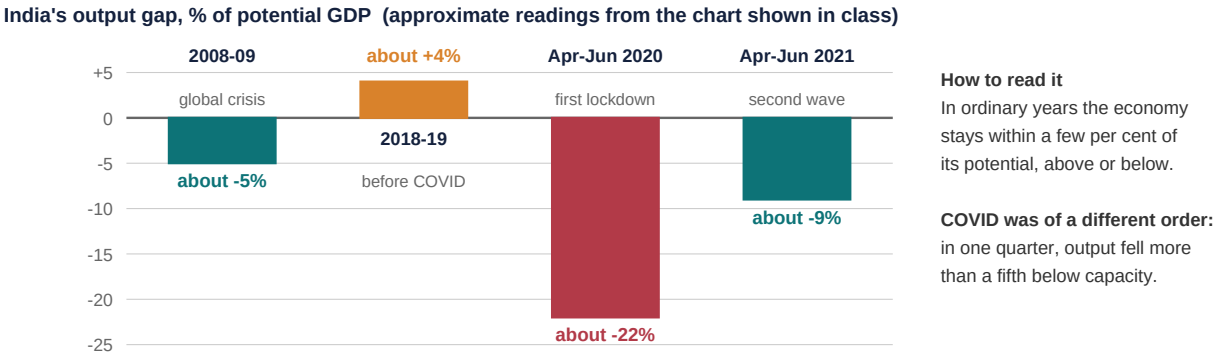


Figure 2.9: India's output gap at four moments. The pandemic quarter is unlike anything else in the record.

Two regularities worth remembering

The slide listed two facts that hold in almost every economy. First, **consumption is less volatile than GDP and investment is more volatile.** A family that hits a bad patch still eats, pays rent and sends the children to school; a company that hits a bad patch postpones the new factory. Second, **unemployment rises in recessions and falls in expansions.**

MANAGER'S TAKEAWAY: KNOW WHETHER YOUR BUSINESS AMPLIFIES THE CYCLE

If your product is somebody's investment, your sales swing more than the economy; if it is somebody's daily consumption, they swing less. A product company making machine tools, trucks or cement can see orders fall 30% when GDP growth merely slows; a maker of soap or medicines barely notices. Services split the same way: project work - a new system implementation, a consulting study - is postponable and behaves like investment, while recurring contracts such as managed services or maintenance behave like consumption. Knowing which you are tells you how much cash to hold in good years, and whether a share of recurring revenue is worth building deliberately.

2.07 What Drives Potential GDP

The trend line is not handed down from heaven. What decides how much an economy is able to produce - and how fast that capacity grows? The professor asked the class, and the answers came quickly: investment, capital, resources.

Take the samosa seller from Session 1. How many samosas can he fry in an hour? That depends on three things: his kadhai and stove, his own two hands and any helper, and his method. Handing his customers more money does not let him fry one extra samosa an hour. A bigger kadhai does. A helper does. A better method does.

The ingredient	In an economy	How it grows
Capital (K)	Factories, machines, roads, ports, power lines, software	Through investment. Capital is the *stock*; investment is the yearly *flow* that adds to it; wear and tear (depreciation) subtracts from it. Think of a tank: investment is the tap, depreciation the leak.
Labour (L)	The number of people working, and their skills	Through population, participation in work, education and health
Technology	The recipe by how capital and labour are combined	Through research, innovation, and copying better methods from elsewhere

"Capital" is the word Karl Marx gave the world, the professor remarked, and it sits at the centre of the long-run story. An economy that has a large stock of capital and keeps generating new technology will have a high potential GDP. That is why the United States stays on top: it has built a system that keeps producing research and innovation. China has been closing the gap by spending on research at a scale that now rivals America's. India's research spending, as a share of its income, is far below both - well under 1% of GDP, against roughly 3.5% in the US and over 2.5% in China.

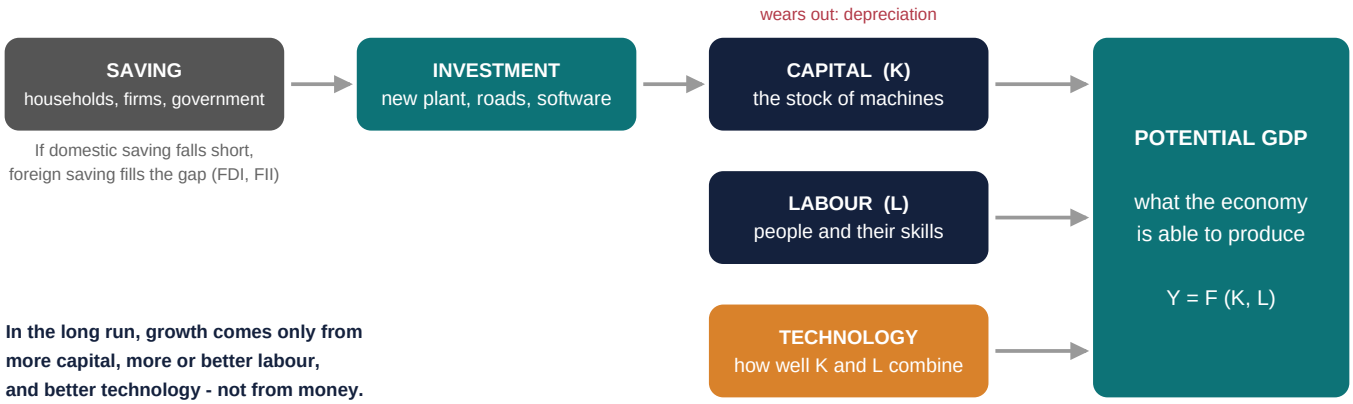


Figure 2.10: The long-run machine. Economists write it as a production function: Y = F (K, L).

Where capital comes from: the saving link

For capital you need investment, and for investment you need **saving**. One person's saving, deposited in a bank, becomes another's loan, which becomes a machine. The worry in many countries, India included, is that the younger generation - "including my generation", the professor said - spends more and saves less. A smaller pool of saving makes capital costlier, and costlier capital means less investment. This is the falling household saving rate from Session 1, now with its consequence spelled out.

A participant objected: without consumption there is no business at all. Agreed - nobody is arguing for zero consumption. The point is that there is an *optimal* amount of saving. The professor called it the golden ratio; textbooks call it the **Golden Rule**: the saving rate that gives a country the highest level of consumption it can sustain in the long run. Save too little and there is too little capital to produce with; save too much and you are giving up consumption for no gain. By most estimates, he said, India saves less than its Golden Rule level.

WHEN A COUNTRY SAVES LESS THAN IT INVESTS

If domestic saving falls short of what the country wants to invest, the gap is filled by other people's saving. Foreign direct investment (FDI) and foreign portfolio money (FII) are exactly that - someone in Japan saved, and the money is building something in India. This is where the open-economy part of the module will begin.

MANAGER'S TAKEAWAY: YOUR FIRM HAS A POTENTIAL OUTPUT TOO

A company's capacity is built from the same three ingredients, and no amount of sales push lifts it. A product company running its plant at 95% cannot discount its way to more revenue; it must add a line, a shift or a better process. A service company's capacity is people multiplied by their productive hours multiplied by what tools let each hour achieve: in a security operations centre that is analysts (L), the platform they work on (K), and the automation and playbooks that decide how many alerts each analyst can handle (technology). Demand can be bought quickly. Capacity has to be built - and the third ingredient is usually the cheapest to improve.

2.08 Technology, AI and Jobs

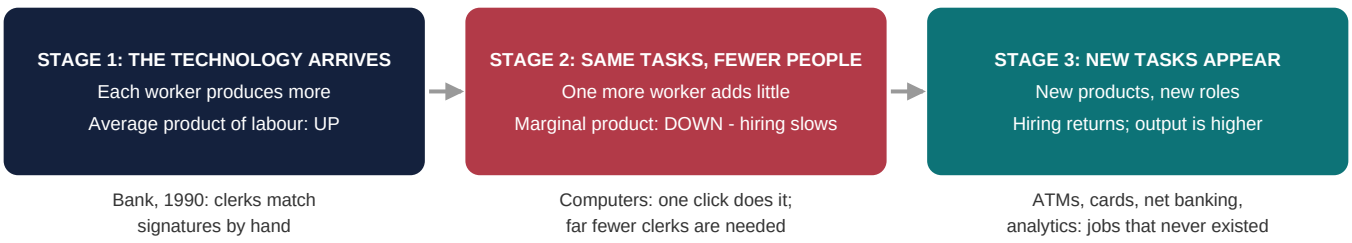
Technology is the third ingredient of potential GDP, and in 2026 one technology is on everybody's mind. The professor took the worry head on. His answer: AI is doing what every technology has always done, and economics has a precise way of describing it.

What does a technology do? Before the wheel, it took four men to carry the king's palanquin. After the wheel, one man and a chariot could do it. Three men were no longer needed for that job. Every technology enters the world this way: it makes each worker more productive.

Measure	What it asks	What a new technology does to it
Average product of labour (APL) = output / workers	How much does each worker produce, on average?	Raises it. This is the whole point of the technology.
Marginal product of labour (MPL)	If the firm hires one more worker, how much extra output does it get?	Lowers it, for the tasks that already exist. The current staff can now handle the work.

The second row is the key, because **firms hire on the margin, not on the average**. The question a firm asks is never "how productive are my people?" It is "what will one more person add?"

The bank branch. Suppose a branch clears 400 cheques a day with 8 clerks who open ledgers and match signatures by hand: 50 cheques per clerk. Computers arrive, and 2 clerks can clear all 400 with a click each: 200 per clerk. Average productivity has quadrupled. But what would a third clerk add? Nothing - every cheque is already being cleared. The marginal product has collapsed, so the bank stops hiring clerks - compare the clerk vacancies of 1990 with those of 2025.



The speed at which Stage 3 follows Stage 2 decides how painful a new technology is.

Figure 2.11: The three stages by which every technology has entered the economy.

If the story ended at Stage 2, every invention since the wheel would have left the world with fewer jobs. It does not end there. More productive workers and cheaper output create **new tasks** that did not exist before. Computers removed the ledger clerk and created the jobs of running ATMs, cards, net banking and loan analytics - and banks employ more people today, not fewer. Electricity did the same on a far larger scale; so did the internet, without which, as the professor pointed out, the class itself could not have been held. For the new tasks, firms need people again.

> **THE RACE THAT DECIDES EVERYTHING**
>
> While the tasks stay the same, a new technology creates unemployment, because the marginal product of labour is down. Once new tasks appear, hiring resumes. So the pain of any technology depends on one thing: how fast new tasks are created. In the professor's words, all technologies penetrate the economy the same way - nothing unique is happening with AI.

This also explains the American calm. In the US new tasks are being created quickly as firms build AI into what they already do, and the labour market is tight to begin with. Participants added a reason for India's anxiety: much of the work India does for the world is the outsourced, repeatable kind that is automated first.

Questions from the class

The question	The answer
Why should a rise in the average pull the marginal down?	Because every decision of a firm is taken at the margin - marginal cost, marginal revenue, the marginal worker. When the existing team can do all the work there is, the next person has little left to add, however productive the team is on average.
If AI takes many jobs, who will have the income to buy what firms produce?	Wages are not the only income. The profits go to the owners of capital - the shareholders - and are spent or invested too. But they go to fewer people, so the likely result is higher inequality, and that is a problem governments address through taxation.
Is this time really no different?	That was the professor's position, and history is on his side. The honest uncertainty is about speed: earlier transitions took decades, and the people caught in Stage 2 did not always live to see Stage 3. His framework tells you what to watch - not the jobs lost, but the pace at which new tasks appear.

MANAGER'S TAKEAWAY: YOUR JOB IS TO BUILD STAGE 3

Inside a company the same three stages play out in miniature, and the finance head asks the marginal question: what does one more hire add? In a product company, automation on the line cuts the number of operators and raises the need for maintenance, quality and data roles. In a service company billed by headcount, tools that let one engineer do the work of three break the pricing model before they break the team - the answer is to price outcomes, not hours. In a security operations centre, AI-assisted triage removes much first-level alert handling; the analysts are worth keeping only if they move to threat hunting, detection engineering and advising customers. A manager who only harvests the productivity gain is running Stage 2. The one who designs the new tasks is running Stage 3.

2.09 Money and Inflation: Short Run vs Long Run

We know how money is created. We have not yet asked what more money does to an economy. The answer depends on one thing only: whether prices are free to move.

Economists use the words short run and long run constantly, and they do not mean six months and ten years. The professor defined them by a single feature - what prices are doing.

	Short run	Long run
Prices are	Sticky - stuck at a level set earlier	Flexible - they have had time to adjust
Output is decided by	Demand: how much people want to buy at those prices	Capacity: capital, labour and technology
More money leads to	More output	Higher prices

Why would prices be sticky? Because they do not change every day. The price printed on a water bottle is the same this week as last. (Commodity prices are the exception.) The slides gave the reasons.

Source of stickiness	What it means	Everyday example
Menu costs	Changing a price costs money and effort: reprinting, re-labelling, informing customers, and the hidden cost of gathering the information needed to decide. So firms review prices only now and then.	A restaurant does not reprint its menu each time onions get costlier.
Fear of annoying customers	Frequent changes alienate buyers.	A salon that raises its rates every month loses its regulars.
Staggered price setting	Competitors change prices at different times, and no one wants to move first, so the whole market adjusts slowly.	Each telecom company waits to see whether the others raise tariffs.
Pricing power	Firms that set their own prices (rather than taking the market's) can choose to hold them.	A branded product with a printed MRP.

The water-bottle economy

To link money and prices the professor built an economy on the spot. He is the only producer, and he makes one thing: a bottle of water. The central bank - a batchmate, described as a benevolent sort of person - gives every citizen Rs. 100. The producer holds up the bottle and asks for bids. Ten rupees. Twenty. Fifty. Finally someone says a hundred - and nobody can say more, because a hundred is all the money anyone has. The bottle sells for Rs. 100.

Now the central bank doubles everyone's money to Rs. 200. There is still only one bottle; the factory can make no more. The bidding runs again - 100, 120, 180 - and stops at 200. Nothing real has changed. The same bottle now carries a price twice as high.

> *"Inflation is nothing but too much money chasing too few goods."*
>
> **The water-bottle economy, in one line**

Then he changed one assumption. Suppose the producer has a warehouse full of bottles and a price tag of Rs. 100 that he does not change. When money doubles, a buyer who wanted one bottle now takes two. The price has not moved. The *quantity sold* has.



Figure 2.12: The same doubling of money in two worlds. Where capacity is the limit, prices rise; where prices are sticky and capacity is idle, output rises.

THE CENTRAL RESULT OF THE SESSION

In the long run, output is fixed by capital, labour and technology, so extra money can only raise prices. **In the short run**, when prices are sticky and there is spare capacity, extra money raises output. The central bank therefore has very little say over the trend line of Section 2.06 - potential GDP. Its job is to keep the economy as close to that line as it can.

This is the meaning of a line every student of economics hears sooner or later. During the Rajya Sabha debate on demonetisation, Dr Manmohan Singh answered those who promised long-run benefits by quoting John Maynard Keynes: **"In the long run we are all dead."** Keynes was not denying the long-run result. He agreed that in the long run money cannot raise production. His point was that people live, work and lose their jobs in the short run - and in the short run, policy matters.

When a participant got tangled in who has how much money, the professor cut through it: "You don't eat money, you eat bread. Money is just a denomination." Doubling the number of rupees does not double the bread.

When it goes out of control: hyperinflation

The class watched a short film from Venezuela: bricks of banknotes that together were worth about four dollars, people buying cash through social media, and a pile of money that would once have bought a flat now paying for a coffee. In Venezuela prices rose by more than a lakh per cent in a single year. Zimbabwe printed a 100-trillion-dollar note in 2009. In Germany in 1923 prices doubled every few days. These are not normal outcomes; the professor called them the corner case - what happens when things go completely out of control.

And they do not start with the central bank. **They start with the government.** A government wants to spend and has no money. It issues bonds. The central bank takes the bonds and prints money to pay for them. If that spending builds nothing - a new palace, higher salaries for legislators, a thousand crore of advertising - then money keeps growing while output does not. Everyone ends up holding ten lakh rupees, and there is still only one bottle of water. This is why Session 1 made so much of the rule that the RBI does not lend directly to the government, and why a central bank has to be both prudent and independent.

GOOD TO KNOW - THE WATER BOTTLE AS AN EQUATION

The slides call this the quantity theory of money. Write M for money, P for the price level and Y for real output. In the simplest version, M = P x Y: the money spent equals the value of what is bought. With one bottle (Y = 1), money of 100 gives P = 100 and money of 200 gives P = 200. Hold P fixed at 100 instead, and money of 200 gives Y = 2. One equation, two worlds - depending on which of P and Y is free to move.

MANAGER'S TAKEAWAY

Every business lives in one of the two worlds at any given time, and should know which. A product company with idle capacity that meets a surge in demand should sell more at the same price and take share; the same company at full capacity should raise prices or invest, because promising more only lengthens delivery times. Stickiness is also a choice you can design. Printed price lists and annual rate cards make your prices slow to respond; fuel-linked surcharges, dynamic pricing and index-linked contracts make them quick. A service company on multi-year fixed rates has the stickiest prices of all - comfortable when costs are falling, painful when they are rising.

2.10 Deflation and Involution: When Prices Fall

If rising prices are bad, falling prices ought to be good: cheaper phones, cheaper cars, cheaper everything. The class spent a surprising amount of time on why this intuition is wrong - and why policymakers fear falling prices even more than rising ones.

Suppose an economy produces so much that supply outruns demand. Prices begin to fall. A sustained fall in the general price level is called **deflation**, and the professor asked the class what could possibly be wrong with it. The answers built up the case.

Why falling prices hurt	In plain words
Buyers wait	If a car will be cheaper next month, why buy it this month? Purchases are postponed, and demand falls further.
Margins and wages shrink	Firms cut prices to hold on to customers, profits thin out, and sooner or later the cuts reach salaries and jobs.
Capital loses its appeal	If the price of what a factory makes keeps falling, there is little reason to build or even hold the factory. Investment dries up.
Debts do not shrink	An EMI is fixed in rupees. If prices and salaries fall while the EMI stays the same, the real burden of every loan rises.

"Prices going up is a nightmare. Prices coming down is a night terror."

The lesson the world took from the Great Depression (paraphrased from class)

Involution: the price war that nobody wins

The professor used a word that has travelled from China into economics: **involution**. It describes firms cutting prices to win market share, which forces every rival to do the same. Nobody gains share for long; everybody's margin is smaller; and since wages are paid out of what firms earn, wages suffer too. The class then watched a short film on where this is happening today.

China's involution, as the film told it	
The complaint	In most countries the public complains that prices are too high. In China the government is unhappy that they are too low.
The cause	Local governments nurtured whole industries - solar panels, lithium batteries, electric cars - until China led the world in them. The result is far more supply than there are customers.
The symptom	About 130 domestic car makers are fighting for sales. Discounts are so steep that a new electric car, the BYD Seagull, can be had for under 8,000 dollars.
The damage	As profits fall, wage growth slows and the jobs outlook weakens.
Why the old cure will not work	A decade ago China faced falling industrial prices and simply ordered capacity cuts in steel and coal - crude, but effective, because those were state-run plants. This time the firms are privately owned, modern and high-tech; the government has less control over them.
The escape routes	Flood foreign markets with the surplus - but trading partners are pushing back with tariffs. Or boost demand at home - the best answer, but one that sits awkwardly with the leadership's vision of China as a manufacturing powerhouse.

Why falling prices do not cure themselves: the Pigou effect that failed

There is an old argument that deflation fixes itself. The economist A. C. Pigou reasoned as follows: when prices fall, the money already in people's pockets buys more; they feel wealthier; they spend more; demand recovers and the price fall stops. It is a neat theory - the **Pigou effect** - and in the Great Depression of the 1930s it simply did not happen. The professor asked why. A participant got it at once: people wait for prices to fall further.

That is the missing piece. A fall in prices creates the *expectation* of a further fall. If flats or cars in India began getting cheaper every month, you would not rush out to buy one; you would wait. And when everyone waits, demand drops again, prices fall again, and the expectation is confirmed.

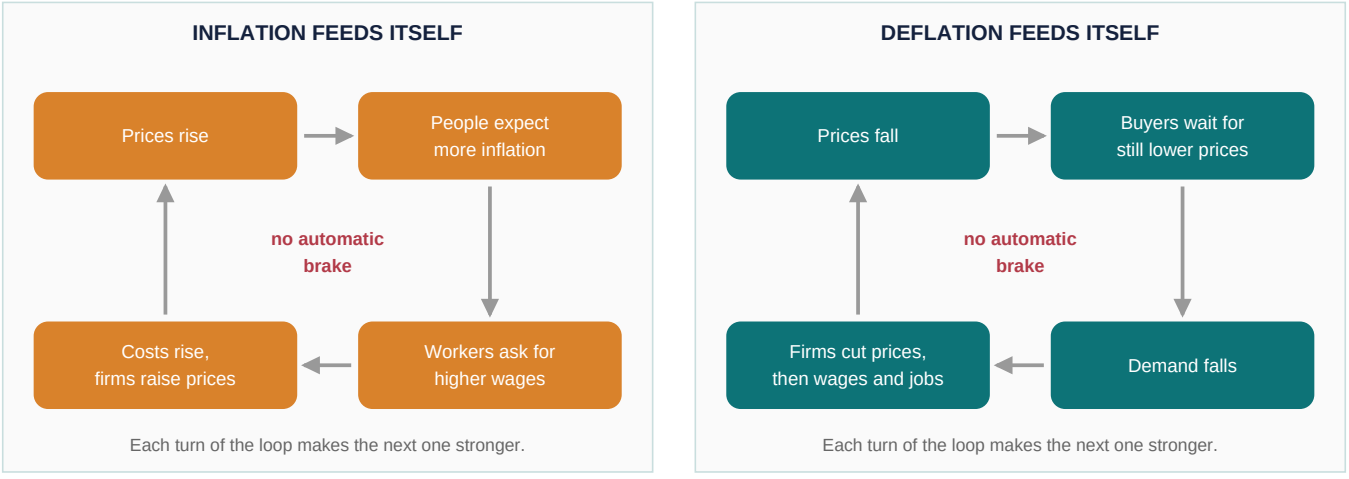


Figure 2.13: Two loops with the same shape. Expectations turn a price change into a reason for a further price change.

A participant asked whether the government could not simply set a minimum price for everything, the way it supports farm prices. In principle it can - a price floor, or for inflation a price ceiling - but doing it across all products

is close to impossible, and history is discouraging. In 1971 President Nixon froze wages and prices in the United States by law. It held for a while. When the controls came off, prices jumped.

MANAGER'S TAKEAWAY: A PRICE WAR IS DEFLATION IN MINIATURE

Everything on this page happens inside single industries all the time. A product company that discounts to gain share invites rivals to match, and trains customers to wait for the next sale - ask anyone who sells phones or televisions before a festive-season event. Falling prices also punish whoever holds stock: inventory bought at last month's cost must be sold at next month's price. A service company meets the same thing as rate-card wars, where each renewal is won by undercutting and nobody's margin recovers. And when a large producer abroad has surplus capacity, its low prices arrive in your market: a gift if you buy components, a threat if you make them. Before joining a price war, ask how it ends.

2.11 Why Markets Do Not Self-Correct

For a long time economists believed that an economy left alone finds its own way back to health: excess supply lowers prices, lower prices revive demand, and balance returns. The Great Depression broke that belief, and one economist explained why.

Picture a recession. Sales are falling and people are being laid off. The professor walks up to you and says: "I have the solution. Go and buy a car. If everyone buys a car, demand rises, firms hire again and the recession is over." You would tell him to keep his advice. There is a recession on; people are losing jobs; why would you buy a car now? You will hold on to your money in case you need it.

That reaction has a name - **precautionary saving** - and it is entirely sensible for one household. The trouble comes when every household does it. Your spending is someone else's income. If all of us cut spending to be safe, all of our incomes fall, and nobody ends up safer. The slides call this the **paradox of thrift**: what is prudent for one is damaging when done by all.

THE KEYNESIAN IDEA

John Maynard Keynes, writing in the Depression, was the first to say plainly that markets do not correct themselves. If demand has fallen short of supply and the economy is sliding into recession, you cannot sit back and wait: uncertainty makes people postpone spending, and the slide feeds on itself. Someone who is not frightened has to step in and spend. That someone is the government. The idea gave governments a far larger role in the economy than they had ever had.

The same is true when prices are rising

Self-correction fails in the other direction too. The professor went back to the Jackson Hole speech, in which the Fed chair put it in a sentence:

> *"Price stability is not self-executing, nor is inflation necessarily mean-reverting."*
>
> **Kevin Warsh, Chair of the US Federal Reserve, Jackson Hole, 28 August 2026**

In plain words: once inflation rises, do not expect it to drift back down by itself. The left-hand loop of Figure 2.13 shows why. High inflation makes people expect high inflation. Expecting it, workers ask for bigger raises. Bigger raises increase firms' costs. Firms raise prices. Inflation is higher again.

WHY THE TWO "BENEVOLENT DICTATORS" EXIST

Whether prices are running away upward or sliding downward, history says the market does not correct by itself. That is why every economy has two institutions with the power to intervene - the central bank and the government. And it is why their decisions land on your business: they act precisely because automatic correction does not happen. The aim, in the professor's words: prices should not rise too fast, and they should never start falling.

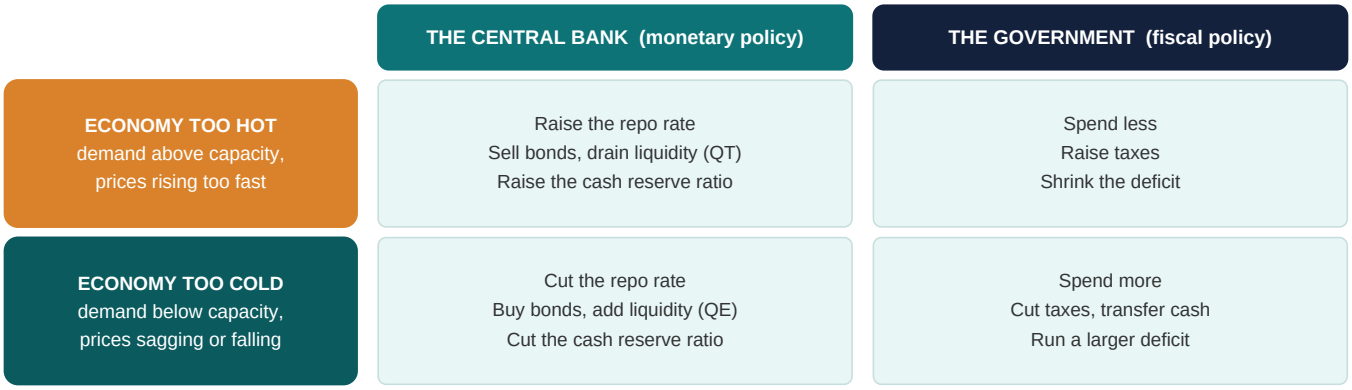


Figure 2.14: The policy toolkit. Two problems, two institutions, and what each one does.

When the economy is too hot - people demanding more than it can produce - the central bank takes money out (quantitative tightening), raises interest rates and slows demand. When it is too cold, as in China today, the government pushes demand: it cuts taxes so that people have more money in hand, or it spends itself. The professor's tongue-in-cheek example was a government that buys ten thousand cars and hands them to its officials.

Case study: how India fought weak demand after COVID

Stage	What happened	The idea at work
1. Rural demand slows	The first sign after the pandemic was weak consumption in the villages.	A negative output gap opening up in one part of the economy.
2. Companies respond	Asked what an FMCG manager would do, the class tried "cut prices" - which the professor rejected as the road to involution - and then found the real answer: keep the Rs. 5 and Rs. 10 price points and make the pack smaller.	Sticky prices in action: the price stays, the quantity adjusts.
3. Government responds	More money for the rural employment guarantee (MGNREGA, replaced in December 2025 by a new scheme promising 125 days of work).	Fiscal policy: put cash directly into the hands most likely to spend it.
4. Urban demand slows too	The problem in cities turned out to be stagnant salaries. The Chief Economic Adviser said it repeatedly: company profits were growing strongly, pay was not.	Demand depends on real wages - see below.
5. Persuasion fails	The government all but asked companies to raise pay. They did not.	A government cannot order private wages up.
6. The remaining lever	Tax relief: from April 2025 no income tax on incomes up to about Rs. 1 lakh a month, and in September 2025 lower GST rates.	If wages will not rise, leave more of the wage in the worker's pocket.

DEMAND DEPENDS ON REAL WAGES, NOT WAGES

If your salary rises 10% and prices also rise 10%, you can buy exactly as many apples as before. You demand more only when your pay rises faster than prices - when your **real wage** goes up. India's urban problem was that salaries were growing more slowly than prices rising at 4 to 5% a year. Pay packets were bigger in rupees and smaller in what they could buy.

MANAGER'S TAKEAWAY

Work out which problem policymakers believe they are fighting, and you can predict their next move and its effect on you. A product company in FMCG lives this directly: when real incomes are squeezed, customers defend the price point and accept less product, so pack design becomes strategy. A service company feels it twice - in what clients will pay for discretionary work, and in its own salary bill, where employees' expectations of inflation set the floor for the annual increase. And remember that your payroll decision is one small part of the real-wage story: if every firm holds raises below inflation, every firm's customers have less to spend.

2.12 Fiscal Policy: Spending, Deficits, Surpluses

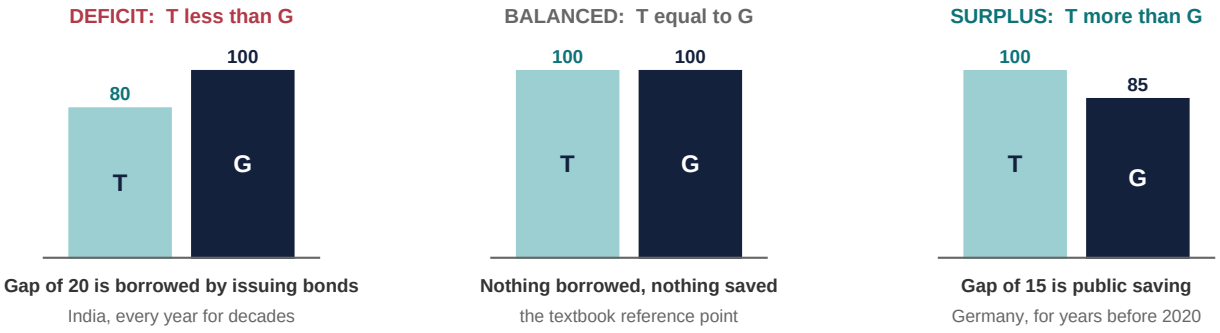
Monetary policy is the central bank's lever. Fiscal policy is the government's, and it has only two moving parts: what the government spends (G) and what it collects in taxes (T).

"Government never pays. You pay."

On where every rupee of public spending comes from (paraphrased from class)

It is a small point that people rarely absorb. A government has no income of its own apart from what it takes in taxes (and, at the edges, what it earns by selling or leasing its assets). When a politician says the government will pay for something, the sentence means that taxpayers will - now, or later.

The government budget: T = tax revenue, G = government spending



Gap of 20 is borrowed by issuing bonds
India, every year for decades

Nothing borrowed, nothing saved
the textbook reference point

Gap of 15 is public saving
Germany, for years before 2020

Whoever is said to be paying, the money comes from taxpayers - today through taxes, or tomorrow to repay the bonds.

Figure 2.15: Three possible budgets. A deficit is covered by borrowing - that is, by issuing government bonds.

If...	It is called	What it means
T is greater than G	A budget surplus (T - G)	The government is saving. Economists call it public saving.
T is less than G	A budget deficit (G - T)	Public saving is negative. The gap is financed by issuing bonds - borrowing.
T equals G	A balanced budget	Public saving is zero.

Not all spending is equal: the productivity test

Section 2.09 warned that government spending financed by printed money ends in inflation. That is not an argument against government spending. In an emerging economy the government *must* spend heavily, because it builds the base on which private business stands: roads, bridges, ports, airports, colleges that turn out skilled people. The professor gave a simple test for telling good spending from bad.

> **THE TEST**
>
> Government spending is productive if it increases the economy's capacity to produce in the future. If it does, output will be higher tomorrow, there will be more goods for the money to chase, and the spending need not be inflationary. In the water-bottle economy it is the difference between printing money and building a second bottling line.

Passes the test	Fails the test
A road, bridge or port that lowers the cost of moving goods	A grand new official residence
A college that raises the skills of the workforce	A large increase in legislators' own salaries
An airport where there is traffic to use it	An airport in a remote place, built because an influential member of parliament comes from there
Power lines, irrigation, digital public infrastructure	A thousand crore spent on advertising the government

This is why economists keep pressing governments to protect **capital expenditure** - spending that creates assets - even when money is tight.

Why would any government tax more than it spends?

India runs a deficit, as it has for decades. The professor asked who does the opposite. Participants offered Norway, Monaco and the oil states with their sovereign funds. His answer was **Germany**, which for years before the pandemic collected more in taxes than it spent. Why would a government do that?

Because it is a way of forcing the country to save. Tax people more, spend less, and the difference is saving done by the state on the citizens' behalf. More saving means cheaper capital, more investment, more factories - and, in Germany's case, more cars to export. This is exactly what its European neighbours complain about: you squeeze your own consumption, build up your industry, and then sell the output to us.

	The German way	The Chinese way	The Indian situation
How saving is raised	The government taxes more than it spends	Households are pushed to save - the professor's illustration was a rule sending a large slice of every salary into a pension fund	It is not: the government runs a deficit and household saving has been slipping
Who takes the decision	The state, on the household's behalf	The state, through the household	The household
The result	A large pool of cheap capital	A very large pool of cheap capital	A shortfall, filled by foreign saving

A participant asked what difference it makes whether the household invests or the government does it for them. The economics is similar; the difference is who decides. Under a forced-saving policy the household has lost the choice between spending and saving - the state has made it.

And when should a government run a bigger deficit?

The slide posed the question directly, and Keynes supplies the answer. When people are gloomy about the future and have stopped spending - when oversupply threatens falling prices, as in China - the government can spend *on their behalf*. It deliberately spends more than it collects, the deficit widens, and the extra demand keeps firms producing. As the slide put it, by spending more than it receives in taxes the government signals better times ahead and gets things moving. The hope is that output and incomes recover, and that the hole is filled later from the taxes on that recovery.

GOOD TO KNOW - TWO UPDATES TO THE PICTURE

Germany has changed course. Its surpluses belong to the years before 2020; since then it has run deficits, and in 2025 it loosened its constitutional limit on borrowing to pay for defence and infrastructure. **A deficit is not printed money.** As Session 1 explained, a deficit covered by selling bonds to banks and savers moves existing money to the government. It becomes inflationary money creation only if the central bank buys those bonds with new money - the road to Section 2.09's hyperinflation.

GOOD TO KNOW - DEFICIT AND DEBT (A TABLE FROM THE SLIDES)

The deck closes with a table from the International Monetary Fund that was not discussed in class but belongs here. A **deficit** is a flow: the amount by which the government's spending exceeds its taxes in one year. **Debt** is the stock: every past deficit added up, less whatever has been repaid. Each year's deficit is that year's addition to the debt. The table shows what the pandemic did: governments everywhere ran the large deficits Keynes would have advised, and their debt jumped in a single year.

General government debt, per cent of GDP	2019	2020
World	83.6	98.6
Advanced economies	103.8	122.7
United States	108.5	133.9
Japan	235.4	254.1
Germany	59.2	69.1
Emerging market economies	54.7	64.0

General government debt, per cent of GDP	2019	2020
China	57.1	66.3
India	74.1	89.6

Two things are worth noticing. Debt is measured against GDP because what matters is the burden relative to the income that has to service it - which is also why a year in which GDP falls, as it did in 2020, pushes the ratio up from both sides. And a high number is not by itself a crisis: Japan has carried debt of more than twice its GDP for years, borrowing in its own currency from its own savers. What no government can do is let the ratio climb without limit - which is the case, made earlier in this section, for running surpluses in good years.

MANAGER'S TAKEAWAY: READ THE BUDGET AS A CUSTOMER AND AS A LANDLORD

The Union Budget touches a business in two ways. Through G, the government is a customer: a product company in cement, steel, cables or capital goods rides the capital-expenditure line, and should look at how much of the spending creates assets rather than at the headline total. Through T, the government decides how much of your customers' income stays in their pockets: a consumer-goods or services company benefits from tax relief with a lag of a few months. For service firms that sell to government - IT projects, consulting, security services - the budget also signals the health of the payer: a government under fiscal pressure pays late.

2.13 The Keynesian Multiplier and Tax Cuts

Keynes made a second and bolder claim. A rupee spent by the government does not raise the nation's income by a rupee. It raises it by more - possibly several times more.

The professor told it as a story with batchmates in the leading roles. The government buys potato chips worth Rs. 100 from one participant. He is now Rs. 100 richer. Like most people who receive extra income, he saves a part and spends a part - say he spends Rs. 80, buying pots from a second participant. She now has Rs. 80 of extra income, and spends 80% of that, Rs. 64, at a third participant's shop. And so on.

Round	Who receives the money	Extra income	Spends (80%)	Saves (20%)
1	The chips seller (paid by the government)	100.00	80.00	20.00
2	The potter	80.00	64.00	16.00
3	The next shopkeeper	64.00	51.20	12.80
4	The next	51.20	40.96	10.24
...	and so on	...	...	...
Total	**The whole economy**	**500**	**400**	**100**

TWO DEFINITIONS AND A FORMULA

Marginal propensity to consume (MPC): if your income rises by one rupee, the part of that rupee you spend. Spend 80 paise and save 20, and your MPC is 0.8. **The Keynesian multiplier:** the total rise in income produced by one rupee of new spending. **Multiplier = 1 / (1 - MPC).** With an MPC of 0.8 it is 1 / 0.2 = 5, so Rs. 100 of government spending raises GDP by Rs. 500 - the figure on the slide.

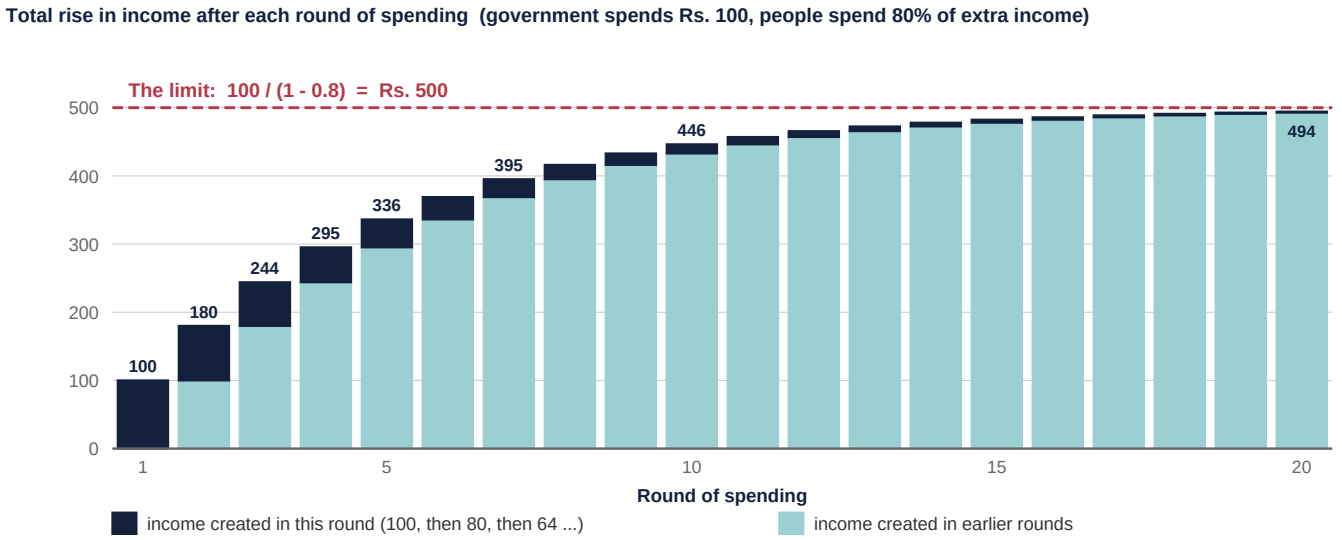


Figure 2.16: The government spends Rs. 100 once. Income rises by Rs. 100, then 80, then 64 - and the total approaches Rs. 500.

If people spend this much of each extra rupee (MPC)	They save	Multiplier	Rs. 100 of spending becomes
0.50	0.50	2	Rs. 200
0.60	0.40	2.5	Rs. 250
0.75	0.25	4	Rs. 400
0.80 (the class example)	0.20	5	Rs. 500
0.90	0.10	10	Rs. 1,000

If the shape of this looks familiar, it is. The money multiplier of Section 2.01 was 1 divided by the share banks *keep* as reserves; this one is 1 divided by the share households *keep* as saving. In both, what leaks out at each round stops the chain, and in both the leaks add up to the original injection - reserves of 100 there, saving of 100 here. And both are ceilings that depend on behaviour: banks must choose to lend, and households must choose to spend.

A tax cut works the same way - with one extra hurdle

When your taxes are cut you have more money in hand; it is as if your income had risen. You spend a part and save a part, and the chain begins. The more of the extra rupee people spend, the more output rises. The class tested this on a news report. Just before lower GST rates took effect in September 2025, the rating agency CRISIL said that the cuts would benefit 11 of the top 30 items of household spending - essentials such as milk products, discretionary purchases such as automobiles and beauty services, and processed foods - together about a third of an average consumer's monthly budget. But, it added, the actual impact would depend on how much of the benefit was passed on to consumers and on whether it led them to consume more. A participant read the passage aloud, and the class was asked to decode its last sentence.

The gate	The question	What it depends on
Gate 1: pass-through	Will companies actually lower their prices by the amount of the tax cut?	Competition, and each firm's choice between volume and margin. Only if prices fall is it as though the consumer's income has risen.
Gate 2: the MPC	Having saved money on one purchase, will households spend the saving or bank it?	The marginal propensity to consume. A high MPC turns the saving into new demand.

An income-tax cut skips the first gate. The money lands directly in the taxpayer's hand; there is no company in between deciding whether to pass it on. Only the second gate remains. And GST cuts are aimed, by design, at items where people are most likely to buy more once the price drops.

GOOD TO KNOW - THREE REFINEMENTS

1. A tax cut has a smaller multiplier than spending. Of Rs. 100 spent by the government, all 100 enters the first round; of a Rs. 100 tax cut, only the Rs. 80 that is spent does. The tax multiplier is MPC / (1 - MPC) - 4 rather than 5. **2. Real multipliers are smaller than the textbook's.** Saving is not the only leak: taxes and spending on imports drain each round too. Estimates by RBI economists put the multiplier for government capital spending in India at well above 2 and for routine spending at below 1. **3. It matters who gets the money.** A family on a tight budget spends almost all of an extra rupee; a wealthy one saves most of it. Money that reaches people with a high MPC travels further.

MANAGER'S TAKEAWAY

When a tax on your product falls, you are standing at Gate 1 and the decision is yours. A product company in a competitive, price-sensitive category usually gains more by passing the cut through and selling more units; one with a loyal customer base may keep part of it as margin - at the risk of being seen to profiteer. The multiplier also works at the scale of a town. When a large plant or a global capability centre opens, its salaries become the first round, and restaurants, landlords, schools and clinics are rounds two and three. A service company choosing where to open next - a retail chain, a hospital, a training institute - is really asking where the first round of spending is about to land.

2.14 Aggregate Demand and What Shifts It

The last fifteen minutes put the session onto one diagram. It has two axes - the general price level and the economy's real output - and it will carry the rest of the module.

The model is called aggregate demand and aggregate supply. The slide describes it as the framework that mainstream economists and policymakers use to think about economic fluctuations and the policies meant to steady them: it shows how the price level and total output are determined together, and how the economy behaves differently in the short run and the long run. This session built the demand half. The supply half comes next time.

AGGREGATE DEMAND (AD)

Aggregate demand is the total demand for the economy's output. In a closed economy - no exports or imports yet - output is either consumed by households, invested, or bought by the government: **AD = C + I + G**. The aggregate demand *curve* shows the relationship between the price level (P) and the quantity of output demanded (Y).

Why the curve slopes downward

The professor asked a participant which way the curve should slope. Downward, she said - if prices fall, people have more income. Right slope, wrong reason, and the correction is the heart of the idea. Your income has not changed. What has changed is what the same money can buy. With Rs. 100 in your pocket and a price of Rs. 5, you can buy 20 items. If the price falls to Rs. 4, the same Rs. 100 buys 25. The quantity of money is the same; its **real value** has gone up.

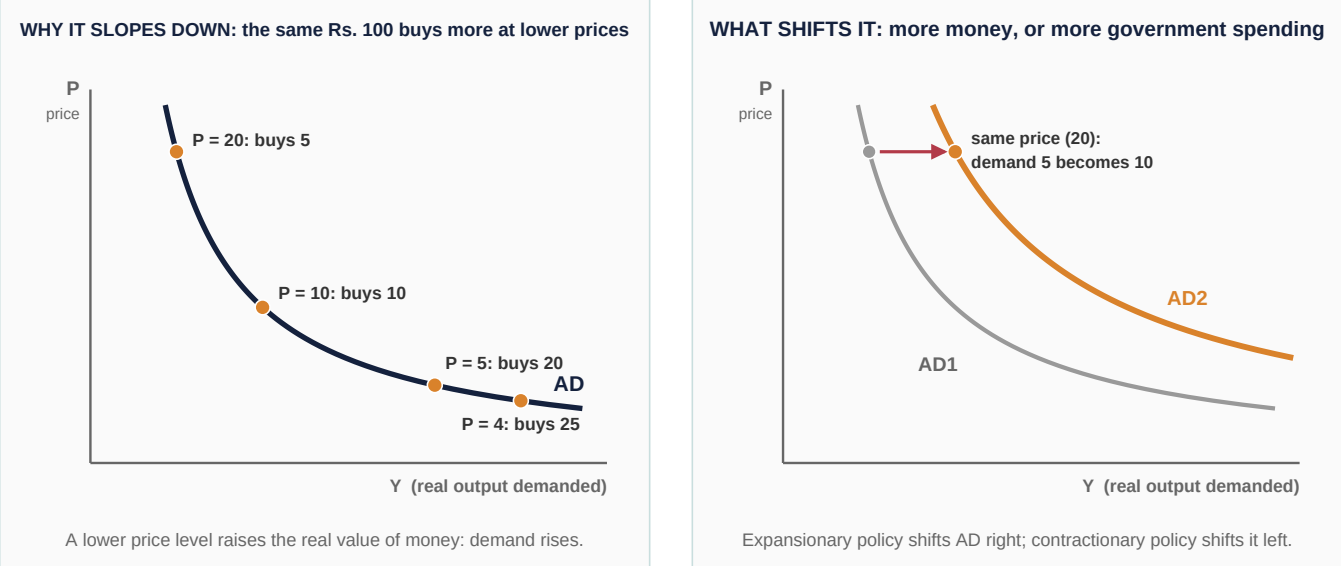


Figure 2.17: Left - one aggregate demand curve, drawn for Rs. 100 of money. Right - a larger money supply moves the whole curve.

The slide says the same thing in the language of economics: a rise in the price level reduces real money balances - the money supply divided by the price level, M / P - and so reduces the demand for goods and services. Holding money and income fixed, price and quantity demanded move in opposite directions.

Moving along the curve, and moving the curve

Now hold the price at Rs. 20 and let the central bank double the money supply from Rs. 100 to Rs. 200. At the same price, people can buy 10 items instead of 5. Nothing has moved *along* the curve - the price has not changed. The whole curve has shifted to the right: at every price, more is demanded than before. An increase in government spending does the same thing, and more strongly than its size suggests, because of the multiplier of Section 13.

What changes	Name of the policy	Effect on the AD curve
Money supply rises	Expansionary monetary policy	Shifts right
Government spending rises, or taxes are cut	Expansionary fiscal policy	Shifts right
Money supply falls	Contractionary monetary policy	Shifts left
Government spending falls, or taxes are raised	Contractionary fiscal policy	Shifts left
Households or firms decide to spend more or less of their own accord	No policy - a change in confidence	Shifts right or left
The price level itself changes	Nothing has shifted	A movement along the same curve

THE LINE TO CARRY INTO THE NEXT SESSION

Expansionary fiscal policy and expansionary monetary policy both raise aggregate demand and shift the AD curve to the right. Contractionary fiscal policy and contractionary monetary policy both shift it to the left. These are the two ways in which the demand of an economy can be moved - which is why the session spent so long on both.

CONCEPT TRAP: THIS IS NOT THE DEMAND CURVE FOR A PRODUCT

The demand curve for tea slopes down because cheaper tea makes people switch away from coffee. The aggregate demand curve has nothing to switch to - it is about *all* goods at once. It slopes down for a different reason: a lower general price level makes the existing stock of money worth more. And it says nothing yet about what output or prices will actually be; for that the curve has to meet aggregate supply.

What comes next. The following session adds the supply curve - flat in the short run, when prices are sticky, and vertical in the long run, when capacity is the limit - and puts the two together. The water-bottle economy has already given away the ending: push demand to the right when prices are sticky and you get more output; push it when the economy is at capacity and you get higher prices. After that the module opens the economy to trade and capital, exchange rates and - as the professor put it - the world that Mr Trump's policies come from.

MANAGER'S TAKEAWAY: EVERY POLICY HEADLINE IS A SHIFT - ASK WHICH WAY

Train yourself to translate news into this diagram. A rate cut, a CRR cut, a tax cut, a bigger capital budget: demand shifts right. A rate hike, a tax increase, a spending freeze: demand shifts left. Then ask who is first in line. A rightward shift from cheaper credit reaches a product company selling homes, cars and appliances first; one from tax relief reaches everyday consumer goods and services first. And because prices are sticky, the shift shows up in volumes before it shows up in prices - so a service company's sales team will feel it in the order book a quarter or two before the pricing team sees any room to move rates.

2.15 Product, Service and the Manager's Desk

The session moved from how money is made to how an economy is steered. As at the end of Session 1, each idea is put on two desks: a business that makes products and one that sells services.

The idea	On the desk of a product business	On the desk of a service business
The multiplier is in the banks' hands (M = m x B)	Dealer and consumer finance decide whether an easier RBI ever reaches the showroom. Track loan growth in your category.	Clients' working-capital limits decide how fast you are paid. Watch receivable days when banks turn cautious.
Tokenised money and stablecoins	Faster, cheaper settlement with overseas suppliers and buyers, once the rules allow. Decide who would hold the keys.	Fees earned from moving money are under attack; collecting from small overseas clients becomes easier.
One ruler for data	Rebuild market-size and share-of-GDP models on the new series before comparing years.	Benchmark fee increases against the CPI or your sector's prices, not the GDP deflator.
The business cycle and the output gap	Capital goods, vehicles and property swing more than GDP; staples swing less. Hold cash to match.	Project work behaves like investment and recurring contracts like consumption. Build the recurring share.

The idea	On the desk of a product business	On the desk of a service business
Potential output: capital, labour, technology	At full utilisation a discount cannot lift sales; a new line, a shift or a better process can.	Capacity is people x productive hours x what tools allow. Tools are usually the cheapest of the three to improve.
Technology and new tasks	Automation shrinks operator roles and grows maintenance, quality and data roles.	Per-head billing breaks first: price outcomes, and design the new tasks your people will move to.
Sticky prices; short run and long run	With idle capacity, sell more at the same price. At capacity, raise the price or invest.	Multi-year fixed rates are the stickiest prices of all. Build indexation into contracts.
Deflation and involution	A price war trains customers to wait and devalues the stock you hold.	Renewals won by undercutting never restore the margin. Compete on outcomes, not rates.
Demand follows real wages	Squeezed households defend the price point and accept a smaller pack.	Discretionary services track real incomes; your own salary bill tracks expected inflation.
Fiscal policy: G and T	Government capital spending is an order book for cement, steel, cables and equipment.	Government as a client means large projects - and slow payment when the budget is tight.
The multiplier and pass-through	When a tax on your product is cut, choose deliberately between volume and margin.	Follow the first round of spending: open where new plants and offices are paying salaries.
Aggregate demand shifts	Cheaper credit reaches homes, cars and appliances first.	Volumes move before prices: the sales team feels a shift before the pricing team does.

Decoding the next headline

Almost every piece of economic news can be placed on the aggregate demand diagram of Section 14. The habit is worth building: name the policy, say which way demand shifts, and ask who is first in line.

The headline	What it is	Demand shifts	Who feels it first
RBI cuts the repo rate	Expansionary monetary policy	Right	Borrowers; sellers of homes, vehicles and durables
RBI cuts the CRR	More room for banks to lend - if they choose to	Right	Firms and dealers that depend on bank credit
RBI sells bonds to drain liquidity	Contractionary monetary policy	Left	Rate-sensitive sectors and heavily indebted firms
Government raises capital spending	Expansionary fiscal policy that also adds capacity	Right	Cement, steel, capital goods, construction
Income tax or GST is cut	Expansionary fiscal policy	Right	Consumer goods and consumer services
The fiscal deficit is to be reduced	Contractionary fiscal policy	Left	Suppliers and contractors to government

The headline	What it is	Demand shifts	Who feels it first
CPI inflation rises above the RBI's band	A signal that tightening is coming	Left, soon	Anyone planning to borrow
Cheap imports arrive from a country with surplus capacity	Imported pressure on prices, not a demand shift	No shift	Local producers lose; buyers of inputs gain

Ten questions to take back to work

#	The question
1	Is credit actually reaching my customers and dealers, whatever the policy statement says?
2	If our main bank turned cautious tomorrow, what is our second source of funds?
3	Are any of our overseas counterparties moving to tokenised payments, and what do Indian rules allow us to do?
4	Are the numbers in our market models on the same series and the same definitions, year to year?
5	Does what we sell behave like somebody's investment or somebody's daily consumption?
6	Is the economy running hot or cold - and so what are the RBI and the government likely to do next?
7	Are we at capacity, where the choice is price or investment, or below it, where the choice is volume?
8	When automation lifts our productivity, what new tasks will our people be doing?
9	Are our customers' real incomes rising or falling? Are our employees'?
10	When a tax or an interest rate changes, are we the ones deciding the pass-through - and what will we decide?

Lines worth remembering (paraphrased from class)

The line	What it compresses
The multiplier is in the hands of the banks.	The RBI controls the base. It does not control what banks do with it.
Inflation is nothing but too much money chasing too few goods.	In the long run, extra money moves only prices.
You don't eat money, you eat bread.	Living standards are about real output, not the number of rupees.
In the long run we are all dead. (Keynes)	Policy matters because people live and work in the short run.
Prices going up is a nightmare. Prices coming down is a night terror.	Deflation feeds on itself and is harder to stop than inflation.
Government never pays. You pay.	Every rupee of public spending is a taxpayer's rupee, now or later.
Demand is a function of real wages.	A pay rise smaller than inflation shrinks what people can buy.
All technologies penetrate the same way.	Watch the pace at which new tasks appear, not the jobs lost.

ONE-BREATH SUMMARY

Total money is the RBI's base multiplied by a multiplier that banks, borrowers and savers decide (M = m x B); in 2020 India's banks parked the RBI's new money back at the RBI, which showed that a bigger base need not mean more credit. Money itself is being re-engineered: central banks (CBDC), existing banks (tokenised deposits) and private issuers (stablecoins) are competing to put currencies on blockchain rails, and America has backed stablecoins - fully reserved issuers that do not lend, resemble money market funds, and worry other countries with dollarisation. GDP figures must be compared on one series; nominal growth is real growth plus price rise, and the deflator is not the CPI. Economies fluctuate around a potential set by capital, labour and technology, and the gap between actual and potential output says whether they are running hot or cold. A technology raises average productivity, lowers the marginal product on old tasks, and restores jobs through new tasks. More money raises output in the short run, when prices are sticky and capacity is idle, and only prices in the long run. Falling prices are worse than rising ones, because expectations make both self-feeding; and since markets do not correct themselves, the central bank and the government step in - one through money and interest rates, the other through spending and taxes, whose effect is multiplied by 1 / (1 - MPC). Both shift the aggregate demand curve, which slopes down because a lower price level makes money worth more. Session 3 adds the supply side.

2.16 Practice Questions for Session 2

Twenty-three questions chosen from this session's full question bank so that every section, and every kind of question - a definition, a calculation, an application, a trap - appears at least once. The options are close on purpose: several are true statements that answer a different question. Read the one-line reason under each answer even when you got it right. More questions on this session are in the Mixed Question Bank after Session 4.

Q1. A CRR of 3% implies a textbook multiplier of about 33, yet India's actual multiplier is about 6. The best explanation is that:

(a) The RBI holds back a large part of the base money that it creates each year

(b) Banks are in practice required to keep reserves of about 16% of deposits

(c) The textbook formula was designed only for developed economies

(d) People hold cash, and banks do not lend every rupee they are allowed to

Answer: (d) - Cash in wallets stops multiplying, and lending depends on banks' and borrowers' willingness. 1/R is only a ceiling.

Q2. Which of the following works on B rather than on m?

(a) A cut in the cash reserve ratio announced by the RBI

(b) Commercial banks becoming more willing to extend loans

(c) The RBI buying government bonds with newly created reserves

(d) Households moving their savings from cash into deposits

Answer: (c) - An open market purchase adds to base money itself. The other three change how far a given base is multiplied.

Q3. In terms of M = m x B, India's experience in 2020 is best described as:

(a) B fell while m rose, leaving M unchanged

(b) B rose but m fell, offsetting much of the rise

(c) Both B and m rose strongly at the same time

(d) B and m were both unchanged through the year

Answer: (b) - The RBI expanded the base; banks did not lend it on, so the multiplier adjusted downwards.

Q4. An issuer has 50 billion dollars of coins outstanding, fully backed by Treasury bills yielding 4%. Its annual interest income is about:

(a) 2 billion dollars

(b) 200 million dollars

(c) 4 billion dollars

(d) 12.5 billion dollars

Answer: (a) - 50 billion x 4% = 2 billion a year, none of which is passed to coin holders.

Q5. Under the GENIUS Act, interest paid by a stablecoin issuer to holders of its coin is:

(a) Compulsory, at the Treasury bill rate

(b) Allowed, but capped at 2% a year

(c) Left to each state to decide

(d) Prohibited

Answer: (d) - Issuers are barred from paying holders interest or yield - one of the things that separates the coin from a deposit.

Q6. If nominal GDP grows 10.3% and real GDP grows 7.8%, the prices of domestically produced output rose by about:

(a) 18.1%

(b) 2.5%

(c) 7.8%

(d) 0.8%

Answer: (b) - Nominal growth is roughly real growth plus price rise: 10.3 minus 7.8 is about 2.5.

Q7. Double deflation means:

(a) Deflating GDP by the CPI and by the WPI, and averaging the two

(b) Removing the effect of inflation twice from the same figure

(c) Deflating output and intermediate inputs separately, then subtracting

(d) Using two different base years, one for goods and one for services

Answer: (c) - Real value added = real output minus real inputs, each valued at its own base-year prices.

Q8. Actual GDP is 104 and potential GDP is 100. The economy has:

(a) A negative output gap of 4% and idle capacity

(b) A budget surplus equal to 4% of its GDP

(c) A positive output gap of 4% and is overheating

(d) A recession, since output differs from potential

Answer: (c) - Output above capacity is a positive gap - the overheating case, with pressure on wages and prices.

Q9. A country invests 100 this year while 30 of its existing capital wears out. Its capital stock changes by:

(a) Plus 130

(b) Plus 70

(c) Plus 100

(d) Minus 30

Answer: (b) - Net addition = investment minus depreciation = 100 - 30 = 70.

Q10. Firms decide whether to hire one more worker by looking at:

(a) The average product of labour

(b) Their total output

(c) The marginal product of labour

(d) Last year's profit

Answer: (c) - Every decision of a firm is taken at the margin: what will the next person add?

Q11. A branch clears 400 cheques a day with 8 clerks. After computerisation 2 clerks clear all 400. The average product per clerk has moved from:

(a) 50 to 200

(b) 50 to 100

(c) 400 to 200

(d) 8 to 2

Answer: (a) - 400 / 8 = 50 before; 400 / 2 = 200 after. Average productivity has quadrupled.

Q12. In the water-bottle economy there is ONE bottle, and citizens' money is doubled from Rs. 100 to Rs. 200 each. The outcome is:

(a) Price Rs. 100, two bottles sold

(b) Price Rs. 200, two bottles sold

(c) Price Rs. 200, one bottle sold

(d) Price Rs. 100, one bottle sold

Answer: (c) - Capacity is one bottle, so the extra money can only bid up the price.

Q13. Using M = P x Y with output fixed at one bottle, raising money from 100 to 300 gives a price of:

(a) 100

(b) 300

(c) 200

(d) 33

Answer: (b) - P = M / Y = 300 / 1. With output fixed, the price level moves one for one with money.

Q14. Deflation is:

(a) A fall in the rate of inflation, say from 6% to 3%

(b) A fall in real GDP for two successive quarters

(c) A fall in the exchange value of the currency

(d) A sustained fall in the general level of prices

Answer: (d) - A falling inflation rate is disinflation - prices still rise. Deflation is prices themselves falling.

Q15. The Pigou effect failed in the Great Depression mainly because:

(a) Prices did not in fact fall during those years, so the mechanism was never tested

(b) The money supply was expanding very rapidly at the time

(c) Governments were running very large budget deficits

(d) Falling prices led people to expect further falls, so they waited

Answer: (d) - Deflation creates deflationary expectations - the piece Pigou's argument left out.

Q16. The paradox of thrift says that when everyone tries to save more:

(a) Total income falls, so total saving may not rise at all

(b) Investment rises automatically to absorb the saving

(c) Interest rates rise and bring spending back

(d) The government's deficit falls by the same amount

Answer: (a) - If all cut spending together, all incomes fall, and nobody ends up safer.

Q17. Your salary rises 6% in a year in which prices rise 8%. Your real wage has:

(a) Fallen by about 2%

(b) Risen by about 2%

(c) Risen by 6%

(d) Fallen by 8%

Answer: (a) - Real wage change is roughly pay rise minus inflation: 6 - 8 = -2.

Q18. If T = 90 and G = 110, the budget shows:

(a) A surplus of 20, which is public saving

(b) A balanced position, since both are near 100

(c) Public saving of 20, held in reserve

(d) A deficit of 20, financed by issuing bonds

Answer: (d) - G - T = 20. The gap is borrowed by selling government bonds.

Q19. By the test given in class, government spending is "productive" if it:

(a) Is disbursed quickly after the budget is passed, so that it reaches people without delay

(b) Is financed out of taxes rather than out of borrowing

(c) Increases the economy's capacity to produce in the future

(d) Is spent on salaries rather than on purchases of goods

Answer: (c) - If capacity rises, there are more goods tomorrow for the money to chase, so the spending need not be inflationary.

Q20. With an MPC of 0.8, the Keynesian multiplier is:

(a) 5

(b) 0.8

(c) 1.25

(d) 8

Answer: (a) - 1 / (1 - 0.8) = 1 / 0.2 = 5.

Q21. A tax cut of Rs. 100 has a smaller multiplier than Rs. 100 of government spending because:

(a) Part of the tax cut is saved before any of it is spent

(b) Tax cuts are not permitted during a recession

(c) Government spending is never saved or taxed away

(d) Tax cuts push up interest rates more than spending does

Answer: (a) - All 100 of spending enters round one; of a tax cut only the 80 that is spent does. Hence 4 rather than 5.

Q22. The money supply doubles while the price level is unchanged. On the diagram this is shown as:

(a) A movement down along the AD curve

(b) A shift of the AD curve to the right

(c) A shift of the AD curve to the left

(d) A movement up along the AD curve

Answer: (b) - At the same price more is demanded - the whole curve moves. Only a change in P itself is a movement along it.

Q23. A stablecoin issuer, a commercial bank and a money market fund all take money from the public. Which of them multiplies deposits by lending to firms and households?

(a) Only the stablecoin issuer

(b) Only the commercial bank

(c) The issuer and the fund

(d) None of the three

Answer: (b) - Only the bank lends on what it receives, and so only the bank creates money.

SESSION 3 OF 4

Supply, Expectations and the Open Economy

Policy in Step and in Conflict, Aggregate Supply, the Phillips Curve, Expectations and Disinflation, the Open Economy and Exchange Rates

Sunday, 20 September 2026 | Prof. Ankit Kumar | Live online session

WHAT THIS SESSION COVERS

The limits of policy, and the world outside. What happens when the government and the central bank disagree; the supply side, the Phillips curve and inflation expectations; supply shocks and disinflation; and then the open economy - a fragmenting world, the identity that divides countries into lenders and borrowers, and the nominal and real exchange rates.

3.01	Two Policymakers: In Step or in Conflict	85	**3.09**	Disinflation: Short Pain, Long Gain	99
3.02	Aggregate Demand, Revisited	87	**3.10**	Case Study: The Kennedy-Powell Hearing	100
3.03	Aggregate Supply: The Great Debate	88	**3.11**	A Fragmenting World	102
3.04	Why Supply Slopes Upward: Sticky Wages and Lucas	90	**3.12**	The Open Economy: Lenders and Borrowers	104
3.05	The Phillips Curve and the Natural Rate	91	**3.13**	The Exchange Rate: The Price of a Currency	106
3.06	AD Meets AS: Reading a Rate Hike	93	**3.14**	The Real Exchange Rate and Exports	108
3.07	Inflation Expectations and the Wage-Price Spiral	95	**3.15**	Product, Service and the Manager's Desk	110
3.08	Supply Shocks: The Central Banker's Dilemma	97	**3.16**	Practice Questions for Session 3	113

3.01 Two Policymakers: In Step or in Conflict

Session 2 ended with the two "benevolent dictators" - the government and the central bank - each able to push aggregate demand up or down. Session 3 began with an awkward fact: they are two separate institutions, and nothing guarantees that they push the same way.

Usually they do. But the professor wanted the class to see both cases clearly, because between them the two decide the business environment in which every company operates.

In step: the COVID years

Take the pandemic. The government had to spend far more while its tax revenue did not rise, so spending exceeded taxes and it had to borrow. Now follow the borrowing through. The country has a pool of saving. When the government comes to that pool for a large amount, the price of money - the interest rate - starts to rise. At this point the central bank can step in: it buys government bonds with newly created money. That pushes the interest rate back down and enlarges the money supply.

Who acts	What it does	Effect on demand	Effect on the interest rate
Government	Spends more than it taxes; borrows the difference	Up	Up - it draws on the pool of saving
Central bank	Buys bonds with new money	Up	Down - money is plentiful again
Together	Expansionary fiscal policy accommodated by expansionary monetary policy	Strongly up	Low

Each policy makes room for the other - economists say monetary policy is *accommodating* fiscal policy. For business it is the friendliest setting possible: plenty of money about, and money that is cheap.

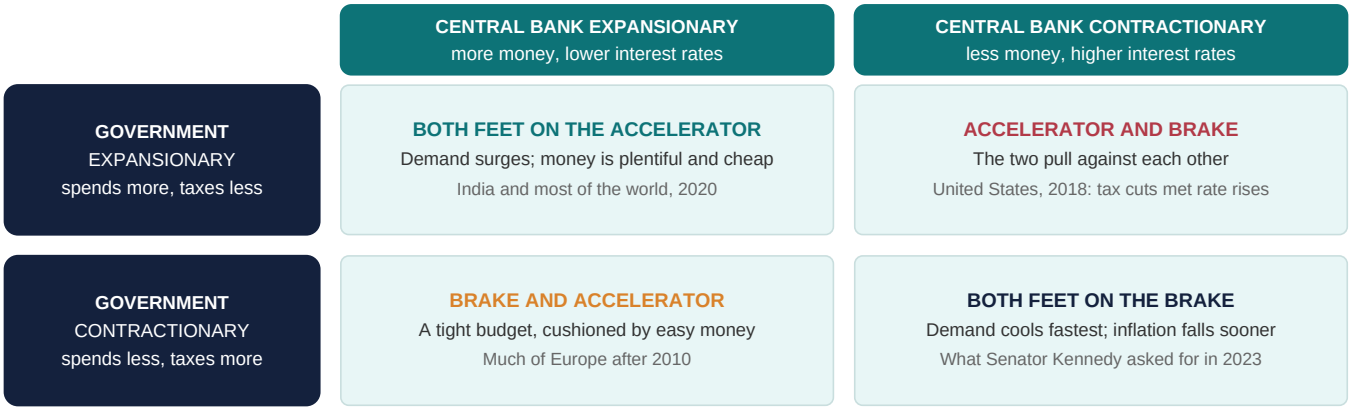


Figure 3.1: The policy mix. Two institutions, two directions each, four possible business environments.

In conflict: Trump and Powell

Now suppose the government is cutting taxes to lift output while the central bank is withdrawing money to hold output down. That is not a thought experiment. It is the root of the long quarrel between President Donald Trump and Jerome Powell, who chaired the US Federal Reserve until a few months ago.

As the professor told it: in his first term Trump pushed through a massive tax cut - expansionary fiscal policy, meant to raise output. Powell, on the other side, was tightening - raising interest rates and shrinking the Fed's bond holdings. One was pressing the accelerator and the other the brake. Many believe Trump still holds Powell responsible for blunting the effect of his tax cut before the election he lost. The irony is that Powell was Trump's own appointee - "it is not that he was the other party's man" - who simply did not behave as the President had hoped.

Powell's reasoning was the reasoning of Session 2. The American economy was already close to its potential. A fiscal push at that point would not produce much extra output; it would push the economy above potential and produce inflation. Keeping output close to potential was his job, so he leaned the other way.

When Trump returned to office the quarrel became public and personal. The class watched a news clip of the President saying there was "something wrong" with Powell, that he would like to fire him, and - half in jest - threatening his own Treasury Secretary with the same fate if interest rates were not brought down. A sitting president humiliating the head of the central bank is very rare. To feel how rare, the professor translated it: imagine the Prime Minister speaking that way about the RBI Governor, with the Finance Minister on stage.

GOOD TO KNOW - THE DATES BEHIND THE STORY

The tax cut was signed in December 2017. Powell, nominated by Trump, took over as Fed chair in February 2018; during 2018 the Fed raised its policy rate four times and kept shrinking its balance sheet, and Trump attacked it repeatedly. Powell's term as chair ended in May 2026, and Kevin Warsh succeeded him. The point for us is not the politics but the mechanics: fiscal policy pushing demand up while monetary policy pulls it down.

What the two are meant to do

Behind the quarrel is a simple division of labour, built on Session 2's picture of an economy fluctuating around its potential.

The job	Who does it	How
Raise potential GDP - the economy's capacity to produce	Mainly the government	Infrastructure, better public facilities, ease of doing business, conditions in which new firms can start
Keep actual output close to potential - neither below nor above	Mainly the central bank, with the government	By moving aggregate demand: more of it when there is slack, less of it when the economy overheats

Below potential the cost is obvious: idle people and machines. Above potential the cost is less obvious, and America has now met it twice in five years - after the pandemic, and again in 2026. "The issue in the United States is not unemployment," the professor said. "It is too much employment." It sounds absurd until you follow it through. When there are more jobs than people, firms bid for workers and wages rise. Higher wages are higher costs, and higher costs become higher prices. Higher prices make people expect more inflation, which makes them ask for still higher wages. High inflation, once started, feeds itself. The remedy is to reduce money and bring output back down towards potential.

MANAGER'S TAKEAWAY: READ THE MIX, NOT ONE POLICY

A budget and a monetary policy statement should be read as a pair. When both are expansionary, demand and credit are both easy: a product company can plan for volume, and borrowing to add capacity is cheap. When they pull apart, the result depends on what you sell. A fiscal push with tight money lifts incomes but makes loans costly, so a product bought on credit - a car, a flat, a machine - can struggle even as everyday consumer goods do well. A service company feels the same split between clients: those selling to consumers are busy, those dependent on borrowed money cut projects. And when both turn contractionary, protect cash first.

3.02 Aggregate Demand, Revisited

Session 2 built the aggregate demand curve (Section 2.14). Before adding supply, the professor rebuilt it in two minutes, with apples - and added one new idea: spending that changes of its own accord.

Keep the money in your pocket fixed at Rs. 100. At Rs. 20 an apple you can buy five; at Rs. 50, only two. Nothing has happened to your money; its *real value* has fallen - the same downward slope as before. Now hold the price at Rs. 20 and double the money to Rs. 200: you buy ten apples instead of five, and the whole curve has moved to the right. A participant checked the direction - more money, at every price, means more demanded. "I am saying nothing about supply yet," the professor added. "That comes next, and then we put the two together."

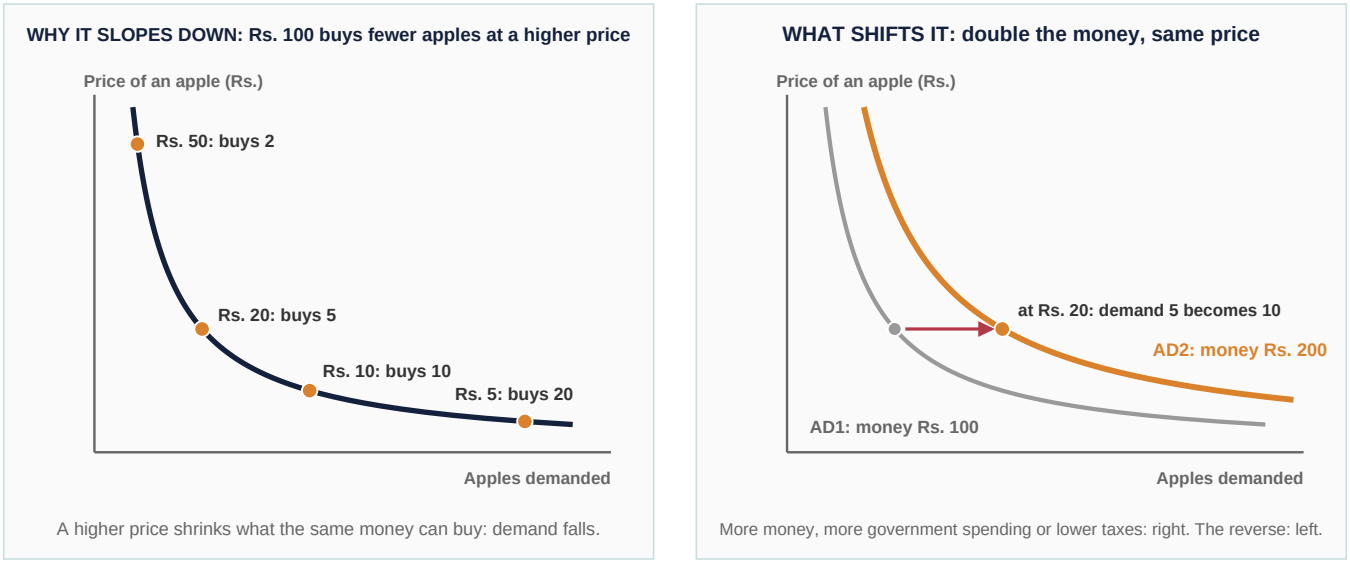


Figure 3.2: The aggregate demand curve, rebuilt with apples. Left - moving along it. Right - shifting it.

Aggregate demand shifts RIGHT when...	Aggregate demand shifts LEFT when...
The money supply rises (expansionary monetary policy)	The money supply falls (contractionary monetary policy)
Government spending rises (expansionary fiscal policy)	Government spending falls (contractionary fiscal policy)
Taxes are cut	Taxes are raised
Households or firms decide to spend more of their own accord	Households or firms turn cautious and spend less

The last row is new, and the slides give it a name: **autonomous consumption and autonomous investment** - spending that changes without any change in income or policy. Two sources were mentioned. One is optimism: a business owner who feels that India is growing decides to invest more. The other is wealth: when the stock market rises, people feel richer and spend more although their salaries have not changed.

MANAGER'S TAKEAWAY

Autonomous demand is the part no policy announcement will warn you about, so it has to be watched directly: consumer and business confidence surveys, and the stock and property markets that make households feel richer or poorer. A product company selling premium cars, jewellery or second homes rides the wealth effect more than the income effect; so does a service company in travel, private banking or premium education. If your customers' spending follows their portfolios rather than their pay, a market correction is your early warning.

3.03 Aggregate Supply: The Great Debate

Economists broadly agree about demand. On supply they have fought for a century. "Macroeconomists love to disagree," the professor said, "and the biggest fight in the history of the subject was over one question: what is the shape of the aggregate supply curve?"

His verdict came first: both sides were right. They were describing two different stretches of time.

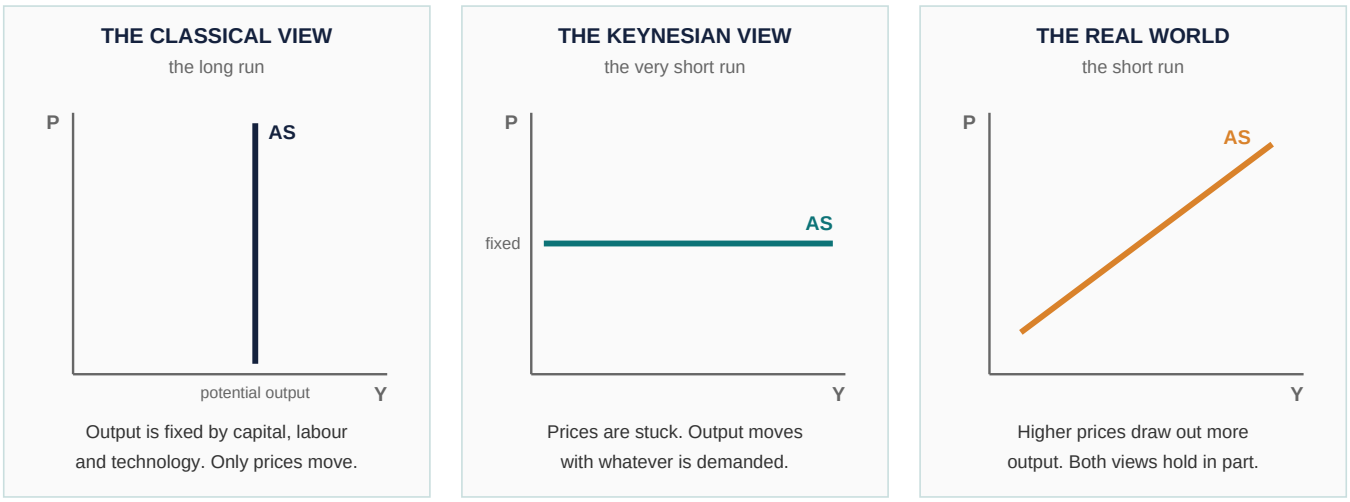


Figure 3.3: Three pictures of aggregate supply. The first two are the extremes; the third is what we observe.

	The classical view	The Keynesian view
Who	The economists before Keynes	Keynes and his followers
The core belief	Supply creates its own demand. Whatever is produced will find a buyer, because prices adjust.	In the short run prices do not adjust, so demand decides how much is produced.
What fixes output	Capital, labour and technology	How much of the capital and labour firms choose to use
What moves freely	Prices	Output
Shape of the supply curve	Vertical: output is fixed whatever the price level	Horizontal: prices are fixed whatever the output
The time frame it fits	The long run	The very short run

Keynes did not deny the classical story; he said it was a story about the long run, and that we do not live there. Prices do not move week by week. If a country's inflation is 4% a year, prices are rising by about a third of one per cent a month - too little for a manager to reprint a price list. Changing a price has a cost, so a bottle of water priced at Rs. 20 will probably still be Rs. 20 a year from now. (Commodities, whose prices are discovered by auction every day, are the exception.) In that world a firm meets a change in demand by producing more or less, not by changing its price.

The two camps argued bitterly, and both knew that reality lay between them. In practice the supply curve **slopes upward**: when prices rise, firms produce more. That was never in dispute. What took decades was explaining *why* - and the explanation, when it came, changed how central banks think.

MANAGER'S TAKEAWAY: WHICH SUPPLY CURVE IS YOURS?

Every firm has its own version of this. A product company with a printed price list and spare capacity is Keynesian in the short run: a surge in orders is met with more output at the same price. A firm selling a commodity - steel, cotton, a hotel room priced by an algorithm - is closer to the classical case: its price moves at once. Most service companies sit at the sticky end, with annual rate cards and contracts, so a change in demand shows up first in utilisation - how busy the team is - long before it shows up in rates.

3.04 Why Supply Slopes Upward: Sticky Wages and Lucas

Why should a higher price level make firms produce more? Two answers were given in class. The first is simple. The second won a Nobel Prize, and the professor summed it up in a line the class will not forget.

The first answer: wages are stickier than prices

Prices are slow to change, but wages are slower still: a salary is fixed for a year, a wage agreement for longer. So when prices rise, wages lag behind, and the gap is profit.

	Before	After prices rise
Cost of making one unit (mostly wages)	Rs. 5	Rs. 5 - wages have not moved yet
Selling price	Rs. 6	Rs. 7
Profit on each unit	Re 1	Rs. 2
What the manager does	-	Produces more: each extra unit earns twice as much

This is the **sticky-wage model**. There is nothing wrong with its logic. Its weakness is that everything rests on one assumption - that wages are stickier than prices.

The second answer: the manager is fooled

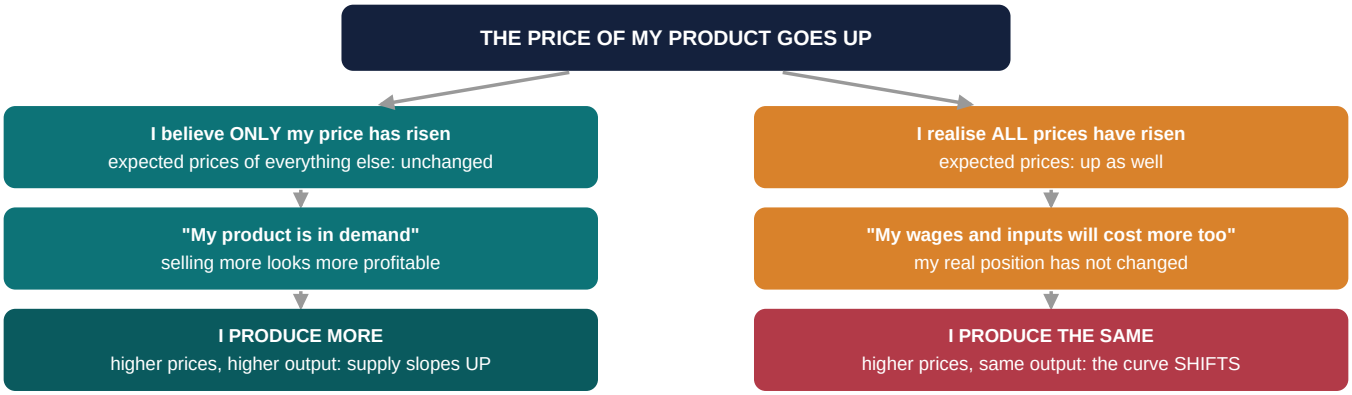
The economist Robert Lucas asked what would happen if nothing were sticky at all - if every price and every wage could move freely. Would the supply curve still slope upward? His answer was yes, for a reason the professor compressed into one sentence.

> *"The supply curve slopes upward because managers are idiots."*
>
> **Lucas's imperfect-information model, as told in class**

Here is the kinder version. Every producer makes one thing and buys many things. He knows the price of his own product exactly - he sets it, or sees it every day. He does *not* know, at that moment, what is happening to the prices of everything else: wages, electricity, raw materials, his rivals' products. For those he works with an expectation.

Now the price of his product rises. What does he conclude? That *his* product is in demand - "my item is so good." He does not realise that all prices are rising together. Believing that his price has risen relative to everything else, he produces more. If he had understood that everything was going up - his wage bill and his inputs included - he would have seen that nothing had really changed, and produced the same as before.

Picture the owner of a small restaurant who finds he can charge Rs. 10 more for a thali and still fill his tables. He takes it as a sign that his food is popular, hires another cook and stays open later. Three months on he notices that rice, cooking gas, rent and the cook's wages have all gone up by about as much. He was never doing better than before. But for those three months he produced more - and so did every other owner who made the same mistake.



Every supply curve is drawn for a given expected price level.

While expectations stay put, we move along the curve. When expectations move, the whole curve moves.

Figure 3.4: The same price rise, read two ways. Which branch the manager takes depends on what he expects other prices to do.

THE IDEA THAT MATTERS: EXPECTED PRICES

The supply curve slopes upward **for a given level of expected prices**. If prices rise while expectations stay where they were, firms produce more: we move along the curve. If expectations rise too, there is no reason to produce more: the whole curve shifts. In terms of inflation: as long as people expect, say, 4%, a surprise in actual inflation draws out more output. Once expectations themselves move, it does not. As the slide puts it, every supply curve is drawn for a given expected price.

GOOD TO KNOW

In class the model was dated to the 1990s. Lucas published it in the early 1970s and received the Nobel Prize for this work in 1995. The slides state its assumptions formally: each supplier produces one good and consumes many, knows the price of the good she produces but not the overall price level, and so bases her decision on her own price relative to the price level she expects.

MANAGER'S TAKEAWAY: IS IT YOU, OR IS IT EVERYONE?

Before reading a price rise as good news, ask Lucas's question. A product company that can suddenly charge 8% more should check whether its costs and its competitors' prices are rising 8% as well; if they are, the gain is inflation and not demand, and adding capacity on the strength of it is a mistake. A service company that wins higher billing rates should set them against its own wage inflation: a 10% rise in rates in a year when salaries rise 10% has improved nothing. The discipline is to look at your price relative to other prices, not your price alone.

3.05 The Phillips Curve and the Natural Rate

The supply curve relates prices to output. Newspapers and central bankers usually talk about a different pair - inflation and unemployment. The professor showed that it is the same curve in different clothes.

Start from a fact nobody disputes. When output grows faster, firms need more people, so unemployment falls. When the economy slows, firms stop hiring, and unemployment rises. Output and unemployment move in opposite directions.

So take the upward-sloping supply curve - higher prices with higher output - and replace "higher output" with "lower unemployment", and "higher prices" with "higher inflation". You get a downward-sloping line: when inflation is high, unemployment is low, and when inflation is low, unemployment is high. This is the **Phillips curve**.

> *"The Phillips curve is nothing but the aggregate supply curve written differently."*
>
> **Paraphrased from class**

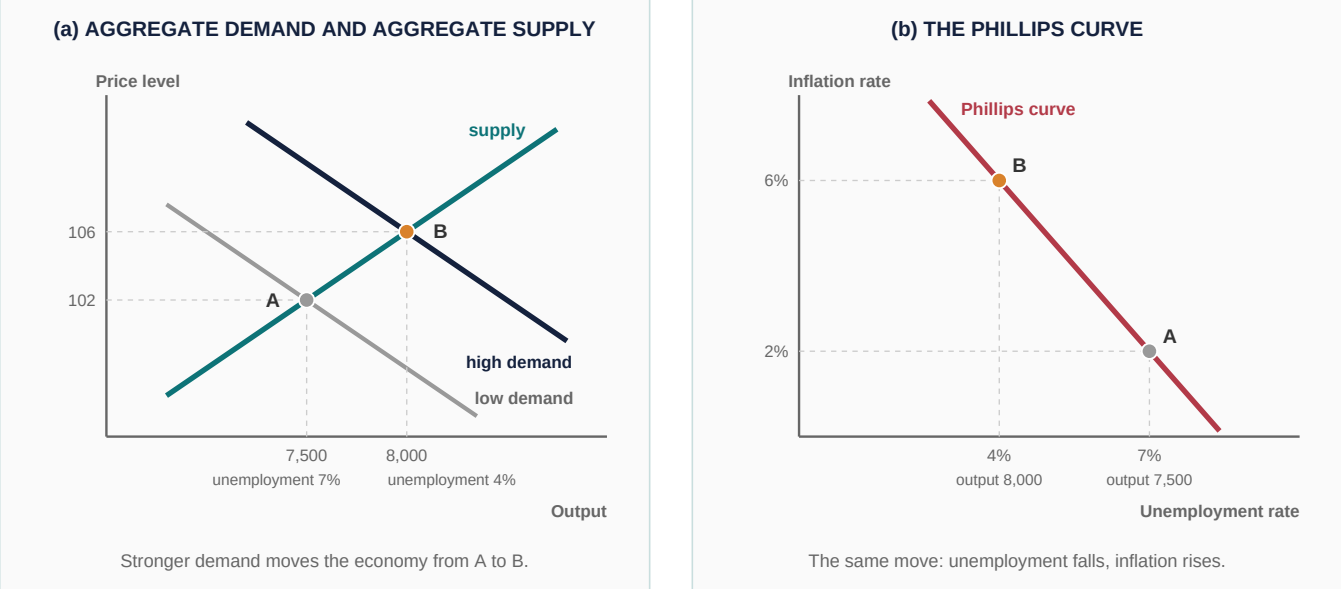


Figure 3.5: One move, two pictures. The numbers are those on the class slide.

	Point A: weak demand	Point B: strong demand
Output	7,500	8,000
Price level	102	106
Inflation	2%	6%
Unemployment	7%	4%

Anything that raises aggregate demand - more money, more government spending, a tax cut - moves the economy from A to B: more output and jobs, bought with more inflation. Anything that lowers demand moves it back. America was at a point like B in 2022, the professor said, and is there again in 2026.

The natural rate of unemployment

One refinement is needed. Suppose the economy is exactly at its potential. Is unemployment zero? No. Some unemployment remains even then, and it is called the **natural rate of unemployment**.

Kind of unemployment	What it is	Example	Present at potential?
Frictional	People between jobs, searching for a better match for their skills	An engineer who has resigned and is choosing between offers	Yes
Structural	People whose skills do not fit the jobs available	India's large pool of young people not trained for the work on offer	Yes
Cyclical	People out of work because demand is weak	Workers laid off in a downturn	No - this is the part that moves with the cycle

Frictional and structural unemployment together make up the natural rate. What the Phillips curve cares about is the gap between actual unemployment and that natural rate.

THE PHILLIPS CURVE IN WORDS

Inflation = expected inflation, minus something proportional to (unemployment - the natural rate), plus any supply shock. Three things therefore move inflation: what people **expect** it to be; how **tight the labour market** is - unemployment below the natural rate pushes inflation up; and **shocks to costs**, such as oil. Sections 3.07 and 3.08 take the first and the third in turn.

GOOD TO KNOW

The curve is named after A. W. Phillips, a New Zealand economist who in 1958 plotted a century of British data and found that wages rose fastest in the years when unemployment was lowest.

MANAGER'S TAKEAWAY

The Phillips curve is a statement about your salary bill. When unemployment falls below its natural rate there are more vacancies than suitable people: competitors poach, attrition rises and pay has to follow - as technology services firms found in 2021-22. A product company feels it as pressure on shop-floor and contract wages. The natural rate has a second message. Structural unemployment means people exist but not with the skills you need, and no rise in demand will fix that. If the people you want cannot be hired at any sensible wage, the answer is to train them yourself.

3.06 AD Meets AS: Reading a Rate Hike

We now have both halves: a demand curve that slopes down and a supply curve that slopes up. Where they cross, the economy settles. The class put the pair to work at once - on the biggest economic news of the week.

Draw the two curves with inflation on the vertical axis and output on the horizontal. They meet at one point: the **short-run equilibrium**. On the class slide that point is inflation of 2% with output of 10 (in Rs. trillion) - exactly the economy's potential. From here, everything is a matter of asking which curve has moved, and which way.

A push from demand - and why it does not last

Suppose the central bank adds money. Session 2 said two things about this which seemed to pull against each other: in the short run more money raises output, in the long run it raises only prices. The demand-supply diagram shows how the first turns into the second.

The extra demand first takes output above potential, to 11, with inflation at 3.5%. But the supply curve was drawn for a given level of expected prices, and people are not fooled for ever. Seeing prices rise, they revise their expectations and ask for higher wages; costs rise; the supply curve shifts up. The economy ends where it began, at an output of 10 - but with inflation of 5.5% in place of 2%. The slide's summary: in the new long-run equilibrium, with a higher price level and higher expected prices, GDP returns to its initial value. It is the water-bottle economy of Session 2, drawn properly.

A demand push in four steps (the numbers on the class slide; output in Rs. trillion)

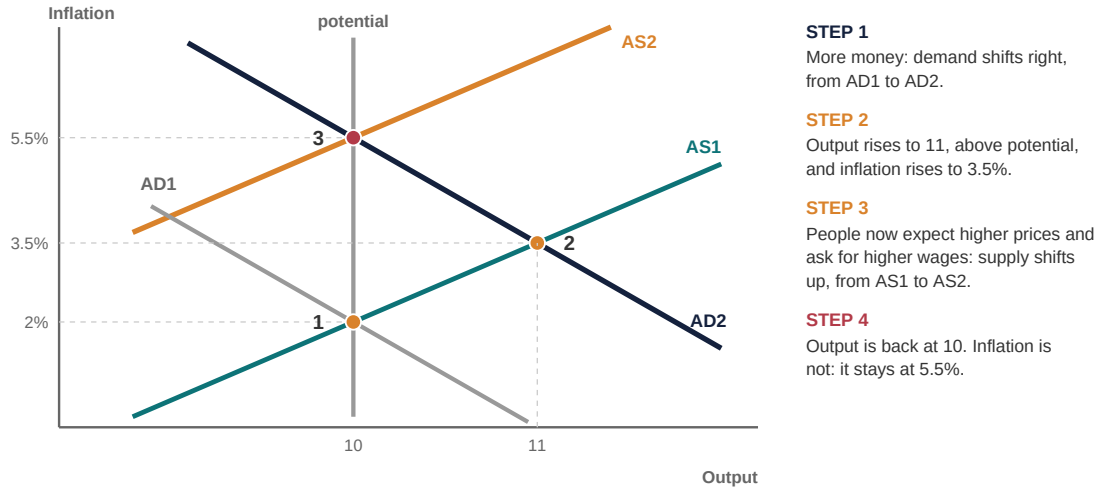


Figure 3.6: More money lifts output for a while. Once expectations catch up, only the higher inflation is left.

HOW THE SHORT RUN BECOMES THE LONG RUN

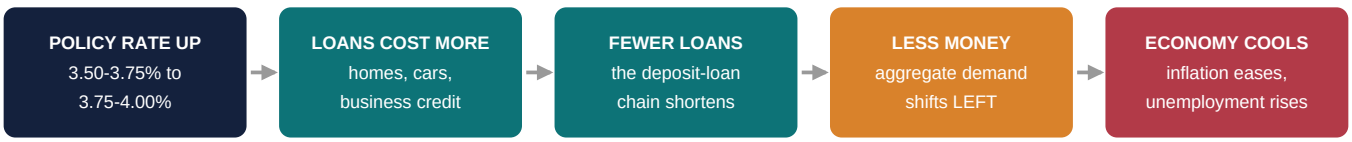
The bridge between the two is the adjustment of expectations. While expected prices stay put, demand policy moves output. As expectations catch up, the supply curve shifts and the gain in output melts away. That is why a central bank cannot keep an economy above its potential by printing money - it can only buy a temporary boost at the price of permanently higher inflation.

The news: the Fed raises rates

A participant read out the headline. Four days before the class, on 16 September 2026, the US Federal Reserve raised its policy rate by a quarter of a percentage point, from a range of 3.50-3.75% to 3.75-4.00%. It was the first increase since July 2023 and the first under its new chair, Kevin Warsh, and the Fed signalled that more could follow, because inflation remained too high.

Read it on Figure 5. America is at a point like B: unemployment low, inflation high, demand above what the economy can comfortably supply. The Fed wants to move back towards A. It cannot order inflation down; it can only reduce demand and accept what comes with it - slower growth and somewhat higher unemployment than there would otherwise have been.

How a rise in the policy rate cools an economy



A rate hike works on the PRICE of money, and reduces its quantity indirectly.

Quantitative tightening works on the QUANTITY directly: the central bank sells bonds and takes money out.

Figure 3.7: From the policy rate to the price level, link by link.

Questions from the class

The question	The answer
Is a rate hike the same thing as quantitative tightening?	No. Quantitative tightening is the central bank working on the quantity of money directly, by selling bonds. A rate hike raises the price of money. Costlier loans mean fewer loans, the deposit-loan chain of Session 2 runs for fewer rounds, and the money supply shrinks - but indirectly. Different channels, same direction.
The latest jobs numbers were strong. More jobs and high inflation together?	Exactly - that is point B. Low unemployment and high inflation are what an economy running above its potential looks like. In 2022 the overheating was dramatic; this time it is subtler.
Will the hike cause unemployment?	Relative to what would have happened without it, yes: output and employment grow more slowly. That is the mechanism, not a side-effect.

GOOD TO KNOW - TWO THINGS THE HEADLINE LEAVES OUT

1. Not all of this inflation comes from demand. Part of America's price rise in 2026 comes from costlier oil, and the Fed chair described the hike partly as insurance against that shock spreading into other prices and into expectations - the subject of the next two sections. **2. It does not stop at America's border.** Higher US interest rates make dollar assets more attractive, which pulls money towards the dollar and weighs on currencies such as the rupee - the subject of Section 13.

MANAGER'S TAKEAWAY

A rate hike abroad reaches an Indian company through three doors. Demand: American customers facing costlier credit trim their budgets, which a service company selling technology or consulting to US clients feels within a quarter or two as slower decisions and smaller deals. Finance: a product company with dollar loans, or one planning to raise money overseas, pays more. Currency: the rupee tends to weaken, which helps whoever earns dollars and hurts whoever must buy them. Before the next Fed meeting, work out which door matters most for you.

3.07 Inflation Expectations and the Wage-Price Spiral

A participant raised the obvious objection to the Phillips curve: how can prices be rising while expected prices are constant? The answer opened the most important idea of the afternoon.

That is exactly what a move along the curve is - a surprise: prices rise more than people had expected. The real question is what happens next. If expectations stay where they were, nothing more. If expectations rise, workers demand higher wages to keep up; higher wages raise the cost of production; and for firms that is no different from any other rise in costs. The supply curve shifts to the left. The economy produces the same output as before, at a higher rate of inflation. "Bad idea," as the professor kept saying.

WHY EXPECTATIONS WORRY CENTRAL BANKERS MORE THAN INFLATION

High inflation with stable expectations is a problem that can be managed. Once expectations rise, wages rise, costs rise, prices rise, and expectations rise again: the **wage-price spiral**, with wages and prices feeding each other. At that point inflation no longer needs a cause. It runs on its own.

The professor showed an article from June 2022 warning that people's inflation expectations were rising and would be hard to bring down, and two charts of what American households expect inflation to be over the coming

year. A cartoon on the next slide made the point in a line: it is all about expectations, says one investor - and he expects the Fed to get it wrong.

Period	Expected inflation, one year ahead (US household survey, approximate)	What was happening
1979-80	About 10%	The last time expectations broke loose; it took a deep recession to bring them back
Mid-1980s to 2020	About 3%, year after year	Expectations anchored
2020 to mid-2022	From about 2.7% to a peak near 5.3%	The post-pandemic surge
September 2023	About 3.4%	Coming back down after eighteen months of high interest rates

Powell and the line he drew

After the pandemic the Fed under Powell had created money on an enormous scale. His later defence was that it was a one-time event and that he had misjudged how much help the economy needed. The result was "too much money chasing too few goods"; inflation rose; and then expectations began to rise. That was the point at which, the professor said, Powell declared it unacceptable.

He described the central banker's position with an image: the central banker puts a gun to the head of every manager and every household and says - raise your inflation expectations if you dare, and I will break this economy. Powell held interest rates very high for about a year and a half. A bank failed along the way - the Silicon Valley Bank of Session 1 - largely because of those rates. He did not relent. It was a matter of first principles: the moment expectations rise, inflation is out of control.

Economists criticise him for acting late. But it worked. Inflation and expectations came down, and between 2023 and 2026 they were fairly steady. Now inflation is rising again, the economy is once more running above its potential, and his successor has taken the same call.

How much inflation is too much?

A participant once asked a Fed chairman how one would know that inflation was too high - at 1%, 2%, 5%? The reply, as the professor retold it, set the statistics aside.

> *"Inflation should be low enough that nobody talks about it."*
>
> **A central banker's working definition of price stability (paraphrased from class)**

In other words, inflation is low enough when it does not enter the decisions of firms and households. The moment people begin to talk about prices, they begin to build inflation into their plans: the employee walks in and asks for a 10% raise because the gas cylinder costs more. (In class the remark was attributed to Ben Bernanke; the definition is usually credited to an earlier chairman, Alan Greenspan.)

How do you know people are talking about it? Listen to what they sing. The professor recalled the 2010 film song about *mehngai*, inflation, as a witch that eats up everything a hard-working husband earns - a complaint, put precisely, about real wages. And one of his MBA students had recently shown him a song popular with a younger audience that grumbles about the price of sugar and of a small bottle of liquor. When prices become the subject of songs, expectations are no longer anchored.

> *"The economy at the end of the day is people, not aliens. It is human behaviour that drives it."*
>
> **Paraphrased from class**

A participant asked whether this is why companies keep salary increases low. A different matter, the professor said - but it is the reason India's middle class feels squeezed: pay is not keeping pace with prices, so real wages are not rising.

MANAGER'S TAKEAWAY: YOUR INCREMENT CYCLE IS THE SPIRAL IN MINIATURE

Every annual pay review is a small version of this section. Employees ask for what they expect prices to do, not what prices did; you grant it and then try to recover it in your own prices. A product company should watch for the tell-tale sign that customers' expectations have moved: buying early "before the next increase". A service company signing a three-year contract is betting on expected inflation whether it knows it or not; an escalation clause tied to a published index takes the guesswork out. The RBI surveys households' inflation expectations every two months, and the series is worth five minutes of anyone's time before a pricing or pay decision.

3.08 Supply Shocks: The Central Banker's Dilemma

So far every disturbance has come from demand. India's own history is mostly about the other curve.

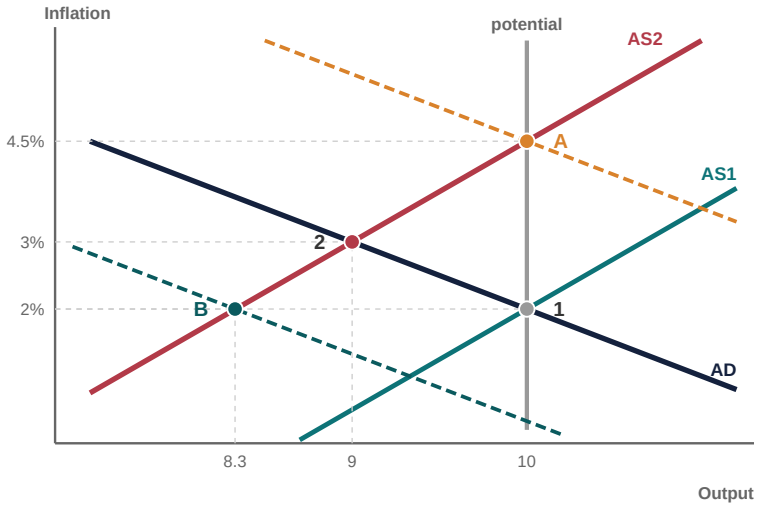
What shifts aggregate supply to the LEFT	Why
A jump in the world price of oil	Energy is a cost for almost every firm
A broken supply chain, as during COVID	Inputs cannot be had, or cost more to bring in
A failed monsoon	Food output falls and food prices rise
Higher inflation expectations	They turn into higher wage demands - Section 3.07

All four raise the cost of production, and all four are **negative supply shocks**. On the class slide such a shock takes the economy from inflation of 2% and output of 10 to inflation of 3% and output of 9. Notice what is different from a demand shock. When demand rises, inflation and output rise together. When supply is hit, inflation goes up while output goes down - the worst of both.

Here lies the trouble. The central bank's instrument, money, acts on *demand*. It has no lever that moves supply. So it has two choices, and neither is good.

	Option A: protect output	Option B: protect prices
What the central bank does	Adds money, lowers interest rates	Withdraws money, raises interest rates
Aggregate demand	Shifts right	Shifts left
Output	Recovers	Falls further
Inflation	Rises further	Returns to target
The risk	Inflation expectations break loose	A recession on top of the shock

A negative supply shock, and the two ways a central bank can respond



THE SHOCK
Costlier oil or a failed monsoon raises costs: supply shifts from AS1 to AS2. Inflation rises to 3% and output falls to 9 (point 2).

OPTION A: PROTECT OUTPUT
Add money; demand shifts right. Output returns to 10, but inflation climbs to 4.5%.

OPTION B: PROTECT PRICES
Withdraw money; demand shifts left. Inflation returns to 2%, but output falls further, to 8.3.

A and B follow from the slopes used in this sketch.

Figure 3.8: After a supply shock a central bank can repair output or repair inflation - not both.

> *"Try to control inflation, and output falls further. Try to control output, and inflation rises further."*
>
> **The trade-off after a supply shock (paraphrased from class)**

India: the governor who waited for rain

This was India's situation under Governor D. Subbarao, who headed the RBI from 2008 to 2013, before Raghuram Rajan. Oil was expensive. One poor monsoon followed another. Output was slowing, inflation was running at 10 to 11%, and expectations were rising with it. "One option," the professor said, "is to look east and west and pray: let there be rain." The governor was, in effect, stuck with that option. The slide carries a headline from those years in which he says that policy decisions would hinge on the monsoon outlook - the interest rate of a large economy depending on how much water fell from the sky. He was much criticised for it. The title of his memoir tells you how it felt from the inside: *Who Moved My Interest Rate?*

GOOD TO KNOW - WHEN A CENTRAL BANK CAN "LOOK THROUGH" A SHOCK

The slide calls the shock *temporary*, and that word matters. One bad monsoon reverses itself: next year's crop restores supply, and inflation comes down without any action. A central bank can then choose to wait. What it cannot afford is for a temporary shock to raise expectations, because that makes it permanent. This is why central banks watch "core" inflation - prices excluding food and fuel - to judge whether a shock is spreading.

MANAGER'S TAKEAWAY: A SUPPLY SHOCK HITS YOUR COSTS AND YOUR CUSTOMERS TOGETHER

A demand boom at least brings volume with its higher costs. A supply shock brings higher costs and weaker sales at once, and interest rates may rise on top. A product company is squeezed from both sides: inputs cost more just as customers have less to spend, so the choices are to hedge the input, keep a second source, or hold enough margin to absorb a bad year. A service company is hit less directly - through fuel, travel and logistics - but its clients are living through the same squeeze and cut discretionary projects first. Do not expect the central bank to rescue demand in such a year; it may be busy doing the opposite.

3.09 Disinflation: Short Pain, Long Gain

There comes a point when a central bank decides that inflation and expectations have gone too far, and chooses Option B deliberately. What follows has a name, and a well-studied shape.

America reached that point around 1980. Inflation was 13.5%. A new Fed chairman, Paul Volcker, decided it would not be tolerated and pushed interest rates to levels never seen before or since - close to 20%. Unemployment soared past 10%. By 1986 inflation was 1.9%. Powell faced a milder version of the same problem in 2022 and gave the same answer.

But this raises a question the professor put to the class himself. We said the central bank's job was to keep output close to potential. Here it is pushing output *below* potential, on purpose. Powell had a phrase for it, quoted in Session 1: a sustained period of below-trend growth. A slide from September 2022 has him admitting that the chances of a soft landing were diminishing and that nobody knew whether the process would end in a recession, or how deep. Why would a central bank do this?

Disinflation in four steps (illustrative numbers)

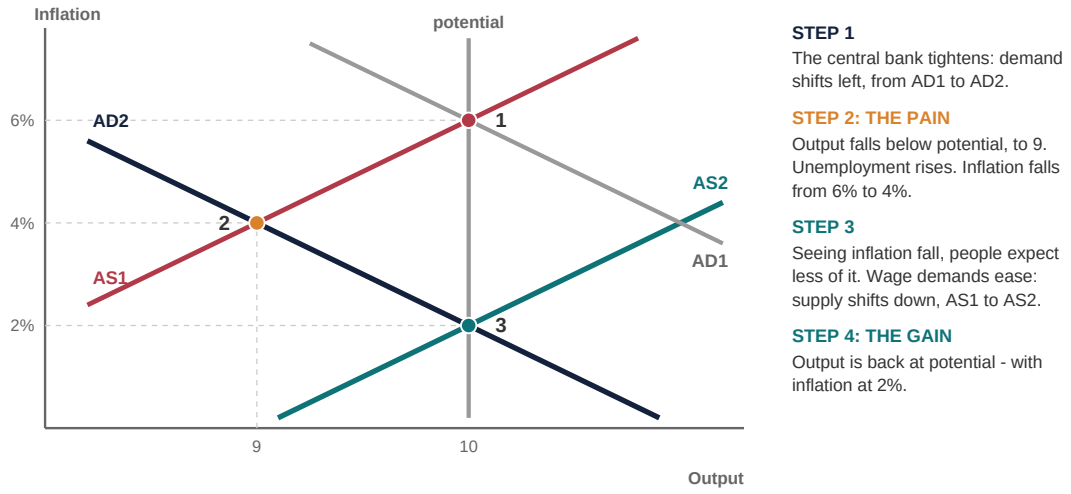


Figure 3.9: Disinflation. The central bank moves demand; the reward arrives when supply moves by itself.

Because of what happens in Step 3. As inflation falls, people gradually stop expecting high inflation. Workers no longer walk in demanding 10%. For firms that is a fall in costs - a *positive* supply shock - and the supply curve shifts back. Output returns to potential, and this time at low inflation.

> *"A shorter pain for a longer gain."*
>
> **On disinflation (paraphrased from class)**

DEFINITION, AND A WORD THAT IS OFTEN CONFUSED WITH IT

Disinflation is a deliberate, systematic reduction in the rate of inflation. Prices are still rising - only more slowly. **Deflation** is negative inflation: prices actually falling. Going from 8% to 4% is disinflation. Going from 4% to minus 4% is deflation, the "night terror" of Session 2.

Who	When	What happened
Paul Volcker, US Federal Reserve	1979 to the mid-1980s	Inflation from 13.5% (1980) to 1.9% (1986); unemployment soared first
Raghuram Rajan, RBI	From September 2013	Raised interest rates on taking over from Subbarao; inflation fell from about 10% to about 5%, and India then adopted a formal inflation target
Jerome Powell, US Federal Reserve	2022 to 2023	The fastest rate increases in forty years; inflation fell from a peak of about 9% to about 3%

A participant restated it to check his understanding, and the professor confirmed the uncomfortable part. During a disinflation output falls and unemployment rises. There is pain, and it has to be borne - so that expectations come down. If expectations are allowed to break loose, bringing them back costs far more. High inflation expectations, he said, serve nobody.

GOOD TO KNOW - CAN DISINFLATION BE PAINLESS?

Economists measure the pain with the **sacrifice ratio**: how much output or employment is lost for each point taken off inflation. One slide asks whether it could be close to zero. Suppose inflation and expected inflation are both 6% and the central bank announces that it will do whatever is necessary to reach 2%. **If people believe it**, their expectations fall at once - perhaps by the full four points - and inflation can come down with no rise in unemployment at all. Everything depends on credibility, which is why central bankers guard their reputations so jealously. Section 3.10 shows that something close to this happened in 2023.

MANAGER'S TAKEAWAY: HOW TO RUN A BUSINESS THROUGH A DISINFLATION

A disinflation has a recognisable order: borrowing costs rise first, volumes weaken next, and only then does inflation fall. A product company should cut inventory and delay debt-funded expansion early, not after sales have fallen; price increases that passed easily a year ago will stop sticking. A service company should be careful about what it locks in at the peak: a multi-year contract signed with an 8% annual escalator looks expensive to the client once inflation is 4%, and will be reopened. The other side of the cycle is worth waiting for - when expectations settle, wage pressure eases and rates come down. That is the time to invest.

3.10 Case Study: The Kennedy-Powell Hearing

To finish the closed economy the professor played a five-minute video: a US senator cross-examining the Fed chairman in March 2023, at the height of the disinflation. He had once set it as an exam question. "If after four classes you can follow what these two gentlemen are saying, my job is done."

The senator is John Kennedy, a Republican; the President at the time, Joe Biden, was a Democrat. The setting is a public hearing of the Senate Banking Committee. Powell is raising interest rates. Follow the questions with Figures 3.5 and 3.9 in mind.

The senator asks	The chairman replies	The economics underneath
When Congress spends money, does that not stimulate the economy?	It depends on whether the spending is paid for by higher taxes. If not, there is a net stimulus.	Deficit-financed spending is expansionary fiscal policy: aggregate demand shifts right.
If Congress slowed its spending and borrowing, would your job be easier?	He does not think fiscal policy is a big driver of inflation just now.	A careful non-answer. The Fed chairman avoids telling Congress what to do.
You are raising rates to slow the economy?	Yes - to cool it off.	Contractionary monetary policy: aggregate demand shifts left.
So you are trying to put people out of work. That is your job, is it not?	Not really. We are trying to restore price stability and bring supply and demand back into line.	A move down the Phillips curve lowers inflation by raising unemployment. He will not say it in those words.
History says each 2 points off inflation cost 3.6 points of unemployment. Is that not a fact?	That is what the record shows; he does not expect numbers of that kind.	The sacrifice ratio, estimated from past disinflations.
The more Congress helps on the fiscal side, the fewer people you will have to put out of work?	It could work out that way.	Two contractionary policies share the load of reducing demand.

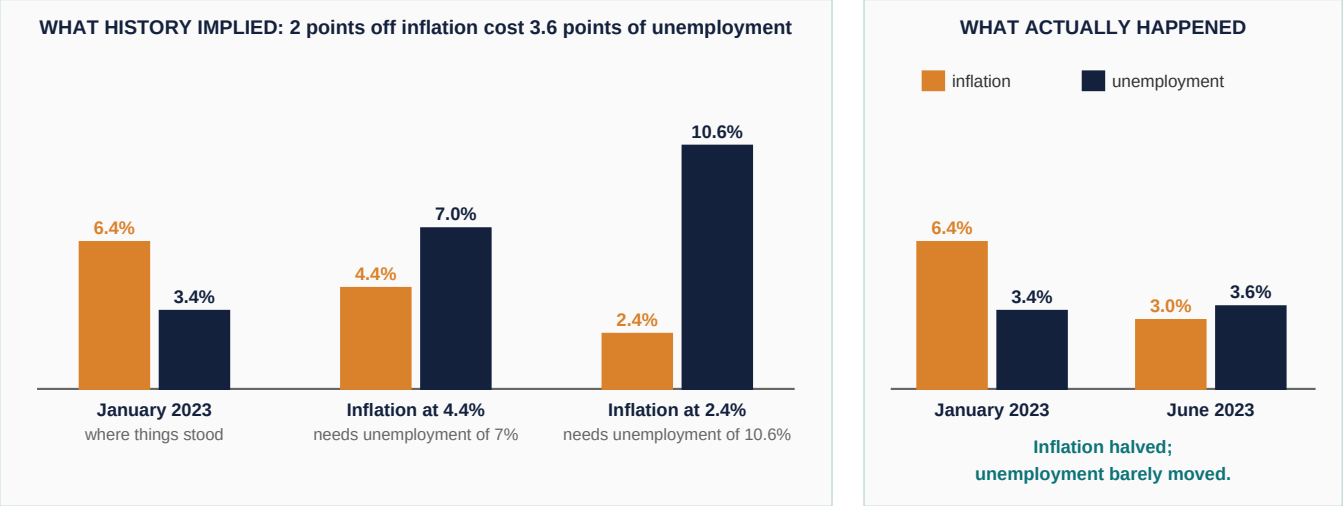


Figure 3.10: The senator's arithmetic, and the outcome. History predicted far more pain than actually came.

The senator had done his homework: ten episodes of disinflation since the 1950s, and in them, on average, two points less inflation had cost 3.6 points more unemployment. With inflation at 6.4% and unemployment at 3.4%, getting inflation down to 2.4% would on that record mean unemployment of 10.6%. A headline shown in class from the same week caught the mood: an economist saying there was "no exit ramp" for Powell until he had created a recession.

Decoding it

The class worked it out together. Aggregate demand can be reduced from two sides - by the central bank, through money and interest rates, or by the government, through lower spending and borrowing. The senator's point is that the Fed is doing the job alone. If fiscal policy turned contractionary as well, the same fall in demand would come faster and the period of pain would be shorter. And he is not really attacking Powell. As an opposition senator he is using the Fed chairman to criticise the government's spending. "He is tricking him," the professor said, with some admiration. Powell, seeing where the questions led, would not be drawn into the dispute - until the last question, to which the only honest answer was yes.

GOOD TO KNOW - WHY HISTORY DID NOT REPEAT ITSELF

Within months of the hearing American inflation had fallen to about 3% while unemployment stayed under 4%. There was no recession. Two things this session explains were at work. Supply recovered: the pandemic's broken supply chains healed and energy prices fell - a positive supply shift that lowers inflation and raises output together. And expectations stayed anchored, because people believed the Fed would do what it said - the "painless disinflation" of Section 09. The senator's arithmetic was right about the past; it described disinflations fought with demand alone.

THE LINE THE PROFESSOR CLOSED THE CLOSED ECONOMY WITH

This is how monetary policy and fiscal policy interact and together set aggregate demand and aggregate supply. They draw the boundary of the business environment in which you have to operate and build your company.

MANAGER'S TAKEAWAY: LISTEN FOR WHICH CURVE THEY MEAN TO MOVE

Official speeches and testimony are written in the vocabulary of this session, and they can be read. "Realign supply and demand" means demand will be reduced. "Below-trend growth" means a slowdown is intended. "Expectations remain anchored" means the central bank believes it can be patient. A product company can translate each phrase into an expected path for volumes and borrowing costs; a service company into its clients' budgets a few quarters ahead. And when a government tightens its budget while the central bank is tightening too, expect demand to cool quickly - and rates to come down sooner.

3.11 A Fragmenting World

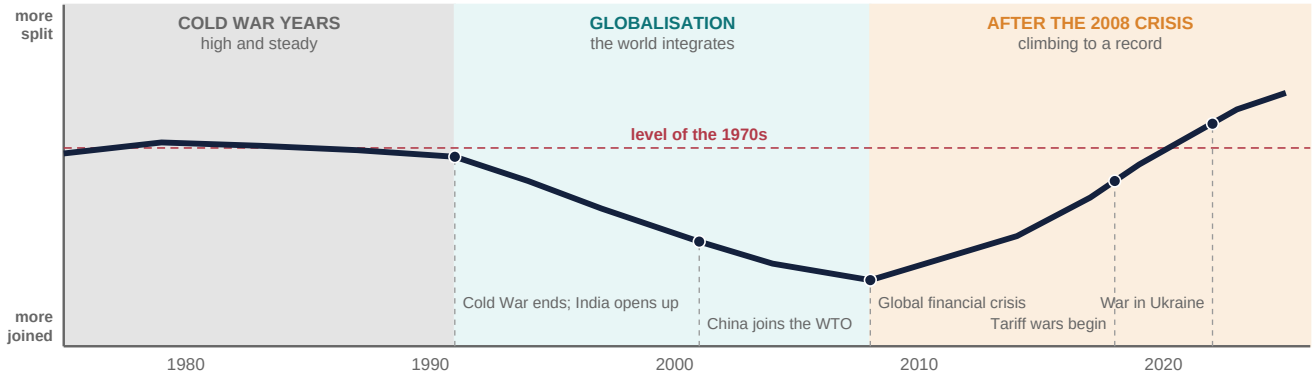
After the break the economy was opened to the rest of the world. Before any mechanics, the professor showed the class the kind of world it is being opened into.

He put up a chart from the work of the economist Jesus Fernandez-Villaverde - one of his own teachers - and co-authors. It is an index of **geopolitical fragmentation**: a single number, tracked since the 1970s, for how divided the world is, built from indicators of trade, finance, the movement of people and technology, and political relations between countries.

Phase	Years	What the index shows
The Cold War years	1975 to the early 1990s	Fragmentation high and fairly steady
Globalisation	Early 1990s to 2008	A long fall: trade, money and firms moving ever more freely
After the financial crisis	2008 to today	A steady rise, to the highest level in the series

The turning point is the global financial crisis of 2008, which the professor set beside the Great Depression as one of the two events that shook the modern world economy. He recalled a prediction made around 2011-12 by the Nobel laureate Joseph Stiglitz: that the coming decade would belong to populist leaders. Stiglitz was reasoning from the 1930s, when the Depression was followed by exactly that, and then by war. The logic was that a crisis leaves ordinary people asking what globalisation has done for them - "all it gave me is a crisis, and my pension fund is gone" - and that the anger takes years to build into politics. If anything, the professor said, Stiglitz underestimated: he said "at least" a decade.

Geopolitical fragmentation, 1975 to today (schematic)



Shape follows the index of Fernandez-Villaverde, Mineyama and Song as shown in class; drawn as a sketch, not to scale.

Figure 3.11: Three phases of the world economy. By this measure the world is now more divided than it was in the 1970s.

Will it reverse? Economists such as Gita Gopinath argue that it will not come down easily: it took a long time to build and will take a long time to calm, so the next decade is likely to look like this one. "This is the new normal." Others expect a quicker reversal. "They are all predictions," the professor said. What is not in doubt is the present. He showed two more charts in the same spirit. One is an index of pressure on global supply chains, which spikes whenever a war or a blocked port disrupts shipping. The other is an index of uncertainty, which has been climbing. A World Economic Forum report, also shown, describes how supply chains are being redesigned in response.

Questions from the class

The question	The answer
What exactly does a fragmentation index measure?	How low tariffs are; how easily goods, money, people and technology cross borders; how closely countries are tied to one another politically. From a business point of view: how easy it is to do business across countries.
Is a more fragmented world a bad thing?	That is a debate, and the professor left it open. The fact is only that fragmentation is rising, and that business has to adapt to it.

GOOD TO KNOW - WHAT THE AUTHORS FOUND

The paper behind the chart goes on to measure what fragmentation does. Three results are worth carrying. More fragmentation lowers output worldwide, and **emerging economies lose more** than advanced ones. The damage is **immediate**, while the benefit of any return to openness arrives only gradually. And the industries hit hardest are those most tied to world markets - manufacturing, construction, finance and trade.

MANAGER'S TAKEAWAY: EFFICIENCY IS NO LONGER THE ONLY DESIGN RULE

For thirty years the question about a supply chain was where a thing could be made most cheaply. In a fragmenting world a second question sits beside it: what happens if that route closes? A product company now has to price in tariffs that change by announcement, export controls on components, and the cost of a second supplier in a second country. A service company delivering across borders - technology, consulting, managed security - meets the same forces as rules on where data may be stored, limits on what technology may be shared, and restrictions on moving people. None of this shows up in a unit-cost comparison, and all of it can stop a business overnight.

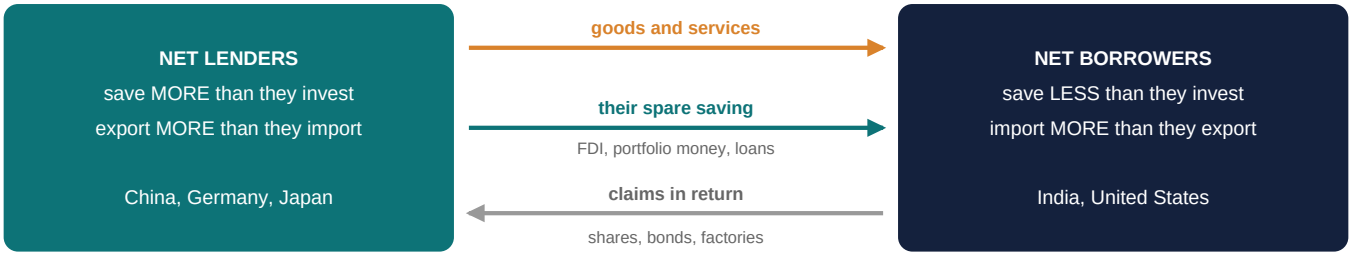
3.12 The Open Economy: Lenders and Borrowers

The open economy starts from one line of algebra. The professor called it Brahma Satya - a truth that cannot fail - because it is not a theory about behaviour. It is an identity.

Step	The line	In words
1	Y = C + I + G + (X - M)	Session 1: output is bought by households, firms, the government and, net, the rest of the world
2	Y - C - G = I + (X - M)	Move consumption and government spending to the left
3	S = I + (X - M)	Income not consumed by households or the government is the nation's saving, S
4	S - I = X - M	Saving minus investment equals exports minus imports

Read the last line slowly. A country that exports more than it imports must be saving more than it invests. A country that imports more than it exports must be saving less than it invests. There is no third possibility.

$$S - I = X - M$$



One group's surplus is the other group's deficit: the two halves fit together to make the world economy.

Figure 3.12: The world in two halves. Each half is the mirror image of the other.

So the world divides into two groups. China, Germany and Japan produce more than they use; they send the surplus abroad as exports, and lend the matching surplus of saving abroad. They are the world's **net lenders**. India and the United States use more than they produce; they import the difference and borrow other countries' saving to pay for it. They are **net borrowers**. The two groups fit together like the pieces of a puzzle, and between them they make up the world economy.

The classroom example

Suppose India earns 100 dollars from exports in a month and spends 150 on imports. It is short by 50. How does a country pay out 150 when it has earned only 100? A participant suggested remittances from Indians abroad. They are already counted, the professor said - the current account deficit is what remains *after* everything of that kind. The gap is filled by someone else's saving. A saver in Japan, where saving exceeds investment, places money in India - in shares and bonds (FII) or in a factory (FDI).

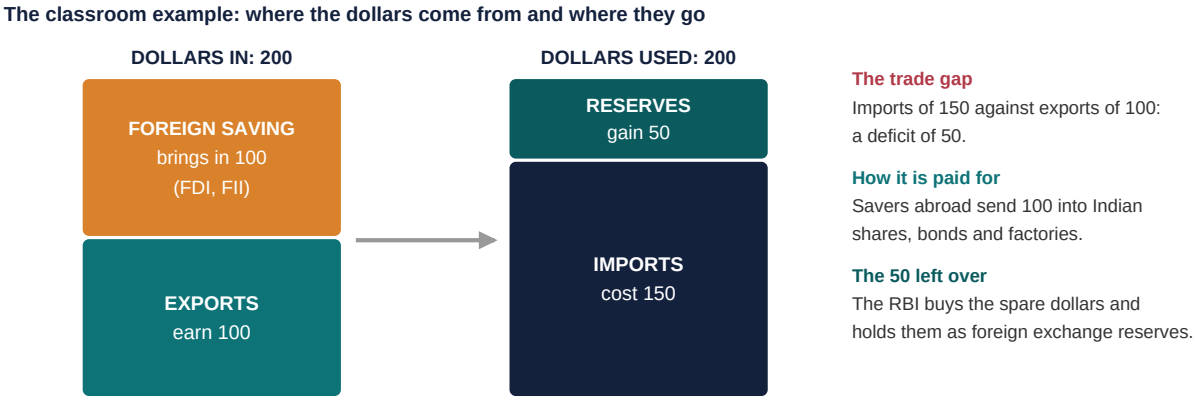


Figure 3.13: A trade gap of 50, foreign saving of 100, and what happens to the difference.

If foreign savers send in 100 when only 50 was needed, the spare 50 does not vanish. The RBI buys those dollars and holds them: they become part of India's **foreign exchange reserves**. There are, then, two movements across the border, not one - a movement of goods and services, which is **trade**, and a movement of money, which is **finance**. The rest of the module is about how the two interact.

Questions from the class

The question	The answer
Why would a country take in 100 when it needs only 50?	"Welcome to the world of reality," the professor replied. Foreign investors do not come to fill a gap; they come for their own reasons - returns, growth, a place to put their saving. The amount that arrives need not match the amount needed, and reserves absorb the difference.
Why does the United States import more than it exports?	Because, like India, it uses more than it produces - it saves less than it invests. That is the deficit its President wants to reverse.
Is Germany's surplus not simply because it is so good at making cars?	"Wrong understanding." Skill explains what a country exports, not whether it runs a surplus. A surplus reflects saving more than it invests. A trade deficit arises when a country wants to consume more than it produces - whatever it is good at.

GOOD TO KNOW - THREE THINGS THE IDENTITY IMPLIES

1. It links back to Session 2. India saves less than it wants to invest, so it draws on foreign saving - which is the same statement as saying it runs a deficit with the world. **2. A tariff alone cannot remove a trade deficit.** As long as a country saves less than it invests, the gap must appear somewhere; tariffs change what is imported and from whom, not the total. **3. India's gap is modest.** Its deficit in goods is large, but earnings from software and other services and remittances from Indians abroad offset most of it, leaving a current account deficit of around 1% of GDP in recent years.

MANAGER'S TAKEAWAY: A DEFICIT COUNTRY LIVES ON OTHER PEOPLE'S SAVING

The identity has a practical edge. Because India borrows saving from abroad, foreign capital is part of its normal business environment - a product company looking for a partner, or a service company setting up a capability centre for an overseas parent, is riding that flow. The same fact is a risk. Foreign saving can stop arriving, as it does when interest rates rise in America, and then the rupee falls and money becomes costlier at home within weeks. A company that imports its inputs, or has borrowed in dollars, should know how exposed it is to that kind of month.

3.13 The Exchange Rate: The Price of a Currency

In Session 1 the interest rate turned out to be nothing more than a price - the price of money across time. The exchange rate, the professor said, is just as simple.

> *"The exchange rate is the price of one sovereign money in terms of another."*
>
> **Paraphrased from class**

When the newspaper says the rupee is at 90 to the dollar, it is telling you the price of one dollar: you must hand over Rs. 90 to get it. If the rate moves from 90 to 92, you now have to give more rupees for the same dollar. The dollar has become more expensive. The rupee has become cheaper.

The rate moves from	Price of a dollar	The rupee has	The dollar has
Rs. 90 to Rs. 92 per dollar	Up	Depreciated (lost value)	Appreciated (gained value)
Rs. 90 to Rs. 88 per dollar	Down	Appreciated	Depreciated

CONCEPT TRAP: A BIGGER NUMBER IS A WEAKER RUPEE

Because the rate is quoted as rupees per dollar, it is the price of the *dollar*. When the number goes up - 87 to 97 - the rupee has gone down. Headlines saying the rupee "rose to 97" and the rupee "fell to 97" describe the same event; only the second is correct.

What moves it: demand and supply, and nothing else

"What determines the price of anything?" the professor asked. Demand and supply. The exchange rate is driven by the demand for one currency relative to the other, and their relative supply. If the rupee slides from 85 to 95, then either more people wanted dollars, or fewer wanted rupees, or both. So who wants rupees? The class found two answers, and the professor insisted there are only two.

Reason to buy rupees	Who	Points made in class
To buy Indian goods and services	An importer abroad; a foreign company using Indian software services; a tourist	Even if the bill is written in dollars, the Indian exporter finally converts those dollars into rupees to pay salaries and suppliers. Tourism is simply an export of services: the visitor needs rupees for the hotel and the taxi.
To buy Indian financial assets	A foreign fund buying shares or government bonds; a company building a plant	These buyers are placing their saving in India - the lenders of Section 12.

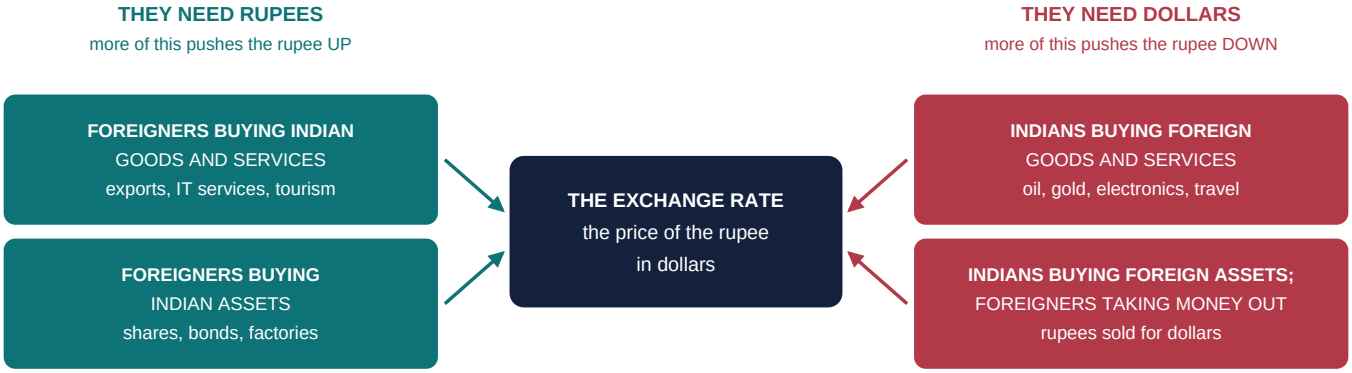


Figure 3.14: Every transaction across the border is somebody buying one currency with the other.

The same holds in reverse for the dollar: it is wanted by those buying American goods and those buying American assets, above all US government bonds. On the supply side sit the two central banks - how many rupees the RBI has created relative to how many dollars the Federal Reserve has.

A participant asked whether domestic monetary policy is not a third cause. It matters, the professor said, but only *through* these two channels. If Indian interest rates rise, Indian bonds pay more, foreigners want more of them, and to buy them they need rupees. Interest rates, inflation, growth, political risk - all are catalysts acting on the same two motives.

GOOD TO KNOW - WHERE THE RUPEE STANDS

The numbers used in class - 85, 90, 95 - were not far from life. The rupee has spent 2026 in the nineties, touching a record closing low of 95.71 to the dollar in May. Section 3.06 gives one reason: when American interest rates rise, dollar assets pay more, and money that might have bought Indian assets buys American ones instead. When the fall is too fast, the RBI sells dollars from the reserves of Section 3.12 to slow it. This everyday quoted rate is the **nominal exchange rate**.

MANAGER'S TAKEAWAY: KNOW WHICH SIDE OF THE RUPEE YOU ARE ON

A weaker rupee is neither good nor bad; it moves money from those who buy dollars to those who earn them. A service company billing overseas clients in dollars collects more rupees for the same work, while its costs - salaries - are in rupees. A product company that imports components, fuel or machinery pays more, and one that both imports and exports may find the two roughly cancel - a natural hedge. The dangerous position is the hidden one: revenue in rupees and a loan in dollars. Map your receipts and payments by currency once, and a move in the rupee stops being a surprise.

3.14 The Real Exchange Rate and Exports

Session 1 separated the nominal interest rate from the real one, and found that only the real one matters to a saver. The exchange rate has the same two faces - and for trade, the professor said, only the real one matters.

Imagine the same car built in two places. A plant in India makes it for Rs. 71 lakh. A plant in the United States makes a similar car for 105,900 dollars. Both are being offered to a buyer in a third country, shipping costs already allowed for. Which is cheaper? You cannot compare rupees with dollars, so first bring them to one currency. At Rs. 82 to the dollar the Indian car costs about 86,600 dollars.

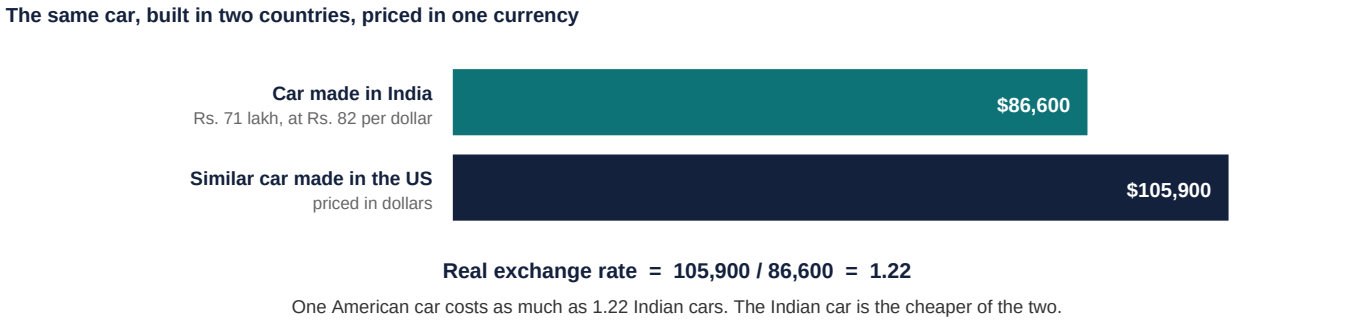


Figure 3.15: The comparison a buyer actually makes.

Divide one by the other: 105,900 / 86,600 = 1.22. One American car can be exchanged for 1.22 Indian cars. That number is the **real exchange rate**: not the price of one currency in terms of another, but the price of one country's *goods* in terms of another's.

> **THE FORMULA**
>
> **Real exchange rate = nominal exchange rate x (price abroad / price at home).** For the car: 82 x 105,900 / 71,00,000 = 1.22. When this number **rises**, Indian goods have become cheaper relative to foreign goods - a **real depreciation** of the rupee - and Indian exports become more competitive. When it **falls**, Indian goods have become relatively dearer - a real appreciation. Exports and imports respond to this number, not to the nominal rate.

A participant asked whether this applies to software. It applies with more force, the professor replied. If your quotation is 100 dollars and a firm in Vietnam quotes 98 for the same work, the work moves - and in services it moves faster than in goods, because there is no factory to relocate.

The class exercise

To fix the idea the professor sent a problem into the chat and worked it with the class.

> **THE PROBLEM**
>
> In 2022 an Indian company, XYZ Ltd, exports an item to ABC Ltd in the United States at Rs. 82,000 a unit. In the base year the item was priced at Rs. 80,000. ABC's demand for it is Q = 87 - 0.082 x P, where P is the price in dollars. The exchange rate in 2022 is Rs. 82 to the dollar, and a similar American-made item costs 1,500 dollars.

Question	Working	Answer
1. What is the real exchange rate?	XYZ's price in dollars: 82,000 / 82 = 1,000. American price: 1,500. Ratio: 1,500 / 1,000.	1.5 - one American item is worth 1.5 Indian ones
2. How much does this export add to India's real GDP?	Quantity: 87 - 0.082 x 1,000 = 5 units. Real GDP values them at the base-year price: 5 x 80,000.	Rs. 4,00,000
3. In 2023 the rupee weakens to Rs. 84 and XYZ keeps its rupee price unchanged. What happens?	Dollar price: 82,000 / 84 = 976. Quantity: 87 - 0.082 x 976 = 6.95, about 7 units - 2 more than before.	Real GDP rises by 2 x 80,000 = Rs. 1,60,000. Revenue rises by 2 x 82,000 = Rs. 1,64,000

Question 3 is the textbook story, and the one most people carry in their heads: the rupee falls, Indian goods become cheaper for foreigners, exports rise. But look at the assumption that made it work - XYZ kept its rupee price unchanged. Now change that. Suppose that in the same year fuel is costlier, wages have gone up and XYZ's costs have risen, so it bills Rs. 90,000.

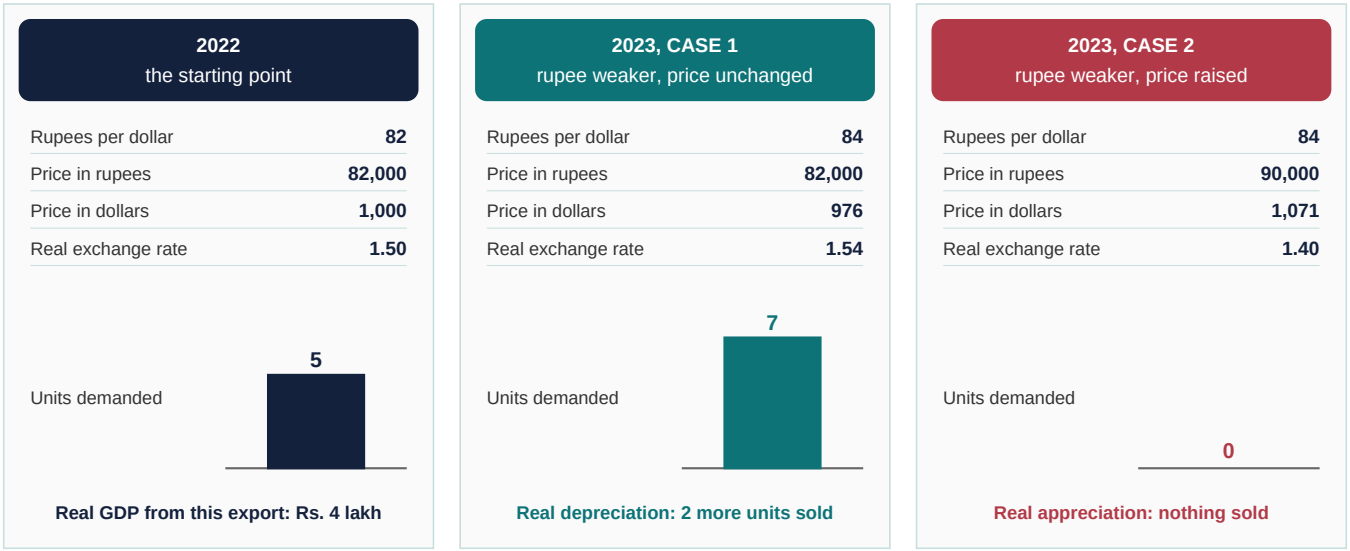


Figure 3.16: Three cases. In the second and third the rupee fell by exactly the same amount.

The dollar price is now 90,000 / 84 = 1,071. Put that into the demand function: 87 - 0.082 x 1,071 comes out negative. At that price ABC buys **nothing**. The rupee depreciated, and exports did not rise - they disappeared.

	2022	2023, price unchanged	2023, price raised
Nominal rate (Rs. per dollar)	82	84	84
Indian price (Rs.)	82,000	82,000	90,000
American price (dollars)	1,500	1,500	1,500
Real exchange rate	82 x 1,500 / 82,000 = 1.50	84 x 1,500 / 82,000 = 1.54	84 x 1,500 / 90,000 = 1.40
What happened to the rupee in real terms	-	Depreciated	Appreciated
Units exported	5	7	0

THREE LESSONS FROM ONE EXERCISE

1. A depreciation raises exports only if it is real. If prices at home rise as fast as the currency falls, nothing has been gained. "The one mistake people make," the professor said, "is to assume that because the currency is depreciating, exports will pick up." **2. Inflation at home is the enemy of the exporter.** A country whose prices rise faster than its competitors' loses ground even with a falling currency. **3. The real rate can move while the nominal rate stands still.** If automation and AI let American firms produce more cheaply, American goods become more competitive at an unchanged exchange rate.

GOOD TO KNOW

The index to watch. The RBI publishes a real effective exchange rate (REER): the rupee against a basket of 40 currencies, adjusted for differences in inflation, with 100 as the base. After years above 100 it fell below 100 during 2025, to its lowest since 2018 - the "real depreciation" the professor mentioned having read about. **The billing currency matters.** The exercise assumed XYZ bills in rupees, so a weaker rupee lowers the buyer's dollar price. Had it billed in dollars, the buyer's price would not have changed and the gain would have appeared in XYZ's rupee margin instead. Dollar invoicing is where the next session begins, followed by exchange-rate regimes and what governments and central banks do about all this.

MANAGER'S TAKEAWAY: TRACK YOUR OWN REAL EXCHANGE RATE

An exporter can compute this for its own business in a few lines: the exchange rate, its own price, and the price of its nearest foreign rival. A product company selling garments, auto parts or chemicals abroad should watch its cost inflation against that of competitors in Vietnam or Bangladesh as closely as it watches the rupee; a year of 8% wage increases can wipe out a 5% fall in the currency. A service company competing on rates with the Philippines or Eastern Europe is in the same position, with salaries as the cost that matters. And the third lesson cuts both ways: productivity - yours or a rival's - shifts the real rate without any help from the currency market.

3.15 Product, Service and the Manager's Desk

The session ran from a quarrel in Washington to the price of a car in two currencies. Once more, each idea is put on two desks: a product business and a service business.

The idea	On the desk of a product business	On the desk of a service business
The policy mix: in step or in conflict	Easy budget with tight money hurts whatever is bought on credit - vehicles, homes, machinery - even as everyday goods sell well.	Clients split the same way: those selling to consumers stay busy; those dependent on borrowing cut projects.
Autonomous demand and the wealth effect	Premium goods follow the stock and property markets more than salaries. Treat a market fall as an early warning.	Travel, private banking and premium education ride the same wave of confidence.
Sticky prices and the supply curve	With a price list and spare capacity, a surge in orders means more volume first, a higher price later.	Rate cards are stickier still: demand shows up as utilisation long before it shows up in rates.
Lucas's question: is it me, or is it everyone?	Do not add capacity because you could raise prices; check whether costs and rivals' prices rose as much.	A 10% rise in billing rates in a year of 10% salary inflation has improved nothing.

The idea	On the desk of a product business	On the desk of a service business
The Phillips curve and the labour market	Unemployment below its natural rate means pressure on shop-floor and contract wages.	Attrition and poaching rise first where skills are scarce. If skills cannot be hired, build them.
A rate hike and how it travels	Dollar borrowing costs more, and credit-financed demand cools - at home and in export markets.	Overseas clients slow decisions and shrink deals within a quarter or two.
Inflation expectations	Customers buying early "before the next increase" is the sign that expectations have moved.	Long contracts are bets on future inflation. Tie escalation to a published index.
Supply shocks	Costs rise as demand weakens. Hedge inputs, keep a second source, hold margin for a bad year.	Fuel, travel and logistics cost more, and clients cut discretionary work first.
Disinflation	Rates rise first, volumes fall next, inflation last. Cut inventory early; price rises stop sticking.	Do not lock in escalators at the peak; they will be reopened when inflation halves.
A fragmenting world	Price in tariffs, export controls and the cost of a second supplier in a second country.	Rules on data location, technology sharing and the movement of people can stop delivery overnight.
Lenders and borrowers (S - I = X - M)	Foreign capital is a normal source of funds and partners - until it stops arriving. Know your import and dollar-debt exposure.	Capability centres and outsourced work ride the same inflow of foreign saving.
Nominal and real exchange rates	A weaker rupee helps exports only if your costs have not risen as fast. Watch rivals' costs as well as the currency.	Dollar billing with rupee salaries gains from depreciation - unless wage inflation eats it.

Which curve moved? A field guide

Every event in this session can be filed under one of two questions: did demand move or did supply, and which way? The answer tells you at once what happens to inflation and to output.

The event	What moves	Inflation	Output
More money, lower interest rates	Demand, to the right	Up	Up (in the short run)
Higher government spending, or a tax cut	Demand, to the right	Up	Up (in the short run)
A rate hike, bond sales by the central bank, or a tighter budget	Demand, to the left	Down	Down
Costlier oil, a failed monsoon, a broken supply chain	Supply, to the left	Up	Down
A rise in inflation expectations	Supply, to the left	Up	Down
Expectations fall, supply chains heal, or productivity improves	Supply, to the right	Down	Up

Ten questions to take back to work

#	The question
1	Are the budget and the central bank pushing the same way this year, or against each other?
2	Does my customers' spending follow their salaries, or their portfolios and their mood?
3	When demand rises, does my business respond first with volume or with price?
4	When I could raise prices last, was that demand for my product or inflation for everyone?
5	Is the labour market for the skills I need tighter than normal - and am I hiring, or training?
6	If interest rates rise abroad, which reaches me first: weaker export demand, costlier funds, or the rupee?
7	What do my customers and my employees expect inflation to be next year, and are my contracts indexed?
8	If oil or a key input jumped 30%, how long could my margin hold, and what is my second source?
9	Which borders does my supply chain or my delivery model cross, and what happens if one of them closes?
10	After allowing for my own cost inflation, has the rupee's fall made me cheaper than my foreign rival?

Lines worth remembering (paraphrased from class)

The line	What it compresses
The two benevolent dictators can work together, or fight like cats and dogs.	The business environment is set by the mix of fiscal and monetary policy.
The supply curve slopes upward because managers are idiots.	Producers mistake general inflation for demand for their own product.
The Phillips curve is the aggregate supply curve written differently.	Lower unemployment and higher inflation come together.
Inflation should be low enough that nobody talks about it.	Price stability is about expectations, not a number.
A shorter pain for a longer gain.	Disinflation: a slowdown now buys low inflation later.
The economy is people, not aliens.	Expectations and behaviour drive inflation.
S - I = X - M. It cannot fail.	A country with a trade deficit is borrowing other countries' saving.
A depreciation raises exports only if it is real.	What matters is your price relative to your rival's.

ONE-BREATH SUMMARY

The government and the central bank can push demand the same way, as in 2020, or opposite ways, as when an American tax cut met rising interest rates; the mix sets the business environment. Demand slopes down and is shifted by money, the budget and confidence. Supply is vertical in the long run and flat in the very short run, and in between it slopes upward - because wages lag prices, and because producers mistake general inflation for demand for their own product - but only for a given level of expected prices. Written in terms of inflation and unemployment, the same curve is the Phillips curve, measured from a natural rate of unemployment that is never zero. A demand push raises output until expectations catch up, and then leaves only higher inflation; so central banks guard expectations above all, as the Federal Reserve did when it raised rates in September 2026. A supply shock raises inflation and lowers output together and leaves the central bank a choice between the two. To bring inflation down it must push output below potential until expectations fall - disinflation, which hurts less when fiscal policy helps and when the central bank is believed. Open the economy, and saving minus investment equals exports minus imports: the world splits into lenders and borrowers, in an age that is becoming more divided. The exchange rate is the price of a currency, set by the demand for a country's goods and assets; but trade follows the real exchange rate, so a falling rupee helps exporters only if prices at home do not rise to cancel it. Session 4 takes up dollar invoicing and exchange-rate regimes.

3.16 Practice Questions for Session 3

Twenty-five questions chosen from this session's full question bank so that every section, and every kind of question - a definition, a calculation, an application, a trap - appears at least once. The options are close on purpose: several are true statements that answer a different question. Read the one-line reason under each answer even when you got it right. More questions on this session are in the Mixed Question Bank after Session 4.

Q1. In the COVID years the combination of policies in most countries was:

(a) Expansionary fiscal policy with expansionary monetary policy

(b) Expansionary fiscal policy with contractionary monetary policy

(c) Contractionary fiscal policy with expansionary monetary policy

(d) Contractionary fiscal policy with contractionary monetary policy

Answer: (a) - Governments spent more than they taxed, and central banks bought the bonds with new money.

Q2. With an expansionary budget but a tightening central bank, which business is most likely to struggle?

(a) A maker of toothpaste and soap sold for cash

(b) A chain of neighbourhood pharmacies

(c) A grocery retailer selling daily essentials

(d) A seller of cars bought mostly on loans

Answer: (d) - Incomes are supported by the budget, but credit is costly - so goods bought on borrowed money suffer most.

Q3. A stock-market boom makes households feel richer and spend more, though their salaries are unchanged. This is:

(a) The Keynesian multiplier at work on consumer spending

(b) The wealth effect - a rise in autonomous consumption

(c) The Pigou effect produced by a falling price level

(d) The crowding out of private spending by the state

Answer: (b) - Wealth, not income, has changed. Demand shifts right with no policy action at all.

Q4. The Keynesian short-run supply curve is horizontal because:

(a) Prices are stuck, so firms meet changes in demand by changing output

(b) Output is fixed by the economy's stock of capital and labour

(c) Wages are perfectly flexible and adjust every week

(d) The money supply is held constant by the central bank

Answer: (a) - In the short run it is output, not price, that responds - depending on how much capacity firms use.

Q5. A unit costs Rs. 5 to make and sells for Rs. 6. The price rises to Rs. 7 while the cost stays at Rs. 5. Profit per unit:

(a) Is unchanged at Re 1

(b) Rises by one half

(c) Doubles, from Re 1 to Rs. 2

(d) Trebles, from Re 1 to Rs. 3

Answer: (c) - 6 - 5 = 1 before; 7 - 5 = 2 after. Each extra unit now earns twice as much.

Q6. If producers correctly realise that ALL prices have risen in the same proportion, they will:

(a) Produce a great deal more than before, to profit from the higher prices

(b) Leave output unchanged, since nothing real has changed

(c) Close down until prices return to normal

(d) Cut their own prices to gain market share

Answer: (b) - Their price relative to their costs is the same as before, so there is no reason to produce more.

Q7. On the class slide the economy moves from A (output 7,500, unemployment 7%, inflation 2%) to B (output 8,000). At B:

(a) Unemployment is 7% and inflation is 6%

(b) Unemployment is 4% and inflation is 6%

(c) Unemployment is 4% and inflation is 2%

(d) Unemployment is 10% and inflation is 2%

Answer: (b) - More output, so fewer unemployed; higher prices, so more inflation.

Q8. In the Phillips curve equation, inflation rises above expected inflation when:

(a) Unemployment is below its natural rate

(b) Unemployment is above its natural rate

(c) Unemployment is equal to its natural rate

(d) The natural rate itself is rising

Answer: (a) - A labour market tighter than normal pushes wages, and therefore prices, up faster than people expected.

Q9. On the class slide, extra money first takes the economy from output 10 and inflation 2% to output 11 and inflation 3.5%. After expectations have adjusted, it ends at:

(a) Output 11, inflation 5.5%

(b) Output 11, inflation 3.5%

(c) Output 10, inflation 2%

(d) Output 10, inflation 5.5%

Answer: (d) - Output returns to potential; the only lasting effect of the extra money is higher inflation.

Q10. A rate hike differs from quantitative tightening in that a rate hike:

(a) Removes money from the system directly, by selling bonds

(b) Has no effect of any kind on the supply of money

(c) Works only by reducing the government's spending

(d) Raises the price of money, reducing its quantity only indirectly

Answer: (d) - QT works on the quantity directly. A rate hike works on the price and cuts the quantity through less lending.

Q11. The wage-price spiral is a loop in which:

(a) Wages and prices fall together, year after year, as firms and workers undercut one another in turn

(b) Prices rise while wages are held down by long contracts

(c) Higher prices raise expected inflation, then wages, then costs, then prices again

(d) Higher wages lower prices by raising productivity

Answer: (c) - Each turn feeds the next, so inflation no longer needs an outside cause.

Q12. "Inflation should be low enough that nobody talks about it" means that price stability is achieved when:

(a) The prices of goods and services stop changing altogether

(b) Inflation does not enter the decisions of households and firms

(c) The rate of inflation equals the rate of economic growth

(d) Wages are frozen by agreement between firms and workers

Answer: (b) - Once people talk about prices, they build inflation into their wage demands and plans.

Q13. A negative supply shock moves inflation and output in which directions?

(a) Inflation up, output down

(b) Inflation up, output up

(c) Inflation down, output down

(d) Inflation down, output up

Answer: (a) - A demand shock moves both the same way; a supply shock gives the worst of both.

Q14. The central bank faces this dilemma after a supply shock because:

(a) It has run out of foreign exchange reserves

(b) The government's budget is too tight to help

(c) Supply shocks are always permanent

(d) Its instrument acts on demand and cannot move supply

Answer: (d) - Money shifts the demand curve. It cannot produce oil or rain.

Q15. Inflation falling from 8% to 4% is _____; inflation moving from 4% to minus 4% is _____.

(a) Deflation; disinflation

(b) Deflation; deflation

(c) Disinflation; deflation

(d) Disinflation; disinflation

Answer: (c) - In the first case prices are still rising; in the second they are actually falling.

Q16. The "sacrifice ratio" measures:

(a) The output or employment lost for each point taken off inflation

(b) The ratio of a country's exports to its imports of goods and services

(c) The share of national income that is saved

(d) The ratio of government debt to GDP

Answer: (a) - It is the price of disinflation. Senator Kennedy's 3.6 points of unemployment for 2 points of inflation is one estimate.

Q17. Senator Kennedy's rule from history was 3.6 points of unemployment for every 2 points taken off inflation. With inflation at 6.4% and unemployment at 3.4%, reaching 2.4% inflation would need unemployment of:

(a) 7.0%

(b) 10.6%

(c) 5.2%

(d) 13.6%

Answer: (b) - Four points off inflation is twice 3.6, or 7.2 points more unemployment: 3.4 + 7.2 = 10.6.

Q18. The index suggests that fragmentation today is:

(a) At the lowest level in the whole series

(b) About the same as it was in the year 2000

(c) Lower than it was during the 1970s

(d) Higher than it was during the 1970s

Answer: (d) - It has climbed since 2008 to the highest level in the series.

Q19. The open-economy identity derived in class is:

(a) S + I = X + M

(b) S - I = M - X

(c) S - I = X - M

(d) S = X - M

Answer: (c) - Saving minus investment equals exports minus imports.

Q20. India exports 100 and imports 150. Foreign investors bring in 100. The country's foreign exchange reserves:

(a) Rise by 50

(b) Fall by 50

(c) Rise by 100

(d) Are unchanged

Answer: (a) - 50 of the inflow pays for the trade gap; the RBI buys the other 50.

Q21. The rate moves from Rs. 90 to Rs. 92 per dollar. Then:

(a) The rupee has appreciated and the dollar has depreciated

(b) The rupee has depreciated and the dollar has appreciated

(c) Both currencies have appreciated

(d) Both currencies have depreciated

Answer: (b) - More rupees are needed for the same dollar: the dollar is dearer, the rupee cheaper.

Q22. A foreign tourist visiting the Taj Mahal is, in the country's external accounts:

(a) An import of goods into India, since the visitor consumes what is produced here

(b) An inflow of foreign capital

(c) A remittance from abroad

(d) An export of services, raising the demand for rupees

Answer: (d) - The visitor buys Indian services - hotel, transport - and needs rupees to do it.

Q23. A car costs Rs. 71 lakh in India - about 86,600 dollars at Rs. 82 - and a similar car costs 105,900 dollars in the US. The real exchange rate, the American car in terms of Indian cars, is about:

(a) 0.82

(b) 1.00

(c) 1.22

(d) 1.49

Answer: (c) - 105,900 / 86,600 = 1.22. The reverse, 0.82, is one Indian car in terms of American cars.

Q24. In the class exercise the buyer's demand is Q = 87 - 0.082 x P, with P in dollars. XYZ raises its price to Rs. 90,000 while the rate is Rs. 84, so the dollar price is about 1,071. Units demanded are:

(a) 7

(b) 5

(c) Zero

(d) 2

Answer: (c) - 87 - 0.082 x 1,071 is negative: at that price the buyer takes nothing.

Q25. The United States raises interest rates. Following the chain in this session, the most likely effect on India is that:

(a) Capital is drawn toward dollar assets and the rupee tends to weaken

(b) Capital floods into India in search of safety, and the rupee strengthens

(c) India's saving rises above its investment

(d) India's exports to the United States stop

Answer: (a) - Higher US rates raise the demand for dollar assets; foreign saving is slower to arrive in India.

SESSION 4 OF 4

Exchange Rates and the World Outside

Invoicing and Pricing Power, Exchange-Rate Regimes, Reserves and the Rupee, the Dollar Agenda, and What It Means for Business

Sunday, 27 September 2026 | Prof. Ankit Kumar | Live online session

WHAT THIS SESSION COVERS

Exchange rates in practice. Who bears currency risk and why; how fixed, flexible and managed regimes work; what reserves are for; how a decision of the US Federal Reserve reaches the rupee; the attempt to weaken the dollar; and what a manager can do about all of it. A transcript was available only for the opening part of this class: from Section 4.08 onward the notes follow the professor's slides, explained with standard material and current data.

4.01	Recap: The Open Economy in Four Lines	119	**4.09**	Reading the Reserves: Where We Are Now	129
4.02	Rupee Invoice or Dollar Invoice?	120	**4.10**	De-dollarisation: How Much Is Real?	130
4.03	Who Bears the Risk: Pricing Power	121	**4.11**	Three Exposures and the Hedging Toolkit	131
4.04	Fixed and Flexible: Two Extremes	123	**4.12**	The Trump Agenda: A Weaker Dollar	132
4.05	Defending a Fixed Rate	124	**4.13**	The President and the Fed	135
4.06	Devaluation: When Reserves Run Out	125	**4.14**	What It Means for Your Business	136
4.07	India's Managed Float	126	**4.15**	Product, Service and the Manager's Desk	137
4.08	When the Fed Sneezes	127	**4.16**	Practice Questions for Session 4	139

4.01 Recap: The Open Economy in Four Lines

The opening slides gathered up what Session 3 had established about an economy that trades with the world. Everything in this session is built on these four lines.

WHERE SESSION 3 LEFT OFF

Net exports. NX = X - IM = Y - (C + I + G): a country exports the part of its output that it does not use itself (Section 3.12). **Capital flows.** Net capital outflow = S - I: a country that saves more than it invests lends the difference abroad, so S - I = NX (Section 3.12). **The nominal exchange rate** is the rate at which one currency is exchanged for another, set by supply and demand, and influenced by central banks through interest rates and their own buying and selling (Section 3.13). **The real exchange rate** is the price of one country's goods in terms of another's - one American car for 1.22 Indian cars - and trade follows it (Section 3.14).

Two words need care. A currency **depreciates** when it buys less foreign currency than before. The slide's example: if the exchange rate goes from 5 Malaysian ringgit per dollar to 4, the dollar has depreciated, because a dollar now buys fewer ringgit - and the ringgit has appreciated.

And the conclusion of Session 3, stated on the slides as a rule: when the rupee depreciates in *real* terms, Indian goods become cheaper relative to foreign goods; buyers at home and abroad switch towards them; exports rise, imports fall, and net exports go up. A real appreciation does the opposite. Net exports are a function of the real exchange rate.

CONCEPT TRAP: THE SAME FACT, TWO WAYS OF WRITING THE NUMBER

The car example gives two numbers: one American car is worth 1.22 Indian cars, and one Indian car is worth 0.81 of an American car. Session 3 used the first, which *rises* when Indian goods get relatively cheaper. Textbooks, and the slide that says net exports move inversely to the real exchange rate, use the second, which *falls*. Do not memorise up or down. Ask one question: have Indian goods become cheaper relative to foreign goods? If yes, the rupee has depreciated in real terms and net exports tend to rise.

4.02 Rupee Invoice or Dollar Invoice?

Session 3 ended with an exporter who billed in rupees. The class had been promised the other half: what happens when the same exporter bills in dollars. The professor worked all three cases on a blank slide.

You export a car from India. It costs Rs. 50,000 - round numbers, and "a parallel universe" in which the exchange rate is Rs. 50 to the dollar. Your customer is an American company whose accounts are in dollars, so what matters to it is the dollar price: 50,000 / 50 = 1,000 dollars. Now the rupee depreciates from 50 to 80.

	What the exporter does	What the buyer pays	What happens
Case 1	Bills in rupees; keeps the price at Rs. 50,000	50,000 / 80 = 625 dollars, down from 1,000	The car is cheaper for the buyer, so demand rises. The gain shows up as more cars sold.
Case 2	Bills in rupees; costs at home have doubled, so the price is Rs. 1,00,000	1,00,000 / 80 = 1,250 dollars, up from 1,000	The car is dearer for the buyer in spite of the weaker rupee. Demand falls.
Case 3	Bills in dollars; the price stays at 1,000 dollars	1,000 dollars, as before	Demand does not change. The exporter now converts 1,000 dollars into Rs. 80,000, not Rs. 50,000.

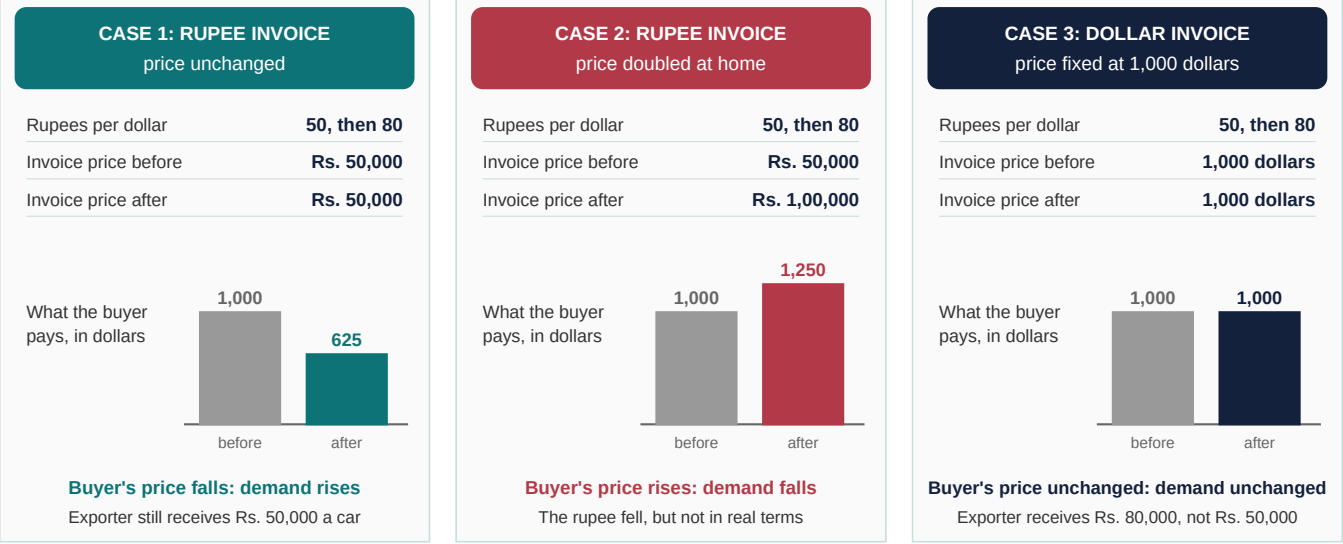


Figure 4.1: One depreciation, three outcomes. What happens depends on the invoice currency and on prices at home.

Cases 1 and 2 repeat the lesson of Session 3. The buyer's price fell in Case 1 only because the depreciation was *real*: the rupee weakened and prices in India did not rise to cancel it. In Case 2 prices rose faster than the currency fell, and the exporter became less competitive.

> *"It is a half-baked statement that if the currency depreciates, exports will pick up. They pick up only if the depreciation is real."*
>
> **Paraphrased from class**

Case 3 is the new one. With a dollar invoice the foreign buyer sees no change at all, so the quantity sold does not respond to the exchange rate. The whole effect of the depreciation lands on the exporter's own rupee income. In the professor's words, the adjustment happens on the revenue side and not on the demand side.

> **THE RULE TO CARRY FORWARD**
>
> **Rupee invoice:** a real depreciation makes you cheaper abroad - you gain through *volume*. **Dollar invoice:** your price abroad is unchanged - you gain through *margin*, because each dollar converts into more rupees. Either way a weaker rupee helps the exporter only so long as costs at home have not risen to match it.

MANAGER'S TAKEAWAY: KNOW WHERE A CURRENCY MOVE LANDS IN YOUR ACCOUNTS

The invoice currency decides which line of the profit-and-loss statement moves. A product exporter billing in rupees should expect a weaker rupee to show up in order volumes a few months later, and should have the capacity to meet them. A service exporter billing in dollars - most of Indian technology services - should expect it in margins at once, with no change in the amount of work. The planning is different: the first needs capacity, the second needs a decision on whether to keep the windfall, share it with clients through lower dollar prices, or use it to absorb wage increases.

4.03 Who Bears the Risk: Pricing Power

If the invoice currency matters so much, who chooses it? The professor answered with two subscriptions that many in the class pay for every month.

Start with Netflix. Almost everyone in the class had it, and pays in rupees - Rs. 499 for the plan most had. Then an AI assistant: the professor's own subscription, from an American company, is priced in dollars - its website quotes dollars, and he pays about 22 dollars a month. Both are American companies. One bills Indians in rupees, the other in dollars. Why?

	The streaming service	The AI subscription
Price quoted to an Indian customer	In rupees	In dollars
When the rupee falls	The customer pays the same; the company receives fewer dollars	The company receives the same; the customer pays more rupees
Who bears the exchange-rate risk	The company	The customer
The market it sells in	Crowded: several rivals a click away	Two or three providers; the service has become close to essential for its users
What the customer would do if the rupee price kept rising	Cancel and move to a rival	"Where will I go?"

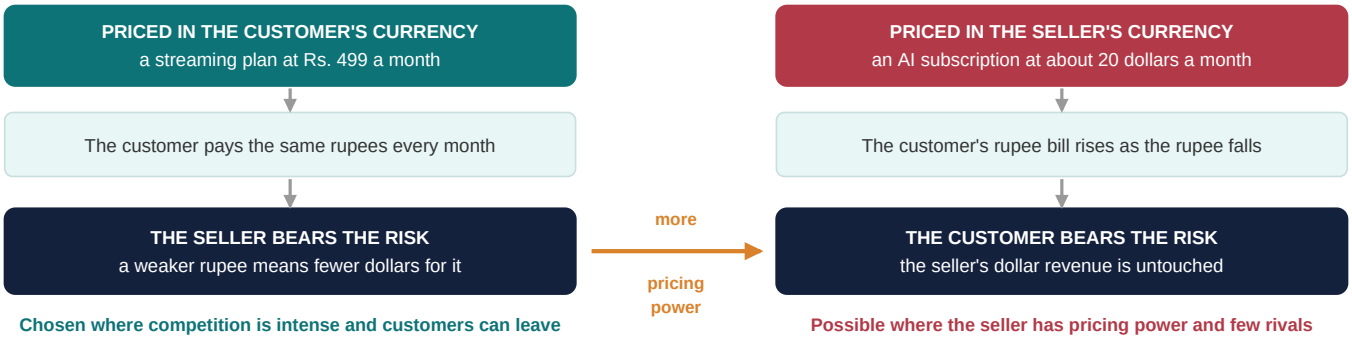


Figure 4.2: The invoice currency is a decision about risk, and it follows from market power.

Think of it from the company's side. If a streaming service priced in dollars, an Indian subscriber would pay a little more every month as the rupee slid - 500, then 560, then 580. In a competitive market that subscriber leaves. So the company fixes the rupee price and takes the currency risk itself. The AI firm is in the opposite position. It has few rivals and customers who depend on it, so it can leave the risk with them. The professor's own rupee bill has kept rising though the dollar price has not moved.

> *"The invoicing decision is not a small thing. It is a function of how much monopolistic power you hold. The simple point is: who will bear the risk?"*
>
> **Paraphrased from class**

The formal names

Term on the slides	Meaning	Who bears the exchange-rate risk
Local currency pricing	The exporter sets the price in the currency of the importing country - the customer's currency.	The exporter. Its home-currency revenue moves with the exchange rate.
Dollar (dominant) currency pricing	The exporter sets the price in US dollars whatever the destination - even when neither buyer nor seller is American.	The importer. The dollar price is fixed in the short run, so the local-currency cost rises and falls with the exchange rate, and so do prices to consumers.

Questions from the class

The question	The answer
We pay such subscriptions by UPI, which works only in rupees. Does that not force rupee pricing?	No. The payment can leave your account in rupees and be converted by the company afterwards. Which currency the *price* is fixed in is a separate, commercial decision - other American services also bill Indians in rupees because the market here is competitive.
Is this why large companies have treasury teams?	Partly. A participant from a large technology exporter confirmed that its treasury hedges its foreign-currency exposure. "They have to," the professor said - Section 4.11 takes it up.

GOOD TO KNOW - WHY THE DOLLAR INVOICE MATTERS FOR A WHOLE COUNTRY

A large share of the world's trade - far larger than America's own share of it - and the great bulk of India's is invoiced in dollars, including trade between two countries neither of which is the United States. Research associated with the economist Gita Gopinath draws out what Case 3 implies at the scale of an economy. When the rupee falls, dollar-priced exports do not become cheaper for foreign buyers in the short run, so export volumes respond slowly. Dollar-priced imports become dearer at once. A depreciation therefore reaches a country first as costlier imports and higher inflation, and only later, if at all, as higher exports.

MANAGER'S TAKEAWAY: THE CURRENCY ON YOUR INVOICE REVEALS YOUR PRICING POWER

Look at your own invoices, and at your suppliers'. A product company that must quote in the customer's currency to win the order is the streaming service: it carries the risk and needs a hedge. One whose customers accept a quotation in its own currency has real pricing power, and should know it. The same test works on the buying side. A service company paying for software, cloud capacity or licences priced in dollars has handed its suppliers the right to raise its rupee costs every time the rupee falls. That is a reason to negotiate rupee pricing or a cap - and a reason to count those bills as dollar liabilities when deciding how much to hedge.

4.04 Fixed and Flexible: Two Extremes

So far the exchange rate has simply moved. But who decides whether it is allowed to? There are two pure answers, and most countries today live somewhere between them.

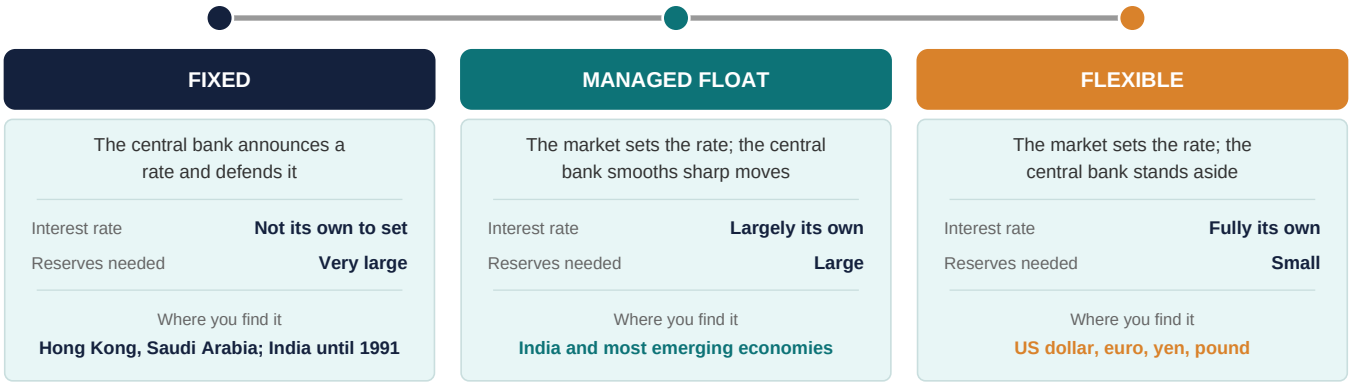


Figure 4.3: The spectrum of exchange-rate regimes. India sits in the middle.

In a **flexible** (or floating) system, market forces set the rate: the demand for one currency relative to another, and their relative supply. If the rupee is depreciating, one of four things is happening - more people want dollars, fewer dollars are on offer, fewer people want rupees, or more rupees are on offer. The central bank stands aside and lets the price find its level.

The slide's example is Japan and America. Suppose a yen costs 0.86 US cents and Japanese exports to America rise. American buyers need more yen to pay for them. If the Bank of Japan stands aside, the yen becomes dearer - say 0.90 cents. Japanese goods now cost more in dollars, and American demand for them eases. The exchange rate has done the adjusting.

In a **fixed** system the central bank announces a rate - say Rs. 85 to the dollar - and stands ready to buy or sell at that price. Nobody will pay more than 85 for a dollar when the central bank sells at 85, and nobody will accept less when it buys at 85, so the market price stays there. This buying and selling of foreign currency by a central bank is called **intervention**. It was the world's system until the early 1970s.

Why the world moved away from fixed rates

A participant asked what the advantage of a flexible rate is. For a fixed rate to hold, the professor replied, every country has to keep a very large stock of foreign currency, and the system was not working well. As the era of globalisation arrived, the idea took hold that markets should set the rate. Emerging economies added a condition: our markets are volatile, so we will follow the market but step in from time to time. That compromise - the managed float - is where India is today.

MANAGER'S TAKEAWAY

Before doing business in a country, find out which regime it runs, because the risk is of a different kind in each. Under a float, the currency moves a little every day and can be hedged at a known cost. Under a fixed rate, it does not move at all for years - and then moves a great deal in one night. A product company selling into a pegged-currency market should watch that country's reserves, not its exchange rate. A service company with staff or costs there should avoid leaving large balances in the local currency.

4.05 Defending a Fixed Rate

A fixed exchange rate is a promise. The class followed what it takes to keep it - and what the central bank has to give up.

Suppose India has fixed the rupee at 85 to the dollar. Now American interest rates rise - "which has just happened", the professor noted, a week after the Federal Reserve's increase. American bonds pay more. To buy them, investors need dollars, so money leaves India. Dollars become scarce here; left to itself, the price of a dollar would rise to 87.

How does the RBI push it back to 85? There are too few dollars in the market, so it supplies them: it sells dollars and takes rupees in return. And here is the part people miss. Those rupees have been taken out of circulation. India's money supply has fallen - and when money becomes scarcer, its price, the interest rate, goes up.

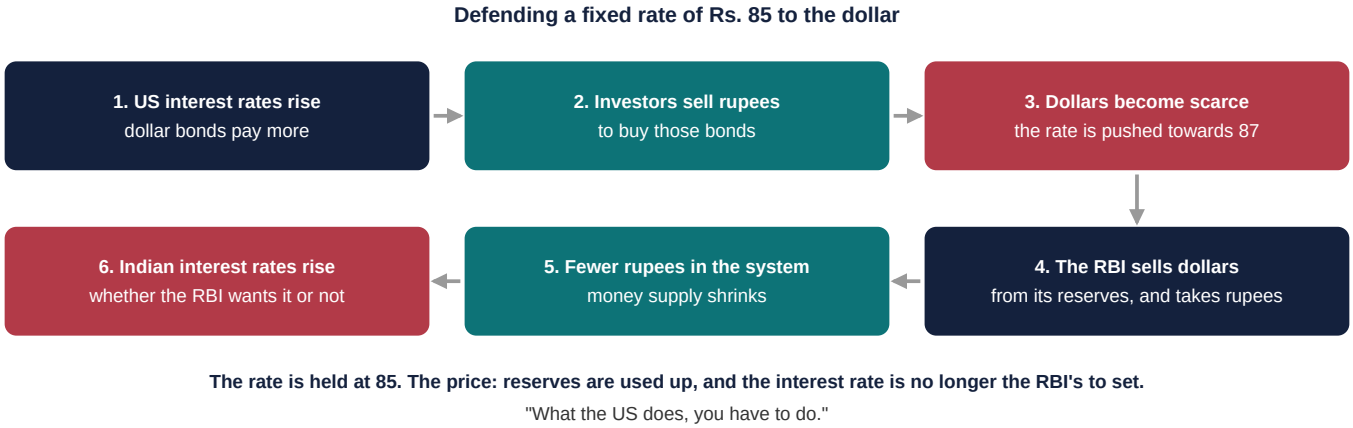


Figure 4.4: Six steps, and at the end of them India's interest rate has followed America's.

THE PRICE OF A FIXED RATE

In a fixed exchange-rate system the central bank loses the ability to set its own interest rate. The interest rate becomes *endogenous* - decided by what is needed to hold the exchange rate. "In simple terms: what the US does, you have to do." If American rates rise and yours do not, dollars leave and the currency comes under pressure.

The dollars the RBI sells come from its **foreign exchange reserves**. As the slide puts it, whoever fixes a price must make up any excess demand and take up any excess supply, and so must hold an inventory. A country can defend a fixed rate only as long as that inventory lasts.

GOOD TO KNOW - THE IMPOSSIBLE TRINITY

Economists sum this section up in a rule with a memorable name. A country would like three things: a stable exchange rate, the free movement of capital across its borders, and an interest rate of its own choosing. It can have any two, never all three. Fix the rate with capital free to move, and the interest rate is no longer yours. Keep your own interest rate with capital free to move, and the exchange rate must float. Want both a fixed rate and your own interest rate, and you must restrict the movement of capital.

MANAGER'S TAKEAWAY

If you borrow or invest in a country with a pegged currency, its interest rates are being set in Washington, not locally. A product company financing a plant there should watch the Federal Reserve as closely as the local central bank. And there is a tell-tale sign of a peg under strain that any manager can read: local interest rates rising sharply while the exchange rate stays still. A service company with receivables in that currency should collect early when it sees it.

4.06 Devaluation: When Reserves Run Out

What if the promise cannot be kept? A central bank defending a rate is selling dollars from a stock that is finite.

The slides put the question directly: what limits a central bank's intervention? With enough reserves it can go on selling dollars and hold the rate. But if a country persistently pays out more foreign currency than it earns, the reserves drain away, and one day it will be unable to continue. Before that day arrives, the central bank will usually act first.

The professor described the moment. You have announced that the rupee is 85 to the dollar. The pressure continues; you keep selling dollars; the reserves are running low. So you say: I cannot defend 85. From now on I will defend 90. That step is a **devaluation**.

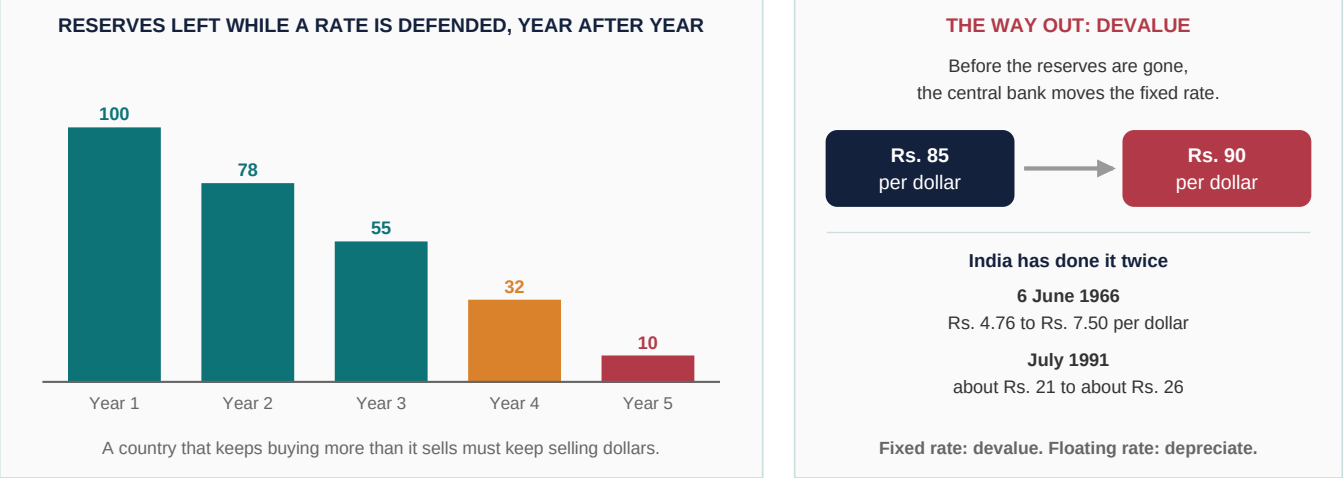


Figure 4.5: A fixed rate lasts as long as the reserves do. Devaluation is the exit taken before they are gone.

India has been through it. The slide shows the front page of The Times of India of 6 June 1966: "Rupee devalued by 36.5 per cent." The rupee went from Rs. 4.76 to Rs. 7.50 to the dollar overnight. "That is what Indira Gandhi did," the professor said. "We had no reserves left, and she devalued the currency."

Four words that are not interchangeable

	Currency loses value	Currency gains value	Who does it
Under a fixed rate	Devaluation	Revaluation	The government or central bank, by announcement
Under a flexible rate	Depreciation	Appreciation	The market, through demand and supply

CONCEPT TRAP: THE RUPEE TODAY IS NOT "DEVALUED"

Devalue and revalue belong to a currency whose rate is officially fixed, as India's once was. Today the rupee's rate is set by the market, so it depreciates or appreciates. The professor was blunt about anyone who writes that the rupee is being devalued now: the word is simply wrong for a floating currency.

GOOD TO KNOW - 1991, AND A NEIGHBOUR IN 2022

India's second devaluation came in July 1991, when reserves had fallen to a few weeks of imports: the rupee was moved in two steps from about Rs. 21 to about Rs. 26 to the dollar, and within two years India had given up the fixed rate altogether. **Sri Lanka** shows what happens when the exit is left too late. A chart in the deck tracks its reserves measured in months of imports: about five months in 2020, less than one by 2022. With nothing left to sell, it could not pay for fuel or medicine, defaulted on its foreign debt, and saw its currency lose almost half its value in weeks.

MANAGER'S TAKEAWAY: A DEVALUATION IS A CLIFF, NOT A SLOPE

A floating currency gives warning; a pegged one does not. A product company exporting to a country with a fixed rate and shrinking reserves should shorten its credit terms and insist on payment in dollars, because the day after a devaluation its customer may be unable to pay or forbidden to. A service company with a subsidiary there should bring cash home regularly and not let it accumulate. The warning signs are public: reserves covering fewer and fewer months of imports, a widening gap between the official rate and the street rate, and new restrictions on buying foreign currency.

4.07 India's Managed Float

India is at neither extreme. Its system has a name: managed floating.

The rupee's value is set by the market, by the demand and supply of Section 3.13. But the RBI does not simply stand aside. From time to time it steps in to steady the currency - selling dollars when the rupee is falling too fast, buying them when money is pouring in.

What it does *not* do is defend a number. The professor showed a headline from November 2025 in which the RBI Governor, Sanjay Malhotra, says precisely that: the RBI does not target any level for the rupee, and the depreciation is being driven by the demand for dollars.

What the Governor said	What it means
The RBI does not target a rupee level	India is not a fixed-rate regime. There is no line the RBI has promised to hold.
It intervenes to curb volatility	The aim is to prevent sharp, disorderly swings - not to stop the currency from moving.
The depreciation is driven by dollar demand	More people want dollars - to pay for imports, to buy dollar assets - than want rupees. The price follows.

The professor also pointed to the mirror image, from a Financial Times report he had kept for the class. In Europe the problem is the opposite one: the euro has been appreciating, and that is trouble for European exporters for exactly the reason a real depreciation helps India's.

A LIVE EXAMPLE FROM THE WEEK OF THE CLASS

India's reserves reached a record 786 billion dollars in the first week of September 2026. Then oil prices rose, the Federal Reserve raised its interest rate, and the rupee came under pressure. In the week to 18 September the reserves fell by almost 15 billion dollars - the largest weekly fall in nearly two years - as the RBI sold dollars to steady the currency. That is a managed float at work: the rupee was allowed to weaken, but not to slide.

Questions from the class

The question	The answer
Could the rate also be managed by restricting imports, or the purchase of dollars?	Yes. Limits on imports and on taking money abroad reduce the demand for dollars, and governments do use them. They are the third corner of Section 4.05's impossible trinity: restricting the movement of capital.
When the RBI supplies dollars it steadies the rate. What about what companies and individuals do?	They move it in exactly the same way. If the world wants more of India's software services, more rupees are demanded, and that by itself limits the depreciation. The RBI is one participant - a very large one - in a market made by everyone else.

MANAGER'S TAKEAWAY: THE RBI WILL SMOOTH YOUR RIDE, NOT CHANGE YOUR DESTINATION

Under a managed float nobody guarantees a rate. A product company that imports components should not plan on the RBI "holding" the rupee at this year's level; it will slow a fall, and that is all. A service company earning dollars should not plan on the rupee weakening for ever either - the RBI buys dollars when inflows are strong and stops it rising fast. What the system does give you is time: moves are gradual enough to hedge, reprice and renegotiate. Use that time; do not mistake it for stability.

4.08 When the Fed Sneezes

The deck opens with a row of falling dominoes and a line that could stand as the title of the whole session: when the Fed sneezes, everyone catches a cold.

Sections 4.05 to 4.07 explain why. The United States is the largest borrower in the world, and its government bonds are the asset everyone holds. When the Federal Reserve raises the return on those bonds, money moves towards them from everywhere else, and each country it leaves has to cope.

When the Fed sneezes: how one decision in Washington travels



The four spillovers the RBI listed in 2022: capital outflows, pressure on the currency, loss of reserves, imported inflation.

It happened in 2013 and in 2022, and the same chain was set off by the Fed's rate rise of 16 September 2026.

A country with ample reserves and anchored inflation feels a shiver. One without them catches the cold.

Figure 4.6: The dominoes. A rate decision in Washington ends as higher interest rates and slower growth elsewhere.

The deck quotes the RBI's own account of 2022. Inflation in the major advanced economies had proved persistent, it said. The shock that followed was the aggressive tightening of monetary policy by the US Fed and the unrelenting rise of the dollar. The spillovers to emerging economies, India included, came in four forms: capital outflows, pressure on currencies, loss of reserves and imported inflation.

The spillover	What it is	How India met it in 2022
Capital outflows	Foreign investors sell local shares and bonds and take the money out	Foreign portfolio investors were heavy sellers for months
Pressure on the currency	Those investors sell rupees for dollars	The rupee fell from about 74 to about 83 to the dollar
Loss of reserves	The central bank sells dollars to slow the fall	Reserves fell from about 630 to about 530 billion dollars
Imported inflation	Everything bought from abroad costs more in rupees	Costlier oil and inputs fed into prices; the RBI raised its own rate

Why is India exposed at all? Because of the identity of Session 3. India saves less than it invests, so it depends on other countries' saving arriving every month. Anything that makes that saving prefer to stay at home - a higher interest rate in America, above all - is felt here at once.

THE CONNECTION TO LAST WEEK

Session 3 studied the Fed's rate rise of 16 September 2026 as a move along America's Phillips curve. This session shows the same decision from the other end. For America it is a way of cooling demand. For India it is a rise in the return on dollar assets - and so the first domino.

MANAGER'S TAKEAWAY: PUT THE FED'S CALENDAR IN YOUR OWN

The Federal Reserve meets eight times a year, on dates published well in advance. For an Indian company with foreign currency in its business those dates matter as much as the RBI's. A product company that imports should avoid leaving large dollar payments unhedged across a meeting at which a rate rise is expected. A service company that earns dollars may gain from the rupee's fall, but its American clients are facing costlier money and will be slower to sign. And any company planning to borrow abroad should remember that the cost is set by the first domino, not the last.

4.09 Reading the Reserves: Where We Are Now

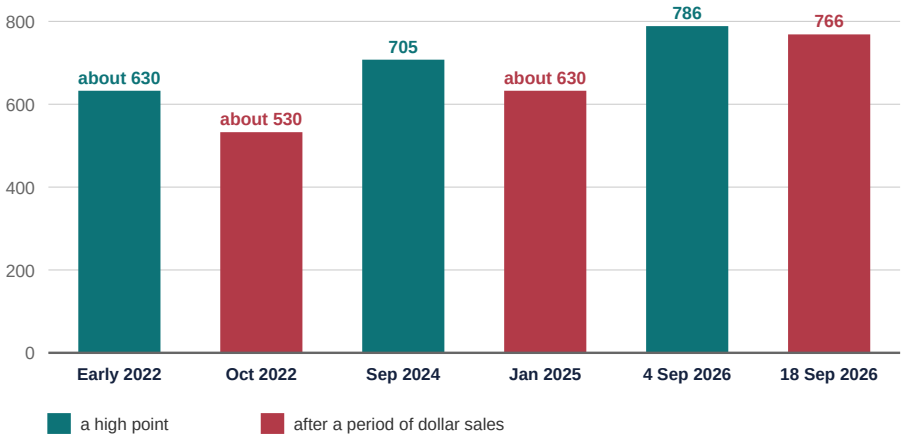
"Where are we right now?" one slide asks. The answer is in a number the RBI publishes every Friday: the foreign exchange reserves.

Reserves are the country's inventory of foreign currency - mostly dollar and other foreign-currency assets, with gold as the second largest part - held by the RBI. They are what stands behind every intervention in Sections 4.05 to 4.07, and their movement tells you what the RBI has been doing.

Two ways of measuring the same stock

Measure	What it tells you	Where India stands
Reserves in dollars	The size of the inventory	About 766 billion dollars (week to 18 September 2026), close to a record
Months of import cover	How long the country could go on paying for its imports if no foreign currency came in at all	Around 11 months. The deck's chart shows it falling from about 17 months in 2021 to about 10 to 11 since 2022, because imports have grown

India's foreign exchange reserves at selected dates, US dollars billion



How to read it

Green bars: the RBI has been buying dollars and adding to reserves.

Red bars: it has been selling dollars to steady the rupee - after the Fed's rate rises of 2022, in early 2025, and in the week to 18 September 2026, when reserves fell by almost 15 billion dollars.

Figure 4.7: India's reserves at six moments. The falls mark the periods when the RBI was defending the rupee.

The second measure is the one that makes countries comparable. A reserve of 5 billion dollars is a fortune for a small economy and nothing for a large one; what matters is how it compares with the bills that must be paid. The deck sets India's chart beside Sri Lanka's for exactly this reason. Sri Lanka's cover fell below one month in 2022. India's has not been below nine.

GOOD TO KNOW - HOW MUCH IS ENOUGH, AND WHAT IT COSTS

The traditional rule of thumb is that reserves should cover at least three months of imports. India holds several times that, as insurance against exactly the sneeze of Section 08. The insurance is not free. Reserves are held in safe foreign assets that pay little, while the rupees created to buy them have to be managed at home. And reserves built by attracting deposits from abroad - as part of the 2026 increase was - are borrowed: they come with an obligation to repay.

MANAGER'S TAKEAWAY: A FRIDAY NUMBER WORTH A GLANCE

The weekly reserves figure is the simplest indicator of pressure on the rupee. A fall of several billion dollars in a week means the RBI has been selling dollars - the rupee wanted to fall further than it did. Several such weeks in a row tell a product company that imports to bring its hedges forward, and tell a service company that earns dollars that a weaker rupee is likely to be allowed soon. Import cover is the number to check before taking on business in another country: below three months, treat every receivable as at risk.

4.10 De-dollarisation: How Much Is Real?

The Governor's remark that the rupee is weakening because of the demand for dollars led the professor to a claim that fills social media: that the world is abandoning the dollar.

He put it as a puzzle. If the world were really moving away from the dollar, how could the demand for dollars be so strong that currencies everywhere are falling against it? The two statements cannot both be true in any large way.

His reading of the evidence: there has been some movement, and it is small. About a year ago a little money shifted from the dollar towards the euro and the Swiss franc. Measured against where the dollar stands, it is minor. "The dollar is still the dominant currency of the world," he said. The talk of de-dollarisation, in his phrase, belongs to WhatsApp University.

Where the dollar is used	Roughly how dominant it is
Central banks' foreign exchange reserves	Between 55% and 60% of the world total - down from about 70% in 2000, a slow decline over 25 years
Trading in the currency market	The dollar is on one side of nearly nine out of every ten transactions
Invoicing of world trade	Far beyond America's own share of trade: oil and most commodities are priced in dollars
The assets the world chooses to hold	US government bonds remain the benchmark safe asset - which is why the Fed's sneeze travels

GOOD TO KNOW - THE PIECES FIT TOGETHER

Three ideas from this module point the same way. Dollar invoicing (Section 4.03) means that even trade that never touches America needs dollars. Dollar stablecoins (Session 2) put dollars into the phones of people who have never held one. And every rise in American interest rates (Section 4.08) pulls the world's saving towards dollar assets. A currency does not lose its place while all three are at work. What has changed is at the edges: more gold in central banks' reserves, and more trade between some pairs of countries settled in their own currencies.

MANAGER'S TAKEAWAY

Plan on the dollar remaining the currency of international business for as long as your plan runs. A product company should not delay a hedge in the hope that settlement in rupees will soon replace dollar invoices; where a customer does offer to settle in rupees, take it as a welcome reduction in risk and not as a trend. A service company should treat claims about the dollar's collapse the way it would treat any other forecast passed around without numbers - and ask for the share of reserves, of trade and of transactions before believing it.

4.11 Three Exposures and the Hedging Toolkit

"What are the implications of the exchange rate for business?" The slide answers with three kinds of exposure. They differ in how far ahead they look - and in what can be done about them.

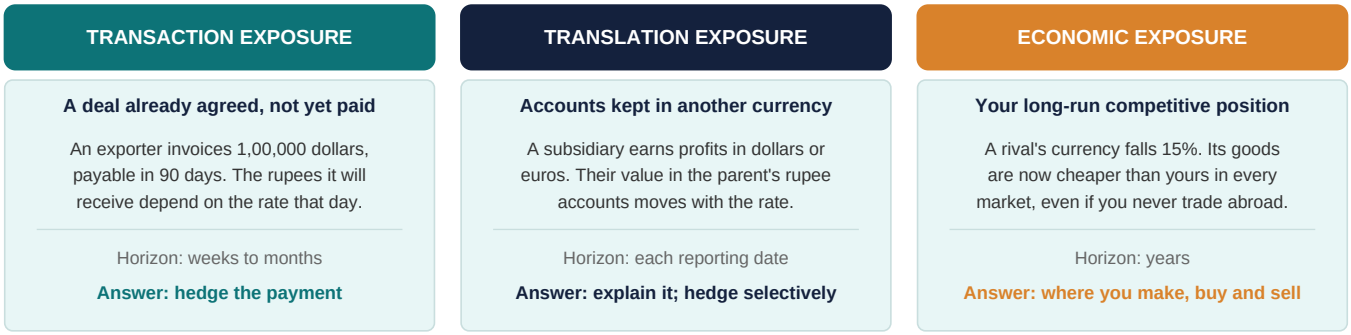


Figure 4.8: Three exposures. The first is about a payment, the second about the accounts, the third about the business itself.

Exposure	The slide's definition	A product business	A service business
Transaction	Risk from exchange-rate changes on pending transactions	A machine ordered from Germany, payable in euros in three months	An invoice raised in dollars, to be paid in 60 days
Translation	Impact on the financial statements when the results of foreign subsidiaries are converted	A plant abroad whose profits are reported in rupees	An overseas delivery centre whose costs are consolidated in rupees
Economic	Long-term effects on the company's competitive position	A rival country's currency falls, and its exports undercut yours for years	Clients compare your dollar rates with those of firms in countries whose currencies have fallen further

Only the first can be removed with a financial contract. The second is mostly a matter of explaining the accounts. The third is the real exchange rate of Session 3 at work on your own business, and it is dealt with by decisions about where to make, buy and sell - not by the treasury.

The four tools on the slide

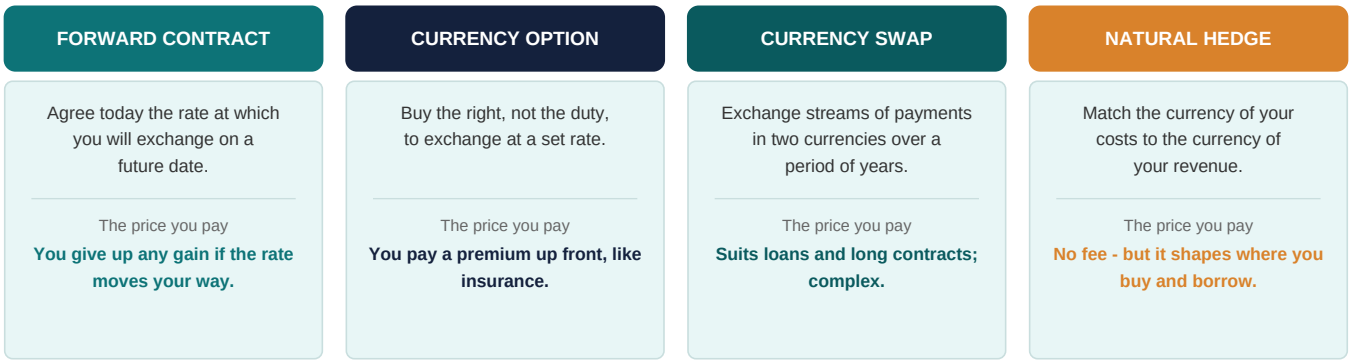


Figure 4.9: Four ways to hedge. Three are bought from a bank; the fourth is designed into the business.

A WORKED EXAMPLE: THE SAME RECEIVABLE, THREE CHOICES

An exporter will receive 1,00,000 dollars in 90 days. Today's rate is Rs. 95. **Do nothing:** it receives whatever the rate is then - Rs. 92 lakh if the rupee strengthens to 92, Rs. 98 lakh if it weakens to 98. **Forward contract** at, say, Rs. 96: it receives Rs. 96 lakh whatever happens. It is protected at 92 and gives up Rs. 2 lakh at 98. **Option** to sell at Rs. 95, for a premium of Re 1 per dollar: at 92 it uses the option and nets Rs. 94 lakh; at 98 it lets the option lapse, sells in the market and nets Rs. 97 lakh. The option keeps the upside, at a price. The forward costs nothing up front and gives certainty.

A **natural hedge** needs no contract at all. A firm that earns dollars can borrow in dollars, or buy its equipment and software in dollars, so that a fall in the rupee raises its costs and its revenue together. This is what the participant from the technology company meant in Section 4.03, and why large firms keep treasury teams: to see the whole position and hedge only what is left over.

CONCEPT TRAP: HEDGING IS NOT A WAY TO MAKE MONEY

A hedge that "loses" - a forward at 96 when the rate turns out to be 98 - has done its job: it replaced an unknown number with a known one. A treasury that is praised when its hedges gain and blamed when they lose will soon stop hedging and start speculating. The right test is whether the business could plan, price and pay its bills whatever the rate did.

MANAGER'S TAKEAWAY

Draw up your exposure before choosing a tool. List what you will receive and what you must pay in each currency over the next year; the difference is the amount at risk. A product company that both imports and exports may find most of it cancels. A service company with dollar revenue and rupee salaries has a one-way exposure and should hedge a steady share of it as a matter of routine, not of opinion about the rupee. And for economic exposure, the question belongs to the board, not the treasurer: if our rival's currency fell 15% tomorrow, what would we change?

4.12 The Trump Agenda: A Weaker Dollar

The second half of the class turned to the change in the international environment itself. One slide asks plainly: what is President Trump claiming to do?

The claim on the slide	The reasoning behind it
Weaken the dollar	A cheaper dollar makes American goods cheaper for foreigners - the real exchange rate of Session 3, used as policy
Revive manufacturing	Make goods produced in America competitive again, at home and abroad
Reduce the trade deficit	America imports far more than it exports, above all from China
Protect American jobs	The charge is that other countries keep their currencies artificially cheap, at the expense of American workers

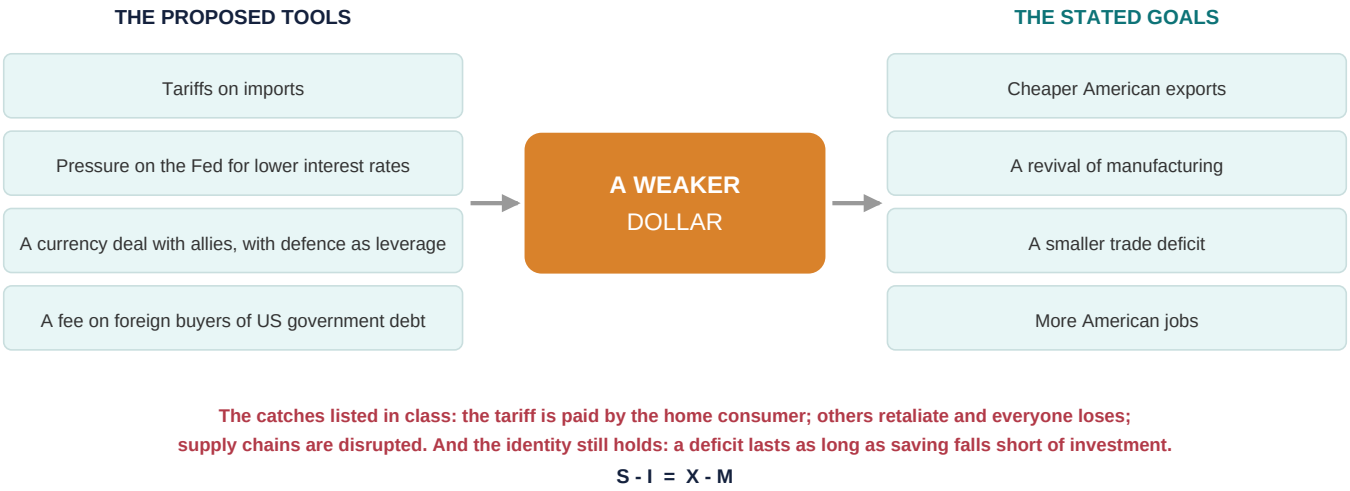


Figure 4.10: One objective, four instruments, four hoped-for results - and the objections raised in class.

Seen through this module, the programme is coherent in its own terms. Exports depend on the real exchange rate; America's is high; so bring it down. The interesting part is the choice of tools.

Tariffs as a currency tool

The slide describes tariffs as one more form of intervention: a way of correcting an overvalued dollar, a wide trade deficit and a hollowed-out industrial base. Other tools are listed beside it - interest rates, direct operations in the currency market, and controls on capital. The deck shows the board held up at the White House on 2 April 2025, with a "reciprocal" tariff against the name of each trading partner.

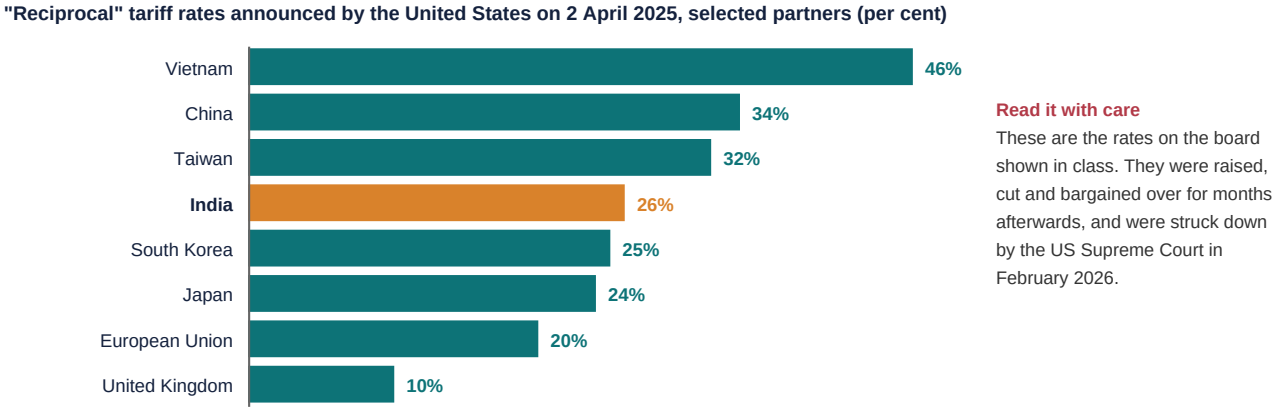


Figure 4.11: The tariff board of April 2025. India was listed at 26%.

The precedent: the Plaza Accord

There is a historical model for weakening the dollar by agreement, and the deck shows it. In September 1985, at the Plaza Hotel in New York, the United States, Japan, West Germany, France and the United Kingdom agreed to act together to bring the dollar down. It worked, and quickly.

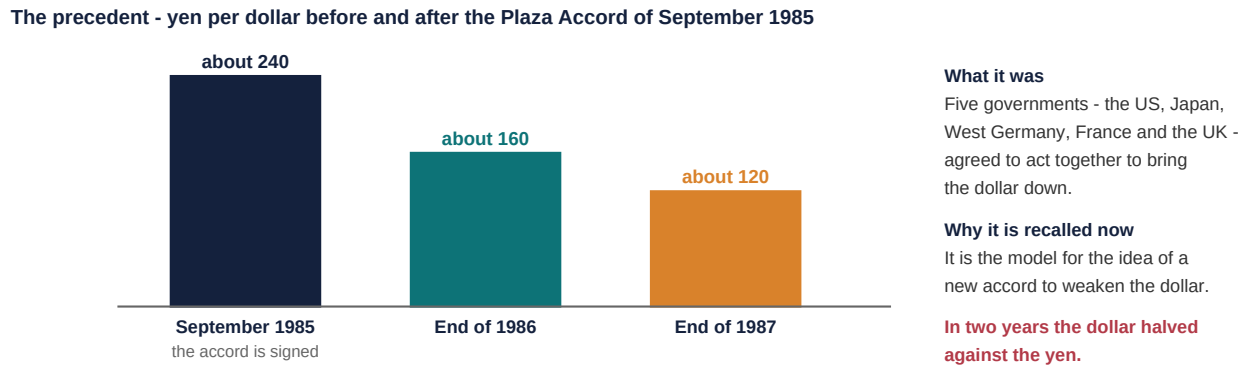


Figure 4.12: The Plaza Accord. Co-ordinated action by five governments moved the dollar a long way.

The present idea goes a step further. Another slide is headed "Make defence obligation a bargaining chip": use America's security guarantees and military protection as leverage in negotiations over trade and currencies, tying defence commitments to favourable terms. Economic policy and security policy, which used to be kept apart, are being joined.

The issues with the policy

The issue	As stated on the slide	In the language of this module
Who pays the tariff	It may pass to the local consumer, who pays more; demand for the foreign exporter falls	A tariff raises costs at home - a negative supply shock (Session 3)
Retaliation	If other countries retaliate, everyone loses	Exports fall on both sides; no one's trade balance improves
Supply chains	Global supply chains may be disrupted, affecting domestic production	The fragmentation of Session 3, speeded up

GOOD TO KNOW - THE IDENTITY, AND WHAT HAPPENED NEXT

The identity has the last word. Session 3 showed that S - I = X - M. A tariff changes what a country imports and from whom; the size of the deficit is set by the gap between its saving and its investment. **The tariffs themselves have had an eventful life.** The rates on the board were raised, lowered and bargained over through 2025 - India's reached 50% at one stage - and in February 2026 the US Supreme Court ruled that the emergency law used to impose them did not permit tariffs at all. The administration replaced them with tariffs under other laws. For a business the lesson is the uncertainty itself: the rate that applies to a shipment can change between the order and the delivery.

MANAGER'S TAKEAWAY: A TARIFF IS A PRICE CHANGE WITH NO NOTICE PERIOD

A product company exporting to the United States should decide in advance who bears a new tariff - written into the contract, not argued about after the event - and should know which of its products could be shipped from another country. A service company is not charged tariffs, but its clients are, and a manufacturer whose margins have been squeezed by duties cuts its technology and consulting budgets next. Both should watch for the mirror image at home: retaliation and diverted trade bring cheaper imports into India, which helps buyers of inputs and hurts local producers of the same goods.

4.13 The President and the Fed

One slide carries a single sentence: "Volatile global business environment - conflict between two benevolent dictators." It is the quarrel of Session 3 again, now with consequences for every other country.

A weaker dollar needs lower American interest rates: if dollar assets pay less, the world wants fewer of them. The deck shows a headline from April 2025, two days after the tariff board, in which the President says it is the "perfect time" for the Federal Reserve to cut rates. The Fed's concern runs the other way. Tariffs raise prices, and Session 3 explained why a central bank that sees inflation and expectations rising will not cut - it may raise, as it did in September 2026.

	What the President wants	What the Federal Reserve is charged with
The aim	A weaker dollar, more exports, cheaper government borrowing	Stable prices and full employment
The interest rate it implies	Lower	High enough to bring inflation back to 2%
The effect of tariffs	A tool for correcting the trade balance	A rise in prices that must not feed into expectations
The result when the two collide	Pressure on the central bank, in public	Policy that markets find hard to predict

The proposal that needs the Fed

The intellectual case for the weak-dollar programme was set out by the economist Stephen Miran, an adviser to the President. The deck picks out one of his recommendations: a **user fee on foreign buyers of US Treasury debt**. The logic follows from Section 08. The dollar is strong because the world wants to hold American government bonds. Make holding them a little less rewarding, and the demand for dollars - and the dollar - should ease.

Step	What is expected to happen
1	A fee is charged on foreign official holders of US Treasury bonds.
2	Holding those bonds becomes less attractive, so some are sold; the demand for dollars falls and the dollar weakens.
3	But selling bonds pushes their prices down and long-term interest rates up - which would hurt American borrowers.
4	To prevent that, the Federal Reserve might have to buy the bonds itself - creating money to do it.
5	So the plan works only with the co-operation of the Fed. The slide's last line: "Need co-operation from Fed."

WHY THIS IS EVERYONE'S PROBLEM

Session 1 explained why a central bank must be independent, and Session 2 where things end when a central bank buys government bonds because the government needs it to. When the issuer of the world's main currency argues in public about both, the uncertainty is exported: to every exchange rate quoted against the dollar, and to every interest rate priced off American bonds. That is the "volatile global business environment" of the slide.

MANAGER'S TAKEAWAY: PLAN FOR A RANGE, NOT A FORECAST

When the two authorities that set the price of the dollar disagree, no forecast of the dollar deserves much weight. A product company should build its budget on a range for the rupee and for interest rates - a good case, a bad case - and check that the business survives the bad one. A service company signing a multi-year dollar contract should ask what happens to its margin if the dollar weakens by a tenth, because the stated aim of American policy is exactly that. Flexibility - in contracts, in sourcing, in the currency of borrowing - is worth paying for when direction cannot be predicted.

4.14 What It Means for Your Business

The deck closes with the question every participant had been asking, and eight slides in answer. None of them is about predicting what governments will do. All are about being able to live with whatever they do.

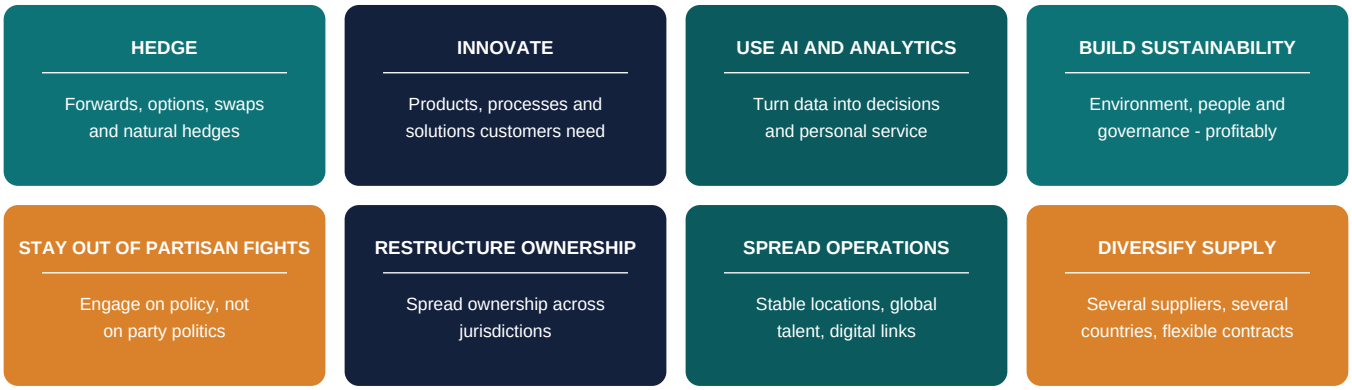


Figure 4.13: The eight responses on the closing slides.

The response	What the slide says	Why it follows from this module
Hedge the exchange rate	With exchange rates and commodity prices volatile, use forwards, options, swaps and natural hedges	The rupee floats, the Fed sneezes, and the dollar's own direction is disputed (Sections 4.07, 4.08, 4.13)
Focus on innovation	Research and development, process improvement, solutions built around customers	Pricing power decides who bears the risk (Section 4.03); only a product others cannot copy has it
Use AI and analytics	Collect data, find patterns, turn insight into action, personalise	Productivity changes the real exchange rate without any help from the currency (Session 3)
Corporate sustainability	Cut the carbon footprint and the use of resources; fair labour practices and community engagement; ethical, transparent governance - balanced with long-term profitability	Buyers and regulators abroad increasingly make it a condition of trade
Caution in politics	Stay neutral; weigh the views of customers, staff and investors; engage on policy, not in partisan battles	Trade and currency policy are now openly political (Sections 4.12 and 4.13)
Restructure ownership	Reorganise the corporate structure; spread ownership across jurisdictions; protect assets	In a fragmenting world, where a company is owned decides which rules apply to it

The response	What the slide says	Why it follows from this module
Offshore operations	Operations in politically stable, business-friendly places with favourable tax and regulation; talent drawn from different regions; cloud and digital tools to coordinate with headquarters	A natural hedge: costs and revenues in more than one currency and one jurisdiction
Diversify the supply chain	Several suppliers, several countries, strategic inventory, flexible contracts	Tariffs and supply shocks arrive without notice (Section 4.12; Session 3)

Read down the list and a pattern appears. The first item deals with risk that can be bought off with a contract. The rest deal with risk that cannot: they change the business itself, so that no single currency, country, supplier or government can stop it. That is the manager's version of what the whole module has shown. The two benevolent dictators set the weather. The firm chooses how it is built.

MANAGER'S TAKEAWAY: EFFICIENCY AND RESILIENCE ARE BOTH COSTS OF DOING BUSINESS

Every item on the list costs money: a hedge has a price, a second supplier is dearer than the first, an extra location needs management. A product company that held one supplier in one country for its lower unit cost was not being efficient; it was carrying a risk it had not priced. A service company that delivers from one city, bills in one currency and depends on one visa regime is in the same position. The practical step is to put a number on each dependence - what would a 15% move in the rupee, a 25% tariff, or the loss of one location cost us? - and to compare it with the price of the protection.

4.15 Product, Service and the Manager's Desk

The last session of the module ran from the currency on an invoice to the politics of the dollar. For the last time, each idea is put on two desks: a product business and a service business.

The idea	On the desk of a product business	On the desk of a service business
The invoice currency	Billing in rupees, a weaker rupee arrives as more orders: have the capacity ready.	Billing in dollars, it arrives as margin at once: decide whether to keep it, share it or spend it on wages.
Pricing power and who bears the risk	If you must quote in the customer's currency to win the order, you carry the risk: hedge it.	Dollar-priced software and cloud bills are your suppliers' pricing power. Count them as dollar liabilities.
Fixed, flexible and managed rates	A pegged market gives no daily movement and then a sudden one. Watch its reserves, not its rate.	Do not leave large balances in a pegged currency; bring cash home regularly.
Defending a peg; devaluation	Rising local interest rates with a still exchange rate signal strain. Shorten credit; ask for dollars.	Collect receivables early when that signal appears.
India's managed float	The RBI slows the rupee's fall; it does not stop it. Do not budget on this year's rate.	Nor will it let the rupee weaken for ever: it buys dollars when inflows are strong.
When the Fed sneezes	Do not carry large unhedged dollar payments across a Fed meeting.	A weaker rupee helps, but American clients facing costlier money sign more slowly.
Reserves and import cover	Weeks of falling reserves mean pressure on the rupee: bring import hedges forward.	Check a country's import cover before taking business there; below three months, treat receivables as at risk.

The idea	On the desk of a product business	On the desk of a service business
De-dollarisation	Plan on dollar invoices for as long as the plan runs; rupee settlement is a bonus, not a trend.	Ask for the numbers before believing claims about the dollar's decline.
Three exposures and hedging	Net your receipts and payments by currency first; much may cancel. Hedge the rest by routine.	Dollar revenue with rupee salaries is a one-way exposure: hedge a steady share.
Tariffs and the weak-dollar agenda	Write into the contract who bears a new tariff; know which products can ship from elsewhere.	Clients squeezed by tariffs cut technology and consulting budgets next.
The President and the Fed	Budget on a range for the rupee and interest rates, and test the bad case.	In a multi-year dollar contract, ask what a 10% weaker dollar does to the margin.
Resilience	A single low-cost supplier was a risk that had not been priced. Price it.	One city, one currency, one visa regime is the same concentration in a service firm.

Reading the rupee: a field guide

What you see	What it usually means	What to do
The rupee weakens; reserves are steady	A market move that the RBI is allowing	Exporters gain; importers check their hedges
The rupee is steady; reserves fall sharply	The RBI is selling dollars - pressure is building	Importers bring hedges forward
The Fed raises its rate	Capital is drawn towards dollar assets	Expect a weaker rupee and costlier dollar borrowing
The price of oil jumps	More dollars are needed for the same imports	Expect pressure on the rupee and on inflation together
Reserves rise while foreign money pours in	The RBI is buying dollars to stop the rupee rising	Dollar earners should not count on a stronger tailwind
A partner country's import cover falls below three months	Risk of devaluation, controls or default	Shorten credit; invoice in dollars; collect early

Ten questions to take back to work

#	The question
1	In which currency do we invoice, and did we choose it or did the customer?
2	Which of our costs are really dollar costs - fuel, components, software, cloud - whatever currency we pay in?
3	Over the next twelve months, what do we receive and what do we owe in each currency, and what is the gap?
4	Do we hedge that gap by routine, or only when someone has a view on the rupee?
5	If the rupee moved 15% either way, which line of our accounts would show it first?
6	Do any of our markets have a pegged currency and thin reserves - and what are our credit terms there?
7	Have we looked at the Fed's calendar as well as the RBI's when timing payments and borrowing?

#	The question
8	Who bears a new tariff under our contracts, and from where else could we ship or deliver?
9	Which of our dependences - one supplier, one country, one currency, one location - has never been priced?
10	What gives us pricing power, and what are we doing this year to add to it?

Lines worth remembering (paraphrased from class and the slides)

The line	What it compresses
If the currency depreciates, exports pick up: a half-baked statement.	Only a real depreciation makes a country's goods cheaper.
The adjustment happens on the revenue side, not the demand side.	With a dollar invoice the exporter gains in margin, not in volume.
The simple point is: who will bear the risk?	The invoice currency follows from pricing power.
What the US does, you have to do.	A fixed exchange rate costs a country its own interest rate.
Fixed rates are devalued; floating rates depreciate.	Four words, two regimes, not interchangeable.
The RBI does not target a level for the rupee.	India's float is managed for volatility, not for a number.
When the Fed sneezes, everyone catches a cold.	American interest rates move capital, currencies and reserves everywhere.
De-dollarisation belongs to WhatsApp University.	The dollar remains dominant; the shift away is small.

ONE-BREATH SUMMARY

A fall in the rupee helps an exporter only if it is real, and how it helps depends on the invoice: billed in rupees, the buyer's price falls and volumes rise; billed in dollars, the buyer's price is unchanged and the exporter's rupee margin rises. The currency on the invoice decides who bears the exchange-rate risk, and that follows from pricing power. Exchange rates can be fixed, flexible or, as in India, managed. A fixed rate must be defended by selling reserves, which hands the interest rate to whoever sets rates abroad; when reserves run low the country devalues, as India did in 1966 and 1991. Under a managed float the RBI targets no level and intervenes only against sharp swings, so its reserves - about 11 months of imports - rise and fall with the pressure on the rupee. That pressure often begins in Washington: a rise in American interest rates pulls capital towards a dollar that remains dominant in reserves, trade and finance. Businesses face transaction, translation and economic exposure, and can hedge the first with forwards, options and natural hedges. The United States is now trying to weaken its own currency with tariffs and pressure on its central bank, which makes the environment volatile for everyone. A firm cannot forecast its way through this. It can hedge, build pricing power, spread its suppliers, locations and ownership, and price every dependence it has.

4.16 Practice Questions for Session 4

Twenty-four questions chosen from this session's full question bank so that every section, and every kind of question - a definition, a calculation, an application, a trap - appears at least once. The options are close on purpose: several are true statements that answer a different question. Read the one-line reason under each answer even when you got it right. More questions on this session are in the Mixed Question Bank after Session 4.

Q1. The exchange rate moves from 5 Malaysian ringgit per dollar to 4 ringgit per dollar. Then:

(a) The dollar has appreciated and the ringgit has depreciated

(b) Neither currency has changed in value

(c) The dollar has depreciated and the ringgit has appreciated

(d) Both currencies have depreciated

Answer: (c) - A dollar now buys fewer ringgit, so the dollar is weaker and the ringgit stronger - the example on the slide.

Q2. A car is invoiced in rupees. Its price doubles from Rs. 50,000 to Rs. 1,00,000 while the rupee moves from Rs. 50 to Rs. 80 per dollar. The American buyer, who used to pay 1,000 dollars, now pays:

(a) 625 dollars

(b) 1,000 dollars

(c) 1,250 dollars

(d) 2,000 dollars

Answer: (c) - 1,00,000 / 80 = 1,250 dollars - more than the original 1,000, although the rupee has fallen.

Q3. "The adjustment happens on the revenue side rather than the demand side" describes:

(a) Rupee invoicing: the buyer's price changes and so does the quantity sold

(b) Dollar invoicing: quantity is unchanged and the exporter's rupee revenue changes

(c) A fixed exchange rate defended by the central bank

(d) A devaluation announced by the government

Answer: (b) - With the dollar price fixed, demand does not respond; the exporter's home-currency income does.

Q4. According to the class, the choice of invoicing currency depends mainly on:

(a) The tax laws of the seller's home country

(b) The payment technology available to the buyer

(c) How much pricing power the seller holds

(d) The size of the customer's national economy

Answer: (c) - "It is a function of how much monopolistic power you hold. Who will bear the risk?"

Q5. Under dollar currency pricing, who bears the exchange-rate risk in the short run?

(a) The exporter, whose home-currency revenue changes with the rate

(b) The importer, whose local-currency cost moves with the exchange rate

(c) The central bank of the importing country

(d) Nobody, because the dollar price is fixed

Answer: (b) - The dollar price is fixed for a time, so the buyer's cost in its own currency rises and falls with the rate.

Q6. When the RBI sells dollars and takes in rupees, India's money supply:

(a) Rises

(b) Is unchanged

(c) Falls

(d) Doubles

Answer: (c) - The rupees it receives are withdrawn from circulation.

Q7. The "impossible trinity" says that a country cannot have all three of:

(a) Low inflation, low unemployment and high growth

(b) A fixed exchange rate, free movement of capital and its own monetary policy

(c) High exports, low imports and rising reserves

(d) A budget surplus, low rates of taxation and a high level of public spending

Answer: (b) - It can choose any two of the three, never all three.

Q8. The correct pairing of regime and vocabulary is:

(a) Fixed rate - devaluation and revaluation; flexible rate - depreciation and appreciation

(b) Fixed rate - depreciation and appreciation; flexible rate - devaluation and revaluation

(c) Both regimes - devaluation and revaluation

(d) Both regimes - depreciation and appreciation

Answer: (a) - Governments devalue; markets depreciate.

Q9. On 6 June 1966 India:

(a) Allowed the rupee to float freely

(b) Became a member of the International Monetary Fund and the World Bank

(c) Nationalised its largest commercial banks

(d) Devalued the rupee by 36.5%, from Rs. 4.76 to Rs. 7.50 per dollar

Answer: (d) - The front page shown in class: "Rupee devalued by 36.5 per cent."

Q10. Governor Malhotra's statement of November 2025 was that the RBI:

(a) Does not target any level for the rupee; the depreciation was driven by dollar demand

(b) Would defend the rupee at Rs. 85 to the dollar for as long as its reserves allowed it to do so

(c) Had devalued the rupee to help exporters

(d) Would stop intervening in the currency market

Answer: (a) - Not a fixed regime: no line it has promised to hold.

Q11. In the week to 18 September 2026 India's reserves fell by almost 15 billion dollars. This indicates that the RBI had been:

(a) Buying dollars to stop the rupee rising

(b) Selling dollars to steady the rupee

(c) Revaluing its holdings of gold upward

(d) Lending dollars to the government

Answer: (b) - Oil was dearer and the Fed had just raised rates; the rupee was allowed to weaken, but not to slide.

Q12. Which of these is NOT one of the four spillovers the RBI listed in 2022?

(a) Capital outflows

(b) Pressure on the currency to depreciate

(c) Loss of reserves

(d) A fall in the prices of imports

Answer: (d) - The fourth was imported inflation - imports became dearer, not cheaper.

Q13. India is exposed to the Fed's decisions because, by the identity S - I = X - M, it:

(a) Exports more than it imports

(b) Saves more than it invests

(c) Keeps its exchange rate fixed against the dollar at all times

(d) Saves less than it invests, and relies on foreign saving

Answer: (d) - Anything that makes foreign saving prefer to stay at home is felt here at once.

Q14. "Import cover" measures:

(a) The tariffs charged on a country's imports of goods and services

(b) Imports as a percentage of GDP

(c) How many months of imports the reserves could pay for

(d) The insurance carried on imported shipments

Answer: (c) - It makes countries of different sizes comparable.

Q15. Import cover fell from about 17 months in 2021 to about 10-11 months although reserves in dollars are near a record, because:

(a) Gold in the reserves lost most of its value during those years

(b) Imports have grown, so the same reserves cover fewer months

(c) The RBI stopped counting gold in the reserves

(d) The dollar lost value against the rupee

Answer: (b) - The measure is reserves divided by monthly imports; the denominator has risen.

Q16. The professor's argument against large-scale de-dollarisation was that:

(a) If the world were abandoning the dollar, demand for it could not be weakening other currencies

(b) The dollar is backed by the gold held by the US government, which no other currency can match

(c) The euro has failed as an international currency

(d) The International Monetary Fund does not permit it

Answer: (a) - Both statements cannot be true in any large way.

Q17. Transaction exposure is the risk that:

(a) The exchange rate changes the home-currency value of a payment agreed but not yet made

(b) The accounts of a foreign subsidiary change in value when they are consolidated with the parent's

(c) A firm's competitive position is eroded over several years

(d) The interest rate on a loan rises before it is repaid

Answer: (a) - A deal already struck, not yet settled.

Q18. An exporter is due 1,00,000 dollars in 90 days and sells them forward at Rs. 96. If the rate on the day is Rs. 92, it receives:

(a) Rs. 92 lakh

(b) Rs. 98 lakh

(c) Rs. 94 lakh

(d) Rs. 96 lakh

Answer: (d) - The forward rate applies whatever the market rate turns out to be.

Q19. The same exporter instead buys an option to sell at Rs. 95, paying a premium of Re 1 per dollar. If the rate turns out to be Rs. 98, it nets:

(a) Rs. 95 lakh

(b) Rs. 97 lakh

(c) Rs. 98 lakh

(d) Rs. 94 lakh

Answer: (b) - It lets the option lapse and sells at 98; less the premium of Rs. 1 lakh, that is Rs. 97 lakh.

Q20. The Plaza Accord of 1985 was an agreement among five countries to:

(a) Fix their exchange rates permanently against one another

(b) Create a common European currency

(c) Raise the price of oil

(d) Act together to bring down the value of the dollar

Answer: (d) - The United States, Japan, West Germany, France and the United Kingdom.

Q21. According to S - I = X - M, a tariff by itself:

(a) Eliminates the trade deficit within a year, provided that other countries do not retaliate at all

(b) Raises the country's saving rate

(c) Changes what is imported and from whom, not the saving-investment gap that sets the deficit

(d) Lowers investment by the amount of the tariff

Answer: (c) - The deficit lasts as long as saving falls short of investment.

Q22. The proposal to charge foreign holders of US Treasury debt a fee "needs co-operation from the Fed" because:

(a) The Fed would be the agency responsible for collecting the fee from foreign governments

(b) The Fed is responsible for setting tariffs

(c) If foreigners sell bonds and long-term rates rise, the Fed may have to buy the bonds

(d) The Fed must approve every trade agreement

Answer: (c) - Buying government bonds with new money to hold rates down - the very thing central-bank independence is meant to prevent.

Q23. "Focus on innovation" follows from this session's lesson that:

(a) Tariffs are always temporary, so a firm need only wait for them to be removed

(b) India's reserves are at a record

(c) The rupee floats freely

(d) Only pricing power lets a firm pass currency risk to its customers

Answer: (d) - A product others cannot copy is what lets you invoice on your own terms.

Q24. The Fed raises rates; India's reserves fall by 15 billion dollars in a week while the rupee weakens modestly. This is consistent with:

(a) A managed float in which the RBI sold dollars to slow the fall

(b) A fixed rate that was successfully defended by the central bank

(c) A free float with no intervention

(d) A devaluation of the rupee

Answer: (a) - Under a peg the rupee would not have moved; under a free float the reserves would not have.

AFTER THE FOUR SESSIONS

Mixed Question Bank

120 more questions drawn from all four sessions and shuffled together, the way an exam mixes them. None repeats a question already asked after a session, and each answer names the section to go back to.

5.01 Questions from Across the Module

The questions after each session came in the order the ideas were taught. These do not: a question on exchange rates may follow one on GDP, as in an exam. Thirty are drawn from each session, none of them used earlier in this book. The bracket at the end of each answer names the section to revise if you got it wrong.

Q1. Which of the following is NOT one of the three reasons given in class for a manager to study macroeconomics?

(a) To analyse the boundary conditions within which a business operates

(b) To analyse the contemporary economic condition

(c) To comprehend the words and signals of policymakers and factor them into decisions

(d) To forecast the firm's own share price for the next quarter

Answer: (d) - The three reasons are boundary conditions, the current condition and policymakers' signals; share-price forecasting was never on the list. [Section 1.01]

Q2. In the formula M = m x B, the letter B stands for:

(a) Bank deposits held by households and firms across the banking system

(b) The monetary base: currency plus banks' reserves with the central bank

(c) The government bonds held as assets on the central bank's balance sheet

(d) Broad money, including the time deposits that the public holds with banks

Answer: (b) - B is base (reserve) money - the layer the central bank creates directly. Deposits belong to M, the second layer. [Section 2.01]

Q3. The quarrel between President Trump and Fed chair Powell, as analysed in class, was at root a case of:

(a) Both policies turning contractionary at the same time

(b) Both policies turning expansionary at the same time

(c) Expansionary fiscal policy meeting contractionary monetary policy

(d) Contractionary fiscal policy meeting expansionary monetary policy

Answer: (c) - A tax cut pushed demand up while the Fed raised rates and shrank its bond holdings to hold demand down. [Section 3.01]

Q4. A country whose saving is greater than its investment is:

(a) A net lender to the rest of the world, with a trade surplus

(b) A net borrower from the rest of the world, with a trade deficit

(c) A net lender to the rest of the world, with a trade deficit

(d) A net borrower from the rest of the world, with a trade surplus

Answer: (a) - S greater than I means X greater than IM. Lenders run surpluses; borrowers run deficits. [Section 4.01]

Q5. A Korean company runs a phone factory in Noida. The output of that factory is part of:

(a) Korea's GDP only

(b) India's GDP

(c) Both countries' GDP in full

(d) Neither country's GDP

Answer: (b) - GDP follows geography, not ownership. It was produced on Indian soil. [Section 1.02]

Q6. A 10% reserve ratio turns Rs. 100 into Rs. 1,000 of deposits; a 90% ratio turns it into Rs. 111. The reason is that a lower ratio:

(a) Increases the amount of base money that exists in the banking system as a whole

(b) Raises the interest rate that banks have to pay depositors to attract funds

(c) Lets more of each deposit be lent on, so the chain runs for more rounds

(d) Makes the RBI issue fresh currency notes at every round of lending

Answer: (c) - The base is unchanged at 100. Less is locked up per round, so more rounds of lending and depositing take place. [Section 2.01]

Q7. "Autonomous" consumption or investment means spending that:

(a) Is financed directly out of the government's budget

(b) Is undertaken by autonomous public-sector bodies

(c) Rises only when household incomes have risen first

(d) Changes without any change in income or in policy

Answer: (d) - It comes from optimism or from wealth - people or firms deciding to spend more of their own accord. [Section 3.02]

Q8. After a real depreciation of the rupee, India's:

(a) Exports fall and imports rise, so net exports fall

(b) Exports and imports both fall by the same amount

(c) Exports rise and imports rise by the same amount

(d) Exports rise and imports fall, so net exports rise

Answer: (d) - Buyers at home and abroad switch towards the relatively cheaper Indian goods. [Section 4.01]

Q9. You sell a ten-year-old flat for Rs. 80 lakh through a broker who charges Rs. 80,000. The addition to this year's GDP is:

(a) Rs. 80 lakh

(b) Rs. 80.8 lakh

(c) Rs. 80,000

(d) Zero

Answer: (c) - The flat was produced years ago; only the broker's service was produced this year. [Section 1.02]

Q10. When the RBI cut the cash reserve ratio from 4% to 3% in 2025, what changed?

(a) The ceiling on the multiplier rose; the monetary base did not change

(b) The monetary base rose; the multiplier did not change at all

(c) Both the monetary base and the multiplier rose together

(d) Neither changed; a CRR cut only moves the repo rate

Answer: (a) - A CRR cut creates no new base money. It lets banks lend more of each deposit - it works on m, not on B. [Section 2.01]

Q11. The classical view that "supply creates its own demand" implies that the aggregate supply curve is:

(a) Horizontal: prices are fixed and output adjusts to demand

(b) Downward sloping: output falls as the price level rises

(c) Upward sloping: output rises as the price level rises

(d) Vertical: output is fixed by capital, labour and technology

Answer: (d) - If prices adjust freely, everything produced is sold, and output depends only on the economy's capacity. [Section 3.03]

Q12. Under a dollar invoice fixed at 1,000 dollars, when the rupee moves from 50 to 80 the buyer pays:

(a) 1,000 dollars, as before

(b) 625 dollars, as in Case 1

(c) 1,250 dollars

(d) 1,600 dollars

Answer: (a) - The buyer's price is set in dollars, so the exchange rate does not touch it. [Section 4.02]

Q13. A team in Bengaluru monitors a customer's factory in Texas remotely and bills the customer in dollars. The service is counted in:

(a) US GDP, because it is used there

(b) Both countries' GDP in full

(c) Neither, because nothing physical crosses a border

(d) India's GDP, as an export of services

Answer: (d) - It is produced in India; where it is consumed decides only that it is an export. [Section 1.02]

Q14. Banks were reluctant to lend in 2020 for all of the following reasons discussed in class EXCEPT:

(a) Bad loans carried over from the previous decade

(b) Fear of later investigation if a loan went bad

(c) Few safe borrowers in a locked-down economy

(d) A ban on fresh lending imposed by the RBI

Answer: (d) - There was no ban - the RBI and the government wanted banks to lend. The reluctance was the banks' own. [Section 2.02]

Q15. In the Keynesian short run, what decides how much firms produce?

(a) The size of the capital stock and nothing else

(b) The level of demand at the prices already set

(c) The natural rate of unemployment in the economy

(d) The price level that firms expect next year

Answer: (b) - With prices fixed, firms produce whatever is demanded, using more or less of their capacity. [Section 3.03]

Q16. A car is invoiced at 1,000 dollars. When the rupee moves from Rs. 50 to Rs. 80 per dollar, the exporter's rupee receipts per car:

(a) Fall from Rs. 80,000 to Rs. 50,000

(b) Stay at Rs. 50,000

(c) Rise from Rs. 50,000 to Rs. 62,500

(d) Rise from Rs. 50,000 to Rs. 80,000

Answer: (d) - 1,000 dollars converts into 80,000 rupees at the new rate. [Section 4.02]

Q17. A household buys a newly built apartment from the builder. In the national accounts this is:

(a) Consumption (C)

(b) Government purchases (G)

(c) Investment (I) - residential

(d) Not counted

Answer: (c) - New housing is investment, the one large item of I that households rather than firms buy. [Section 1.03]

Q18. "He was paying interest on his own money" refers to:

(a) The government paying interest to the RBI on the bonds the RBI had bought

(b) Banks paying interest to their depositors on balances they could not lend

(c) The RBI paying banks interest on money it had created and they had parked back

(d) Small firms paying interest on loans that the government had guaranteed

Answer: (c) - The RBI created the money, banks deposited it back through the reverse repo, and the RBI paid them interest on it. [Section 2.02]

Q19. The sticky-wage model explains the upward-sloping supply curve by saying that when prices rise:

(a) Wages lag behind, so profit per unit rises and firms produce more

(b) Wages rise faster than prices, so workers supply more labour

(c) Firms are misled about what is happening to the price level

(d) The central bank expands money to match the higher prices

Answer: (a) - Prices are slow to change but wages are slower; the gap between the two is extra profit on every unit. [Section 3.04]

Q20. An AI subscription is priced in dollars for Indian customers. When the rupee falls:

(a) The customer pays more rupees; the company's dollar revenue is unchanged

(b) The company receives fewer dollars; the customer pays the same rupees

(c) Both the company and the customer lose equally

(d) Neither the company nor the customer is affected

Answer: (a) - With a dollar price the risk sits with the customer - the professor's own rising bill. [Section 4.03]

Q21. A farmer sells wheat to a miller for $1; the miller sells flour to a baker for $3; the baker sells bread for $6. The miller's value added is:

(a) $3

(b) $1

(c) $6

(d) $2

Answer: (d) - 3 - 1 = 2. The three value-added figures (1, 2, 3) sum to the $6 price of the bread. [Section 1.04]

Q22. The government's most direct answer in 2020 to banks' fear of lending to small firms was to:

(a) Guarantee the loans, so the risk of default did not fall on the bank

(b) Order the RBI to lend to small firms from its own balance sheet

(c) Have the repo rate cut to zero until the lockdowns were lifted

(d) Close the reverse repo window so that banks could not park cash

Answer: (a) - "Give the loan, I am the guarantor" - credit-guarantee schemes for MSMEs removed the banker's fear directly. [Section 2.02]

Q23. In Lucas's imperfect-information model a producer raises output when her price rises because she:

(a) Finds that wages have fallen in her industry

(b) Receives a subsidy linked to the price she charges

(c) Expects the price of her product to fall soon

(d) Believes her price has risen relative to other prices

Answer: (d) - She reads a general rise in prices as a rise in demand for her own product. [Section 3.04]

Q24. A streaming service that sells in a crowded market prices in rupees for its Indian customers because:

(a) Indian law requires every subscription sold to consumers in India to be priced and billed in rupees

(b) UPI cannot be used to pay a price that is set in dollars

(c) Its market is competitive: customers would leave if their bill rose whenever the rupee fell

(d) All of its costs are incurred in rupees

Answer: (c) - With several rivals a click away, it cannot make customers carry the currency risk. [Section 4.03]

Q25. In April-June 2026 India's nominal GDP grew 10.3% and real GDP grew 7.8%. The difference mainly reflects:

(a) The rise in prices

(b) Population growth

(c) The growth of imports

(d) A statistical discrepancy

Answer: (a) - The gap between nominal and real growth is the price change, measured by the GDP deflator. [Section 1.05]

Q26. Money held in a UPI app is:

(a) Tokenised but not digital, since it is recorded on a public blockchain

(b) A stablecoin that is issued and guaranteed by the payments network

(c) A central bank digital currency issued directly to users by the RBI

(d) Digital but not tokenised: it is still entries in banks' own ledgers

Answer: (d) - UPI moves entries between banks' private books. A tokenised rupee would itself live on a shared ledger. [Section 2.03]

Q27. The natural rate of unemployment is the rate that prevails when:

(a) Inflation has fallen to zero

(b) No one is between jobs or searching for work

(c) The government's budget is in balance

(d) Output is equal to potential output

Answer: (d) - Even at potential some unemployment remains - frictional and structural. [Section 3.05]

Q28. Which measure of inflation does the RBI target?

(a) WPI inflation

(b) The GDP deflator

(c) Headline CPI inflation

(d) Core CPI inflation

Answer: (c) - The target is headline CPI, although the RBI watches core closely. [Section 1.06]

Q29. Because so much trade is invoiced in dollars, a fall in the rupee reaches the Indian economy first as:

(a) An immediate surge in the volume of goods and services exported

(b) Lower prices for imported goods

(c) A fall in the rate of inflation

(d) Costlier imports, with export volumes responding slowly

Answer: (d) - Dollar-priced exports are no cheaper for foreign buyers; dollar-priced imports cost more rupees at once. [Section 4.03]

Q30. The institution a stablecoin issuer most closely resembles, according to the class, is a:

(a) Commercial bank

(b) Money market fund

(c) Central bank

(d) Stock exchange

Answer: (b) - Like a money market fund it pools the public's cash into Treasury bills and repos; unlike the fund, it keeps the interest. [Section 2.04]

Q31. India's large number of young people who are not trained for the jobs on offer is an example of:

(a) Frictional unemployment

(b) Cyclical unemployment

(c) Structural unemployment

(d) Seasonal unemployment

Answer: (c) - The people and the jobs both exist; the skills do not match. More demand alone will not fix it. [Section 3.05]

Q32. In a fixed exchange-rate system the central bank:

(a) Takes no part in the currency market

(b) Lets the market decide the rate each day

(c) Stands ready to buy and sell foreign currency at the announced rate

(d) Changes the announced rate every day, in line with the demand and supply it observes

Answer: (c) - Because it will always deal at the fixed price, nobody deals at any other. [Section 4.04]

Q33. The GDP deflator differs from the CPI because the deflator:

(a) Covers only the goods and services that households consume

(b) Includes imported consumer goods such as phones and fuel

(c) Uses a basket of items that stays fixed until the base year changes

(d) Covers everything produced domestically, including capital goods and government services

Answer: (d) - The first three describe the CPI or are simply wrong for the deflator. [Section 1.06]

Q34. "Dollarisation", the risk that central banks outside the US fear from stablecoins, means:

(a) Households and firms moving savings and payments into dollars, weakening the home currency

(b) The US government buying up the currencies of emerging economies in the foreign exchange market

(c) A sustained fall in the value of the dollar against the currencies of emerging economies

(d) Banks from emerging economies opening branches and taking deposits inside the United States

Answer: (a) - If people save and pay in dollar tokens, the home central bank's tools reach less and less of the economy. [Section 2.04]

Q35. After a rise in the money supply, what carries the economy from the short-run result (more output) to the long-run result (only more inflation)?

(a) The adjustment of expected prices, which shifts aggregate supply

(b) A fall in the money supply back to its original level, engineered by the central bank

(c) A rise in the economy's potential output

(d) A cut in taxes by the government

Answer: (a) - People revise their expectations and ask for higher wages; costs rise and the supply curve shifts up. [Section 3.06]

Q36. India's present exchange-rate system is best described as:

(a) A fixed rate

(b) A managed float

(c) A free float with no intervention

(d) A currency board

Answer: (b) - The market sets the rate; the RBI steps in from time to time to steady it. [Section 4.04]

Q37. A sharp rise in the price of imported smartphones will show up in:

(a) The CPI but not the GDP deflator

(b) The GDP deflator but not the CPI

(c) Both equally

(d) Neither

Answer: (a) - Households buy them, so CPI rises; they are not produced in India, so the deflator does not. [Section 1.06]

Q38. Some critics compared Rs. 88.27 lakh crore on the new GDP series with Rs. 86 lakh crore on the old one and called it 2.6% growth. That figure is wrong because it:

(a) Uses real numbers where nominal numbers are needed

(b) Ignores the growth of population between the two years

(c) Compares a new-series number with an old-series number

(d) Leaves the informal sector out of the calculation

Answer: (c) - 88.27 (new method) against 86.05 (old method) mixes two rulers. The professor said it makes no economic sense. [Section 2.05]

Q39. On 16 September 2026 the US Federal Reserve:

(a) Cut its policy rate by 25 basis points

(b) Left its policy rate unchanged for a sixth meeting

(c) Raised its policy rate by 25 basis points, to 3.75-4.00%

(d) Raised its policy rate by 100 basis points

Answer: (c) - From 3.50-3.75% to 3.75-4.00%, with a signal that more could follow. [Section 3.06]

Q40. "The interest rate becomes endogenous" under a fixed exchange rate means that:

(a) The central bank can no longer choose it; it is dictated by the need to hold the rate

(b) The interest rate is decided by the government in its budget instead of by the central bank

(c) The interest rate falls to zero and stays there

(d) The interest rate is fixed for ever at its present level

Answer: (a) - Holding the exchange rate decides the money supply, and so the interest rate. [Section 4.05]

Q41. Between the 2012 and 2024 baskets, the all-India combined weight of food and beverages moved from about:

(a) 45.9 to 40.1

(b) 40.1 to 45.9

(c) 54.2 to 44.8

(d) 36.3 to 34.3

Answer: (a) - 54.2 to 44.8 is the rural figure and 36.3 to 34.3 the urban one. [Section 1.07]

Q42. A higher policy rate reduces the money supply indirectly because:

(a) Banks are then required to hold a larger part of their deposits as gold in their own vaults

(b) Costlier loans mean fewer loans, so the deposit-loan chain creates less money

(c) The government prints fewer currency notes that year

(d) Savers withdraw their deposits and hold cash instead

Answer: (b) - Money is created when banks lend. Fewer loans mean fewer rounds of the multiplier. [Section 3.06]

Q43. Households can feel inflation near 5% while the GDP deflator shows about 2.5% because the CPI, unlike the deflator:

(a) Tracks the household shopping basket, including imported goods

(b) Leaves out food and fuel, whose prices are the most volatile

(c) Covers machinery, construction and government services as well

(d) Is compiled only once a year and so lags behind actual prices

Answer: (a) - The deflator covers everything made in India and excludes imports; the CPI covers what households buy, wherever made. [Section 2.05]

Q44. A country wants a fixed exchange rate AND an interest rate of its own choosing. By the impossible trinity it must:

(a) Let its currency float freely against all other currencies

(b) Give up having a central bank

(c) Hold no foreign exchange reserves

(d) Restrict the movement of capital across its borders

Answer: (d) - With capital unable to leave, a different interest rate does not drain the reserves. [Section 4.05]

Q45. Headline inflation is high only because of vegetable prices, while core inflation is low. A rate hike:

(a) Will bring vegetable prices down quickly by cooling the demand for food

(b) Cannot grow more vegetables, so the RBI may look through a temporary supply shock

(c) Is compulsory under the law whenever headline inflation is above 4%

(d) Will raise core inflation by making loans to food traders costlier

Answer: (b) - Interest rates act on demand. A supply shock in food is not cured by costlier loans. [Section 1.07]

Q46. A firm makes the same quantity of goods from the same quantity of inputs as last year. Output prices are flat and input prices fall 10%. Its real value added has:

(a) Risen by 10%

(b) Not changed

(c) Fallen by 10%

(d) Risen by the saving on inputs

Answer: (b) - Nothing real changed - only the margin in rupees. Single deflation would wrongly report growth; double deflation reports zero. [Section 2.05]

Q47. If inflation expectations rise, workers demand higher wages. For firms this acts like:

(a) A negative supply shock: costs rise and the supply curve shifts left

(b) A positive demand shock: sales rise at every price, and the demand curve shifts right

(c) A positive supply shock: costs fall and output rises

(d) A fall in the money supply engineered by the central bank

Answer: (a) - A rise in wages is a rise in costs, whatever caused it. [Section 3.07]

Q48. Saying that "the rupee was devalued today" is wrong for the present-day rupee because:

(a) The rupee never loses value against the dollar for more than a few days, so the word cannot apply

(b) The rupee's rate is set by the market, so it depreciates; devaluation belongs to a fixed rate

(c) Only the RBI is permitted to use the word

(d) The word has been dropped from economics

Answer: (b) - The professor was blunt about writers who mix the two. [Section 4.06]

Q49. According to the Fisher equation, the real interest rate is approximately:

(a) The nominal rate plus expected inflation

(b) The nominal rate minus expected inflation

(c) Expected inflation minus the nominal rate

(d) The nominal rate multiplied by expected inflation

Answer: (b) - i = r + expected inflation, so r = i - expected inflation. [Section 1.08]

Q50. The professor used popular songs about rising prices as evidence that:

(a) Official inflation figures are exaggerated, since songs are written about only a few goods

(b) The consumer price index is wrongly constructed

(c) Real wages are rising across the country

(d) People are talking about inflation - a sign that expectations are not anchored

Answer: (d) - "The economy is people, not aliens." What people talk about is what they act on. [Section 3.07]

Q51. Which combination is typical of a negative output gap?

(a) Labour shortages and fast-rising wages

(b) Idle capacity and rising unemployment

(c) Prices rising faster than the target

(d) The central bank raising interest rates

Answer: (b) - Below potential, machines and people are idle. The other three belong to an overheating economy. [Section 2.06]

Q52. India's second devaluation, in July 1991, took the rupee from about:

(a) Rs. 21 to Rs. 26 per dollar

(b) Rs. 4.76 to Rs. 7.50 per dollar

(c) Rs. 45 to Rs. 60 per dollar

(d) Rs. 8 to Rs. 12 per dollar

Answer: (a) - Reserves had fallen to a few weeks of imports; the fixed rate was abandoned within two years. [Section 4.06]

Q53. A fixed deposit pays 7%. Interest is taxed at 30% and inflation is 5%. The real after-tax return is about:

(a) 7%

(b) 2%

(c) 4.9%

(d) Just below zero

Answer: (d) - After tax the deposit earns 4.9%; against 5% inflation that is about -0.1%. [Section 1.08]

Q54. The "Golden Rule" level of saving (called the golden ratio in class) is the saving rate that:

(a) Produces the largest stock of capital that the economy could possibly accumulate

(b) Matches the investment rate of the fastest-growing large economy

(c) Gives the highest consumption the country can sustain in the long run

(d) Brings the government's budget exactly into balance each year

Answer: (c) - Too little saving means too little capital; too much means giving up consumption for nothing. [Section 2.07]

Q55. After a negative supply shock, a central bank that expands money in order to restore output will:

(a) Bring inflation down at the same time

(b) Push inflation higher still

(c) Leave inflation where it was

(d) Shift the supply curve back to where it began

Answer: (b) - Option A in the notes: output recovers, at the cost of even more inflation. [Section 3.08]

Q56. A rise in world demand for India's software services, other things equal:

(a) Weakens the rupee, because more dollars are needed to pay for them

(b) Raises the demand for rupees and limits the rupee's depreciation

(c) Reduces India's foreign exchange reserves

(d) Has no effect on the exchange rate

Answer: (b) - Companies and individuals move the rate in the same way the RBI does - through demand and supply. [Section 4.07]

Q57. Unexpected inflation transfers wealth from:

(a) Borrowers to lenders

(b) The government to households

(c) Exporters to importers

(d) Lenders and savers to borrowers

Answer: (d) - Debts are repaid in cheaper money. The biggest borrower, the government, is the biggest gainer. [Section 1.08]

Q58. Which of these would raise India's potential GDP?

(a) A cut of half a percentage point in the repo rate by the RBI's rate-setting committee

(b) A faster rise in the supply of money and bank credit

(c) A rebate on personal income tax for salaried households

(d) A technology that lets the same workers and machines produce more

Answer: (d) - The first three move demand. Only capital, labour and technology move capacity. [Section 2.07]

Q59. The RBI Governor whose term (2008 to 2013) was marked by costly oil, weak monsoons and inflation near 10% was:

(a) D. Subbarao

(b) Raghuram Rajan

(c) Shaktikanta Das

(d) Urjit Patel

Answer: (a) - Rajan succeeded him in September 2013 and began the disinflation. [Section 3.08]

Q60. Restrictions on imports, or on taking money abroad, manage the exchange rate by:

(a) Increasing the supply of dollars

(b) Raising interest rates

(c) Creating more rupees

(d) Reducing the demand for dollars

Answer: (d) - They are the capital-control corner of the impossible trinity. [Section 4.07]

Q61. Fiat money has value because:

(a) It is backed one-for-one by gold

(b) Everyone expects everyone else to accept it

(c) It has intrinsic value as paper

(d) It is costly to print

Answer: (b) - Its value is a shared belief, reinforced by the state accepting it for taxes. [Section 1.09]

Q62. According to the class, the early unemployment caused by a new technology is eventually reversed mainly when:

(a) The government restricts the use of the technology

(b) Wages fall far enough to make hiring attractive again

(c) The technology creates new tasks for which people are needed

(d) The central bank cuts interest rates to support demand

Answer: (c) - Computers removed the ledger clerk and created ATMs, cards, net banking and analytics. New tasks restore hiring. [Section 2.08]

Q63. A central bank can sometimes "look through" a supply shock when the shock is:

(a) Caused by excessive demand in the economy

(b) Expected to last for many years

(c) Temporary, and expectations remain anchored

(d) Larger than five percentage points

Answer: (c) - One bad monsoon reverses itself. The danger is only that it raises expectations and so becomes permanent. [Section 3.08]

Q64. "Imported inflation" arises when:

(a) A country's exports grow faster than its imports

(b) The currency falls, so goods bought abroad cost more in home currency

(c) Wages at home rise faster than the productivity of the workers who earn them

(d) The central bank expands the money supply

Answer: (b) - Oil at the same dollar price costs more rupees when the rupee is weaker. [Section 4.08]

Q65. On the three-function test, Bitcoin's clearest weakness today is that:

(a) It cannot be transferred between people without going through a bank

(b) It is illegal to hold or trade in every major economy of the world

(c) Prices and salaries are not quoted in it, and its value swings too sharply

(d) It cannot be divided into units small enough for everyday payments

Answer: (c) - It fails as a unit of account and as a stable store of value, and is rarely used as a medium of exchange. [Section 1.09]

Q66. The professor's explanation for why AI is a louder worry in India than in the US was that in the US:

(a) Companies have been much slower to adopt AI tools

(b) The labour market is tight and new tasks are being created fast

(c) Labour law prevents firms from laying off their workers

(d) Wages are set by the government and cannot be cut

Answer: (b) - America is running above potential, with more demand for workers than supply, and is quick to build new tasks. [Section 2.08]

Q67. In the first stage of a disinflation the central bank:

(a) Shifts aggregate supply to the right by lowering firms' costs

(b) Reduces aggregate demand, pushing output below potential

(c) Raises potential GDP by encouraging investment

(d) Cuts taxes in order to support household incomes

Answer: (b) - It raises interest rates; demand shifts left; output and inflation both fall. This is the pain. [Section 3.09]

Q68. A rise in the Fed's interest rate is, for the United States and for India respectively:

(a) A way of cooling demand; a rise in the return on dollar assets that pulls capital away

(b) A tax on American consumers; a subsidy to Indian exporters that raises their dollar prices

(c) A devaluation of the dollar; a revaluation of the rupee

(d) A fiscal stimulus; a fiscal contraction

Answer: (a) - Session 3 saw it from America's side; this session sees it from the other end. [Section 4.08]

Q69. On the RBI's balance sheet, a currency note in your pocket is:

(a) An asset

(b) A liability

(c) Part of its capital

(d) Not recorded at all

Answer: (b) - The note is the RBI's promise to pay the bearer - a debt it owes. [Section 1.10]

Q70. In the version of the water-bottle economy with a full warehouse and a price tag fixed at Rs. 100, doubling everyone's money leads to:

(a) Price Rs. 100, two bottles sold

(b) Price Rs. 200, one bottle sold

(c) Price Rs. 200, two bottles sold

(d) Price Rs. 50, two bottles sold

Answer: (a) - With a sticky price and spare capacity, the quantity adjusts instead of the price. [Section 2.09]

Q71. Powell's phrase "a sustained period of below-trend growth" means:

(a) Output deliberately held below potential for a time

(b) Output growing faster than its potential for a time

(c) A period in which inflation is exactly zero

(d) A period in which the budget is balanced

Answer: (a) - A central banker's way of saying that a slowdown is intended. [Section 3.09]

Q72. According to the "painless disinflation" argument, inflation can fall without higher unemployment if:

(a) The central bank acts quietly, without announcing its intentions to the public in advance

(b) Wages and prices are frozen by law for a year

(c) The central bank's commitment is credible, so expected inflation falls at once

(d) The government raises its spending at the same time

Answer: (c) - If people believe the announcement, expectations fall first and inflation can follow without a slump. [Section 3.09]

Q73. The three "prices" of money discussed in class are:

(a) The interest rate, the price level and the exchange rate

(b) The repo rate, the cash reserve ratio and the statutory liquidity ratio

(c) The CPI, the WPI and the GDP deflator

(d) Wages, rent and profit - the three kinds of income

Answer: (a) - Money priced against time, against goods, and against other currencies. [Section 1.11]

Q74. "Involution", as the word was used in class, describes:

(a) Firms cutting prices to gain share, forcing rivals to follow, until all margins shrink

(b) A wave of mergers and takeovers that steadily reduces the number of competitors in an industry

(c) A government setting minimum prices for every firm in an industry

(d) Exporters turning back to the home market when foreign demand falls

Answer: (a) - A price war nobody wins: no one gains share for long, everyone's margin is thinner, and wages follow. [Section 2.10]

Q75. One cost of holding very large reserves is that:

(a) They earn a higher return than any other asset

(b) They cannot be used in a crisis

(c) They are held in safe foreign assets that pay little

(d) They push up the price of imports

Answer: (c) - Reserves are insurance, and insurance has a premium. [Section 4.09]

Q76. A fall of several billion dollars in reserves within a week most likely signals that:

(a) The RBI has been selling dollars; the rupee was under pressure

(b) Exports have risen sharply during the week, bringing in more dollars

(c) The RBI has been buying dollars from the market

(d) Inflation in India has fallen below target

Answer: (a) - The rupee wanted to fall further than it did. [Section 4.09]

Q77. A repo-rate hike and QT are:

(a) The same thing under two names - both reduce the quantity of money directly

(b) Both forms of tightening, one through the price of money and the other through its quantity

(c) Opposite in effect - a rate hike tightens while QT eases

(d) Both fiscal measures, taken by the government rather than the central bank

Answer: (b) - They are different levers that push in the same direction. [Section 1.11]

Q78. During deflation, a borrower paying a fixed EMI finds that the real burden of the loan:

(a) Falls

(b) Rises

(c) Stays the same

(d) Disappears

Answer: (b) - The EMI is fixed in rupees while prices and salaries fall, so it takes a larger share of income. [Section 2.10]

Q79. Senator Kennedy's central argument to Powell was that:

(a) Interest rates should be cut at once to protect jobs, whatever the effect on prices might be

(b) The Fed should give up trying to reduce inflation

(c) Unemployment is of no importance when inflation is high

(d) If Congress slowed spending and borrowing, the Fed could put fewer people out of work

Answer: (d) - Demand can be reduced from the fiscal side as well as the monetary side; sharing the load shortens the pain. [Section 3.10]

Q80. Dollar invoicing supports the dollar's dominance because:

(a) The World Trade Organization requires it

(b) Even trade that never touches the United States needs dollars

(c) The United States is a party to most of the world's trade

(d) Other currencies cannot legally be used for trade

Answer: (b) - Oil and most commodities are priced in dollars, whoever buys and sells them. [Section 4.10]

Q81. The RBI buying bonds directly from the government at the time of issue would be:

(a) Monetisation of the deficit - the automatic version ended in April 1997

(b) A routine open market operation of the kind carried out every week

(c) Something the law requires at the end of every quarter

(d) The same as a repo, because the bonds are later bought back

Answer: (a) - The RBI buys in the secondary market; a direct purchase is printing money to fund spending. [Section 1.11]

Q82. The central Keynesian claim discussed in class is that:

(a) Money has no effect on output or employment at any horizon, short or long

(b) Governments should balance their budgets in every single year, whatever the state of the economy

(c) Inflation is always and everywhere the result of rising wages

(d) Markets do not correct themselves, so government must act to restore demand

Answer: (d) - Keynes was the first to say it plainly, and it gave governments a far larger role in the economy. [Section 2.11]

Q83. What actually happened in the months after the Kennedy-Powell hearing of March 2023?

(a) Unemployment rose above 10%, very much as the historical rule had predicted

(b) Inflation climbed back above 9%

(c) Inflation fell to about 3% while unemployment stayed under 4%

(d) The United States entered a deep recession

Answer: (c) - History had predicted far more pain than came. [Section 3.10]

Q84. Translation exposure arises when:

(a) An export invoice has not yet been paid and the exchange rate moves in the meantime

(b) A rival's currency falls sharply

(c) The results of foreign subsidiaries are converted into the parent's currency

(d) Tariffs are changed without notice

Answer: (c) - It is an effect on the financial statements. [Section 4.11]

Q85. According to the index, the long fall in fragmentation - the era of globalisation - ran roughly from:

(a) The end of the war in 1945 to 1975

(b) The early 1990s to 2008

(c) 2008 to 2020

(d) 1975 to 1990

Answer: (b) - Before it, the Cold War years were high and steady; after it, fragmentation rose. [Section 3.11]

Q86. When rural demand weakened after COVID, the first response of Indian FMCG companies, as discussed in class, was to:

(a) Cut prices on all their main products

(b) Withdraw from the smaller rural markets

(c) Keep the price point and reduce the pack size

(d) Raise prices in order to protect margins

Answer: (c) - Sticky prices in action: the Rs. 5 and Rs. 10 points stayed and the grams came down. [Section 2.11]

Q87. The interest rate on a Rs. 50 lakh, 20-year home loan falls from 9% to 8%. The monthly EMI falls by about:

(a) Rs. 500

(b) Rs. 1,000

(c) Rs. 3,200

(d) Rs. 10,000

Answer: (c) - From about Rs. 44,990 to about Rs. 41,820 - which is why EMI-driven demand follows the repo rate. [Section 1.12]

Q88. A natural hedge is:

(a) Matching the currency of costs or borrowing to the currency of revenue

(b) Buying a currency option from a bank

(c) Entering a forward contract with a bank

(d) Insurance against currency losses that is bought from a government agency

Answer: (a) - A fall in the rupee then raises costs and revenue together. [Section 4.11]

Q89. In a fractional reserve banking system, banks:

(a) Keep all deposits as reserves and earn a fee for safekeeping

(b) Keep a fraction of deposits as reserves and lend out the rest

(c) Lend only their owners' capital and leave deposits untouched

(d) Pass all deposits to the central bank, which does the lending

Answer: (b) - Because depositors do not all withdraw at once, a fraction is enough on a normal day. [Section 1.13]

Q90. "Government never pays. You pay" makes the point that:

(a) Public spending is ultimately financed by taxpayers, now or later

(b) Governments in practice never repay what they borrow

(c) Companies, not individuals, bear the whole tax burden

(d) The central bank finances whatever the government spends

Answer: (a) - A government has no income of its own beyond taxes and, at the edges, the proceeds of its assets. [Section 2.12]

Q91. Joseph Stiglitz's prediction, recalled in class, was that the decade after the financial crisis would be one of:

(a) Populist leaders, as after the Great Depression

(b) Faster globalisation than ever before

(c) Falling inequality within rich countries

(d) Stronger international institutions

Answer: (a) - Hardship leaves people asking what globalisation has done for them; the anger builds into politics over years. [Section 3.11]

Q92. A forward at Rs. 96 that "loses" because the rate ends at Rs. 98 has:

(a) Failed, and shows that forward contracts should not be used again

(b) Cost the firm part of its capital

(c) Done its job: it replaced an unknown outcome with a known one

(d) Broken the firm's hedging policy

Answer: (c) - Hedging is not a way to make money. Judge it by whether the business could plan. [Section 4.11]

Q93. "A fractional reserve banking system creates money, but not wealth" because:

(a) The borrower's new cash is matched by a new debt of the same size

(b) Banks keep the interest, so the gain goes to them and not to society

(c) The RBI takes back the new money through the reserve requirement

(d) Inflation immediately wipes out the value of the new money

Answer: (a) - Spending power rises; net worth does not. [Section 1.13]

Q94. Germany's past budget surpluses were described in class as a way of:

(a) Reducing the volume of the country's exports to its European neighbours

(b) Lowering saving in order to boost household consumption

(c) Paying for a more generous system of welfare benefits

(d) Forcing the economy to save more, making capital cheap for investment

Answer: (d) - Tax more than you spend and the state saves on the citizens' behalf - cheap capital, more factories, more exports. [Section 2.12]

Q95. A country that exports more than it imports must be:

(a) Investing more than it saves

(b) Saving more than it invests

(c) Running a deficit in its government budget

(d) Consuming more than it produces

Answer: (b) - If X - M is positive, S - I must be positive. There is no third possibility. [Section 3.12]

Q96. On the slides, tariffs are described as:

(a) A source of revenue for the government, with no effect on trade or the currency

(b) A tool for correcting an overvalued dollar and a wide trade deficit

(c) A subsidy paid to American exporters

(d) A form of quantitative easing

Answer: (b) - "Tariffs as currency tools" - one more form of intervention. [Section 4.12]

Q97. According to the identity, a country's trade deficit can shrink only if:

(a) It changes the list of goods that it imports

(b) It imposes a tariff on its largest trading partner

(c) The gap between its saving and its investment narrows

(d) It changes the currency in which it invoices

Answer: (c) - Tariffs change what is imported and from whom; the total is set by saving and investment. [Section 3.12]

Q98. The marginal propensity to consume (MPC) is:

(a) The share of total income that a household consumes

(b) The part of an extra rupee of income that is spent

(c) The share of income that is paid in taxes

(d) The ratio of a household's saving to its investment

Answer: (b) - It is about the extra rupee - the margin - not the average share of income consumed. [Section 2.13]

Q99. "Loans create deposits" means that:

(a) A bank must first collect a deposit of equal size before it can make each loan

(b) When a bank grants a loan it credits the borrower's account, creating a new deposit

(c) Deposits are, in effect, loans made by the public to the RBI

(d) Loans are paid out in cash, which borrowers then deposit elsewhere

Answer: (b) - The bank finds the reserves afterwards, at around the repo rate. [Section 1.13]

Q100. A tariff on imported inputs acts on the home economy like:

(a) A positive supply shock: costs fall and output rises

(b) A fall in the money supply

(c) A fiscal stimulus

(d) A negative supply shock: costs and prices rise

Answer: (d) - Session 3: anything that raises the cost of production shifts supply left. [Section 4.12]

Q101. A bank run is:

(a) A sudden rush by investors to buy a bank's shares

(b) A sharp, unexpected rise in interest rates announced by the RBI

(c) Many depositors withdrawing at once because they fear the bank will fail

(d) A bank expanding its lending faster than its capital allows

Answer: (c) - The fear can be self-fulfilling, even when the bank is sound. [Section 1.14]

Q102. With an MPC of 0.75, government spending of Rs. 200 crore raises total income by:

(a) Rs. 150 crore

(b) Rs. 267 crore

(c) Rs. 800 crore

(d) Rs. 1,000 crore

Answer: (c) - The multiplier is 1 / 0.25 = 4, and 4 x 200 = 800. [Section 2.13]

Q103. If Indian interest rates rise relative to those abroad, the rupee tends to:

(a) Depreciate, because exports become dearer

(b) Appreciate, because foreigners buy more Indian bonds and need rupees

(c) Stay unchanged, because interest rates are a domestic matter

(d) Depreciate, because money becomes scarce at home

Answer: (b) - Higher returns raise the demand for Indian assets, and so for rupees. [Section 3.13]

Q104. A weaker dollar would be helped by lower US interest rates because:

(a) Lower interest rates automatically raise the tariffs charged on imports

(b) Dollar assets then pay less, reducing the demand for dollars

(c) Lower interest rates raise American saving

(d) Lower interest rates fix the exchange rate

Answer: (b) - The chain of Section 4.08, run in reverse. [Section 4.13]

Q105. Which of the following is NOT a defence against bank runs?

(a) Deposit insurance

(b) The central bank acting as lender of last resort

(c) Reserve and liquidity requirements

(d) Paying higher dividends to shareholders

Answer: (d) - Dividends take money out of the bank; the other three build confidence or cushions. [Section 1.14]

Q106. CRISIL said the effect of the GST cuts would depend on pass-through and on whether consumption rose. "Pass-through" refers to:

(a) How quickly the new rates were notified and came into force across the states

(b) Whether companies lower prices by the amount of the tax cut

(c) How soon tax refunds reach the companies

(d) Whether the states share the loss of revenue

Answer: (b) - Gate 1: only if prices actually fall is it as though the consumer's income had risen. [Section 2.13]

Q107. A car costs Rs. 71 lakh in India and a similar car costs 105,900 dollars in the US. At Rs. 82 per dollar the Indian car costs about:

(a) 86,600 dollars

(b) 58,200 dollars

(c) 105,900 dollars

(d) 71,000 dollars

Answer: (a) - 71,00,000 / 82 is about 86,600. [Section 3.14]

Q108. The "user fee" recommendation attributed to Stephen Miran would be charged on:

(a) American exporters

(b) American households

(c) Foreign holders of US Treasury debt

(d) American commercial banks and pension funds

Answer: (c) - The dollar is strong because the world wants to hold US government bonds. [Section 4.13]

Q109. A company funds a ten-year plant with ninety-day borrowings that must be renewed every quarter. The risk it is running is the same as:

(a) Engel's law

(b) Seigniorage

(c) A bank's maturity mismatch

(d) Stagflation

Answer: (c) - Long assets on short money - one bad quarter in the credit market can be fatal. [Section 1.14]

Q110. Compared with a GST cut, an income-tax cut:

(a) Has no effect at all on consumer demand, because income tax is paid only once a year

(b) Depends on companies reducing their prices

(c) Benefits only the buyers of imported goods

(d) Puts money directly in taxpayers' hands, so only the MPC matters

Answer: (d) - There is no company in between deciding whether to pass it on - only the second gate remains. [Section 2.13]

Q111. The formula given in class is: real exchange rate =

(a) Nominal exchange rate + inflation at home

(b) Nominal exchange rate - inflation abroad

(c) Nominal exchange rate x (price at home / price abroad)

(d) Nominal exchange rate x (price abroad / price at home)

Answer: (d) - 82 x 105,900 / 71,00,000 = 1.22. A rise in this number is a real depreciation of the rupee. [Section 3.14]

Q112. Offshore operations act as a hedge because:

(a) They allow a firm to avoid paying taxes in any of the countries where it operates

(b) They remove currency risk completely

(c) They spread costs and revenues across more than one currency and jurisdiction

(d) They always reduce the wage bill

Answer: (c) - A natural hedge built into where the firm operates. [Section 4.14]

Q113. The revenue of an Indian IT services exporter sits in which component of India's GDP?

(a) C

(b) I

(c) G

(d) NX

Answer: (d) - Services sold abroad are exports. [Session 1]

Q114. A fall in the general price level, with nothing else changed, causes:

(a) A movement along the AD curve to a higher quantity demanded

(b) A shift of the whole AD curve to the right, as after a rise in the money supply

(c) A shift of the whole AD curve to the left

(d) No change at all in the quantity demanded

Answer: (a) - A change in P moves you along the curve. Shifts come from money, spending, taxes or confidence. [Section 2.14]

Q115. In the class exercise the real exchange rate began at 1.50. With the rate at Rs. 84 and XYZ's price raised to Rs. 90,000 it becomes 84 x 1,500 / 90,000, which is:

(a) 1.40 - a real appreciation of the rupee from 1.50

(b) 1.54 - a real depreciation of the rupee from 1.50

(c) 1.50 - no change in real terms

(d) 0.71 - a real depreciation of the rupee

Answer: (a) - Indian goods have become dearer relative to American ones although the rupee fell in nominal terms. [Section 3.14]

Q116. The rupee falls 10% and an exporter's rupee costs also rise 10%. Billing in dollars, its position is:

(a) Much better, since it now earns more rupees on every dollar that it bills abroad

(b) Much worse, since its costs have risen

(c) Better, since it will sell more units

(d) Unchanged in real terms: more rupees per dollar, offset by higher costs

Answer: (d) - A depreciation helps the exporter only so long as costs at home have not risen to match it. [Session 4]

Q117. Which statement about money creation is correct?

(a) The RBI creates base money; commercial banks create most of broad money by lending

(b) The RBI creates all money; commercial banks only pass it on to borrowers

(c) The government creates money when it spends; the RBI only records it

(d) Commercial banks create base money; the RBI creates deposits

Answer: (a) - Two layers: reserves and currency from the RBI, deposits from banks. [Session 1]

Q118. Which pair correctly matches each multiplier with its "leak"?

(a) Money multiplier - saving; Keynesian multiplier - reserves

(b) Money multiplier - taxes; Keynesian multiplier - depreciation

(c) Money multiplier - depreciation; Keynesian multiplier - taxes

(d) Money multiplier - reserves; Keynesian multiplier - saving

Answer: (d) - Banks hold back reserves at each round; households hold back saving. [Session 2]

Q119. Which sequence correctly describes a successful disinflation?

(a) Demand shifts right; expectations rise; supply shifts left; output returns to potential at higher inflation

(b) Demand shifts left; expectations fall; supply shifts right; output returns to potential

(c) Supply shifts left, then demand shifts right

(d) Demand shifts right, then supply shifts right

Answer: (b) - Short pain while output is below potential; the gain arrives when expectations and supply adjust. [Session 3]

Q120. A country with a fixed rate, free capital flows and falling reserves faces a rise in US interest rates. The likely sequence is:

(a) Its currency appreciates and its reserves rise

(b) It sells reserves, its interest rates rise, and if reserves run low it devalues

(c) Its interest rates fall, its exports boom and its reserves rise within a few months

(d) Nothing changes, because the rate is fixed

Answer: (b) - Sections 4.05 and 4.06 in order. [Session 4]

THE LAST FEW PAGES

Exam Cheat Code

Everything in the module that has to be recalled, not reasoned out: the formulas, the pairs that are easy to confuse, which way things move, the numbers, the traps, and how to attack a question.

6.01 Every Formula in the Module

Seventeen lines. Each has the section where it was built and a number to check it with. If you can reproduce the last column without looking, you know the formula.

Formula	In words	Check it with	Section
Y = C + I + G + NX	Output is bought by households, firms, the government and, net, foreigners	Imports are subtracted because C, I and G already include them	1.03
Value added = sales - purchases from other firms	GDP is the sum of value added, never of turnover	Sales 1,000, purchases 980: value added 20	1.04
Real growth = nominal growth - inflation (approx.)	Growth in quantities only	10.3% - 2.5% = 7.8%	1.05, 2.05
GDP deflator = nominal GDP / real GDP x 100	The price index of everything produced at home	It has no fixed basket	1.05
Inflation = change in CPI / earlier CPI x 100	How fast the basket is getting dearer	114.3 to 117.1 is about 2.5%	1.06
Real interest rate = nominal rate - inflation (approx.)	What a saver gains in purchasing power	4% - 6% = minus 2%	1.08
Money multiplier = 1 / reserve ratio; M = m x B	Deposits created from each rupee of reserves	10% gives 10: Rs. 100 becomes Rs. 1,000. India's actual m is about 6	1.13, 2.01
Keynesian multiplier = 1 / (1 - MPC)	Income created from each rupee of new spending	MPC 0.8 gives 5: Rs. 100 becomes Rs. 500	2.13
Tax-cut multiplier = MPC / (1 - MPC)	Smaller, because part of a tax cut is saved first	MPC 0.8 gives 4	2.13
Budget balance = T - G	Negative is a deficit, positive a surplus	T 90, G 110: deficit of 20	2.12
Output gap = actual output - potential output	Positive is overheating, negative is slack	104 against 100: plus 4	2.06
Net investment = investment - depreciation	What is actually added to the capital stock	100 - 30 = 70	2.07
M = P x Y	With output fixed, money moves only prices	One bottle: money 100 to 200, price 100 to 200	2.09
Inflation = expected inflation - b x (u - natural rate) + shock	The Phillips curve: three things move inflation	Point A: 7% and 2%. Point B: 4% and 6%	3.05

Formula	In words	Check it with	Section
S - I = X - M	A country with a trade deficit is borrowing others' saving	India and the US borrow; China, Germany, Japan lend	3.12
Real exchange rate = nominal rate x price abroad / price at home	The price of foreign goods in terms of home goods	82 x 105,900 / 71,00,000 = 1.22	3.14
Import cover = reserves / monthly imports	How long reserves could pay for imports	India about 11 months	4.09

6.02 Pairs That Are Easy to Confuse

Most wrong answers in a multiple-choice paper come from mixing up two things that sound alike. Here are the pairs this module is full of, each separated in one line.

This	Is not this	The difference
GDP: where it is made	Who owns the maker	GDP counts what is produced on Indian soil, whoever owns it. Samsung's plant in Noida is in India's GDP; an Infosys office in Texas is in America's.
Nominal	Real	Nominal is measured at today's prices. Real has the price change taken out: it moves only with quantities.
CPI	WPI and the GDP deflator	CPI is what households pay, imports included. WPI is wholesale goods only. The deflator covers everything made at home and has no basket.
Headline inflation	Core inflation	Core leaves out food and fuel, to show whether price pressure is broad.
Disinflation	Deflation	Disinflation: prices rising more slowly. Deflation: prices falling.
Repo rate	Reverse repo, SDF, MSF	Repo: banks borrow from the RBI. SDF: banks park money with it (the floor). MSF: emergency borrowing (the ceiling).
Open market operation	QE and QT	An OMO fine-tunes money to hold the interest rate. QE and QT change the quantity of money itself, on a large scale and for long.
A rate hike	Quantitative tightening	A hike raises the price of money. QT cuts its quantity directly.
CRR	SLR	CRR is cash kept with the RBI. SLR is the share of deposits held in safe government bonds.
Monetary base (B)	Broad money (M)	B is made by the central bank. M includes the deposits that banks create by lending.
Money multiplier	Keynesian multiplier	The first multiplies deposits and leaks into reserves. The second multiplies income and leaks into saving.
Monetary policy	Fiscal policy	The central bank moves money and interest rates. The government moves spending and taxes.
Movement along a curve	Shift of a curve	A change in the price level moves you along. Money, the budget or confidence moves the curve.
Demand shock	Supply shock	Demand: inflation and output move together. Supply: inflation up, output down.

This	Is not this	The difference
Frictional and structural unemployment	Cyclical unemployment	The first two exist even at potential - the natural rate. Cyclical is the part caused by weak demand.
Stablecoin	CBDC and tokenised deposit	Issued by a private firm, a central bank and a commercial bank respectively. Only the bank creates money by lending.
Nominal exchange rate	Real exchange rate	Currency against currency; goods against goods. Trade follows the real one.
Depreciation	Devaluation	The market does the first to a floating currency. A government does the second to a fixed one.
Rupee invoice	Dollar invoice	In rupees, a weaker rupee lowers the buyer's price: more volume. In dollars, the buyer's price is fixed: more margin.
Transaction exposure	Translation and economic exposure	A payment due; the accounts of a subsidiary; your long-run competitive position.
Forward	Option	A forward fixes the rate and gives up the upside. An option keeps the upside, for a premium.

6.03 Which Way Does It Move?

For any event, ask two questions: does it change spending or does it change costs, and which way? Spending moves demand; costs move supply. The table gives the standard chains.

When this happens	This follows	And the result is
The RBI cuts the repo rate	Banks pay less, loans get cheaper, borrowing rises	Demand up; output up in the short run; inflation up later
The RBI buys bonds (or cuts the CRR)	More reserves, or a bigger multiplier	More money, lower interest rates - if banks choose to lend
Banks turn cautious	The multiplier falls; money is parked back at the RBI	Central-bank easing does not reach borrowers (India, 2020)
Government spends more or cuts taxes	Aggregate demand shifts right, multiplied through the rounds	Output up while prices are sticky; a deficit to be financed
Money grows faster than output for long	Too much money chasing too few goods	Only prices rise; output stays at potential
Prices start to fall	Buyers wait, real debts grow, firms cut wages	Demand falls further: deflation feeds itself
Oil jumps, or the monsoon fails	Costs rise; aggregate supply shifts left	Inflation up and output down together
People expect more inflation	Wage demands rise; costs rise	Supply shifts left: the wage-price spiral
The central bank tightens to disinflate	Demand shifts left; output falls below potential	Inflation and expectations fall; output then recovers
The Fed raises its rate	Capital moves to dollar assets	Rupee weaker, reserves lower, imports dearer
The rupee depreciates in real terms	Indian goods become relatively cheaper	Exports up, imports down

When this happens	This follows	And the result is
A country fixes its exchange rate	It must sell reserves to defend it	Its interest rate follows the anchor country's
A tariff is imposed	Imported inputs and goods cost more at home	A supply shock at home; the trade gap still set by S - I

6.04 Numbers Worth Remembering

Examiners like a number. Every number used in class or on the slides is gathered here, once, with the section it comes from. The Indian and world data are as they stood in early October 2026.

India and the world today

Indicator	Number	Section
Repo rate	5.25%	1.12
SDF (floor) and MSF (ceiling)	5.00% and 5.50%	1.12
CRR and SLR	3% and 18%	1.13
Inflation target	4%, within 2% to 6%	1.06
CPI inflation, August 2026	4.82%	1.06
Real and nominal GDP growth, April-June 2026	7.8% and 10.3%; nominal GDP of Rs. 88.27 lakh crore	1.05, 2.05
Price rise in the GDP deflator	About 2.5%	2.05
Reserve money and broad money	About Rs. 49 lakh crore and Rs. 299 lakh crore	2.01
Money multiplier, actual and textbook	About 6, against 33	1.13, 2.01
Bank credit as a share of GDP, 2021	India 52%; emerging economies 127%	2.02
Government debt, 2020	India 89.6% of GDP; world 98.6%	2.12
Stablecoins in circulation	About 270 billion dollars	2.04
US policy rate	3.75% to 4.00%, raised on 16 September 2026	3.06
The rupee's record closing low	95.71 to the dollar (May 2026)	3.13
Foreign exchange reserves	Record 786 billion dollars (4 September 2026); 766 billion two weeks later	4.07, 4.09
Import cover	India about 11 months; Sri Lanka under 1 month in 2022	4.09
The dollar's share of world reserves	Between 55% and 60%	4.10

From the classroom

Example	The numbers	Section
Deposit cascade from Rs. 100	Rs. 1,000 at a 10% reserve ratio; Rs. 111 at 90%	1.13, 2.01
Keynesian multiplier	MPC 0.8 gives 5: Rs. 100 of spending becomes Rs. 500 of income	2.13
Phillips curve slide	A: unemployment 7%, inflation 2%. B: 4% and 6%	3.05
Demand push on the slide	2% at output 10, then 3.5% at 11, then 5.5% at 10	3.06
Supply shock on the slide	From 2% at output 10 to 3% at output 9	3.08
The Volcker disinflation	Inflation 13.5% in 1980, 1.9% in 1986	3.09
The senator's rule	2 points off inflation for 3.6 points of unemployment	3.10
The two cars	Rs. 71 lakh and 105,900 dollars at Rs. 82: real exchange rate 1.22	3.14
The export exercise	Real exchange rate 1.50, then 1.54 or 1.40; units sold 5, then 7 or 0	3.14
The invoicing exercise	Rs. 50,000 at Rs. 50, then Rs. 80: buyer pays 1,000, 625, 1,250 or 1,000 dollars	4.02
India's devaluations	Rs. 4.76 to Rs. 7.50 (June 1966); about Rs. 21 to Rs. 26 (July 1991)	4.06
The hedging example	1,00,000 dollars: Rs. 96 lakh by forward; Rs. 94 or 97 lakh by option	4.11
The Plaza Accord	About 240 yen per dollar in 1985, about 120 by the end of 1987	4.12
The tariff board	India 26% on 2 April 2025; struck down in February 2026	4.12

6.05 Fifteen Traps

Each of these has caught somebody. Read the left column, decide what is wrong with it, then read the right.

#	The trap	The right way to think
1	Adding up every firm's sales to get GDP	Only final goods count - or, equivalently, the value added at each stage.
2	Counting a second-hand sale, a share purchase or a cash transfer in GDP	Nothing new was produced. Only the broker's fee is output.
3	"Nominal GDP rose 10%, so the economy produced 10% more"	Part of it is prices. Real GDP changes only when quantities change.
4	"Inflation fell, so prices fell"	Prices are still rising, more slowly. Falling prices are deflation.
5	Treating a repo-rate change and QE as the same thing	One changes the price of money, the other its quantity.
6	"The government sold bonds, so money was printed"	Selling bonds to the public moves existing money. Money is created only when the central bank buys.
7	"Banks lend out the deposits they receive"	Loans create deposits. Banks create money - but not wealth.
8	Assuming more reserves always means more lending	M = m x B, and m belongs to the banks. They can sit on the money.

#	The trap	The right way to think
9	Calling a stablecoin issuer a bank	It holds 100% reserves and does not lend, so it creates no money.
10	Giving a tax cut the same multiplier as spending	Part of a tax cut is saved before the first round begins.
11	Reading a move along the demand curve as a shift	A change in the price level moves you along the curve; it does not move the curve.
12	"After a supply shock the central bank can fix both inflation and output"	Its tool works on demand. It must choose one.
13	"The currency fell, so exports will rise"	Only if the fall is real - if prices at home have not risen to cancel it.
14	"The rupee rose to 95"	A bigger number of rupees per dollar is a weaker rupee. And a floating currency depreciates; it is not devalued.
15	"A tariff will close the trade deficit"	The deficit equals investment minus saving. A tariff changes what is imported, not that gap.

6.06 How to Attack a Question

The questions in this module are short, and the options are close. A few habits separate the right answer from the nearly right one.

If the question says	Stop and think
"Real"	Take out prices. Subtract inflation from growth, from an interest rate, from a pay rise, from a currency move.
"In the short run"	Prices are sticky: demand moves output. "In the long run": output is at potential, and money moves only prices.
"Which curve shifts?"	Did spending change (demand) or did costs or expectations change (supply)? Did only the price level change (no shift at all)?
"NOT" or "EXCEPT"	Three options are true. Mark each one true or false before choosing.
A calculation	Write the formula first. Check the units - per cent or percentage points, lakh or crore, rupees per dollar or dollars per rupee.
"Who bears the risk?"	Look at the currency of the invoice. The side whose own currency it is not, bears it.
"Appreciate or depreciate?"	Ask which currency now buys less of the other. A higher rupees-per-dollar number is a weaker rupee.
Two options that are both true	One of them answers a different question. Re-read the stem for the exact thing asked.
A current-affairs example	Map it to the model first: expansionary or contractionary, fiscal or monetary, demand or supply, nominal or real.

6.07 The Module in Twelve Lines

If only twelve sentences survive the journey to the exam hall, let them be these.

#	The line
1	GDP is the market value of final goods and services produced within a country in a year; it equals the sum of value added, and it is bought by C, I, G and NX.
2	Real GDP moves only with quantities; nominal growth less inflation is real growth.
3	The RBI targets CPI inflation of 4%, within 2% to 6%; what a saver or borrower should care about is the real interest rate.
4	Money is whatever is accepted as payment; the rupee is backed by trust in the economy, and most money is created by banks when they lend.
5	The central bank controls the base and the price of money; the multiplier is in the hands of the banks.
6	Economies fluctuate around a potential set by capital, labour and technology; policy manages the gap, not the trend.
7	Demand is steered by the budget and by money; each rupee of new spending is multiplied, and aggregate demand slopes down.
8	In the short run prices are sticky and money raises output; in the long run it raises only prices. Falling prices are more dangerous than rising ones.
9	Supply slopes up only for given expectations; that is why central banks guard inflation expectations, and why disinflation hurts before it helps.
10	A supply shock raises inflation and lowers output together, and leaves the central bank a choice between them.
11	S - I = X - M: a deficit country borrows the world's saving; trade follows the real exchange rate, so a weaker currency helps only if it is real.
12	The rupee floats under the RBI's management, the dollar still rules, and a firm's protection is pricing power, hedging and not depending on any one thing.

A NOTE TO MY BATCHMATES

All the very best.

These notes began as my own attempt to make sense of four Sundays of economics, and they grew because so many of you read them and wrote back. If you have reached this page, you have covered the whole module: how an economy is measured, how money is made, how governments and central banks steer demand, what limits them, and how the rupee meets the world.

None of us needs to become an economist. It is enough to read a headline about the repo rate, the budget or the dollar and know which way it pushes our own business - and to ask one good question in the next review meeting. I hope these pages have made that a little easier, and that you close them feeling surer of the subject than when you opened them.

Read at your own pace, try the questions honestly, and keep the Cheat Code for the last evening. Good luck for the exam, and for everything that comes after it.

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