Consumption, Saving and Investment

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Outline

▸ Consumption, Savings, Investment

◦ Consumption function

◦ Savings function

◦ Marginal propensity to consume (MPC): Calculation & interpretation

◦ Marginal propensity to save (MPS): Calculation & interpretation

$$MPS \equiv 1 - MPC$$

◦ Determinants of consumption

◦ Determinants of investment

◦ Investment demand curve

◦ Aggregate demand: Introduction

Role of consumption and investment

- Consumption (C) and investment (I) – major components of national income [India: 95.4% of GDP (2021-22)]
- Low C + high I => Rapid growth of output and income
- High C + low I => Slow growth of output and income
- Importance of consumption and investment dynamics
  - Understand determination of aggregate demand (AD) in the short-run
  - Economic conditions can result in rapid increase (decline) in consumption and investment => increase (decrease) in AD
- Business cycle: *short-run* fluctuations in output, income and unemployment in terms of total national output, leading to expansion or contraction in most sectors of the economy.
- ***Dynamics between consumption, saving and income***

Consumption – some facts

- People with lower incomes spend largely on food, shelter, clothing

- As incomes increase:

  1) Expenditure on food increases (quantity and quality) – *up to a limit*

  2) Limit on amount of extra income spent on food: Proportion of total expenditure on food declines with ***further*** increase in income

  3) Expenditure on other items (clothing, recreation, education, etc.) increases

  4) Spending on luxury items increases in greater proportion than increase in income

  5) *What is the greatest luxury ?*

Consumption – Concepts

- **Engel elasticity (EE):** Measure to analyze consumer behavior with regard to a commodity. It measures responsiveness of *consumption* of a particular commodity to total consumption.

- Engel elasticity < 1 => as income increases, spending on the commodity declines
  - E.g. EE (meat, eggs, fish, vegetables, etc.) > EE (breads, cereals, pulses, etc.)

- India (Economic Survey 2017-18): Engel elasticity of :
  - Food significantly < 1
 - Health significantly > 1
  - Education little < 1

Consumption – Concepts

- Income is the primary determinant of consumption and savings in an economy

- Recall: S = DI – C *or* C + S = DI

- Higher income households save more in absolute and % terms of income

- Lower income households save less or may *dissave* (spend more than they earn through borrowings *or* drawing on accumulated savings)

Consumption function

▶ **Definition:** Relation (graph) between the *level of consumption expenditure* and *level of personal disposable income*

▶ Based on the assumption that there exists a stable empirical relation between consumption and income

▶ <u>Graphical interpretation</u>: For every level of DI, the consumption function provides the Rupee level of consumption for a household.

▶ *Break-even point*: The point at which a household neither saves nor dissaves i.e. consumes all its income.

▶ **Assumption**: Whatever a household does not consume, it saves
$$(DI - C = S)$$

Consumption Function
(Ref: Samuelson and Nordhaus, Economics (19ᵗʰ Edition)

FIGURE 21-2. A Plot of the Consumption Function
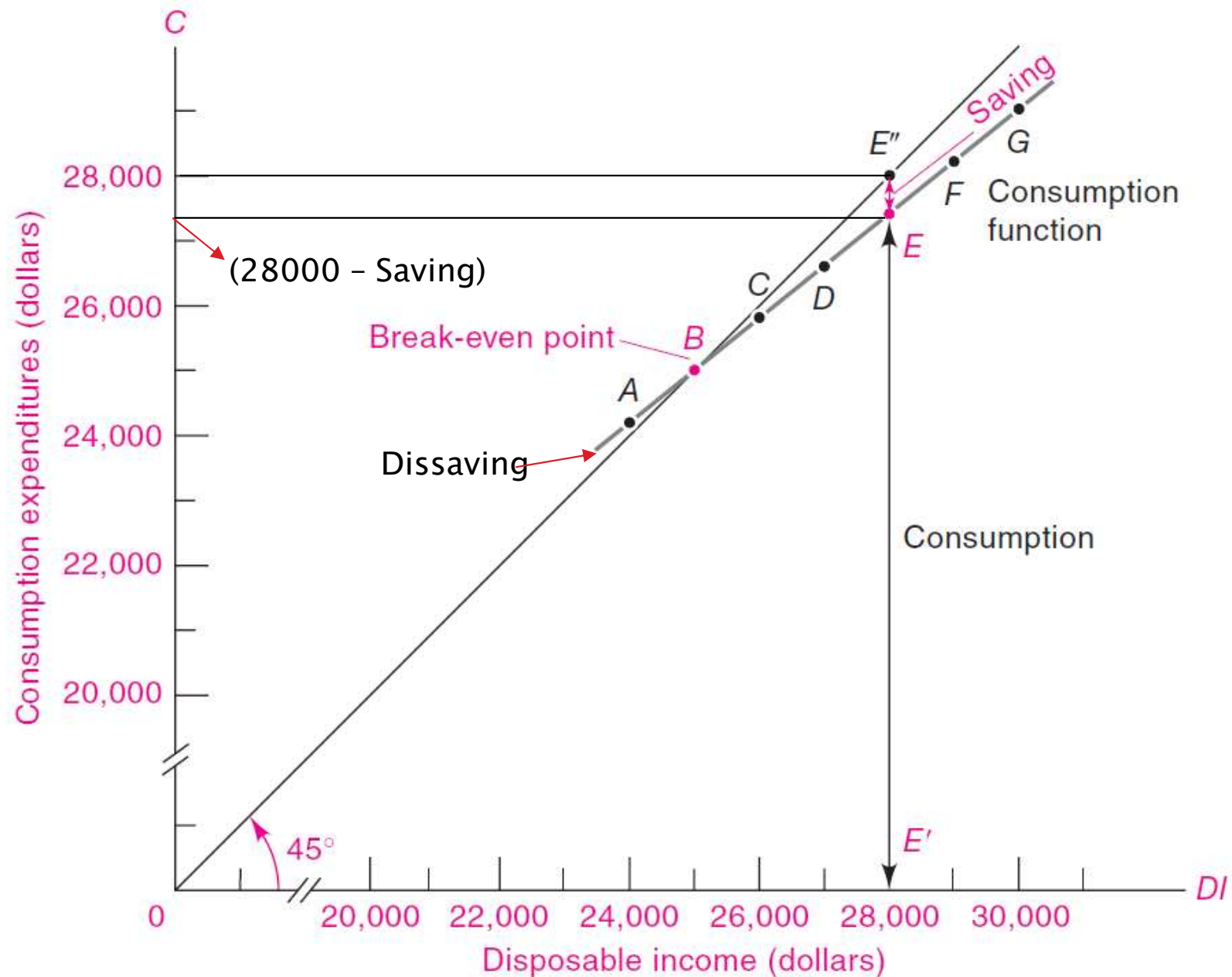
Consumption function

- Consumption < Income (Area to right of point B)
  - ➤ **Positive savings**

- Consumption > Income (Area to left of point B)
  - ➤ **Dissaving (negative savings)**

- Consumption = Income (Point B)
  - Household is neither a borrower, nor a saver i.e. household consumes all its income
  - Break-even point

- Net saving (or dissaving) measured by the distance between the consumption function and the 45° line

Savings Function

▸ *Household savings*: part of DI **not** spent on consumption

▸ Relation (graph) between *level of net savings* and *personal disposable income*

▸ Savings function is derived from the consumption function (**assumption: S= DI – C**)

▸ Savings function is a mirror image of the consumption function

▸ Savings > 0 (Points to right of point B)
  ◦ Positive savings
  ◦ Consumption < Income => S > 0

▸ Savings < 0 (Points to left of point B)
  Dissaving (negative savings)
  Consumption > Income => S < 0

Data for graphs
(Ref: Samuelson and Nordhaus, Economics (19th Edition))

	(1) Disposable income ($)	(2) Net saving (+) or dissaving (−) ($)	(3) Consumption ($)
A	24,000	−200	24,200
B	25,000	0	25,000
C	26,000	200	25,800
D	27,000	400	26,600
E	28,000	600	27,400
F	29,000	800	28,200
G	30,000	1,000	29,000

TABLE 21-3. Consumption and Saving Are Primarily Determined by Income
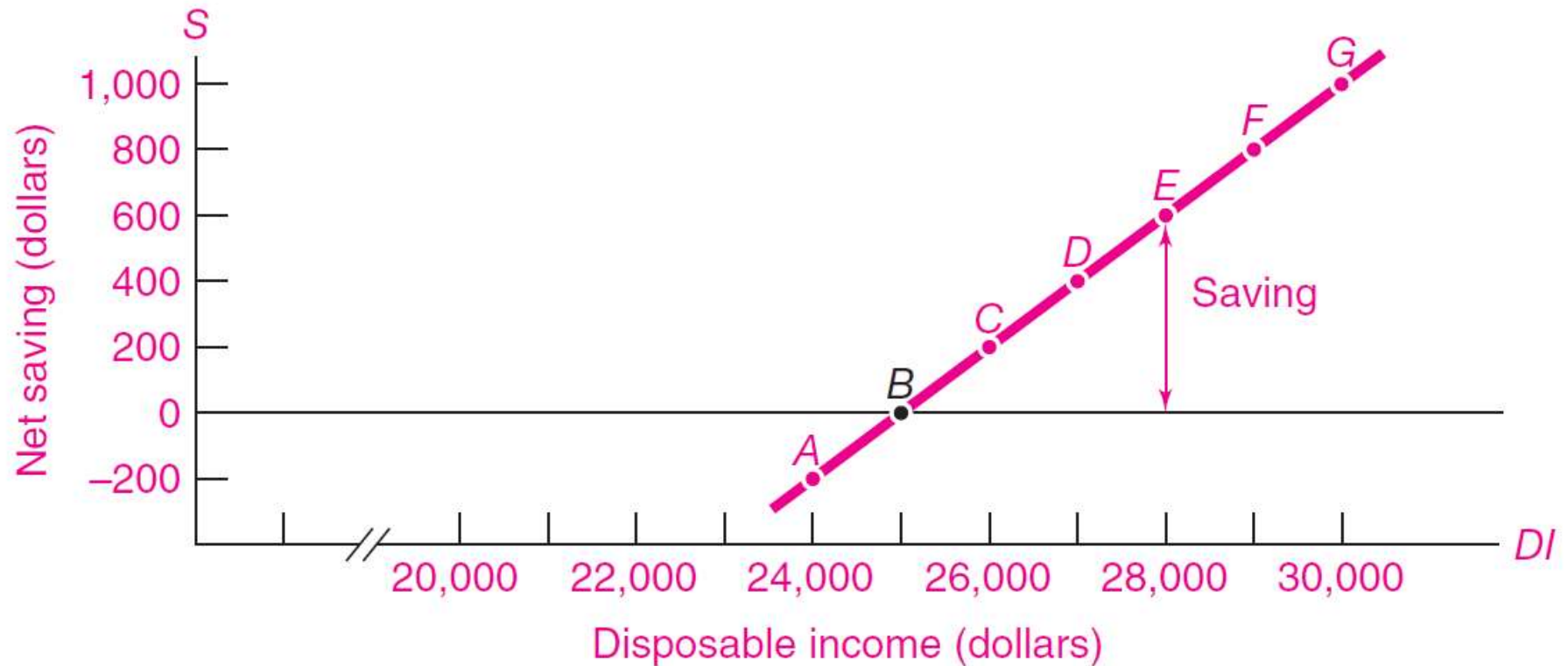
Consumption Function
(Ref: Samuelson and Nordhaus, Economics (19th Edition)
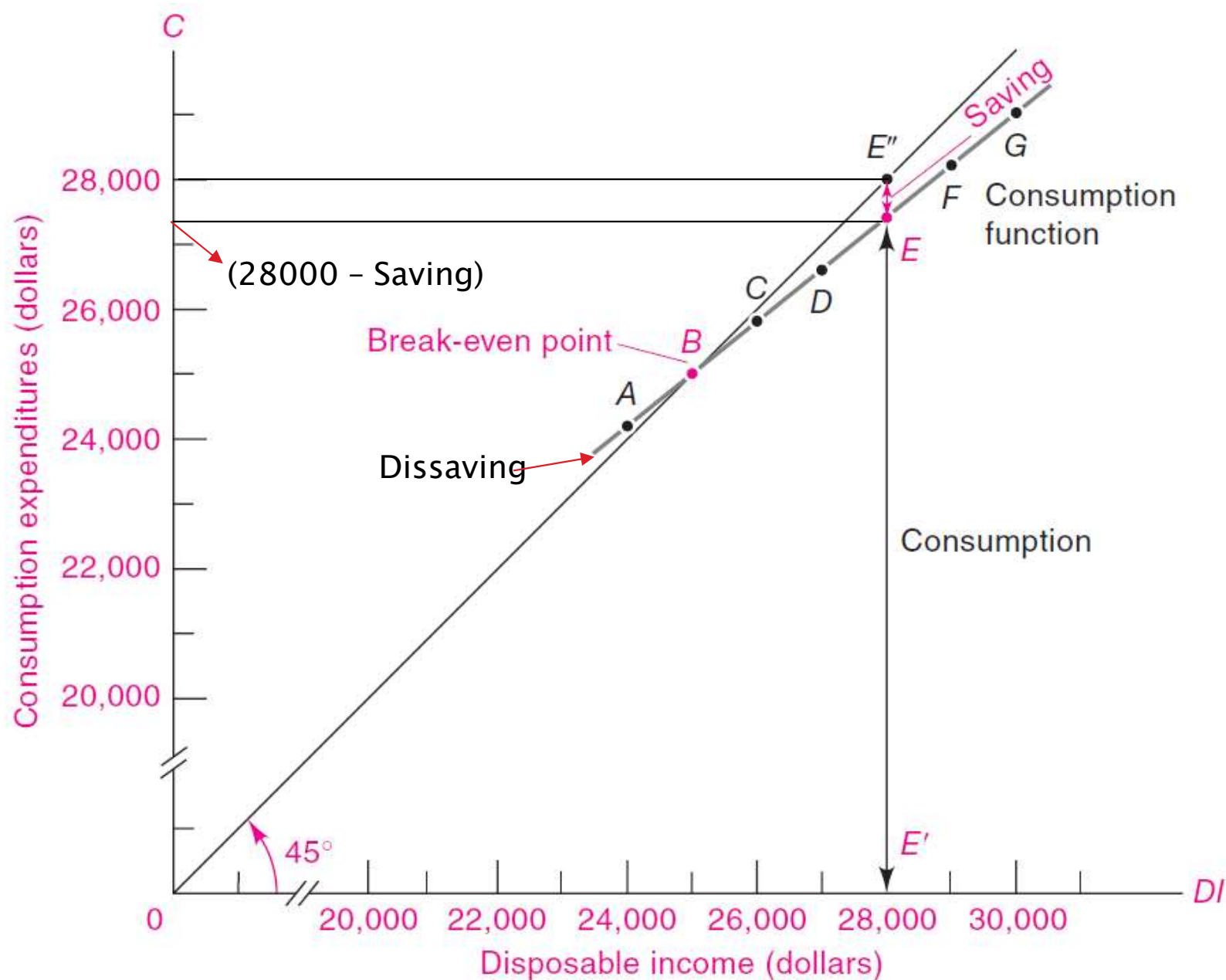
FIGURE 21-2. A Plot of the Consumption Function

Savings Function
(Ref: Samuelson and Nordhaus, Economics (19th Edition))

FIGURE 21-3. The Saving Function Is the Mirror Image of the Consumption Function

Marginal Propensity to Consume (MPC)

▸ "Marginal" => Extra or additional

▸ "Propensity to consume" => Desired level of consumption

▸ MPC => change in consumption due to a unit change in income i.e. change in consumption for unit (Rupee) change in income

$$MPC = \frac{Change\ in\ Consumption\ (C)}{Change\ in\ Disposable\ income\ (DI)} = \frac{\Delta C}{\Delta DI}$$

▸ Lower MPC at higher income levels indicates role of savings

▸ 0 < MPC < 1

▸ *Graphical*: MPC = Slope of consumption function (slope of tangent to the curve) = $\Delta C/\Delta DI$

Marginal Propensity to Save (MPS)

▸ MPS => Change in savings for unit (Rupee) change in disposable income i.e. the additional desired level of saving due to a unit change in income

$$MPC = \frac{Change\ in\ Savings\ (C)}{Change\ in\ Disposable\ income\ (DI)} = \frac{\Delta S}{\Delta DI}$$

▸ MPS is the mirror image of MPC (?)

▸ 0 < MPS < 1

▸ MPS = 1 – MPC

▸ Intuition: Assuming that a household **can only consume or save**, DI = C + S

  ➤ An increase in the income by one unit would be split between the choice to consume or save (which would increase MPC (or decrease MPS), and vice versa

MPC and MPS example

Household	Disposable income (DI) (Rs)	Consumption Expenditure (C) (Rs)	MPC = ΔC/ΔDI	Net Saving = DI – C	MPS = ΔS/ΔDI	MPC+MPS
A	24000	24110		–110		
B	25000	25000	0.89	0	0.11	1
C	26000	25850	0.85	150	0.15	1
D	27000	26600	0.75	400	0.25	1
E	28000	27240	0.64	760	0.36	1
F	29000	27830	0.59	1170	0.41	1
G	30000	28360	0.53	1640	0.47	1

National consumption behaviour

- National consumption behavior is essential to understanding short-run business cycles and long-run economic growth

- Short-run: Consumption is major component of expenditure;
  - Changes in C impact AD by affecting output and employment

- Long-run: Capital is the major component driving growth –
  - Consumption behavior matters as:
  - Saving = what is not consumed (and is thus available for investment in form of capital)

- **National Consumption Function:** Relation between *National Disposable Income* and *Consumption Expenditure* at different points in time.
  - It gives the Gross National DI and the corresponding Consumption expenditure at different points in time.

India: MPC and MPS
[Data at current prices (in Rs. crores)
Data Source: National Accounts Statements, MOSPI (2021)]

Year	PFCE	GFCE	Gross Saving	GNDI	Total C	MPC	MPS
2011	49,10,447	9,68,375	30,26,837	89,64,407	58,78,822		
2012	56,14,484	10,62,404	33,69,202	1,01,77,331	66,76,888	0.66	0.28
2013	64,75,649	11,56,509	36,08,193	1,14,89,556	76,32,158	0.73	0.18
2014	72,47,340	13,01,762	40,19,957	1,27,25,683	85,49,102	0.74	0.33
2015	80,91,249	14,27,835	43,01,948	1,40,17,341	95,19,084	0.75	0.22
2016	90,04,904	16,63,836	45,72,573	1,54,56,822	1,06,68,740	0.80	0.19
2017	1,00,36,153	18,40,119	54,80,741	1,73,10,970	1,18,76,272	0.65	0.49
2018	1,12,22,072	20,37,627	57,76,960	1,91,78,372	1,32,59,699	0.74	0.16
2019	1,23,09,019	22,85,016	63,85,981	2,06,98,263	1,45,94,035	0.88	0.40

Determinants of Consumption (Theories)

- Consumption depends on:
  - Disposable income (current + *future*)
- Relation between consumption and future trends of disposable income
  1) Permanent Income Hypothesis
  2) Life-cycle Hypothesis

Permanent income hypothesis

▸ **Permanent income**: level of income which households receive after removing or accounting for transient/temporary impacts and influences

▸ **Hypothesis**: Current consumption is primarily determined by *permanent income*

▸ Consumers do not respond to *all (temporary and permanent)* income shocks

▸ *Permanent* positive (negative) income shock => consumers would increase (decrease) current consumption expenditure

▸ *Temporary* positive income shock => consumers would be inclined to save a significant fraction of additional income

Life-cycle hypothesis

- **Hypothesis**: People save today to smooth consumption over their expected lifetimes.

- People save while working (today) to have income during later years (when not working).

Other determinants of consumption

- **Wealth effect**: Amount of existing wealth determines consumption
- Changes in wealth (higher wealth) lead to change (higher) in consumption

Investment

- Private spending = Consumption + Investment (I)
  - I => Gross private domestic investment
- 2 roles of investment
  - Short-run (SR): impact on SR output and employment (through influence on AD)
  - Long-run (LR): impact on LR output growth through impact on capital formation
- Total national investment = I + foreign investment + government investment + *intangible investments*
- Majority of investment: fixed investments (90%) (dwellings, machinery + equipment, others)
- Why do businesses invest? (Revenues > Costs)
- Determinants of investment: Revenues, Costs, Business expectations

Determinants of investment

1. **Revenues**: Investments which increase sales of firms help bring additional revenue

▸ Investment depends on overall state of economic activity

▸ Investment level is sensitive to the business cycle

▸ **Accelerator principle**

  ◦ Rate of investment is primarily determined by rate of change of output

  ◦ Directly proportional:

    • Growing output => ↑ Investment

    • Falling output => ↓ Investment

Determinants of investment

2. **Cost of investment:** Costs determine investment as costs would need to offset the return from investment

▶ Calculating cost of investment – complex owing to the lasting nature of investment

- ◦ Cost of investment depends on:
  - Price of capital good
  - Cost of borrowing => ?
  - Tax rates imposed on businesses

Determinants of investment

3. **Business expectations and confidence**: Expectations of the returns on investment (revenue) determine the investment levels

▸ Investment is determined by:

  ◦ Expectation of revenue exceeding costs (profits)

  ◦ Likelihood of slowdown or recovery

▸ Summarizing determinants of investment:

  i. Demand for output produced by new investment

  ii. Interest rates and tax rates

  iii. Business expectations about state of economy

Investment demand curve

- Relation between interest rates and investment

- Assumptions:
  - Durable investments (no replacement required)
  - Investment leads to constant flow of net income
  - No inflation

- *Investment demand*: Total investment across projects with positive profits (= revenue – costs)

- **Investment demand curve** (downward sloping) gives the amount of investment (profitable) at every interest rate
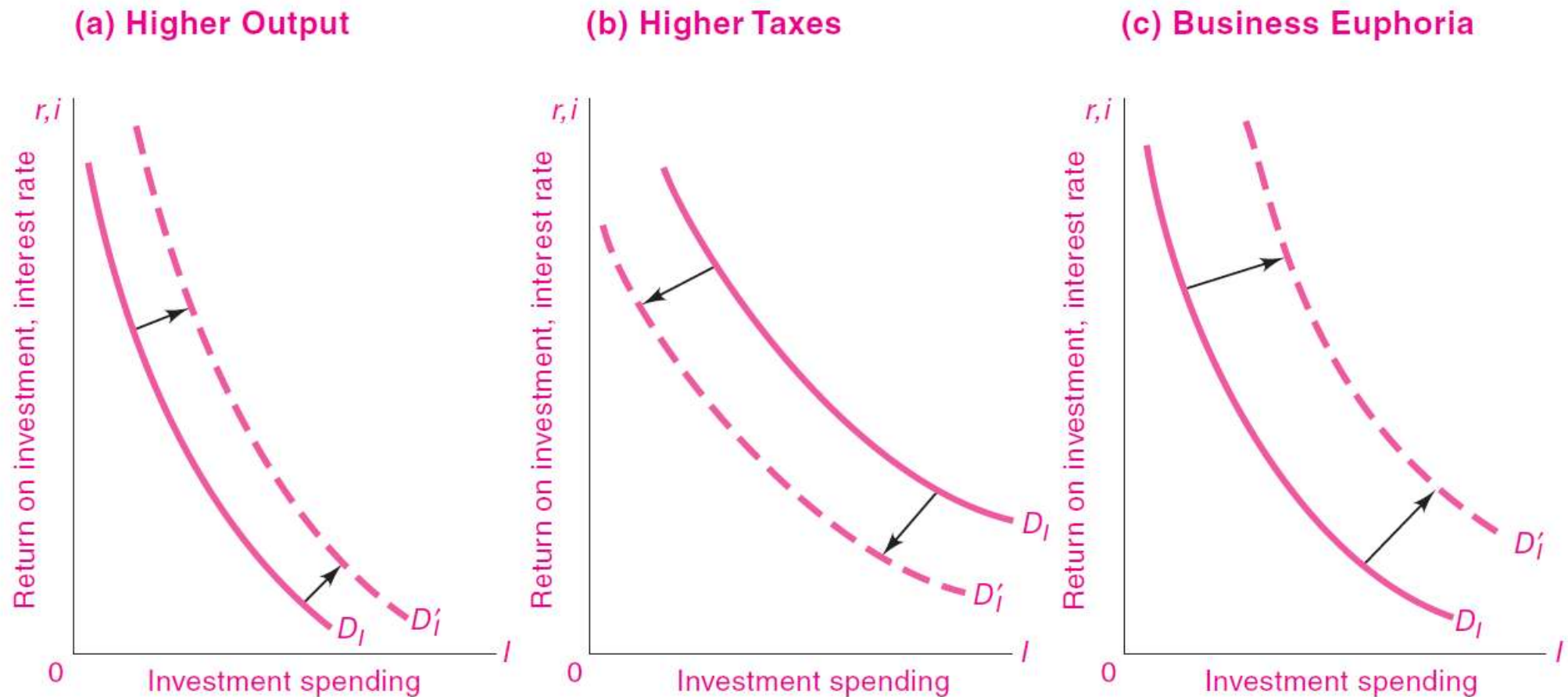
Shifts in investment demand curve

▸ Tax rates

$$\uparrow \text{taxes} => \downarrow \text{investment}$$

$$=> \text{investment demand curve shifts \textbf{left}}$$

▸ Business expectations (and Output)

$$\uparrow \text{business confidence} => \uparrow \text{investment}$$

$$=> \text{investment demand curve shifts \textbf{right}}$$

Shifts in investment demand curve

(a) Higher Output

r, i

Return on investment, interest rate

D_I D'_I

0   Investment spending   I

(b) Higher Taxes

r, i

Return on investment, interest rate

D_I

D'_I

0   Investment spending   I

(c) Business Euphoria

r, i

Return on investment, interest rate

D'_I

D_I

0   Investment spending   I

FIGURE 21-9. Shifts in Investment Demand Function

In the demand-for-investment (D_I) schedule, the arrows show the impact of **(a)** a higher level of GDP, **(b)** higher taxes on capital income, and **(c)** a burst of business euphoria.

Thank you