

Chapter 9

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Aggregate Expenditure *and* Aggregate Demand





Consumption, C

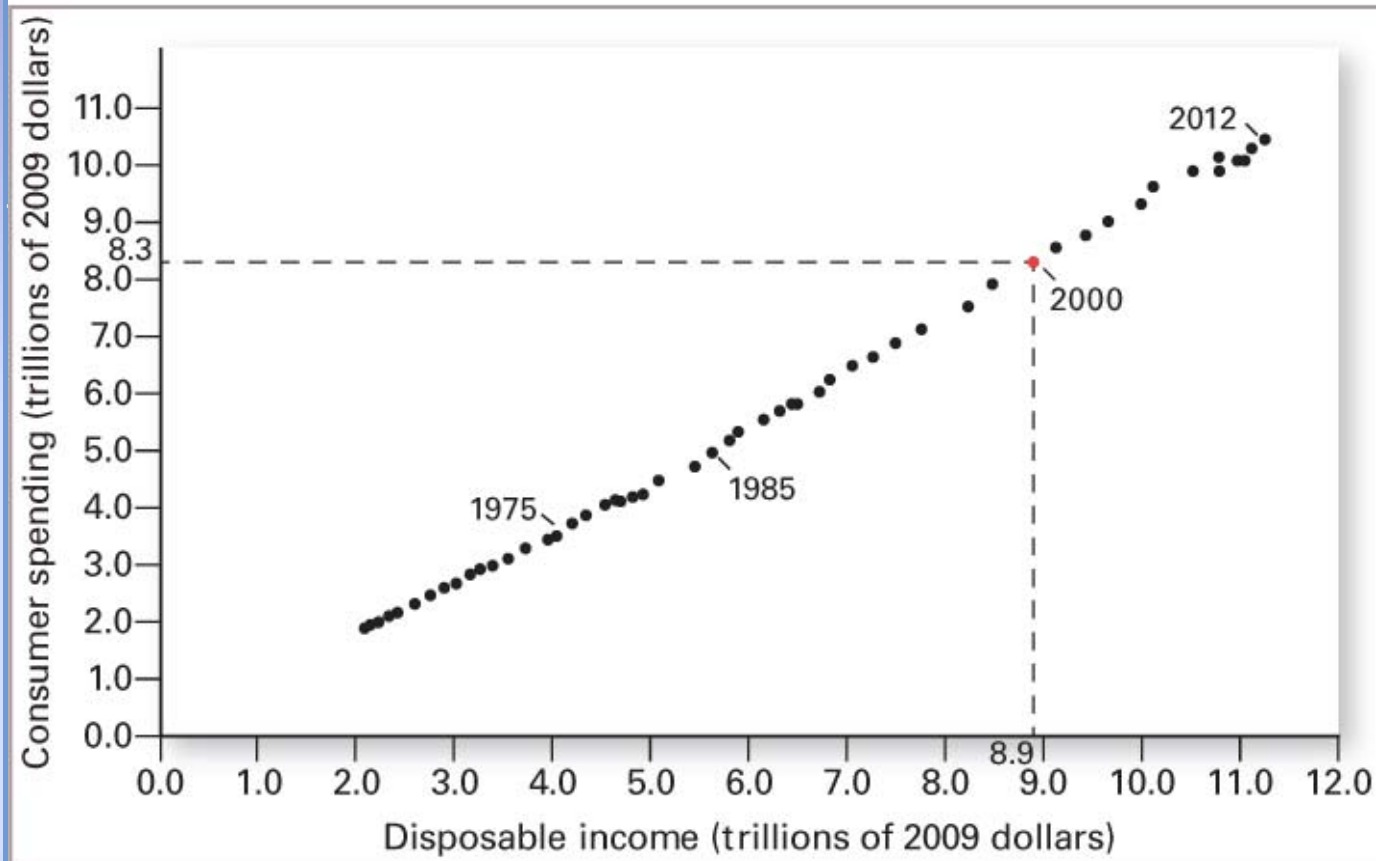
- Consumption
 - Positive, stable relationship with income
 - Households and economy
 - 70% of GDP
- Disposable income, $DI = C + S$
 - Consumption, C
 - Saving, S

Exhibit 1

U.S. Consumption Depends on Disposable Income

Exhibit I

U.S. Consumption Depends on Disposable Income, As Shown Here Since 1959



SOURCE: Based on estimates from the Bureau of Economic Analysis, U.S. Department of Commerce. For the latest data, go to <http://bea.gov/>.

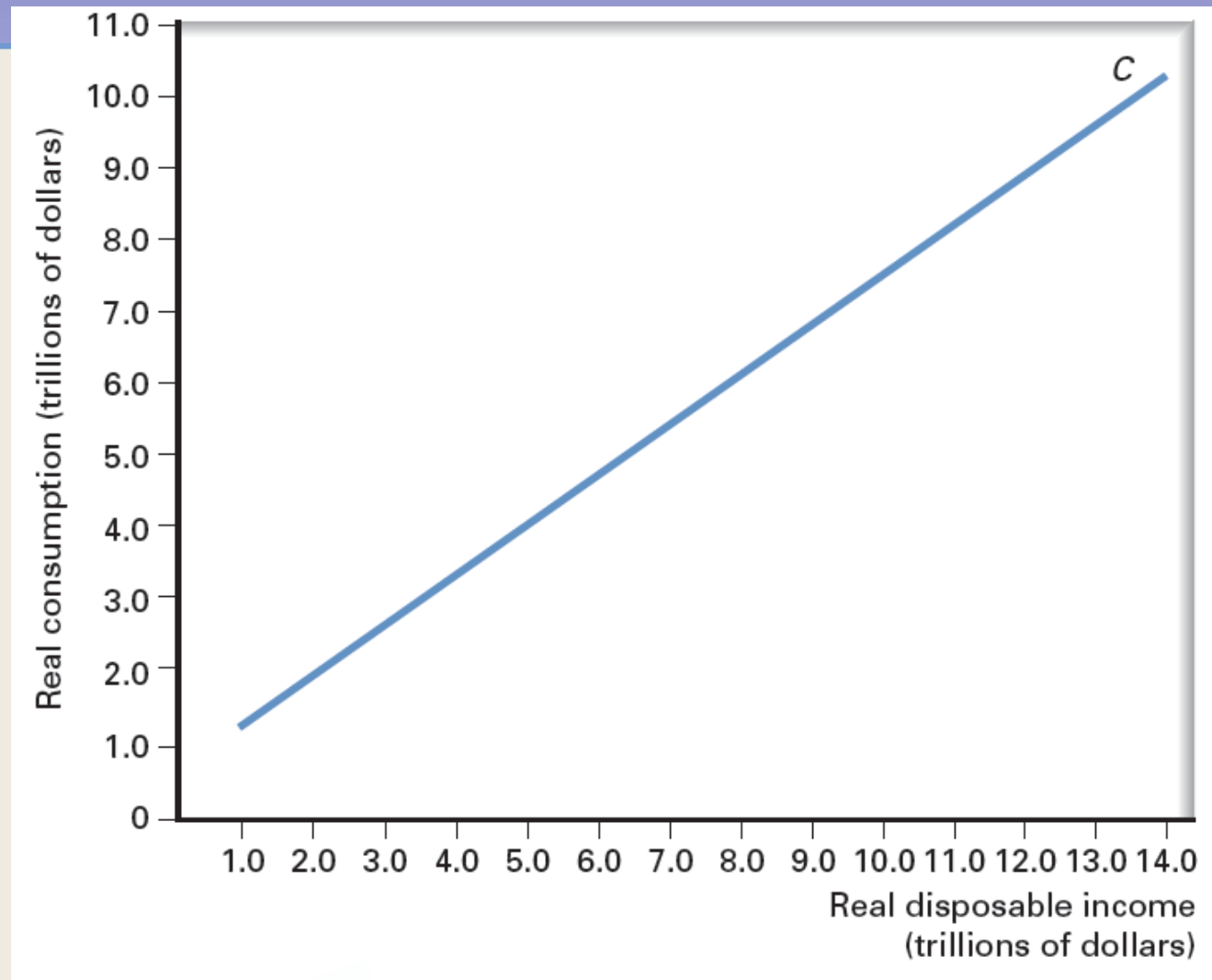
Consumption is on the vertical axis and disposable income on the horizontal axis. Notice that each axis measures trillions of 2009 dollars. For example, in 2000, identified by the red point, consumption was \$8.3 trillion and disposable income \$8.9 trillion. There is a clear and direct relationship over time between disposable income and consumption. As disposable income increases, so does consumption.



Consumption Function, C

- Consumption, C
 - Depends on disposable income
 - Function of income
 - C – dependent variable
 - DI – independent variable
 - Positive slope

Exhibit 3 The Consumption Function



The consumption function, C, shows the relationship between consumption and disposable income, other things constant.



Marginal Propensity

- Marginal propensity to consume, MPC
 - Fraction of additional income that is spent
 - Change in consumption / change in income
- Marginal propensity to save, MPS
 - Fraction of additional income that is saved
 - Change in saving / change in income
- $MPC + MPS = 1$



Marginal Propensity

- Consumption function
 - Relationship between consumption and income, other things constant
- MPC
 - The slope of consumption function

$$MPC = \frac{\Delta C}{\Delta DI}$$



Marginal Propensity

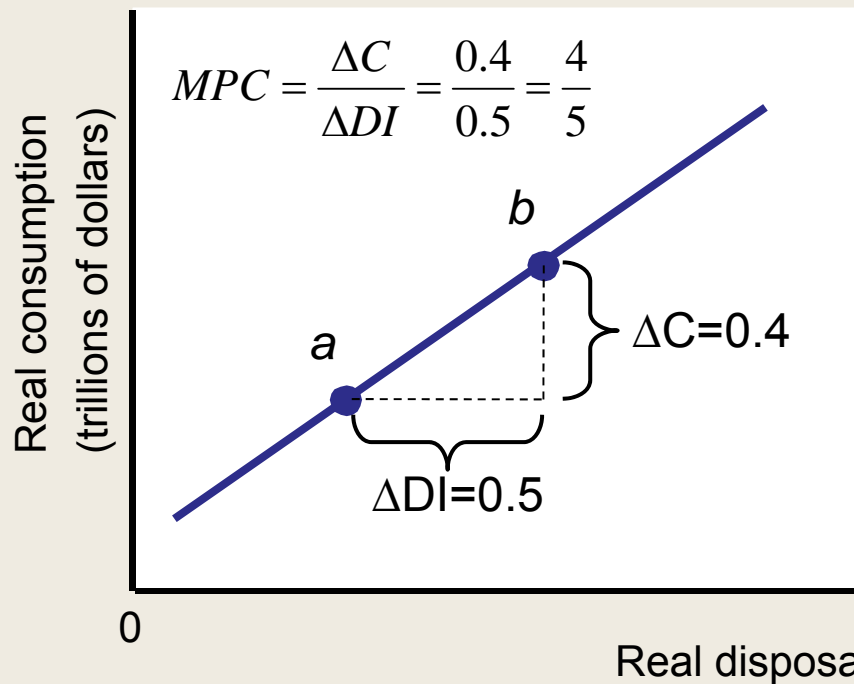
- Saving function
 - Relationship between saving and income, other things constant
- MPS
 - The slope of saving function

$$MPS = \frac{\Delta S}{\Delta DI}$$

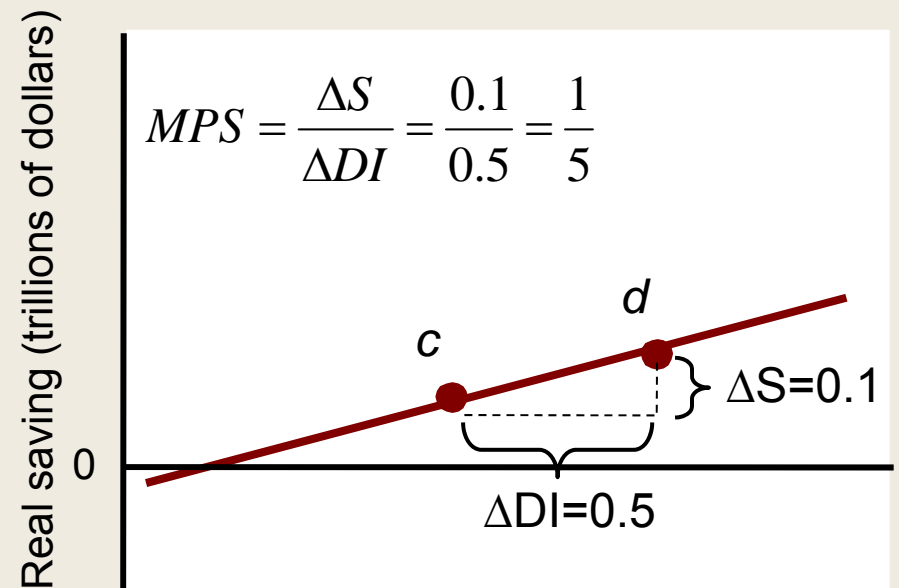
Exhibit 3

Marginal Propensities to Consume and to Save

(a) Consumption function



(b) Saving function



The slope of the consumption function equals the marginal propensity to consume. For the straight-line consumption function in panel (a), the slope is the same at all levels of income and is given by the change in consumption divided by the change in disposable income that causes it. Thus, the marginal propensity to consume equals $\Delta C / \Delta DI$, or $0.4 / 0.5 = 4/5$. The slope of the saving function in panel (b) equals the marginal propensity to save, $\Delta S / \Delta DI$, or $0.1 / 0.5 = 1/5$. Both consumption and disposable income are in real terms.

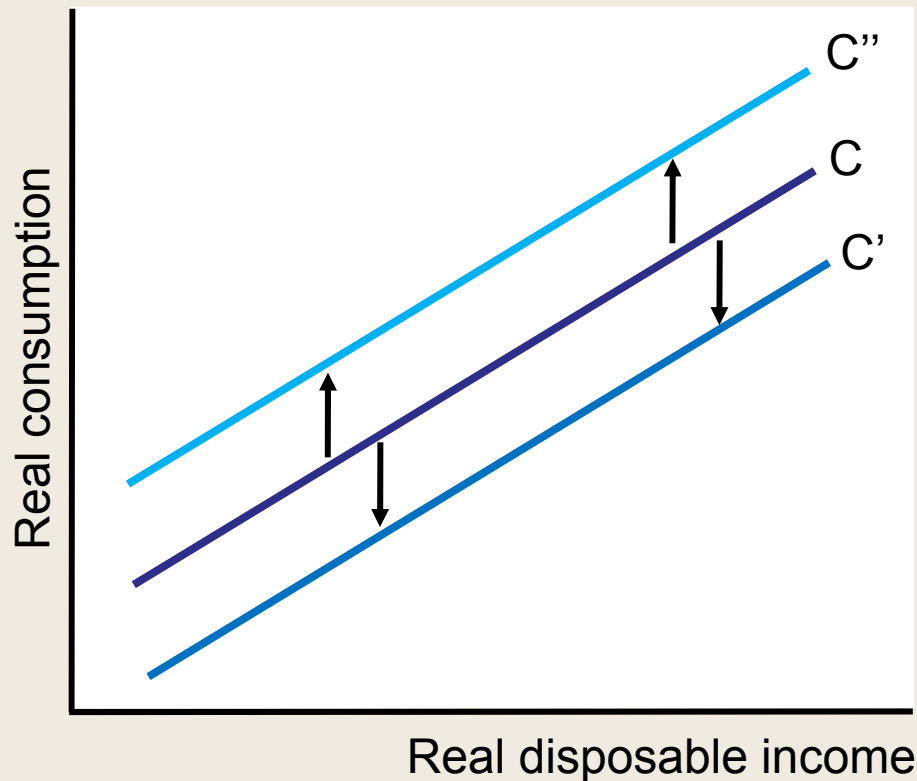


Nonincome Determinants of C

- Net wealth
 - Value of all assets minus liabilities
- Decrease in net wealth
 - Spend less
 - C decreases
 - C function shifts down
 - Save more (increase S)

Exhibit 4

Shifts of the Consumption Function



A downward shift of the consumption function, such as from C to C' , can be caused by a decrease in net wealth, an increase in the price level, an unfavorable change in consumer expectations, or an increase in the interest rate. An upward shift, such as from C to C'' , can be caused by an increase in net wealth, a decrease in the price level, a favorable change in expectations, or a decrease in the interest rate.



Nonincome Determinants of C

- Changes in price level
 - Changes in real value of cash and bank accounts
 - Increase in price level
 - Decreased purchasing power
 - Decrease C
 - Downward shift of C function
 - Increase S



Nonincome Determinants of C

- Interest rate
 - Reward for savers
 - Cost for borrowers
 - Higher interest rates
 - Save more
 - Borrow less
 - Spend less
 - Decrease C



Nonincome Determinants of C

- Expectations
 - Future income increase
 - Increase C now
 - Future price level increase
 - Increase C now
 - Future interest rate increase
 - Increase C now



Investment, I

- Gross private domestic investment, I
 - New physical capital
 - New housing
 - Net increases to inventories
 - 16% of GDP
- Firms buy new capital goods
 - Only if they expect this investment to yield a higher return
 - Than other possible uses of their funds

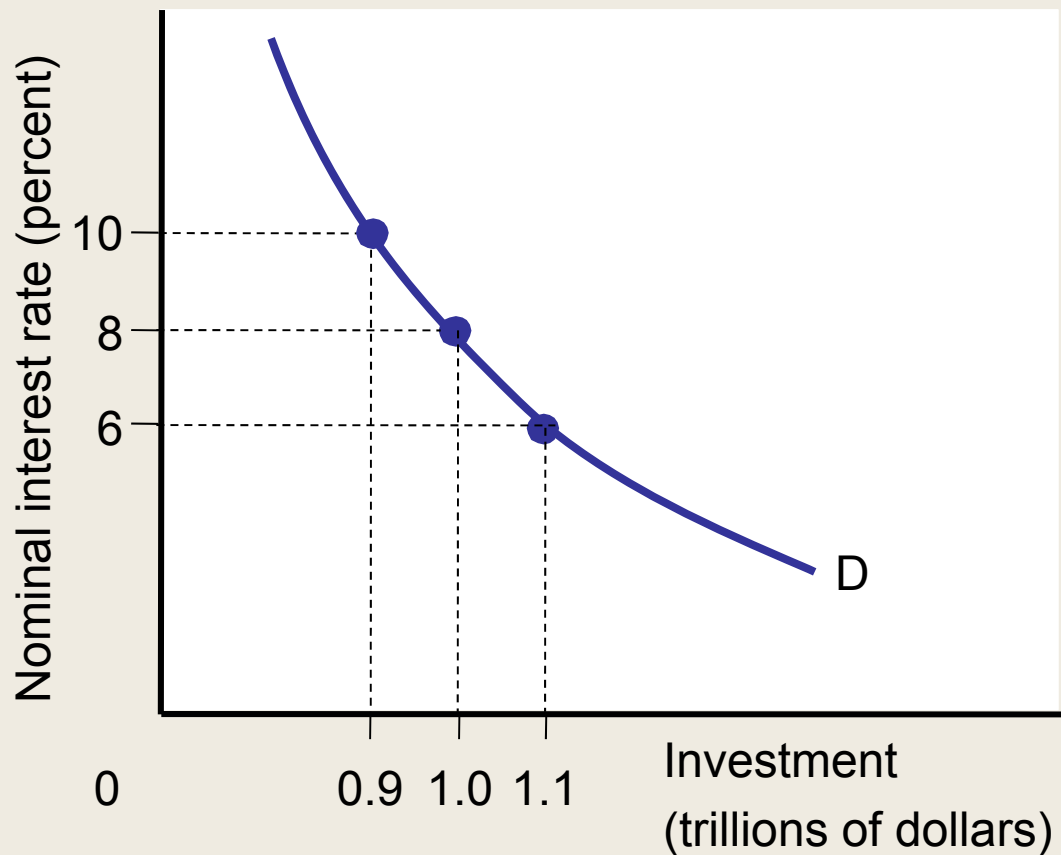


Investment, I

- Investment demand curve
 - Inverse relationship
 - Quantity of investment demanded
 - Market interest rate
 - Other things constant
 - Business expectations
- Optimistic expectations
 - Investment demand increases

Exhibit 6

Investment Demand Curve for the Economy



The investment demand curve for the economy sums the investment demanded by each firm at each interest rate. At lower interest rates, more investment projects become profitable for individual firms, so total investment in the economy increases.



Investment Function

- Investment decision
 - Forward looking
- Investment function
 - Relationship between the amount businesses plan to invest
 - And the economy's income (DI)
 - Other things constant
 - Autonomous (independent)



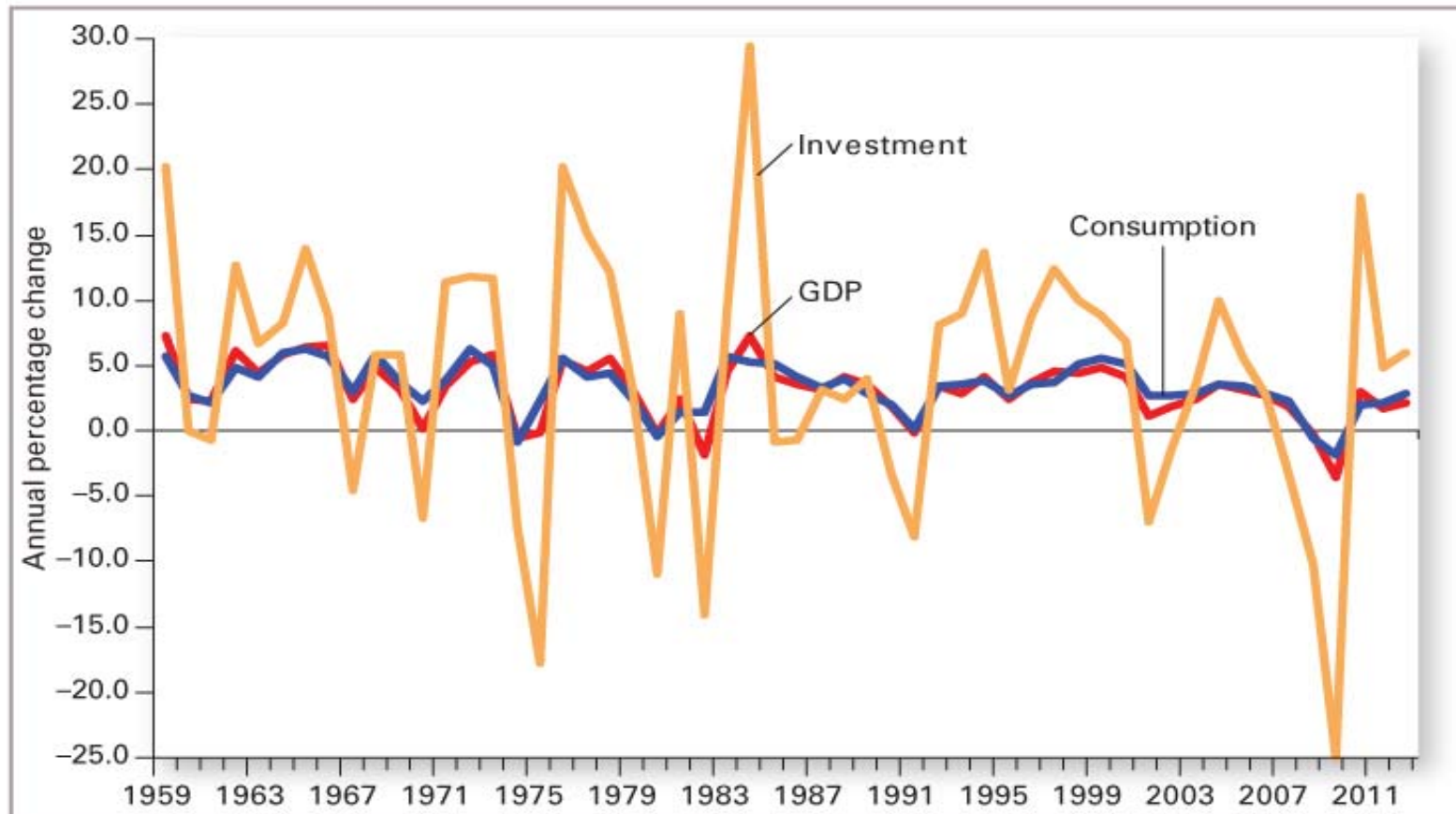
Nonincome Determinants of I

- Market interest rate increases
 - Investment decreases
 - Downward shift of I function
- Business expectations – optimistic
 - Investment increases
 - Upward shift of I function

Exhibit 8 Annual Percentage Change in U.S. Real GDP, Consumption, and Investment

Exhibit 6

Annual Percentage Change in U.S. Real GDP, Consumption, and Investment



SOURCE: Based on annual estimates from the Bureau of Economic Analysis, U.S. Department of Commerce. For the latest data, go to <http://bea.gov/>.

Investment varies much more year-to-year than consumption does and accounts for nearly all the variability in real GDP. This is why economic forecasters pay special attention to the business outlook and investment plans.



Government Purchases, G

- Government purchases, G
 - Government purchases of goods and services
 - 19% of GDP
 - Most by state and local governments



Government Purchases, G

- Government purchase function, G
 - Relationship between government purchases
 - And the economy's income, other things constant
 - Autonomous
 - Increase in government purchases
 - Upward shift of G function



Government

- Government outlays
 - Government purchases, G
 - Transfer payments, TP
 - Outright grants from government to households
 - Vary inversely with income
 - Taxes, T
 - Vary directly with income
- Net taxes = $T - TP$, autonomous of income



Net Exports, $X-M$

- Net exports = Exports – Imports = $X - M$
- Net exports function
 - Income increases: imports increase
 - Assumption: Autonomous of income
 - If $M > X$: Net exports < 0
 - If $X > M$: Net exports > 0

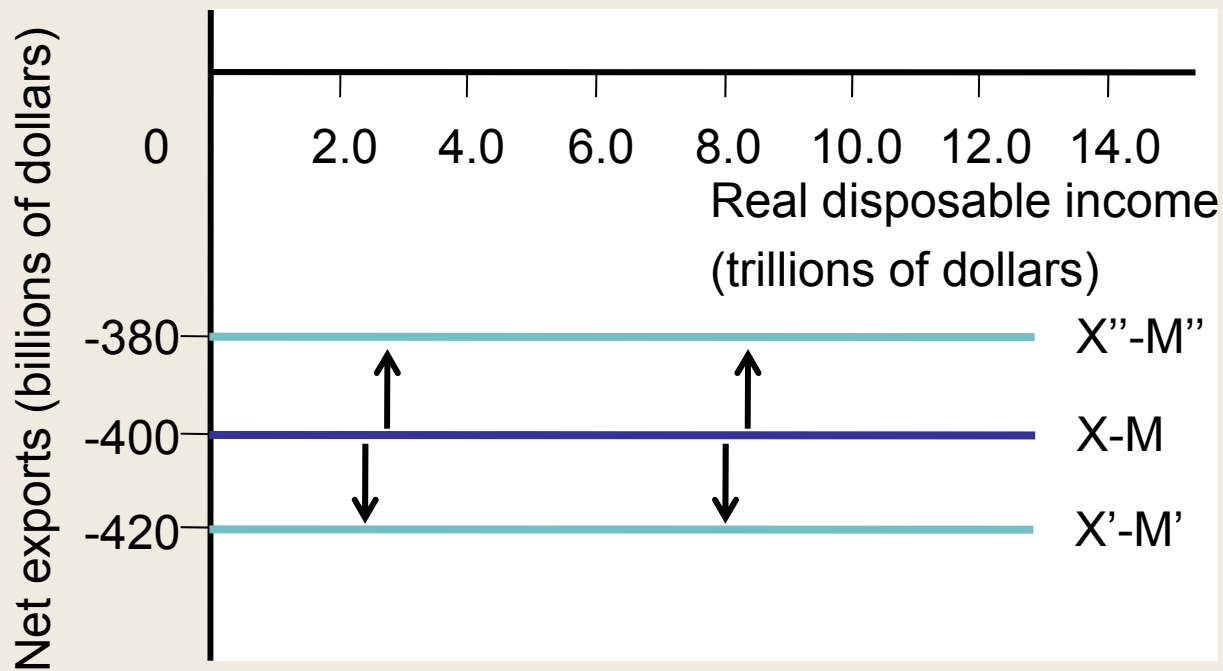


Net Exports, X-M

- Nonincome determinants of net exports
 - Price level (US and foreign)
 - Interest rates (US and foreign)
 - Foreign income
 - Exchange rate

Exhibit 9

Net Export Function



Net exports here are assumed to be independent of disposable income, as shown by the horizontal lines. $X-M$ is the net export function when autonomous net exports equal \$400 billion. An increase in the value of the dollar relative to other currencies would decrease net exports at each level of income, as shown by the shift down to $X'-M'$. A decrease in the value of the dollar would increase net exports at each level of income, as shown by the shift up to $X''-M''$.



Composition of AE

- Aggregate expenditure, AE
 - $AE = C + I + G + (X - M)$
- Consumption, C
 - Stable
 - Long term trend: increase
- Investment, I
 - Fluctuates



Composition of AE

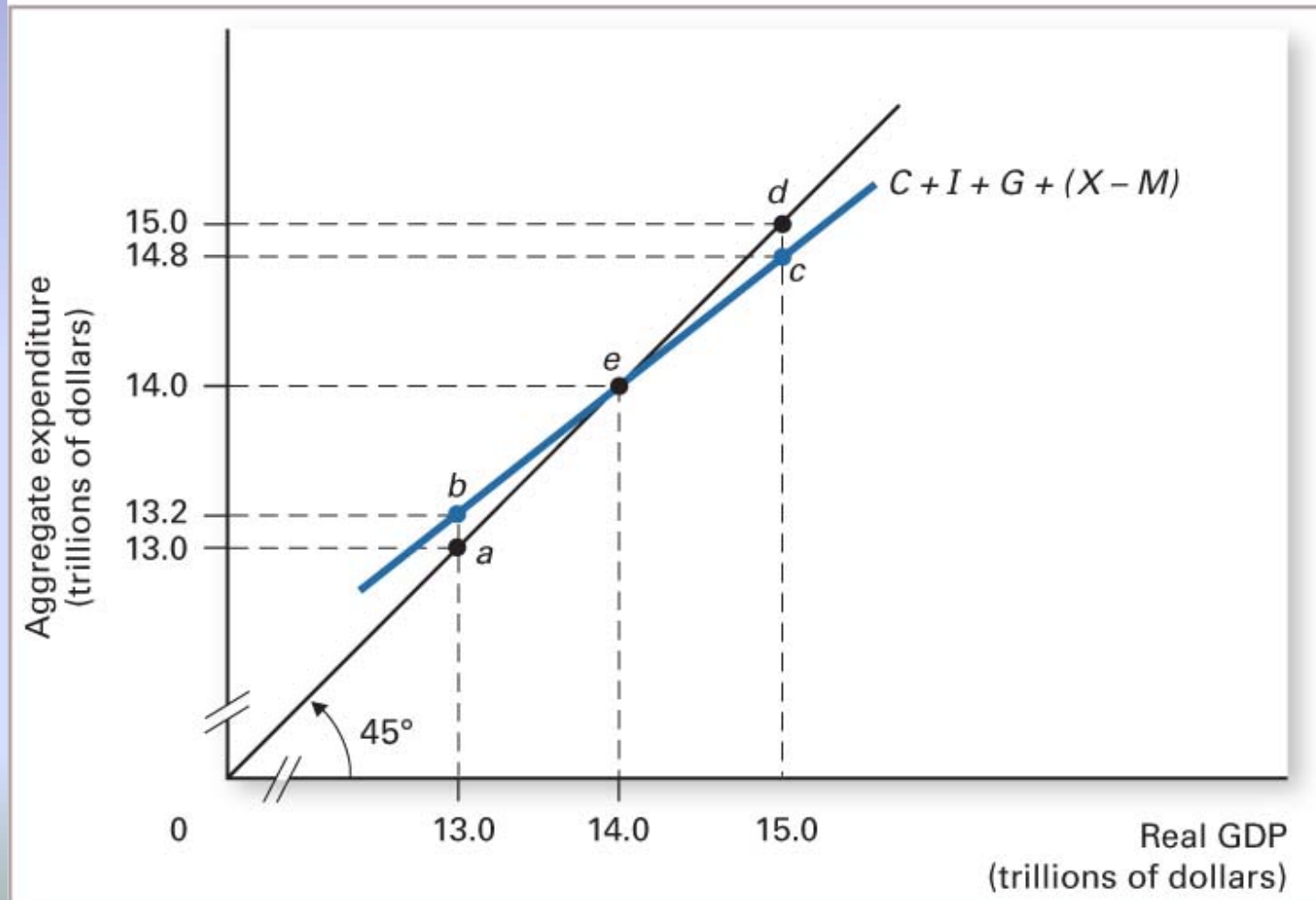
- Aggregate expenditure, AE
 - $AE = C + I + G + (X - M)$
- Government purchase, G
 - Long-term trend: declined
- Net exports, X-M
 - Last decade: -5% of GDP



Deriving GDP Demanded for a Given Price Level

Exhibit 7

Deriving the Real GDP Demanded for a Given Price Level





Simple Spending Multiplier

- Increased spending: AE line shifts upward
 - Round one
 - Spending $>$ output
 - Unplanned reduction in inventories
 - Expand production
 - Increased income



Simple Spending Multiplier

- Increased spending: AE line shifts upward
 - Round two
 - Increased spending and saving
 - Increased output
 - Increased income
 - Round three and beyond
 - Increased spending and saving
 - Increased output
 - Increased income
 - ... as long as spending exceeds output



The Aggregate Demand Curve

- Each price level
 - Unique AE line
 - Yields a unique real GDP demanded
- Changing the price level
 - Different real GDP demanded



The Aggregate Demand Curve

- Higher price level
 - Decreased C
 - Higher interest rate
 - Decreased I
 - Decreased (X-M)
 - Reduced aggregate spending
 - AE shifts down
 - Decrease real GDP demanded

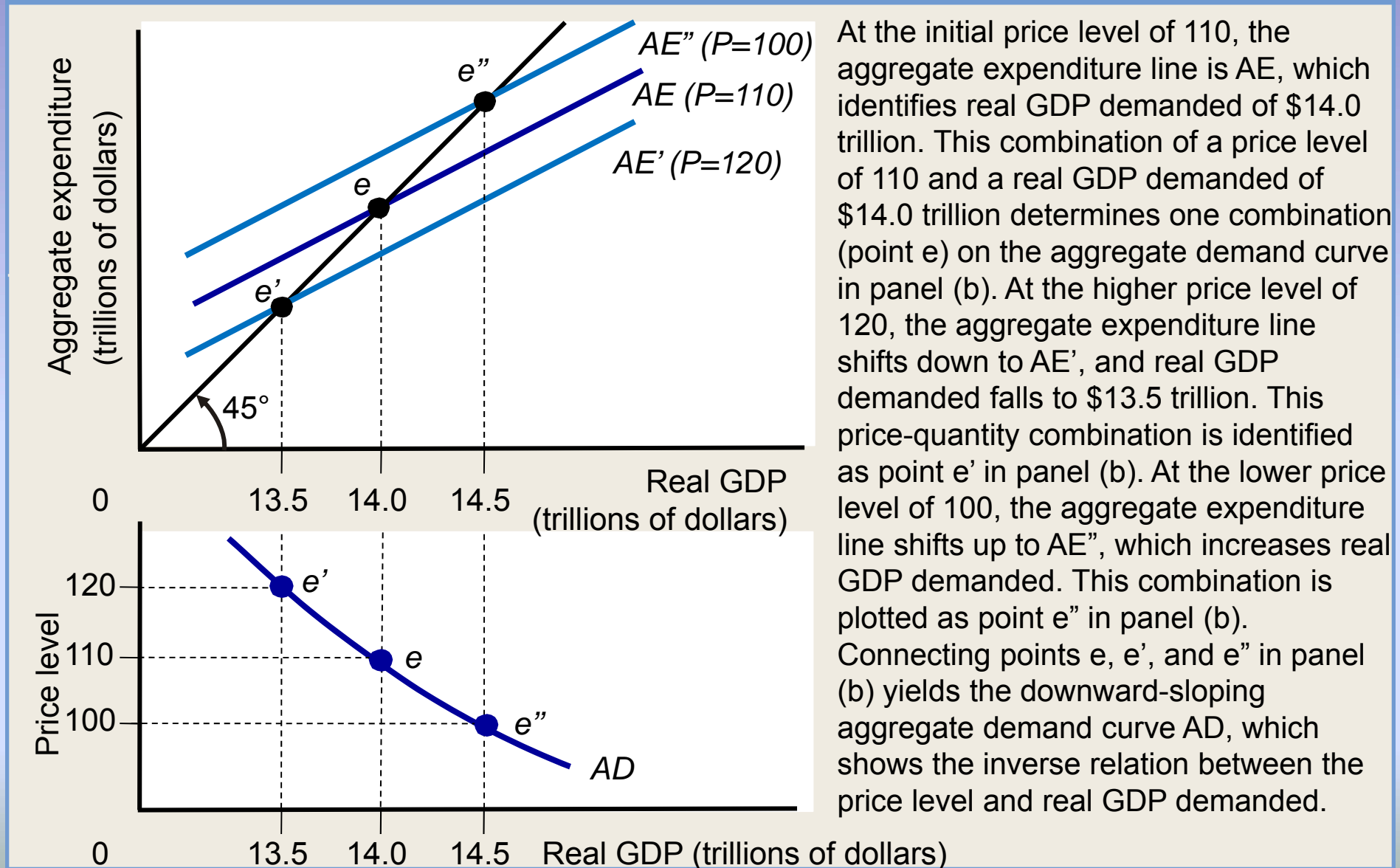


The Aggregate Demand Curve

- Lower price level
 - Increase: C, I, (X-M)
 - Increased aggregate spending
 - AE line shifts up
 - Increase real GDP demanded
- Aggregate demand curve
 - Various price levels
 - Quantities of real GDP demanded

Exhibit 4

Changing the Price Level to Find the Aggregate Demand Curve



At the initial price level of 110, the aggregate expenditure line is AE, which identifies real GDP demanded of \$14.0 trillion. This combination of a price level of 110 and a real GDP demanded of \$14.0 trillion determines one combination (point e) on the aggregate demand curve in panel (b). At the higher price level of 120, the aggregate expenditure line shifts down to AE', and real GDP demanded falls to \$13.5 trillion. This price-quantity combination is identified as point e' in panel (b). At the lower price level of 100, the aggregate expenditure line shifts up to AE'', which increases real GDP demanded. This combination is plotted as point e'' in panel (b). Connecting points e, e', and e'' in panel (b) yields the downward-sloping aggregate demand curve AD, which shows the inverse relation between the price level and real GDP demanded.



The Aggregate Demand Curve

- A given price level
 - AE line – relationship between
 - Spending plans and income (real GDP)
- Change in price level
 - Shifts AE line
 - Changes real GDP demanded
 - Movement along AD curve
- A given price level
 - For changes in spending: shift AD curve

Exhibit

A Shift of the AE Line That Shifts the AD Curve

