Aggregate Demand

Aggregate demand (AD) is the total quantity of output (GDP) demanded at alternative price levels in a given period, *ceteris paribus.*

AD consists of four components:
- Consumption (C)
- Investment (I)
- Government Spending (G)
- Net Exports (X – IM)

Concept 1: Consumption

Consumption represents purchases by consumers on final goods and services. Consumption is obtained from consumer disposable income.

Disposable income must be either spent or saved. Therefore the following formula applies:

Disposable Income (Y_D) = Consumption (C) + Saving (S)

Concept 1: Consumption

We often want to determine the proportion of total disposable income spent on consumer goods and services.

The **average propensity to consume** (APC) is equal to total consumption on consumer goods and services in a given time period divided by total disposable income.

APC = total consumption / total disposable income   =
C / Y_D

Concept 1: Consumption

Often we would like to know what consumers would do if they received a change in their disposable income.

To determine this change, we calculate the marginal propensity to consume (MPC).

The **marginal propensity to consume** is the fraction of each additional dollar of disposable income spent on consumption. It is calculated by taking the change in consumption and dividing it by the change in disposable income.

Concept 1: Consumption

$MPC = \Delta C / \Delta Y_D$

To calculate MPC we need to know how consumers spend the last dollar they receive.

If consumers spend 80 cents out of the last dollar, then MPC = $0.80/$1.00 = .80.

Notice that the MPC is lower than the APC we previously calculated. Consumers tend to save a greater percentage of the last dollars earned.

Concept 1: Consumption

We are also concerned with how much consumers save from each additional dollar they earn.

The **marginal propensity to save** (MPS) is the fraction of each additional dollar of disposable income not spent on consumption.

$$MPS = \Delta S / \Delta Y_D \text{ or } MPS = 1 - MPC$$

If consumers save $0.20 out of the last dollar earned, what is the MPS? The MPS = .20/1.00 = .20.

Concept 1: Consumption

We are also concerned with the average rate of consumer saving. To determine this, we calculate the average propensity to save (APS).

The APS = S / Y_D or   APS = 1 – APC

Suppose disposable income is $6,698 billion and consumers saved $208 billion. What is the APS? The APS = $208 billion/$6,698 billion = .031. Consumers save an average of $0.031 out of each dollar of disposable income.

Concept 1: Consumption

Although calculating the MPC, MPS, APC, and APS is useful, predicting them is even more important. What drives consumer consumption?

Keynes believed that consumer consumption was driven be current income and other non-income determinants.

The **non-income determinants** of consumption according to Keynes are: expectations, wealth, credit, taxes, and price levels. Consumption based upon one or more of these determinants is called **autonomous consumption**.

Consumption
Concept 2: Non-Income Determinants

Expectations is concerned with consumers changing current consumption based upon an anticipated future event.

Consumers will spend a portion of anticipated salary increases, tax refunds, bonuses, often before they are received. If this is occurring, autonomous consumption increases.

If consumers believe they may get their work hours cut, laid off, or have their jobs eliminated, they will spend less and save more. Autonomous consumption declines.

Consumption
Concept 2: Non-Income Determinants

Wealth is the amount of assets an individual owns. This can affect their consumption.

Increases in wealth create greater spending of current income. Autonomous consumption increases.

Decreases in wealth causes spending of current income to decline. Autonomous consumption declines.

Consumption
Concept 2: Non-Income Determinants

Credit is the amount and availability of credit. It also can affect consumption.

If credit is readily available, consumer spending of current income increases causing an increase in autonomous consumption.

If credit is not easily attainable or costly (high rates), consumer spending of current income decreases and autonomous consumption declines.

Consumption
Concept 2: Non-Income Determinants

Taxes are another non-income determinant. Decreases in taxes increase consumer disposable income and consumer spending. This would cause an increase in autonomous consumption. Tax increases reduce consumer disposable income and consumer spending, causing a decline in autonomous consumption.

Price-levels are the final non-income determinant. If price levels are increasing (inflation), the real value of money is reduced, and consumer spending is reduced by the effects of inflation. Autonomous consumption is reduced.

Consumption and the
Concept 3: Consumption Function

We have learned that consumer spending is influenced by current income, and the non-income determinants of consumption.

Therefore total consumption = non-income determinants of consumption + income-dependent consumption, or total consumption = autonomous consumption + income-dependent consumption. The formula that represents this relationship is:

$$C = a + bY_D$$

Consumption and the
Concept 3: Consumption Function

The equation $C = a + bY_D$ represents the consumption function.

The **consumption function** is a mathematical relationship indicating the desired consumer spending at various income levels.

- C = current consumption
- a = autonomous consumption
- b = marginal propensity to consume
- Y_D = disposable income

Consumption and the
Concept 3: Consumption Function

The consumption function is used to predict how changes in disposable income (Y_D) will affect consumer spending. It also shows the effect of changes in one or more non-income determinants (autonomous consumption) on consumer spending.

A consumption function can be graphically illustrated to show the relationship between consumption and disposable income.

Concept 3: A Consumption Function

$C = Y_D$

Saving

Dissaving

Consumption Spending
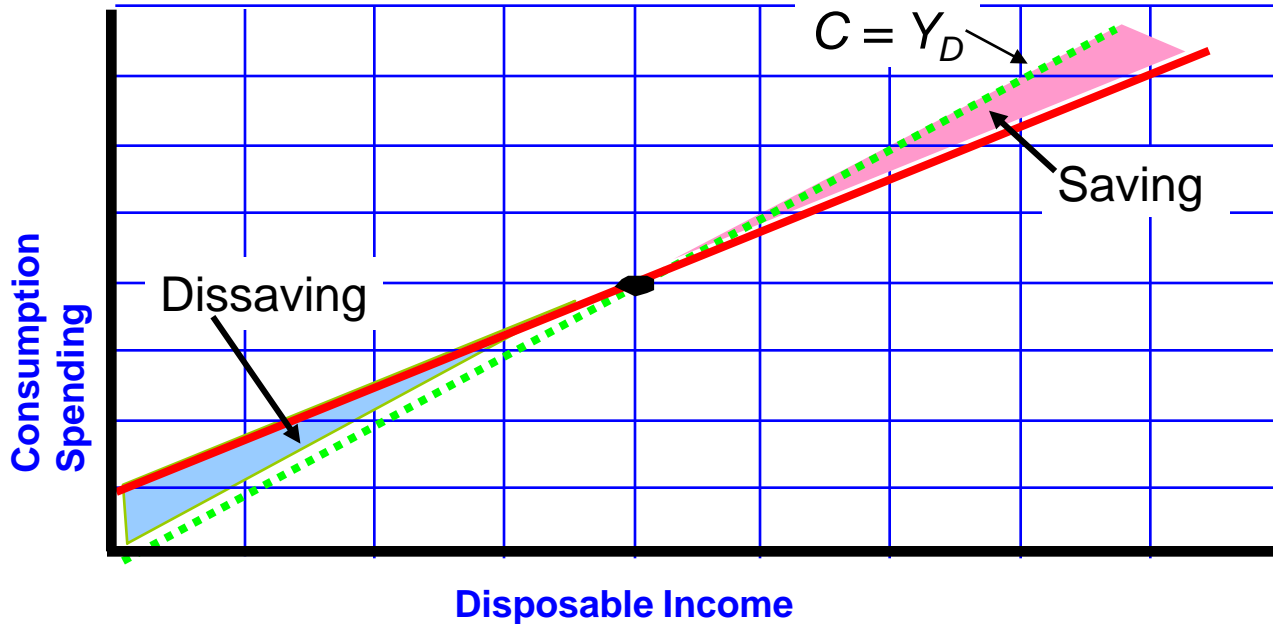
Disposable Income

Concept 3: A Consumption Function

The graph on the preceding page illustrates a consumption function. The green dotted line represents the points at which consumption is equal to disposable income – no saving or dissaving occurs. This is called the **45 degree line** representing C = Y$_D$.

The red solid line represents the actual consumption. Whenever the red line is below the green line savings occurs. Once you reach the point at which the two lines intersect, any additional spending is more than disposable income and dissaving occurs (the green dotted line is below the red line of the consumption function).

Concept 3: Consumption and the Consumption Function

To graph the consumption function for a individual or for an economy, we need to know the level of autonomous consumption, the MPC, and the amount of disposable income.

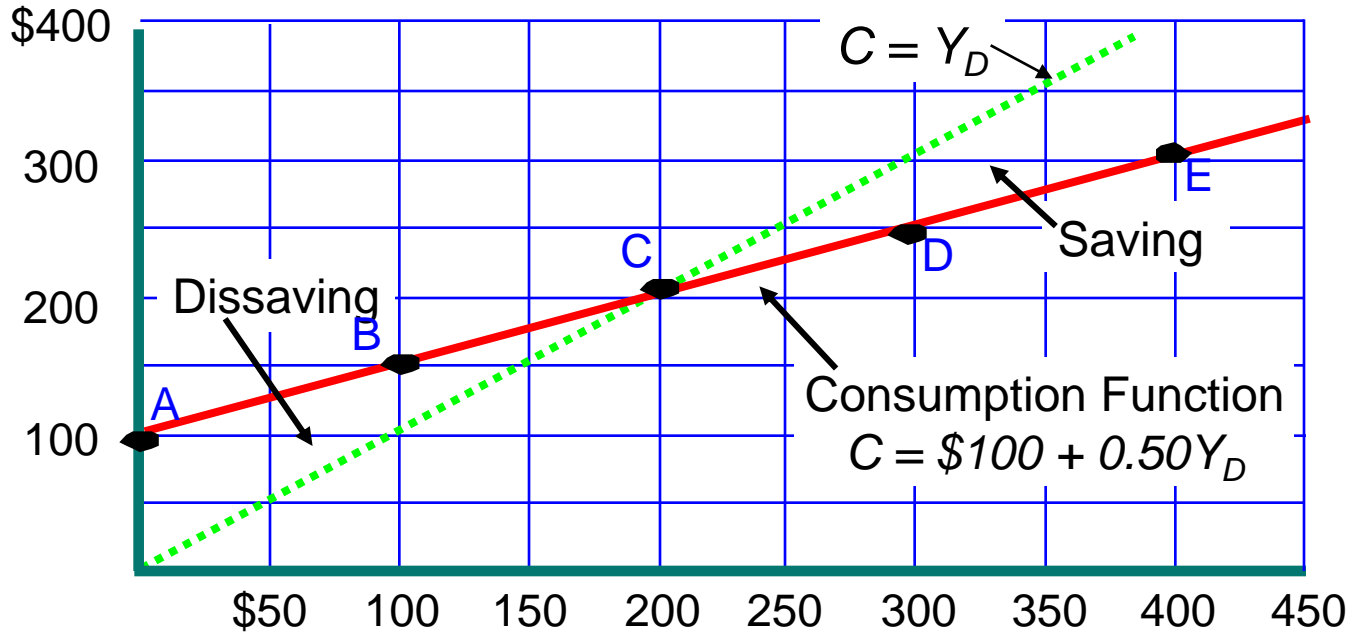If autonomous consumption = $100, and the MPC = .50, then our equation is:

$$C = \$100 + .50Y_D$$

Once we know different levels of disposable income, we can graphically represent the consumption function.

Fred's Consumption Function

	Disposable Income (Y_D)	Consumption = $100 + 0.50Y_D$				
		Autonomous Consumption	+	Income-Dependent Consumption	=	Total Consumption
A	$ 0	100		$ 0		$100
B	100	100		50		150
C	200	100		100		200
D	300	100		150		250
E	400	100		200		300

Fred's Consumption Function

$400

300

200

100

A

B

C

D

E

Dissaving

Saving

$C = Y_D$

Consumption Function
$C = \$100 + 0.50Y_D$

$50   100   150   200   250   300   350   400   450

Aggregate Consumption Function

The aggregate model of the consumption function is essentially identical to the simple consumer model presented.

Shifts of the consumption function can occur when a change occurs in one of the autonomous consumption determinants (expectations, wealth, credit, taxes, price levels). For example, significant positive returns in the stock market can increase consumer wealth which would cause autonomous consumption to increase. This would cause the consumption function to shift upwards.
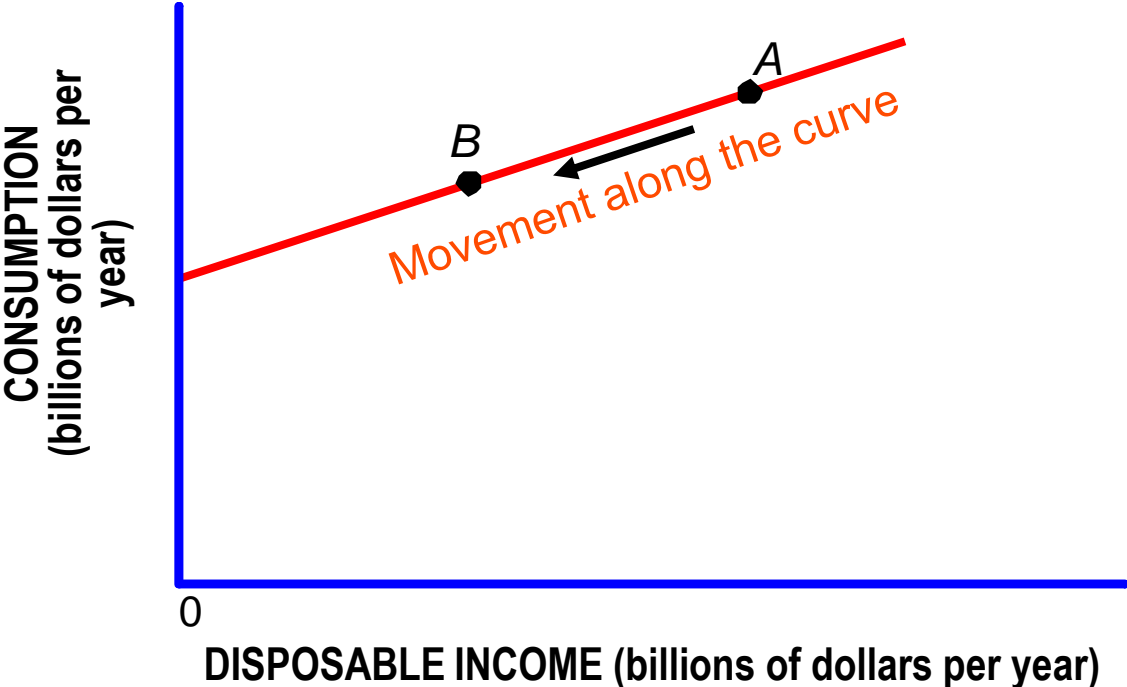
Shift in the Consumption Function
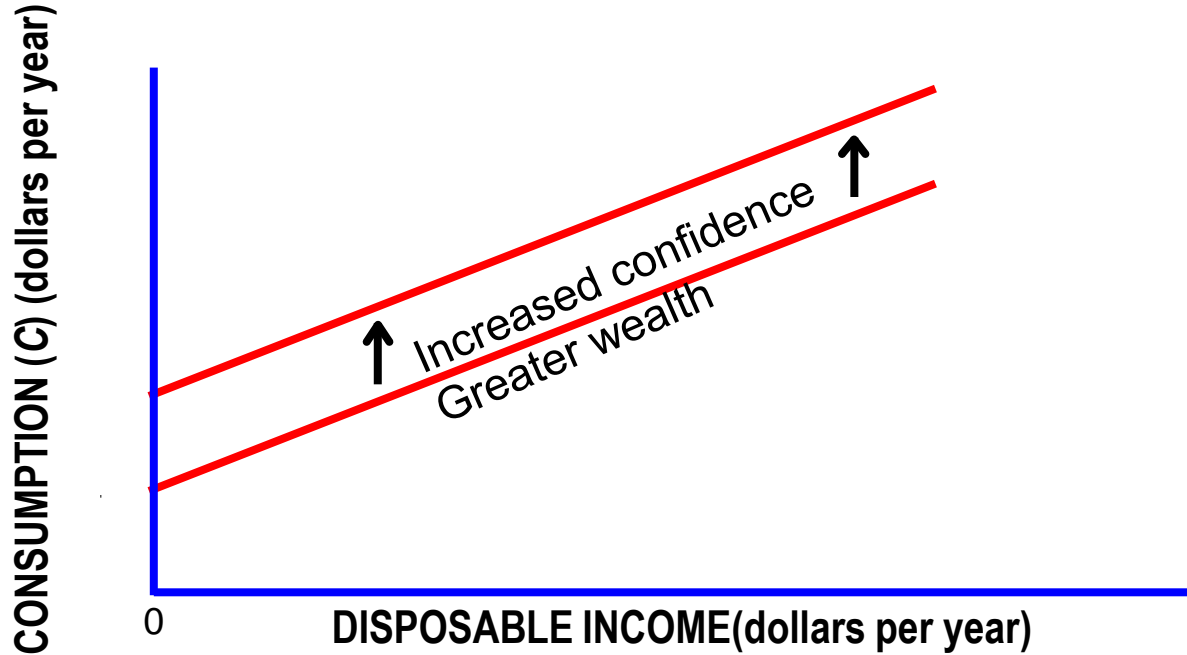
Movement along the Consumption Function

Movement along the consumption function occurs when there is a change in income or a change in the MPC.

A decline in income causes a leftward movement along the consumption function (from point A to B on the next slide).

A decline in MPC also causes a leftward movement along the consumption function.

Movements along the Consumption Function

CONSUMPTION (billions of dollars per year)

DISPOSABLE INCOME (billions of dollars per year)

0

A

B

Movement along the curve

Consumption Function

You should notice that when the consumption function shifts, there is a <u>change in autonomous consumption</u>. Overall consumption has changed as a result of a change in non-income dependent consumption.

The point at which the line representing the consumption function intersects the Y axis changes when autonomous consumption changes.

When the line shifts up it indicates an increase in autonomous or non-income dependent consumption. When the line shifts down it indicates a decrease in autonomous or non-income dependent consumption.

Consumption Function

When there is <u>movement along the consumption function</u>, the level of autonomous consumption does not change.

Overall consumption has changed as a result of a change in income-dependent consumption.

Movement along the consumption function line indicates a <u>change in income</u>. Movement to the right occurs when income increases and movement to the left occurs when income decreases.

Consumption and AD

The consumption function and aggregate demand curves will move together.

A downward shift of the consumption function implies a leftward shift of the AD curve. Demand/consumption have fallen.

An upward shift of the consumption function implies a rightward shift of the AD curve. Demand/consumption have risen.

AD Effects of Consumption Shifts