Chapter 21
Consumption & Investment

GDP = C + I + G + (X - M)
GDP = C + I + G
GDP = C + I

What determines Consumption Spending?
Consumption is a function of income
C = f(Y)

John Maynard Keynes:
Author of “The General Theory of Employment, Interest and Money”

What was Keynes central idea?
An economy can be in equilibrium at less than full employment.

How did this idea differ from the Classical School view?
The Classical Economists believed that the economy is always tending toward a full employment equilibrium.
Keynes’s View on Consumption:
Consumers are guided by the “Fundamental Psychological Law”

In terms of consumption, we all strive to achieve a “comfort zone”. Once we achieve that or are closer to it we do not need to increase our consumption as much with our income as we had done at lower levels of income.

What is Keynes’ Absolute Income Hypothesis?
As national income increases, consumption spending increases, but by diminishing amounts

What is MPC?
The ratio of the change in consumption spending to a given change in income, that induces it.

\[ MPC = \frac{\Delta C}{\Delta Y} \]

If household's income rises from $12,000 to $12,700 and consumption rises from $13,000 to $13,500, then

\[ MPC = \frac{500}{700} = .71 \]

According to the “Absolute Income Hypothesis”, What happens to the Marginal Propensity to Consume as income increases?
MPC decreases as income increases and increases as income decreases
### An Individual’s Marginal Propensity to Consume

<table>
<thead>
<tr>
<th>Total Income (Y)</th>
<th>Change in Income</th>
<th>Consumption (C)</th>
<th>Change in Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>1000</td>
<td>1400</td>
<td>900</td>
</tr>
<tr>
<td>2000</td>
<td>1000</td>
<td>2200</td>
<td>800</td>
</tr>
<tr>
<td>3000</td>
<td>1000</td>
<td>2900</td>
<td>700</td>
</tr>
<tr>
<td>4000</td>
<td>1000</td>
<td>3500</td>
<td>600</td>
</tr>
<tr>
<td>5000</td>
<td>1000</td>
<td>4000</td>
<td>500</td>
</tr>
</tbody>
</table>

### The Individual’s Marginal Propensity to Consume

![Graph showing consumption and income relationship]

### The Nation’s Marginal Propensity to Consume

![Graph showing national consumption and income relationship]

### Who was Simon Kuznets?

He is the author of “National Income and Its Composition”, ....... won Nobel Prize in Economics in 1971 for his pioneering analysis of national income data.

### What did Kuznets conclude about MPC?

His empirical research led to the conclusion that MPC tends to remain fairly constant regardless of the absolute level of national income.
The Marginal Propensity to Consume Remains Constant

Duesenberry’s Relative Income Hypothesis:
Because social status influences consumption spending, MPC remains constant as long as relative income remains unchanged.

Autonomous Consumption:
- Consumption spending that is independent of the level of income

The Consumption Function

Real Disposable Income

Calculate C for each level of National Income (Y)

<table>
<thead>
<tr>
<th>Y</th>
<th>C_a</th>
<th>MPC</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>50</td>
<td>0.50</td>
<td>100</td>
</tr>
<tr>
<td>200</td>
<td>60</td>
<td>0.60</td>
<td>180</td>
</tr>
<tr>
<td>300</td>
<td>70</td>
<td>0.70</td>
<td>280</td>
</tr>
<tr>
<td>400</td>
<td>80</td>
<td>0.80</td>
<td>400</td>
</tr>
<tr>
<td>500</td>
<td>90</td>
<td>0.90</td>
<td>540</td>
</tr>
</tbody>
</table>

C = a + bY = 90 + .90 (500) = 540
Will a change in Income cause a shift in C?

No!

When income changes there is a movement along a stationary Consumption Curve.

What can cause a shift in the Consumption Function?

- Real assets & money holdings
- Expectations of price changes
- Interest rates
- Taxation

What is Saving?

That part of national income not spent on consumption

If, \( Y = C + S \)

then, \( S = Y - C \)

What is the Marginal Propensity to Save (MPS)?

The Ratio of the change in saving to the change in income, which induced it.

\[ MPS = \frac{\Delta S}{\Delta Y} \]
Let's assume that your income increases by $100. We observe that you increase your consumption by $80. What is your MPC?

\[
\text{MPC} = \frac{\Delta C}{\Delta Y} = \frac{60}{100} = .60
\]

\[
\text{MPS} = \frac{\Delta S}{\Delta Y} = \frac{40}{100} = .40
\]

MPC + MPS = 1

MPC = 1 – MPS

MPS = 1 – MPC

At each Y level, calculate the MPC, MPS and the S

<table>
<thead>
<tr>
<th>Y</th>
<th>C</th>
<th>MPC</th>
<th>MPS</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>60</td>
<td>.60</td>
<td>.60</td>
<td>-60</td>
</tr>
<tr>
<td>100</td>
<td>140</td>
<td>.80</td>
<td>.20</td>
<td>-40</td>
</tr>
<tr>
<td>200</td>
<td>220</td>
<td>.80</td>
<td>.20</td>
<td>-20</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
<td>.80</td>
<td>.20</td>
<td>0</td>
</tr>
<tr>
<td>400</td>
<td>380</td>
<td>.80</td>
<td>.20</td>
<td>20</td>
</tr>
<tr>
<td>500</td>
<td>400</td>
<td>.80</td>
<td>.20</td>
<td>100</td>
</tr>
</tbody>
</table>

\[
\text{MPC} = \frac{\Delta C}{\Delta Y} = \frac{80}{100} = .80
\]

\[
\text{MPC} + \text{MPS} = 1
\]

\[
\text{Y} = \text{C} + \text{S}
\]

What determines Autonomous Investment?

- Level of technology
- Interest rate
What determines Autonomous Investment?
- Level of technology
- Interest rate
- Expectations of growth
- Rate of capacity utilization

The Effect of Changes in the Rate of Interest on the Level of Investment

Why is investment volatile?
Because factors that influence investment sometimes change in unison to create dramatic increases or decreases in investment

Chapter 22:
Equilibrium National Income:
Keynesian Cross:
Simplifying Assumptions:
- There is no Government Sector.
- There is no Foreign Sector.
- There is no Depreciation.
GDP + Net Factor Payments from Abroad = GNP

GNP - Depreciation = NNP

NNP – Indirect Business Taxes = NI

GDP = NI

From Producers’ Side:

\[ Y = C + I_i + G + (X-M) \]

In other words, the producers decide how much of the total production would be investment goods and how much would be consumption good.

\[ Y - I_i = C_i \]

From Consumer’s Side:

\[ Y = C + S \]

Consumers’ decide how much of Y (income) they want to consume and how much they want to save.

Consumer’s consumption is determined by the consumption function. Which is,

\[ C = a + bY \]

From Consumer’s side,

\[ Y = C + S, \quad \text{where} \quad C = a + bY \]

From Producer’s side,

\[ Y = C_i + I_i \]

If, \( C = C_i \) then \( S = I_i \)

The Economy will be in Macroequilibrium

\[ C = C_i \quad \text{Y = C + I}_i \]

Actual Investment (\( I_a \)): Investment spending that producers actually make --- that is, intended investment (\( I_i \)), plus unintended changes in inventories.

\[ I_a = I_i + \Delta \text{ in Inventory} \]
When, \( y_i < y^* \)
\[
C_i < C \quad I_i > S
\]
\[
I_a < I_i
\]
This signals the economy to Expand

When, \( y_i > y^* \)
\[
C_i > C \quad I_i < S
\]
\[
I_a > I_i
\]
This signals the economy to Contract
When, $I_i > S$  
This will happen when $I_s < I_i$

$Y$ increases and continues to increase until it reaches equilibrium, where, $I_i = S$.

When, $S > I_i$  
This will happen when $I_s > I_i$

$Y$ falls and continues to fall until it reaches equilibrium where, $I_i = S$.

<table>
<thead>
<tr>
<th>Round</th>
<th>Change in $I_i$</th>
<th>Output</th>
<th>Income</th>
<th>$C$</th>
<th>$S$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1000</td>
<td>Restringer</td>
<td>1000</td>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>2</td>
<td>Waterbed</td>
<td>800</td>
<td>640</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Computer</td>
<td>640</td>
<td>512</td>
<td>128</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Violin</td>
<td>512</td>
<td>409.6</td>
<td>102.4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Auto Repair</td>
<td>409.6</td>
<td>327.7</td>
<td>81.9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Space Heater</td>
<td>327.7</td>
<td>262.2</td>
<td>65.5</td>
<td></td>
</tr>
</tbody>
</table>

$\Delta Y = 1000 + 800 + 640 + 512 + 409.6 + 327.7 + \ldots$  

$\Delta Y = 1000 + .8(1000) + .8(.8)(1000) + \ldots$  

$\Delta Y = 1000 + (.8)(1000) + (.8)^2(1000) + \ldots$  

$\Delta Y = 1000 + .8(1000) + (.8)^2(1000) + (.8)^3(1000) + \ldots$  

$S_n = a + ra + r^2a + r^3a + \ldots$  

$S_n = a \frac{1}{1-r}$  

$\Delta Y = 1000 \frac{1}{1-.8} = \frac{\Delta AE}{1-MPC}$

Income Multiplier $= \frac{1}{1-MPC}$  

$= \frac{1}{MPS}$
Chapter 23:

Fiscal Policy: Coping with Inflation & Unemployment

Different Types of Unemployment:
- Frictionally Unemployed
- Structurally Unemployed
- Cyclically Unemployed
- Discouraged Workers
- Underemployed Workers
1. Frictionally Unemployed: Relatively brief periods of unemployment caused by people deciding to voluntarily quit work in order to seek more attractive employment.

2. Structurally Unemployed: Unemployment that results from fundamental technological changes in production, or from the substitution of new goods for customary ones.

3. Cyclically Unemployed: Unemployment associated with the downturn and recession phases of the business cycle.

4. Discouraged Workers: Unemployed people who give up looking for work after experiencing persistent rejection in their attempts to find work.

5. Underemployed Worker: Workers employed in jobs that do not fully utilize their productive talents or experience.

The Bureau of Labor Statistics (BLS): Two Questions:

Q1. Are you presently gainfully employed?

Q2. Are you actively seeking employment?

Number of Workers and Type of Unemployment:

<table>
<thead>
<tr>
<th>Total Number of Workers</th>
<th>10,250</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frictional Unemployment</td>
<td>150</td>
</tr>
<tr>
<td>Structural Unemployment</td>
<td>200</td>
</tr>
<tr>
<td>Cyclical Unemployment</td>
<td>500</td>
</tr>
<tr>
<td>Discouraged Workers</td>
<td>250</td>
</tr>
<tr>
<td>Underemployed Workers</td>
<td>300</td>
</tr>
<tr>
<td>Total Unemployment</td>
<td>1,400</td>
</tr>
<tr>
<td>True Unemployment Rate</td>
<td>13.7%</td>
</tr>
</tbody>
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Number of Workers and Type of Unemployment:

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</tr>
<tr>
<td>Discouraged Workers</td>
<td>250</td>
</tr>
<tr>
<td>Underemployed Workers</td>
<td>300</td>
</tr>
<tr>
<td>Labor Force</td>
<td>10,000</td>
</tr>
<tr>
<td>Actual Unemployment Rate</td>
<td>8.5%</td>
</tr>
</tbody>
</table>
Total Number of Workers | 10,250
---|---
Frictional Unemployment | 150
Structural Unemployment | 200
Cyclical Unemployment | 500
Discouraged Workers | 250
Underemployed Workers | 300

Actual Unemployment Rate = 8.5%
Natural Rate of Unemployment = \( \frac{150 + 200}{10000} = 3.5\% \)
Actual Rate of Unemployment = Natural Rate of Unemployment + Cyclical Rate of Unemployment
8.5\% = 3.5\% + 5\%

Whole and Losers from Inflation:

Who Loses from Inflation?
- People on fixed income
- Lenders
- Savers

Who Gains from Inflation?
- Borrowers
- Government

Moderating the Wins and Losses:
- Variable Rate of Interest
- Cost of Living Index (COLA)

Recessionary Gap:
The amount by which aggregate expenditure falls short of the amount needed to generate full employment national output.
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The amount by which aggregate expenditure falls short of the amount needed to generate full employment national output.

Inflationary Gap:
The amount by which aggregate expenditure exceeds the level needed to generate full employment national output.