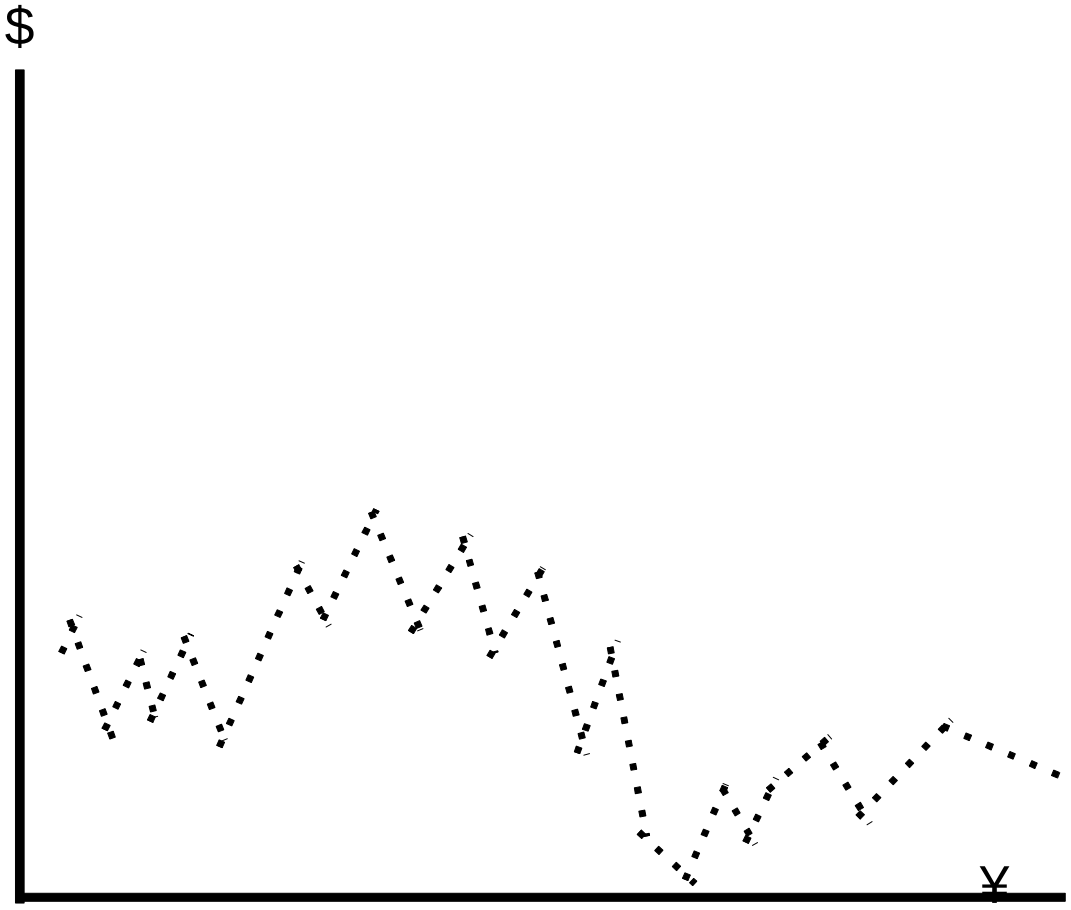
INTRODUCTION TO MACROECONOMICS

E202



Dr. David A. Dilts
Department of Economics
Doermer School of Business and Management Sciences
Indiana-Purdue University-Fort Wayne

June 1, 1993
Revisions: May 1994,
December 1995,
July 1996,
November, 2000,
May 2003,
May 2006

PREFACE

This Course Guide was developed in part because of the high cost of college textbooks, and in part, to help organize students' studying by providing lecture notes together with the reading assignments. This Guide is provided to the student online at the Department of Economics website. Jayla Heller, the Department's secretary has been kind enough to go through all of the frustration and hard work to put the guide in the appropriate format and put it online. To her goes my gratitude.

The department, neither school, nor the professor make anything whatsoever from this Guide. In fact, the department's budget and the professor's own resources are used in the writing of the Guide, and the numerous draft copies that are produced in the revisions of this document. Like the sign in the Mom and Pop bait shop on Big Barbee Lake says, "This is a non-profit organization, wasn't planned to be – it just worked out that way." Well, actually it was planned to be a non-profit enterprise in this case.

The professor also wishes to acknowledge the fact that several students have proposed changes, improvements, caught errors, and helped to make this document more useful as a learning tool. Naturally, any errors of omission or commission are those of the professor alone.

Introduction & Use of Guide

This Course Guide is provided to assist students in mastering the subject matter presented E202, Introduction to Macroeconomics. The commercially available student guides and workbooks are notoriously inadequate and are simply of little value. At several institutions, prepared course materials are made available to students to assist their learning. What research has been done concerning these course specific materials, suggests that students' performances are enhanced by having access to these types of materials. Because macroeconomics is such an important foundation for business, engineering, and the social sciences this Guide has been prepared.

The purpose of this Course Guide is fourfold. First, the course syllabus is included in the Guide. Second, the Guide provides the student a listing of the key concepts covered in the lectures. Third, the Guide provides students with problems and study-guides to aid each individual in the retaining the materials presented by the text and lecture. Fourth, sample exams are offered as self-test exercises and to give students an idea of the level of mastery expected in this course.

Organization

The Guide is divided into twelve units, following the organization of the Tentative Course Outline found in the syllabus. At the end of each chapters in the reading assignments there is a section containing the key concepts developed in the chapter, sample exam questions and a brief study guide. Also in the Guide is the course syllabus included before the twelve sections covering the substantive portions of the course. Following the reading assignments are the lecture notes for each chapter. The final section of the Guide contains sample examinations, including answers.

Note to Students

There is no substitute for doing the reading assignments, attending class, and working through the material. A teacher cannot cause a student to learn, all a teacher can do is to organize and present the material, grades can provide a small extrinsic reward for accomplishment, but it is the student's ability, effort, and desire that determine how much and how well they will learn. It is hoped this Guide will help in the learning effort.

SYLLABUS
E202, Introduction to Macroeconomics

Dr. David A. Dilts
Room 340D Neff Hall
Phone 481-6486

Department of Economics and Finance
School of Business and Management Sciences
Indiana - Purdue University - Fort Wayne

COURSE POLICIES

1. In all respects, the policies of the School, Department, IPFW and the University shall be applied in this course.

2. Office hours will be posted on the professor's door, appointments may also be arranged. The Professor's office is Neff 340D.

3. The following grade scale will be applied in this course for determination of final grades:

A	100 - 90 percent
B	89 - 80 percent
C	79 - 70 percent
D	69 - 60 percent
F	below 60 percent

   All final grade calculations shall be rounded up. In other words, 69.01 and 69.99 percent are both considered 70 percent and will earn the student a grade of C.

4. The majority of undergraduate economics courses this professor has taught have had average final grades that fall within the range centered on 2.0 on a 4.0 scale.

5. Course requirements:

   A. The MIDTERM examination is worth 40% of the final grade. The FINAL examination is worth 50% of the final grade. The QUIZZES are worth 10% of the final grade, and only the best two quiz scores will be used in this calculation. If a student improves their performance on the final examination by 10 full points above what they earned on the midterm, I will change the weights to midterm 30% and final exam 60%.

   B. Examinations will consist of objective items. Examinations will be worth 100 points, and will consist of twenty multiple choice questions (worth four points each), and twenty true-false questions worth one point each) for a total of 100 points.

6. The final examination will be given at the time and place scheduled by the university. No exception is possible.

7. No make-up exams will be permitted. If you cannot attend class at exam time you must make prior arrangements to take an equivalent examination before your classmates. Exceptions may be granted for cases where there was no possibility for an earlier examination, i.e., injuries or illnesses, etc – things clearly beyond the student's control.

8. Academic dishonesty in any form will result in a course grade of F and other sanctions as may be authorized by the university. The over whelming preponderance of students do not engage in dishonesty, and the professor owes it to these students to strictly police this policy.

9. The provisions of these policies and the course objectives are subject to testing. These policies are also subject to change at the discretion of the professor and do not constitute a binding contract.

COURSE OBJECTIVES

This is an introductory principle of economics course that covers topics in macroeconomics. The breath of topical coverage limits the course objectives to subject matter mastery. The course will present factual material concerning the operation of the aggregate economy as well as the development of rudimentary understanding of economic policy.

In general, the ability to critically evaluate demonstrates the highest cognitive mastery of the material. It is important that this level of understanding be achieved. Therefore, students will find several examination and quiz questions are focused on complex applications or critical evaluation.

Even though there are no grades assigned for class participation, students are encouraged to participate in classroom discussions. The opportunity to have open discourse, to debate, to disagree is critical to a student's learning experience; particularly if students are to develop the ability to critically evaluate economic ideas.

REQUIRED TEXT

David A. Dilts, *Introduction to Macroeconomics, E202.* Fort Wayne: 2003, memo.

SUPPLEMENTAL TEXT

Campbell R. McConnell and Stanley L. Bruce, *Economics, fifteenth edition.* New York: McGraw-Hill. [M&B in the outline]

TENTATIVE COURSE OUTLINE

1. Introduction to Macroeconomics, Economic Policy and the Course

   DAD Chapter 1
   M & B Chapter 1

2. National Income Accounting

   DAD Chapter 2
   M & B Chapter 7

3. Unemployment and Inflation

   DAD Chapter 3
   M & B Chapter 8

4. Aggregate Demand & Supply

   DAD Chapter 4
   M & B Chapter 11

5. Classical and Keynesian Models

   DAD Chapter 5

M & B Chapter 9

6. Equilibrium in the Keynesian Model

   DAD Chapter 6
   M & B Chapter 10

7. Fiscal Policy

   DAD Chapter 7
   M & B Chapter 12

MIDTERM EXAMINATION

8. Growth

   DAD Chapter 8
   M&B Chapter 22

9. Money & Banking

   DAD Chapter 8
   M & B Chapter 13

10. Multiple Expansion of Money

    DAD Chapter 9
    M & B Chapter 14

11. Federal Reserve and Monetary Policy

    DAD Chapter 10
    M & B Chapter 15

12. Economic Stability and Policy

    DAD Chapter 11
    M & B Chapters 18 & 19

FINAL EXAMINATION

1. Introduction to Economics

Lecture Notes

1. Economics Defined - Economics is the study of the allocation of SCARCE resources to meet unlimited human wants.

    a. Microeconomics - is concerned with decision-making by individual economic agents such as firms and consumers.

    b. Macroeconomics - is concerned with the aggregate performance of the entire economic system.

    c. Empirical economics - relies upon facts to present a description of economic activity.

    d. Economic theory - relies upon principles to analyze behavior of economic agents.

    e. Inductive logic - creates principles from observation.

    f. Deductive logic - hypothesis is formulated and tested.

2. Usefulness of economics - economics provides an objective mode of analysis, with rigorous models that are predictive of human behavior.

3. Assumptions in Economics - economic models of human behavior are built upon assumptions; or simplifications that permit rigorous analysis of real world events, without irrelevant complications.

    a. Model building - models are abstractions from reality - the best model is the one that best describes reality and is the simplest.

    b. simplifications:

        1. Ceteris paribus - means all other things equal.

        2. Problems with abstractions, based on assumptions. Too often, the models built are inconsistent with observed reality - therefore they are faulty and require modification. When a model is so complex that it cannot be easily communicated or its implications understood - it is less useful.

4. Goals and their Relations - Positive economics is concerned with what is; normative economics is concerned with what should be. Economic goals are value statements.

    a. Most societies have one or more of the following goals:

        1. Economic efficiency,

        2. Economic growth,

        3. Economic freedom,

        4. Economic security,

        5. Equitable distribution of income,

        6. Full employment,

        7. Price level stability, and

        8. Reasonable balance of trade.

5. Goals are subject to:

    a. Interpretation - precise meanings and measurements will often become the subject of different points of view, often caused by politics.

    b. Complementary - goals that are complementary are consistent and can often be accomplished together.

    c. Conflicting - where one goal precludes or is inconsistent with another.

    d. Priorities - rank ordering from most important to least important; again involving value judgments.

6. The Formulation of Public and Private Policy - Policy is the creation of guidelines, regulations or law designed to affect the accomplishment of specific economic goals.

    a. Steps in formulating policy:

        1. Stating goals - must be measurable with specific stated objective to be accomplished.

2. Options - identify the various actions that will accomplish the stated goals & select one, and

3. Evaluation - gather and analyze evidence to determine whether policy was effective in accomplishing goal, if not re-examine options and select option most likely to be effective.

7. Objective Thinking:

a. Bias - most people bring many misconceptions and biases to economics. Because of political beliefs and other value system components rational, objective thinking concerning various issues requires the shedding of these preconceptions and biases.

b. Fallacy of composition - is simply the mistaken belief that what is true for the individual, must be true for the group.

c. Cause and effect - post hoc, ergo propter hoc - after this, because of this fallacy.

1. Correlation - statistical association of two or more variables.

2. Causation - where one variable actually causes another. Granger causality states that the thing that causes another must occur first, that the explainer must add to the correlation, and must be sensible.

d. Cost-benefit or economic perspective - marginal decision-making - if benefits of an action will reap more benefits than costs it is rational to do that thing.

2. National Income Accounting

Lecture Notes

1. Gross Domestic Product - (GDP) the total value of all goods and services produced within the borders of the United States (or country under analysis).

2. Gross National Product - (GNP) the total value of all goods and services produced by Americans regardless of whether in the United States or overseas.

3. National Income Accounts are the aggregate data used to measure the well-being of an economy.

    a. The mechanics of these various accounts are:

Gross Domestic Product

- Depreciation =

Net Domestic Product

+ Net American Income Earned Abroad
- Indirect Business Taxes =

National Income

- Social Security Contributions
- Corporate Income Taxes
- Undistributed Corporate Profits
+ Transfer Payments =

Personal Income

- Personal Taxes =

Disposable Income

4. Expenditures Approach vs. Incomes Approach

    a. Factor payments + Nonincome charges - GNP/GDP adjustments = GDP is the incomes approach

    b. $Y = C + I_g + G + X_n$ is the expenditures approach (where Y = GDP)

5. Social Welfare & GDP - GDP and GNP are nothing more than measures of total output (or income). More information is necessary before conclusions can be drawn concerning social welfare. There are problems with both measures, among these are:

    a. Nonmarket transactions such as household-provided services or barter are not included in GDP.

    b. Leisure is an economic good but time away from work is not counted, however, movie tickets, skis, and other commodities used in leisure time are.

    c. Product quality - no pretense is made in GDP to account for product or service quality.

    d. Composition & Distribution of Output - no attempt is made in GDP data to account for the composition or distribution of income or output. We must look at sectors to determine composition and other information for distribution.

    e. Per capita income - is GDP divided by population, very rough guide to individual income, but still mostly fails to account for distribution.

    f. Environmental problems - damage done to the environment in production or consumption is not counted in GDP data unless market transactions occur to clean-up the damage.

    g. Underground economy - estimates place the amount of underground economic activities may be as much a one-third of total U.S. output. Criminal activities, tax evasion, and other such activities are the underground economy.

6. Price Indices - are the way we attempt to measure inflation. Price indices are far from perfect measures and are based on surveys of prices of a specific market basket of goods.

a. Market basket surveys - The market basket of goods and services are selected periodically in an attempt to approximate what the average family of four purchases at that time.

b. CPI (U) is for urban consumers & CPI (W) is for urban wage earners. GDP Deflator is based on a broader market basket and may be more useful in measuring inflation.

    1. Standard of living - is eroded if there is inflation and no equal increase in wages.

    2. COLA - are escalator clauses that tie earnings or other payments to the rate of inflation, but only proportionally.

    3. Other indices - American Chamber of Commerce Research Association in Indianapolis does a cross sectional survey, there are wholesale price indices and several others designed for specific purposes.

c. Inflation/Deflation - throughout most of U.S. economic history we have experienced deflation - which is a general decline in all prices. Inflation is primarily a post-World War II event and is defined to be a general increase in all prices.

d. Nominal versus Real measures - economists use the term nominal to describe money value or prices (not adjusted for inflation); real is used to describe data, which are adjusted for inflation.

7. Measuring the price level

    a. CPI = (current year market basket/ base year market basket) X 100 the index number for the base year will be 100.00 (or 1 X 100)

    b. Inflating is the adjustment of prices to a higher level, for years when the index is less than 100.

    c. Deflating is the adjustment of prices to a lower level, for years when the index is more than 100.

        1. to change nominal into real the following equation is used:

        Nominal value/ (price index/100)

d. Changing base years - a price index base year can be changed to create a consistent series (remembering market baskets also change, hence the process has a fault). The process is a simple one. If you wish to convert a 1982 base year index to be consistent with a 1987 base year, then you use the index number for 1982 in the 1987 series and divide all other observations for the 1982 series using the 1982 value in 1987 index series.

3. Unemployment and Inflation

Lecture Notes

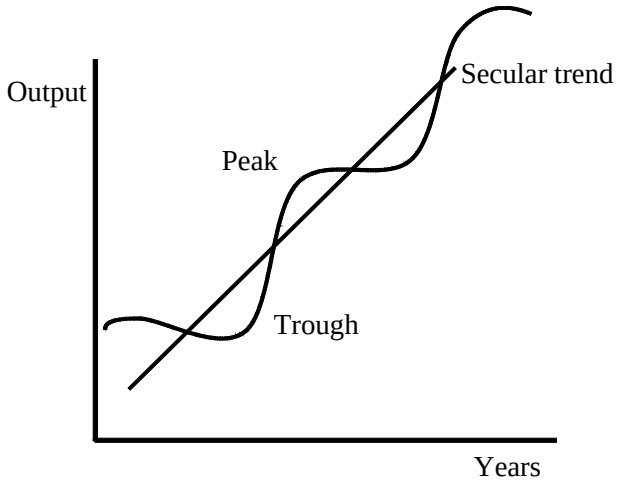
1. Business Cycle - is the recurrent ups and downs in economic activity observed in market economies.

    a. Troughs are where employment and output bottom-out during a recession (downturn)

    b. Peaks are where employment and output top-out during a recovery (upturn)

    c. Seasonal trends are variations in data that are associated with a particular season in the year.

    d. Secular trends are long-run trend (generally 25 or more years in macroeconomic data.



2. Unemployment - there are various causes of unemployment, including:

    a. Frictional - consists of *search* and *wait* unemployment which is caused by people searching for employment or waiting to take a job in the near future.

b. Structural - is caused by a change in composition of output, change in technology, or a change in the structure of demand.

c. Cyclical - due to recessions, (business cycle).

3. Full employment - is not zero unemployment, full employment unemployment rate is the same as the natural rate.

   a. Natural rate - is thought to be about 4% and is structural + frictional unemployment.

      1. Potential output - is the output of the economy at full employment.

4. Unemployment rate - is the percentage of the workforce that is unemployed.

   a. Labor force - those employed or unemployed who are willing, able and searching for work; the labor force is about 50% of the total population.

   b. Part-time employment - those who do not have 40 hours of work (or equivalent) available to them, at 6 million U.S. workers were involuntarily part-time, and about 10 million were voluntarily part-time employees in 1992.

   c. Discouraged workers - those persons who dropped out of labor force because they could not find an acceptable job.

   d. False search - those individuals who claim to be searching for employment, but really were not, some because of unemployment compensation benefits.

5. Okun's law

   a. Okun's Law states that for each 1% unemployment exceeds the natural rate there will be a gap of 2.5% between actual GDP and potential GDP.

6. Burden of unemployment differs by several factors, these are:

   a. Occupation - mostly due to structural changes.
   b. Age young people tend to experience more frictional unemployment.

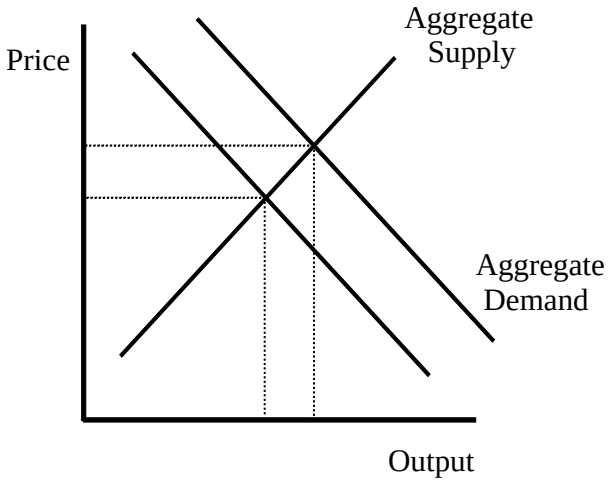
c. Race and gender reflect discrimination in the labor market and sometimes in educational opportunities.

7. Inflation - general increase in all prices.

   a. CPI - is the measure used to monitor inflation.

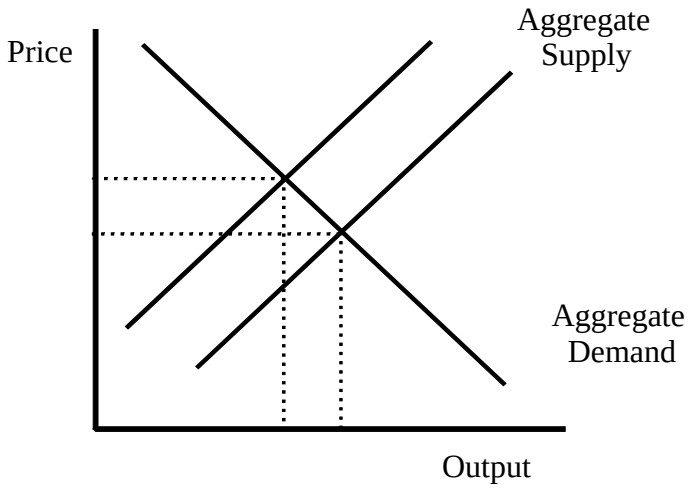
   b. Rule of 70 -- the number of years for the price level to double = 70/%annual rate of increase.

8. Demand - pull inflation

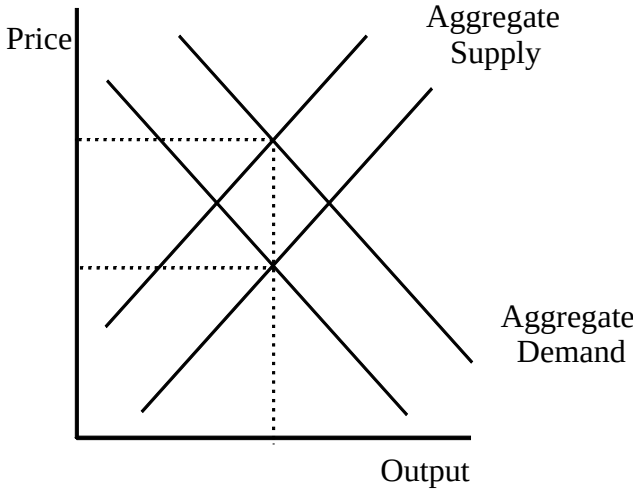


Using a naive aggregate demand - aggregate supply model (similar to the supply and demand diagrams for a market, except the supply is total output in all markets and demand is total demand in all markets, as the aggregate demand shifts outwards prices increase, but so does output.

9. Cost - push inflation - again using a naive aggregate supply - aggregate demand approach cost-push inflation results from a decrease in aggregate supply:



a. Pure inflation results from an increase in aggregate demand that is equal to a decrease in aggregate supply:



10. Effects of inflation impact different people in different ways. If inflation is fully anticipated and people can adjust their nominal income to account for inflation then there will be no adverse effects, however, if people cannot adjust their nominal income or the inflation is unanticipated those individual will see their standard of living eroded.

    a. Debitors typically benefit from inflation because they can pay loans-off in the future with money that is worth less, thereby creditors are harmed by inflation.

    b. Inflation typically creates expectations among people of increasing prices, which may contribute to future inflation.

c. Savers generally lose money because of inflation if the rate of return on their savings is not sufficient to cover the inflation rate.

4. Aggregate Supply & Aggregate Demand

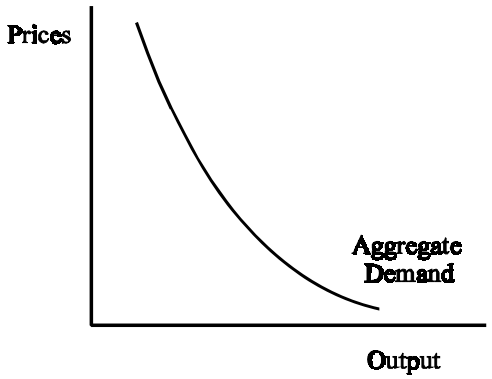
Lecture Notes

1. Aggregate demand is a downward sloping function that shows the inverse relation between the price level and domestic output. The reasons that the aggregate demand curve slopes down and to the right differs from the reasoning offered for individual market demand curves (substitution & income effects - these do not work with aggregates). The reasons for the downward sloping aggregate demand curve are:

    a. Wealth or real balance effect - higher price level reduces the real purchasing power of consumers' accumulated financial assets.

    b. Interest-rate effect - assuming a fixed supply of money, an increase in the price level increases interest rates, which in turn, reduces interest sensitive expenditures on goods and services (e.g., consumer durables - cars etc.

    c. Foreign purchases effect - if prices of domestic goods rise relative to foreign goods, domestic consumers will purchase more foreign goods as substitutes.



2. Determinants of aggregate demand - factors that shift the aggregate demand curve.

    a. Expectations concerning real income or inflation (including profits from investments in business sector),

    b. Consumer indebtedness,

    c. Personal taxes,

    d. Interest rates,

    e. Changes in technology,

    f. Amount of current excess capacity in industry,

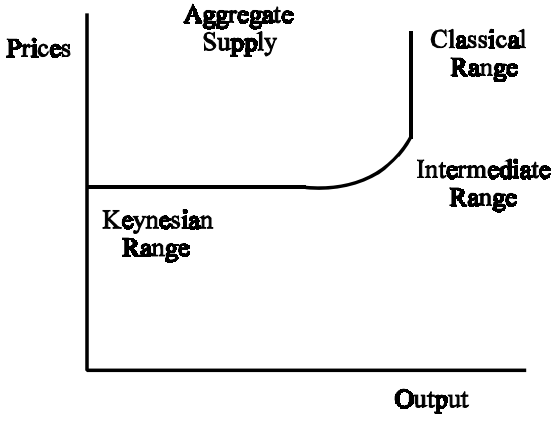
    g. Government spending,

    h. Net exports,

    i. National income abroad, and

    j. Exchange rates.

3. Aggregate Supply shows amount of domestic output available at each price level. The aggregate supply curve has three ranges, the Keynesian range (horizontal), the intermediate range (curved), and the classical range (vertical).



    a. Keynesian range - is the result of downward rigidity in prices and wages.

b. Classical range - classical economists believed that the aggregate supply curve goes vertical at the full employment level of output.

c. Intermediate range - is the range in aggregate supply where rising output is accompanied by rising price levels.

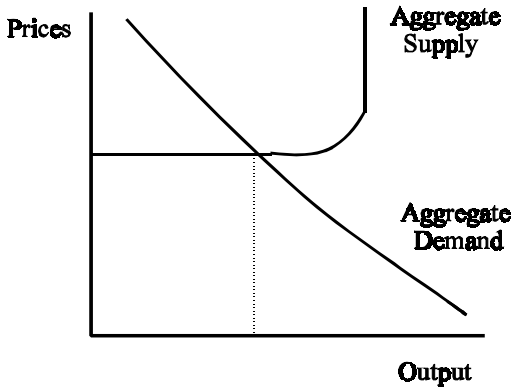
4. Determinants of Aggregate Supply cause the aggregate supply curve to shift.

   a. Changes in input prices,

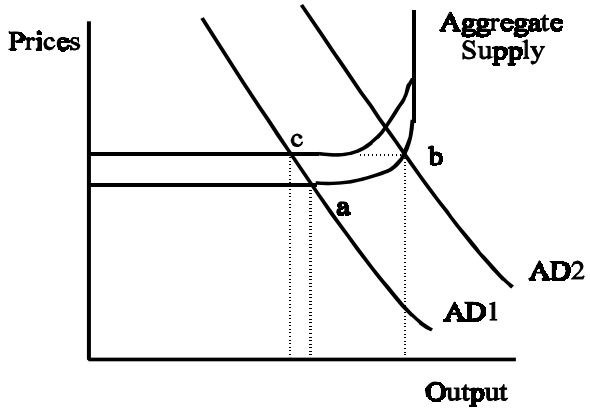
   b. Changes in input productivity, and

   c. Changes in the legal/institutional environment.

5. Macroeconomic Equilibrium - intersection of aggregate supply and aggregate demand:



6. Ratchet Effect - is where there is a decrease in aggregate demand, that producers are unwilling to accept lower prices (rigid prices and wages) therefore there is a ratcheting of the aggregate supply curve (decrease in the intermediate and Keynesian ranges) which will keep the price level the same, but with reduced output. In other words, there can be increases in prices (forward) but no decreases (but not backward).



An increase in aggregate demand from AD1 to AD2 moves the equilibrium from point a to point b with real output and the price level increasing. However, if prices are inflexible downward, then a decline in aggregate demand from AD2 to AD1 will not restore the economy to its original equilibrium at point a. Instead, the new equilibrium will be at point c with the price level remaining at the higher level and output falling to the lowest point. The ratchet effect means that the aggregate supply curve has shifted upward (a decrease) in both the Keynesian and intermediate ranges.

5. Classical and Keynesian Models

Lecture Notes

1. Classical theory of employment (macroeconomics) rests upon two founding principles, these are:

    a. Underspending unlikely - spending in amounts less than sufficient to purchase the full employment level of output is not likely.

    b. Even if underspending should occur, then price/wage flexibility will prevent output declines because prices and wages would adjust to keep the economy at the full employment level of output.

2. Say's Law "Supply creates its own demand" (well not exactly)

    a. In other words, every level of output creates enough income to purchase exactly what was produced.

    b. Among others, there is one glaring omission in Say's Law -- what about savings?

3. Savings

    a. Output produces incomes, but savings is a leakage

    b. Savings give rise to investment and the interest rates are what links savings and investment.

4. Wage-Price flexibility

    a. The classicists believed that a laissez faire economy would result in macroeconomic equilibria and that only the government could cause disequilibria.

5. Keynesian Model - beginning in the 1930s the classical models failed to explain what was going on, hence a new model was developed -- the Keynesian Model.

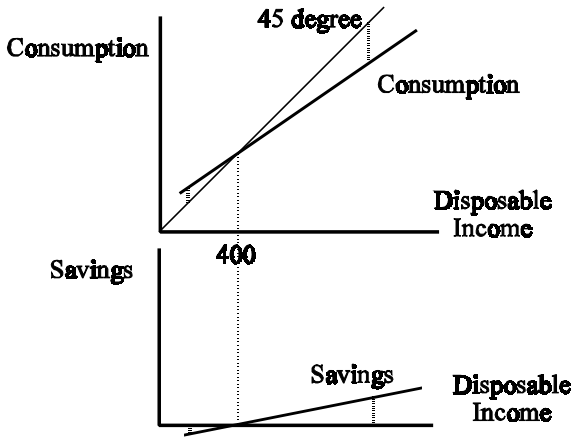
    a. Full employment is not guaranteed, because interest motivates both consumers & businesses differently - just because households save does not guarantee businesses will invest.

    b. Price-wage rigidity, rather than flexibility was assumed by Keynes

6. The Consumption schedule - income & consumption

    a. Consumption schedule - the 45-degree line is every point where disposable income is totally consumed.

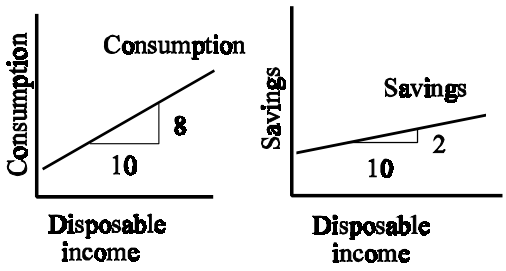
    b. Saving schedule - shows the amount of savings associated with the consumption function.



The consumption schedule intersects the 45-degree line at 400 in disposable income, this is also where the savings function intersects zero (in the graph below the consumption function). To the left of the intersection of the consumption function and the 45-degree line, the consumption function lies above the 45-degree line. The distance between the 45-degree line and the consumption schedule is dissavings, shown in the savings schedule graph by the savings function falling below zero. To the right of the intersection of the consumption function with the 45 degree line the consumption schedule is below the 45-degree line. The distance that the consumption function is below the 45-degree line is called savings, shown in the bottom graph by the savings function rising above zero.

    c. Marginal Propensity to Consume (MPC) is the proportion of any increase in disposable income spent on consumption (if all is spent MPC is 1, if none is spent MPC is zero). The Marginal Propensity to Save (MPS) is the proportion of any increase in disposable income saved. The relation between MPC and MPS is:

        1. MPC + MPS = 1



d. The slope (rise divided by the run) of the consumption function is the MPC and the slope of the savings function is the MPS. Add the slope of the consumption function (8/10) to the slope of the savings function (2/10) and they equal one (10/10).

e. The Average Propensity to Consume (APC) is total consumption divided by total income, Average Propensity to Save (APS) is total savings divided by total income. Again, if income can be either saved or consumed (and nothing else) then the following relation holds:

1. APC + APS = 1

7. The nonincome determinants of consumption and saving are (these cause shifts in the consumption and saving schedules):

a. Wealth,

b. Prices,

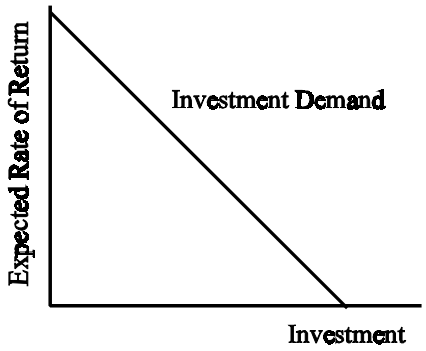
c. Expectations concerning future prices, incomes and availability of commodities,

d. Consumer debts, and

e. Taxes.

8. Investment

a. Investment demand curve is downward sloping:



b. Determinants of investment demand are:

   1. Acquisition, maintenance & operating costs,

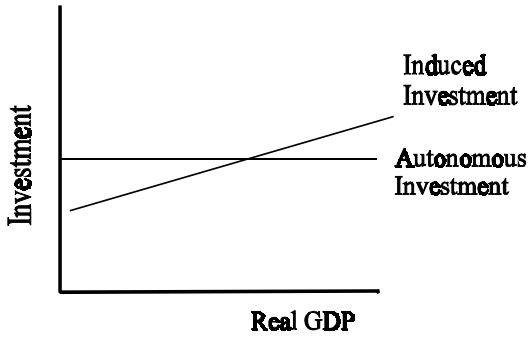
   2. Business taxes,

   3. Technology,

   4. Stock of capital on hand, and

   5. Expectations concerning profits in future.

c. Autonomous (determined outside of system) v. induced investment (function of GDP):



   1. Instability in investment has marked U.S. economic history.

2. Causes of this instability are:
    a. Variations in the durability of capital,
    b. Irregularity of innovation,
    c. Variability of profits, and
    d. Expectations of investors.

6. Equilibrium in the Keynesian Model

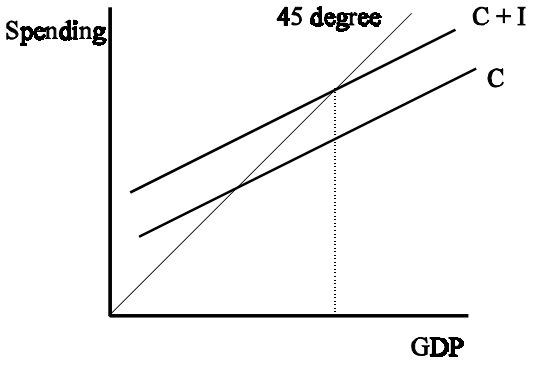
Lecture Notes

1. Equilibrium GDP - is that output that will create total spending just sufficient to buy that output (where aggregate expenditure schedule intersects 45 degree line).

    a. Disequilibrium - where spending is insufficient (recessionary gap) or too high for level of output (inflationary gap).

2. Expenditures - Output Approach

    a. Y = C + I + G + X is the identity for income where Y = GDP, C = Consumption, I = Investment, G= Government expenditures, and X = Net exports (exports minus imports)

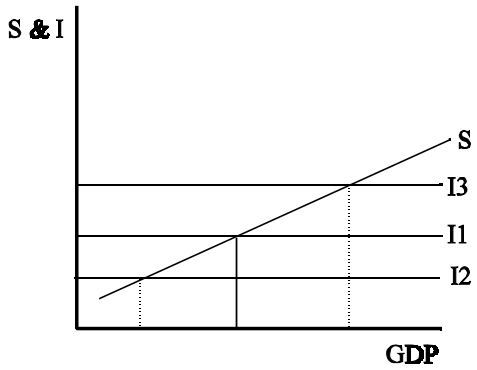


The equilibrium level of GDP is indicated above where C + I is equal to the 45 degree line. Investment in this model is autonomous and the amount of investment is the vertical distance between the C and the C + I lines. This model assumes no government and that net exports are zero.

3. Leakages - Injections Approach relies on the equality of investment and savings at equilibrium.

    a. I = S is equilibrium in the leakages - injections approach.

b. Planned v. actual investment, the reason that the leakages - injection approach works is that planned investment must equal savings. Inventories can increase beyond that planned, hence output that is not purchased which is recessionary; or intended inventories can be depleted which is inflationary.



The original equilibrium is where I1 is equal to S and that level of GDP is shown with the solid indicator line. If we experience a decrease in investment we move down to I2 and if an increase in investment is observed it will be observed at I3.

4. If there is an increase in expenditures, there will be a respending effect. In other words, if $10 is injected into the system, then it is income to someone. That first person will spend a portion of the income and save a portion. If MPC is .90 then the first individual will save $1 and spend $9.00. The second person receives $9.00 in income and will spend $8.10 and save $0.90. This process continues until there is no money left to be spent. Instead of summing all of the income, expenditures, and/or savings there is a short-hand method of determining the total effect -- this is called the Multiplier, which is:

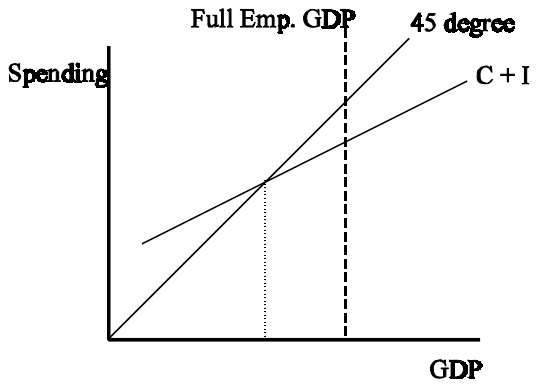
   a. **Multiplier M = 1/1-MPC or 1/MPS**

   b. Significance - any increase in expenditures will have a multiple effect on the GDP.

5. Paradox of thrift - the curious observation that if society tries to save more it may actually save the same amount - unless investment moves up as a result of the savings, all that happens is that GDP declines and if investment is autonomous then savings remain the same.

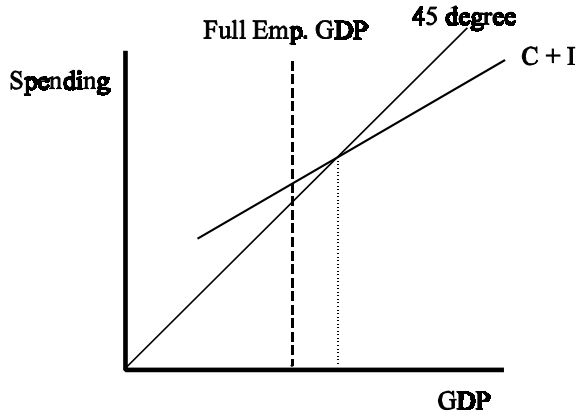
6. Full Employment level of GDP may not be where the aggregate expenditures line intersects the 45 degree line. There are two possibilities, (1) a recessionary gap or (2) an inflationary gap, both are illustrated below.

   a. Recessionary gap



The distance between the C + I line and the 45 degree line along the dashed indicator line is the recessionary gap. The dotted line shows the current macroeconomic equilibrium.

   b. Inflationary gap



The distance between the C + I line and the 45 degree line along the dashed indicator line is the inflationary gap. The dotted indicator line shows the current macroeconomic equilibrium.

7. Reconciling AD/AS with Keynesian Cross the various C + I and 45 degree line intersections, if multiplied by the appropriate price level will yield one point on the aggregate demand curve. Shifts in aggregate demand can be shown with holding the price level constant and showing increases or decreases in C + I in the Keynesian Cross model. Both models can be used to analyze essentially the same macroeconomic events.

7. Fiscal Policy

Lecture Notes

1. Discretionary Fiscal Policy - involves government expenditures and/or taxes to stabilize the economy.

    a. Employment Act of 1946 - formalized the government's responsibility in promoting economic stability.

    b. Simplifying assumptions for the analyses presented here:

        1. Exogenous I & X,

        2. G does initially impact private decisions,

        3. All taxes are personal taxes,

        4. Some exogenous taxes collected,

        5. No monetary effects, fixed initial price level, and

        6. Fiscal policy impacts only demand side.

2. Changes in Government Expenditures - can be made for several reasons:

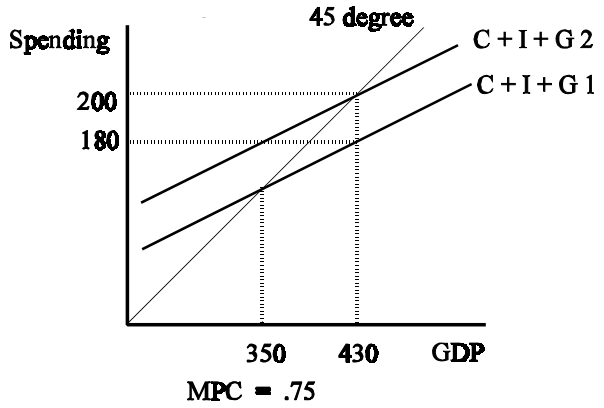
    a. Stabilization of the economy,

        1. To close a recessionary gap the government must spend an amount that time the multiplier will equal the total gap.

        2. To close an inflationary gap the government must cut expenditures by an amount that times the multiplier will equal the inflationary gap.

    b. Political goals, and

    c. Provision of necessary goods & services.



An increased government expenditure of $20 billion results in an increase in GDP of $80 billion with an MPC of .75, hence a multiplier of 4.

3. Taxation effects both consumption and savings.

    a. If the government uses a lump sum tax increase to reduce an inflationary gap the reduction in GDP occurs thusly:

        3. The lump sum tax must be multiplied by the MPC to obtain the reduction in consumption;

        4. The reduction in consumption is then multiplied by the multiplier.

    b. A decrease in taxes works the same way, the total impact is the lump sum reduction times the MPC to obtain the increase in consumption, which is, in turn, multiplied by the multiplier to obtain the full impact on GDP.

    c. A short-cut method with taxes is to calculate the multiplier, as you would with an increase in government expenditures and deduct one from it.

4. The balanced budget multiplier is always one.

    a. Occurs when the amount of government expenditures goes up by the same amount that a lump sum tax is increased.

    b. That is because only the initial expenditure increases GDP and the remaining multiplier effect is offset by taxation.

5. Tax structure refers to the burden of the tax:

    a. Progressive is where the effective tax rate increases with ability to pay,

    b. Regressive is where the effective tax rate increases as ability to pay decreases,

    c. Proportional is where a fixed proportion of ability to pay is taken in taxes.

6. Automatic stabilizers help to smooth business cycles without further legislative action:

    a. Progressive income taxes,

    b. Unemployment compensation,

    c. Government entitlement programs

7. Fiscal Lag - there are numerous lags involved with the implementation of fiscal policy. It is not uncommon for fiscal policy to take 2 or 3 years to have a noticeable effect, after Congress begins to enact fiscal measures.

    a. Recognition lag - how long to start to react.

    b. Administrative lag - how long to have legislation enacted & implemented.

    c. Operational lag - how long it takes to have effects in economy.

8. Politics and Fiscal Policy.

    a. Public choice economists claim that politicians maximize their own utility by legislative action.

    b. Log-rolling and negotiations results in many bills that impose costs.

9. Government deficits and crowding - out. It is alleged that private spending is displaced when the government borrows to finance spending:

    a. Ricardian Equivalence - deficit financing same effect on GDP as increased tax.

10. Open economy problems. Because there is a foreign sector that impacts GDP there are potential problems for fiscal policy arising from foreign sources.

a. Increased interest - net export effect

    1. An increase in the interest rate domestically will attract foreign capital, but this increases the demand for dollars which increases their value and thereby reduces exports, hence GDP.

b. Foreign shocks - in addition to currency exchange rates.

    1. Oil crises increased costs of production in the U.S.

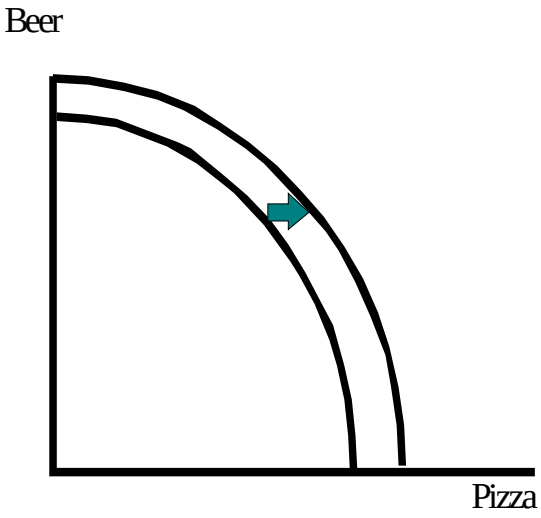
8. Economic Growth

Lecture Notes

1. Economic growth is defined in one of two ways, as a total (hence GDP) or as a per capita (hence GDP per capita). Each of these definitions has its uses. The second definition is of the greatest importance in defining the standard of living in a country.

    a. The following production possibilities frontier shows economic growth in a simple two-commodity economy.

    b. The assumptions underpinning the production possibilities model is that there are only two commodities produced, there is a fixed technology and number of resources and these resources are used in an economically efficient manner.



2. Developing economies are classified into two categories:

    a. **Middle-income countries $760 to $9300 per capita GDP in 2000**

    b. **Low-income countries those below $760 per capita GDP in 2000.**

1. The majority of Latin countries are middle-income countries and the majority of sub-Saharan African countries and South-Asian countries are low income countries. The industrial, high income countries are the U.S., Canada, Australia, New Zealand, Japan, and Western Europe.

c. **Growth-paths are the historical tracing of how an economy moved from being less developed to a developed economy.** The prerequisites to economic growth, which include:

(1) Establishing and implementing domestic rules of law,

(2) Opening the economy to international trade,

(3) Controlling population growth,

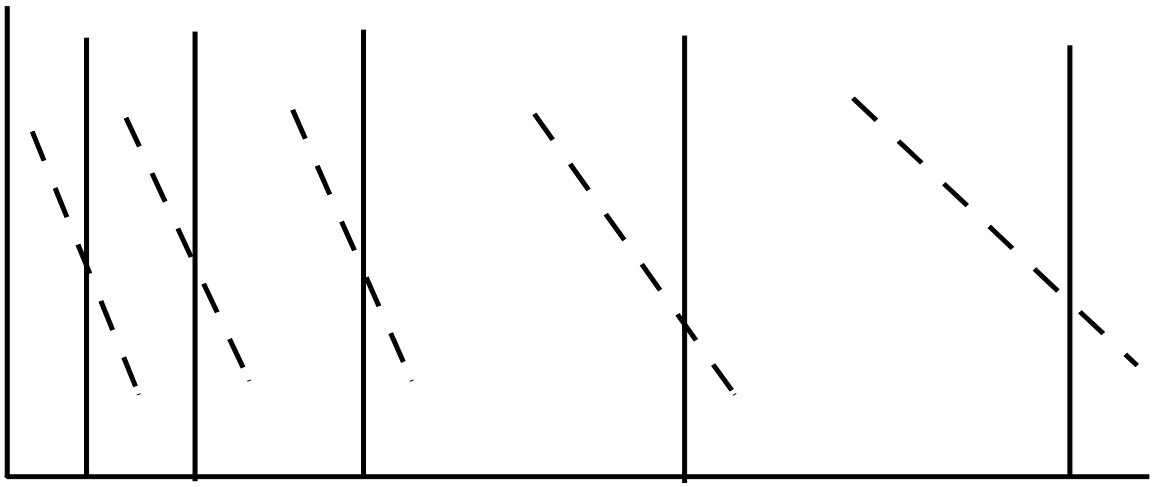
(4) Encouraging foreign direct investment,

(5) Building human capital,

(6) Reasonable monetary institutions and markets,

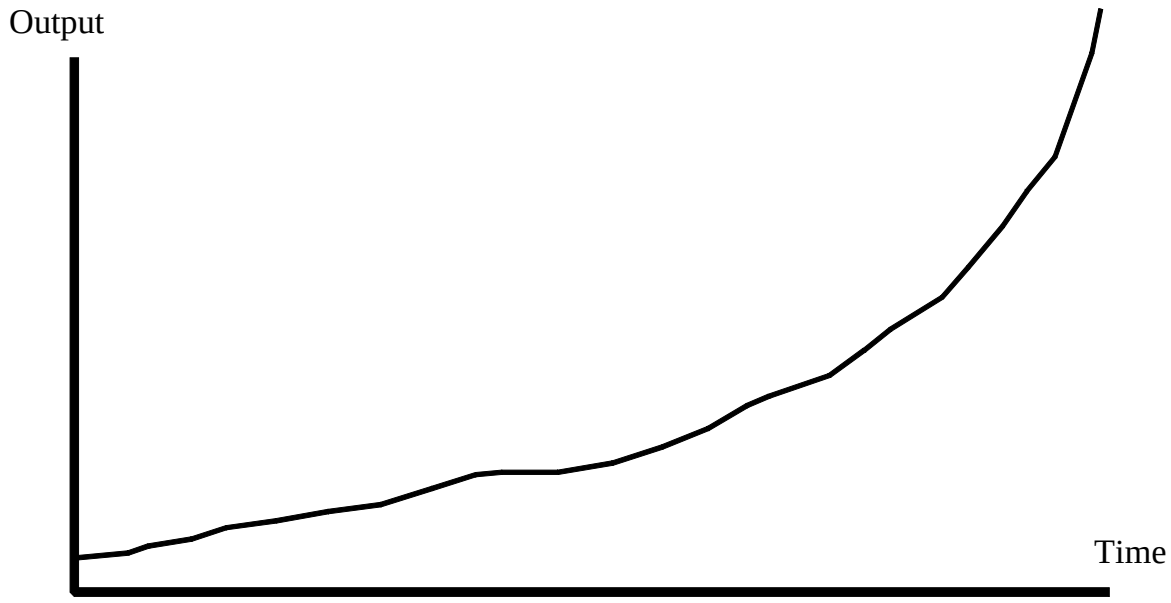
(7) Minimizing the role of the military both domestically and internationally, and

(8) Encouraging the growth of the private sector relative to the public sector.



d. Aggregate demand, aggregate supply over time shows accelerating economic growth.

1. The following graph translates the AS/AD model into the secular trend.



2. In Indonesia, India, and several middle-eastern and African countries there are significant problems with corruption, and capital flight. It is nearly impossible to attract capital to a developing nation, if the government is corrupt and there is little in the way of political stability or the rule of law. In the late 1990s there were stories coming out of Indonesia where high government officials were leaving the country with several suitcases of U.S. dollars – classic capital flight.

e. **Economic growth is a long-term secular trend.**

3. The accumulation of capital in the United States was both domestic capital, and the attraction of foreign capital.

   a. Political instability in Europe

   b. U.S. natural resources

   c. Rule of law and political stability

   d. Innovation

4. The Asian Tiger economies, China, Taiwan, Indonesia, South Korea, Malaysia, the Philippines, and Thailand all experienced very substantial growth.

a. Much of this growth depended on two things, low wage labor for manufacturing, particularly in the electronics industry, and exports.

5. The majority of the world's population lives in low-income countries.

    a. Indebted,

        1. Help here is important

    b. Population outgrowing the economy,

    c. Narcotic effect of foreign aid

    d. Brain Drain

    e. Political instability

        1. Arms trade

    f. Capital Flight

    g. International Trade

9. Money and Banking

Lecture Notes

1. Functions of Money - there are three functions of money:

    a. Medium of exchange - accepted as "legal tender" or something of general and specified value.

        1. Use avoids reliance on barter.

        2. Barter requires a coincidence of wants and severely complicates a market economy.

    b. Measure of value - permits value to be stated in terms of a standard and universally understood standard.

    c. Store of value - can be saved with little risk, chance of spoilage and virtually no cost and later exchanged for commodities without these positive storage characteristics.

2. Supply of money

    a. There are numerous definitions of money M1 through M3 most commonly used.

        1. M1 is currency + checkable deposits

        2. M2 is M1 + noncheckable savings account, time deposits of less $100,000, Money Market Deposit Accounts, and Money Market Mutual Funds.

        3. M3 is M2 + large time deposit (larger than $100,000).

3. Near Money - are items that fulfill portions of the requirements of the functions of money.

    a. Credit cards - fulfill exchange function, but are not a measure of value and if there is a credit line, can be used to store value.

b. Other forms of near money:

2. Precious metals - store of value, but not easily exchanged

3. Stocks and Bonds - earnings instruments, but can be used as store of value.

c. Implications for near money - stability, spending habits & policy

4. What gives money value

a. No more gold standard

1. Nixon eliminated gold standard

b. The Value of money depends upon:

1. acceptability for payment,

2. because the government claims it is legal tender, and

3. its relative scarcity.

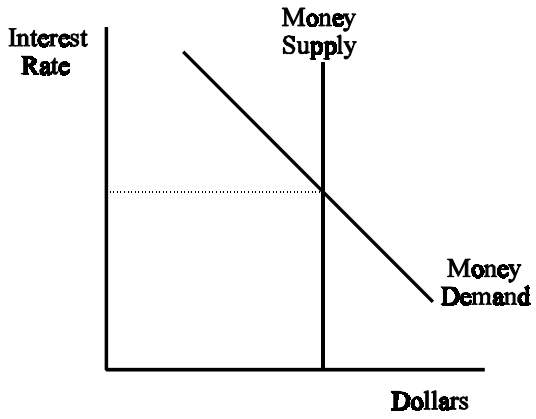
5. Value of dollar = D = 1/P

6. Demand for Money - three components of money demand:

a. Transactions demand

b. Asset demand

c. Total demand



The money supply curve is vertical because the supply of money is exogenously determined by the Federal Reserve. The money demand curve slopes downward and to the right. The intersection of the money demand and money supply curves represents equilibrium in the money market and determines the interest rate (price of money).

7. Money market

    a. With bonds that pay a specified interest payment per quarter then:

        1. Interest rate and value of bond inversely related

8. U.S. Financial System

    a. FDIC - Federal Deposit Insurance Corporation - guarantees bank deposits.

    b. Federal Reserve System - is comprised of member banks. The Board of Governors and Chairman are nominated by the President of United States. The structure of the system is:

        1. Board of Governors

        2. Open Market Committee

        3. Federal Advisory Council

        4. 12 regions

    c. Functions

1. Set reserves requirements,
2. Check clearing services,
3. Fiscal agents for U.S. government,
4. Supervision of banks,
5. Control money supply through FOMC,

9. Moral hazard - insuring reduces insured's incentive to assure risk does not happen

10. Multiple Expansion of Money

Lecture Notes

1. Balance sheet (T accounts -- assets = liabilities + net worth)

    a. is nothing more than a convenient reporting tool.

2. Fractional Reserve Requirements

    a. Goldsmiths used to issue paper money receipts, backed by stocks of gold. The stocks of gold acted as a reserve to assure payment if the paper claims were presented for payment.

        1. Genghis Khan first issued paper money in the thirteenth century - it was backed by nothing except the Khan's authority.

    b. The U.S. did not have a central banking system from the 1820 through 1914. In the early part of this century several financial panics pointed to the need for a central banking and financial regulation.

        1. States and private companies used to issue paper money.

        2. In the early days of U.S. history Spanish silver coins were widely circulated in the U.S.

        3. The first U.S. paper money was issued during the Civil War (The Greenback Act), which included fractional currency (paper dimes & nickels!).

    c. Today, the Federal Reserve requires banks to keep a portion of its deposits as reserves.

        1. Purposes to keep banks solvent & prevent financial panics

3. RRR (Required Reserve Ratio) and multiple expansion of money supply through T accounts

    a. How reserves are kept

        1. Loans from Fed - discount rate at which Fed loans reserves to members

2. Vault cash

3. Deposits with Fed

4. Fed funds rate - the rate at which members loan each other reserves

b. RRR = Required reserve/demand deposit liabilities

c. actual, required, and excess reserves

4. Money created through deposit/loan redepositing

a. Money is created by a bank receiving a deposit, and then loaning that non-reserve portion of the deposit, which is deposited and loans made against those deposits.

1. If the required reserve ratio is .10, then a bank must retain 10% of each deposit as a reserve and can loan 90% of the deposit; the multiple expansion of money, assuming a required reserve ratio of .10, is therefore:

Deposit	Loan
$10.00	9.00
9.00	8.10
8.10	7.29
.	.
.	.
$ 100.00	$90.00

Total new money is the initial deposit of $10 + $90 of multiple expansion for a total of $100.00 in new money.

5. Money multiplier Mm = 1/RRR

a. Is the short-hand method of calculating the entries in banks' T accounts and shows how much an initial injection of money into the system generates in total money supply.

b. With a required reserve ratio of .05 the money multiplier is 20 & with a required reserve ratio of .20 the money multiplier is 5.

c. The Federal Reserve needs to inject only that fraction of money that time the multiplier will increase the money supply to the desired levels.

11. Federal Reserve and Monetary Policy

Lecture Notes

1. Monetary policy, defined and objectives

    a. Monetary policy is carried out by the Federal Reserve System and is focused on controlling the money supply.

    b. The fundamental objective of monetary policy is to assist the economy in attaining a full employment, non-inflationary equilibrium.

2. Tools of Monetary Policy

    a. Open Market Operations is the selling and buying of U.S. treasury obligations in the open market.

    b. Expansionary monetary policy involves the buying of bonds.

        1. The Fed buying bonds, it puts money into the hands of those who had held bonds.

    c. Contractionary monetary policy involves the selling of bonds.

        1. The Fed sells bonds it removes money from the system and replaces it with bonds.

3. Required Reserve Ratio - the Fed can raise or lower the required reserve ratio.

    a. Increasing the required reserve ratio, reduces the money multiplier, hence reduces the amount by which multiple expansions of the money supply can occur.

        1. Decreasing the required reserve ratio increases the money multiplier, and permits more multiple expansion of the money supply.

4. The Discount Rate is the rate at which the Fed will loan reserves to member banks for short periods of time.

5. Velocity of Money - is how often the money supply turns-over.

    a. The quantity theory of money is: MV = PQ

        1. This equation has velocity (V) which is nearly constant and output (Q) which grows slowly, so what happens to the money supply (M) should be directly reflect in the price level (P).

6. Target Dilemma in Monetary Policy

    a. Interest rates and the business cycle may present a dilemma. Expansionary monetary policy may result in higher interest rates which dampen expansionary policies.

    b. Fiscal and monetary policies may also be contradictory.

7. Easy Money - lowering interest rates, expanding money supply.

    a. mitigate recession and stimulate growth.

8. Tight Money - increasing interest rates, contracting money supply.

    a. mitigate inflation and slow growth.

9. Monetary rules - Milton Friedman

    a. Discretionary monetary policy often misses targets in U.S. monetary history

    b. Suspicion of Fed and FOMC – perhaps overblown

12. Economic Stability and Policy

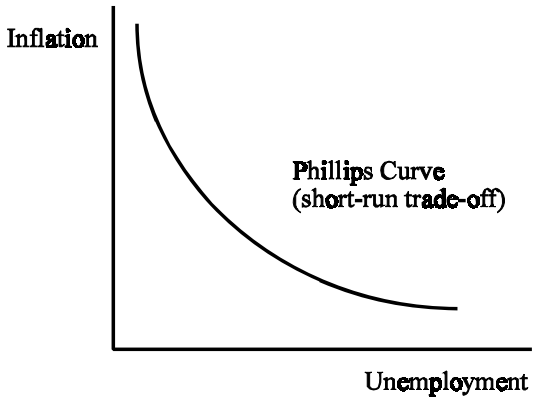
Lecture Notes

1. Inflation, Unemployment and Economic Policy

    a. The misery index is the inflation rate plus the unemployment rate.

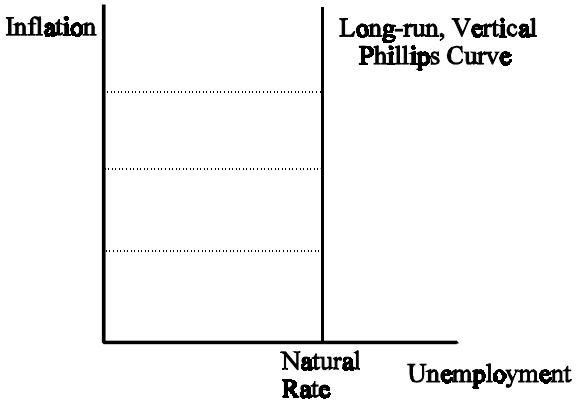
2. The Phillips Curve is a statistical relation between unemployment and inflation named for A. W. Phillips who examined the relation in the United Kingdom and published his results in 1958. (Actually Irving Fisher had done earlier work on the subject in 1926).

    a. Short run trade-off



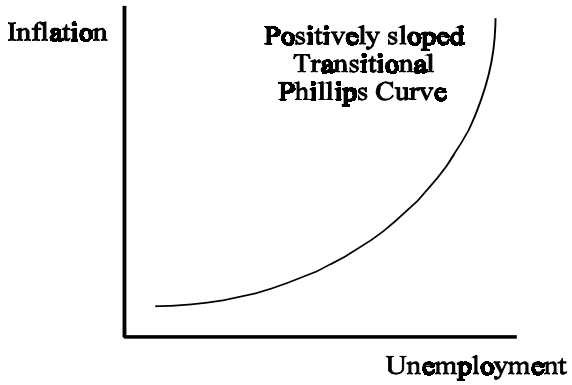
Often used to support activitist role for government, however, the short-run trade-off view of the Phillips curve demonstrates that there is a cruel choice between increased inflation or increased unemployment, but low inflation and unemployment together are not possible.

b. Long run Phillips Curve is alleged to be vertical at the natural rate of unemployment.



This long-run view of the Phillips Curve is also called the Natural Rate Hypothesis. It is based on the idea that people constantly adapt to current economic conditions and that their expectations are subject to "adaptive" revisions almost constantly. If this is the case, then business and consumers cannot be fooled into thinking that there is a reason for unemployment to cure inflation or vice versa.

c. Possible positive sloping has hypothesized by Milton Friedman. Friedman was of the opinion that the may be a transitional Phillips curve while people adapt both their expectations and institutions to new economic realities. The positively sloped Phillips curve is show in the following picture:



The positively sloped transitional Phillips Curve is consistent with the observations of the early 1980s when both high rates of unemployment existed together with high rates of inflation -- a condition called stagflation.

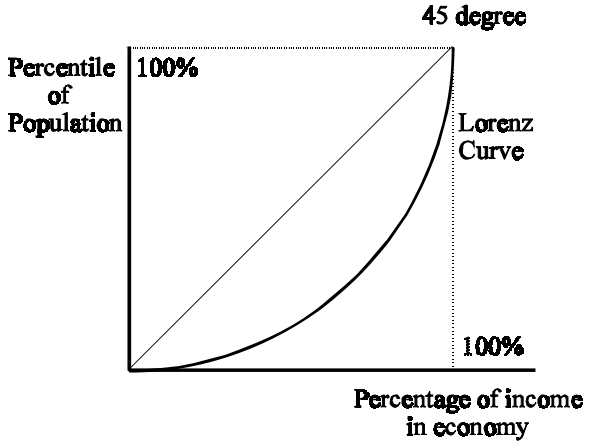
d. Cruel choices only exist in the case of the short-run trade-off view of the Phillips Curve. However, there maybe a "Lady and Tiger Dilemma" for policy makers relying on the Phillips Curve to make policy decisions.

3. Rational expectations is a theory that businesses and consumers will be able to accurately forecast prices (and other relevant economic variables). If the accuracy of consumers' and business expectations permit them to behave as though they know what will happen, then it is argued that only a vertical Phillips Curve is possible, as long as political and economic institutions remain stable.

4. Market policies are concerned with correcting specific observed economic woes.

   a. Equity policies are designed to assure "a social safety net" at the minimum and at the liberal extreme to redistribute income.

   1. The Lorenz Curve and Gini Coefficients are used to measure income distribution in economies.



The Lorenz curve maps the distribution of income among across the population. The 45 degree line shows what the distribution of income would be if income was uniformly distributed across the population. However, the Lorenz curve drops down below the 45 degree line showing that poorer people receive less than rich people.

The Gini coefficient is the percentage of the triangle mapped out by the 45 degree line, the indicator line from the top of the 45 degree line to the percentage of income axis, and the percentage of income axis that is accounted for by the area between the Lorenz curve and the 45 degree

line. If the Gini coefficient is near zero, income is close to uniformly distributed; if is near 1 then income is mal-distributed.

b. Productivity is also the subject of specific policies. The Investment Tax Credit, WIN program, and various state and federal training programs are focused increasing productivity.

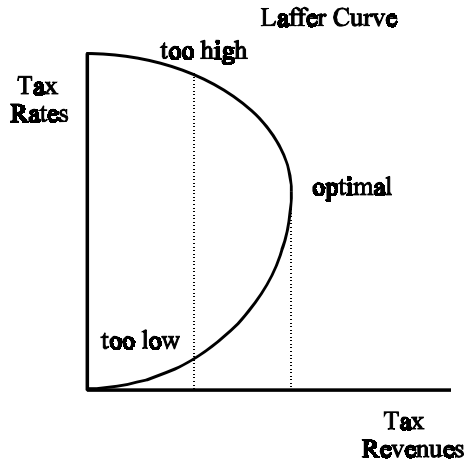
c. Trade barriers have been reduced through NAFTA and GATT in hopes of fostering more U.S. exports.

5. Wage-Price Policies

a. Attempts have been made to directly control inflation through price controls, this seemed to work reasonably well during World War II. Carter tried voluntary guidelines that failed, and Nixon tried controls that simply were a disaster.

6. Supply Side Economics of the Reagan Administration were based on the theory that stimulating the economy would prevent deficits as government spending for the military was increased. This failed theory was based on something called the Laffer Curve.

a. Laffer Curve (named for Arthur Laffer) is a relation between tax rates and tax receipts. Laffer's idea was rather simple, he posited that there was optimal tax rate, above which receipt went down and below which receipts went down. The Laffer curve is shown below:



The Laffer Curve shows that the same tax receipts will be collected at the rates labeled both "too high" and "too low." What the supply-siders thought was that tax rates were too high and that a reduction in tax rates would permit them to slide down and to the right on the Laffer Curve and collect more revenue. In other words, they thought the tax rate was above the optimal. We got a big tax rate reduction and found, unfortunately, that we were below the optimal and tax revenues fell, while we dramatically increased the budget. In other words, record-breaking deficits and debt.

b. There were other tenets of the supply-side view of the world. These economists thought there was too much government regulation. After Jimmy Carter de-regulated trucking and airlines, there was much rhetoric and little action to de-regulate other aspects of American economic life.

7. Unfortunately, the realities of American economic policy is that politics is often main motivation for policy.

   a. Tax cuts are popular, tax increases are not.

   b. Deficits are a natural propensity for politicians unwilling to cut pork from their own districts and unwilling to increase taxes.

8. Politics - economics provides a scientific approach to understanding, politics is the “art of the possible” what is good economically maybe horrible politically and vice versa

   a. Public choice literature

      1. Politicians act in self-interest just like the rest of us

13. Epilogue

Lecture Notes

1. Why study Macroeconomics:

    a. Knowledge is prerequisite for democracy

        1. Founding fathers thought that knowledge was what prevented despotism – Jefferson and the free Press

    b. Business conditions

        1. Environment in which business is conducted, importance cannot be minimized in a practical sense.

        2. Becoming more important as economy becomes more global – exchange rates, reasons for shifting fortunes etc.

    c. Self-preservation – very powerful incentives

        1. Individual economic planning – 401K, investments, etc.

        2. Understanding markets requires understanding the environment in which they work – full circle to a and b above

2. Futurism, macroeconomic variables are powerful determinants of the future well-being of societies and people.

    a. Commodities - Oil (energy in general); metals; natural resources; etc.

    b. Climate changes impacting markets and whole areas

    c. Technological changes - products and processes available today which didn't exist 10 years ago

    d. Political and institutional changes - terrorism, foreign policy etc.

    e. Unanticipated issues and reactions – the historical record shows that much of this shapes what the modern world is.

3. Economics as a career

    a. Economics majors, areas in which they work, one of fastest growing majors in U.S. universities

b. Graduate training almost required today - economic foundations in business, law, teaching, etc.

c. Not dependent on institutional arrangements

Reading Assignments

Introduction to Macroeconomics

E202

Chapter 1

Introduction to Economics

In general, the purpose of this chapter is to provide the basic definitions upon which the subsequent discussions of macroeconomics will be built. The specific purpose of this chapter is to define economics (and its major component fields of study), describe the relation between economic theory and empirical economics, and examine the role of objectivity in economic analysis, before examining economic goals and their relations. For those of you who have had E201, Introduction to Microeconomics, much of the material contained in this chapter will be similar to the introductory material contained in that course.

Definitions

Economics has been studied since sixteenth century and is the oldest of the social studies. Most of the business disciplines arose in attempt to fill some of the institutional and analytical gaps in the areas with which economics was particularly well suited to examine. The subject matter examined in economics is the behavior of consumers, businesses, and other economic agents, including the government in the production and allocation processes. Therefore, any business discipline will have some direct relation with the methods or at least the subject matter with which economists deal.

Economics is one of those words that seems to be constantly in the newspapers and on television news shows. Most people have some vague idea of what the word economics means, but precise definitions generally require some academic exposure to the subject. **Economics is the study of the allocation of SCARCE resources to meet UNLIMITED human wants.** In other words, economics is the study of human behavior as it pertains to the material well-being of people (as either individuals or societies).

Robert Heilbroner describes economics as a "Worldly Philosophy." It is the organized examination of how, why and for what purposes people conduct their day-to-day activities, particularly as relates to the production of goods and services, the accumulation of wealth, earning incomes, spending their resources, and saving for future consumption. This worldly philosophy has been used to explain most rational human behavior. (Irrational behavior being the domain of specialties in sociology, psychology, history, and anthropology.)

Underlying all of economics is the base assumption that people act in their own best interest (at least most of the time and in the aggregate). Without the assumption of rational behavior, economics would be incapable of explaining the preponderance of observed economic activity. Consistent responses to stimuli are necessary for a model of behavior to predict future behavior. If we assume people will always act in their best economic interests, then we can model their behavior so that the model will predict (with some accuracy) future economic behavior. As limiting as this assumption may seem, it appears to be an accurate description of reality. Experimental economics, using rats in mazes, suggests that rats will act in their own best interest; therefore, it appears to be a reasonable assumption that humans are no less rational.

Most academic disciplines have evolved over the years to become collections of closely associated scholarly endeavors of a specialized nature. Economics is no exception. An examination of one of the scholarly journals published by the American Economics Association, The *Journal of Economic Literature* reveals a classification scheme for the professional literature in economics. Several dozen specialties are identified in that classification scheme, everything from national income accounting, to labor economics, to international economics. In other words, the realm of economics has expanded to such an extent over the centuries that it is nearly impossible for anyone to be an expert in all aspects of the discipline, so each economist generally specializes in some narrow portion of the discipline. The decline of the generalist is a function of the explosion of knowledge in most disciplines, and is not limited to economists.

Economics can be classified into two general categories; these are (1) microeconomics and (2) macroeconomics. **Microeconomics is concerned with decision-making by individual economic agents such as firms and consumers.** In other words, microeconomics is concerned with the behavior of individuals or groups organized into firms, industries, unions, and other identifiable agents. Microeconomics is the subject matter of E201, Introduction to Microeconomics (which many of you have recently completed).

Macroeconomics is concerned with the aggregate performance of the entire economic system. Unemployment, inflation, growth, balance of trade, and business cycles are the topics that occupy most of the attention of students of macroeconomics. These matters are the topics to be examined this course (E202), Introduction to Macroeconomics.

Macroeconomics is a course that interfaces with several other academic disciplines. A significant amount of the material covered in this course involves public policy and has a significant historical foundation. The result is that much of what is currently in the news will be things that are being studied in this course as they happen. In many respects, that makes this course of current interest, if not fun.

Methods in Economics

Economists seek to understand the behavior of people and economic systems using scientific methods. These scientific endeavors can be classified into two categories, (1) economic theory and (2) empirical economics. **Economic theory relies upon principles to analyze behavior of economic agents.** These theories are typically rigorous mathematical models (abstract representations) of behavior. A good theory is one that accurately predicts future behavior and is consistent with the available evidence.

Empirical economics relies upon facts to present a description of economic activity. Empirical economics is used to test and refine theoretical economics, based on tests of economic theory. The tests that are typically applied to economic theories are statistically based, and is generally called econometric methods.

Theory concerning human behavior is generally constructed using one of two forms of logic. Sociology, psychology and anthropology typically rely on inductive logic to create theory. **Inductive logic creates principles from observation.** In other words, the scientist will observe evidence and attempt to create a principle or a theory based on any consistencies that may be observed in the evidence. Economics relies primarily on deductive logic to create theory. **Deductive logic involves formulating and testing hypotheses.** Often the theory that will be tested comes form inductive logic or sometime informed guesswork. The development of rigorous models expressed as equations typically lend themselves to rigorous statistical methods to determine whether the models are consistent with evidence from the real world. The tests of hypotheses can only serve to reject or fail to reject a hypothesis. Therefore, empirical methods are focused on rejecting hypotheses and those that fail to be rejected over large numbers of tests generally attain the status of principle.

However, examples of both types of logic can be found in each of the social sciences. In each of the social sciences, it is common to find that the basic theory is developed using inductive logic. With increasing regularity, standard statistical methods are being employed across all of the social sciences and business disciplines to test the validity of theories.

The usefulness of economics depends on how accurate economic theory predicts behavior. Even so, economics provides an objective mode of analysis, with rigorous models that permit the discounting of the substantial bias that is usually present with discussions of economic issues. The internal consistency brought to economic theory by mathematical models often fosters objectivity. However, no model is any better than the assumptions that underpin that model. If the assumptions are either unrealistic or formulated to introduce a specific bias, objective analysis ca still be thwarted (under the guise of scientific inquiry).

The purpose of economic theory is to describe behavior, but behavior is described using models. **Models are abstractions from reality** - the best model is the one that best describes reality and is the simplest (the simplest requirement is called Occam's Razor). Economic models of human behavior are built upon assumptions; or simplifications that allow rigorous analysis of real world events, without irrelevant complications. Often (as will be pointed-out in this course) the assumptions underlying a model are not accurate descriptions of reality. When the model's assumptions are inaccurate then the model will provide results that are consistently wrong (known as bias).

One assumption frequently used in economics is **ceteris paribus** which means all other things equal (notice that economists, like lawyers and doctors will use Latin to express rather simple ideas). This assumption is used to eliminate all sources of variation in the model except for those sources under examination (not very realistic!).

Economic Goals, Policy, and Reality

Most people and organizations do, at least rudimentary planning, the purpose of planning is the establishment of an organized effort to accomplish some economic goals. Planning to finish your education is an economic goal. Goals are, in a sense, an idea of what should be (what we would like to accomplish). However, goals must be realistic and within our means to accomplish, if they are to be effective guides to action. This brings another classification scheme to bear on economic thought. Economics can be again classified into positive and normative economics.

Positive economics is concerned with what is; and normative economics is concerned with what should be. Economic goals are examples of normative economics. Evidence concerning economic performance or achievement of goals falls within the domain of positive economics.

Most nations have established broad social goals that involve economic issues. The types of goals a society adopts depends very much on the stage of economic development, system of government, and societal norms. Most societies will adopt one or more of the following goals: (1) economic efficiency, (2) economic growth, (3) economic freedom, (4) economic security, (5) an equitable distribution of income, (6) full employment, (7) price level stability, and (8) a reasonable balance of trade.

Each goal (listed above) has obvious merit. However, goals are little more than value statements in this broad context. For example, it is easy for the very wealthy to cite as their primary goal, economic freedom, but it is doubtful that anybody living in poverty is going to get very excited about economic freedom; but equitable distributions of income, full employment and economic security will probably find rather wide support

among the poor. Notice, if you will, goals will also differ within a society, based on socio-political views of the individuals that comprise that society.

Economics can hardly be separated from politics because the establishment of national goals occurs through the political arena. Government policies, regulations, law, and public opinion will all effect goals, how goals are interpreted, and whether they have been achieved. A word of warning, e**CON**omics can be, and has often been used, to further particular political agendas. The assumptions underlying a model used to analyze a particular set of circumstances will often reflect a political agenda of the economist doing the analysis. For example, Ronald Reagan argued that government deficits were inexcusable, and that the way to reduce the deficit was to lower peoples' taxes -- thereby spurring economic growth, therefore more income that could be taxed at a lower rate and yet produce more revenue. Mr. Reagan is often accused, by his detractors, of having a specific political agenda that was well hidden in this analysis. His alleged goal was to cut taxes for the very wealthy and the rest was just rhetoric to make his tax cuts for the rich acceptable to most of the voters. (Who really knows?) Most political commentators, both left and right, have mastered the use of assumptions and high-sounding goals to advance a specific agenda. This adds to the lack of objectivity that seems to increasingly dominate discourse on economic problems.

On the other hand, goals can be publicly spirited and accomplish a substantial amount of good. President Lincoln was convinced that the working classes should have access to higher education. The Morrell Act was passed 1861 and created Land Grant institutions for educating the working masses (Purdue, Michigan State, Iowa State, and Kansas State (the first land grant school) are all examples of these types of schools). By educating the working class, it was believed that several economic goals could be achieved, including growth, a more equitable distribution of income, economic security and freedom. In other words, economic goals that are complementary are consistent and can often be accomplished together. Therefore, conflict need not be the centerpiece of establishing economic goals.

Because any society's resources are limited, there must be decisions about which goals should be most actively pursued. The process by which such decisions are made is called prioritizing. Prioritizing is the rank ordering of goals, from the most important to the least important. Prioritizing of goals also involves value judgments, concerning which goals are the most important. In the public policy arena, prioritizing of economic goals is often the subject of politics.

Herein lies one of the greatest difficulties in macroeconomics. An individual can easily prioritize goals. It is also a relatively easy task for a small organization or firm to prioritize goals. For the United States to establish national priorities is a far larger task. Adam Smith in the *Wealth of Nations* (1776) describes the basic characteristics of capitalism (this book marks the birth of capitalism). Smith suggests that there are three legitimate functions of government in a free enterprise economy. These three functions are (1) provide for the national defense, (2) provide for a system of justice, and (3)

provides those goods and services that cannot be effectively provided by the private economy because of the lack of a profit motive. There is little or no controversy concerning the first two of these government functions. Where debate occurs is over the third of these legitimate roles.

Often you hear that some non-profit organization or government agency should be "run like a business." A business is operated to make a profit. If the capitalist model is correct, then the only reason for an entrepreneur to establish and operate a business is to make profits (otherwise, the conduct of the business is irrational and cannot be explained as self-interested conduct). A church, charity, or school is established for purposes other than the making of a profit. For example, a church may be established for the purposes of maximizing spiritual well-being of the congregation (the doing of good-works, giving testimony to one's religion, worship of God, and the other higher pursuits). The purpose of a college or a secondary/elementary school system, likewise is not to make profits, the purposes of educational institutions is to provide access knowledge. A University is to increase the body of knowledge through basic and applied research, professional services, and (of primary importance to the students) to provide for the education of students. To argue that these public or charitable organizations should be run like a business is to suggest that these matters can be left to the private sector to operate for a profit. Inherent in this argument is the assumption (a fallacy) that the profit motive would suffice to assure that society received a quality product (spiritual or educational or both) and in the quantities necessary to accomplish broad social objectives. Can you imagine what religion would become if it was reduced to worldly profitability (some argue there's too much of that sort of thing now), can you imagine what you would have to pay for your education if, instead of the State of Indiana subsidizing education, the student was asked to pay for the total cost of a course plus some percentage of cost as a profit? Perhaps worse still, who would do the basic research that has provided the scientific break-troughs that result in thousands of new products each year? Would we have ever had computers without the basic research done in universities, what would be missing from our medical technology?

Priorities at a national level are rarely set without significant debate, disagreements, and even conflict. It is through our free, democratic processes that we establish national, state and local priorities. In other words, the establishment of our economic priorities are accomplished through the political arena, and therefore it is often impossible to separate the politics from the economics at the macro level.

Policy

Policy can be generally classified into two categories, public and private policy. The formulation of public and private policy is the creation of guidelines, regulations, or law designed to effect the accomplishment of specific economic (or other) goals. Public policy is how national economic goals are pursued. In the private sector, policy formulation means the creation of rules, regulations and procedures to guide the operation of the company. Therefore, to understand goals one needs to understand something of the process of formulating policy.

Business students will have an in depth treatment of policy making in Administrative Policy (P401) and the School of Public and Environmental Affairs requires a similar course in some of its degree programs. For students in other programs the brief treatment here will suffice for present purposes.

The following diagram outlines the steps in formulating policy (in sufficiently general terms to be applicable to both the public and private sectors):

Steps in formulating policy:

1. Stating goals - must be measurable with specific stated objective to be accomplished.

2. Options - identify the various actions that will accomplish the stated goals & select one, and

3. Evaluation - gather and analyze evidence to determine whether policy was effective in accomplishing goal, if not reexamine options and select option most likely to be effective.

Both the public and private policy formulation process are dynamic processes. Economic goals change with public opinion and with the achievement or failure of certain elements of policy. Step 1 involves the setting of goals. Often this is based on little more than stating value judgments, but the statement of goals should be based on informed opinion (which requires the gathering and analyzing of evidence concerning the effects of the goal on other economic activities, and the expected results of the goal). Step 2 involves selecting the appropriate model and the options associated with that model to accomplish the specified goal. The final step involves the implementation of the policies designed to accomplish the goal and the monitoring of progress toward

accomplishing that goal. The monitoring of progress involves the gathering of evidence and the appropriate analysis to determine whether the policy is doing what was anticipated or whether the policy needs revision. The process of formulating policy is, therefore, a loop, and requires continuous monitoring and revising.

The major difference between public policy and private policy is that private policy is not subject to democratic processes. The Board of Directors or management of a company will decide what goals are to be accomplished and what policy options are best used to do so. Often private policy is made behind closed-doors without public accountability. Public policy is created in the open with free debate and has the force of law (and not just company rules and regulations).

Objective Thinking

Most people bring many misconceptions and biases to economics. After all, economics deals with people's material well-being. Because of political beliefs and other value system components rational, objective thinking concerning various economic issues fail. Rational and objective thought requires approaching a subject with an open-mind and a willingness to accept whatever answer the evidence suggests is correct. In turn, such objectivity requires the shedding of the most basic preconceptions and biases -- not an easy assignment.

What conclusions an individual draws from an objective analysis using economic principles, are not necessarily cast in stone. The appropriate decision based on economic principles may be inconsistent with other values. The respective evaluation of the economic and "other values" (i.e., ethics) may result in a conflict. If an inconsistency between economics and ethics is discovered in a particular application, a rational person will normally select the option that is the least costly (i.e., the majority view their integrity as priceless). An individual with a low value for ethics or morals may find that a criminal act, such as theft, as involving minimal costs. In other words, economics does not provide all of the answers; it provides only those answers capable of being analyzed within the framework of the rational behavior that forms the basis of the discipline.

There are several common pitfalls to objective thinking in economics. After all, few things excite more emotion than our material well-being. It should come as no surprise that bias and less than objective reasoning is common when it comes to economic issues, particularly those involving public policy... Among the most common logical pitfalls that affect economic thought are: (1) the fallacy of composition, and (2) post hoc, ergo prompter hoc. Each of these will be reviewed, in turn.

The fallacy of composition is the mistaken belief that what is true for the individual must be true for the group. An individual or small group of individuals may

exhibit behavior that is not common to an entire population. In other words, this fallacy is simply assuming a small, unscientifically selected sample will predict the behavior, values, or characteristics of an entire population. For example, if one individual in this class is a I.U. fan then everyone in this class must be an I.U. fan is an obvious fallacy of composition. Statistical inference can be drawn from a sample of individual observations, but only within confidence intervals that provide information concerning the likelihood of making an incorrect conclusion (E270, Introduction to Statistics, provides a more in depth discussion of confidence intervals and inference).

Post hoc, ergo prompter hoc means after this, hence because of this, and is a fallacy in reasoning. Simply because one event follows, another does not necessarily imply there is a causal relation. One event can follow another and be completely unrelated. All of us have, at one time or another experienced a simple coincidence. One event can follow another, but there may be something other than a direct causal relation that accounts for the timing of the two events.

For example, during the thirteenth century people noticed that the black plague occurred in a location when the population of cats increased. Unfortunately, some people concluded that the plague was caused by cats so they killed the cats. In fact, the plague was carried by fleas on rats. When the rat population increased, cats were attracted to the area because of the food supply (the rats). The people killed the predatory cats, and therefore, rat populations increased, and so did the population of fleas that carried the disease. This increase in the rat population also happened to attract cats, but cats did not cause the plague, if left alone they may have gotten rid of the real carriers (the rats, therefore the fleas). The idea that cats were observed increasing in population gave rise to the conclusion that the cats brought the plague is a post hoc, ergo prompter hoc fallacy, but this example has an indirect relation between cats in the real cause. Often, even this indirect relation is absent.

Many superstitions are classic examples of this type of fallacy. Broken mirrors causing seven years bad luck, or walking under a ladder brining bad luck are nothing but fallacies of the post hoc, ergo prompter hoc variety. There is no causal relation between breaking glass and bad luck or walking under ladder (unless something falls off the ladder on the pedestrian). Deeper examination of the causal relations are necessary for such events if the truth of the relations is to be discovered. However, more in depth analysis is often costly, and the cost has the potential of causing decision-makers to skip the informed part and cut straight to the opinion.

Economic history has several examples of how uniformed opinion resulted in very significant difficulties for innocent third parties, in addition, to those responsible for the decisions. The following box presents a case where policy was implemented based on the failure to recognize that there is a significant amount of interdependence in the U.S. economy.

Unintended Consequences

The Legend of 'Pig' Iron (David A. Dilts, *Indiana Policy Review, Vol. 1, No. 5, pp. 28-29.)*

Many a cliché seems to center on pork. The head of the household is supposed to " put bacon on the table," "pork barrels," and politicians are frequently accused of being in too close a proximity. It only seems fitting that one more story concerning pork should be brought to your attention.

During World War II, farmers in the corn belt argued that regulation of the price of pork had no effect on the war effort, and that they should be permitted to sell their commodities without government interference. The farmers brought political pressure to bear on the Congress and our representatives to deregulate the price of pork. The end result was to shut down the steel mills in Gary.

Shut down our steel mills? How could this be?

Since it is not intuitively obvious how this happened, I'll explain. In 1942, there had been a change in management in the Philippines. And, as luck would have it, we didn't have good trade relations with the new management -- the Japanese. Therefore we did not have access to Manila fibre, necessary in making everything from rope to battleships. We had not yet developed synthetic fibre and therefore has to rely on the fibre previously available. That fibre was hemp.

Now hemp grows in the same places, under the same climatic conditions as does corn. Corn is what hogs eat. And because corn was not being grown in the Midwest, the farmers sought alternative feed for the increased number of hogs they were raising. (Remember, increased price results in a larger quantity supplied.) Oats, wheat and barley were available from the Great Plains region. The problem was shipping it to where the hogs were raised in the Corn Belt of the Lower Midwest.

In their search for transportation, the farmers found that railroads were regulated and reserved for military and heavy industry; trucks needed gasoline and rubber, both in short-supply; and airplanes were being built almost exclusively for military purposes.

This left the farmers without a ready source of domestic transportation for the needed grain. But they eventually found a source of shipping that was neither regulated nor controlled, because it was international in nature -- the iron-ore barges on the Great Lakes.

They bid up the price and the barges started hauling oats to the pigs and stopped hauling ore to the Gary steel mills. And there you have it: Without the requisite iron ore the steel mills could not produce; they were actually shut down for a period as a direct result of deregulating the price of pork.

U.S. Economy

This story shows fairly conclusively that private interests can damage society as a whole. While our economic freedom is one of the prime ingredients in making our economy the grandest in the world, such freedom requires that it be exercised in a responsible fashion, lest the freedom we prize becomes a source of social harm. Like

anything else, economic freedom for one group may mean disaster for another, through no fault of the victims. Government and the exercise of our democratic responsibilities is suppose to provide the checks on the negative results of the type portrayed in the above box.

Statistical Methods in Economics

The use of statistical methods in empirical economics can result in errors in inference. Most of the statistical methods used in econometrics (statistical examination of economic data) rely on correlation. **Correlation is the statistical association of two or more variables.** This statistical association means that the two variables move predictably with or against each other. To infer that there is a causal relation between two variables that are correlated is an error. For example, a graduate student once found that Pete Rose's batting average was highly correlated with movement in GNP during several baseball seasons. This spurious correlation cannot reasonably be considered path-breaking economic research.

On the other hand, we can test for causation (where one variable actually causes another). **Granger causality states that the thing that causes another must occur first, that the explainer must add to the correlation, and must be sensible.** As with most statistical methods Granger causality models permit testing for the purpose of rejecting that a causal relation exists, it cannot be used to prove causality exists. These types of statistical methods are rather sophisticated and are generally examined in upper division or graduate courses in statistics.

As is true with economics, statistics are simply a tool for analyzing evidence. Statistical models are also based on assumptions, and too often, statistical methods are used for purposes for which they were not intended. Caution is required in accepting statistical evidence. One must be satisfied that the data is properly gathered, and appropriate methods were applied before accepting statistical evidence. Statistics do not lie, but sometimes statisticians do!

Objectivity and Rationality

Objective thinking in economics also includes rational behavior. The underlying assumptions with each of the concepts examined in this course assumes that people will act in their perceived best interest. Acting in one's best interests is how rationality is defined. The only way this can be done, logically and rigorously, is with the use of marginal analysis. This economic perspective involves weighing the costs against the benefits of each additional action. In other words, if benefits of an additional action will be greater than the costs, it is rational to do that thing, otherwise it is not.

KEY CONCEPTS

Economics
- Microeconomics
- Macroeconomics

Empirical economics v. Theoretical economics

Inductive logic v. Deductive logic

Model Building
- Assumptions
- Occam's Razor

Normative economics v. Positive economics

Policy formulation
- Public v. Private

Objective Thinking
- Fallacy of Composition
- Cause and effect
- Bias

Correlation v. causation

Cost-benefit analysis

STUDY GUIDE

Food for Thought:

Most people are biased in their thinking particularly concerning economic issues. Why do you suppose this is?

Sample Questions:

Multiple Choice:

Which of the following is not an economic goal?

A. Full Employment
B. Price Stability
C. Economic Security
D. **All of the above are economic goals**

Which of the following methods can be applied to test for the existence of statistical association between two variables?

A. Correlation
B. **Granger causality**
C. Theoretical modeling
D. None of the above

True - false:

Non-economists are no less or no more biased about economics than physics or chemistry {FALSE}.

Assumptions are used to simplify the real world so that it may be rigorously analyzed {TRUE}.

Chapter 2

National Income Accounting

The aggregate performance of a large and complex economic system requires some standards by which to measure that performance. Unfortunately, our systems of accounting are imperfect and provide only rough guidelines, rather than crisp, clear measurements of the economic performance of large systems. As imperfect as the national income accounting methods are, they are the best measures we have and they do provide substantial useful information. The purpose of this chapter is to present the measures we do have of aggregate economic performance.

Gross Domestic and Gross National Product

The most inclusive measures we have of aggregate economic activity are Gross Domestic Product and Gross National Product. These measures are used to describe total output of the economy, by source. In the case of Gross Domestic Product, we are concerned with what is produced within our domestic economy. More precisely, **Gross Domestic Product (GDP) is the total value of all goods and services produced within the borders of the United States (or country under analysis).** On the other hand, Gross National Product is concerned with American production (regardless of whether it was produced domestically). More precisely, **Gross National Product (GNP) is the total value of all goods and services produced by Americans regardless of whether in the United States or overseas.**

These measures (GDP and GNP) are the two most commonly discussed in the popular press. The reason they garner such interest is that they measure all of the economy's output and are perhaps the least complicated of the national income accounts. Often these data are presented as being overall measures of our population's economic well-being. There is some truth in the assertion that GDP and GNP are social welfare measures, however, there are significant limitations in such inferences. To fully understand these limitations we must first understand how these measures are constructed.

The national income accounts are constructed in such a manner as to avoid the problem of double counting. For example, if we count a finished automobile in the national income accounts, what about the paint, steel, rubber, plastic, and other components that go into making that car? To systematically eliminate double counting, only **value-added** is counted for each firm in each industry. The value of the paint, used in producing a car, is value-added by the paint manufacturing company, the application of that paint by an automobile worker is value-added by the car company

(but the value of the paint itself is not). By focusing only on value-added at each step of the production process in each industry, national income accountants are thus able to avoid the problems of double counting.

GROSS DOMESTIC PRODUCT by COMPONENT 1940-2000
(billions of current U.S. dollars)

YEAR	Personal Consumption	Gross Domestic Investment	Government Expenditures	Net Exports	GDP
1940	71.1	13.4	14.2	1.4	100.1
1950	192.1	55.1	32.6	0.7	286.7
1960	332.4	78.7	99.8	-1.7	513.4
1970	646.5	150.3	212.0	1.2	1010.7
1980	1748.1	467.6	507.1	-14.7	2708.0
1990	3742.6	802.6	1042.9	-74.4	5513.8
2000	6257.8	1772.9	1572.6	-399.1	9224.0

The above box presents the GDP accounts in the major expenditures components. GDP is the summation of personal consumption expenditures ©, gross domestic private investment (I_g), government expenditures (G) and net exports (X_n), where net exports are total export minus total imports. Put in equation form:

$$\mathbf{GDP\ (Y) = C + I_g + G + X_n}$$

GDP can also be calculated using the incomes approach. GDP can be found by summing each of the income categories and deducting Net American Income Earned Abroad. The following illustration shows how GNP and GDP are calculated using the incomes approach as follows:

Depreciation
+
Indirect Business Taxes
+
Employee Compensation
+
Rents
+
Interest
+
Proprietors' Income
+
Corporate Income Taxes
+
Dividends
+
Undistributed Corporate Profits

= **Gross National Product**

- Net American Income Earned Abroad

= **Gross Domestic Product**

In a practical sense, it makes little difference which approach to calculating GDP is used, the same result will be obtained either way. What is of interest is the information that each approach provides. The sub-accounts under each approach provide useful information for purposes of understanding the aggregate performance of the economy and potentially formulating economic policy. Under the expenditures approach we have information concerning the amount of foreign trade, government expenditures, personal consumption and investment.

The following accounts illustrates how GDP is broken down into another useful set of sub-accounts. Each of these additional sub-accounts provides information that helps us gain a more complete understanding of the aggregate economic system. The following illustration demonstrates how the sub-accounts are calculated:

Gross Domestic Product
- Depreciation =

Net Domestic Product
+ Net American Income Earned Abroad
- Indirect Business Taxes =

National Income
- Social Security Contributions
- Corporate Income Taxes
- Undistributed Corporate Profits
+ Transfer Payments =

Personal Income
- Personal Taxes =

Disposable Income

The expenditures approach provides information concerning from what sector proportions of GDP come. Personal consumption, government expenditures, foreign sector, and investment all are useful in determining what is responsible for our economic well-being. Likewise, the incomes approach provides greater detail to our understanding of the aggregate economic output. Net National Product is the output that we still have after accounting for what is used-up in producing, in other words, the capital we used-up getting GDP is netted-out to provide a measure of the output we have left. National Income takes out of Net National Product all *ad valorem* taxes that must be paid during production and net American income originating from overseas. Appropriate adjustments are made to National Income to deduct those things that do not reach households (i.e., undistributed corporate profits) and adds in transfer payments to arrive at Personal Income. The amount of Personal Income that households are free to spend after paying their taxes is called Disposable Income.

So far, the national income accounts appear to provide a great deal of information. However, we do know that this information fails to accurately measure our aggregate economic well-being. There are many aspects of economic activity that do not lend themselves well to standard accounting techniques and these problems must be examined to gain a full appreciation for what this information really means.

National Income Accounts as a Measure of Social Welfare

Accounting, whether it is financial, cost, corporate, nonprofit, public sector, or even national income, provides images of transactions. The images that the accounting process provides has value judgments implicit within the practices and procedures of the accountants. National income accounting, as do other accounting practices, also has significant limitations in the availability of data and the cost of gathering data. In turn, the costs of data gathering may also substantially influence the images that the accounts portray.

GDP and GNP are nothing more than measures of total output (or income). However, the total output measured is limited to legitimate market activities. Further, national income accountants make no pretense to measure only positive contributions to total output that occur through markets. Both economic goods and economic bads are included in the accounts, which significantly limits any inference that GDP or any of its sub-accounts are accurate images of social welfare. More information is necessary before conclusions can be drawn concerning social welfare.

Nonmarket transactions such as household-provided services or barter are not included in GDP. In other words, the services of a cook if employed are counted, but the services of a man or woman doing the cooking for their own household is not. This makes comparisons across time within the United States suspect. In the earliest decades of national income accounting, many of the more routine needs of the household were served by the household members' own labor. As society became faster paced, and two wage earners began to become the rule for American households, more laundry, housecleaning, child rearing, and maintenance work necessary to maintain the household were accomplished by persons hired in the marketplace. In other words, the same level of service may have been provided, but more of it is now a market activity, hence included in GNP. This is also the case in comparing U.S. households with households in less developed countries. Certainly, less market activity is in evidence in less developed countries that could be characterized as household maintenance. Few people are hired outside of the family unit to perform domestic labor in less developed countries, and if they are, they are typically paid pennies per hour. Less developed countries' populations rely predominately on subsistence farming or fishing, and therefore even food and clothing may be rarely obtained in the marketplace.

Leisure is an economic good but time away from work is not included in GNP. The only way leisure time could be included in GNP is to impute (estimate) a value for the time and add it to GNP (the same method would be required for household services of family members). Because of the lack of consistency in the use of time for leisure activities these imputation would be a very arbitrary, at best. However, commodities used in leisure activities are included in GNP. Such things as movie tickets, skis, and

other commodities are purchased in the market and may serve as a rough guide to the benefits received by people having time away from work.

Product quality is not reflected in GNP. There is no pretense made by national income accountants that GDP can account for product or service quality. There is also little information available upon which to base a sound conclusions concerning whether the qualitative aspects of our total output has increased. It is clear that domestic automobiles have increased in quality since 1980, and this same experience is likely true of most of U.S. industry.

No attempt is made in GDP data to account for the composition output. We must look at the contributions of each sector of the economy to determine composition. The U.S. Department of Commerce publishes information concerning output and classifies that output by industry groups. These industry groupings are called Standard Industrial Codes (S.I.C.) and permits relatively easy tracking of total output by industry group, and by components of industry groups.

Over time, there are new products introduced and older products disappear as technology advances. Whale oil lamps and horseshoes gave way to electric lights and automobiles between the Nineteenth and Twentieth Centuries. As we moved into the latter part of this century vinyl records gave way to cassettes, which, in turn, have been replaced by compact disks. In almost every aspect of life, the commodities that we use have changed within our lifetimes. Therefore, comparisons of GNP in 1996 with GNP in 1966 is really comparing apples and oranges because we did not have the same products available in those two years.

As we move further back in time, the commodities change even more. However, it is interesting to note the relative stability of the composition of output before the industrial revolution. For centuries, after the fall of the Roman Empire, the composition of total output was very similar. Attila the Hun would have recognized most of what was available to Mohammed and he would have recognized most of what Da Vinci could have found in the market place. Therefore, the rapid change in available commodities is a function of the advancement of knowledge, hence the advancement in technology.

Another shortcoming of national income accounting is that the accounts say nothing about how income is distributed. In the early centuries of this millennium, only a privileged few had lifestyles that most of us would recognize as middle income or above. With recent archaeological work at Imperial Roman sites, many scholars have concluded that over 95% of the population lived in poverty (the majority in life-threatening poverty), while a very few lived in extreme wealth. With the tremendous increases in knowledge over the past two-hundred years, technology has increased our productivity so substantially that in the 28 industrialized nations of the world, the majority of people in those countries do not know poverty. However, the majority of the world's population lives in less developed countries and the overwhelming majority of the people in those countries do know poverty, and a significant minority of these

people know life threatening poverty. In short, with the increase in output has come an increase in the well-being of most people.

Per capita income is GDP divided by the population, and this is a very rough guide to individual income, which still fails to account for distribution. In the United States, the largest economy in the world, there are still over 40 million people (about 14½ percent) that live in poverty, and only a very few these in life threatening poverty. Something just under four percent of the population (about 1 person in 26) are classified as wealthy. The other 81 percent experience a middle-income lifestyle in the United States. The distribution of poverty is not equal across the population of this country. Poverty disproportionately falls to youngest and oldest segments of our population. Minority group persons also experience a higher proportion of poverty than do the majority.

Environmental problems are not addressed in the national income accounts. The damage done to the environment in the production or consumption of commodities is not counted in GDP data. The image created by the accounts is that pollution, deforestation, chemical poisoning, and poor quality air and water that give rise to cancer, birth defects and other health problems are economic goods, not economic bads. The cost of the gasoline burned in a car that creates pollution is included in GNP, however, the poisoning of the air, especially in places like Los Angeles, Denver, and Louisville is not deducted as an economic bad. The only time these economic bads are accounted for in GNP is when market transactions occur to clean-up the damage, and these transactions are added to GNP. The end result, is that GNP is overstated by the amount of environmental damage done as a result of pollution and environmental damage.

The largest understatement of GNP comes from something called the underground economy. **The underground economy is very substantial in most less developed countries and in the United States. It includes all illegitimate (mostly illegal) economic activities, whether market activities or not.** In less developed countries, much of the underground economy is the "black market," but there is also a significant amount of crime in many of these countries. Estimates abound concerning the actual size of the underground economy in the United States. The middle range of these estimates suggest the amount of underground economic activities may be as much as one-third of total U.S. output.

The F.B.I. has, for years, tracked crime statistics in the United States and publishes an annual report concerning crime. It is clear that drugs, organized theft, robberies, and other crimes against property are very substantial in the United States. But when these crimes result in income for the offenders, there is also the substantial problem of income tax evasion from not reporting the income from the criminal activity. After all, Al Capone never went to jail for all of the overt criminal acts involved in his various criminal enterprises, he went to jail for another crime, that is, because he did not pay income taxes on his ill-gotten gains.

Drug trafficking in the United States is a very large business. The maximum estimates place this industry someplace in the order of a $500 billion per year business in the U.S. Few legitimate industries are its equal. Worse yet, the news media reports that nearly half of those incarcerated in this nation's prisons are there on drug charges. The image that the national income accounts portrays is that the $100 billion, plus that is spent on law enforcement and corrections because of drug trafficking is somehow an economic good, not a failure of our system. Drugs, however, are not the only problem. As almost any insurance company official can tell you, car theft is also another major industry. A couple of years ago CNN reported that a car theft ring operating in the Southeast (and particularly Florida) was responsible for a large proportion of vehicles sold in certain Latin American countries. Further, that if this car theft ring were a legitimate business it would be the fourteenth largest in the United States (right above Coca-Cola in the Fortune 100).

In an economy with total output of $6 trillion, when nearly 10% of that is matched by only one illegitimate industry - drugs - there is a serious undercounting problem. If estimates are anyplace close to correct, and $500 billion per year are the gross sales of drug dealers, and if the profits on this trade are only eighty percent (likely a low estimate), and if the corporate income tax rate of forty-nine percent could be applied to this sum, then instead of a $270 billion budget deficit, the Federal government would be experiencing a surplus of something in the order of $130 billion, without any reduction in expenditures for law enforcement and corrections (which could be re-allocated to education, health care or other good purposes). Maybe the best argument for the legalization of drugs is its effect on the nation's finances (assuming, of course, drugs were only a national income accounting problem).

Price Indices

Changes in the price level poses some significant problems for national income accountants. If we experience 10% inflation and a reduction of total output of 5% it would appear that we had an increase in GNP. In fact, we had an increase in GNP, but only in the current dollar value of that number. In real terms, we had a reduction in GNP. Comparisons between these two time periods means very little because the price levels were not the same. If we are to meaningfully compare output, we must have a method by which we can compare output with from one period to another by controlling for changes in the price levels.

Nominal GDP is the value of total output, at the prices that exist at that time. By adjusting aggregate economic data for variations in price levels then we have data that can be compared across time periods with different price levels. **Real GDP** is the value of total output using constant prices (variations in price levels being removed).

Price indices are the way we attempt to measure inflation and adjust aggregate economic data to account for price level variations. There are a wide array of price indices. We measure the prices wholesalers must pay, that consumers must pay (either urban consumers (CPI(U) or that wage earners must pay (CPI(W)), we measure prices for all goods and services (GNP Deflator) and we also have indices that focus on particular regions of the country, generally large urban areas, called Standard Metropolitan Statistical Areas -- S.M.S.A.).

Price indices are far from perfect measures of variations in prices. These indices are based on surveys of prices of a specific market basket of goods, at a particular point in time. The accuracy of any inference that may be drawn from these indices depends on how well the market basket of commodities used to construct the index match our own expenditures (or the expenditures of the people upon whom the analysis focuses). Further complicating matters, is the fact that the market basket of goods changes periodically as researchers believe consumption patterns change. Every five to ten years (generally seven years) the Commerce Department (Current Population Surveys) changes the market basket of goods in an attempt to account for the current expenditure patterns of the group for which the index is constructed (total GNP, consumers, wholesalers, etc.).

For the consumer price indices, there is a standard set of assumptions used to guide the survey takers concerning what should be included in the market basket. The market basket for consumers assumes a family of four, with a male wage earner, an adult female not employed outside of the home, and two children (one male, one female). There are also assumptions concerning home ownership, gift giving, diet, and most aspects of the hypothetical family's standard of living.

The cost of living and the standard of living are mirror images of one another. If someone has a fixed income and there is a two percent inflation rate per year, then their standard of living will decrease two percent per year (assuming the index used is an accurate description of their consumption patterns). In other words, a standard of living is eroded if there is inflation and no equal increase in wages (or other income, i.e., pensions). Under the two percent annual inflation scenario, a household would need a two percent increase in income each year simply to avoid a loss in purchasing power of their income (standard of living).

During most, if not all, of your lifetime this economy has experienced inflation. Prior to World War II, however, the majority of American economic history is marked by deflation. That is, a general decrease in all prices. With a deflationary economy all one must do to have a constant increase in their standard of living is to keep their income constant while prices fall. However, deflation is a problem. Suppose you want to buy a house. Most of us have mortgages, we borrow to buy a house. If you purchase a house worth $50,000 and borrow eighty percent of the purchase price, $40,000 you may have a problem. If we have five percent deflation per year, it only takes five years for the market value of that house to reach $38689. In the sixth year, you owe more on

your thirty-year mortgage than the market value of the house. Credit for consumer purchases becomes an interesting problem in a deflationary economy.

On the other hand, if you owe a great deal of money, you have the opportunity to pay back your loans with less valuable money the higher the rate of inflation. Therefore, debtors benefit from inflation if they have fixed rate loans that do not adjust the rates for the effects of inflation.

The inflationary experience of the post-World War II period has resulted in our expecting prices to increase each year. Because we have come to anticipate inflation, our behaviors change. One of the most notable changes in our economic behavior has been the wide adoption of escalator provisions in collective bargaining agreements, executory contracts, and in entitlement laws (social security, veterans' benefits, etc.). Escalator arrangements (sometimes called Cost of Living Adjustments, C.O.L.A.) typically equate earnings or other payments to the rate of inflation, but only proportionally. For example, the escalator contained in the General Motors and United Auto Workers contract provides for employees receiving 1¢ per hour for each .2 the CPI increases. This protects approximately $5.00 of the employees earnings from the erosive effects of inflation (.01/.2)100, assuming a base CPI of 100. (There is no escalator that provides a greater benefit to income receivers than the GM-UAW national agreement).

There are other price indices that focus on geographic differences. (Price data that measures changes over time are called time series, and those that measure differences within a time period but across people or regions are called cross sections). The American Chamber of Commerce Research Association (ACCRA) in Indianapolis does a cross sectional survey, for mid-sized to large communities across the United States. On this ACCRA index Fort Wayne generally ranges between about 96.0 and 102.0, where 100 is the national average and the error of estimate is between 2 and 4 percent.

There are also producer and wholesale price indices and several component part of the consumer price indices that are designed for specific purposes that focus on regions of the country or industries. For example, the components of the CPI are also broken down so that we have detailed price information for health care costs, housing costs, and energy costs among others.

Measuring the Price Level

The discussion here will focus on the Consumer Price Index (CPI) but is generally applicable. The CPI is based on a market basket of goods and is expressed as a percentage of the value of the market baskets' value in a base year (the year with which all prices in the index are compared). Each year's index is constructed by

dividing the current year market basket's value by the base year market basket's value and then multiplying the result by 100. Note that the index number for the base year will be 100.00 (or 1 X 100).

By using this index, we can convert nominal values into real values (real value are expressed in base year dollars). We can either inflate or deflate current values to obtain real values. Inflating is the adjustment of prices to a higher level, for years when the index is less than 100. Deflating is the adjustment of prices to a lower level, for years when the index is more than 100.

The process whereby we inflate and deflate is relatively simple and straightforward. To change nominal into real values the following equation is used:

Nominal value/(price index/100)

For example, in 1989 the current base year the CPI is 100. By 1996, the CPI increased to 110.0. If we want to know how much $1.00 of 1996, money is worth in 1989 we must deflate the 1996 dollar. We accomplish this by dividing 110 by 100 and obtaining 1.1; we then divided 1 by 1.1 and find .909, which is the value of a 1996 dollar in 1989. If we want to know how much a 1989 dollar would buy in 1996, we must inflate. We accomplish this by dividing 100 by 110 and obtaining .909; we then divide 1 by .909 and find 1.10, which is the value of a 1989 dollar in 1996.

Because the government changes base years it may be necessary to convert one or more indices with different base years to obtain a consistent time series if we want to compare price levels between years decades apart. Changing base years is a relatively simple operation. If you wish to convert a 1982 base year index to be consistent with a 1987 base year, then you use the index number for 1982 in the 1987 series and divide all other observations for the 1982 series using the 1982 value in 1987 index series. This results in a new index with 1987 as a base year. If inflation was experienced during the entire period then the index number for 1987 will be 100, for the years prior to 1987 the indices will be less than 100 and for the years after 1987 the numbers will be larger than 100.

The price index method has problems. The assumptions concerning the market basket of goods to be surveyed causes specific results that are not descriptive of a general population. In the case of the consumer price index, families without children or with more than two may find their cost of living differs from what the index suggests. If both parents work, the indices may understand the cost of living. For families with ten year old, fixed rate mortgages and high current mortgages rates, the CPI may understate their current cost of living. Therefore, the CPI is only a rough measure, and its applicability differs from household to household.

Cost of Living Adjustments

David A. Dilts and Clarence R. Deitsch, *Labor Relations,* New York: Macmillan Publishing Company, 1983, p. 167.

To the casual observer, COLA clauses may appear to be an excellent method of protecting the real earnings of employees. This is not totally accurate. COLA is not designed to protect the real wage of the employee but is simply to keep the employee's nominal wage, within certain limits, close to its original purchasing power. With a 1 cent adjustment per .4 increase in the CPI (if no ceiling is present) the base wage which is being protected from the erosive effect of inflation is $2.50 per hour, 1 cent per .3 increase in the CPI protects $3.33 per hour, and 1 cent per .2 increase in the CPI protects $5.00 per hour. This is quite easy to see; since the CPI is an index number computed against some base year (CPI = 100 in 1967) and the adjustment factor normally required in escalator clauses is 1 cent per some increase *x*, in the CPI, the real wage which is protected by the escalator is the inverse of the CPI requirement or 1/*x*.

KEY CONCEPTS

National Income Accounting
- Social Welfare
- Under-estimations
- Over-estimations

Gross Domestic Product v. Gross National Product
- Value added
- Expenditures Approach
- Income Approach
- Criticisms

Net Domestic Product v. Net National Product
- Depreciation

National Income

Personal Income

Disposable Income

Inflation v. Deflation

Cost-Push Inflation v. Demand-Pull Inflation
- Pure Inflation
- Monetarist School
- Quantity Theory of Money

Price Indices
- CPI
- Other Indices
- Inflating v. Deflating

STUDY GUIDE

Food for Thought:

Critically evaluate the use of national income accounts as measures of social welfare.

Using the following, data construct the price indices indicated:

Year	Market basket $
1989	350
1990	400
1991	440
1992	465
1993	500

Calculate a price index using 1989 as the base year

Calculate a price index using 1991 as the base year

If the nominal price of new house in 1993 is $100,000, how much is the house in 1989 dollars? In 1991 dollars?

If the price of a new house in 1989 is $90,000 what is the price in 1991 dollars?

Critically evaluate the use of price indices for comparison purpose across time.

Using the following data calculate GDP, NDP, NI, PI, and DI

Undistributed Corporate profits $40
Personal consumption expenditures $1345
Compensation of employees $841
Interest $142
Gross exports $55
Indirect business taxes $90
Government expenditures $560
Rents $115
Personal taxes $500
Gross imports $75
Proprietors income $460
Depreciation $80
Corporate income taxes $100
Net Investment $120
Dividends $222
Net American income earned abroad $5
Social security contributions $70

Sample Questions:

Multiple Choice:

If U.S. corporations paid out all of their undistributed corporate profits as dividends to their stockholders then which of the following national income accountants would show an increase?

A. Gross Domestic Product
B. Net Domestic Product
C. **Personal Income**
D. National Income

The following are costs of market baskets of goods and services for the years indicated:

1900 $100
1910 $102
1920 $105
1930 $90
1940 $100
1950 $110
1960 $160

Using 1920 as a base year what is the price index for 1900 and for 1960?

A. 1900 is 105, 1960 is 160
B. **1900 is 95.2, 1960 is 152.4**
C. 1900 is 111.1, 1960 is 177.8
D. Cannot tell from the information given

If there is a very large underground economy in the United States, then which of the following statements is true?

A. The elimination of the underground economy may actually deprive some people of their ability to earn a living
B. Its existence means we are understating the GDP unless somehow we can measure it appropriately
C. We have defined certain market activities as illegal and others as legal which has implications for GDP as a measure of economic well-being
D. All of the above are true

True - False:

The GDP is overstated because of the relatively large amount of economic activity that occurs in the underground economy {TRUE}.

The difference between Personal Income and Disposable Income is personal taxes {TRUE}.

Chapter 3

Unemployment and Inflation

The measurement of the efficacy of a macroeconomic system focuses on employment and price level stability. The purpose of this chapter is to examine two of the most important and recurrent economic problems that have characterized modern economic history throughout the industrialized world, including the United States. These two problems are unemployment (associated with recessions) and inflation (associated with the lose of purchasing power of our incomes). Most economic policy focuses on mitigating these, most serious, of problems in the macroeconomy.

Mixed Economic System and Standard of Living

American capitalism is a mixed economic system. There are small elements of command and tradition, and some socialism. However, our economic system is predominately capitalist. The economic freedom and ability to pursue our individual self-interest provides for the American people a standard of living, in the main, that is unprecedented in world history. Perhaps more important, our high standards of living are widely shared throughout American society (with fewer than 17.5% of Americans living in poverty).

The accomplishments of American society ought not be taken lightly, no other epoch and no other nation, has seen a "golden" age as impressive as modern America. However, there are aspects of our freedom of enterprise that are not so positive. Free market systems have a troubling propensity to experience recessions (at the extreme depressions) periodically. As our freedom of inquiry develops new knowledge, new products and new technologies, our freedom of enterprise also results in the abandonment of old industries (generally in favor of new industries). At times we also seem to lose faith in accelerating rates of growth or economic progress. At other times, we have experienced little growth in incomes (at the extreme declines in consumer incomes). All of these problems have resulted in down-turns in economic activity. At other times, consumer's income have increased at accelerating rates, people have become enthusiastic about our economic future, and the growth of new industries have far outpaced the loss of old industries that have resulted in substantial expansions of economic activity. Together these down-turns and expansions are referred to as the business cycle.

Business Cycles

The business cycle is the recurrent ups and downs in economic activity observed in market economies. Troughs, in the business cycle, are where employment and output bottom-out during a recession (downturn) or depression (serious recession). Peaks, in the business cycle, are where employment and output top-out during a recovery or expansionary period (upturn). These ups and downs (peaks and troughs) are generally short-run variations in economic activity. It is relatively rare for a recession to last more than several months, two or three years maximum. The Great Depression of the 1920s and 1930s was a rare exception. In fact, the 1981-85 recession was unusually long.

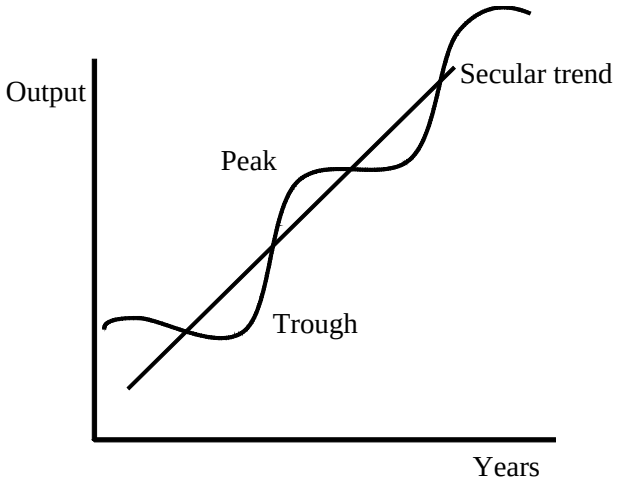
One of the most confusing aspects of the business cycle is the difference between a recession and depression. For the most part, recessionary trends are marked by a downturn in output. This downturn in output is associated with increased levels of unemployment. Therefore, unemployment is what is typically keyed upon in following the course of a recession. In 1934, the U.S. economy experienced 24.9% unemployment, this is clearly a depression. The recession of 1958-61 reached only 6.7% unemployment. This level of reduced economic activity is clearly only a recession. However, in the 1981 through 1986 downturn the unemployment rate reached a high of 12%, and in both 1982 and 1983 the annual average unemployment rate was 10.7%. Probably the Reagan recession was close to, if not actually, a short depression, arguably a deep recession. This 1981-85 period was clearly the worst performing economy since World War II, but it also was clearly nothing compared to the problems in the decade before World War II.

The old story about the difference between a recession and depression probably is as close to describing the difference between a recession and a depression as anything an economist can offer. That is, *a recession is when your neighbor is out of work, a depression is when you are out of work!*

In general, the peaks and troughs associated with the business cycle, are short-run variations around a long-term secular trend. **Secular trends are general movements in a particular direction that are observed for decades (at least 25 years in macroeconomic analyses).**

Prior to World War II the secular trend started as relatively flat and limited growth period and then it took a sharp downward direction until the beginnings of the War in Europe (a period of about twenty years). Since the end of World War II we have experienced a long period of rather impressive economic growth (a period of over fifty years).

The following diagram shows a long-term secular trend that is substantially positive (the straight, upward sloping line). About that secular trend is another curved line, whose slope varies between positive and negative, this is much the same as the business cycle variations about that long-term growth trend. If we map out economic activity since World War II we would observe a positive long-term trend, with marked ups and downs showing the effects of the business cycle.



There are other variations observed in macroeconomic data. **These variations, called seasonal variations, last only weeks and are associated with the seasons of the year.** During the summer, unemployment generally increases due to students and teachers not having school in the summer and both groups seeking employment during the summer months. Throughout most of the Midwest agriculture and construction tend to be seasonal. Crops are harvested in the fall, then in the winter months farmers either focus on livestock production or wait for the next grain season. In the upper Midwest, north of Fort Wayne, outside work is very limited due to extreme weather conditions, making construction exhibit a seasonal trend. In the retail industry, from Thanksgiving through New Year's Day is when disproportionately large amounts of business are observed, with smaller amounts during the summer.

Unemployment

Unemployment is defined to be an individual worker who is not gainfully employed, is willing and able to work, and is actively seeking employment. A person who is not gainfully employed, but is not seeking employment or who is unwilling or unable to work is not counted as unemployed, or as a member of the work force. During the Vietnam War unemployment dropped to 3.6% in 1968 and 3.5% in 1969. This period illustrates two ways in which unemployment can be reduced. Because of

the economic expansion of the Vietnam era more jobs were available, but during the same period many people dropped out of the work force who may otherwise have been unemployment or, alternatively, vacated jobs that became available to others to avoid military service. One way to keep from being drafted was to become a full time student, which induced many draft-age persons to go to college rather than risk military service in Vietnam. Additionally, there was a substantial expansion in the manpower needs of the military with nearly 500,000 troops in Vietnam in 1969. Therefore, the unemployment rate was compressed between more job, and fewer labor force participants.

Unemployment can decrease because more jobs become available. It can also decrease because the work force participation of individuals declines, in favor of additional schooling, military service, or leisure. Unemployment is more than idle resources, unemployment also means that some households are also experiencing reduced income. In other words, unemployment is associated with a current loss of output, and reductions in income into the foreseeable future.

Economists classify unemployment into three category by cause. These three categories of unemployment are (1) frictional, (2) structural, and (3) cyclical. Frictional unemployment consists of *search* and *wait* unemployment, which is caused by people searching for employment or waiting to take a job in the near future. Structural unemployment is caused by a change in composition of output, changes in technology, or a change in the structure of demand (new industries replacing the old). Cyclical unemployment is due to recessions, (the downturns in the business cycle). Structural unemployment is associated with the permanent loss of jobs, however, cyclical unemployment is generally associated with only temporary losses of employment opportunities.

Full employment is not zero unemployment, the full employment rate of unemployment is the same as the natural rate. The natural rate of unemployment is thought to be about 4% and is a portion of structural unemployment and frictional unemployment. However, there is not complete professional agreement concerning the natural rate, some economists argue that the natural rate, today is, about 5%. The disagreement centers more on observation of the secular trend, than any particular technical aspect of the economy (and there are those in the profession who would disagree with this latter statement).

The reason that frictional and structural unemployment will always be observed is that our macroeconomy is dynamic. There are always people entering and leaving the labor force, each year there are new high school and college graduates and secondary wage earners who enter and leave the market. There is also a certain proportion of structural unemployment that should be observed in a healthy economy. Innovations result in new products and better production processes that will result in displacement of old products and production processes that results employees becoming unnecessary to staff the displaced and less efficient technology. Therefore, the structural component

of the natural rate is only a fraction of the total structural rate in periods where there is displacement of older industries that may result from other than normal economic progress. Perhaps the best example of this is the displacement of portions of the domestic steel and automobile industries that resulted from predatory trade practices (i.e., some of the dumping practices of Japan and others).

The level of output associated with full utilization of our productive resources, in an efficient manner is called potential output. Potential output is the output of the economy associated with full employment. It is the level of employment and output associated with being someplace on the production possibilities curve (from E201). This level of production will become important to us in judging the performance of the economy.

Full employment is not zero unemployment and potential GNP is not total capacity utilization (full production), such levels of production are destructive to the labor force and capital base because people fulfill other roles (i.e., consumer, parent, etc.) and capital must be maintained. The Nazi's slave labor camps (during World War II) were examples of the evils of full production, where people were actually worked to death.

Unemployment rates

The unemployment rate is the percentage of the work force that is unemployed. The work force is about half of the total population. Retired persons, children, those who are either incapable of working or those who choose not to participate in the labor market are not counted in the labor force. Another way to look at it, is that the labor force consists of those persons who are employed or unemployed who are willing, able and searching for work.

People who are employed may be either full time or part time employees. In aggregate the average number of hours worked by employees in the U.S. economy generally is something just under forty-hours per week (generally between 38 and 39 hours per week). This statistic reflects the fact that people have vacation time, are absent from work, and may have short periods of less than forty hours available to them due to strikes, inventories, or plant shut-downs.

Part time employees are included in the work force. You are not counted as unemployed unless you do not work and are actively pursuing work. Those who do not have 40 hours of work (or the equivalent) available to them are classified as part time employees. At present there are about 6.5 million U.S. workers were are involuntarily part-time workers, and about 12 million were voluntarily part-time employees, this is up about 3 million from total part time employment in 1982.

The unemployment rate is calculated as:

UR = Unemployed persons ÷ labor force

There are problems with the interpretation of the unemployment rate. **Discouraged workers** are those persons who dropped out of labor force because they could not find an acceptable job (generally after a prolonged search). To the extent there are discouraged workers that have dropped out of the work force, the unemployment rate is understated. There are also those individuals who have recently lost jobs who are not interested in working, but do not wish to lose their unemployment benefits. These individuals will typically go through the motions of seeking employment to remain eligible for unemployment benefits but will not accept employment or make any effort beyond the appearance of searching. This is called **false search** and serves to overstate the unemployment rate.

There has yet to be any conclusive research that demonstrates whether the discouraged worker or false search problem has the greatest impact on the unemployment rate. However, what evidence exists suggests that in recent years the discouraged worker problem is the larger of the two problem, suggesting that the unemployment rate may be slightly understated.

Okun's Law

As mentioned earlier, unemployment is not just a single dimensional problem. Based on empirical observation an economist determined that there was a fairly stable relation between unemployment and lost output in the macroeconomy. This relation has a theoretical basis. As we move away from an economy in full employment, non-inflationary equilibrium, we find that we lose jobs in a fairly constant ratio to the loss of output. **Okun's Law** states that for each one percent (1%) the unemployment rate exceeds the natural rate there will be a gap of two and one-half percent (2.5%) between actual GDP and potential GDP. This is why it is not technically incorrect to look to the unemployment rate to determine whether a recession has begun or stopped. It is also true that unemployment tends to trail behind total output of the economy, so it is not a perfect or current indicator.

This relationship permits some rough guesses about what is happening to total output in the economy, however, it is only a rough guide, because unemployment is a trailing indicator. In other words, as the economy goes into recession that last variable to reflect the loss of output is the unemployment rate.

Burden of Unemployment

The individual burden of unemployment is not uniformly spread across the various groups that comprise our society. There are several factors that have been historically associated with who bears what proportion of the aggregate levels of unemployment. Among the factors that determine the burden of unemployment are occupation, age, race and gender.

The individual occupational choice will effect the likelihood of becoming unemployed. Those with low skill and educational levels will generally experience unemployment more frequently than those with more skills or education. There are also specific occupations (even highly skilled or highly educated) that may experience unemployment due to structural changes in the economy. For example, with the decline in certain heavy manufacturing many skilled-trades persons experienced bouts of unemployment during the 1980s. As educational resources declined in the 1970s and again recently, many persons with a Ph.D. level education and certified teachers experienced unemployment. However, unemployment for skilled or highly educated occupations tends to be infrequent and of relatively short duration.

Age also plays a role. Younger people tend to experience more frictional unemployment than their older, more experienced counterparts. As people enter the work force for the first time their initial entry puts them into the unemployed category. Younger persons also tend to experience a longer duration of unemployment. However, there is some evidence that age discrimination may present a problem for older workers (the Age Discrimination Act covers those persons over 40, and it appears those over 50 experience the greatest burden of this discrimination).

Race and gender, unfortunately, are still important determinants of both incidence and duration of unemployment. Most frequently the race and gender effects are the result of unlawful discrimination in the labor market. There is also a body of evidence that suggests there may be significant discrimination in the educational opportunities available to minorities.

Edmund Phelps developed a theory called **statistical theory of racism and sexism** that sought to explain how discrimination could be eliminated as a determinate of the burden of unemployment. His theory was that if there was not a ideological commitment to racism or sexism, that if employers were forced to sample from minorities they would find that there was no difference in these employees' productivity and the productivity of the majority. This formed the basis of affirmative action programs. The lack of effectiveness of most of these programs suggests that the racism and sexism that exists is ideological and requires stronger action, than simple reliance on economic rationality and sampling.

Inflation

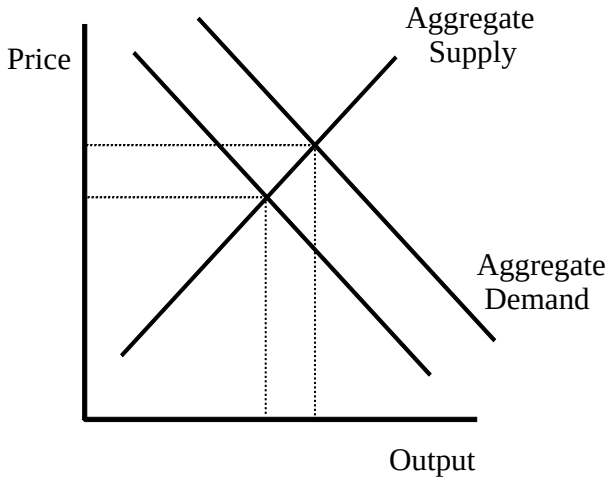
The news media reports inflation, generally, as increases in the CPI. This is not technically accurate. **Inflation is defined as a general increase in all prices (the price level).** The CPI does not purport to measure all prices, wholesale prices and producer prices are not included in the consumer data. The closest we have to a measure of inflation is the GNP deflator that measures prices for the broadest range of goods and services, but even this broader index is not a perfect measure, but its all we have and some information (particularly when we know the short-comings) is better than perfect ignorance.

One of the more interesting bits of trivia concerning inflation is something called the **Rule of 70.** The rule of 70 gives a short-hand method of determining how long it takes for the price level to double at current inflation rates. It states that the number of years for the price level to double is equal to seventy divided by the annual rate of increase (i.e., 70/%annual rate of increase(expressed as a whole number)). For example, with ten percent inflation, the price level will double every seven years (70/10 = 7).

There are three theories of inflation that arise from the real conduct of the marcoeconomy. These three theories are demand-pull, cost-push, and pure inflation. There is a fourth theory that suggests that inflation has little or nothing to do with the real output of the economy, this is called the quantity theory of money. Each of these theories will be reviewed in the remaining sections of this chapter.

Demand - Pull Inflation

Using a naive aggregate supply/aggregate demand model, we can illustrate the theory of demand-pull inflation. The following chapter will develop a more sophisticated aggregate supply/aggregate demand model, but for present purposes the naive model will suffice. The naive model has a linear supply curve and a linear demand curve, much the same as the competitive industry model developed in E201. However, the price variable here is not the price of a commodity, it is the price level (the CPI for want of a better measure) and the quantity here is the total output of the economy, not some number of widgets.

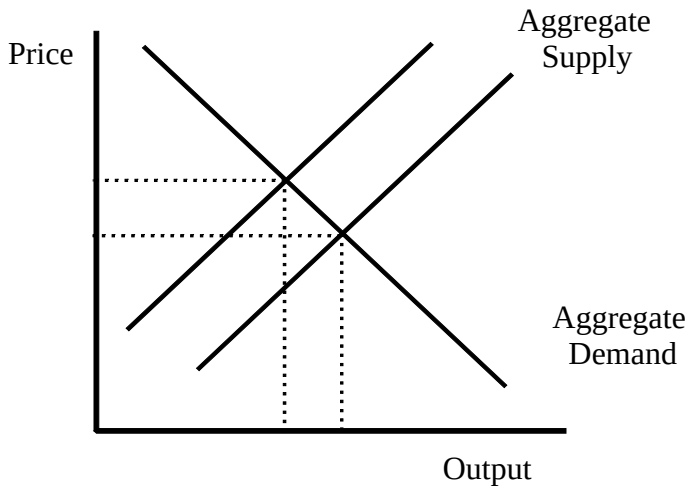


Using a naive aggregate demand\ aggregate supply model, as the aggregate demand shifts to the right or increases, all prices increase. This increase in all prices is called inflation. However, this increase in aggregate-demand is also associated with an increase in total output. Total output is associated with employment (remember Okun's Law?). In other words, even though this increase in aggregate demand causes inflation, it does not result in lost output, hence unemployment. Policy measures designed to control demand-pull inflation, will shift the aggregate demand curve to the left, (i.e., reduce aggregate demand) and this reduction in aggregate demand is associated with loss of output, hence increased unemployment.

Cost - Push Inflation

Again using a naive aggregate supply/aggregate demand approach, cost-push inflation results from particular changes in the real activity in the macroeconomy. In this case, a decrease in the aggregate supply curve.

The following diagram shows a shift to the left or decrease in aggregate supply curve.



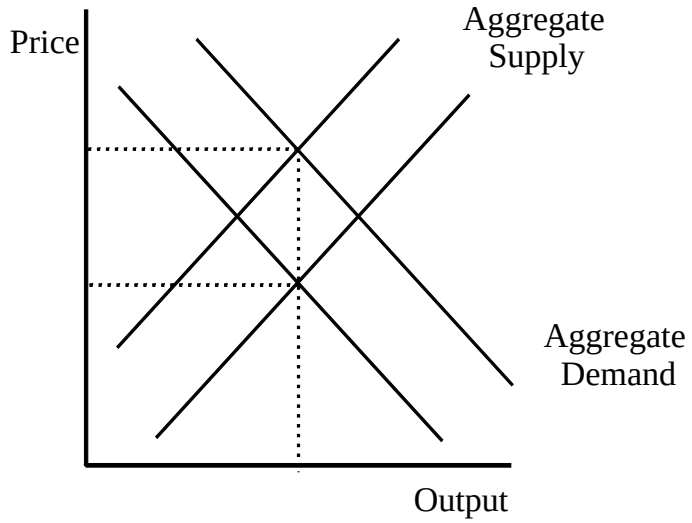
The OPEC Oil embargo may present the best case for cost-push inflation. As oil prices doubled and then tripled, the costs of production that were comprised at least in part from oil also dramatically increased. Therefore, the dramatic increase in the price of oil shifted the aggregate supply curve to the left (a decrease) , resulting in cost-push inflation.

The general case is, as the price of any productive input increases, the aggregate supply curve will shift to the left. This decrease in aggregate supply also results in reduced output, hence unemployment. This is consistent with the economic experience of the early 1980s during the Reagan Administration when the economy experienced high rates of both inflation and unemployment.

Pure Inflation

Pure inflation results from an increase in aggregate demand and a simultaneous decrease in aggregate supply. For output to remain unaffected by these shift in aggregate demand and aggregate supply, then the increase in aggregate demand must be exactly offset by an equal decrease in aggregate supply.

The following aggregate supply/aggregate demand diagram illustrates the theory of pure inflation:



Notice in this diagram, that aggregate supply shifted to the left, or decreased by exactly the same amount that the aggregate demand curve shifted to the right or increased. The result is that output remains exactly the same, but the price level increased. Intuitively, this makes sense, with the loss of aggregate supply we would expect an increase in prices, and with an increase in aggregate demand we would also expect an increase in prices. As aggregate supply and aggregate demand move in opposite directions, it is not perfectly clear what happens to output. In this case, with equal changes in aggregate demand and supply output should remain exactly the same.

Quantity Theory of Money

The Monetarist School of economic thought points to another possible explanation for inflation. These economists do not reject the idea that inflationary pressures can occur because of an oil embargo or increases in consumer demand. However, these economists argue that inflation cannot occur simply as a result of these events. They are quick to point out that a change in a single price in the price index market basket can give the appearances of inflation, when all that happened was a change in the relative price of one commodity with respect to all others.

More of this theory will be discussed in the final weeks of the semester, however, one point is necessary here. Inflation, in the monetarist view, can only occur if the money supply is increased which permits all prices to increase. If the money supply is not increased there can be changes in relative prices, for example, oil prices can go up, but there has to be offsetting decreases in the prices of other commodities. An increase in all prices or in the price of a particular good, therefore, is a failure of the Fed to appropriately manage the money supply.

Effects of Inflation

The effects of inflation impact different people in different ways. Creditors and those living on a fixed income will generally suffer. However, debtors and those whose incomes can be adjusted to reflect the higher prices will not, and perhaps this group may even benefit from higher rates of inflation.

If inflation is fully anticipated and people can adjust their nominal income or their purchasing behavior to account for inflation then there will likely be no adverse effects, however, if people cannot adjust their nominal income or consumption patterns people will likely experience adverse effects. This is the same as if people experience unanticipated inflation. Normally, if you cannot adjust income, are a creditor with a fixed rate of interest or are living on a fixed income you will pay higher prices. The result is that those individuals will see their standard of living eroded by inflation.

Debtors, whose loans specify a fixed rate of interest, typically benefit from inflation because they can pay loans-off in the future with money that is worth less. It is this paying of loans with money that purchases less that harms creditors. It should come as no surprise that the double digit inflation of fifteen years ago caused subsequent loan contracts to often specify variable interest rates to protect creditors from the erosive effects of unanticipated inflation.

Savers may also find themselves in the same position as creditors. If savings are placed in long-term savings certificates that have a fixed rate of interest, inflation can erode the earnings on those savings substantially. Savers that anticipate inflation will seek assets that vary with the price level, rather than risk the loss associated with inflation.

Inflation will effect savings behavior in another way. If a person fully anticipates inflation, rather than to save money now, consumers may acquire significant debt at fixed interest rates to take advantage of the potential inflationary leverage caused by fixed rates. Rather than to save now, consumers spend now. Therefore, inflation typically creates expectations among people of increasing prices, and if people increase their purchases aggregate demand will increase. An increase in aggregate demand will cause demand-pull inflation. Therefore, inflationary expectations can create a spiraling of increased aggregate-demand and inflationary expectations that can feed off one another. At the other extreme, recessionary expectations may cause people to save, that results in reduced aggregate demand, and another spiral effect can result (but downwards).

To account for expectations in a less harsh way in economic behavior, the theory of rational or adaptive expectations has been formulated. It is more likely that people will not take extreme views of economic problems. People will anticipate and react to relatively "sure things" and generally in the near term and wait to see what happens. As

economic conditions change, consumers and producers change their expectations to account for these changes; in another words, they adapt their expectations to current and near term information about future economic events.

The adaptive expectations model is supported by a substantial amount of economic evidence. It appears that the overwhelming majority of the players in the macroeconomy are adaptive in their expectations.

Unemployment Differentials

David A. Dilts, Mike Rubison, Bob Paul, “Unemployment: which person's burden - man or woman, black or white?" *Ethnic and Racial Studies.* Vol. 12, No. 1 (January 1989) pp. 100-114.

. . . The race and sex of the work force are significant determinants of the relative burdens of unemployment. Blacks are experiencing a decreasing burden of unemployment over the period examined while white females exhibit a positive time trend (increasing unemployment over the period). The dispersion of unemployment for blacks varies directly with the business cycle, which suggests greater labor force participation sensitivity by this group. . . . The dispersions of white female unemployment vary counter cyclically with the business cycle, which is consistent with the inherited wisdom concerning unemployment and macroeconomics.

. . . These results, together with the unemployment equation results, indicate that the unemployment rate for white males is not sensitive to the fluctuations in the business cycle nor do these data exhibit any significant time trend. These are rather startling results. This evidence suggests that while males bear substantially the same relative unemployment rates over all ranges of the business cycle. . . .

KEY CONCEPTS

Business Cycle
- Peaks
- Troughs

Seasonal trends

Secular trends

Unemployment
- frictional
- structural
- cyclical

Full employment
- Natural rate of unemployment
- Potential output

Labor Force
- part-time employment
- discouraged workers
- false search

Okun's Law

Burden of Unemployment

Inflation v. Deflation
- CPI
- Rule of 70
- Demand-pull
- Cost-push
- Pure inflation
- Monetarists

Impact of Inflation

STUDY GUIDE

Using the basic supply & demand model demonstrate cost-push, demand-pull, and pure inflation.

Critically evaluate the three categories of unemployment, be sure to discuss the problems with conceptualizing and measuring each.

Critically evaluate the qualitative and quantitative costs of both inflation and unemployment. Which is worse? Why?

Sample Questions:

Multiple Choice:

Which of the following is most likely to benefit from a period of unanticipated inflation? (assuming fixed assets and liabilities)

A. Those whose liabilities are less than their assets
B. Those whose liabilities exceed their assets, and whose loans are variable rate
C. **Those whose liabilities exceed their assets, and whose loans are fixed rate loans**
D. None of the above will benefit

People who are unemployed due to a change in technology that results in a decline in their industry fit which category of unemployment?

A. frictional
B. **structural**
C. cyclical
D. natural

True - False:

Seasonal variations in data are impossible to observe in annual data {TRUE}.

Cost-push inflation is often associated with increased unemployment {TRUE}

Chapter 4

Aggregate Supply & Aggregate Demand

The aggregate supply/ aggregate demand model of the macroeconomy will be developed in this chapter. This model is one of two models (the other is the Keynesian Cross) of the U.S. macroeconomic system that we will develop in this course. The aggregate demand and aggregate supply model is the main mode of analysis that characterized the classical school of economic thought and provides some useful insights. However, because the Keynesian Cross permits more direct analysis of the multiplier effects and other economic phenomenon it will be the model that is relied upon for the majority of the course.

Aggregate Supply and Aggregate Demand

The aggregate supply/aggregate demand model is comparative static (slice of time) model of the macroeconomy. Rather than to be able to observe changes during each second of a period of time (dynamic), we will compare the economy in one time period with the model in a subsequent and distinct period. Its elegance arises from the fact that the model has foundations in microeconomics. In this view of the macroeconomy we simply aggregate everything on the supply side to obtain an aggregate supply curve and aggregate everything on the demand side to obtain an aggregate demand curve. Where aggregate supply intersects aggregate demand we observe a macroeconomic equilibrium. However, because the two functions are aggregations, the horizontal axis does not measure the quantity of a particular good, it measures GNP. The vertical axis is not a price in the sense of a microeconomic market, but is the price level in the entire economy.

Aggregate Demand

The aggregate demand curve is a downward sloping function that shows the inverse relationship between the price level and gross domestic output (GDP). The reasons that the aggregate demand curve slopes down and to the right differ from the reasons that individual market demand curves slope downward and to the right (i.e., the substitution & income effects - these do not work directly with macroeconomic aggregates, for among other reasons, we are dealing with all prices of all commodities, not a single price of a single commodity, as in a microeconomic sense).

The reasons for the downward sloping aggregate demand curve are:

(1) the wealth or real balance effect,

(2) the interest rate effect, and

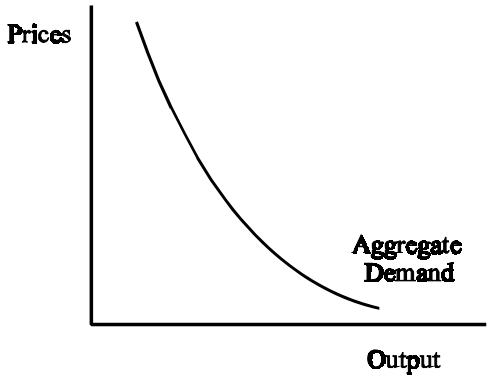
(3) the foreign purchases effect.

As the price level increases, with fixed incomes, the given amount of savings and assets consumers have will purchase less. On the other hand, as the price level decreases the savings and wealth consumers have will purchase more. The negative relation between the price level and the purchasing power of savings (wealth or real balances) is called the real balances or wealth effect.

Assuming a fixed supply of money, an increase in the price level will increase interest rates. Increases in interest rates will reduce expenditures on goods and services for which the demand is interest sensitive (e.g., consumer durables such as cars and investment). This negative relation between the interest rate and purchases is called the interest rate effect.

If the prices of domestic goods rise relative to foreign goods (an increase in the price level), domestic consumers will purchase more foreign goods as substitutes, assuming stable exchange rates for currencies. Remember from Chapter 2 that if exports remain constant and imports increase GNP declines (net exports). Therefore, as the price level increases, imports will also increase, ceteris paribus. The foreign purchases effect is the propensity to increase purchases of imports, when the domestic price level increases.

Each of these effects describes a negative relation between the price level and the aggregate demand for the total output of the economy. Therefore, the aggregate demand curve will slope downward and to the right, as shown in the diagram below:



The determinants of aggregate demand are the factors that shift the aggregate demand curve. These determinants are:

(1) consumer and producer expectations concerning the price level, and real incomes,

(2) consumer indebtedness,

(3) personal taxes,

(4) interest rates,

(5) changes in technology,

(6) excess capacity in industry,

(7) government spending,

(8) net exports,

(9) national income earned abroad, and

(10) exchange rates.

The expectations of producers and consumers concerning real income or inflation (including profits from investments in business sector) will effect aggregate demand. Inflationary expectations and anticipated increases in real income are consistent with increased current expenditures. Should real income or inflation be expected to fall, purchases may be postponed in favor of future consumption or investment.

As personal taxes, interest rates and indebtedness increase aggregate demand should decrease due to a general reduction in effective demand. Should any of these three decrease there should be an increase in aggregate demand due to the increased ability to purchase output.

Changes in technology operate on aggregate demand in two distinct ways, the creation of new products or new production processes, and the reduction of the costs of producing resulting in less expensive output. The amount of excess capacity in industry will also impact the demand for capital goods. If there is substantial excess capacity, output can be increased without obtaining more capital, on the other hand, if there is very little excess capacity an expansion of output will require purchasing more capital.

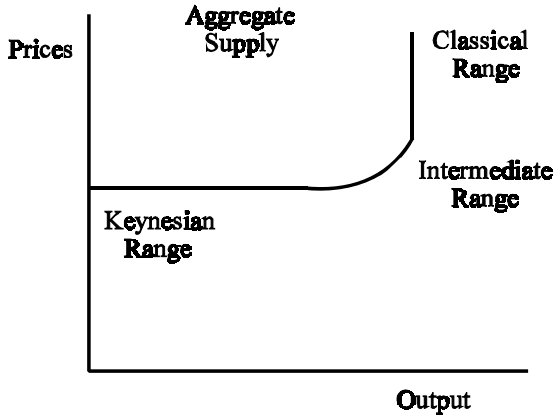
Government expenditures account for a significant proportion of GNP. If government expenditures decrease, so will aggregate demand; if they increase, so will aggregate demand. The same is true of national income earned abroad, as American economic activity moves abroad, the demand for domestic output will generally decline.

Exchange rates refer to how much of a foreign currency the U.S. dollar will purchase. If the Japanese Yen loses value with respect to the U.S. dollar, then Japanese goods will become cheaper. As the dollar buys more imports aggregate demand will decrease simply because the U.S. dollar gains value relative to that foreign currency. As the dollar loses value relative to a foreign currency, such as the Yen, then the Japanese goods become more expensive and American consumers will substitute American goods for Japanese goods and aggregate demand increases.

These determinants of aggregate demand act together to shift the aggregate demand curve. Several of these determinants may change at the same time, and possibly in different directions. The actual observed change in an aggregate demand curve will result from the net effects of these changes. For example, if the dollar gains one or two percent in value relative to the Yen this alone may cause a slight decrease in aggregate demand. However, if government purchases increase by two or three percent this should offset any exchange rate tendency toward a reduction in aggregate demand and shift the aggregate demand curve to the right.

Aggregate Supply

The aggregate supply curve shows the amount of domestic output available at each price level. The aggregate supply curve has three ranges, the Keynesian range (horizontal portion), the intermediate range (curved portion), and the classical range (vertical portion). These ranges of the aggregate supply curve are identified in the following diagram.



The Keynesian range of the aggregate supply curve shows that any output is consistent with the particular price level (the intersection of the aggregate supply curve with the price level axis) up to where the intermediate range begins. In other words, wages and prices are assumed to be sticky (fixed) in this range of the aggregate supply curve.

The classical range of the aggregate supply curve is vertical. Classical economists believed that aggregate supply curve goes vertical at the full employment level of output. In other words, any price level above the end of the intermediate range is consistent with the full employment level (potential) of GNP.

The intermediate range is the transition between the horizontal and vertical ranges of the aggregate supply curve. As the macroeconomy approaches full employment levels of output the price level begins to increase, as output increases in this range.

The determinants of aggregate supply cause the aggregate supply curve to shift. There are three general categories of the determinants of aggregate supply, these are:

(1) changes in input prices,

(2) changes in input productivity, and

(3) changes in the legal or institutional environment.

As input prices increase, aggregate supply decreases. For example, when the price of oil increased dramatically in 1979-80, aggregate supply decreased because the costs of production increased in general in the United States. In other words, for the same level of production cost, we got less GNP. Should input prices decline, we should expect to observe an increase in aggregate supply. In other words, for the same level of production cost we got more GNP.

Changes in input productivity will also shift the aggregate supply curve. If labor or capital becomes more productive then producers will receive more output for the same cost of production. This can occur because of better quality resources or because of the ability to use more efficient technology.

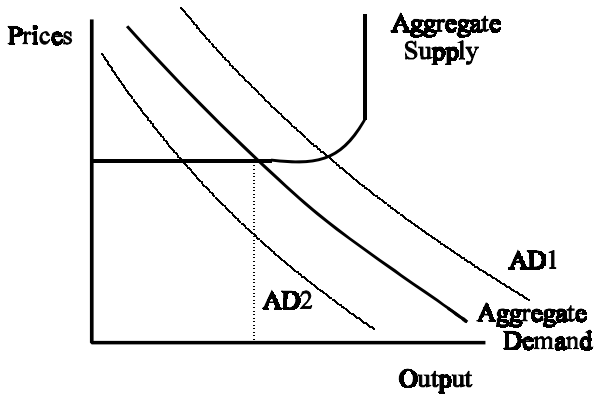
Changes in the legal or institutional environment will also increase aggregate supply. One of the reasons that de-regulation is so popular in certain business circles is that such changes in the legal environment will often result in lower costs of production. To the extent that there are no diseconomies, this increases aggregate supply. More efficient capital markets (i.e., the recent proposed S.E.C. changes concerned, among

others, the New York Stock Exchange), better schools, better health care, and less crime all have the potential for increasing aggregate supply through the institutional environment of business.

Macroeconomic Equilibrium

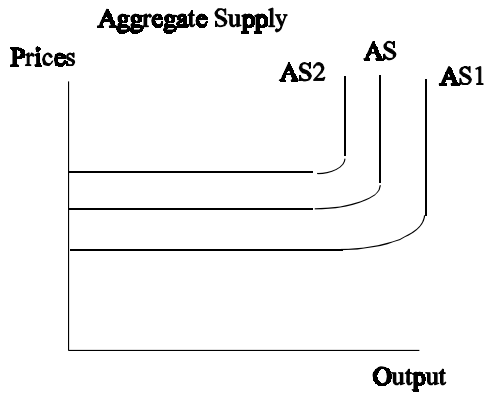
As mentioned earlier in this chapter, macroeconomic equilibrium in this model is the intersection of aggregate supply and aggregate demand. The idea of equilibrium in the macroeconomy is similar to that in microeconomic market. Where aggregate supply and aggregate demand intersect, if there is no force applied to disturb the intersection (change in a determinant), then there is no propensity for the output and price levels to change from those determined by the intersection. The following diagram portrays a macroeconomy in equilibrium. In this case the intersection of aggregate supply and aggregate demand is in the Keynesian range. Should aggregate demand increase up to where the intermediate range starts, only output will change. Through the intermediate range both output and the price level will increase as aggregate demand increase. In the classical range if aggregate demand increases, output will remain the same, but the price level will increase.

The following diagram shows a macroeconomy in equilibrium. The solid aggregate demand curve is the initial equilibrium. The two dotted lines show an increase in aggregate demand (AD1) and a decrease in aggregate demand (AD2).



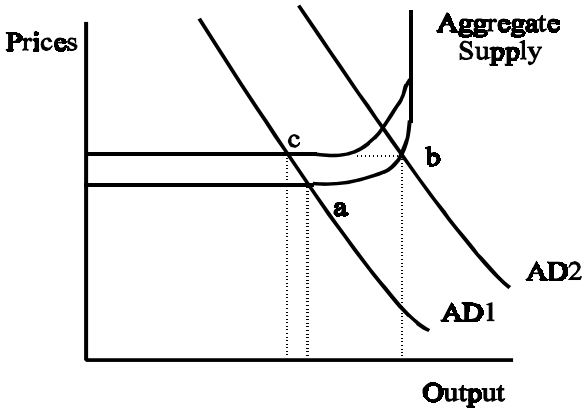
The changes in aggregate supply are analytically only marginally more complicated than aggregate demand. An increase in aggregate supply is simply a shift of the entire curve to the right (downward). As aggregate supply shifts downward along

the aggregate demand curve in the Keynesian and intermediate ranges, the price level falls, and output will increase. However, in the classical range a decrease in aggregate supply changes neither the price level or total output. The following diagram portrays an increase in aggregate supply, the line labeled (AS1) and a decrease in aggregate supply, the line labeled (AS2), and the original aggregate supply curve is the solid line.



There is a more complicated view of changes in equilibrium in the aggregate supply and aggregate demand model called the Ratchet Effect. The Rachet Effect is where there is a decrease in aggregate demand, but producers are unwilling to accept lower prices (rigid prices and wages). Rather than to accept the lower price levels resulting from a decrease in aggregate demand, producers will decrease aggregate supply. Therefore, there is a ratcheting of the aggregate supply curve (decrease in the intermediate and Keynesian ranges) which will keep the price level the same, but with reduced output. In other words, there can be increases in prices (forward) but no decreases in the price level (but not backward) because producer will not accept decreases (price rigidity). The same is argued to exist for wages in the labor market, in other words, unions will resist decreases in wages associated with a decrease in aggregate demand, hence they too, will place downward pressure on aggregate supply.

The following diagram illustrates the rachet effect:



An increase in aggregate demand from AD1 to AD2 moves the equilibrium from point a to point b with real output and the price level increasing. However, if prices are inflexible downward, then a decline in aggregate demand from AD2 to AD1 will not restore the economy to its original equilibrium at point a. Instead, the new equilibrium will be at point c with the price level remaining at the higher level and output falling to the lowest point. The ratchet effect means that the aggregate supply curve has shifted upward (a decrease) in both the Keynesian and intermediate ranges.

KEY CONCEPTS

Aggregate Demand

Real balance effect

Interest rate effect

Foreign purchases effect

Determinants of Aggregate Demand

Aggregate Supply

Keynesian Range

Classical Range

Intermediate Range

Determinants of Aggregate Supply

Equilibrium in Aggregate Supply and Aggregate Demand

Rachet Effect

STUDY GUIDE

Food for Thought:

Explain and demonstrate the operation of the determinants of aggregate supply and aggregate demand.

Critically evaluate both the Keynesian and Classical ranges of the aggregate supply curve.

Is the ratchet effect plausible? Explain.

Why does the aggregate demand curve slope downward? Why do we find ranges in the aggregate supply curve? Explain.

Sample Questions:

Multiple Choice:

The aggregate demand curve is most likely to shift to the right (increase) when there is a decrease in:

A. the overall price level
B. the personal income tax rates
C. **the average wage received by workers**
D. consumer and business confidence in the economy

A short-run increase in interest rates on consumer loans may cause a decrease in aggregate demand. What would we expect to observe, if there is no ratchet effect?

A. In the classical range only a reduction in prices
B. In the Keynesian range only a reduction in output
C. **Both A and B are correct**
D. Neither A or B are correct

True - False:

All economists are convinced that ratchet effect exists in today's economy. {FALSE}

One of the major reasons that the aggregate demand curve slopes downward is the real balances effect. {TRUE}

Chapter 5

Classical and Keynesian Models

The purpose of this chapter is to extend the analysis presented in Chapter 4. Based on the foundations of the relatively simple aggregate supply and aggregate demand model both the Classical and Keynesian theories of macroeconomics will be developed and compared in this chapter.

Introduction

The Classical theory of employment (macroeconomics) traces its origins to the nineteenth century and to such economists as John Stuart Mill and David Ricardo. The Classical theory dominated modern economic thought until the middle of the Great Depression when its predictions simply were at odds with reality. However, the work of the classical school laid the foundations for current economic theory and a great intellectual debt is owed to these economists.

During the beginnings of the 1930s economists in both Europe and the United States recognized that current theory was inadequate to explain how a depression of such magnitude and duration could occur. After all, the miracle of free market capitalism was suppose to always result in a return to prosperity after short periods of correction (recession). For a long term disequilibrium to be observed was both disconcerting and fascinating. It became very obvious by 1935 that the market mechanisms were not going to self-adjust and bring the economy out of a very deep depression.

John Maynard Keynes, an English mathematician and economist, is the father of modern macroeconomics. His book, *The General Theory*, (1936) was to change how economists would examine macroeconomic activity for the next six decades (until present). Keynes' work laid aside the notion that a free enterprise market system can self-correct. He also provided the paradigm that explained how recessions can spiral downwards into depression without active government intervention to correct the observed deficiencies in aggregate demand. Some of Keynes' ideas were original, however, he borrowed heavily from the Swedish School, in particular, Gunar Myrdal, in his explanations of the fact that there is no viable mechanism in our system of markets that provide for correction of recessionary spirals.

Many economists, on both sides of the Atlantic, were working on the problem of why the classical theory had failed so miserably in explaining the prolonged, deep downturn and in offering policy prescriptions to cure the Great Depression. In some ways it resembled an intellectual scavenger hunt. As soon as John Maynard Keynes

had worked out the “general” theory, he literally rushed to print before someone beat him to the punch, so to speak. The result is that *The General Theory* is not particularly well written and has been subject to criticism for the rushed writing, however, its contributions to understanding the operation of the macroeconomy are unmistakable and considerable.

The Classical Theory

The classical theory of employment (macroeconomics) rests upon two fundamental principles, these are: (1) underspending is unlikely to occur, and (2) if underspending should occur, the wage-price flexibility of free markets will prevent recession by adjusting output upwards as wages and prices declined.

What is meant by underspending is that private expenditures will be insufficient to support the current level of output. The classicists believed that spending in amounts less than sufficient to purchase the full employment level of output is not likely. They also believed that even if underspending should occur, then price/wage flexibility will prevent output declines because prices and wages would adjust to keep the economy at the full employment level of output.

The classicists based their faith in the market system on a simple proposition called Say's Law. **Say's Law** in its crudest form states that "Supply creates its own demand." In other words, every level of output creates enough income to purchase exactly what was produced. However, as sensible as this proposition may seem there is a serious problem. There are leakages from the system. The most glaring omission in Say's Law, is that it does not account for savings. Savings give rise to gross private domestic investment and the interest rates are what links savings and investment. However, there is no assurance that savings and investment must always be in equilibrium. In fact, people save for far different reasons that investors' purchase capital.

Further, the classicists believed that both wages and prices were flexible. In other words, as the economy entered a recession both wages and prices would decline to bring output back up to pre-recession levels. However, there is empirical evidence that demonstrates that producers will cut-back on production rather than to lower prices, and that factor prices rarely decline in the face of recession. The classicists believed that a laissez faire economy would result in macroeconomic equilibria through the unfettered operation of the market system and that only the government could cause disequilibria in the macroeconomy.

One need only look to the automobile industry of the last ten years to understand that wage - price flexibility does not exist. Automobile producers have not lowered prices in decades. When excess inventories accumulate, the car dealers will offer rebates or inexpensive financing, but they have yet to offer price reductions. There has

been some concession bargaining by the unions in this industry, but even where wages were held down, it is rare that a union accepts a nominal wage cut.

Modern neo-classical macroeconomics takes far less rigid views. Even though the neo-classicists have come to realize that the market system has its imperfections, they believe that government should be the economic stabilizer of last resort. Further, even though there is now recognition that the lauded wage-price flexibility is unlikely, by itself, to be able to correct major downturns in economic activity, the neo-classicists stubbornly hold to the view that government must stay out of the economic stabilization business. The one exception they seem to allow, is the possibility of a major external shock to the system, otherwise they claim there is sufficient flexibility to prevent major depressions, with only very limited government responses (primarily through monetary, rather than fiscal policy). In other words, the differences between the Keynesians and the neo-classicists are very subtle (magnitude of government involvement) and focus primarily on the starting point of the analysis (Keynes with recession, neo-classicist with equilibrium).

Keynesian Model

Keynes recognized that full employment is not guaranteed, because interest motivates both households and businesses differently - just because households save does not guarantee businesses will invest. In other words, there is no guarantee that leakages will result in investment injections back into the system. Further, Keynes was unwilling to assume that self-interest in a market system guaranteed that there would be wage-price flexibility. In fact, the empirical evidence suggested that wages and prices exhibited a substantial amount of downward rigidity.

Under the Keynesian assumptions there is no magic in the market system. The mechanisms that the classicist thought would guarantee adjustments back toward full employment-equilibrium simply did not exist. Therefore, Keynes believed that government had to be pro-active in assuring that underspending did not spiral the economy into depression once a recession began.

Keynes' views were revolutionary for their time. However, it must be remembered that the Great Depression was an economic downturn unlike anything experienced during our lifetimes. Parents and grandparents, no doubt, have related some of the traumatic experiences they may have endured during the Depression to their children and grandchildren (perhaps you have heard some of these stories). However, such economic devastation is something that is nearly impossible to imagine unless one has lived through it. One-quarter of the labor force was unemployed at points during the Depression. The U.S. economy had almost no social safety net, no unemployment compensation, little in the way of welfare programs, no social security, no collective bargaining, and very small government. Our generations have gotten

used to the idea that there is something between us and absolute poverty, there are programs to provide income during times of unemployment, generally for a sufficient period to find alternative employment. Even though these programs may have a personal significance, they were intended to prevent future demand-deficiency depressions.

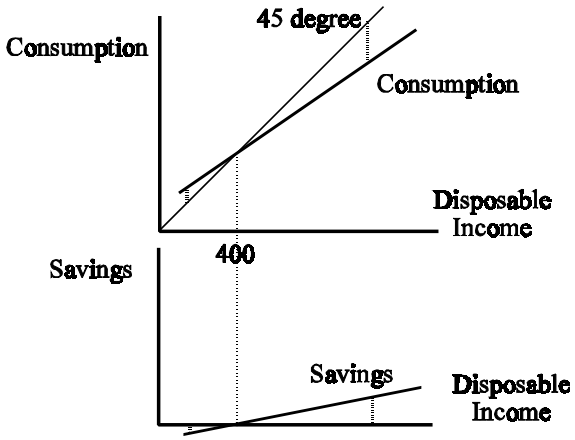
The array of entitlement programs, particularly unemployment insurance, various welfare programs, and social security provides an automatic method to keep spending from spiraling into depression. Once recessionary pressures begin to build in the economy, the loss of employment does not eliminate a household's consumption as soon as savings are depleted. Unemployment compensation and then welfare will keep the lights on (and I & M employees working), food on the table (to the relief of those working at Kroger and Scotts), and clothes on the back of the those in need (keeping people working at Walmart through Hudsons). Further, the government has been proactive in stabilization of economic downturns since the beginning of World War II. Thereby providing us with the expectation that something will be done to get things back in order as soon as possible once a recession starts.

The government's ability to tax and to engage in deficit spending provides the flexibility in the market system to deal with underspending that was only presumed to exist by deflating the economy. Without the automatic stabilizers and the government flexibility to deal with serious underspending the economy could theoretically produce the same results that it did in the 1930s.

Aggregate supply and aggregate demand can now be expanded to include the savings and investment in the analysis to make for a more complete model. In so doing, we can also create a more powerful analytical tool.

The Consumption Schedule

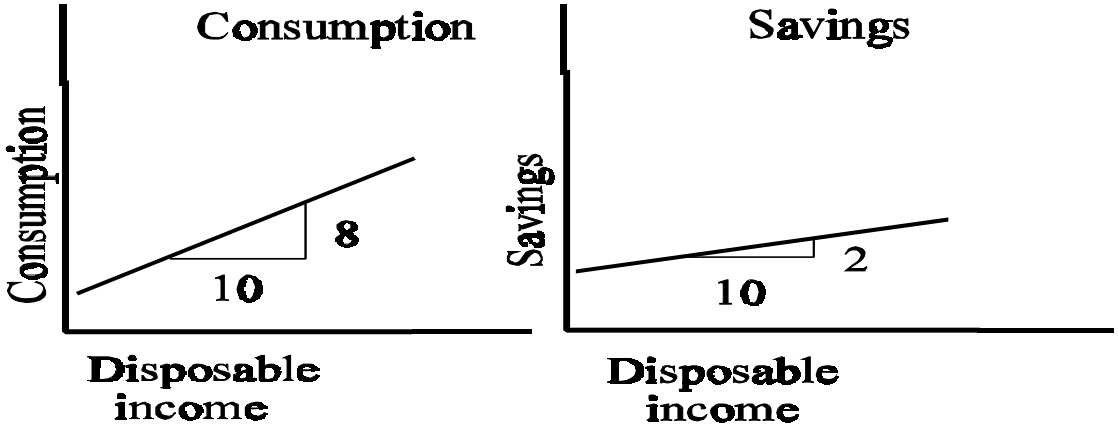
In beginning the development of the Keynesian Cross model, we return to aggregate supply and aggregate demand. Along the vertical axis we are going to measure expenditures (consumption, government, or investment). Along the horizontal axis we are going to measure income (disposable income). At the intersection of these two axes (the origin) we have a forty-five degree line that extends upward and to the right. What this forty-five degree line illustrates is every point where expenditures and income are equal.



The consumption schedule intersects the 45 degree line at 400 in disposable income, this is also where the savings function intersects zero (in the graph below the consumption function). At this point, (400) all disposable income is consumed and nothing is saved. To the left of the intersection of the consumption function with the 45 degree line, the consumption function lies above the 45 degree line. The distance between the 45 degree line and the consumption schedule is dissavings, shown in the savings schedule graph by the savings function falling below zero. Dissavings means people are spending out their savings or are borrowing (negative savings). To the right of the intersection of the consumption function with the 45 degree line, the consumption schedule is below the 45 degree line. The distance that the consumption function is below the 45 degree line is called savings, shown in the bottom graph by the savings function rising above zero.

This analysis shows how savings is a leakage from the system. Perhaps more importantly the analysis also shows that there is a predictable relation between consumption and savings. What is not consumed is saved, and vice versa. However, there is more to this than savings plus consumption must equal income.

The Marginal Propensity to Consume (MPC) is the proportion of any increase in disposable income that is spent on consumption (if an entire increase in income is spent MPC is 1, if none is spent then MPC is zero). The Marginal Propensity to Save (MPS) is the proportion of any increase in disposable income that is saved. The relation between MPC and MPS is that MPS + MPC =1, in other words, any change in income will be either consumed or saved. This relation is demonstrated graphically in the following diagram:



The slope (rise divided by the run) of the consumption function is the MPC and the slope of the savings function is the MPS. The slope of the consumption function is .8 or (8/10) and the slope of the savings function .2 or (2/10). Total change in income will be either spent or saved. If ten dollars of additional income is obtained then $2 ($10 times .2) will be saved and $8 ($10 times .8) will be spent on consumption.

The marginal propensities to save and to consume deal with changes in one's income. However, average propensities to consume or save deal with what happens to total income. The Average Propensity to Consume (APC) is total consumption divided by total income, Average Propensity to Save (APS) is total savings divided by total income. Again, (just like the marginal propensities) if income can be either saved or consumed (and nothing else) then the following relation holds, the average propensity to consume plus the average propensity to save must equal one (APC + APS = 1). For example, if total income is $1000 and the average propensity to consume is .95 and the average propensity to save is .05, then the economy will experience $950 is consumption (.95 times $1000) and $50 in savings ($1000 times .05).

The non-income determinants of consumption and saving cause the consumption and savings functions to shift. The non-income determinants of consumption and saving are: (1) wealth, (2) prices, (3) expectations concerning future prices, incomes and availability of commodities, (4) consumer debts, and (5) personal taxes.

In general, it has been empirically observed that the greater the amount of wealth possessed by a household the more of their current income will be spent on consumption, ceteris paribus. All other things equal, the more wealth possessed by a household the less their incentive to accumulate more. Conversely, the less wealth

possessed by a household the greater the incentive to save. An Italian economist, Franco Modigliani, observed that this general rule varied somewhat by the stage in life a person was in. The young (twenties) tend to save for homes and children, in the late twenties through the forties, savings were less evident as children were raised, and with the empty nest, came savings for retirement. This is called the Life Cycle Hypothesis.

An increase in the price level has the effect of causing the consumption function to shift downward. As prices increase, the real balances effect (from the previous chapter) becomes a binding constraint. As the value of wealth decreases, so too does the command over goods and services, so consumption must fall (and savings increase). If the price level decreases, then we would expect consumption to increase (and savings to fall).

The expectations of households concerning future prices, incomes and availability of commodities will also impact consumption and savings. As households expect price to increase, real incomes to decline or commodities to be less available, current consumption will increase (and current savings decline). If, on the other hand, households expect incomes to increase, prices to fall, or commodities to become more generally available, current consumption will decline (and savings will increase).

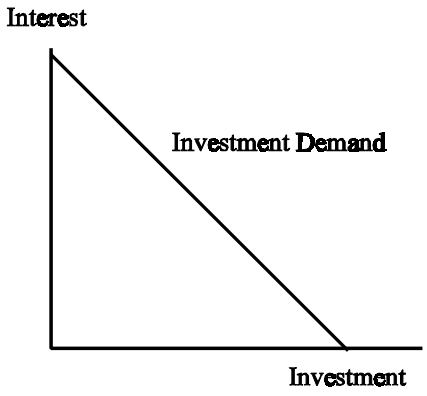
Consumer indebtedness will also effect consumption and savings. If consumers are heavily indebted, save a third of their income goes on debt maintenance then current consumption will decline to pay off debts (dis-savings). However, if indebtedness is relatively low, consumers will consume more of their current income, perhaps even engage in dis-savings (borrowing) to consume more currently.

Taxation operates on both the savings and consumption schedules in the same way. Because taxes are generally paid partly from savings and partly from current income, an increase in taxes will cause both consumption and savings to decline. On the other hand, if taxes are decreased, then both the savings and consumption functions will increase (shift upwards).

Investment

Investment demand is a function of the interest rate. The following diagram shows an investment demand curve. The investment demand curve is downward sloping, which suggests that as the interest rate increases investment decreases. The reason for this is relatively simple. If the expected net return on an investment is six percent, it is not profitable to invest when the interest is equal to or more than six percent. A firm must be able to borrow the money to purchase capital at an interest rate that is less than the expected net rate of return for the investment project to be undertaken Therefore, there is an inverse relation between expected return and the

interest rate; and the interaction of the interest rate with the expected rate of return determine the amount of investment.



The determinants of investment demand are those things that will cause the investment demand curve to shift. The determinants of investment demand are: (1) acquisition, maintenance & operating costs of capital, (2) business taxes, (3) technology, (4) stock of capital on hand, and (5) expectations concerning profits in future.

The investment demand depends on whether the expected net rate of return is higher than the interest rate. Therefore, anything that increases the expected net return will shift the investment demand curve to the right, anything that cause the expected return to fall will shift the investment demand curve to the left (decrease). As the acquisition, maintenance and operating costs of capital increase, the net expected return will decrease, ceteris paribus, thereby shifting the demand curve to the left. If the acquisition, maintenance and operating costs decline, we would expected a higher rate of return on this investment and therefore the demand curve shifts to the right (increase).

Business taxes are a cost of operation. If business taxes increase, the expected net (after tax) return will decline, this shifts the investment demand curve to the left. If business taxes decrease, the expected net return on the investment will increase, thereby increasing the investment demand curve.

Changes in technology will also shift the investment demand curve. More efficient technology will generally increase expected net returns and shift the investment demand to the right (increase). By decreasing production costs or improving product quality through technological improvements competitive advantages may be reaped and this is one of the most important determinants of investment since World War II.

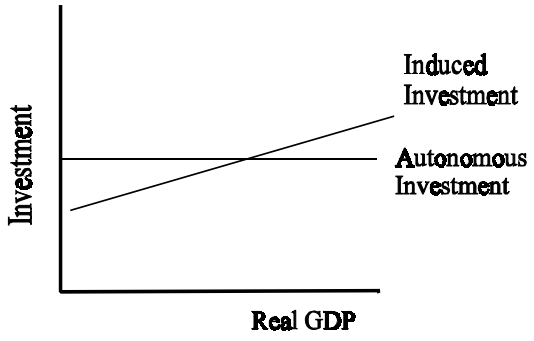
The stock of capital goods on hand will also impact investment demand. To the extent that producers have a large stock of capital goods on hand, investment demand will be dampened. On the other hand, if producers have little or no inventory of capital goods, then investment demand may increase to restore depleted stocks of capital.

Business investment decisions are heavily influenced by expectations. Expectations concerning the productive life of capital, its projected obsolescence, expectations concerning sales and profits in the future will also impact investment decisions. For example, expectations that technological break-throughs may make current computer equipment less competitive may dampen current investment demand. Further, if competitors are tooling-up to enter your industry, you may be hesitant to invest in more capital if the profits margins will be cut by the entrance of competitors.

Autonomous v. Induced Investment

Autonomous investment is that investment that occurs which is not related to the level Gross Domestic Product. Investment that is based on population growth, expected technological progress, changes in the tax structure or legal environment, or on fads is generally not a function of the level of total output of the economy and is called autonomous investment. In examining the following diagram, the autonomous investment function is a horizontal line that intercepts the investment axis at the level of autonomous investment.

Induced investment is functionally related to the level of Gross Domestic Product. The following diagram has an investment function that slopes upward (increases as GDP increases). Induced investment is that investment that is "induced" because of increased business activity. In short, induced investment means that investment that is caused by increased levels of GDP.



Throughout American economic history the level investment has been very volatile. In fact, much of the variation in the business cycle can be attributed to the instability of investment in the United States. There are several reasons for this instability, including: (1) variations in the durability of capital, (2) irregularity of innovation, (3) variability of profits, and (4) the expectations of investors.
The durability of most capital goods means that they have an expected productive life of at least several years, if not decades. Because of the durability and expense of capital goods, their purchase can be easily postponed. For example, a bank may re-decorate and patch-up an old building, rather than build a new building, depending on their business expectations and current financial position.

Perhaps the most important contributors to the instability of investment in the post- World War II period is the irregularity of innovations. With the increase in basic knowledge, comes the ability to develop new products and production processes. During World War II there was heavy public investment in basic research in medicine and the pure sciences. What was intended from these public expenditures was for military use, but many of these discoveries had important civilian implications for new products and better production methods. Again, in the late 1950s and early 1960s an explosion of basic research occur that led to commercial advantages. The Russians launched Sputnik and gave the Western World a wake-up call that they were behind in some important technical areas, the government again spent money on education and basic research.

For the private sector to invest there must be some expectation of profits flowing from that investment. Much of the decline in private investment during the Great Depression was because private investors did not expect to be able to make a profit in the economic environment of the time. In the late 1940s, automobile producers knew that profits would be nearly guaranteed because no new private passenger cars were built in the war years. There was very significant investment in plant and equipment in the auto industry in those years (mostly to convert from war to peace-time production).

The expectations of business concerning profits, prices, technology, legal environment and most everything effecting their business are simply forecasts. Because the best informed forecasts are still guess-work, there is substantial variability in business conditions expectations. Because these expectations vary substantially across businesses and over time, there should be significant variability in investment decisions.

KEY CONCEPTS

Classical Theory

Say's Law

Keynesian Model
- price-wage rigidity
- No guarantee of full employment

Income v. Expenditures

Consumption Function

Marginal Propensity to Consume v. Marginal Propensity to Save
- Determinants of consumption and savings

Investment Demand
- Determinants of investment demand
- Investment instability in U.S.

Induced investment v. autonomous investment

STUDY GUIDE

Food for Thought:

Compare and contrast the classical model of the economy with the Keynesian model. Are these models really that different? Explain.

Develop the consumption and savings schedules. Fully explain the assumptions underlying the models, its mechanics, and its implications.

What is the relation between savings and investment? Explain.

Critically evaluate Say's Law.

Sample Questions:

Multiple Choice:

If you receive $40 in additional income and you save $4, what is your marginal propensity to consume?

A. 0.4
B. **0.9**
C. 1.0
D. None of the above

Which of the following contribute to investment instability?

A. Irregularity in innovation
B. Variable investor expectations
C. Purchases of capital durable goods are postponable
D. **All of the above**

True - False:

MPC + MPS = 1 {TRUE}

The forty-five degree line in the consumption function model shows each point at which disposable income and consumption are equal. {TRUE}

Chapter 6

Equilibrium in the Keynesian Model

The purpose of this chapter is to extend the analysis of Chapter 5. The basic Keynesian Cross model will be developed and examine how equilibrium can be achieved in the macroeconomy. In Chapter 7, that follows we will complete the analysis of the Keynesian view of the macroeconomy.

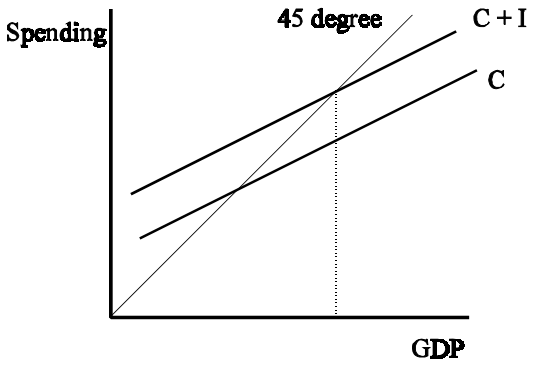
Equilibrium and Disequilibrium

Equilibrium GDP is that output that will create total spending just sufficient to buy that output (where aggregate expenditure schedule intersects 45 degree line). Further, once achieved, an equilibrium in a macroeconomy has no propensity to change, unless there is a shock to the system, or some variable changes to cause a disequilibrium. Disequilibrium where spending is insufficient (recessionary gap) or too high for level of output (inflationary gap).

The neo-classicists view the primary macroeconomic as one of maintaining equilibriums. Their analysis of the system begins with equilibrium, because unless there is some external intervening problem, they believe this is the state of nature for the macroeconomy. Keynesians, on the other hand, begin their analysis with disequilibrium because this is the natural state for a macroeconomy. The constant changes associated with policies, technological change, and autonomous influences will impact the economy periodically and cause it to move out of equilibrium. In fact, this is the major analytical difference between the neo-classical and Keynesian economists.

Keynes' Expenditures - Output Approach

From Chapter 2, remember that one of the ways that GDP can be calculated is using the identity $Y = C + I + G + X$; where Y = GDP, C = Consumption, I = Investment, G= Government expenditures, and X = Net exports (exports minus imports). This provides for us the formula by which we can complete the model we began in the previous chapter. Consider the following diagram:



Remember that the 45 degree line is each point where spending is exactly equal to GDP. The above figure shows a simple economy with no public or foreign sectors. We begin the analysis by adding investment to consumption, and obtaining Y = C + I. The equilibrium level of GDP is indicated above where C + I is equal to the 45 degree line. Investment in this model is autonomous and the amount of investment is the vertical distance between the C and the C + I lines.

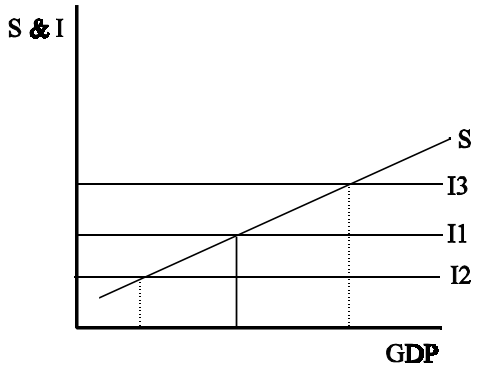
Keynes' Leakages - Injections Approach

The same result obtained in the expenditures - output approach above can be obtained using another method. Remember that APC + APS = 1, and MPC + MPS = 1, this suggests that leakages from the system are also predictable. The leakages - injections approach relies on the equality of investment and savings at equilibrium in a macroeconomic system (I = S).

The reason that the leakages - injection approach works is that planned investment must be equal savings. The amount of savings is what is available for gross private domestic investment. When investors use the available savings, the leakages (savings) from the system are injected back into the system through investment. However, this must be planned investment.

Unplanned investment is the cause of disequilibrium. Inventories can increase beyond that planned, and inventories are investment (stock of unsold output). When inventories accumulate there is output that is not purchased, hence reductions in spending which is recessionary; or, on the other hand, if intended inventories are depleted which this inflationary because of the excess spending in the system. Consider the following diagram, where savings is equal to I1, investment. If there is unplanned investment, the savings line is below the investment line, at the lowest level

of GDP, the vertical line label UPI (Unplanned Investment), if inventories are depleted beyond the planned level, then the savings line is above I1, as illustrated with the highest level of GDP, and that vertical line is labeled Dep. Inv. for Depleted Inventory.



The original equilibrium is where I1 is equal to S. The if the unplanned inventory or unplanned depletion of inventory become planned investment the analysis changes. If we experience a decrease in planned investment we move down to I2, with a reduction in GDP (Recession), just like an increase in unplanned investment, and if an increase in investment is observed it will be observed at I3, which is expansionary, and this is similar to unplanned depletion of inventories (which could also be inflationary).

Re-spending

The interdependence of most developed economies, results in an observed re-spending effect if there is an injection of spending in the economy. This re-spending effect is called the multiplier, and we will provide a more detailed analysis of the multiplier effects in the following chapter, however, the re-spending effect represented by the multiplier will be introduced here to provide a full understanding of the model.

If there is an increase in expenditures, there will be a re-spending effect. In other words, if $10 is injected into the system, then it is income to someone. That first person will spend a portion of the income and save a portion. If MPC is .90 then the first individual will save $1 and spend $9.00. The second person receives $9.00 in income and will spend $8.10 and save $0.90. This process continues until there is no money left to be spent. Instead of summing all of the income, expenditures, and/or savings there is a short-hand method of determining the total effect -- this is called the Multiplier, which is 1/1-MPC or 1/MPS. The significance any increase in expenditures is that it will increase GDP by a multiple of the original increase in spending.

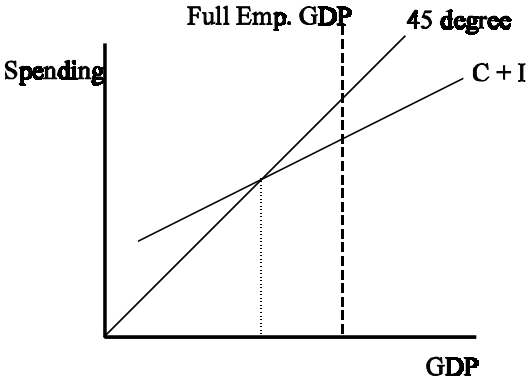
The re-spending effect and the leakage - injection approach to GDP provides for curious paradox. This paradox is called the paradox of thrift. To accumulate capital, it is often the policy of less developed countries to encourage savings, to reduce the country's dependence on international capital markets. **What often happens is that as a society tries to save more it may actually save the same amount, this is called the paradox of thrift.** The reason that savings may remain the same is that unless investment moves up as a result of the increased savings, all that happens is that GDP declines. The higher rate of savings with a smaller GDP results in the same amount of savings if GDP declines proportionally with the increase in savings rates. If investment is autonomous then there is no reason to believe that investment will increase simply because the savings rate increased. In fact, because of the re-spending effects of the leakages, generally savings will remain the same as before the rate went up.

Full Employment

Simply because C + I + G intersects the 45 degree line does not assure utopia. The level of GDP associated with the intersection of the C + I + G line with the 45 degree line may be a disequilibrium level of GDP, and not the full employment level of GDP. The full employment level of GDP may be to the right or to the left of the aggregate expenditures line. Where this occurs you have respectively, (1) a recessionary gap or (2) an inflationary gap. In either case, there is macroeconomic disequilibrium, that will generally require appropriate corrective action (as will be described in detail in the following chapter on fiscal policy)

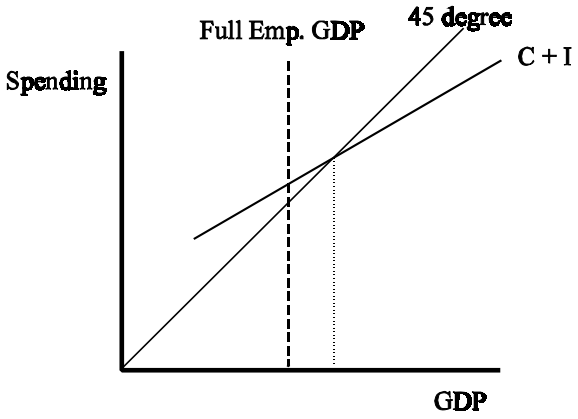
Both forms of disequilibrium can be illustrated using the expenditures - output approach. Consider the following two diagrams:

Recessionary Gap



In the above diagram the dashed line labeled Full Employment GDP. Is the level of GDP that is associated with potential GDP or full employment. The distance between the C + I line and the 45 degree line along the dashed indicator line is the recessionary gap. The dotted line shows the current macroeconomic equilibrium. Okun's Law (Chapter 3) provides some insight into what this means, remember that every 2.5% of lost potential GDP is associated with 1% unemployment above the full employment level. Therefore, this recession represents lost output and unemployment is fixed proportions of 1% to 2.5%.

Inflationary Gap



Again the full employment (non-inflationary) level of GDP is indicated by the dashed line labeled full employment GDP. The distance between the C + I line and the 45 degree line along the dashed indicator line is the inflationary gap. The dotted indicator line shows the current macroeconomic equilibrium. In this case, there is too much spending in the economy or some other (similar) problem that has resulted in an inflated price level. A reduction in GDP is necessary to restore price level stability, and to eliminate excess output.

These same problems can be shown, somewhat less elegantly, using the aggregate supply - aggregate demand model, but with the loss of as precise representation of the multiplier. The various C + I and 45 degree line intersections, if multiplied by the appropriate price level will yield one point on the aggregate demand curve. Shifts in aggregate demand can be shown with holding the price level constant and showing increases or decreases in C + I in the Keynesian Cross model. Both models can be used to analyze essentially the same macroeconomic events. However, from this point on will concentrate on our efforts on mastering the Keynesian Cross.

KEY CONCEPTS

Macroeconomic Equilibrium v. Macroeconomic Disequilibrium

Expenditures - Output Approach

Leakages - Injections Approach
- Planned v. Unplanned Investment

Re-spending
- Multiplier Effect
- Paradox of Thrift
  - Economic Development constraints

Full Employment
- Potential GDP
- Natural Rate of Unemployment

Recessionary Gap

Inflationary Gap

STUDY GUIDE

Food for Thought:

Critically evaluate the paradox of thrift.

What specifically is meant by a recessionary gap? Explain, and how does this differ from an inflationary gap? Explain.

What insight does the multiplier for the Bush tax cuts of 2003? Explain.

Sample Questions:

Multiple Choice:

With a marginal propensity to consume of .8 the simple multiplier is:

A. 0.25
B. 2.00
C. **4.00**
D. None of the above

An inflationary gap is:

A. The amount by which C+I+G exceeds the 45 degree line at or above the full
A. **employment level of output**
B. The amount by which C+I+G is below the 45 degree line at the full employment level of output
C. The amount by which the full employment level of output exceed the current level of output
D. None of the above

True - False

A recessionary gap is how much the aggregate expenditure line must increase to attain full employment without inflation. {TRUE}

The equilibrium level of output is that output whose production will create total spending just sufficient to purchase that output. {TRUE}

Chapter 7

Fiscal Policy

The Great Depression demonstrated that the economy is not self-correcting as alleged by many of the classical economists of the time. The revolutionary Keynesian view that government must take a proactive role in stabilization of the business cycle focused in large measure on the powers of the federal government to tax and to make expenditures. Together the government's activities involving taxing and spending are called fiscal policy. The purpose of this chapter is to examine the fiscal policy tools and their effectiveness.

Discretionary Fiscal Policy

The Employment Act of 1946 formalized the federal government's responsibility for promoting economic stability. The economic history of the first half of the twentieth century was a relatively stormy series of financial panics prior to World War I, a relatively stagnant decade after World War I, and the Depression of the 1930s. After World War II, a new problem arose called inflation. It should therefore come as no surprise that the Congress wished to assure that there was a pro-active role for the government to smooth-out these swings in the business cycle.

The government has several roles to fulfill in society. Its fiscal powers are necessary to providing essential public goods. Without the federal government national defense, the judiciary, and several other critical functions could not be provided for society. There is also the ebb and flow of politics. The Great Society of Lyndon B. Johnson represents the public opinion of the 1960s, today's political agenda seems to be substantially different. The result is that as political opinion changes so will the government's pattern of taxation and expenditures.

The government's taxing and spending authority to stabilize the economy is called discretionary fiscal policy. Taxation and spending by the federal government has been used, with some frequency, to smooth out the business cycle. In times of underspending, the short-fall is made up by government spending or reductions in taxes. In times of inflation, cuts in spending or increases in taxes have been used to cool-off the economy. However, in recent year the discretionary fiscal policies of the federal government have become extremely controversial. The first step in understanding this controversy, is to understand the role of fiscal policy in economic stabilization.

Milton Friedman and others, have argued that there is no role for discretionary fiscal policy. Friedman’s position is that much of the business cycle is the result of

governmental interference and that the long lags in fiscal policy becoming operationalized makes it only a potential force for mischief, and not hope for stability. In other words, Friedman believes that the classical economists, while over simplifying the argument, were basically correct about keeping government out of the economy.

Simplifying Assumptions

As was discussed in E201, Introduction to Microeconomics, assumptions are abstractions from reality. The utility of these abstractions is to eliminate many of the complications that have the potential to confuse the analyses and to simplify the presentation of the concepts in which we are interested. It must be remembered that the assumptions underlying any model determine how good an approximation of reality that model is. In other words, a good model is one that is a close approximation of the real world.

To analyze the macroeconomy using the Keynesian Cross some simplifying assumptions are necessary. We will assume that all investment and net exports are determined by factors outside of GDP (exogenously determined), it is also assumed that government expenditures do initially impact private decisions and all taxes are lump-sum personal taxes (with some exogenous taxes collected, i.e., customs duties). It is also assumed that there are no monetary effects associated with fiscal policy, that the initial price level is fixed, and that any fiscal policy actions impact only demand side.

The Goals of Government Expenditures

The primary and general goal of discretionary fiscal policy is to stabilize the economy. Often other goals, involving public goods and services as well as political are included in the discretionary aspects of fiscal policy. However, for present purposes we are concerned only with government expenditures used to stabilize the economy (taxes will be examined elsewhere in this chapter).

To remedy a recession the government must spend an amount that will exactly make-up the short-fall in spending associated with that recession. The government can also mitigate inflation by reducing government expenditures. However, the amount of increased expenditures necessary to bring the economy back to full employment is subject to a multiplier effect (the same is true of decreases in government expenditures). Therefore, the government must have substantial information about the economy to make fiscal policy work effectively. To determine the proper value of the multiplier the fiscal policy makers must know either the Marginal Propensity to Save or to Consume. Further, the policy makers will need to know the current level of output and what potential GDP is, (potential GDP is that output associated with full

employment). In a practical sense, in the near term the government may have reasonably accurate information upon which to base forecasts to conduct fiscal policy. For present purposes, we will assume the government has all the necessary information at hand to conduct fiscal policy.

The Simple Multiplier

When the government increases expenditures, the effect on the economy is more than the initial increase in government expenditures. In fact, this is also true of investment and consumption expenditures, not just government expenditures. When there is an increase in expenditures, through an increase in government expenditures, those expenditures become income for someone. They will save a portion of the expenditures and spend the rest, which then become income to someone else. The result of this chair-reaction re-spending is that there is a direct relation between the total amount of re-spending and the marginal propensity to save. This is the re-spending effect discussed in Chapter 6.

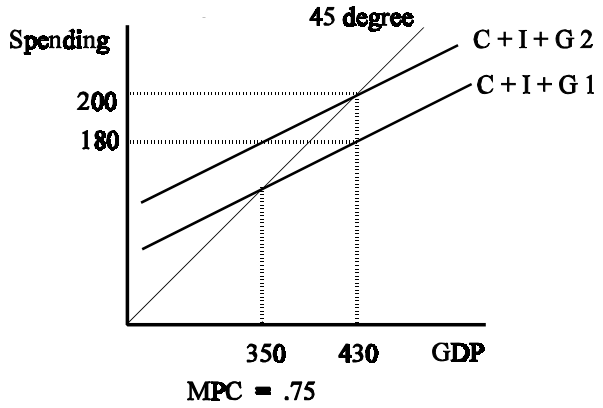
The multiplier is the reciprocal of the marginal propensity to save:

The multiplier = 1/MPS

Because MPS + MPC = 1, there is an equivalent expression: 1/MPS = 1/1-MPC. The multiplier is the short-cut method of determining the total impact of an increase or decrease in total spending in the economy. For example, if the government spends $10 more and the marginal propensity to consume is .5, then the multiplier is 2 and the total increase in spending resulting from the increase of $10 in government expenditures is $20.

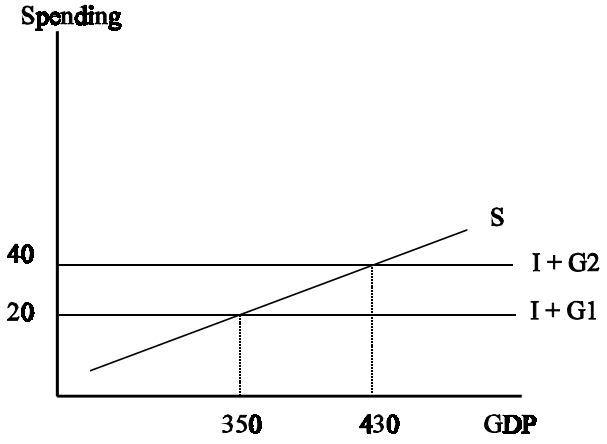
This is called the simple multiplier because the only leakage in the re-spending system is savings. In reality there are more leakages. People will use a portion of their income to buy foreign goods (imports), and will have to pay income taxes. These are also leakages and would be added to the denominator in the multiplier equation. The Council of Economic Advisors tracks the multiplier that contains each of these other leakages, called the complex multiplier. The complex multiplier has remained relatively stable over the past couple of decades is estimated to be about 2.0.

The following diagram presents a case of recession, that will be eliminated by increasing government expenditures by just enough to eliminate the recession, but not to create inflation. Assuming that our current level of GDP is $350 billion and we know that full employment GDP is $430 we which to eliminate this recession using increases in government expenditures. We also know that MPC is .75 and therefore MPS is .25.



With an MPC of .75 we know the multiplier is 4 (1/.25). We also know that we must obtain another $80 billion in GDP to bring the economy to full employment. The distance between the forty-five degree line and the C+I=G1 line at $430 is $20 billion which is our recessionary gap in expenditures. Therefore to close this gap we must spend $20 billion and the multiplier effect turns this $20 billion increase in government expenditures into $80 billion more in GDP. Another way to calculate this is, that we are $80 billion short of full employment GDP, we know the multiplier is 4, so we divide $80 by the multiplier 4 and find the government must spend an additional $20 billion.

The leakages approach yields the same results.

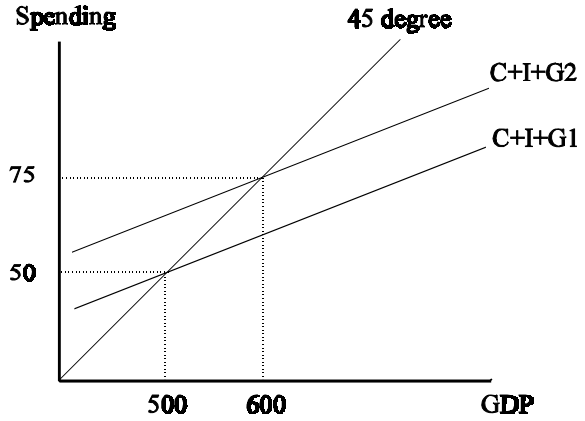


An increase in $20 of government expenditures moves the investment plus government expenditures line for I+G1 to I+G2 by a total of $20 billion dollars on the expenditures axis, but because of the re-spending effects, this increase results in $80 billion more in GDP, from $350 billion to $430 billion.

Taxation in Fiscal Policy

The government can close a recessionary gap by cutting taxes, just as effectively as it can by increasing government expenditures. Assuming that it is a lump-sum tax the government will use (lump-sum meaning it is the same amount of tax regardless of the level of GDP). The lump sum tax must be multiplied by the MPC to obtain the reduction in consumption, however, such taxes are also paid proportionately from savings. So the effect is not the same as is observed with government expenditures. The tax is multiplied by the MPC and then by the simple multiplier to obtain the total impact on GDP. In other words, the taxation multiplier is always the simple multiplier minus one or:

taxation multiplier = (1/MPS) - 1



If full employment GDP is $600 billion and we are presently at $500 billion with an MPC of .8, then if we are going to increase GDP by $100 billion we must cut taxes by $25 billion. The simple multiplier with an MPC of .8 is 1/.2 = 5; but the taxation multiplier is the simple multiplier minus one, hence 4. The decrease in taxation necessary to increase GDP by $100 billion is the $100 billion divided by 4 or $25 billion..

The major difference between increasing expenditures or decreasing taxes is that the multiplier effect for taxation is less. In other words, to get the same effect on GDP you must decrease taxes by more than you would have had to increase expenditures.

Balanced Budget Multiplier

An alternative policy is to increase taxes by exactly the amount you increase expenditures. This balanced budget approach can be used to expand the economy. Remember that the simple multiplier results in 1/MPS times the increase in expenditures, but the taxation multiplier is one less than the simple multiplier. In other words, if you increases taxes by the same amount as expenditures, GNP will increase by the amount of the initial increase in government expenditures. That is because only the initial expenditure increases GDP and the remaining multiplier effect is offset by taxation. Therefore, the balanced budget multiplier is always one.

For example, if full employment GDP is $700 billion, and we are presently at $650 billion, with an MPC of .75, then the simple multiplier is 4, (1/.25) and the taxation multiplier is 3, [(1/.25)-1], therefore the government must spend $50 billion and increase taxes by $50 to increase GDP by $50.

Tax Structure

Taxation is always a controversial issue. Perhaps the most controversial of all tax issues concerns the structure of taxation. Tax structure refers to the burden of the tax. Progressive taxation is where the effective tax rate increases with ability to pay. Regressive taxation is where the effective tax rate increases as ability to pay decreases. A proportional tax structure is where a fixed proportion of ability to pay is taken in taxes.

In general consumption is more greatly effected by taxation when the tax is progressive, and savings are impacted more when the tax is regressive. Therefore, if the distribution of the tax across income groups will have a variable impact on the consumption and savings.

At present, the federal income tax structure is nearly proportional, most ad valorem taxes, tobacco etc., are regressive. State income tax structures also vary substantially. States like Kansas, California and New Jersey have mildly progressive income taxes. States like Indiana and South Carolina use gross income tax schemes that tend to be very regressive. Therefore, the current tax structures are not neutral with respect to their re-distributional effects across income groups. In total, the taxes collected across the federal, state and local level are at best proportional and are probably slightly regressive. Probably the most regressive of these taxes is the gasoline tax.

Automatic Stabilizers

During the New Deal period several social welfare programs were enacted. The purpose of these programs was to provide the economy with a system of automatic stabilizers to help smooth business cycles without further legislative action. Among these programs were:

(1) progressive income taxes,

(2) unemployment compensation, and

(3) government entitlement programs.

Since the end of the Carter administration these automatic stabilizers have become controversial. President Clinton moved in his first term in office to eliminate some of these programs, but it was really the Republican congress and Governors like Tommy Thompson in Wisconsin who eliminated much of then welfare programs. Since 2002 much of this “welfare reform” has also come under fire for not having produced the results that were advertised. In 2002 the movie “Bowling for Columbine” by Michael Moore, brought many of these issues to an international audience.

The idea behind a progressive income tax was basic fairness. Those with the greatest wealth and income have the greatest ability to pay and generally receive more from government. As recessions occur, it is that segment of the population with the greatest wealth that will have resources upon which to draw to pay taxes, the poor will generally be impacted the most by high level of unemployment and recessions generally leave them with very little ability to pay.

Unemployment compensation is paid for in every state of the union by a payroll tax. The payroll tax is generally less than one percent of the first $10,800 of payrolls. Most states also impose an experience rating premium, that is those companies that have laid people off in the last year will pay a higher rate based on their experience. The preponderance of this tax is paid during periods of expansion and is placed in a trust fund. Unemployment benefits are then paid from this trust fund as the economy enters a recession. The effect is that money is taken out of the system during expansion and injected during recession, which dampens the top of the cycle (peaks) and eases the bottom of the cycle (trough).

Most social welfare programs have essentially the same effect, except that the expansions tend not to be dampened as much because the funding comes from general budget authority rather than a payroll tax. The significant increases in the proportion of poor people during recessions, however, do not add as much to the downward spiral of underspending, that would have otherwise been observed in the absence of these entitlement programs.

Problems with Fiscal Policy

There are several serious problems with fiscal policy as a method of stabilizing the macroeconomy. Among these problems are (1) fiscal lags, (2) politics, (3) the crowding-out effect, and (4) the foreign sector. Each of these will be addressed, in turn, in the following paragraphs.

Fiscal Lag

There are numerous lags involved with the implementation of fiscal policy. It is not uncommon for fiscal policy to take 2 or 3 years to have a noticeable effect, after Congress begins to enact corrective fiscal measures. These fiscal lags fall into three basic categories.

There is a recognition lag. The recognition lag is the amount of time for policy makers to realize there is an economic problem and begin to react. Administrative lags are how long it takes to have legislation enacted and implemented. Operational lags are how long it takes for the fiscal actions to effect economic activities.

Because of the typical two to three years for fiscal policy to have its intended effects, they may cause as many problems as they cure. For example, it is not uncommon for the Congress to cut taxes because of a perceived recession that subsequently ends within months of the enactment of the legislation. When the effects of the fiscal policies actually effect the economy, it may be in a rapid expansion and the tax cut or increase in government expenditures add to inflationary problems.

Politics, Crowding-out, the Foreign Sector and Fiscal Policy

Often politics overwhelms sound economic reasoning in formulating fiscal policies. Public choice economists claim that politicians maximize their own utility by legislative action, and are little concerned with the utility of their constituents. Perhaps worse, is the fact that most bills involve log-rolling and negotiations. Special interest often receive benefits simply to because they pay many of the election costs, and the interests of these lobbyists may be inconsistent with the best interests of the nation as a whole. The end result is that politics confounds the formulation of policy designed to deal with technical ills in the economy.

The neo-classicist have long argued that government deficits (often associated with fiscal policy) results in increased interest rates that crowds-out private investment.

there is little empirical evidence that demonstrates the exact magnitude of this crowding-out effect, but there is almost certainly some small element of this.

The neo-classicist also argue that there is another problem with government borrowing to fund deficit financing of fiscal policies. This problem is called Ricardian Equivalence. David Ricardo hypothesized that the deficit financing of government debt had the same effect on GDP as increased taxes. To the extent that capital markets are not open (foreign investors) the argument is plausible, however, in open economies there is little empirical evidence to support this view.

There are also problems that result from having an open economy. The most technical of these problems is the net export effect. An increase in the interest rate domestically (associated with a recession, or with an attempt to control inflation) will attract foreign capital, but this increases the demand for dollars which increases their value with respect to foreign currencies. As the value of the dollar increases it makes U.S. goods more expensive overseas and foreign goods less expensive domestically. This results in a reduction of net exports, hence a reduction in GDP.

There have also been shocks to the U.S. economy that have their origins outside of the United States and are difficult if not impossible to address with fiscal policy. The Arab Oil Embargo is a case in point. The United States and Holland supported the Israeli in their war with the Arabs in the early 1970s. The problem was we also had treaty obligations to some of the Arab states. Because of our support, the Arabs embargo oil shipments to the United States and Holland, which had the result of increasing domestic oil prices and decreased aggregate supply, hence, driving up the price level. This all occurred because of American Foreign Policy, but little could be done with fiscal policy to offset the problems for aggregate supply caused by the embargo.

KEY CONCEPTS

Social Welfare Programs
- 1946 Employment Act
- Politics and change

Expenditures
- Expansionary v. Contractionary Fiscal Policy
- Political Goals
- Public Goods and Services

Taxation
- Expansionary v. Contractionary Fiscal Policy

Multipliers
- Simple

- Taxation
- Balanced Budget

Tax Structure
- Proportional
- Regressive
- Progressive

Automatic Stabilizers
- Progressive Income Taxes
- Unemployment Compensation
- Entitlement Programs

Fiscal Lags
- Recognition
- Administrative
- Operational

Politics and Fiscal Policy
- Log-rolling
- Public Choice Economics

Government Deficits
- Crowding-out
- Ricardian Equivalence

Open Economy

STUDY GUIDE

Food for Thought:

Develop the expenditures - output model and show an increase (decrease) in taxes to close an inflationary (recessionary) gap. Now, do the same thing using increases and decreases in government expenditures. Do the exercise one more time using the balanced budget approach. [do this exercise using various MPCs].

Critically evaluate fiscal policy as an economic stabilization policy.

Critically evaluate the Ricardian Equivalence Theorem, and be careful to explain its implications for the national debt.

Which is most reliable as a fiscal policy tool, taxes or expenditures? Defend your answer.

Sample Questions:

Multiple Choice:

With an inflationary gap of $100 million and a large budget deficit, which has become a serious political issue and an economy with an MPC of .95, what would you do to close the gap?

A. Increase taxes $5 million
B. **Decrease expenditures $5 million**
C. Increase taxes $100 and decrease expenditures $100
D. None of the above

2. With a recessionary gap of $70 million and an MPS of .1 which of the following policy would close the gap?

A. Increase taxes and expenditures by $70 million
B. Increase expenditures by $7 million
C. Decrease taxes by $7.8 million
D. **All of the above will work**

True - False:

The crowding - out effect is the theory that a government deficit raises interest rates and absorbs resources that could have been used for private investment. {TRUE}

Automatic stabilizers, such as unemployment compensation, provide counter cyclical relief from economic instability without additional government action. {TRUE}

Chapter 8

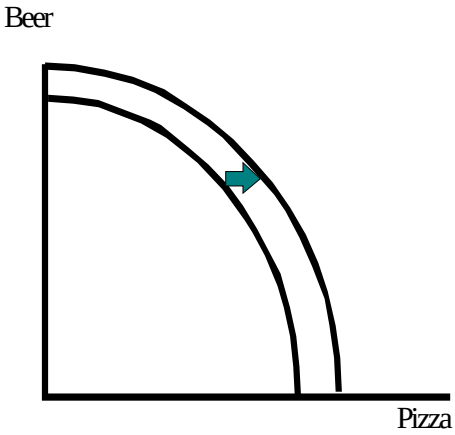
Economic Growth

This chapter focuses on economic growth. Some definitions of growth will offered, before proceeding to discussion of the causes of economic growth in the United States and other nations. The decade of the 1990s witnessed unprecedented growth in the United States, and in many Asian countries, much of which has not been sustained, for several reasons, in the first years of the twenty-first century.

Definitions

Economic growth is defined in one of two ways, as a total (hence GDP) or as a per capita (hence GDP per capita). Each of these definitions has its uses. The second definition is of the greatest importance in defining the standard of living in a country.

The following production possibilities frontier shows economic growth in a simple two commodity economy.



Remember the assumptions underpinning the production possibilities model is that there are only two commodities produced, there is a fixed technology and number of resources, and these resources are used in an economically efficient manner.

As the frontier expands to the right, more pizza can be obtained with the previous production levels of beer, and vice versa. The way that this growth can be obtained is that the assumptions are relaxed. In other words, more resources or a better technology is necessary to obtain growth. While this model shows growth, it shows it only as a total concept, and nothing is represented with respect to how these additional commodities are distributed.

Countries with developing economies are of particular concern in this increasing global economy. Developing economies are classified into two categories, **middle-income countries $760 to $9300 per capita GDP in 2000**, and **low-income countries those below $760 per capita GDP in 2000.** The majority of Latin countries are middle-income countries and the majority of sub-Saharan African countries and South-Asian countries are low income countries. The industrial, high income countries are the U.S., Canada, Australia, New Zealand, Japan, and Western Europe.

Economists generally discuss economic growth in terms of growth-paths. **Growth-paths are the historical tracing of how an economy moved from being less developed to a developed economy.** In general, the currently industrialized countries have several characteristics in common. These commonalities have given rise to the theory that there are prerequisites to economic growth, which include:

(1) Establishing and implementing domestic rules of law,

(2) Opening the economy to international trade,

(3) Controlling population growth,

(4) Encouraging foreign direct investment,

(5) Building human capital,

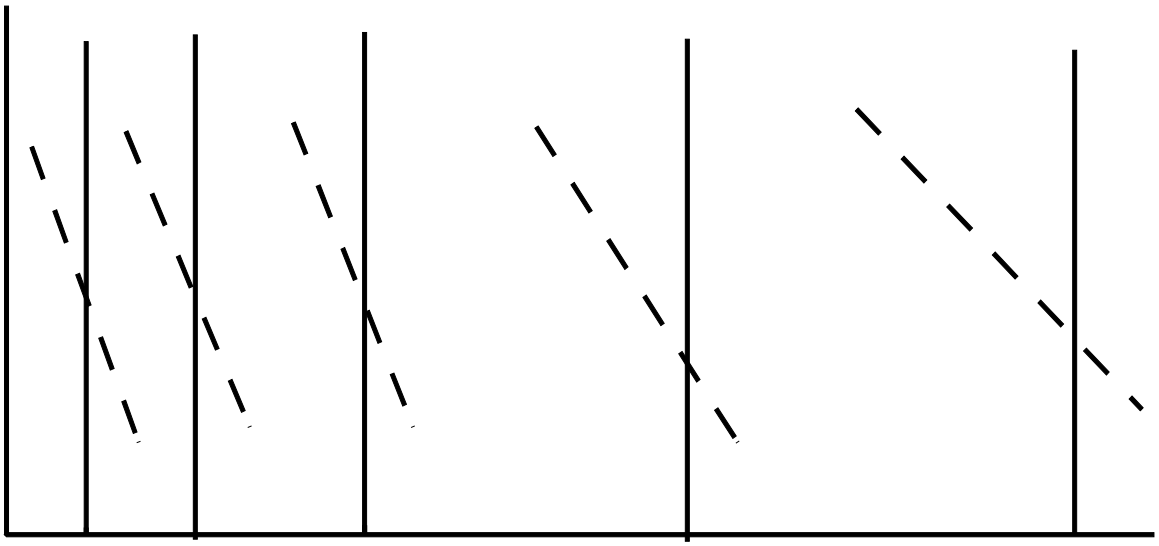
(6) Reasonable monetary institutions and markets,

(7) Minimizing the role of the military both domestically and internationally, and

(8) Encouraging the growth of the private sector relative to the public sector.

It is hypothesized that if these prerequisites can be fulfilled, then the developing country has created an environment that permits the building of a substantial infrastructure, sufficient to support a modern growing economy. Once the infrastructure is in place, the a substantial private economy can be expected to grow, if these prerequisites and the infrastructure continue in place.

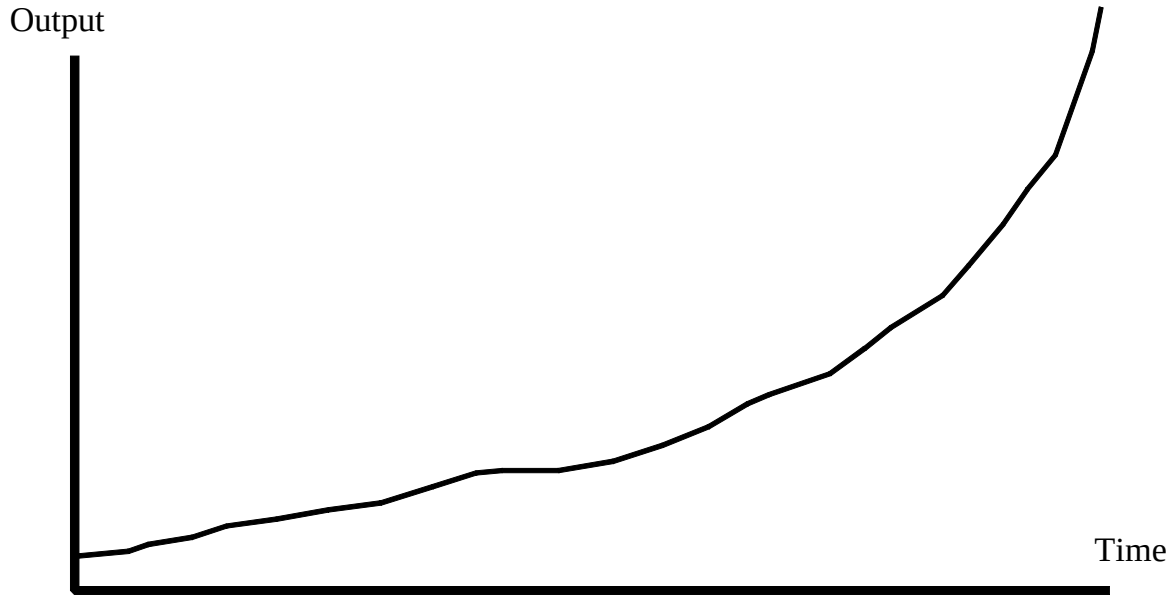
In Indonesia, India, and several middle-eastern and African countries there are significant problems with corruption, and capital flight. It is nearly impossible to attract capital to a developing nation, if the government is corrupt and there is little in the way of political stability or the rule of law. In the late 1990s there were stories coming out of Indonesia where high government officials were leaving the country with several suitcases of U.S. dollars – classic capital flight.



Economic growth is a long-term secular trend. There are periods in which increased economic activity may be observed, but without the secular trend, the accumulation of capital necessary for an industrialized economy is unlikely.

The above diagram shows several aggregate demand and aggregate supply curves. If the AD1 and AS1 are for 1900 and each subsequent equilibrium is for a period 25 years later, one can see the secular trend in economic growth, and that the economic growth observed is accelerating (greater distance between the aggregate supply curves). The mapping out of the equilibriums, filling in all the intermediate periods, is basically a mapping of a long term secular trend of economic activity.

This secular trend shows that output increases at a rather leisurely rate in the beginnings of the period, and that the growth rate grows exponentially in the later periods – pretty much the same as the actual data for the 20th century in the United States.



U.S. Growth

The accumulation of capital in the United States was both domestic capital, and the attraction of foreign capital. Much of the industrial revolution in Europe was eventually exported to the United States because of the Napoleonic Wars in the beginning of the 19th century and continued political instability in Western and Central Europe. At the beginning of the 19th century the U.S. had substantial European ties, and was insulated from the political instability in Europe by the great barrier of the Atlantic Ocean.

In addition to this geographic advantage, the United States also had substantial amounts of natural resources, and agriculturally productive land in great abundance. With this the British traditions in common law and a strong constitutional form of government gave this country both the rule of law and substantial political stability, which permitted both foreign and domestic sources of capital accumulation to thrive.

As the United States progressed through the 19th century, education and technological innovation both stepped-up to assist in driving economic growth. Cyrus McCormick, George Washington Carver, Alexander Graham Bell, and Thomas Edison all were responsible for significant innovations that created whole industries and contributed substantially to the economic growth of the United States. As this country entered the 20th century the rate of technological innovation accelerated, and that acceleration continues to this very day.

The decade of the 1990s saw growth rates in the United States that were unprecedented. U.S. growth in excess of 4% of is not common, yet the 1990s witnessed growth rates in excess of this in several years. Much of this growth ended in

2000. In a large measure, this “new economy” growth was due to a bubble in the NASDAQ attributable to an “internet” craze that produced substantial income for investors in these dot.com companies. However, this craze, was as Alan Greenspan identified it, “irrational exuberance.”

The Asian Tiger economies, China, Taiwan, Indonesia, South Korea, Malaysia, the Philippines, and Thailand all experienced very substantial growth. Much of this growth depended on two things, low wage labor for manufacturing, particularly in the electronics industry, and exports. The semi-conductor industry has suffered substantial decline since 2000 and the growth rates of these Asian Tiger economies have gone down drastically. Further, much of the manufacturing upon which these economies relied was low value added, and the end result is that the incomes in these economies did not grow as once forecasted – hence failing to create the kinds of consumer economies observed in North America, and Western Europe.

Global Economic Development

The majority of the world’s population lives in low-income countries, and many of these low-income countries have very substantial foreign debts. The role of industrialized or high income countries is not so clear in helping to develop the world’s middle- and low-income countries.

It is clear that population growth, the lack of health care, education, and infrastructure added to the heavy debt burdens of these developing countries are substantial impediments to economic growth. There are several suggestions that scholars and international organizations have offered concerning assistance to developing nations.

Many of the low income countries, particularly in Africa, are heavily in debt to governments and private banks in the industrialized portions of the world. This debt is a crushing burden, that in many cases, makes economic development nearly impossible. In many cases, this debt was acquired to buy military hardware, or was stolen by corrupt former government leaders (Saddam Hussein is alleged to have left Iraq with tens of billions of dollars in 2003). Debt rescheduling has become a way of life with these creditor banks and governments, simply so that the debtor countries can pay back at least the principle of these debts. Debt relief is something that is just beyond the horizon, if economic disaster is to be avoided in many of these indebted countries.

The issue of foreign aid is also controversial. The United States and Japan both provide very significant amounts of foreign aid to the developing portions of the world. The United States, as of 2001, was providing just under .2 percent of its GDP in various foreign aid programs to developing countries. Japan’s percentage of GDP was slightly higher, but was lower in absolute dollars because of its smaller GDP. More than a dozen other high income also provide substantial amounts in foreign aid.

Foreign aid is criticized from two perspectives. Corrupt foreign governments can easily divert aid from productive endeavors to things never intended by the donor country. Perhaps worse still, is the fact, that there is a narcotic effect of foreign aid. Foreign aid can provide substantial improvements in infrastructure, incomes, and even political stability. However, over a period of time the receiving country may become dependent on foreign grants and loans, and not be successful in finding alternative means of generating revenues to pay for these items. The end result, the developing country becomes addicted, with no way out – or so the criticism goes. Whether this really is a problem is an empirical question, and there is insufficient evidence to make any final judgments in this matter.

An open economy is also one way in which a growth path can be established. Both the British and the Japanese developed their respective economies by engaging in international trade. International trade, free and open trade, is one way in which a developing economy might very well increase their per capita incomes, and hence develop a consumer economy to assist in their own economic development.

The issue of trade is a controversial issue. Developing economies fear becoming economic colonies of industrialized nations, and are suspicious of such "free trade." On the other hand, vested interests in the developed economies also fear the loss of domestic jobs and income due to trade with low wage economies. There are historical reasons for these fears, but free and open trade, based on comparative advantage, and living wages is likely beneficial to all of the trading partners.

Finally, one of the severest problems facing the developing world is the "brain drain." The highly skilled and educated persons in developing countries seem to have a propensity to immigrate to North America and Western Europe. If economic growth is to bring the developing world into the 21st century, the developing world is going to need its human capital. At the same time, the less skilled and educated are remaining in the developing world, when such workers are in short supply in certain parts of the industrialized world, hence, immigration policies towards those workers might serve both groups of countries better if they were liberalized. As one might imagine such policy proposals generally meet with harsh criticism in the industrialized world.

If political stability is to be achieved and maintained in the developing world, then the industrialized countries need to create some sensible policies towards the exportation of arms to developing countries. At present the proliferation of conventional arms in both Africa and Latin America suggests the potential for substantial armed conflict in both regions – either internationally or domestically.

KEY CONCEPTS

Economic Growth
- Total
- Per capita

Developed or high income countries

Developing countries
- Middle income countries
- Low Income countries

Growth Paths
- Prerequisites to Growth

Secular Trend

Asian Tigers

Impediments to Growth
- Debt
- Brain Drain

Role of Developed Economies in Developing Economies
- Foreign Aid
- International Trade
- Human Capital - Brain Drain

STUDY GUIDE

Food for Thought:

Why is growth deemed to be a long term secular trend? Explain.

What costs and benefits are there for foreign aid from developed economies, for both developing and developed economies?

Critically evaluate total GDP growth, and per capita growth as measures of economic growth.

Sample Questions:

Multiple Choice:

Which of the following are NOT prerequisites to economic growth:

A. Brain Drain
B. Controlling population growth
C. Opening the economy to international trade
D. Encouraging foreign direct investment

How is growth illustrated in a production possibilities curve?

A. A point inside the curve
B. A point outside the curve
C. A shift of the curve to the left
D. A shift of the curve to the right

True - False:

Foreign aid to a developing economy is unambiguously good for the country receiving that aid. {FALSE}

Most low income countries are in Africa and South Asia. {TRUE}

Chapter 9

Money and Banking

In primitive, tribal societies the development and use of money occurs only after that society reaches a size and complexity where barter is no longer a viable method of transacting business. Barter, the trading of one good or service for another, requires a coincidence of wants. When one individual has something another wants, and vice verse, trade can be arranged be there is a coincidence of wants.

Larger, more complex social orders generally require the division of labor and specialization, which in turn, increases the number of per capita market transactions. When individuals live in a higher interdependent society, most necessities of life are obtained through market transactions. In a modern industrialized country it is not uncommon for an individual to make more than a dozen transactions per day. This volume of business makes barter nearly impossible. The result is that societies will develop money to facilitate the division of labor and specialization that provide for higher standards of living.

The purpose of this chapter is to introduce the reader to money and to the banking system. This chapter will provide the basic definitions essential to understanding our complex monetary and banking systems. The following chapters will extend the analyses to demonstrate how money is created and how the monetary system is used to stabilize the fluctuations in the business cycle.

Functions of Money

There are three functions of money, these are:

(1) a medium of exchange,

(2) a measure of value, and

(3) a store of value.

Each of these functions will be examined, in turn, in the following paragraphs.

Money serves as a medium of exchange. It is generally accepted as "legal tender" or something of general and specified value, such that, people have faith that they can accept it for payment, because they can use it in exchange without loss of value. Because barter requires a coincidence of wants, trade occurs only when two people have different commodities that the other is willing to accept in trade for their

own wares. A barter economy makes exchange difficult, it may take several trades in the market before you could obtain the bread you want for the apples you have.

Money solves the barter problem. If you have apples and want bread, you simply sell the apples for money and exchange the money for bread. If barter persists it may take a dozen or more transactions to turn apples into bread. In other words, money is the grease that lubricates modern, sophisticated economic systems.

Money is also a measure of value. Without money as a standard by which to gauge worth, value would be set by actual trades. The value of a horse in eighteenth century Afghanistan could be stated in monetary units in the more modern areas of the country. However, the nomads that wandered the northern plains of that country could tell you in terms of goats, carpets, skins, and weapons what the range of values were for horses. However, there were as many prices of horses as there were combinations of goods and services that could be accepted in exchange for the animal. Money permits the value of each commodity to be stated in simple terms of a single and universally understood unit of value.

Money is also a store of value. Money can be saved with little risk, with virtually no chance of spoilage, and little or no cost. Money is far easier to store than are perishable foodstuffs, or bulky commodities such as coal, wool or flour. To store money (save) and later exchange it for commodities is far more convenient than having to store commodities for future use, or to have to continually go through barter exchanges.

Together, these functions vest in money a critical role in any complex modern economy. Our prices are stated in terms of money, our transactions are facilitated by money, and we can store the things we which to consume in the future by simply saving money. In fact, money may not make the world go 'round, but it certainly permits the economic world to go 'round much more smoothly.

The Supply of Money

The supply of money has a very interesting history in both U.S. economic history and world economic history. Several historians note that one of the contributing factors to the fall of the Roman Empire was that there was significant deflation in the third and fourth centuries. The reason for this was that money, in those days, was primarily coinage minted of gold, silver, and copper. As gold and silver was traded for commodities from the orient there was a flow of coinage out of the west. In addition, "barbarians" were constantly raiding Roman territory and it was the gold and silver that they carried back with them (for trade). Further, as the population grew at a faster rate than the availability of precious metals, the money supply fell relative to the need for it to make the economy function efficiently. This rapid deflation, added to a extremely mal-distributed income, and loss of productive resources resulting in a rapidly declining

economy after the second century A.D. The Roman economy collapsed, with the collapse of the economy the military and government were also doomed. Given the times, once the Roman government and military were ruined, it was short-work to eliminate the empire and social structure.

In 1792, the U.S. Congress enacted the first coinage act. The Congress authorized the striking of gold and silver coins. The Congress set the ratio of the value of gold to silver in the coinage at 15 units of silver equaled one unit of gold. The problem with this was that gold was worth more than silver as bullion than as coinage. This arbitrary setting of the coinage value of these metals resulted in the gold coins disappearing from circulation (being melted down as bullion) and only silver coins circulating. At the same time, most coinage that circulated in the eighteenth century western hemisphere (including the United States) was of Spanish origin. In fact, the standard unit adopted for U.S. coinage was the dollar, however, the Spanish minted coins that were also called dollars (from a Dutch word, tolar). The Spanish one dollar coins contained more silver, than did the U.S. dollar and the Spanish coins were being melted down and sold, at a profit, at the U.S. mint. Herein is the problem with using gold or silver as minted coins or as backing for currency. Money has value in exchange that is unrelated to the value of precious metals. Their relative values fluctuate and result in money disappearing if the value of the metal is more than the unit of currency in which the metal is contained.

One of the classical economists noted this volatility in the monetary history of most countries. As the value of the gold or silver made the currency worth more as bullion, that currency disappeared and was quickly replaced by monetary devices of lesser value. **Gresham's Law** is that money of lesser value will chase money of greater value out of the market.

A modern example of this is available from U.S. coinage. In 1964, the value of silver became nearly 4 times (and later that decade nearly 22 times) its worth in coinage. Therefore, the last general circulation coins that were minted in the United States that contained any silver was 1964. Today, the mint issues one dollar coins that contain one ounce of silver (rather than .67 ounces), but that silver is worth $5.30 per ounce as bullion. Therefore, you do not see actual silver dollars in circulation, and will not until the value of silver drops below $1.00 per ounce. This observation is Gresham's law in operation.

Since the American Civil War there have been various forms of money used in this country other than coinage. The government issued paper money, particularly after the Greenback Act of 1861 (there were numerous examples of U.S. paper money before that year, including bank notes, state notes, and colonial notes). The Greenback Act provided for the denominations of bills with which you are familiar, but it also provided for 5¢ 10¢, 25¢, and 50¢ bills (fractional currency).

Today, there are numerous definitions of money. The most commonly used monetary items are included in the M1 through M3 definitions of money; these definitions are: (1) M1 is currency + checkable deposits, (2) M2 is M1 + noncheckable savings account, time deposits of less $100,000, Money Market Deposit Accounts, and Money Market Mutual Funds, and (3) M3 is M2 + large time deposit (larger than $100,000). The largest component of the M1 money supply is checkable deposits (checking accounts, credit union share drafts, etc.), currency is only the second largest component of M1.

Near Money

Near money are the items that fulfill portions of the requirements of the functions of money. Near money can be simply a store of value, such a stocks and bonds that can be easily converted to cash. Credit cards are often accepted in transactions, and the line of credit they represent can serve as a medium of exchange. Gold, silver, and precious stones have historically served as close substitutes for money because these commodities have inherent value and can generally be converted to cash in almost any area of the world. Much of the wealth smuggled out of Europe at the end of World War II by escaping Nazis was smuggled out in the form of gem stones, gold, and silver bullion.

The widespread use of near money is relatively rare in the world's economic history. However, in modern times, there is a potential for problems. Indiana's history presents an interesting example. The State of Indiana issued currency in the 1850s, in part to help finance the canals that were being built across the State. In 1855 and 1856, the railroads put the canals out of business, even before they were completed, virtually bankrupting the State, hence the 1857 Constitution, rather the year Indiana entered the Union. State currency or even private bank currency is not controlled by a central bank and is worth only what faith people have in it or the intrinsic value of the monetary unit. If the full faith and credit of a bankrupt State or bank is all that backs the currency, it is worthless.

What Gives Money Value?

The value of the U.S. dollar (or any other currency) can be expressed as the simple reciprocal of the price level:

$$D = 1/P$$

Where D is the value of the dollar and P is the price level. In other words, the value of the dollar is no more or less than what it will buy in the various markets. This is true of

any currency (money in general). However, there are reasons why money has value. The value of money is determined by three factors, these factors are: (1) its general acceptability for payment, (2) because the government claims it is legal tender (hence must be accepted for payment), and (3) its relative scarcity (as a commodity).

Money can be used to buy goods and services because people have faith in its general acceptability. It is not that the coin or paper has intrinsic value that makes money of value in exchange, it is simply because people know that they can accept it in payment and immediately exchange it for like value in other commodities, because virtually everyone trusts its value in exchange.

Money also has value in international currency markets, not just domestic ones. The international currency markets provide a very good example of why trust provides money with value. The world's currencies are generally divided into two categories, hard currency and soft currency. A hard currency is one that can be exchanged for commodities in any nation in the world. A soft currency is one whose value is generally limited to nation that issued it, and often to some limited extent in the world currency markets (often with significant limitations or even discounts). The U.S. dollar, French franc, German deutsche mark, Canadian dollar, Japanese Yen, British pound, and Italian lire are recognized as hard currencies (generally the Swiss franc is also included in the hard currencies). These seven nations are the G-7 nations and are the world's creditor nations. The reason that these countries are the creditor nations is that they are the largest free market economies, have democratic and stable governments, and long histories of rather stable financial markets. These nations' currencies are termed "hard" currencies because they are relatively stable in value and can be readily exchanged for the goods and services of these largest most advanced economies. In other words, the economic systems and governments that generate these currencies are the markets from which everyone else imports a wide array of necessary commodities.

On the other hand, the Mexican peso, Kenyan dollar, and Greek drachma (among 165 others) are currencies of less developed nations that have very little of value, relative to any of the G-7 nations in the world's markets, do not have histories of stable financial markets, governments, and they are typically in debt to the G-7 nations. Because of their limited value in exchange, and rather volatile value these currencies are called "soft" currencies. The difference between a hard and a soft currency is trust in its present and future value in exchange for commodities. Hard currencies are generally trusted, hence accepted, soft currencies are not.

There is also an element of legality in the value of money. For example, the United States is a large, economically powerful country. Its government is also a large, powerful government that has always paid its bills. People have faith and trust in the U.S. government making good on its financial obligations, therefore people have taken notice when the United States government says that Federal Reserve Notes are legal tender.

Also contributing to the value of money is its scarcity. Because money is a scarce and useful commodity it also has value the same as any other commodity. It is interesting to note that the U.S. $100 bill is the most widely circulated currency outside of the United States, and more of these bills circulate outside of the U.S. than within the U.S. This suggests something of the commodity value of U.S. dollars, as well as the general international trust in the U.S. dollar.

By spring 1971, the exchange rate problems had become acute. This was true for Japan and especially for West Germany, who had large trade surpluses with the United States and held more dollars than they wanted. Under these conditions, the U.S. dollar was rapidly losing value against the German deutsche mark. From January to April of 1971, in keeping with the Bretton Woods agreements, the German Bundesbank had to acquire more than $5 billion of international reserves in order to defend the value of the dollar. To protect the value of the dollar and its exchange rate with the German mark, however, the German central bank was losing control over its domestic monetary policy. By May 5, 1971, the Bundesbank abandoned its efforts to protect the dollar and permitted the deutsche mark to seek its own value in the world's currency markets. The scenario was the same for all countries that had trade surpluses with the United States. The excess supply of dollars was causing those countries to lose control over their money supplies. Given that the United States was rapidly losing its gold reserves, on August 155, 1971, by Richard Nixon's order, it was announced that the United States officially abandoned the Bretton Woods system and refused to exchange gold for U.S. dollars held by foreigners. For the first time in modern monetary history, the U.S. dollar was permitted to seek its value in open markets. The move to a flexible exchange rate system where the exchange rates are determined by the basic market forces was the official demise of the Bretton Woods system.

Mashaalah Rahnama-Moghadam, Hedayeh Samavati, and David A. Dilts, *Doing Business in Less Developed Countries: Financial Opportunities and Risks.* Westport, Conn: Quorum Books, 1995, p. 74.

The Demand for Money

The demand for money consists of two components of total money demand, these are: (1) transactions demand, and (2) asset demand. Transactions demand for money is the demand that consumers and business have for cash (or checks) to conduct business. Transaction demand is related to a preference to have wealth or resource in a form that can be used for purchases (liquidity). There is also an asset demand for money. In times of volatility in the stock and bond markets, investors may

prefer to have their assets in cash so as not risk losses in other assets. Together, the asset and transaction demand for money comprise the total demand for money.

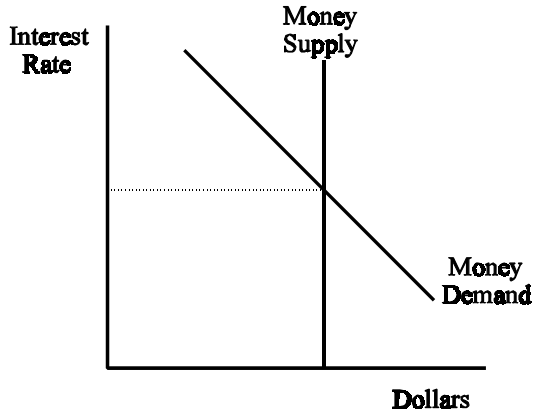
Money is much the same as any other commodity, it has a demand curve and a price. The price of money is interest, primarily because money is also a claim on capital in the financial markets. The demand curve for money is a downward sloping function, that is a schedule of interest rates to the quantity of money.

The Money Market

The money market is a particularly interest market. In reality there are several markets in which money is exchanged as a commodity. In examining only M1, the currencies of various countries are exchanged for one another for the purpose of doing business across national boundaries. The price of one nation's currency is generally expressed in terms of another countries currency. For example, 105 Yen is the value of a dollar, in the case of a Deutsche Mark, 1.26 DM is worth one dollar.

There is also the credit market. The credit market is where consumers and businesses go to borrow money. A consumer purchasing a house will typically need a mortgage and will borrow to buy a house. Businesses will need to borrow to purchase capital equipment (investing) to produce commodities to sell in product markets. Both types of borrowing influence the credit markets, because money is a relatively scarce commodity. One of the largest borrowers in the U.S. economy is the U.S. Treasury. Typically the government borrows by selling Treasury Bonds.

The following diagram is for a general money market (credit market):



The money supply curve is vertical because the supply of money is exogenously determined by the Federal Reserve. The Federal Reserve System regulates the money supply through monetary policy and can increase or decrease the money supply by the various actions it has available to it in regulating the banking system and in selling or buying Treasury Bonds. The money demand curve slopes downward and to the right. The intersection of the money demand and money supply curves represents equilibrium in the money market and determines the interest rate (price of money).

Bonds are financial obligations. Both private companies and governments issue bonds and receive cash. The bonds typically state that the owner of the bond will receive a specific payment in dollars periodically for holding the bond, and at the end of the bond's life it will be redeemed for its face value. This is the primary market, where bonds are sold directly by the government or company. In the case of the Treasury the bonds are generally sold at auction.

This method of paying interest creates a "secondary" market for bonds. Bonds may be resold for either a discount or a premium. As the market value of the bond increases, it drives down the rate of return on the bond, conversely, if the market value of the bond decreases the rate of return increases. For example, consider a $1000 bond that the government agrees to pay $60 per year in interest over its life. If the bond remains at the $1000 face value the interest rate is 6%. However, if bonds are viewed as a safer investment than other possible investments, or there is excess demand for bonds, the market price may increase. If the market price of this $1000 bond increases to $1200 then the rate of return falls to only 5% (60/1200 = .05). On the other hand, if the bond is viewed as more risky, or there is an excess supply of bonds the market price may fall, say to $800, then the rate of return increases to 7.5% (60/800 = .075).

Notice how bonds become a good investment. Bonds are good investments when the interest rate is falling. As the interest rate falls, the market value of the bond increases, (remember that the payment made by the original borrower is a fixed payment each period). In other words, falling interest rates mean larger market values for the bonds, and greater profits for investors in bonds.

An Overview of the U.S. Financial System

The U.S. financial system is a complex collection of banks, thrifts, savings & loans, credit unions, bond and stock markets, and numerous markets for other financial instruments such as mutual funds, options, and commodities. The complete analysis of these markets is not a single course, its an entire curriculum called Finance. What is important for understanding the basics of the effects of money on the macroeconomy is the banking system and the closely associated regulatory agencies, such as the Federal Reserve System and Federal Deposit Insurance Corporation (F.D.I.C.).

Federal Reserve System (FED) is comprised of member banks. These member banks are generally large, nationally chartered banks that do significant amounts of commercial banking. The FED is owned by these member banks. However, under the Federal Reserve Act, the Board of Governors and Chairman are nominated by the President of United States and confirmed by the Senate. The structure of the system is: (1) Board of Governors - that governs the FED and is responsible for the operations of the Fed, (2) Open Market Committee - buys and sells bonds (called open market operations, (3) Federal Advisory Council - provides advise concerning appropriate banks regulations and monetary policies, and (4) The FED has 12 regional banks that serve as check clearing houses, conduct research, and supervises banks within the region. Fort Wayne is in the Chicago region, however, Evansville is in the St. Louis region.

The functions of FED are basically associated with bank regulation and the conduct on monetary policy. The functions of the FED include:

1. Set reserves requirements,

2. Check clearing services,

3. Fiscal agents for U.S. government,

4. Supervision of banks, and

5. Control money supply through Open Market Operations (buying and selling of bonds).

The supervision of banks and check clearing services are routine FED functions that are focused on making the banking system safer and more efficient. Because the FED is the agency through which Treasury obligations are bought and sold the FED is the fiscal agent for the federal government. The setting of reserve requirements for the banking system and open market operations are the tools of monetary policy and are the subjects of the following chapter.

The Federal Deposit Insurance Corporation is a quasi-governmental corporation whose purpose is to insure the deposits of member banks. Credit unions, thrifts, and savings & loans had separate independent agencies designed to provide the same insurance. However, after the savings & loans crisis, these other agencies were consolidated under the control of F.D.I.C. The reason for these programs was the experience of the banking industry during the Great Depression when many depositors lost their life savings when the banks failed. Many banks failed, simply because of "runs." Runs are where depositors demand their funds, simply because they have lost faith in the financial ability of the banks to meet their obligations (sometimes the loss of faith was warranted, often it was nothing more than panic). Therefore, to foster

depositor faith in the banking system, F.D.I.C. was created that provided a guarantee that depositors would not loss their savings even if the bank did fail.

There is a problem with such insurance arrangements. This problem is called moral hazard. Moral hazard is the effect that having insurance reduces the insured's incentive to avoid the hazard against which they are insured. The savings and loan crisis was at least in part the result of moral hazard. The managers of the failed saving and loans often would extend loans or make investments that were high risk, but were less concerned because if it resulted in failure, the government would pay-back the depositors. This is a classic example of moral hazards, but there were also other problems involving fraud, bad loans in Mexico, and shaky business practices, against which it was not intended that F.D.I.C. would risk substantial exposure.

KEY CONCEPTS

Functions of Money
- Medium of Exchange
  - Avoidance of Barter
- Measure of Value
- Store of Value

Supply of Money
- M1, M2, and M3

Near Money

Value of Money

Demand for Money
- Transactions Demand
- Asset Demand
- Total Demand

Money Market
- Interest rates

Federal Reserve System
- Board of Governors
- FMOC
- Federal Advisory Council
- 12 regions

Functions of the Fed
- Sets Reserve Requirements

Check clearing
Fiscal agent for the U.S. government
Supervision of Banks
Control of Money Supply

Moral Hazard

STUDY GUIDE

Develop and explain each:

Functions of money,

Demand for money,

Money supply, and

Value of money.

Critically evaluate the Federal Reserve System as a regulatory agency.

What is near money? Explain and critically evaluate the use of near money.

Sample Questions:

Multiple Choice:

The U.S. money supply is backed by:

A. Gold
B. Gold and Silver
C. Gold, silver & government bonds
D. **People's willingness to accept it**

2. If a U.S. government 30-year bond sold originally for $1000 with a specified interest rate of five percent, each year the bond holder receives $50 from the government. If the sales price of the bond falls to $900 what is the interest rate?

A. **5.56%**
B. 5.00%
C. 4.50%
D. None of the above

True - False:

If the Fed wishes to decrease the money supply they can buy bonds {FALSE}.

The FDIC provides insurance for deposits in member banks {TRUE}.

Chapter 10

Multiple Expansion of Money

The purpose of this chapter is to analyze how banks create money and how the Federal Reserve System plays an essential role in regulating the banking system. After a brief history of banking reserves is examined, we will proceed to analyze the multiple expansion of money.

Paper money is produced at the United States Bureau of Printing and Engraving in Washington, D.C. Each day, the Bureau of Printing and Engraving produces about $22 million in new currency. Once the Bureau of Printing and Engraving produces the money it is then shipped to the twelve regional Federal Reserve banks for distribution to the member banks. The stock of currency is created and maintained by a simple printing and distribution process. However, the stock of paper money is only a small part of the M1 money supply. The majority of the M1 money supply is checkable deposits.

Counterfeiting is of U.S. currency is a significant problem. The U.S. Bureau of Printing and Engraving has developed a new fifty dollar bill that will make counterfeiting more difficult. Periodically for the next several years the new design will be extended to all denominations of U.S. currency. A few years ago, a strip was added to U.S. currency that when held to the light shows the denomination of the bill, so that counterfeiters cannot use paper from one dollar bills to create higher denomination bills. The government agency responsible for enforcing the counterfeiting laws in the United States is the U.S. Secret Service, the same agency that provides security for the President.

Assets and Liabilities of the Banking System

Assets are items of worth held by the banking system, **liabilities** are claims of non-owners of the bank against the banks' assets. **Net worth** is the claims of the owners of the bank against the banks' assets. Over the centuries a system of double entry accounting has evolved that presents images of businesses. The double entry system accounts for assets, liabilities, and net worth.

Accounts have developed a **balance sheet** approach to present the double entry results of the accounting process. On the left hand side are entered all of the bank's assets. On the right hand side of the ledger are entered all of the claims against those assets (claims by owners are net worth and claims by non-owners are liabilities). The assets side of the ledger, must equal the net worth and liabilities side. This rather simple method, is an elegant way to assure that claims and assets balance.

The balance sheet method will permit us a method to track how banks create money through the multiple expansion process.

Rational for Fractional Reserve Requirements

The fractional reserve approach to monetary stability dates from the middle-ages in Europe. Goldsmiths received gold to make jewelry, religious objects, and to hold for future use. In return the goldsmiths would issue receipts for the gold they received. In essence, these goldsmith receipts were the first European paper money issued and they were backed by stocks of gold. The stocks of gold acted as a reserve to assure payment if the paper claims were presented for payment. In other words, there was a 100% reserve of gold that assured the bearer of the receipt that the paper receipt would be honored. The reserves of gold held by the goldsmiths created faith in the receipts as mediums of exchange, even though there was no governmental involvement in the issuing of this money.

However, the goldsmiths in Europe were not the first to issue paper money. Genghis Khan first issued paper money in the thirteenth century. Genghis did not hold reserves to back his money, it was backed by nothing except the Khan's authority (which was absolute). Therefore in the case of the Great Khan, it was the ability to punish the untrusting individuals that gave money its value. In Europe, two-hundred years later, it was trust in reserves that gave money its value.

The U.S. did not have a central banking system, as we know it, from the 1840s through 1914. There were two early "national" banks whose purpose was to serve as the fiscal agent of the U.S. government and to provide limited regulation for the U.S. monetary system. Both failed and were eliminated. In the early part of this century several financial panics pointed to the need for a central banking system and for strong financial regulations.

During the first half of this country's history both states and private companies issued paper money. Mostly this paper money was similar to the gold receipts issued by the European goldsmiths, except the money was not backed by gold, typically the money was a claim against the assets of the state or company, in other words, the money issued represented debt. It is little wonder that most of this currency became worthless, except as collectors' items. Prior to 1792, Spanish silver coins were widely circulated in the U.S. because they were all that was available for use as money (for more details see the previous chapter).

The first widespread issuance of U.S. paper money was during the Civil War (The Greenback Act), which included fractional currency (paper dimes & nickels!). Earlier attempts to issue U.S. notes were less than successful, simply because people

trusted coinage because of the silver and gold therein contained, and paper money was a novelty (but not a very valuable one).

Today, the Federal Reserve requires banks to keep a portion of its deposits as reserves, to help assure the solvency of the bank in case of a financial panic, like those experienced in the first decade of this century and again in the 1930s. The fact that these reserves are kept also helps to assure the public of the continuing viability of their banking system, hence the safety of their deposits. In turn, this public faith should prevent future runs on the banking system that have historically caused so much economic grief due to bank failures.

The Required Reserve Ratio

The Required Reserve Ratio (RRR) is set by the FED's Board of Governors within limits set by statute. The minimum legally allowable RRR is three percent, where the current RRR has been set by the Board of Governors. The RRR determines by how much the banking system can expand the money supply. The RRR is the amount of reserves that a bank must keep, as a percentage of their total liabilities (deposits).

Banks are permitted some freedom to determine how their reserves are kept. A bank can keep reserves as vault cash or deposits with the regional Federal Reserve bank. Should a bank be short of the amount required to meet the reserves necessary, then a bank can borrow their reserves for short periods from either the FED or other member banks. The FED regulates the borrowing of reserves, and sets an interest rate for these short term loans if they are borrowed from the FED. The rate charged on borrowed reserves from the FED is called the discount rate. The rate of interest charged on reserves borrowed from other member banks is called the Federal Funds Rate (currently about 5.5%).

The banking system has three forms of reserves, these are actual, required, and excess reserves. Actual reserves are the amounts the banks have received in deposits that are currently held by the bank. The required reserves are the amounts the Board of Governors requires the banks to keep (as vault cash, deposits with the FED, or borrowed). The excess reserve is amount of actual reserves that exceeds the required reserves. It is the excess reserves of the banking system that may be used by the member banks to expand the checkable deposits component of the U.S. money supply.

Multiple Expansion of Checkable Deposits

The largest component of the M1 money supply is checkable deposits. Rather than printing Federal Reserve Notes, the majority of the money supply is created through a system of deposits, loans, and redeposits. Money is created by a bank receiving a deposit, and then loaning that non-required reserve portion of the deposit (excess reserve), which, in turn, is deposited in another checking account, and loans are subsequently made against those deposits, after the required reserve is deducted and placed in the bank's vault or deposited with the FED.

For example, if the RRR is .10, then a bank must retain 10% of each deposit as its required reserve and it can loan the 90% (excess reserves) of the deposit. The multiple expansion of money, assuming a required reserve ratio of .10, can, therefore, be illustrated with the use of a simple balance sheet (T-account):

Deposit	Loans
$10.00	9.00
9.00	8.10
8.10	7.29
.	.
.	.
$ 100.00	$90.00
	10.00 (required reserves)
	$100.00

The total new money is the initial deposit of $10 and an additional $90 of multiple expansion for a total of $100.00 in new money. The T-account used to illustrate this multiple expansion of money is really a crude balance sheet for the banking system with the liabilities on the left side and the assets on the right side of the ledger. Notice, however, that the T-account balances, and that there is $100.00 on each side of the ledger.

There is a far easier way to determine how much the money supply can be expanded through the multiple deposit - loan, re-deposit - loan mechanism. This short-cut method is called the money multiplier (Mm). The money multiplier is the reciprocal of the required reserve ratio:

Mm= 1/RRR

The money multiplier is the short-hand method of calculating the total entries in the banking systems' T-accounts and shows how much an initial injection of money into the system can generate in total money supply through checkable deposits. One of the tools of the FED to expand or contract the money supply is to make or withdraw deposits from its member banks. This element of monetary policy will be discussed in greater detail in the following chapter. The following chapter examines monetary policy and how the FED operates to maintain control over the money supply.

The potential creation of money is therefore inversely related to the required reserve ratio. For example, with a required reserve ratio of .05 the money multiplier is 20. This means that a $1.00 increase in deposits can potentially create $20 in new checkable deposits as it is loan and re-deposited through the system. On the other hand, with a required reserve ratio of .20 the money multiplier is 5 and only $5 of new money can be created from an initial deposit of $1.00.

With the current required reserve ratio of .03, the money multiplier is 33.33. Currently, an initial deposit of $1.00 can potentially create $33.33 in new money through increased checking deposits. The reason that the word potential is used to describe this process, is that there is no guarantee that the banking system will be able to loan all of its available excess reserves. The amount that will be loaned still depends on the demand for money and investment in plant and equipment.

The monetary history of several nations illustrates how well the multiple expansion of money has been understood. The United States has had recurrent bouts of inflation during the post-World War II period. As the FED struggled with understanding how the system worked in this country, the Swiss understood since the turn of the century. Switzerland is a relatively small economy, and the money supply in this small nation was very competently managed. The result is that the Swiss have experienced unusually stable price levels ever since 1945.

The recurrent bouts of inflation in the post-World War II economic history of the United States, is not consistent with the economic history of this country prior to World War II. Most of American history experienced significant deflation. Deflation is rarely discussed today, but is, in many ways, a far more destructive problem than inflation. The reason this problem persisted for so many decades in this country was that there was no stable central banking system to manage the money supply and that the value of the U.S. dollar was tied to an increasingly rare commodity - gold.

Need for Regulation and Inflation

One of the serious implications of the money multiplier is that the banking system has the potential for significant harm to economic stability. In Chapter 3 we examined the various theories of inflation. One of those theories is called the quantity theory of

money, where MV = PQ. Because V and Q grow very slowly, they are generally regarded as nearly constant. The implication is that what happens to the money supply should be nearly directly reflected in the price level.

During expansions in the business cycle, investment demand is generally high and banks can often loan all of their excess reserves. If we reduced the required reserve ratio to .01 then banks could expand the money supply $100 for each $1.00 in additional deposits made in the system. If the required reserve ratio was only .001, then $1000 of new money can be created for every dollar of new deposits. Without any required reserve ratio, the money supply could be theoretically be expanded infinitely for each dollar of new deposits. These high multiple potential expansions could create serious inflationary problems for the economy, and therefore the required reserve ratio of the central bank is an essential portion of any nation's economic stabilization policies.

During this period of a political swing to the right of public opinion, the idea of de-regulation has gained some new support. However, there is no serious, and informed move toward de-regulating the money supply. Without monetary controls imposed by a central bank, there will most certainly be serious economic problems associated with the loss of some modicum of sensible control of the money supply. To return to the pre-World War I period with its nearly endless financial panics and collapses, and destructive reliance on gold and silver to operate the economy makes no rational sense. No professional economist today advocates such a policy. Unfortunately there are those on the political fringe who occasionally gain a public forum and advocate the return to the gold standard and other ill-informed policies, but thankfully they are not taken seriously.

This need for regulation has been long recognized by economists. Since at least the 1890s classical economists described the role of money in the economy, and the need to control the money supply if price stability was to achieved. Most prominent among the classical economists writing at the beginning of the twentieth century concerning monetary economics was Irving Fisher, who developed the modern quantity theory of money presented in Chapter 3. The quantity theory of money has not been well-understood by policy makers in Western economies and the history of the 19th and 20th Centuries are marked with events which simply make you wonder how we understood so little. The German experience immediately following World War I was one such event. The printing of paper currency to pay off the reparations required by the Treaty of Versailles resulted in inflation of Biblical proportions, which brought down the Weimar Republic and ushered in the Nazis.

Consider the following short excerpt from Irving Fisher's classical work on the Quantity Theory of Money:

> We come back to the conclusion that the velocity of circulation either of money or deposits is independent of the quantity of money or of deposits. No reason has been, or, so far as is apparent, can be assigned, to show why the velocity of circulation of money, or deposits, should be different, when the quantity of money or deposits, is great, from what it is when the quantity is small.
>
> There still remains one seeming way of escape from the conclusion that the sole effect of an increase in the quantity of money in circulation will be to increase prices. In may be claimed -- in fact it has been claimed -- that such an increase results in an increased volume of trade. We now proceed to show that (except during transition periods) the volume of trade, like the velocity of the circulation of money, is independent of the quantity of money. An inflation of the currency cannot increase the product of farms and factories, nor the speed of freight trains or ships. The stream of business depends on natural resources and technical conditions, not on the quantity of money. The whole machinery of production, transportation, and sale is a matter of physical capacities and technique, none of which depend on the quantity of money . . . . We conclude, therefore, that a change in the quantity of money will not appreciably affect the quantities of goods sold for money.
>
> Since, then, a doubling in the quantity of money: (1) will normally double deposits subject to check in the same ratio, and (2) will not appreciably affect either the velocity of circulation of money or of deposits or the volume of trade, it follows necessarily and mathematically that the level of prices must double . . . .
>
> Irving Fisher, *The Purchasing Power of Money.* New York, Macmillan, 1911, pp. 154-57.

KEY CONCEPTS

Fractional Reserve Requirements
- Balance Sheet
- Required Reserve Ratio
- Money Multiplier

Monetary History
- Genghis Kahn
- Gold Receipts
- U.S. had no central bank prior to 1914
- Greenback Act

Reserves
- Required
- Excess
- Actual

Money Creation

STUDY GUIDE

Food for Thought:

Trace the deposit of $100 through a banking system with a .25 RRR. Does an injection of $100 really result in an increase in the money supply of $400? Explain.

Explain the sources of reserves for member banks. How does the Fed control the money supply when reserves can be borrowed? Explain and critically evaluate this practice.

Sample Questions:

Multiple Choice:

With a required reserve ratio of .05 by how much will the money supply be increased in the Federal Reserve deposits a check of $1000 with National City Bank?

A. $1000
B. $5000
C. **$20,000**
D. None of the above

Which of the following is the interest rate that member banks charge one another for borrowing excess reserves?

A. Federal funds rate
B. Money Market rate
C. Discount rate
D. Prime rate

True - False:

Excess reserves are the funds in the Federal Reserve Banks that the Fed does not need to assure the solvency of the banking system. {FALSE}

Money multiplier with a RRR of .25 is 4. {TRUE}

Chapter 11

Federal Reserve and Monetary Policy

The neo-classicists continue to reject the idea that the government has a pro-active role to play in economic stabilization. However, where the neo-classicists see any role for government in stabilizing the macroeconomy it is in monetary policy arena. There is some merit to this point of view. Fiscal policy has significant lags that often results in counter-productive governmental actions, by the time the fiscal policy actually impacts the economy. Monetary policy, on the other hand, has very short lags between the recognition of a problem and the impact on the macroeconomy. At a minimum, monetary policy is quicker to change the economy's direction, is involved in far less political game-playing, and is more efficient than is fiscal policy.

The purpose of this chapter is the examine the role of the FED in the formulation and implementation of monetary policy for the purpose economic stabilization. Each of the major tools of monetary policy will be examined, and their potential effects present.

Monetary Policy

The monetary policies of a government focus on the control of the money supply. These policies directly control inflation or deflation, but also can influence real economic activity. The focal point of control over real economic activity through the management of monetary aggregates is the interest rate. The demand for investment is dependent upon the relation between expected rates of return from that investment, and the interest rate that must be paid to borrow the money to buy capital.

Monetary policy in the United States is conducted by the Federal Reserve, either through the Board of Governors or the Open Market Committee. The monetary policies of the United States has focused primarily on the control of various monetary aggregates, i.e., the money supply, which in turn influences interest rates and aggregate economic activity. The fundamental objective of monetary policy is to assist the economy in attaining a full employment, non-inflationary macroeconomic equilibrium.

Tools of Monetary Policy

The Federal Reserve has an arsenal of weapons to use to control the money supply. The FED can buy and sell U.S. Treasury bonds, called open market operations, it can control the required reserve ratio, within statutory limits, and it can manipulate the discount rate (the interest rate charged by the FED for member banks to borrow

reserves). This array of tools provides the FED with several options in taking corrective actions to help stabilize the economy. Each of these tools will be examined in the following paragraphs.

Open Market Operations

Open Market Operations (OMO) involves the selling and buying of U.S. Treasury obligations in the open market. OMO directly influences the money supply through exchanging money for bonds held by the public (generally commercial banks and mutual funds). Expansionary monetary policy involves the buying of bonds. When the FED buys bonds, it replaces bonds held by the public with money. When someone sells a bond, they receive money in exchange, which increases the money supply. Contractionary monetary policy involves the FED selling bonds to the general public. When the FED sells bonds it removes money from the hands of the public and replaces that money with U.S. Treasury bonds.

The FED sells and buys both long-term (thirty year) Treasury bonds, and short-term (primarily two, five and ten year) Treasury bonds. In theory the FED can focus its influence on either long-term interest rates or short term-interest rates. However, what most security analysts argue is that the FED's bond buying and selling behavior is not a leadership position. In recent years, the FED buys and sell bonds after the money market establishes a direction for interest rates. In times, of high inflation or steep recession, however, the evidence suggests that the FED's OMO leads the market, rather than follows. In reality, this is what we should expect to observe in the responsible exercise of monetary policies.

The Required Reserve Ratio

As discussed in the previous chapter, it is the required reserve ratio that determines the size of the money multiplier. The money multiplier determines how much money can be created by the member banks through the deposit - loan process. Therefore, the FED can directly control how much the banking system can expand the money supply through the manipulation of the required reserve ratio.

The FED can raise or lower the required reserve ratio, within statutory limits. Increasing the required reserve ratio, reduces the money multiplier, hence reduces the amount by which multiple expansions of the money supply can occur. By decreasing the required reserve ratio, the FED increases the money multiplier, and permits more multiple expansion of the money supply through the deposit - loan process described in the previous chapter.

Most of the new deposits that result in the multiple expansion of money occur because the FED bought bonds from the public. When the FED buys bonds, this is injecting new money into the system that is, in turn, deposited -- which set the money multiplier (multiple expansion) into motion.

The Discount Rate

The Discount Rate is the rate at which the FED will loan reserves to member banks for short periods of time. To tighten monetary policy, the FED will raise the discount rate. The raising of the discount rate will discourage the borrowing of required reserves by member banks, hence encourages using their reserves as required reserves, rather than excess reserves (which they loan and start the multiple expansion of money). By lowering the discount rate, the FED encourages the borrowing of required reserves, which may result in more excess reserves hence potentially more loans, and a greater expansion of the money supply through the loan - deposit process described in the previous chapter (Chapter 10).

FED Targets

The FED must have benchmarks to determine the need for and effectiveness of monetary policies. The quantity theory of money suggests that the money supply itself is the appropriate policy target for the FED. As noted by Irving Fisher, the velocity of money is how often the money supply turns-over, and is unrelated to economic activity. Further, Fisher argued that money does not directly influence the real output of the economy. Therefore, in any policies aimed at controlling inflation or deflation the FED's monetary targets should simply be the money supply.

However, the economy is not as simple as the quantity theory of money would suggest. Many consumer purchases and most investment is interest rate sensitive. Therefore, to the extend that the FED's policies do impact interest rates, the FED can also correct downturns in the business cycle. If investment is too low to maintain full-employment level of GDP, the FED can reduce the required reserve ratio or buy bonds thereby increasing the supply of money and lowering the interest rate. The lower interest rate may encourage consumption expenditures and investment, thereby mitigating recession.

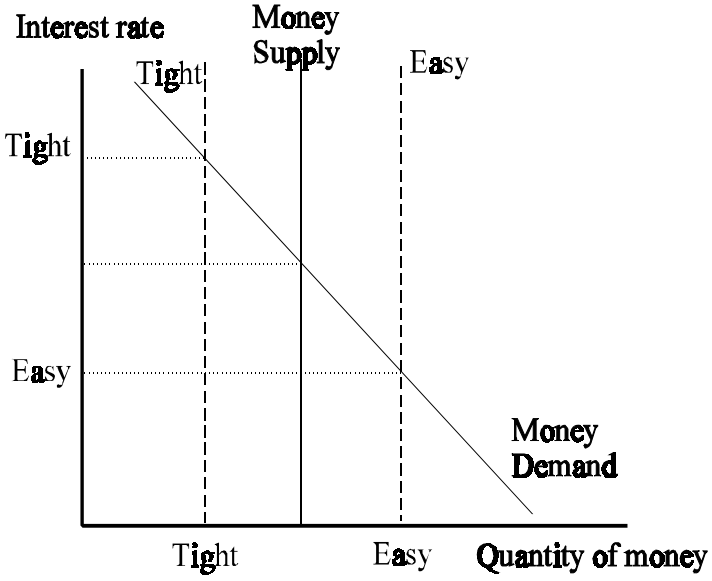
There are dilemmas for the FED in selecting targets for their monetary policies. Interest rates and the current business cycle may present a dilemma. Expansionary monetary policy may result in higher interest rates, by increasing the rate of inflation, which will be reflected in the interest rates. As the interest rate increases and people's inflationary expectations develop, these may serve to dampen the expansionary effects

of the FED's monetary policies. At the same time, there is no necessary coordination of fiscal and monetary policies. At the time an expansion monetary may be necessary to reverse a recession, contractionary fiscal policies may begin to affect the economy. Therefore, the FED must keep an eye on the Congress and account for any fiscal policies that may be contradictory to the appropriate monetary polices. The presents a delicate balancing act for the FED. Not only must the FED correct problems in the economy, it may well have to correct Congressional fiscal mistakes, or at least, account for this errors when implementing monetary policies.

Tight and Easy Money

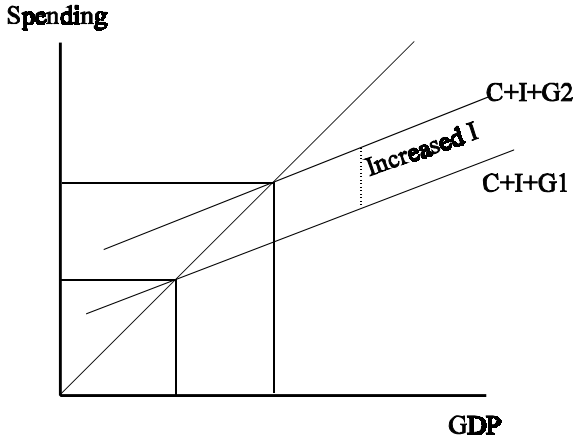
Discretionary monetary policy, therefore, fits into one of two categories, (1) easy money, and (2) tight money policies. Easy money policies involves the lowering of interest rates, and expanding the money supply. The purpose of easy money policies are typically to mitigate recession and stimulate economic growth. Tight money policies involve the increasing interest rates, and contracting the money supply. The purpose of tight money policies is generally to mitigate inflation and slow the rates of economic growth (typically associated with inflation).

Consider the following diagram showing both tight and easy money policies.



Assuming that the money supply remains constant, we can analyze the changes in the money supply imposed by the FED. As the FED engages in tight money policies the supply curve is shifted to the left (dashed line labeled tight), this increases the

interest rate and lowers the amount of money available in the economy. On the other hand, easy money policy is a shift to the right of the money supply curve (dashed line labeled easy). With easy money policies, the quantity of money increases and the interest rate falls. The effectiveness of such policies in influencing GDP result from changes in autonomous investment. In the case of an easy money policy, as the interest falls, investment will increase which results in an increase in the C+I+G line as illustrated below:



The decrease in the interest rate is associated with an increase in investment (the vertical distance between C+I+G1 and C+I+G2) which results in an increased GDP and levels of spending.

The acceptance of discretionary monetary policies are often associated with Keynesian views of a pro-active role for government in economic stabilization. Even though most neo-classicists argue that monetary policy is necessary to the proper functioning of a market economy. However, there is another view. The most extreme of the neo-classicists argue there is simply no role for either discretionary fiscal or monetary policies, except in dealing with extreme variations in economic activity.

Friedman's Monetary Rules Argument

The leading economist of the neo-classical school (Chicago School of Thought or Monetarist) is the Nobel Prize winning economist, Milton Friedman. Friedman won his Nobel Prize for, among other contributions, his work on the monetary history of the United States. Friedman argues, with some persuasion, that Irving Fisher's work establishes the appropriate standard for monetary policy. Based on the presumption

that discretionary fiscal policy can be abolished, Friedman would have all monetary policies based on a simple rule that follows directly from the quantity theory of money.

Assuming that discretionary fiscal policy has been eliminated, and that the economy is operating at a full-employment, non-inflationary equilibrium, monetary policy should be nothing more or less than estimating the growth rate of economy (change in Q) and matching the growth rate of the money supply to the growth rate of the economy. Such monetary policy leaves nothing to the discretion of policy makers. The FED's sole role is to make sure that the money supply simply facilitates economic growth by expanding at the same pace as the real economic activity. If the FED underestimates growth, there could be small deflations, that could be eliminated but subsequent adjustments to the money supply, and overestimations of the growth rate causing inflation could be dealt with in the same type of subsequent adjustments.

If nothing else, Friedman's suggestion would eliminate any government induced variations in economic activity. Real Business Cycle Theory is another paradigm that has arisen out of the ashes of the classical school, and these economists would not find much to argue with Friedman about, as far as the analysis goes. These economists, primarily Thomas Sargeant from the University of Minnesota, argue that recessions and inflations result from either major structural changes in the economy or external shocks, such as the Arab Oil Embargo. When these types of events occur, the Real Business Cycle Theorists would have the government play a pro-active role, but focused specifically on the shock or structural problem. In this sense, there is a role for discretionary fiscal and monetary policies, but very narrowly focused on very specific events.

KEY CONCEPTS

Monetary Policy
- Expansionary
- Contractionary

Tools of Monetary Policy
- Bonds
- Required Reserves Ratio
- Discount Rate

Velocity of Money

Quantity Theory of Money

Target Dilemma in Monetary Policy

STUDY GUIDE

Food for Thought:

Critically evaluate the tools and the independence of the Fed to use them in monetary policy.

If the MV = PQ equation is correct then inflation can be dealt with as a monetary problem. If we are experiencing 10 percent inflation with $4 billion real economy (in other words nominal GDP is $4.4 billion) and the velocity of money 2.8 how do we control inflation? Would we want to? Explain.

What must the Fed do with each of its tools to create (1) a tight money policy, and (2) an easy money policy? Critically evaluate each.

Sample Questions:

Multiple Choice:

If the Fed wanted to create a tight money policy which of the following is inconsistent with this goal?

A. Increasing the Required Reserve Ratio
B. Increasing the Discount Rate
C. **Buying bonds**
D. All of the above are consistent with a tight money policy

If the Fed wishes to stimulate the economy during a recession what might we expect to observe?

A. Lowering the Required Reserve Ratio
B. Lowering the Discount Rate
C. **Fed Buying Bonds**
D. None of the above

True/False:

The main goal of the Federal Reserve System is to assist the economy in achieving and maintaining a full-employment, non-inflationary, stability. {TRUE}

A tight money policy assists in bringing the economy out of recession, but at the risk of possibly causing inflation. {FALSE}

Chapter 12

Economic Stability and Policy

Perhaps the most important macroeconomic problems of the last forty years are unemployment and price level instability. During the post-World War II period price level instability has primarily been inflation. There are several other matters that have also been the focus of economic policy, including poverty (income distribution), and the federal debt and budget deficit. The purpose of this chapter is to examine these policy issues.

The Misery Index

During the Reagan administration both unemployment and inflation topped ten percent. This record gave rise to an economic statistic called the misery index. The **misery index** is the summation of the civilian unemployment rate and the consumer price index. For example, with 10 percent unemployment and twelve percent inflation, the misery index would be 22.

The consumer price index is based on a market basket of goods that household typically purchase. Therefore, the CPI measures the impact of increasing prices on the standard of living of consumers. The unemployment rate also focuses on the welfare of families, when the household wage earning is out of work it has serious implications for that household's income. The misery index can be interpreted as a measure of the loss of well-being of households.

Since 1973 American households have not fared well. The U.S. Department of Commerce, Current Population Survey, tracks economic and demographic data concerning households. Between 1973 and 1993 the median real income of American households has not changed. The slight increases enjoyed in the 1970s were all given back during the 1980s. However, between 1973 and 1993 there has been a dramatic increase in the number of two wage earner households, and households where a full-time worker also has a part-time job.

Increasingly, economists are warning that the distribution of misery in the U.S. economy is becoming more extreme and that the social ills associated with this misery are increasing. Crime, drug abuse, social and economic alienation, and stress related illnesses have become epidemic. The fraudulent arguments that what was needed was a return to traditional family values, is used as a substitute for what is really transpiring, something must be done to reduce economic disparity, particularly as it negatively effects the family. As Lester Thurow has noted:

If the real GNP is up and real wages are down for two thirds of the work force, as an algebraic necessity wages must be up substantially for the remaining one third. That one third is composed of Americans who still have an edge in skills on workers in the rest of the world -- basically those with college educations. In the 1980s educational attainment and increases or decreases in earnings were highly correlated. American society is now divided into a skilled group with rising real wages and an unskilled group with falling real wages. The less education, the bigger the income reduction; the more education, the bigger the income gains.

These wage trends have produced a sharp rise in inequality. In the decade of the 1980s, the real income of the most affluent five percent rose from $120,253 to $148,438, while the income of the bottom 20 percent dropped from $9,990 to $9,431. While the top 20 percent was gaining, each of the bottom four quintiles lost income share; the lower quintile, the bigger the decline. At the end of the decade, the top 20 percent of the American population had the largest share of total income, and the bottom 60 percent, the lowest share of total income ever recorded.

Lester Thurow, *Head to Head: The Coming Economic Battle Among Japan, Europe, and America.* New York: William Morrow and Company, 1992, p. 164.

It is beyond dispute that since 1981 there has been a fundamental change in American society. As Lester Thurow notes, America is becoming two separate and unequal societies, one group with an increasing misery index, and another one with increasing affluence.

The Bush Administration's 2003 Tax Cut has also been heavily criticized as having provided significant tax relief for the wealthy in the form of reduced rates on dividends. At the same time, the deficits necessary to fund those dividend tax cuts will increase interest rates over the next few quarters, which impact mortgage rates and consumer loan interest rates. This is an empirical question and will be answered by cold, objective evidence within the year.

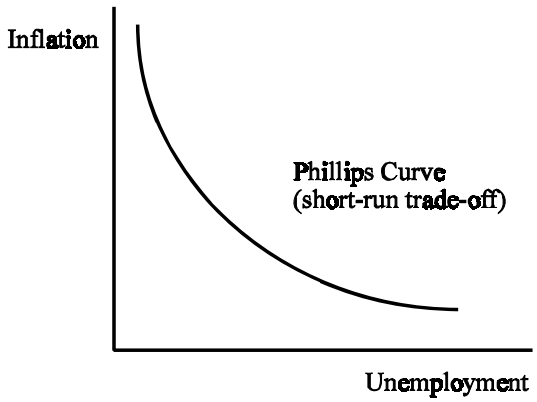
The Phillips Curve

Since the Kennedy administration much of American economic policy has been based on the idea that there is a trade-off between unemployment and inflation. It was not until the recession of 1981-85 that we experienced very large amounts of unemployment together with high rates of inflation. It was thought that there was always a cruel choice in any macroeconomic policy decision, you can have

unemployment and low inflation, or you can have low rates of unemployment, but at the cost of high rates of inflation. This policy dilemma, results from acceptance of a statistical relation observed between unemployment and inflation named for A. W. Phillips who examined the relation in the United Kingdom and published his results in 1958. (Actually Irving Fisher had done earlier work on the subject in 1926 focused on the United States).

The Short-Run, Trade-off Phillips Curve

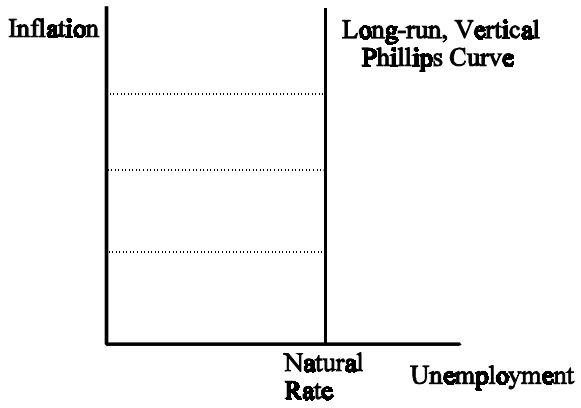
The following diagram presents the short-run trade-off view of the Phillips curve. Actually, A. W. Phillips' original research envisioned a linear, downward sloping curve that related nominal wages to unemployment. Over two years after A. W. Phillips' paper was published in *Economica*, Richard Lipsey replicated Phillips' study specifying a non-linear form of the equation and using the price level, rather than nominal wages in his model. It is Lipsey's form that is commonly accepted, in the literature, as the short-run, trade-off view of the Phillips curve.



The short-run, trade-off view of the Phillips curve is often used to support an activist role for government. However, the short-run, trade-off view of the Phillips Curve shows that as unemployment declines, inflation increases, and vice versa. It is this negative relation between unemployment and inflation, portrayed in the above diagram, that gives rise to the idea of cruel policy choices between unemployment and inflation. However, there are alternative views of the Phillips Curve relation.

Natural Rate Hypothesis

Classicists argue that there can only be a short-run, trade-off type Phillips Curve if inflation is not anticipated in the economy. Further, these economists argue that the only stable relation between unemployment and inflation that can exist is in the long-run. In the long run the Phillips Curve is alleged to be vertical at the natural rate of unemployment, as shown in the following diagram:

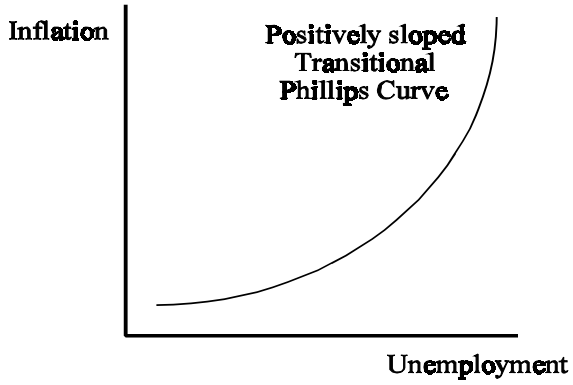


In this view of the Phillips Curve any rate of inflation is consistent with the natural rate of unemployment, hence the Natural Rate Hypothesis. It is based on the idea that people constantly adapt to current economic conditions and that their expectations are subject to "adaptive" revisions almost constantly. If this is the case, then businesses and consumers cannot be fooled into thinking that there is a reason for unemployment to cure inflation or vice versa, as is necessary for the short-run, trade-off of the Phillips Curve to exist.

If taken to the extreme, the adaptive expectations view can actually result in a positively sloped Phillips Curve relation. The possibility of a positive sloping Phillips Curve was first hypothesized by Milton Friedman. Friedman was of the opinion that there may be a transitional Phillips Curve, caused by people adapting both their expectations and institutions to new economic realities.

In fact, the experience of 1981-85 may well be a transitional period, just like that envisioned by Friedman. The beginning of the period was marked by OPEC driving up the price of exported oil, and several profound changes in both the American economy and social institutions. The Reagan appointments to the N.L.R.B., Justice Department (particularly the Anti-Trust Division), the Supreme Court (and Circuit Courts of Appeals, and District Courts) and significant changes in the tax code changed much of the legal environment significantly. Further, the very significant erosion of the traditional base

industries in the United States (automobiles, transportation, steel, and other heavy manufacturing) together with massive increases in government spending on defense arguably created a transitory economy, consistent with the increases in both inflation and unemployment. The positively sloped Phillips Curve is show in the following picture:



The positively sloped transitional Phillips Curve is consistent with the observations of the early 1980s when both high rates of unemployment existed together with high rates of inflation (the positive slope) -- a condition called stagflation (economic stagnation accompanied by inflation).

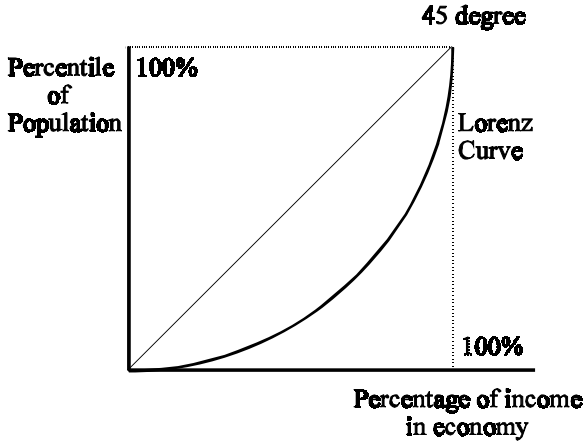
Cruel choices may only exist in the case of the short-run, trade-off view of the Phillips Curve. However, there maybe a "Lady and Tiger Dilemma" for policy makers relying on the Phillips Curve to make policy decisions. If fiscal policy is relied upon, only the timing of the impact of those fiscal policies will result in any positive influence on the economy. Therefore, to act, through taxes or expenditures, may result in having a counter-productive effect by the time the policy impacts the economy (the tiger). On the other hand, if accurate two and three year into the future forecasts can be acted upon in time, recession or inflation could be mitigated by current action -- a real long-shot! (the lady).

However, if the rational expectations theories are correct, then the long-shot is exactly what would be predicted. Rational expectations is a theory that businesses and consumers will be able to accurately forecast prices (and other relevant economic variables). If the accuracy of consumers' and businesses' expectations permit them to behave as though they know what will happen, then it is argued that only a vertical Phillips Curve is possible, as long as political and economic institutions remain stable.

Market Policies

Market policies are focused on measures that will correct specific observed economic woes. These market policies have been focused on mitigating poverty, mitigating unemployment, and cooling-off inflation. For the most part, these market policies have met with only limited success when implemented.

One class of market policies have been focused on reducing poverty in the United States. These equity policies are designed to assure "a social safety net" at the minimum, and at the liberal extreme, to redistribute income. In part, the distribution of income is measured by the Lorenz Curve, and more completely by the Gini coefficient. The following diagram presents the Lorenz Curve:



The Lorenz curve maps the distribution of income across the population. The 45 degree line shows what the distribution of income would be if income was uniformly distributed across the population. However, the Lorenz curve drops down below the 45 degree line showing that poorer people receive less than rich people. The further the Lorenz Curve is bowed toward the percentage of income axis the lower the income in the poorer percentiles of the population.

The Gini coefficient is the percentage of the triangle (mapped out by the 45 degree line, the indicator line from the top of the 45 degree line to the percentage of income axis, and the percentage of income axis) that is accounted for by the area between the Lorenz curve and the 45 degree line. If the Gini coefficient is near zero, income is close to uniformly distributed (and the 45 degree line); if is near 1 then income is distributed in favor of the richest percentiles of the population (and the Lorenz curve is close to the horizontal axis). If that distribution is consistent with the productivity or meritorious performance of the population, there may be an efficiency argument that can be used to justify the distribution. However, if the high income skewness of the

distribution is not related to productivity, then the skewed distribution is inefficient and unfair, hence mal-distributed. In the United States the Gini coefficient exceeds .5, and while incomes in the lower three-quarters of the upper quintile are highly correlated with education (and presumably productivity) the overwhelming amount of the highest part of the distribution does not have any prima facie evidence to prove the justice or efficiency of such high incomes. Recently, (December 8, 1995) CNN reported that Chief Executive Officer salaries in the entertainment industries appeared to be out of line with similar officials in more productive industries, and that stock holders in several of these companies were beginning to revolt over these high levels of compensation. In particular, Viacom and Disney were experiencing stock holder queries concerning executive salaries. In general, most economists familiar with the income distribution in the United States, would probably agree that income in this country is mal-distributed, because it does not reflect the market contributions of those at either the highest end, or in the lower end of the distributions.

Productivity has also the subject of specific policies. The Investment Tax Credit, WIN program, and various state and federal training programs have been focused on increasing productivity. For the most part, there has been very little evidence concerning most of these programs that give reason for optimism. The one exception was the work of Mike Seeborg and others, that found substantial evidence that Job Corps provided skills that helped low income, minority teenagers find and keep reasonably well-paying jobs.

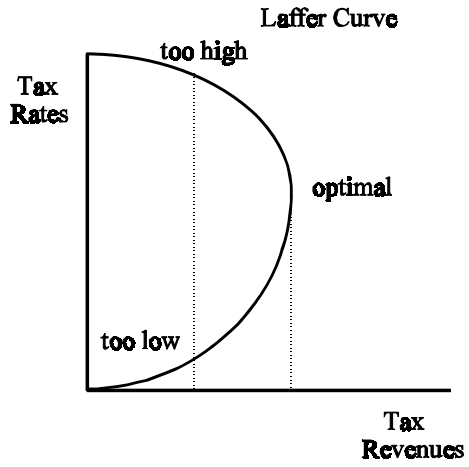
Many of the recent treaties concerning international trade have aspects that can be classified as market policies. To the extent that trade barriers to American exports have been reduced through NAFTA and GATT it was hoped that there may have been positive effects from these treaties. In fact, little if any, positive effects have been observed from these initiatives.

There have been recurrent attempts have to directly control inflation through price controls. These controls worked well during World War II, mainly because of appeals to patriotism during a war in which the United States was attacked by a foreign power. Further, during World War II the idea of sacrifice was reinforced by many families having relatives serving in the military, which made the idea of sacrifice more acceptable to most people. However, absent the popular support for these policies created by World War II for rationing and wage and price controls, these policies have been uniformly failures. President Carter tried voluntary guidelines that failed, and Richard Nixon had earlier tried short-lived wage and price controls that simply were a policy disaster.

Debt and Deficit

The supply side economics of the Reagan Administration were based on the theory that stimulating the economy would prevent deficits as government spending for the military was substantially increased. This failed theory was based on something called the Laffer Curve.

The Laffer Curve (named for Arthur Laffer) is a relation between tax rates and tax receipts. Laffer's idea was rather simple and straightforward, he posited that there was optimal tax rate, above which and below which tax receipts fell. If the government was below the optimal tax rate, an increase in the rate would increase receipts and in the rate was above the optimal rate, receipts could be increased by lowering tax rates. The Laffer Curve is shown below:



The Laffer Curve shows that the same tax receipts will be collected at the rates labeled both "too high" and "too low." What the supply-siders thought was that tax rates were too high and that a reduction in tax rates would permit them to slide down and to the right on the Laffer Curve and collect more tax revenue. In other words, they thought the tax rate was above the optimal. Therefore Reagan proposed and obtained from Congress a big tax rate reduction and found, unfortunately, that we were below the optimal and tax revenues fell. While tax revenue fell significantly, the Reagan Administration increased the defense budget by tens of billions of dollars per year. The reduction in revenues, combined with substantial increases in government spending made for record-breaking federal budget deficits and substantial additions to our national debt.

There were other tenets of the supply-side view of the world. These economists thought there was too much government regulation. They would have de-regulated most aspects of economic life in the United States. However, after Jimmy Carter de-

regulated the trucking and airlines industries, there was considerable rhetoric and little action concerning the de-regulation other aspects of American economic life.

Politics and Economic Policy

Unfortunately, the realities of American economic policy is that politics is often main motivation for policy. Whatever anyone may think of Reagan's Presidency there is simply no doubt that he was probably the most astute observer of the political arena of any of his competitors. Reagan argued that taxes were too high and needed to be cut. This is probably the single most popular political theme any candidate can adopt. Remember McGovern? He said if he were elected President he would raise taxes, he did not have to worry about how, because he won only two states. The surest way to lose a bid for public office is to promise to raise taxes.

As it turned-out McGovern was right, there should have been a tax increase, at the time Reagan cut them. Being right, does not have anything to do with being popular. What we now face is a direct result of the unprecedented deficits run during the Reagan years. In fact, during those eight years this country acquired nearly $1.7 trillion of its national debt. No other President in U.S. history has generated this amount of debt in nominal dollars. However, before Reagan is judged too harshly, it must remembered that we were in the midst of a major recession during his first term in office, and the cold war was still at its zenith. Again, in Mr. Reagan's defense the first three years of his administration also witnessed exceedingly high rates of inflation, that are reflected in the nominal value of the deficits that his administration ran up which contributed to these high national debts.

Debt itself is not necessarily an economic evil. There has been substantial debate among economists as to the overall impact of the debt. If the debt is used to fund education (Kennedy-Johnson administration), or to build highways (as in the Eisenhower administration) the future stream of economic benefits may generate growth which pays off the debt. Typically, when the debt is acquired in military build-ups, it does not generate a stream of economic growth because there is no infrastructure, or human capital to generate the growth. So, in large measure, whether the debt is an economic constraint or not depends critically on what that the government expenditures that resulted in the debt provided for the future growth of the U.S. economic system.

The following table shows the U.S. National Debt for the period 1980 through 1988.

Table I: National Debt 1980 - 1988

YEAR	NATIONAL DEBT (billions of U.S. dollars)
1980	908.3
1981	994.3
1982	1136.8
1983	1371.2
1984	1564.1
1985	1817.0
1986	2120.1
1987	2345.6
1988	2600.6
1989	2868.0
1990	3206.6
1991	3598.5
1992	4002.1
1993	4351.4
1994	4643.7
1995	4921.0
1996	5181.9
1997	5369.7
1998	5478.7
1999	5606.1
2000	5629.0
2001	5803.1

Nearly $1692.3 of additional debt was accumulated during the years that President Reagan was in office. The first nine months of this period was under Carter's budget, but the first nine months of 1989 was under Reagan's and this data makes Reagan's record look better than it really was. At a six percent interest rate, the current yield on the 30 year Treasury Bond (as of December 8, 1995) the debt accumulated during these eight years adds $101.5 billion to the federal budget in interest payments.

There is a lesson here, that has nothing to do with political propensities, tax cuts that do not generate continuing economic growth, will add to the national debt, and the

interest payments on that debt will add to even further budget deficits. It cannot be denied that Reagan was one of the most popular Presidents of this century. the very things that made him popular, tax cuts, and military build ups are responsible for much of our current controversy concerning the balanced budget.

Is the Debt Really a Problem?

In addition to the issues discussed above there is a substantial historical experience with the Federal debt. The most valid criticism of the debt is its potential for disrupting credit markets, by artificially raising interest rates and crowding out private investment. Naturally, a debt as large as ours will have an upward influence on interest rates, but the evidence does not suggest that it is substantial.

Today, we find ourselves in roughly the same position this country was in 1805. President Jefferson borrowed about the same amount as our GDP from England and Holland to buy Louisiana from the French (we owe an amount almost the same as GDP). History has taught us that even when we added the debt acquired in the War of 1812, it did not bankrupt the government or its citizens. By the end of World War II, we again had a national debt of $271 billion and a GDP of $211.6 billion. The predictions that my generation would be paying 60 and 70 percent effective tax rates to pay off the debt never materialized. Frankly, I wish my debt was only equal to my annual income, and I suspect most people in their thirties and forties have the same wish. Surely the size of debt and current deficits are not a source of any grief. If it is then little is learned from history and little is known about economics.

The serious question is why did we acquire the debt and what must we give up if we are to pay it off. When Reagan took office, we were in the midst of a cold war. The increases in government expenditures for the military, caused our chief rivals to spend larger proportions of their GNP on the military and eventually caused the economic and political collapse of the Soviet bloc. Was the end of the Cold War worth the debt we acquired? Are the benefits of education worth a few million dollars in current debt? Is providing for the poor, the elderly, and children worth a few billion in debt? Are veterans' pensions for those who stood between us and our enemies worth a few billion in debt? What about the Interstate Highway System, subsidies for the company where you work, research for medical reasons, the pure sciences, the social sciences, and the tens of thousands of things on which the government spends our tax dollars? These are the priorities that any society must set. Probably the only realistic answer to whether the debt is a problem is what we do about it and what priorities we set. History will judge this society, whether we are judged as compassionate, or barbarians, or economically astute or fools is for future generations of historians. Let us all hope that we choose correctly.

Hedayeh Samavati, David A. Dilts, and Clarence R. Deitsch, "The Phillips Curve: Evidence of a 'Lady or Tiger Dilemma,'" *The Quarterly Review of Economics and Finance.* Vol. 34, No. 4 (Winter 1994) pp. 333-345.

During the period examined, January 1974 to April 1990, the evidence reported (here) suggests that there is a unidirectional causal relation from the inflation rate to the rate of unemployment. If, the Phillips Curve were vertical over this sixteen year period, one should have observed no causality between the unemployment rate and the rate of inflation (the natural rate hypothesis, i.e., any rate of inflation can be associated with the natural rate of unemployment). The empirical findings reported here, however, suggest a non-vertical Phillips Curve.

Finally, the results reported here suggest the proper specification of the empirical models used to test the Phillips Curve relation. Friedman argued that the proper specification of the regression equations used to estimate the Phillips Curve relation is of significance (both theoretically and empirically). "The truth of 1926 and the error of 1958" (as Friedman argued) is supported by the evidence presented in this paper. The statistical evidence presented here supports Friedman's claim that inflation is properly specified as the independent variable in "Phillips Curve" analyses. That is, rather that the specification proposed by A. W. Phillips (1958), the proper specification is that proposed by Irving Fisher (1926) as asserted by Friedman. This finding is of significance to those researchers using ordinary least squares to examine relations between inflation and unemployment. Irving Fisher's specification is consistent with Friedman's well known theoretical arguments concerning posited relations between inflation and unemployment, hence, his taste for inflation as the independent variable.

Maybe this box does not represent the final word in the Phillips curve controversy, but this research suggests that there is a short-run view of the Phillips curve and that the idea of rational expectations may not be as good as it looks at first blush. This study employed the Granger causality methods to inflation and unemployment data in the United States for the period identified to see if there was causality -- the evidence suggests that inflation causes unemployment.

KEY CONCEPTS

Misery Index
- Inflation
- Unemployment

Phillips Curve
- Short-run Trade-off
- Long-term, natural rate hypothesis
- Positively sloped

Rational Expectations

Market Policies
- Lorenz Curve
- Gini Coefficient
- Investment Tax Credits
- NAFTA & GATT

Wage-Price Policies

Laffer Curve
- Supply Side Economics

Budget Deficit
- National Debt

STUDY GUIDE

Food for Thought:

Compare and contrast the various views of the Phillips Curve. Map out each and demonstrate how there may be a cruel choice in economic policy.

Develop the Laffer Curve. What does it tell us? How then can we have witnessed the large increases in the deficit during the years this model held center stage? Critically evaluate.

What are market policies? Explain the major market policies observed in the U.S. economy today. Compare and contrast these.

Sample Questions:

Multiple Choice:

In the short-run view of the Phillips curve policy-makers are left with a cruel choice. What is this cruel choice?

A. Inflation will exist regardless of the level of unemployment
B. Unemployment will exist regardless of the level of inflation
C. **Policies that improve unemployment will create inflation and vice versa**
D. Inflation appears not to have a causal relation with unemployment, hence a downward sloping Phillips curve is not plausible.

Stagflation is:

A. general decreases in the price level
B. excess employment which causes inflation
C. **both high rates of unemployment and inflation**
D. both very low rates of unemployment and inflation

True - False:

The Laffer curve suggests that the higher the tax rate the lower will be tax revenues. {FALSE}

Supply side economics was the view of the Reagan administration, which believed Say's Law. {FALSE}

CHAPTER 13

Epilogue

Why should we study economics at all? Well, there are three pretty sound reasons for becoming as knowledgeable as possible about macroeconomic issues. These reasons are: (1) to be a good citizen, (2) to understand business conditions, and (3) simple self-preservation, each of these will be examined, in turn, in the following paragraphs.

Democracy is a very tough form of government. Our Constitution, whether you realize it or not, is based on some pretty heroic assumptions. The founding fathers did not provide us with a fool-proof way of life or system of government. The Constitution is based on the idea that we will participate in elections, and inform ourselves of what the candidate's stand for, and that will we closely monitor what our government does, and does not do. In other words, knowledge is prerequisite for democracy.

Jefferson argued that a free and unfettered press was necessary to keep the people informed of what was transpiring in our society and with our government. If certain factions in our society became anti-social, it was up to the government to rein those factions in, and if the government because unruly, it was up to the electorate to rein it in. It was a delicate balance, a balance struck on the basis of everyone understanding what was occurring and why. In today's economy things are complicated. The government has dozens of roles to play in protecting the general welfare and interest of society. However, unless one understands how the economy works and what the implications of the actions of the major players are one cannot hope to maintain a free and balanced society. In other words, you need to know enough to make informed decisions concerning candidates for office, and the various causes you are asked to support nearly every day.

In a practical sense, the environment in which business is conducted will in large measure determine the success or failure of that enterprise. The demand for many products is interest rate sensitive. In an environment where the Federal Reserve is raising the interest rates, it would be unadvisable to start a construction business or invest heavily in banking stocks. A great number of businesses spend a significant amount of money on attempting to forecast economic aggregates so as to create for themselves an economic advantage in the market place. The importance of this understanding cannot be minimized.

It has also become increasingly important to understand the economy, not so much as a system of domestic inter-relationship, but more as a global system. One of the major reasons that the prices of copper, gold, silver and oil are rising at nearly

unprecedented rates, is the dollar is losing value with respect to most other currencies. The result of the dollar losing value is that it will buy less foreign manufactured goods, and fewer resources from abroad. Oil from the Middle East, gold from South Africa, Copper from Chile, silver from Peru and Beer from Holland have all gone up in price, in some significant measure because the dollar is losing its value. The reason the dollar is losing value has to do with macroeconomic phenomenon. To understand these shifting fortunes you must understand the macroeconomy, and keep abreast of the relevant economic data.

Perhaps the best reason to remain a life-long student of macroeconomics is simple self-preservation. I presume for most people, self-preservation is as powerful an incentive as I have always found it to be. We have all developed several bad habits, we think we need to eat everyday, be cool in the summer, warm in the winter, dry when it rains, and entertained. These habits require resources, and resources are best obtained when we can bring a comparative advantage to bear. Retirement, investments, and passive income all require some understanding of what's happening in the economy now, and in the near future. If you need no other reason to keep up with what's happening in economics, keep in mind, you need a retirement income, and would like to accumulate at least enough wealth to be comfortable.

The Future

The future is tough to predict. Over the next fifty years there are going to be significant changes in the way we do business, and what businesses will thrive. With non-renewable resources comes the need for technological changes. As we use up our initial endowment of oil, coal, iron, copper, and a whole array of other resources we will need to procure substitutes for these items, either close substitutes or entirely different approaches to meeting many of our basic human needs. The result is that we will experience mixes of opportunities and crises. How we as individuals, and as societies respond to these opportunities and crises will, in large, measure determine what our economic future will be.

In general, over the past couple of centuries, the historical record shows that as a group, people have done pretty well. Our standard of living, and our ability to cope has seemingly increased faster than at any time in history. In other words, we have responded well to the challenges, in aggregate, and the opportunities have directed our progress more than the crises have hampered it.

Thomas Malthus wrote nearly 300 years ago that people were going to face a crises. The ability to grow food grew arithmetically while the population grew geometrically. The end result, according to Malthus is we're all going to starve. Well, as it turns out, he was wrong. His dismal prediction, (hence economics is called the Dismal Science) failed to account for the favorable changes in agricultural technologies that have resulted in obesity being a greater killer in this country than starvation.

However, in defense of Malthus there was no way to predict the increases in farmer productivity over the last few hundred years.

Global warming, terrorism, our deteriorating relations with other countries, changes in technology, increasing life expectancies, and an increasingly global economy will have significant effects on our futures. Being informed and keeping current with the economic data will help each of us succeed in this future.

Economics Majors

Whether one becomes an economics major or not, it is clear that there should be a commitment to continued study of the subject, even informally. However, it is interesting to note that economics is one of the fastest growing majors on most university campuses. Rather than report this second hand, here is an article which can be found on the Economics Department website, and which is very informative, from the *Wall Street Journal*:

The Hot Major For Undergrads Is Economics

By Jessica E. Vascellaro
Staff Reporter of *THE WALL STREET JOURNAL*
July 5, 2005; Page A11

What's your major? Around the world, college undergraduates' time-honored question is increasingly drawing the same answer: economics.

U.S. colleges and universities awarded 16,141 degrees to economics majors in the 2003-2004 academic year, up nearly 40% from five years earlier, according to John J. Siegfried, an economics professor at Vanderbilt University in Nashville, Tennessee, who tracks 272 colleges and universities around the country for the Journal of Economic Education.

Since the mid-1990s, the number of students majoring in economics has been rising, while the number majoring in political science and government has declined and the number majoring in history and sociology has barely grown, according to the government's National Center for Education Statistics.

"There has been a clear explosion of economics as a major," says Mark Gertler, chairman of New York University's economics department.

The number of students majoring in economics has been rising even faster at top colleges. At New York University, for example, the number of econ majors has more than doubled in the past 10 years. At nearly 800, it is now the most popular major.

Economics also is the most popular major at Harvard University in Cambridge, Mass., where 964 students majored in the subject in 2005. The number of econ majors at Columbia University in New York has risen 67% since 1995. The University of Chicago said that last year, 24% of its entire graduating class, 240 students, departed with economics degrees.

The trend marks a big switch for the so-called dismal science, which saw big declines in undergraduate enrollments in the early 1990s as interest in other areas, like sociology, was growing. Behind the turnaround is a clear-eyed reading of supply and demand: In a global economy filled with uncertainty, many students see economics as the best vehicle for a job promising good pay and security.

And as its focus broadens, there are even some signs that economics is becoming cool.

In addition to probing the mechanics of inflation and exchange rates, academics now use statistics and an economist's view of how people respond to incentives to study issues such as AIDS, obesity and even terrorism. The surprise best-seller of the spring was "Freakonomics," a book co-authored by a University of Chicago economist, Steven Levitt, which examines issues ranging from corruption among real estate agents to sumo wrestling.

Pooja Jotwani, a recent graduate of Georgetown University in Washington D.C., says she is certain her economics degree helped her land a job in Lehman Brothers Holdings Inc.'s sales and trading division, where she will earn $55,000, not including bonus. She says the major strengthened her business skills and provided her with something very simple: "financial security."

"People are fascinated with applying the economic mode of reasoning to a wide variety of issues, and these forces are causing them to study economics more and more," says Lawrence H. Summers, president of Harvard and former secretary of the Treasury.

According to the National Association of Colleges and Employers, economics majors in their first job earn an average of nearly $43,000 a year -- not as much as for computer-science majors and engineering majors, who can earn in excess of $50,000 a year. But those computer and engineering jobs look increasingly threatened by competition from inexpensive, highly skilled workers in places like India and China.

"Historically, the trends [in college degrees] are largely connected to perceived job prospects," says Marvin Lazerson, historian of education and a professor at the University of Pennsylvania's Graduate School of Education in Philadelphia. He cites the recent example of computer science majors, whose ranks swelled in the 1990s and quickly subsided in the early 2000s, soon after the dot-com bubble

burst and many companies started outsourcing computer-programming jobs abroad.

In contrast, economics and business majors ranked among the five most-desirable majors in a 2004 survey of employers by the National Association of Colleges and Employers, along with accounting, electrical engineering and mechanical engineering. It wasn't just banks and insurance companies that expressed interest in economics majors -- companies in industries such as utilities and retailing did so, too.

Like many people whose eyes glaze over at a supply-and-demand curve, Nicholas Rendler, a 19-year-old student at Brown University, in Providence, R.I., says he finds economics boring. But he has gravitated to the topic anyway: He chose a major combining economics, sociology, and anthropology because he thinks economics is crucial to understanding the world.

"Economics can be very frustrating, but it is the world we are currently operating in and we need the basic framework," he says. Roberto Angulo, chief executive of AfterCollege Inc., a San Francisco online recruiting service with 267,000 registered users, says an economics major has practical job value. "Students are more employable if they study economics," he says. He graduated from Stanford University with an economics degree five years ago.

It isn't just the job calculus that is drawing students to the major: It also is the rapid spread of economic globalization. Many students around the world are wondering what effect global economic trends will have on them.

Foreign students studying in the U.S. are flocking to the major. Sabrina De Abreu, a student from Argentina about to start her senior year at Harvard, says her country's experiences made her choice easy. "When I grew up in Argentina, my country plunged into a recession," she says. "Understanding economics has become a fundamental part of my life."

Indeed, the rising popularity of the economics major appears to be a global phenomenon. A recent McKinsey Global Institute study found that the share of degrees in economics and business awarded in Poland from 1996 to 2002 more than doubled, to 36% from 16%; in Russia, the share jumped to 31% from 18%.

John Sutton, chairman of the economics department at London School of Economics, says the school's popularity is at an all-time high, in part due to interest from Eastern Europe. Dr. Sutton says that as these countries undergo capitalist changes, "bright young students are beginning to see economic issues highlighted."

APPENDIX -1

SAMPLE MIDTERM AND FINAL EXAMINATIONS

Introduction to Macroeconomics

E202

Sample Midterm Examination

ANSWERS ARE FOUND AT THE END OF THE SECTION

Multiple Choice [4 points each]

1. The way air pollution affects the measurement of GDP is:

    A. pollution is entirely ignored
    B. any cleaning up of pollution is subtracted from GDP
    C. any bad affects of pollution are subtracted from GDP
    D. any cleaning up of pollution is added into GDP as production

2. A college student graduates from school and is looking for a job. What is the college student experiencing?

    A. Frictional unemployment
    B. Structural unemployment
    C. Natural rate unemployment
    D. False search

3. An increase in the price of crude oil will, in the short-run, result in:

    A. A decrease in supply of all goods and therefore cost-push inflation
    B. An increase in supply of all goods and therefore cost-push inflation
    C. A decrease in demand for all goods and therefore demand-pull inflation
    D. An increase in demand for all goods and therefore demand-pull inflation

4. If the consumers expect that there will be a recession that will possibly cause them to lose their jobs, or suffer a reduction in real earnings (assuming downward inflexible wages and prices) what should we expect to observe?

    A. Prices will decline, but output will remain the same in the classical range of AS
    B. Output will remain the same, but prices will decline in the Keynesian range of AS
    C. If the ratchet effect is observed then prices will remain the same in the classical range but output will decline.
    D. None of the above will be observed.

5. Which of the following methods can be applied to test for the existence of statistical association between two variables?

    A. Theoretical modeling
    B. Granger causality
    C. Correlation
    D. None of the above

6. If you consume $150 out of $200 in addition income then your marginal propensity to save is:

    A. 1.33
    B. .75
    C. .67
    D. .25

7. In 1990 the market basket survey found the cost of goods and services was $500. In 1991 this same market basket cost $550; in 1992 it was $600. What is the cost of the 1990 market basket in 1992 dollars?

    A. .833
    B. $600
    C. 1.20
    D. $500

8. Which of the following concepts is associated with the natural rate of unemployment?

    A. Natural disasters
    B. Full employment
    C. Recession
    D. None of the above

9. A long-term trend (25 to 100 years) in an economic variable is an example of:

    A. A trough in a recession within a business cycle
    B. A peak in a business cycle
    C. A seasonal variation
    D. A secular trend

10. The aggregate demand is most likely to shift to the left (decrease) when there is a decrease in the:

    A. money income
    B. overall price level
    C. total unemployment rate
    D. level of personal income taxes

11. Evaluate this statement, "As long as per capita money incomes are rising in the United States, so is the living standards of its residents."

    A. This statement is essentially correct.
    B. This statement is true when incomes are rising at the same rate as prices.
    C. This statement fails to distinguish between real income and nominal income.
    D. This statement is true during business cycle peaks, but is incorrect during recessionary troughs.

12. The difference between Personal Income and Disposable Income is:

    A. Undistributed Corporate Profits
    B. Social Security Contributions
    C. Personal Taxes
    D. None of the above

13. Which of the following is an automatic stabilizer?

    A. Unemployment Security Programs
    B. Progressive Income Tax Structure
    C. Welfare Programs such as Food Stamps
    D. All of the above are

14. Which of the following is most likely to benefit from a period of unanticipated inflation (assuming fixed assets and liabilities)?

    A. Those whose liabilities are less than their assets
    B. Those whose liabilities are more than their assets
    C. Those with assets, but no significant liabilities
    D. None of the above

15. If the unemployment rate is 8% and the current GDP is $100 billion, how much is the recessionary gap?

    A. There is no recessionary gap
    B. $4.17 billion
    C. $10 billion
    D. $11.11 billion

16. The unemployment rate is 10%, the potential GDP is $10,000 billion, the marginal propensity to save is .05, which of the following fiscal policies may be used to close this recessionary gap?

    A. Increase government expenditures by $75 billion
    B. Decrease taxes by $75 billion
    C. Increase taxes and expenditures by $2500 billion
    D. None of the above will work

17. With a recessionary gap of $100 billion, and a need to balance the budget what policy will work best (assuming an MPS of .2)?

    A. Increase both taxes and expenditures by $80 billion
    B. Increase both taxes and expenditures by $100 billion
    C. Decrease both taxes and expenditures by $80 billion
    D. Decrease both taxes and expenditures by $100 billion

18. A tax structure that requires that as one's ability to pay increases, so too should their tax rates is:

    A. Proportional
    B. Progressive
    C. Regressive
    D. Lump sum

19. What is the tax multiplier?

    A. Always one
    B. 1/MPC minus one
    C. 1/MPS minus one
    D. 1/1-MPC

20. Which of the following is an contractionary fiscal policy?

    A. Decrease taxes and expenditures
    B. Increase expenditures
    C. Increase taxes
    D. None of the above are contractionary

True/False [1 point each]

1. Macroeconomics is the study of economic systems in aggregate.

2. Okun's law states that for every 2% that the unemployment rate exceeds the natural rate there will be a 5% recessionary gap in GDP.

3. Demand-pull inflation is the result of an increase in the costs of production.

4. The Keynesian range of the aggregate supply curve is vertical, but the classical range is horizontal.

5. The difference between GDP and GNP is that GNP excludes incomes earned by foreigners in the United States and includes incomes earned by Americans abroad.

6. Economic policy is concerned with describing people's behavior, but economic theory is concerned with influencing people's behavior.

7. A discouraged worker is one that will quit her or his job and become unemployed in the near future.

8. A regressive tax structure means that those with the highest ability to pay more will pay more taxes.

9. In the short-run there can be an increase in aggregate demand in the classical range of aggregate supply that results only in higher prices and no change in output.

10. It is difficult to compare overall social welfare over great periods of time (decades) because of the quality and mix of goods and services will differ.

11. The real interest rate is the nominal interest rate minus the rate of inflation.

12. Political considerations in passing budgets and tax bills help to enhance the effectiveness of fiscal policy for economic stabilization.

13. The fallacy of composition is the mistaken belief that what is true for the individual must be true for the group.

14. The existence of a substantial underground economy in the United States probably means that GDP is overstated.

15. Positive economics is concerned with what is, and normative economics is concerned with what should be.

16. MPC + MPS = 1

17. The multiplier is equal to 1/MPC.

18. The balanced budget multiplier is one.

19. The lags associated with fiscal policy include administrative, operational, and recognition lags.

20. Keynesians believe that wages and prices are flexible, but the classical economists believed that wages and prices were inflexible downward.

Sample Midterm Examination

ANSWERS:

Multiple Choice	True/False
1. D	1. T
2. A	2. T
3. A	3. F
4. A	4. F
5. C	5. T
6. B	6. F
7. D	7. F
8. B	8. F
9. D	9. T
10. A	10. T
11. C	11. T
12. C	12. F
13. D	13. T
14. B	14. F
15. D	15. T
16. A	16. T
17. B	17. F
18. B	18. F
19. C	19. T
20. C	20. F

Sample Final Examination

ANSWERS ARE FOUND AT THE END OF THE SECTION

Multiple Choice [4 points each]

1. The U.S. money supply is backed by:

    A. Gold
    B. Gold and Silver
    C. Gold, silver & government bonds
    D. People's willingness to accept it

2. A bond sold for $2000 with an original interest rate of 10% yields $200 per year. If the market price of the bond changes causing its yield to go to 8% what is its market price?

    A. $1600
    B. $2500
    C. $2800
    D. None of the above

3. If $100 is deposited in a local bank and goes through the entire banking system, by how much could the money supply be expanded with .1 RRR?

    A. $10
    B. $100
    C. $1000
    D. None of the above

4. Which of the following is the interest rate that member banks charge one another for borrowing excess reserves?

    A. Federal funds rate
    B. Money Market rate
    C. Discount rate
    D. Prime rate

5. In the short-run view of the Phillips curve policy-makers are left with a cruel choice. What is this cruel choice?

    A. Inflation appears to have a causal relation with unemployment, hence a downward sloping Phillips curve is plausible.
    B. Policies that improve unemployment will create inflation and vice versa
    C. Inflation will exist regardless of the level of unemployment
    D. Unemployment will exist regardless of the level of inflation

6. What does the Laffer curve predict?

    A. Above some tax rate, revenues fall
    B. Below some tax rate, revenues can be increased by raising the rate
    C. That there is some optimal tax rate that generates the most revenue
    D. All of the above

7. If the Fed wishes to reduce the rate of unemployment what policies might we expect to observe?

    A. An increase in the discount rate
    B. Buying of bonds on the open market
    C. Selling of bonds on the open market
    D. An increase in the required reserve ratio

8. Which of the following is a function of money?

    A. Asset demand
    B. Store of value
    C. Total money demand
    D. Transactions demand

9. The selling of bonds in the open market by the Federal Reserve does which of the following?

    A. Takes money out of circulation
    B. Is appropriate if the Fed is engaged in a tight money policy
    C. If the Fed wishes to control inflation or increase interest rates
    D. All of the above are true

10. Who controls the Required Reserve Ratio for Fed?

    A. Member banks vote on it
    B. The Board of Governors
    C. Open Market Committee
    D. U.S. President

11. Which of the following is true about the Fed's policy targets.

    A. Stabilization of interest rates is no problem, but the money supply has been hard to control
    B. Stabilization of the money supply is no problem, but interest rates have been hard to control
    C. The Fed has had difficulty stabilizing both the money supply and interest rates at the same time
    D. The Fed has had no difficulty in stabilizing all of the monetary aggregates at the same time

12. Which of the following is consistent with the traditional view of a short-run trade off view of the Phillips curve?

    A. Cost push inflation
    B. Demand pull inflation
    C. The natural rate hypothesis
    D. The adaptive expectation hypothesis

13. Stagflation is:

    A. general decreases in the price level
    B. excess employment which causes inflation
    C. both high rates of unemployment and inflation
    D. both very low rates of unemployment and inflation

14. Which of the following have NOT been suggested as a method of reducing the Federal deficit?

    A. Line-item veto
    B. Devaluing the U.S. dollar
    C. Privatization of government services
    D. Balanced budget amendment to U.S. Constitution

15. Which of the following is the interest rate that the Fed charges member banks for borrowing reserves?

    A. Discount rate
    B. Federal funds rate
    C. Money Market rate
    D. Prime rate

16. Which of the following is a cause of the delayed effects associated with using fiscal policy for economic stabilization?

    A. The Ricardian Equivalence Theorem
    B. Operational lags
    C. Okun's Law
    D. None of the above

17. Which of the following is true of developing countries?

    A. The population growth is generally too high
    B. The is typically capital flight from the country
    C. They suffer from a “brain drain”
    D. All of the above are true

18. What roles can developed nations play in developing countries’ economic growth?

    A. Foreign Aid
    B. Open Foreign Trade
    C. Assist with debt reduction for these countries

19. A tax structure that requires that as one’s ability to pay increases, so too should their tax rates is:

    A. Proportional
    B. Progressive
    C. Regressive
    D. Lump sum

20. What is the tax multiplier?

    A. Always one
    B. 1/MPC minus one
    C. 1/MPS minus one
    D. 1/1-MPC

True/False [1 point each]

1. The majority of the U.S. money supply is currency.

2. There are twelve regional banks in the Federal Reserve System.

3. The Discount Rate is the interest rate the Fed charges member banks to loan them reserves.

4. If MV = PQ is correct and V and Q are stable and grow at very slow rates, then the money supply has nothing to do with the general price level.

5. Nixon was the last U.S. President to use wage-price controls to attempt to control inflation.

6. The Ricardian Equivalence Theorem states that there is little difference between deficit financing and tax increases on the aggregate economy.

7. The national debt has no effect on incentives within the U.S. economy.

8. Cyclically balanced budgets require that the budget be balanced on some fixed cycle of several years.

9. When the price of bond increases, the interest rate increases.

10. With a required reserve ratio of .2, the money multiplier is 5.

11. The dilemma in monetary policy is that monetary policy effects each of the money aggregates in different ways and at different times may effect the economy differently.

12. The velocity of money is how fast its value changes with respect to other currencies.

13. Supply side economists were concerned that there was too little regulation in the U.S. economy and that lack of regulation hurt productivity.

14. Inflation in a general increase in all prices, not just in some prices.

15. One problem with fiscal and monetary policy is there is no mechanism to assure the coordination of the two policies.

16. The paradox of thrift has several dimensions, however in general it refers to the observation that households may save more when the economy needs greater consumption to reach a long stable equilibrium.

17. Developing countries have little, if any, debt because they are not credit-worthy.

18. A regressive tax structure means that those with the highest ability to pay more will pay more taxes.

19. Say's Law states that for every 1% the unemployment rate exceeds the natural rate we have lost 2.5% of potential GDP.

20. The Employment Act of 1946 formalized the Federal Government's role in stabilizing the U.S. economy.

Sample Final Examination

ANSWERS:

Multiple Choice:	True/False:
1. D	1. F
2. B	2. T
3. C	3. T
4. A	4. F
5. A	5. T
6. D	6. T
7. B	7. F
8. B	8. F
9. D	9. F
10. B	10. T
11. C	11. T
12. A	12. F
13. C	13. F
14. B	14. T
15. A	15. T
16. B	16. T
17. D	17. F
18. D	18. F
19. B	19. F
20. C	20. T