A Study of Paul A. Samuelson's *Economics*: Making Economics Accessible to Students

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Abstract

Paul A. Samuelson is the founder of the modern introductory economics textbook. His textbook *Economics* has become a classic, and the yardstick of introductory economics textbooks. What is said to distinguish economics from the other social sciences is the development of a textbook tradition. The textbook presents the fundamental paradigms of the discipline, these gradually evolve over time as puzzles emerge, and solutions are found or suggested. The textbook is central to the dissemination of the principles of a discipline. *Economics* has, and does contribute to the education of students, and advances economic literacy and understanding in society. It provided a common economic language for students.

Systematic analysis and research into introductory textbooks is relatively recent. The contribution that textbooks play in portraying a discipline and its evolution has been undervalued and under-researched. Specifically, applying bibliographical and textual analysis to textbook writing in economics, examining a single introductory economics textbook and its successive editions through time is new. When it is considered that an economics textbook is more than a disseminator of information, but a physical object with specific content, presented in a particular way, it changes the way a researcher looks at that textbook. This thesis examines the sixteen editions of *Economics* as a physical object, and its content. Through this examination it is possible to see how Samuelson made economics accessible to students. A central question is has *Economics* evolved as the world around it has changed?

Samuelson has a very student-oriented approach when writing his textbook. Readers of *Economics* come to understand economic concepts through relevant examples. Well-known people and events are used by Samuelson to illustrate economic theory and present economic ideas. In *Economics* Samuelson presents the principles of mainstream economics. He also portrays the social, psychological, political, and historical landscape of the time. Samuelson's *Economics* provides the non-professional economist (the student, businessperson, politician etc) with the principles of economics, presented in ways that are relevant to them, and relate to the issues they see and face in the world. *Economics* has not remained static; rather, it has developed over time. The ability of *Economics* to evolve has been the key to its survival.

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Contents

List of Tables

List of Figures

"I don't care who writes a nation's laws - or crafts its advanced treaties - if I can write its economics textbooks" Paul A Samuelson.[1]

[1] (Nasar 1995).

Chapter One:

Introduction

"To read *Economics* is to have a glimpse of the extraordinary mind that created it: undogmatic, generous to predecessors and contemporaries, encyclopedic, of course brilliant, and, most remarkably, skeptical, not inclined to take itself too seriously. Those are not properties that come in that combination very often, least of all in a textbook" (Fischer 1999, 363).

"Why has this textbook [*Economics*] had such a long-term impact on the field of economics?...His [Samuelson's] text was the first to introduce the study of macroeconomics. It was the first to bring the then state-of-the-art Keynesian approach of economic analysis down to the level that college freshmen could understand. It was an era when foreign trade exerted modest influence on the overall economic activity of the United States. Samuelson had created a common economic language that from then on would be used throughout the world" (McGraw 1999, 355-356).

Introductory economics textbooks provide a vehicle for students to understand an academic discipline – they make economics accessible to students. In a very real way introductory textbooks convert the 'science' of economics into a teachable subject. Therein lies their significance: introductory textbooks acquaint students with the accepted and theoretical framework of a discipline. They log the foundation of what students understand to be the object and methods of the discipline, and they predetermine in a powerful way how students will see the world. Since *Economics* was first printed millions of students around the world have learned the principles of economics from it.

Introductory textbooks – in this case Samuelson's *Economics* – represent the mainstream thought of a discipline, its paradigms.[1] The paradigms of the discipline form the main structure of the normal science. The development of a textbook tradition is that which distinguishes economics from the other social sciences. Introductory economics textbooks are in Kuhnian terms canonical textbooks.[2]

This makes textbook analysis a fascinating object of research. If it is understood how textbooks are written, if and how they evolve over the years, whether they change as the world changes, and as the discipline itself changes, a deeper insight into the learning process is gained. This thesis is a contribution to the understanding of how introductory economics textbooks are written – what is in the textbook, and how it has changed over the fifty years of publication. Bibliographical and textual scholarship is the main framework of this research. It involves the examination of the physical characteristics of the textbook (the number of pages, words, chapters, graphs, equations), and the content and themes of the textbook.

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[1] Kuhn (1970, 136) contends that introductory textbooks: "address themselves to an already articulated body of problems, data, and theory, most often to the particular set of paradigms to which the scientific community is committed at the time they are written...[they] aim to communicate the vocabulary and syntax of a contemporary scientific language."

[2] A canonical textbook in the sense that it is said to embody the mainstream economic thinking of the time, presenting the central paradigms of the discipline.

There is an academic interest in examining the evolution of ideas in the introductory economics textbook. Through them it is possible to evaluate changes to important paradigms, and see passing fads. Whether it is the First or Twelfth Edition of *Economics*, what is presented as the 'fundamentals' of economics is notable for that time. Samuelson's introductory economics textbook presents world events, changes in the economic, political, and social environments, and addresses issues that students see and need to understand. This research will track how the changing ideas and issues shape this canonical textbook over time or, as Samuelson (Sam. 16 1998, xxvi) himself says:

> "A historian of mainstream economic doctrines, like a paleontologist who studies the bones and fossils in different layers of earth, could date the ebb and flow of ideas by analyzing how Edition 1 was revised to Edition 2 and, eventually, to Edition 16."

By the early 1940s, Paul Samuelson already had a reputation as a brilliant theorist, and could see a need to produce an interesting and clear introductory economics textbook. When in 1945 Ralph Freeman asked Samuelson, on staff at Massachusetts Institute of Technology (MIT), to write an introductory economics textbook, Freeman said:

> "Paul, here's an offer you can't refuse. A year of economics is compulsory for our MIT students. And they find it dull. Take as much time off as you need. Write a book that people new to economics will like. It can be as short as you wish. Cover the topics *you* think important. I'm sure it will be a best seller. More importantly, you'll contribute to the education of a generation. Then you'll have two reputations. Paul Samuelson, the economic theorist who pioneers at the frontiers of high-falutin' mathematical economics. And Paul Samuelson, who has paid his dues to promoting economic literacy and rational understanding among the citizenry" (Sam. 14 1992, ix).

The First Edition of *Economics* was published in 1948, and every three to four years later another edition was published, until in 1998 sixteen editions of *Economics* had been produced. *Economics,* when it first appeared, had an immediate impact on the teaching of economics. Brown and Solow (1983, xiii) assert that: "Alfonso the Wise is supposed to have said that if he had been present at the Creation, he would have done a better job. Paul was, and did. It was only the creation of a little world, though it reached through all of economics." Samuelson's *Economics* provided the world with a common economics language, and set a benchmark for modern mainstream introductory textbooks.

The justification for using Paul Samuelson's *Economics* is straightforward; it is the most long-lived and pre-eminent introductory economics textbook. After reviewing the First Edition of *Economics* Galbraith predicted "that the next generation would learn its economics from the

Samuelson *Economics*."[3] Even today, fifty years later, modern introductory economics textbooks can trace their heritage back to the pedagogy and paradigms of Samuelson's *Economics*. Samuelson's textbook set a lasting pattern in the presentation of the principles of economics that has been mimicked many times by rival economics textbooks. It changed the way authors wrote and presented introductory economics in textbooks. In recent times *Economics* may have lost its dominant position in the textbook market as introductory economics textbooks jockey for position; however, it still commands a place. *Economics* has sold over four million copies, has been translated into more than sixteen languages, and has been used in over sixty countries. Its sales peak was the Sixth Edition (1964) selling over 440,000 units. Today textbooks such as McConnell and Brue; Byrns and Stone; Baumol and Blinder; Schiller; Dolan and Lindsey; Lipsey, Steiner, Purvis and Courant; and Mansfield, together represent a sixty to seventy percent share of the introductory economics textbook market in the United States (Carvellas, Kessel and Ramazani 1996).

There is an important social relevance to this research. Most people understand and interpret the economy and economic policy based on what they have learned and understood in their introductory economics course. The significance of this was outlined in an article in *The Economist* (1997b, 60):

> "In the next few weeks, thousands of students throughout the world will begin an introductory economics course. They will probably use only one textbook. For most, that one course will be their only brush with the dismal science. That is why basic economics textbooks are enormously influential."

For many students an introductory course in economics is compulsory for their degree. They have not chosen to do the course, but are required to complete it nonetheless. Students' familiarity with economics may be weak and their desire to do the course even weaker; often finding it hard, boring, and irrelevant. What is presented in an introductory economics class, and how it is presented, has an important influence on students' understanding of economics as a discipline and in formulating what economics means to them. This is especially relevant, when one considers that the majority of introductory economics students will not take another economics course. So it is this course, introductory economics that plays an important role in 'turning students on' to economics, and teaching students some fundamental principles that

[3] Samuelson quotes Galbraith in his Fourteenth Edition (Sam. 14 1992, x).

will be useful to them in the future. Samuelson (Sam. 7 1967, vii) reflects on the importance *Economics* plays in educating the citizenry in the Seventh Edition:

> "When the election of 1984 rolls around, and the issues of the protective tariff and public debt are being seriously debated, all the hours that the artists and editors and I have spent in making the pages as informative and authentic as possible will seem to me well spent if somewhere a voter turns to the old book from which he first learned economics for a rereasoning of the economic principle involved."

Some years later when Samuelson was asked why he wrote, and continues to write and revise editions of *Economics,* he replied:

> "Writing a beginning textbook is hard work. But its rewards have been tremendous - and I do not mean simply pecuniary rewards. Contact with hundreds of thousands of minds of a whole generation is an experience like no other that a scholar will ever meet. And writing down what we economists know about economics has been truly an exciting experience. I can only hope that some of this excitement will rub off on the reader" (Breit and Spencer 1995, 69).

Teachers and students rely on economics textbooks to guide them through the introductory economics course. What is in them and how the material is presented aids the learning and critical thinking processes. When Hart (1948, 915) reviewed the First Edition of *Economics* he observed: "If we can come to expect most students who take elementary economics to come out with a reasonable grasp of what can be learned from this book [*Economics*], we can have a good conscience about this most important of the profession's teaching responsibilities."

For the purposes of this research I will reference statements from the editions of *Economics* in an abbreviated form as outlined in the fourth column of the Table 1.1, always in the present tense. I have used both the original version of *Economics* (Editions One to Five, 1948-1961), and the international students version of *Economics* (Editions Six to Sixteen 1964-1998) in this research.

Table 1.1: *Economics* Reference Table

Author	Edition	Year	Abbreviation
Samuelson, P. A.	First	1948	Sam. 1 1948
Samuelson, P. A.	Second	1951	Sam. 2 1951
Samuelson, P. A.	Third	1955	Sam. 3 1955
Samuelson, P. A.	Fourth	1958	Sam. 4 1958
Samuelson, P. A.	Fifth	1961	Sam. 5 1961
Samuelson, P. A.	Sixth	1964	Sam. 6 1964
Samuelson, P. A.	Seventh	1967	Sam. 7 1967
Samuelson, P. A.	Eighth	1970	Sam. 8 1970
Samuelson, P. A.	Ninth	1973	Sam. 9 1973
Samuelson, P. A.	Tenth	1976	Sam. 10 1976
Samuelson, P. A.	Eleventh	1980	Sam. 11 1980
Samuelson, P. A. and W. Nordhaus	Twelfth	1985	Sam. 12 1985
Samuelson, P. A. and W. Nordhaus	Thirteenth	1989	Sam. 13 1989
Samuelson, P. A. and W. Nordhaus	Fourteenth	1992	Sam. 14 1992
Samuelson, P. A. and W. Nordhaus	Fifteenth	1995	Sam. 15 1995
Samuelson, P. A. and W. Nordhaus	Sixteenth	1998	Sam. 16 1998

Samuelson wrote the first eleven editions (1948-1980) of *Economics* as sole author. From the Twelfth Edition (1985) on, William Nordhaus joined as co-author. For the purposes of this thesis I refer only to Paul Samuelson and the sixteen editions of his textbook. This is not meant to be disrespectful of William Nordhaus. Rather, it reflects and follows the widespread identification of the book in its successive editions as the Samuelson. I believe the central philosophy of *Economics* has remained even after Nordhaus joined Samuelson. Appendix Two presents a brief biography of William Nordhaus.

This thesis begins with a chapter that places *Economics* in time and context, Chapter Two "Reconstructing History Through Samuelson's *Economics*." This chapter presents a selection of events and issues that were being faced by America (and Americans) and the world over the fifty years 1948 to 1998, and their portrayal in *Economics*. The next two chapters, Chapters Three and Four, analyse *Economics*; first, its physical characteristics, and then its content. Chapter Five, "Mathematisation and *Economics,*" tackles the issue of formalism in *Economics*. The next two chapters are case studies of two central and far-reaching issues in economics. The first issue is presented in Chapter Six, "The Government and the Market." In this chapter the changing role of the government and market in the economy over the past fifty years as presented by Samuelson in *Economics* is discussed. Chapter Seven, "The International

Economy" focuses on the issue of internationalisation. The chapter looks at the open economy and protectionism, and how this is portrayed in Samuelson's textbook. The final chapter, Chapter Eight, concludes the thesis.

Chapter Two:

Reconstructing History Through Samuelson's *Economics*

"It [*Economics*] has survived nearly half a century of dramatic changes in the world economy and the economics profession: peace and war, boom and bust, inflation and deflation, Republicans and Democrats, and an array of new economic theories" (Skousen 1997, 137).

2.1 Introduction

> **"Economics borders on other important academic disciplines. *Sociology, political science, psychology*, and *anthropology* are all social sciences whose studies overlap those of economics. Here is just one example.**
> **In impoverished India cows are sacred animals and, numbering millions, are allowed to walk through the streets foraging for food. While a naïve economist might regard these herds as a prime source for protein supplements to an already inadequate diet, the more profound scholar will take the psychology of custom into account when analyzing Indian economic development.**
> **Economics also draws heavily on the study of *history*" (Sam. 7 1967, 5).**

In *Economics* Samuelson presents economics as a teachable social science, and includes the central paradigms of the discipline - mainstream economic thought. Samuelson in *Economics* also mirrors the social, psychological, political, and historical landscape of the time. A snapshot of the world at the time of each edition is provided to readers. Samuelson writes about a broad array of ideas, topics, theories and issues, never hiding his passion for economics and its applicability to the world. The aim of this chapter is to place *Economics* in time by selecting some of these topics - both world events and issues - and show how they appear in *Economics*.

This chapter presents an assortment of issues and themes that are evident in *Economics*. The topics chosen for this chapter represent some of the central themes (events and crises) that have impacted on the post-World War Two world. Since the end of WWII the Cold War between the United States and the Soviet Union (capitalism versus communism) dominated the international economy. The American domestic economy was affected by changing political administrations, the assassination of civil and political leaders, internal upheavals, and external influences. The conflicts, changing political ideologies, social revolutions, breakthroughs in science and technology, issues relating to the environment, the international economy, and domestic economy of the United States are all reflected in the successive editions of Samuelson's *Economics*. Samuelson uses these topics to provide information about issues and events to readers, making them aware of their surroundings, and the world beyond America. He also uses these topics and issues in examples, and in applications of economic theory, to improve understanding and remind readers of the direct relevance of economic theory to themselves.

In the following four sections major themes that have influenced and characterised the economic, social and political landscape is discussed, and their portrayal in *Economics* is presented. The selection is not, and cannot be, exhaustive. The issue here is to show the immediacy and the force of unfolding events and trends in post-war history in the evolution of an introductory economics textbook.

2.2 International Conflict

> **"The world is divided into two great blocks: Soviet Russia and Siberia with her satellites of Eastern Europe and Asia stand within the Iron Curtain; and outside is the rest of the world. But the nations outside the Iron Curtain are far from homogeneous. Labor-Socialist governments are now ruling, or have recently been ruling, in Britain, in Australia and New Zealand, and in all of Scandinavia. Various forms of dictatorship still linger on in Spain and Latin America. France, Germany, and Italy have within them noisy and articulate left-wing political parties. The awakening nations of Asia and Africa do not view the world with laissez-faire-tinted glasses. Only the United States and Switzerland and a few other countries remain as islands of capitalism in an increasingly collectivized world. And even here, the scene is drastically changed: ours is a mixed system of private and public initiative and control; and in these disturbed days, a mixed system of a peace and a war economy" (Sam. 2 1951, 727).**

By 1946, the United States of America had emerged as the most powerful economic and military force in the world. In the aftermath of WWII America's perceived political and ideological foe was communism. Soviet Russia was its central adversary. This antagonism led to the Cold War[1] that impacted dramatically on the world from the 1950s until the 1990s. Samuelson reflected this antagonism in the Sixth Edition (1964) in an almost journalistic style, thus relating the study of economics directly to the major international conflict of the time: "Nikita Khrushchev...said to an American audience, 'We will bury you...your grandchildren will be communists'"(Sam. 6 1964, 723). This statement is made in the thirty-fifth chapter "The Theory of Growth," in the context of the predetermined role of history and the unfolding of events.[2]

There was the possibility of another war, specifically a war with nuclear technology. Strong statements made by Samuelson in the early editions of *Economics* reflect this:

- "After the defeat of the Axis, the short-lived comradeship with the Western powers flickered out, and the world now stands in the shadow of the atomic bomb with Russia trying to spread her influence over Europe, and with Britain and ourselves bent on stopping her" (Sam. 1 1948, 588).

[1] In 1946 Sir Winston Churchill described the Soviet Unions intentions in Eastern Europe as the 'iron curtain descending.'

[2] "Events rarely agree with fable" (Sam. 6, 1964, 723).

- "We live in unsettled times: experts who insure life and property tell us the risk of war is real and substantial" (Sam. 3 1955, 681).

- "World War II was not like World War I. Why should World War III be like World War II? What about the hydrogen bomb and the intercontinental ballistic missile? America and Europe are urban economies. Wipe out 300 cities in the first hour of the war and you immobilize most of their populations – moreover, that part of the population most important for war production and defense" (Sam. 4 1958, 748).

Plans for aid and support flowed from the United States to bolster many countries' economies, and to help with internal stability. The 1947 Marshall Plan for European economic recovery helped stimulate industrial and agricultural production and trade. The Plan targeted Europe's high post-war inflation and unemployment, and was intended to create economic and political stability, thereby reducing Europe's susceptibility to communism. *Economics* clearly reflects the concern of the time about unstable economies in Europe and Asia:

- "Communism thrives on economic chaos abroad. Disorganization and privation in Europe constitute a threat to the peace and security of the United States. For this reason President Truman and Secretary of State Marshall asked the countries of Europe to get together and draw up plans for helping themselves to economic recovery, so that we could intelligently aid them in this task" (Sam. 1 1948, 376).

- "The 'Truman Doctrine' brought financial aid to Greece when threatened by communism. Even Red Yugoslavia has received aid, as did the Nationalists in China, the South Koreans, and the French in Indo-China" (Sam. 3 1955, 671).

Samuelson speculates in the Third Edition as to America's motive for such aid and support. He sees it coming mainly from American fear of the expansion of communism: "Undoubtedly, the motives for many of these programs were our fear of communism. Full stomachs may not save a democracy; but empty ones can seal its doom. And putting modern guns into the hands of our friends will both help their defense and save American soldiers' lives" (Sam. 3 1955, 671). This point is reiterated again in the Fifth Edition when it's stated that:

> "In the modern ideological war between the free and the communist worlds, the Communists regard the underdeveloped regions as our Achilles' heel. They ceaselessly agitate in such lands, never failing to point out the poverty there, never failing to contrast it with our wealth, never failing to remind the people there of real and fancied evils of 'colonialism.' Cuba is a nearby example" (Sam. 5 1961, 778).

That these programmes were not without cost to America is highlighted in the Seventh Edition:

"The Marshall Plan and other aid programs soon began to have spectacularly favorable effects on the less-than-most-affluent countries - Japan, Germany, Holland, France, and Italy. Primarily on their own, by a process no one had predicted, they began a miraculous sprint of productivity growth in the 1950s. This growth in the *competitiveness* of foreign economies, plus the expensiveness of our *cold-war programs* (the Korean conflict, the Viet Nam war, the Atlantic Alliance, etc.), plus our *civilian foreign-aid programs* (in Asia, Latin America, and elsewhere), plus the burgeoning outflow of *direct foreign investments by American corporations* facing juicy profitability opportunities abroad - all these factors led to a gradual cessation of the dollar shortage and an actual swing toward a shortage of foreign currencies" (Sam. 7 1967, 689-90).

The scale of the expenditure on defence in both countries was high and did not wane until the 1990s when the Cold War was finally over. America and the Soviet Union embarked on a dangerous arms race, each country trying to outdo the other, to stay ahead. This 'competition' features in the Fifth Edition in a section comparing the United States and the Soviet Union:

"Military analysts estimate that the U.S.S.R. now mounts about the same military effort as does the United States. Her real GNP may be half ours, but she devotes twice our fraction of this total to security purposes. Furthermore, once both parties have innumerable nuclear bombs and during the time period for which the U.S.S.R. may have a technical advantage in the rocket and missile area, it is not necessarily the case that the United States, even by considerably increasing the fraction of her GNP spent on defense, could thereby gain decisive military advantage" (Sam. 5 1961, 830-31).

The 'fear' of communism operating inside the United States is apparent in *Economics*. Readers are aware from the First Edition of *Economics* of the nature of such mistrust as Samuelson (Sam. 1 1948, 590) describes:

"socialist Britain (1948) [as having] more civil liberties than...the United States in the 1920s era of rugged individualism, when Attorney General Palmer imprisoned and released hundreds of people alleged to be 'reds.' It is one thing to tell a corporation what it may charge for electric power and quite another thing to tell a man what he can say, what he can believe, how he must worship."

Also evident in *Economics* are the actions in the 1950s of Senator Joseph McCarthy.[3] The denunciation that the American State Department was full of communists led to a period of 'witch-hunts,' seeking out the 'communists' in America and putting them on trial. In the Fifteenth Edition Samuelson (Sam. 15 1995, xxvii) reflects back on these days:

"Not always has it been fun and games. In the reactionary days of Senator Joseph McCarthy, when accusations of radicalism were being launched at the pulpit and the classroom, my book got its share of condemnation."

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[3] "Sometimes nightmares do come true. Even paranoids may have enemies" (Samuelson 1983a, 51).

While the antagonism between the role of the market and a centrally planned economy manifested itself primarily in the conflict between the United States and the Soviet Union, China, Cuba, and some Eastern European nations were also led by communist regimes. Not all of these countries, however, followed the same Soviet philosophy or direction. This is outlined in the Seventh Edition:

> "...the family tree of Marxian economics shows a branching out in the middle 1960s. China and Russia cannot agree on the true apostolic succession to Lenin and Marx. The Chinese bitterly attack the Russians for their policy of peaceful coexistence. These ideological splits would be merely ironical, were it not that the future existence of the whole human race is at stake in this age of the nuclear bomb" (Sam. 7 1967, 789).

In the next edition Samuelson (Sam. 8 1970, 832) makes clear that:

> "In the last part of the twentieth century the communist world no longer presents a monolithic front. The dominance of the Soviet Union is challenged by China, Yugoslavia, Rumania, and Albania. Hungary and Czechoslovakia, in the absence of Russian intervention, showed signs of divergence from the Moscow pattern."

From the Thirteenth Edition (1989) the changes taking place in the Soviet Union and Eastern Europe are presented. In 1985, the then Premier of the Soviet Union, Chernenko, had died. Gorbachev rose to power, and change began to occur inside the Soviet Union, including a shift in the Soviet Union's relationship with the rest of the world. There was a dramatic transformation in the Soviet ethos. This change was brought out in the Thirteenth Edition:

> "General Secretary Gorbachev faced a crisis in the Soviet economy upon assuming leadership in 1985. Growth in the Soviet economy had slowed sharply, defense continued to drain a substantial fraction of the output and technological capability, and leadership and worker morale seemed at a low ebb. Gorbachev argued that the traditional Soviet system was too centralized and clumsy for effective management of an increasingly sophisticated economy...he [Gorbachev] instituted a policy of *glasnost* (openness) to promote candor and reduce ideological rigidity...[and] *perestroika*...a major reform of the management of Soviet industry" (Sam. 13 1989, 843).

Communism was in retreat. In 1989, the Berlin Wall came down in Germany, and the reunification of East and West Germany began.[4]

[4] Samuelson (Sam. 15 1995, 736) says of the effects of German reunification: "Following reunification, Germany's fiscal policy turned sharply expansionary as it subsidized East German industry...The expansion in western Germany led to an uptick in the German inflation rate."

The Czechoslovak Communist leader resigned, Nicolae Ceausescu in Romania was executed, and students protested for democracy in Tiananmen Square, China. Lithuania declared its independence from the Soviet Union in 1990, and free elections were held in Romania, Czechoslovakia, and Bulgaria. After forty years fraught with conflict, the Cold War between the United States and the Soviet Union was essentially over.

Much of the world has faced conflict over the fifty years since the end of WWII, some related to the Cold War, others from new threats to peace. Since the late 1940s there has been an almost continual conflict in one place or another in the world. These conflicts and their effects on the world, and the American domestic economy are outlined in *Economics*. War economics is a common theme in the Third through Thirteenth Editions (1955-1989). The Korean, Vietnam,[5] Arab-Israeli, and Gulf wars are all referred to in *Economics*.

References to the Korean War appear in the Sixth through Thirteenth Editions of *Economics* (1964-1989), and the Vietnam War in the Seventh through Fifteenth Editions (1967-1995). The impact of the Korean and Vietnam wars on the American economy was substantial, and Samuelson discusses both in his textbook. In the Sixth Edition the Korean War and Suez crisis are presented in the context of current international economic problems (in Chapter Thirty-Four):

> "...the increasing expensiveness of our fighting the Korean War and maintaining cold-war security programs, led to a gradual cessation of the dollar shortage. At first the drain on our gold supply went unnoticed. Just as the changed situation was beginning to be felt, the 1956-1957 crisis over the Suez Canal gave a temporary reversal to our ebbing trade surplus" (Sam. 6 1964, 706).

In the Ninth Edition the impact of the Vietnam War appears, again in the context of current international economic problems (in Chapter Thirty-Six):

> "The Vietnam inflation dramatically worsened the United States balance of payments...Speculators engineered a flight from the dollar. Their 'hot money' went abroad in billions of dollars" (Sam. 9 1973, 719).

The Arab-Israeli War is used in the Thirteenth Edition (in Chapter Fifteen, "Inflation and Unemployment") to answer the question "Who is pushing up costs?"

> "In 1973 and again in 1979, countries were minding their own macroeconomic business when severe shortages in oil and other markets occurred. These arose

[5] "When we were secretly bombing Cambodia, I doubt that Henry Kissinger and Melvin Laird, who must have been in on the secret, regarded the President as the madman that many of Adolf Hitler's aides thought him to be...Unfortunately, the principles that Richard Nixon believes in represent a minority view that cannot be imposed on the country without departure from standard democratic procedures...People say we should be grateful to Watergate because it shows the American system at work to cure its own evils. What rot. But at least it has stopped the President from exercising that mandate he never got" (Samuelson 1983a, 33-34).

largely from political events, such as the Arab-Israeli war in 1973 and the fall of the Shah of Iran in 1978. In each case, when the sand had settled in the Mideast, a gigantic cost-push inflation had occurred" (Sam. 13 1989, 326).

In 1990, Saddam Hussein of Iraq invaded Kuwait. The United States and Allied countries responded by sending forces to the Gulf region. In 1991, Operation Desert Storm had commenced and the Allied offensive subsequently liberated Kuwait. The change in the technology and sophistication of the weaponry used in this conflict is featured in the Fourteenth Edition:

> "During the war in the Persian Gulf in 1991, the world was stunned by the tremendous advantage that high-technology weapons - Stealth aircraft, 'smart' bombs, antimissile missiles - gave to the United States and its allies against an opponent armed with a technology that was but a few years behind" (Sam. 14 1992, 552).

The inclusion of the Persian Gulf crisis in *Economics* can been seen in Samuelson's perennial 'guns and butter' illustration of the production possibility frontier, as it is updated to apply to the Gulf crisis:

> "For dramatic purposes we can select guns and butter to illustrate the problem of choosing between military spending and civilian goods. This example applies equally to America's massive mobilization during World War II, to the issue of how to pay for operation 'Desert Storm' in Saudi Arabia in 1991, and to the choices of military versus civilian spending faced by any nation" (Sam. 14 1992, 21).

The Persian Gulf crisis also makes an appearance in Samuelson's public goods discussion in the Fifteenth Edition:

> "For example, an AIDS vaccine would benefit people from every state, not just those living near the laboratory where it is discovered; similarly, when the U.S. Army wages war against Saddam Hussein's army in Kuwait, the Middle East oil supplies are protected for the entire country" (Sam. 15 1995, 300-301).

The sixteen editions of *Economics* have mirrored the conflicts and wars that have occurred in the world over the past fifty years. These wars and conflicts are used in examples showing government policy and economic theory, and their impact on the American domestic economy and the international economy is discussed. What was Samuelson's reason for doing this? He (Sam. 3 1955, 681) outlines his rationale in the Third Edition when writing: "we must study the economics of war in order to understand the economics of peace...*To learn about normal functioning, you must study pathological cases.* Certainly, nothing could be more pathological than the sight of two great powers waging total war on a global scale."

2.3 Technology

> **"A malicious colleague once asked, 'Paul, how soon will the computer make you obsolete?' Since he was malicious, I let him have the truth: 'Not in a million years.' Even if I am wrong by a factor of 10 the point is made. Inside every computer is a fallible human being, the person who wrote its program, who specified its important variables and designed their general structure" (Samuelson 1983a, 96).**

After WWII, many military developments in science and technology had major impacts on civilian productivity and living standards, such as jet engines, improvements in medicines, and communications. Effective operating television was developed, and by 1955 thirty-four countries had domestic and world events beamed into the homes of their citizens. The revolutions in telecommunications through the cellular system is brought out in the Sixteenth Edition of *Economics*: "Most of the U.S. population is now served by two cellular telephone networks, which use radio waves instead of wires" (Sam. 16 1998, 160).

Computers appeared in the 1950s, initially large and primitive as Samuelson (Sam. 7 1967, 321) describes in the Seventh Edition: "Some modern digital computers can beat a good player at checkers, but none can yet beat a champion. None can yet play a really fine game of chess; at simple games such as tick-tack-toe, the machine plays a perfect game." Over time, however, computers rapidly developed and evolved. An important question for Samuelson, in terms of economic power and development, is why the computer industry took off in the United States as opposed to the Soviet Union. In the Sixteenth Edition Samuelson (Sam. 16 1998, 521) gives his answer to this question:

> "Consider today's U.S. computer industry, where even enthusiasts can hardly keep up with the stream of new hardware configurations and software packages. Why did the entrepreneurial spirit thrive here and not in Russia, home to many of the great scientists, engineers, and mathematicians? One key reason is the combination of an open spirit of inquiry and the lure of free-market profits in Silicon Valley in comparison to the secrecy and deadening atmosphere of central planning in Moscow."

1957 was a landmark year: a new phase in the space age was entered. In this year, the Soviet Union launched Sputnik I and II into space – the 'space race' began. A year later the Americans launched the Vanguard and Explorer satellites. In 1961, when the Russians put the first human in space, America was seen to be behind. Some years later this race for control of space, and therefore Cold War dominance is reflected in *Economics*:

> "Since 1945 the United States and the Soviet Union have engaged in a superpower competition for public opinion, for military superiority, and for economic dominance. Premier Nikita Khrushchev boastfully predicted that the U.S.S.R.

> would bury the United States economically. Moreover, in that era - when the American economy stagnated while Soviets thrust the first missile into space - many objective analysts believed that the Soviets might well outstrip their capitalist rivals" (Sam. 13 1989, 841).

President Kennedy sent out a challenge to the American space agency, to land a man on the moon and bring him back safely before the end of the decade. It was 1962 before the United States launched a manned space flight, after the Russians had achieved this goal. However, American Neil Armstrong became the first person to walk on the moon in 1969. The American space programme had achieved what Kennedy had hoped; America had been the first to successfully land someone on the moon, and bring them back.

Economics features issues of technology, industry, innovation, and research and development in each edition. From steel to textiles, computers to telecommunications, *Economics* presents to readers key industries, key players, and the environment in which investment and development of new technology is facilitated. Aided by new technology many countries of the world were experiencing rapid growth and prosperity after WWII and in the 1950s and 1960s. Things changed, however, in the 1970s when the international community was rocked by world events, and nations realised how interdependent they had become.

2.4 Social and Demographic Issues

This section presents some of the social and demographic issues that appear in *Economics*. The energy and food shortages of the 1970s, the environment, discrimination, and issues relating to population are discussed in *Economics*. Samuelson does not shy away from controversial subjects. *Economics* is a place where topics from oil shocks to racism to contraception are raised.

2.4.1 Shortages in the 1970s

> **"OPEC must gather a group of temperamental oil ministers together - braving terrorist threats, bargaining as if in a Turkish bazaar, listening to endless harangues - every time it wishes to change its official oil prices" (Sam. 12 1985, 146).**

The 1970s was a turbulent decade.[6] There were crop failures in the Soviet Union, changes in the ocean currents, increased speculation on world commodity markets, crises in foreign exchange markets, and the price of crude oil from the Organisation for Petroleum Exporting Countries (OPEC) quadrupled.

These natural disasters and shortages impacted on most countries of the world, and the tenor of public concern is described in *Economics*:

- "Harvests were intermittently bad throughout the 1970s. Corn fungus hit the Mississippi Valley. The Russians experienced a lack of snow cover for their wheat crop two years running, and had to come into the U.S. market for heavy 1972 and 1975 wheat purchases. This sent grain prices soaring. A drought in China and elsewhere in Asia cut down on the rice and grain crops there. The monsoons of India, upon which crops so much depend, were disappointing. The Sub-Sahara wilted from lack of rain" (Sam. 10 1976, 827).

- "An 'end-of-the-world' mentality arose, with the cover of a popular magazine showing an empty cornucopia entitled 'Running Out of Everything?'" (Sam. 12 1985, 95).

Government-backed cartels like the OPEC sought to control the supply of their product thereby increasing the price and creating problems for oil importing countries as prices of oil skyrocketed. These cartels were not restricted to oil as Samuelson (Sam. 12 1985, 391) demonstrates in the Twelfth Edition: "Indeed, programs by government cartels have been pursued all over the world. The Organization for Petroleum Exporting Countries (OPEC) forced oil prices up tenfold in the 1970s by restricting supply. Brazil used to burn coffee to raise its price. Sugar, cocoa, and coffee are still under international control."

In 1978, opposition to the Shah of Iran was organised from France by Ayatollah Khomeini, resulting the next year with the Shah leaving the country, Khomeini returned to create an Islamic state, and oil prices rose again: "By 1979 the economy had recovered from the 1973 supply shock. Output had regained potential. Just when equilibrium was attained, however, another round of oil-price increases contributed to an accelerating two-digit inflation rate - 12 percent per annum in 1979 and 1980" (Sam. 12 1985, 96).

The events of the 1970s caused a change in the wealth base of the world in favour of the oil producing nations. Oil rich nations riding on the back of the oil crises in the 1970s had created huge profits and nations such as Saudi Arabia and Kuwait joined the wealthiest

[6] "We all remember the run of bad harvests in the early 1970s. Again and again the Russian wheat crop failed. The sub-Saharan ran particularly dry. The timing and nature of India's monsoons was bad for its grain crops. Recurrent droughts in Asia decimated the rice crops, and mainland China's soybean yields plummeted" (Samuelson 1983a, 147).

nations in the world. Some of the ramifications of this period of rising oil prices, and the impact this had on nations revenues is shown in Chapter Thirty-Six, "Current International Economic Problems" in the Tenth Edition:

> "Most industrial countries, including the U.S., were hard hit by the sharp increase in energy prices after 1973. The LDCs were also put into balance of payment deficit by the new need to pay much more for their necessary oil imports and imports of fertilizers and other goods whose costs depend much on the price of energy...Some OPEC countries quickly spent their new revenues on imports designed to accelerate internal development. (Iran is a good example.) But others, such as Saudi Arabia and Kuwait, now took in enormously more than they could sensibly spend in the short run" (Sam. 10 1976, 716).

Over the later editions of *Economics* it is evident to readers that OPEC has not always been successful in its attempts to control the supply, and thereby price of oil:

- "On several occasions, however, smaller countries (Nigeria, Iran, Ecuador) have refused to cut production. In 1982, as a result, OPEC was forced to reduce its price to balance supply and demand" (Sam. 12 1985, 534).

- "Sometimes OPEC succeeds [in restricting the supply of oil, thereby increasing its price], but every few years price competition breaks out. This happened in a spectacular way in 1986, when Saudi Arabia drove oil prices from $28 per barrel down to below $10" (Sam. 14 1992, 182).

- "It is particularly hard to enforce a cartel agreement among parties that hate each other or even - as with Iraq, Iran, and Kuwait - are fighting real wars as well as price wars" (Sam. 16 1998, 174).

The dramatic events of the 1970s are reflected in *Economics*. The causes of these events and their effects are discussed in terms of both the international economy, and the American domestic economy. During this period there was also an increasing concern about environmental issues such as pollution, resource depletion and degradation.

2.4.2 The Environment

> **"Even a casual spectator of a modern industrial economy can observe the pervasive nature of externalities. The air and water pollution, risks from unsafe factories or nuclear power plants, danger from drunk drivers or gargantuan trucks, strip-mined land, or burnt-out ghetto skeletons housing packs of wild dogs - these are some of the negative economies the nation experiences" (Sam. 12 1985, 718).**

Issues relating to the environment began to appear in *Economics* in the 1970s. The problems of pollution and environmental degradation were becoming more apparent and popularly discussed, and Samuelson began to include these issues in his textbook. He (Sam. 8 1970, 791) observes in the Eighth Edition:

> "One merely sees in the city in exaggerated degree a problem common to all modern life, namely, contamination of the general environment. The smog in Los Angeles is the sign in the skies of what is impending for cities elsewhere. Really clear days in New York, Paris, or Tokyo are almost completely a thing of the past."

The Eighth Edition is the first edition that devotes a chapter to the economic problems of the environment entitled, "Economic Problems of Race, Cities, and the Polluted Economy." From the Eighth Edition to the present, Sixteenth Edition, there is a full chapter in *Economics* dedicated to the economics of the environment and natural resources.

Issues of global warming, and/or our world entering a new ice age became increasingly topical in the 1970s. *Economics* presents this debate in the Tenth Edition:

> "Maybe even the weather is getting colder as we move into a new ice age. Some geographers fear that the jet winds in the first part of this century were unusually favorable to agriculture in the Sahara and Indian-peninsula regions; that is now over...Weather experts are divided. Some fear the globe is warming up, from carbon dioxide greenhouse effects and from the release of industrial energy. For every 'freezer' there is a futurologist who is a 'boiler.' Both may be wrong as the weather oscillates" (Sam. 10 1976, 420).

By the 1970s, there existed more than enough thermonuclear weapons to destroy all human life. The uses of nuclear power were also being extended into civilian life. *Economics* presents the "atom program [as being] the largest government spending program of all times. The billions of dollars spent have produced tremendous results, tremendous for potential good and tremendous for potential evil" (Sam. 4 1958, 718).

Nuclear power was more than just useful in military applications – it also represented a new power source for society as a whole. The idea of utilising energy from nuclear power appeared at a time when fossil fuels were believed to be running out. The world was looking for a new energy source, and it found one in fissile fuels - uranium and thorium. Nuclear power plants were built in many countries in the 1950s and 1960s, supplying power to many cities.

Nuclear energy appears in *Economics* in discussion on weapons of mass destruction, as a 'cheap' and 'clean' power source, and as a dangerous energy provider. Concerns over the production of nuclear weaponry and its testing in the atmosphere and underground are also apparent in *Economics*. In the Eighth Edition readers are made aware that: "Strontium 90 and radioactive trace elements have been the consequence of atomic testing; and the threat of the ultimate-doomsday cobalt bomb which will end all human life forever is more than an old-wives' bogey tale" (Sam. 8 1970, 791).

The confidence in the safety of nuclear power changed as information to the public increased (through the reporting of nuclear accidents and the effects of radiation exposure). From being a 'cheap' and 'clean' energy source, it was no longer considered the safe option it was once touted as being:

> "*By the early 1990s, the wisdom of this decision was in doubt. Demand for power was below projections, the plants were turning out to be more expensive to build and operate than expected, oil and other alternative energy sources were far cheaper than expected, and much of the public no longer believed that nuclear power was safe. These changes in the economic environment posed a tough problem for utilities which still had nuclear power plants under construction*" (Sam. 15 1995, 161).

The environmental damage from the fall out from nuclear power plant accidents becomes a very real issue after the Chernobyl disaster. *Economics* reflects the increasing awareness of the air and water contamination that occur:

> "from chemical production, energy production, and use of automobiles; 'acid rain,' which comes from long-distance transportation of sulphur emissions from power plants; radioactive exposure from atmospheric tests of nuclear weapons or from accidents like that at the Soviet plant in Chernobyl; depletion of the ozone layer from buildup of chlorofluorocarbons; and many other examples" (Sam. 14 1992, 311).

As the public became more 'environmentally aware' in the 1970s, so too did *Economics*. Since the Eighth Edition issues pertaining to pollution, the sustainability of natural resources, and degradation of the natural environment have been included. The negative effects of burgeoning cities, the indiscriminate use of resources, and the lax approach to pollution control and monitoring are all discussed in *Economics*. Another prominent issue of the 1960s and 1970s was that of discrimination on the basis of race and gender.

2.4.3 Discrimination

> **"There is no economic puzzle about how nineteenth-century slavery in America, or twentieth-century apartheid in South Africa, persisted and thrived. The ruling groups made 'colored' a second class of citizen, endowed with few inalienable rights, and subject to harsh laws and discipline if any of its members attempted to gain the freedoms enjoyed by others" (Sam. 12 1985, 624).**

In the Sixth Edition of *Economics* Samuelson predicts: "One of the dominant economic and political movements of the 1960s will be the struggle against segregation and discrimination" (Sam. 6 1964, 123). The 1960s was a decade of political and social disturbances in the Western world. In America there were civil rights marches, race riots, the feminist movement, and an increase in the drug culture among youth.

As early as the First Edition (1948), Samuelson concerns himself with issues of inequality. In the First Edition Samuelson (Sam. 1 1948, 84) demonstrates to readers the racial discrimination apparent in American society:

> "There are indications that the problem of Negro inequality, far from straightening itself out, is becoming worse. In times of prosperity, the Negro is last to be hired; when depression comes, the Negro is first to be fired and thrown on relief; when jobs become scarce, whites invade even the fields of domestic service usually abandoned to the Negro."

The issue of discriminatory pay scales was also a reality. This is outlined in an example in the Second Edition: "Where Negro and white dishwashers work side by side, it is not impossible that the former should receive lower pay" (Sam. 2 1951, 74).

In *Economics* Samuelson[7] also raises the economics of slavery. He (Sam. 8 1970, 788) observes at the time: "Hitherto no economics textbook has grappled with the problems of the economics of race. And it ill becomes a white author to think that he can provide diagnoses and prognoses for a problem of this kind."

In the early 1960s legislation was enacted in America to help stop discrimination in society and the economy on the basis of race, colour and gender. This legislation is discussed in the Ninth Edition of *Economics*:

> "The Civil Rights Act (1964) set up the Equal Employment Opportunities Commission, which has been making some steady progress in lessening discrimination - discrimination against women and discrimination against

[7] As a Jew Samuelson would be very aware of what discrimination means, and the dangerous side of prejudice.

> nonwhites. But even the most ardent believer in gradualism will admit that progress has been discouragingly slow in coming" (Sam. 9 1973, 97).

The extent of racism after the Civil Rights Act of 1964 is seen in *Economics* to be subtler, with examples of tokenism used to illustrate the relative lack of progress in moving towards equality for African Americans:

> "Indeed, the phenomenon of 'tokenism' has begun to develop: large corporations vie for a presentable black Harvard Business School graduate in order to be able to boast of an assistant vice-president who is a Black American" (Sam. 10 1976, 785).

In the Sixteenth Edition the social system that had depressed African Americans is reviewed for readers:

> "The history of black Americans illustrates how social processes depressed their wages and social status. After slavery was abolished, the black population of the American south fell into a caste system of peonage under 'Jim Crow' legislation. Even though legally free and subject to the laws of supply and demand, black workers had earnings far below those of whites...Because they had inferior schooling and were excluded from the best jobs by trade unions, local laws, and customs. They were consequently shunted into menial, low-skilled occupations that were effectively non-competing groups" (Sam. 16 1998, 240).

It is clear to readers of *Economics* that it was not just African Americans who felt the effects of race discrimination. Mexican-Americans and Native American Indians were also affected:

- "Americans of Mexican origin receive less-than-average incomes and have been the victims of prejudice in the Southwest and elsewhere. In recent decades our Eastern cities have been the mecca for a host of migrants from Puerto Rico, and for them the American melting pot has been slow to assimilate" (Sam. 8 1970, 780).

- "The first inhabitants of this continent, the American Indians, have yet to receive their full share of the economic and social opportunities we boast of in our Fourth of July orations" (Sam. 10 1976, 781).

At a time when America was using legislation to try and reduce discrimination, South Africa was doing the opposite. The Apartheid[8] - 'separation' - slogan was first used in South Africa by the African National Party in the general election of 1948. The victory of the National Party under Dr Daniel Malan in the late 1940s led to the adoption of the system. The separation of the races under white rule began. By the end of the 1980's South Africa had been economically and strategically isolated by most of the Western

[8]Apartheid, Afrikaans for 'apartness'. It was the racial segregation policy of the government of South African from 1948-1994. In 1991, President de Klerk repealed the central elements of apartheid policy and by 1994 it had ceased to exist in law.

world for its human rights abuses and institutionalised racism. This is reflected in the Fourteenth Edition of *Economics*:

> "Harking back to the doctrines of Hobson and Lenin, radicals denounce American companies and accuse them of profiting from the racist policies of apartheid in South Africa. A rising storm of protest has forced many colleges and universities to sell their shares of companies operating in South Africa" (Sam. 14 1992, 382).

Throughout the sixteen editions of *Economics* the issues of ethnic minorities and their economic problems are raised reflecting the effects, and extent of racial discrimination in society. Tables 2.1 and 2.2 present the figures Samuelson uses in the sixteen editions of *Economics* to portray the comparative wage incomes and earning differentials for both white, and black men, and women. It is clear from these figures that white men have had much higher wage incomes and earning differentials.[9] Over time, however, the gap between white and black men has reduced, and the earning differentials of both white and black women have improved relative to men.[10]

Table 2.1: "Comparative [Median Wage Incomes] of Men and Women and of Negroes and Whites" (Sam. 1 1948, 82).

	Male	Female	Year
White	1 401	734	1940 (Sam. 1)
Negro	663	396	1940 (Sam. 1)
White	2 711	1 615	1948 (Sam. 2)
Negro	1 615	701	1948 (Sam. 2)
White	3 201	1 221	1951 (Sam. 3)
Negro	1 708	518	1951 (Sam. 3)
White	4 458	2 870	1955 (Sam. 4)
Negro	2 831	1 637	1955 (Sam. 4)
White	4 569	2 364	1958 (Sam. 5)
Negro	2 652	1 055	1958 (Sam. 5)
White	5 287	2 538	1961 (Sam. 6)
Negro	3 015	1 302	1961 (Sam. 6)

[9] "Businessmen - and there is no need for me to apologize for the sexist version of the word, since the executive suite is almost as undiversified as a monastery." (Samuelson 1983a, 166).

[10] "With each productive input largely earning its own keep, both men and an enhanced supply of women can hope to perform good paying jobs. Neither the 'poor whites' nor other groups in the community have to fear particularly that out of *their* economic hides will have to come any advance in well-being achieved by black Americans, native Americans, Americans of Mexican descent or other minority groups" (Samuelson 1983a, 234).

Table 2.2: Earnings Differential – earnings of group (as percentage of earnings of white males)

	Male	Female	Year
White	100	49	1970 (Sam. 14)
Black[11]	64	40	1970 (Sam. 14)
White	100	67	1990 (Sam. 15 & 16)
Black	73	56	1990 (Sam. 15 & 16)

In the First Edition, Samuelson (Sam. 1 1948, 83) observes: "Women grade-school teachers often receive lower pay than men on the grounds that their *needs are less and their classroom authority not so great.*" With the expectation that women married relatively young and worked in the home, society considered it more important for men to complete their schooling to improve their career options and prospects. This is reflected in the First Edition:

> "Scarcely higher in the economic scale are the miscellaneous dead-end jobs such as messenger, elevator operator, hat-check girl, bus boy, and dime-store clerk...For a girl who hopes to be married in a few years, the economic waste in taking such a job before finishing high school may not be nearly so important as the social waste involved. But it is nothing less than an economic crime for a boy to terminate the schooling that can get him a higher skilled and better rewarded job for the few dollars and feeling of independence that come from such a futureless position" (Sam. 1 1948, 87).

Samuelson's statements in the editions of *Economics* reflect the place of women in society in the 1940s and 1950s. Some examples of these early comments are:

- "Wives and beer do not improve with keeping, although wine may" (Sam. 1 1948, 54).
- "Mind you this, does not mean that its owner [imperfect competitor] is of poor character, that he beats his wife, or fails to pay his bills" (Sam. 6 1964, 474).

The introduction of new technology in the workplace prompted Samuelson (Sam. 4 1958, 718) to observe in the Fourth Edition: "Giant electronic calculators, which are a millionfold faster than hand machines, have simplified data processing and record keeping. A pretty machine does the work of a hundred even prettier girls." None of these statements appear in the later editions, indicating changes in the appropriateness of such comments, and the degree of concern about attitudes towards, and increases in, the reported cases of domestic violence.

[11] It is interesting to note that after the Seventh Edition (1967) Samuelson does not use the term 'Negro,' instead he uses the word 'black' – this was standard practice however – he reflected accepted usage.

America was not, however, the vanguard for advancing the position of women in society and the economy when compared internationally. Samuelson (Sam. 9 1973, 797) addresses this issue when writing: "America, which thinks of itself as advanced, is actually a laggard in the emancipation of women. India, Ceylon, and Israel have women heads of government. In Russia, most physicians by far are women." Countries such as India, Pakistan, Britain, and New Zealand, for example, had (or have) women heads of state.

> "Half of the population is female. How is it that a woman who has the same amount of schooling as a man, who also has two eyes and hands, the same tested IQ and aptitude scores, the same parental background, nonetheless ends up getting paid for full-time work an average of only 70 per cent of what a man of similar abilities gets?" (Sam. 10 1976, 781).

With American women by the 1970's able to achieve more prominent positions in the economy and labour market, careers were now something to be pursued. Having a family was also becoming less of a barrier to working as day-care centres were instituted. *Economics* reflects this change in the Eleventh Edition: women will "take their time about marrying. And careers will compete with motherhood (and with marriage itself). Today mothers with infants are beginning to stay in the labor market. Demands for day-care centers will undoubtedly accelerate" (Sam. 11 1980, 32). The development of new birth control technology facilitated the safer and more reliable control by women of their fertility. This allowed women to pursue career and family when desired:

> "Slowly but surely there has been increased use of the pill, the IUD loop, and other chemical and mechanical devices. There have been changes in mental attitudes, particularly where women are able to control fertility, so that even methods based on rhythm are applied more effectively. Sterilization - male vasectomy, tube tying, etc. - often follows on attainment of desired family size. The older practices of infanticide and infant exposure, relied on in the past by so many cultures, have given way to legal and illegal abortions. Ethical debate still continues over celibacy and chastity, the right to life of the embryo and foetus, women's liberation and the cult of masculinity ('machismo')" (Sam. 11 1980, 29).

The breakthroughs in fertility technology, specifically birth control, were considered useful in controlling population levels in countries that did not have the resources to support a large growing population. The countries that needed to be able to access birth control to control population growth were probably, however, not able to afford it. This incongruity is presented to readers in the Eighth Edition: "...the new chemical means popular in the advanced Western nations - the so-called 'pill' - are often inordinately expensive in poorer lands. A couple of dollars a month may seem like little in New York City; but in Java or El Salvador you could raise a family on that much" (Sam. 8 1970, 30).

Cherry and Feiner (1992) examined the amount of space in introductory economics textbooks given to issues of discrimination. Their (1992) study examined the following textbooks: Heilbroner et al; Lipsey, Steiner, Purvis and Courant; McConnell; Mansfield; Miller; Spencer; Amacher; Baumol and Blinder; Bronfenbrenner, Sichel and Gardner; Dolan; Fischer and Dornbusch; Gwartney and Stroup; Ruffin and Gregory; Samuelson and Nordhaus; and Waud. Cherry and Feiner (1992) found that the introductory economics textbook with the lowest number of pages on discrimination was Waud's, with two pages in the publication year 1977-1980, two in the year 1981-1984, and eight in the year 1988-1990. Samuelson's *Economics* had the most number of pages on discrimination in the publication year 1972-1974, 1977-1980, 1981-1984, and was second behind Lipsey and Steiner in 1988-1990. Cherry and Feiner (1992) found that Samuelson's *Economics* used more pages to discuss issues of discrimination than the mean of all the textbooks examined issues of racism, slavery and gender discrimination in particular. Table 2.3 shows the number of pages devoted to the issue of discrimination in Samuelson's *Economics,* and the mean number of pages of all the other textbooks in the study.

Table 2.3: Cherry and Feiner's Study of Discrimination in Introductory Economics Textbooks - *Economics* Compared with all Textbooks in the Study

Year	Number of Pages: Samuelson's *Economics*	Mean Number of Pages: All Textbooks
1972-74	33	14.42
1977-80	32	18.91
1981-85	22	11.53
1988-90	24	13.93

Issues of racism and discrimination have not disappeared from America (or any society.)[12] Nor have they disappeared from *Economics*. However, the presentation of these issues has changed, as the issues themselves have evolved over time. Throughout the sixteen editions it is also possible to see the development in the role and status of women in society and the economy. Samuelson considers issues that affect the population of a country to be worth

[12] "The record shows that within the United States much has been accomplished since the Kennedy-Johnson first attacks on poverty and discrimination...Economic historians [however] will look back with amazement from the next century at the slowness of the liberation and antidiscrimination process. As an economist, I must emphasize this: such slow improvements as have taken place did not just happen out of the spontaneous workings of the laissez-faire marketplace alone. New laws and customs played an important role" (Samuelson 1983a, 15-16).

discussing in an introductory economics textbook, along with their implications from a social and economic perspective.

2.4.4 Population

> **"It is the kernels of truth in the tales of successful integration of immigrant groups into the mainstream of American life which point up ironically the problems of American Negroes and Indians. The Sioux did not arrive here yesterday. And it is more than 100 years since slavery was abolished. Obviously the ancient timetable of gradual immigrant assimilation is not the relevant pattern for the student of the economics of race" (Sam. 8 1970, 781)**

Population issues have had an important place in American society over the past fifty years, and continue to do so today. In *Economics* problems such as population explosions, for example in India are discussed: "In the 20 years from 1931 to 1951, India's population grew by about 93 million, an amount equal to the combined populations of France and England!" (Sam. 4 1958, 28). Immigration, emigration, and drug use in the population have also been critical issues in society and are evident in *Economics*.

Immigration into America since WWII has been common. In recent years immigration has become a matter of concern, particularly illegal immigration. There has also been a change in the type and background of people wanting to immigrate to America:

> "Immigrants made up 39 percent of population growth in the 1980s and were a rising share of the labor force...In addition, there are special quotas for political refugees. In recent years, the biggest groups of legal immigrants have come from places like Mexico, China, the former Soviet Union, Korea, the Philippines, Vietnam, and some of the Central American and Caribbean countries" (Sam. 15 1995, 233-34).

Germans and Canadians came to America in the 1950s, and in the 1980s Mexicans and Filipinos.[13] Today people from Mexico and the Philippines still make up a large number of the American immigrant population, but they are now joined by Vietnamese, and people from Central American and Caribbean countries (Sam. 16 1998, 230).

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[13] "A few Jews from Holland and Germany came to this land early and prospered as merchants and investment bankers; a subsequent mass migration from Russia led, at first, to sweatshop conditions within a stone's throw of the Ellis Island point of entry; but gradually, through the workings of the marvelous American melting pot, their grandchildren have come to occupy comfortable homes in Westchester or Los Angles County. In the same way, the descendants of the Italian immigrants who crowded into Boston's North End 60 years ago are now found throughout the greater Boston or San Francisco area" (Sam. 10 1976, 782).

Samuelson (Sam. 16 1998, 235) comments in the Sixteenth Edition on where immigrants tend to go in the United States and what they tend to do, relating this to wage differentials and segmented labour markets:

> "The job choice of new immigrants is a classic case of noncompeting groups. Rather than go into the open job market, new immigrants from a particular country tend to cluster in certain occupations. For example, in many cities, such as Los Angeles and New York, a large number of grocery stores tend to be owned by Koreans. The reason is that the Koreans can get advice and support from friends and relatives who also own grocery stores."

The days of people leaving the 'old country' for newer and greener pastures, Samuelson (Sam. 3 1955, 712) laments, were gone:

> "Gone are the opportunities of a Columbus; and gone is the open door beckoning the poor of the older regions, begging them to migrate to the fertile prairies of North and South America or to the empty regions of Australia and New Zealand."

A serious concern, however, for many countries is the problem of their best and brightest leaving for a better education and more money abroad. The fear is they do not return to their native country to add value in the economy and society:

> "Educated people become more productive workers when they can use capital more effectively, adopt new technologies, and learn from their mistakes. For advanced learning in science, engineering, medicine, and management, countries will benefit by sending their best minds abroad to bring back the newest advances. But beware of the *brain drain*, in which the most able people get drawn off to high-wage countries in Europe and North America" (Sam. 13 1985, 885).

Throughout the editions of *Economics* reference is made to drugs. In the Fourth Edition drugs are used in an example of consumer sovereignty: "We don't treat the consumer as a sovereign who can decide how much opium he'll spend his money votes on. Where opium is concerned we adopt a paternalistic attitude, treating the consumer a little the way we treat lunatics, minors, and other 'incompetents'" (Sam. 4 1958, 396).

This is revised in the Seventh Edition with the question: "Why do we let people generally decide what shoes they will buy with their own money, but not what heroin or LSD?" (Sam. 7 1967, 159). In the Tenth Edition a link is made between the trafficking of people in the nineteenth century, and drug trafficking today:

> "Illegal importation of slaves continued well into the last century, as pursuit of profit led to the same flouting of law that one sees in connection with traffic in narcotics" (Sam. 10 1976, 783).

There is an increasing concern of the burgeoning use of drugs, and the negative effects they have on the individual and society. In the Sixteenth Edition a new section entitled

"The Economics of Addiction" appears in the chapter "Demand and Consumer Behavior." In this edition of *Economics* the price of alcohol during the Prohibition is compared with cocaine in the 1990s: "During Prohibition (1920-1933), alcohol prices were approximately 3 times higher than before. Estimates are that cocaine currently sells for at least 20 times its free-market price" (Sam. 16 1998, 89). The Sixteenth Edition of *Economics* also outlines the addictive substance as an example of a demerit good:

> "One of the most controversial cases of demerit goods concerns addiction. An addictive substance is one for which the desire to consume depends significantly on past consumption. The hooked smoker, the addicted crack user, may regret bitterly the acquired habit; but, such is the nature of addiction, one cannot resist the habit after it has become established. A regular user of cigarettes or heroin is much more likely to desire these substances than is a nonuser" (Sam. 16 1998, 89).

Issues relating to population have been raised through the sixteen editions of *Economics*. The debates over the increasing numbers of immigrants into America, the emigration of skilled labour, and the increasing use of drugs in the population are reflected in Samuelson's *Economics*.

Section 2.5 demonstrates how the nature and condition of the American economy and society is reflected in the editions of *Economics*, as are the administrations that governed America.

2.5 American Politics Since 1945

> **"Fiscal policy marches to different drummers; indeed, the tune tends to change with every new President. During the Kennedy-Johnson administration (1961-1968), fiscal policy was used first to take up economic slack and then to finance a war in Vietnam. In the Nixon-Ford years (1969-1976), the winding down of the Vietnam war allowed many new domestic programs to get started. Moreover, frequent recessions drove up cyclical deficits. The Carter presidency (1977-1980) was one of fiscal austerity, with rising taxes and few new spending programs. We have seen how the Reagan years produced a combination of military buildup, higher interest payments, lower taxes, and continued growth in transfer spending" (Sam. 13 1989, 393).**

The United States of America is central to the sixteen editions of *Economics*. The textbook provides an insight into the American domestic economy, its international links, and the various administrations that governed the nation over the past fifty years.

Not everyone lives a prosperous and financially secure life in America, living in a nice house, and earning a good income. In 1948, a rather gloomy picture of poor America is painted in the First Edition of *Economics*:

> "Even today, nothing in New York's Hell's Kitchen or east side, nothing in Boston's south or north end, nothing 'behind the Yards' in Chicago or in its black belt can overshadow the poverty and squalor of our rural problem areas: the Tobacco Road of the deep South, the hillbilly regions of the Appalachian Plateau, the two dust bowls, the ghost mining towns of Pennsylvania, and the cutover region of the upper Michigan peninsula" (Sam. 1 1948, 68).

This picture changes only slightly nearly forty years later:

> "Even today, New York's Hell's Kitchen or Harlem, Boston's South End, or Los Angeles's Watts district hardly overshadow the poverty and squalor of our rural slums: the Tobacco Road of the upper south, border towns of the southwest, the hill towns of Appalachia, or the Indian reservations of Arizona and New Mexico" (Sam. 12 1985, 563).

In the Thirteenth Edition readers are reminded of the aspirations of President Kennedy who in the 1960s wished to banish poverty:

> "In the 1960s, the United States would not accept limited aspirations. We would send a man to the moon, banish unemployment, and export democracy to every corner of the globe. Persuaded by those who held ours was a boundlessly affluent society, President Kennedy, before his 1963 assassination, mapped out a 'war on poverty'" (Sam. 13 1989, 805).

Even in the Sixteenth Edition, however, readers are made aware of the problems of inequality and poverty in America:

> "The growing inequality of income in America - and the large numbers of people who are locked into dead-end jobs and living in run-down neighborhoods - is a sober reminder of the harsh inequalities possible in a market economy" (Sam. 16 1998, 736).

Since the early 1950s the American economy has suffered increasing unemployment and slowing growth.[14] From being a creditor nation it became a debtor nation in the 1980s:

> "In the late 1980s, the United States was added to the list of debtor countries. Because the large federal budget deficit was financed by negative net foreign investment (that is, by borrowing from abroad), the United States turned from a creditor nation to a debtor nation" (Sam. 13 1989, 402).

[14] "The trouble, though, with being rich is that someone else may become richer. I do not refer to the odd sheikdom which, by virtue of a lucky oil strike and the forming of the export cartel, finds itself with a per capita income many times that of the U.S....I refer to the ugly rumors that Sweden, Switzerland and perhaps even West Germany are beginning to top the U.S. in real GNP per capita...And what lesson does one infer from the indication that Japan, Inc., will after X years overtake and pass the U.S., as it has already done to Britain?" (Samuelson 1983a, 43-44).

As the 1980s closed the concern that the United States was heading for a political and economic decline is reflected in *Economics*. The national savings rate was falling, there was a constant federal budget deficit, productivity growth was slowing, and the external deficit was growing. Struggles over health care provision in the 1990s, and dramatic price changes have also impacted on the American economy in recent years. In the Fifteen Edition of *Economics* Samuelson highlights this changing economic environment:

> "In just the last 15 years, the number of consumers and businesses that own a personal computer has skyrocketed. The price of oil has gyrated from $3 to $40 a barrel with the rise and fall of an oil cartel, with revolutions, embargoes, price wars, and shooting wars. Housing prices rose through most of the 1980s and then plunged in many areas of the country. And the job market was terrific for college graduates until 1990 and then became very tough during the recession after 1990" (Sam. 15 1995, 38).

Since WWII, America has provided relief and aid to many countries to support their economies and political structures. The American economy came out of WWII stronger than nations like Great Britain and the Soviet Union, and a dominant player in the international economy. In the First Edition of *Economics* America's role in providing relief and support to other nations is made apparent to readers:

> "We [America] have come out of the war with more resources than ever before. Other nations - such as Holland, France, England, Czechoslovakia - suffered extensive war damage. If the peace is to be durable and if democracy is to flourish, we ought to send these countries food and goods for relief and rehabilitation purposes" (Sam. 1 1948, 376).

The comprehensive economic strength of America internationally was not to last. By the middle of the 1950s, America was incurring a balance of payments deficit that only got worse during the 1970s. At the same time other countries like Japan and Germany, however, seemed to be racing ahead.[15] Things, it was hoped, would improve in the 1970s but America was also hit severely by the 'plagues' of the 1970s. These are presented vividly to readers in the Thirteenth Edition:

> "Bad harvests in the Soviet Union drove up food prices in American grocery stores. Technological advances in the Japanese automobile industry threw people out of work in Detroit. The overthrow of the Shah of Iran drove oil prices from $14 to $32 per barrel, produced a great inflation, and thereby contributed to the deepest recession since the 1930s. A mounting trade deficit at home plus rising interest rates abroad triggered a stock market panic that wiped out over $500 billion in American wealth in one day" (Sam. 13 1989, 937).

[15] "Here is a democracy [Japan] where the trains run on time; a society where *the people* run on time - run, not walk. Japanese and German citizens, led to disastrous military defeats by leaders seeking glory, came out of the war sick of the state and politics. An able young Japanese no longer dreams of going into the foreign service or army. Like the Yale graduates of 1925 he wants to cultivate his garden, that is, make his pile. His wife wanted the three C's - car, color TV, air conditioning. And she is getting them" (Samuelson 1983a, 279-80).

Throughout the sixteen editions of *Economics* the various Presidents and their administrations have been discussed, along with their impact on the American economy and society. At the time of the First Edition of *Economics* Harry Truman (Democrat) was President of the United States. By the Sixteenth Edition Bill Clinton (Democrat) was President. In between the First and Sixteenth Editions, the United States has had seven Republican and three Democratic administrations, each with its own view and attitude toward the domestic and international economy.[16] Each administration is reflected in *Economics* as having varying degrees of success:

> "In the Eisenhower years, 1953-1961, the American economy suffered from a worsening trend in unemployment and an insufficiency of total money demand...the economy, spurred on by the massive tax cut of 1964, finally moved back toward the full-employment growth path in the middle 1960s...the attempt by the Nixon administration to combat the inherited Vietnam inflation resulted in the 1969-1971 era of contrived stagnation, and the 1973-1975 recession" (Sam. 10 1976, 234).

President John Kennedy was elected in 1961, introducing 'New Economics' into American economic policy. Kennedy utilised fiscal policy to create growth and higher levels of employment. Samuelson played a key role in providing economic advice to John Kennedy.[17] Samuelson writes in the Eighth Edition of *Economics*:

> "Elected in 1961 on the pledge to 'get the country moving again,' he [Kennedy] realized that this would require fiscal actions and not just words. In the first years of the 1960s, the United States government for the first time in its history *explicitly tried to add to a recession deficit in the interests of higher employment and better growth*" (Sam. 8 1970, 338).

Kennedy's term as President was cut short in Dallas in 1963. President Johnson continued through with Kennedy's fiscal plans. Johnson also sent American troops to Vietnam at great cost to the American economy and society:

> "In 1965 came Johnson's fateful decision to accelerate the Vietnam war. His memoirs tell us that he purposely disregarded the advice of his economists to raise taxes to pay for the war. The combination of war expenditures and maintained

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[16] "The brute truth is that Democratic Administrations have been good for profits and business these last 50 years...And it has been during Republican Administrations that most of our recessions have tended to come...*Since Hoover's time, which President has been most unlucky in terms of bad performance of the U.S. economy during his Administration?* The answer is not Richard Nixon. The jury might argue between Gerald Ford and Dwight Eisenhower. Although the Ford recession was the worst of the postwar period, my own verdict would have to go against Eisenhower. During his two terms we managed to have *three* recessions. Worse than that, from the standpoint of stock-market values, business profits and full-employment opportunities, the sad fact is that the Eisenhower years were years of chronic growth stagnation. And only the first of his recessions can be explained by the Korean war" (Samuelson 1983a, 85-86).

[17] "Giving economic advice to Kennedys is the story of my life. It's a hard habit to break. I began with Sen. John F. Kennedy. I continued with candidate and Democratic nominee Jack Kennedy, and ran a task force on the state of the economy for the President-elect. As with Moses, it was not given to me to enter into the promised land of the White House. Other duty called. But I was able to serve as out-of-town designated hitter, backing up the magnificent on-the-site all-star Council of Economic Advisers" (Samuelson 1983a, 35).

> Great Society programs led to three years of demand-pull inflation" (Sam. 10 1976, 364).

Richard Nixon succeeded Johnson, he withdrew American troops from Vietnam, his term was one, however, marked by controversy.[18]

The Reagan administration is discussed at some length in *Economics*. His administration represented a break with the past:[19]

> "From the election of Franklin Roosevelt in 1932 to the defeat of Jimmy Carter in 1980, the United States experienced a steady growth in the scale and scope of government...At the end of the 1970s, conservatives remonstrated that the United States was becoming a planned economy. President Reagan came into office in 1981 with a different vision of how the economy should be managed. This view held that individual initiative and unfettered markets would produce the best possible economic outcome...In February 1981 the Reagan administration introduced its 'New Economic Policy.' Although some shifts occurred, the fundamental tenets were generally followed closely through the next 8 years" (Sam. 13 1989, 791).

There was a change in the role of government and in the nature of economic policies implemented during President Reagan's term in office.[20] Reagan's economic programme aimed at reducing taxes, increasing military expenditure, and balancing the federal budget. He achieved the first two targets and failed badly at the third, as Samuelson (Sam. 13 1989, 383) reflects in the Thirteenth Edition: "the government debt grew from $620 billion when President Reagan was inaugurated to $2000 billion when he left office."

Some of the supply-side[21] policies were carried on to a degree during the Bush administration that followed Reagan's, until 1992 when Clinton won the presidency. Readers are reminded in the Fifteenth Edition that:

> "This philosophy [supply-side] led the Bush administration to maintain a hands-off attitude toward the economy during the 9-month recession of 1990-1991. That cost

[18] "The reason why the never-ending disclosures out of Washington [during the Nixon administration] have been so disquieting is that we begin to see, on the TV tube darkly, the face of Fascism" (Samuelson 1983a, 32).

[19] "His [Reagan's] notion of being able 'to vote by your feet' means, and its logic intends it to mean, that any group of affluent people be allowed to form their own community within the U.S. and limit the support they give to others less affluent. But, of course, one person's privacy is another person's exclusion. Reagan's logic must involve vast ghettos of those who are not affluent and who have been left by the others. Like a partitioned Lebanon or Ulster, one can envision enclaves in the Middle Atlantic states, the Midwest, parts of California, in which blacks, Puerto Ricans, Spanish-Americans, Indians, immigrants and ordinary poor people work out their problems on their own grass-roots basis" (Samuelson 1983a, 26)

[20] "He [Reagan] should have shut up about his hope of emasculating federal-determined welfare programs until *after* he got elected. His distrust of Russia is shared by plain people. But they do not wish to lose sleep over what an impetuous President might do in this regard" (Samuelson 1983a, 28).

[21] "Still, if anyone believes in the moonshine of 'supply-side economics' – that reducing tax rates across the board and freeing international trade from exchange controls will unleash a miracle of market growth – a trip to London will cure such delusions" (Samuelson 1983a, 67).

> Bush dearly. With unemployment still running at 7.3 percent in November 1992, Bill Clinton was able to win [the] election on a platform of economic change, vowing to roll back many of the conservative measures of the 1980s" (Sam. 15 1995, 312).

Economics also presents the Clinton administration, one that has not always been easy, focussing on the area of health care in particular:

> "In the early 1990s, Americans engaged in a protracted struggle over the way that health-care should be organized and financed. Under the leadership of President Bill Clinton, liberals wanted to extend government controls over the vast and growing health-care system and extend coverage to all Americans; conservatives worried about the inefficiencies that result from the heavy hand of government and warned particularly about the dangers of price control" (Sam. 15 1995, 289).

Clinton has also had problems with Congress, especially after 1994 when the Republicans gained control of Congress. Samuelson (Sam. 16 1998, 189) describes this situation in the Sixteenth Edition:

> "When governments make decisions about taxes and expenditures, these often result from intricate bargaining between political parties, or between the President and Congress, or among many power brokers in Congress. The struggle between President Clinton and the Republicans after the big Republican congressional victory in 1994 involved an intricate series of bargains and threats over shutting down the government, and at one point the Republicans threatened to cause a default on the national debt."

Over the years 1948-1998 there have been different Democratic and Republican administrations governing America. Each of them had to deal with a domestic and international economy that faced a number of issues. Through the sixteen editions of *Economics* the leaders of the United States, the American domestic economy, and its role in the international economy and community are presented to provide readers with information, and an explanation of economic policies and their implications.

2.6 Conclusion

> **"The book and its 15 subsequent updates...employ economic and historical situations, charts and graphs to illustrate the theories of economics that leave some thirsting for more information, others struggling to stay awake after a long night of studying" (Boston Globe 03/01/98).**

A study of a selection of the issues and topics featured in *Economics* places the editions of the textbook in time. It allows an examination of how Samuelson has reconstructed history in his textbook. *Economics* (along with its author) has not remained static. The development of *Economics* over time is not surprising when it is considered that Samuelson (Sam. 16 1998, xxix) believes economics to be "above all a living and evolving organism."

Samuelson's sixteen editions of *Economics* reflect the changing national (American), and international events and issues over the fifty years from 1948 to 1998. The descriptions of the political changes, military conflicts, changes in social and economic conditions, and developments in technology are vivid. The inclusion of the rise and fall of communism, the Cold War, the creation and destruction of apartheid, oil shocks, advances in technology, discrimination and environmental concerns, provide readers with up-to-date information, and further explain economic theory and ideas through applied examples.

Samuelson wanted to advance economic literacy and understanding in society and bridge the gap between the highly technical aspects of advanced economics and what people needed to understand at an introductory level. Samuelson presents economics as a teachable social science. He did this by endeavouring to keep *Economics* topical and relevant to readers. Samuelson wanted readers to be able to relate to the textbook, and recognise that economics is not detached from the world.

Ralph Freeman, Samuelson's MIT departmental head, wanted Samuelson to write *Economics* for two reasons: to contribute to the education of students, and to advance economic literacy and understanding in society (Sam. 14 1992). *Economics* has had a substantial impact on the discipline of economics and on Samuelson himself. Silk (1974, 17) observes that: "Some economists feel that Samuelson's textbook is no mere by-product of his serious work but may represent his greatest single contribution, in giving the world a common economic language."

Chapter Three:

Analysing *Economics*: Physical Characteristics

"*Economics* is a multi-level book that in its appendices, footnotes, and allusions goes far beyond elementary economics" (Fischer 1987, 241).

3.1 Introduction

> **"American business ideology at the turn of the century embraced a crude notion that might makes right. The fittest survive, and *should* survive. For every survivor, there must be a dozen perishers" (Samuelson 1983a, 6).**

The discipline of bibliographical and textual scholarship is old; applying it to the successive editions of an introductory economics textbook is new. Utilising ideas from bibliographical scholarship, it is possible to critically evaluate the changes in the editions of a textbook through time. Like a geologist - or, as Samuelson says, a palaeontologist - the textbook can be examined as a physical object and the content within scrutinised. A textual critic is aware of the unique way in which an author presents his or her work; recognising that the language and the examples used are not neutral or arbitrary.

Research into economics textbooks is relatively new. Cottrell (1995, 217) argues: "this field is obviously important, if one stops to think about it, yet it is often regarded as beneath the notice of economists wearing their researchers' hats."[1] Yet introductory economics textbooks are very important for the discipline. As Kuhn (1970, 137) contends, textbooks are the "pedagogic vehicles for the perpetuation of normal science, [they] have to be rewritten in whole or in part whenever the language, problem structure, or standards of normal science, change."

Croome (1949, 88) classifies the different categories of introductory economics textbooks:

> "There is the brief, chatty, come-on-in-the-water's-fine preliminary, designed for the general reader or as an appetizer for beginners; there is the equally brief but austerely stripped and essential statement of first principles, designed to precede and be seriously supplemented by both oral teaching and a mass of peripheral and factual reading; there is the teacher's-companion textbook, a handy framework for class or lecture room; and there is the comprehensive encyclopaedia embracing between its covers the substance of an entire lecture course and all its ancillary reading, with theory, institutional fact, statistical matter and the discussion of socio-political implications all complete."

Samuelson's *Economics* spans all four categories but is best placed in the last.

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[1] At an anecdotal level it was clear to me that some of the colleagues in my department considered my area of research had little importance and academic merit.

This chapter begins by reviewing some ideas from bibliographical and textual scholarship,[2] and the extent to which the economics discipline has made use of these tools. The chapter then explores the physical characteristics of *Economics* through the sixteen editions. The "Preface," chapters, appendices, and index are examined showing the changes in theme, direction, and development.

3.2 Bibliographical and Textual Scholarship

> **"The humanistic features of Samuelson's portrait are further accentuated by the plays with words. Even though he has warned in all editions except the last one against the 'tyranny of words,' Samuelson himself demonstrates a love for words and poetic phrases" (Klamer 1990, 137).**

Textual analysis is based on the study of a text as a physical object. Bibliographical and textual scholarship has a number of subdivisions:

- Analytical bibliography
- Historical bibliography
- Reference bibliography
- Descriptive bibliography
- Textual criticism.

Analytical bibliography examines a text as a physical object, studying perhaps the book binding, the type of machine used to create the book, as well as the substance of the text itself. It developed as a discipline through the work done by scholars in English Renaissance drama. Williams and Abbott (1985, 11) contend that: "Like detective work (indeed, it has forensic applications), it combines drudgery with excitement and can turn up bits of information that, though seemingly minor, may have considerable significance."

Historical bibliography analyses the history of the text, for example the sale and distribution, the book market and trade, and paper type used. This analysis may study the methods of setting and printing of books used in the past, perhaps dealing with the broader issues of the impact of printing on Western culture and society. Historical bibliography also encompasses

[2] The subject of bibliographical and textual scholarship can be said to date back to the great library at Alexandria that was founded around 323 BC. The library allowed textual scholarship to take place (Williams and Abbott 1985).

research into the effect of electronic data processing on language and literature (Williams and Abbott 1985).

Most of us consider a bibliography to be a list of works created in certain way for a particular literary purpose. The specialist area of compiling such lists is that of reference bibliography. Reference bibliographers aggregate works, focusing less on the book than on the works cited within the book. Some examples of reference bibliography are standard tools of scholarship such as, *New Cambridge Bibliography of English Literature* and *The Chicago Manual of Style.*

Descriptive bibliography asks a number of questions, for example: What is the book? What does the book say about itself? How was the book put together? What does the book contain? This subdivision is similar to analytical bibliography. Where analytical bibliography tries to break down into parts the process that created the text, descriptive bibliography tries to describe the outcome of the process. Williams and Abbott (1985, 8) extend the discussion of descriptive bibliography by stating:

> "The purpose of descriptive bibliography is twofold. First, it tries to record all the forms in which a particular book may be found so that a subsequent scholar or critic will know what is wrong or right about the copy at hand. In other words, it serves as a means of identification. Second, it provides a norm against which other copies, unknown or unexamined at the time the bibliography was prepared, may be checked."

Textual criticism examines the transmission of texts, focusing on the text itself, rather than its physical embodiment. It is the oldest division of bibliographical scholarship, and also uses information gained from both analytical and descriptive bibliography. Textual criticism can involve the study of a text's full transmission through manuscript and print. As Williams and Abbott (1985, 53) point out:

> "Taking as its subject the transmission of texts, textual criticism lies midway between literary criticism, which focuses on works, and bibliography, which focuses on books as books. It seeks to identify the texts of a work and their various states, determine the relations between the texts, discover the sources of textual variation, and establish a text on a scholarly basis."

There is not a single methodology to study a text. McGann (1991, 179) asserts that: "unlike a theory of mathematics, or a theory of cellular development, a theory of texts is difficult to formulate because one fundamental distinction cannot be firmly drawn: that between the subject being studied and the tools by which the study is to be executed." The other difficulty is defining what text is – a novel, poem, work, letters, words, or punctuation?

When analysing a text it is also important to operate in two time periods. Interpreting text – the language in a text, the context of the language and examples, the use of pictures/graphs – is done not only in present time, but also with the perspective of the time when the text was written and published. When examining text it is possible to see images of a period of time; however, to those who produced the text, these are the actual events of history and time. Texts are the products of people's minds, their environment, their biases, and their opinions. The language and style of the text is not neutral, it reflects the author's political, social, economical, or philosophical beliefs, and perhaps those of the times in which they lived. This in itself makes them historical and unique. Greetham (1992, 295-96) highlights a key aspect of undertaking textual criticism: "For the single most important characteristic of textual *criticism*...is that it is *critical*, it does involve a speculative, personal, and individual confrontation of one mind by another."

When it comes to the application of textual methodology to economics as a discipline, there have been two broad types of analysis. First, the language used by economists and in academic writing has been examined. Broadly characterised as a type of 'discourse' analysis, it has involved examining many questions, among them whether economics is a science or an art. Academics such as Lawson,[3] Henderson,[4] McCloskey,[5] Colander,[6] and Samuels[7] for example, have analysed the nature of economics and its language.

The second relates to analysing the principles of economics and the economics textbook. Academics such as Amacher (1988), Awh (1986), Brandis (1985), Feiner (1987, 1992, 1993), Krynski (1989), and Leamer (1974) have looked at some issues in this area. These authors either examined an issue such as gender and how textbooks treat this, or looked at how an area of economics has changed through time. Brazelton (1977), and Pearce and Hoover (1995)

[3] *Economics and Reality.* London: Routledge, 1997.
[4] *Economics and Language.* London: Routledge, 1993.
[5] *If You're So Smart: The Narrative of Economic Expertise* Chicago: The University of Chicago Press, 1990. *Knowledge and Persuasion in Economics* Cambridge: Cambridge University Press, 1994. *The Rhetoric of Economics* Madison: The University of Wisconsin Press, 1985.
[6] "The Lost Art of Economics," *Journal of Economic Perspectives* 6 (1992) : 191-198. *Why Aren't Economists as Important as Garbagemen?* Armonk: M.E. Sharpe Inc., 1991.
[7] *Economics as Discourse.* Boston: Kluwer Academic Publishers, 1990.

both looked specifically at Samuelson's *Economics*. Brazelton briefly compared the First and Ninth Editions of the textbook, and Pearce and Hoover examined the Keynesian model in Samuelson's first twelve editions of *Economics*. Aslanbeigui and Naples' (1996) work[8] is an attempt at using textual methodology to examine introductory economics textbooks. Their chapters include: "The Rhetoric of Economics Texts Revisited," "Gender in Introductory Economics Textbooks," "Principles of Economics Textbooks: Coping with Scarce Resources and Unlimited Wants," and "Counting Pages: The Evolution of the Economics Principles Text."

This research essentially uses descriptive bibliography as its base. It examines a number of questions relating to *Economics*, such as: What does the textbook say about the world and time it was published? How is the textbook put together? How does the physical characteristics and content evolve over the sixteen editions? Examining a single introductory economics textbook and its editions through time is new - Samuelson's *Economics* and its successive editions is the subject of this research.

The chapter now moves to examine the physical characteristics (the number of pages, words, chapters) of *Economics* through its editions. It then explores how its themes have evolved through time by examining the "Preface," chapter headings, appendices, and the index of *Economics*.

3.3 The Physical Characteristics

In a 1996 study, Carvellas, Kessel and Ramazani surveyed the physical characteristics, and the format of eight popular mainstream introductory economics textbooks in the United States, including *Economics*. The textbooks involved in their study had gone through at least five editions, and together represented a sixty to seventy-five percent share of the introductory economics textbook market in the United States. They were McConnell and Brue; Byrns and Stone; Baumol and Blinder; Schiller; Dolan and Lindsey; Lipsey, Steiner, Purvis and Courant; Samuelson and Nordhaus; and Mansfield. The results of their study found that:

[8] *Rethinking Economic Principles*. Chicago: Irwin, 1996.

- All the textbooks had grown in size, and the number of words per page had grown, on average, fifty percent since the first edition.

- The textbooks were increasingly using pedagogical material, such as end-of-chapter questions, boxed examples and the like, which contributed to the growth of the textbooks.

- Between the 1960s and early 1980s the percentage of textbook space with graphs ranged from six to 7.7 percent. After this period it increased to around nine percent.

One of the most interesting findings of their study was not the fact that these textbooks had considerable differences from each other, quite the reverse. Carvellas, Kessel and Ramazani (1996, 235) observed that: "When we look at principles textbooks, we do see more uniformity than diversity. Differences in terms of size, organizational structure, and reading levels have all narrowed over time."

Another study was that undertaken by McEachern (1996). His (1996) study examined fourteen principles of economics textbooks, which account for the majority of the textbook sales in America. They were: Baumol and Blinder; Boyes and Melvin; Byrns and Stone; Case and Fair; Colander; Dolan and Lindsay; Ekelund and Tollison; Hyman; McConnell and Brue; McEachern; Miller; Parkin; Schiller; and Stiglitz. (The study excluded *Economics*). McEachern (1996) found:

- The average textbook with six or more editions had 37.4 chapters, 867 pages, and 23.2 pages per chapter.

- The 'new-comers' had, on average, an additional ten percent in their textbook compared with textbooks that had six editions or more.

McEachern (1996, 217) believes an explanation for the additional material in the 'new-comers' is that: "New market entrants, on average, try to differentiate themselves by covering not only all the basic material but by offering the latest bells and whistles." A summary of McEachern's study is shown in Table 3.1.

Table 3.1: The Physical Dimensions of Introductory Textbooks - McEachern (1996)

Textbooks	Average Number of Pages	Average Number of Chapters	Average Number of Pages Per Chapter
All Fourteen Textbooks	966	38.0	24.3
Five Textbooks (With Six Editions or More)	867	37.4	23.2
Nine Textbooks (The 'New- Comers')	954	38.3	24.9

Using McEachern's (1996) methodology *Economics* can be compared with the results of his study. *Economics* has expanded and contracted in size over the course of its sixteen editions. The average *Economics* edition has thirty-eight chapters, 833 pages, twenty-two pages per chapter, and 615 words per page. When compared with the results from McEachern's (1996) study (textbooks with six editions or more), *Economics* has about the same number of chapters, thirty-four pages less than those reviewed, and a page less per chapter. This reinforces Carvellas, Kessel and Ramazani's (1996) point that there is a greater uniformity than diversity in the introductory economics textbook market.

Table 3.2 shows the physical characteristics of *Economics* over the sixteen editions. Specifically, the number of chapters, pages, words per page, standardised pages,[9] and the number of appendices in the successive editions of *Economics*. To obtain the data the words from fifty pages from each edition were counted, then averaged to get the total average number of words per page. Every tenth page was counted except the first and last pages of a chapter, end-of-chapter question pages, the index, and glossary, to reach fifty pages. Standardised pages were calculated using the formula: standardised pages = (total words per page x total pages)/((16th edition total words x total pages) x total pages of the edition).

[9] Standardised pages were calculated using the formula: standardised pages = (total words per page x total pages)/((16th edition total words x total pages) x total pages of the edition).

Table 3.2: The Physical Characteristics of *Economics*

Edition	Number of Chapters	Number of Pages (including index)	Number of Words per Page	Standardised Pages	Number of Appendices
1	27	622	446	323.5	7
2	35	762	448	489.7	12
3	37	753	514	546.4	11
4	38	810	524	644.5	14
5	37	853	536	731.1	14
6	38	838	540	710.9	15
7	40	821	571	721.5	15
8	42	868	630	889.8	15
9	43	917	567	893.8	16
10	43	917	602	949.0	16
11	43	861	782	1 086.9	12
12	40	950	772	1 306.1	14
13	40	1013	760	1 462.0	12
14	39	784	742	855.0	5
15	37	789	722	842.6	6
16	36	781	683	781.0	3

Chapters are the modular components that aid in the teaching and learning process. They need to be of 'digestible' size, including the subsections inside. Chapter titles provide a crude insight into topic selection and presentation in a textbook. The number of chapters in *Economics* has increased from twenty-seven in the First Edition (1948), to a peak of forty-three in the Ninth through Eleventh Editions (1973-1980), before settling at thirty-six in the latest, Sixteenth Edition (1998). The number of chapters from the First to Eleventh Edition increases by 59.3 percent. There is, however, a fall of 16.3 percent from the Eleventh to Sixteenth Edition. Overall, there is a 33.3 percent increase in the number of chapters from the First to Sixteenth Edition. Over the first eleven editions chapters and appendices were added to *Economics* with very little being removed, turning it into a 'handbook' of economics. However, due to changing student and instructor demands over time, and the competition in the textbook market the textbook decreases in size from the Thirteenth Edition (1989). New material is substituted rather than simply added. The Fourteenth Edition (1992) markedly cuts back on material; Samuelson omits topics that are considered less central to modern economics. Appendices in particular are removed.

Of more significance is the number of pages and words per page in a textbook. This gives a far clearer indication of the actual amount of material in a textbook. *Economics* culminated in the Thirteenth Edition (1989) with 1013 pages, 62.8 percent more pages than the First Edition (1948). The Sixteenth Edition (1998) is a slimmer book with 781 pages, only 159 more than the First Edition in 1948. The number of pages from the Thirteenth to Sixteenth Edition fell by 22.6 percent. Overall, there is a 25.6 percent increase in the number of pages from the First to Sixteenth Edition. Figure 3.1 compares the number of pages in *Economics* with the number of standardised pages over the sixteen editions.

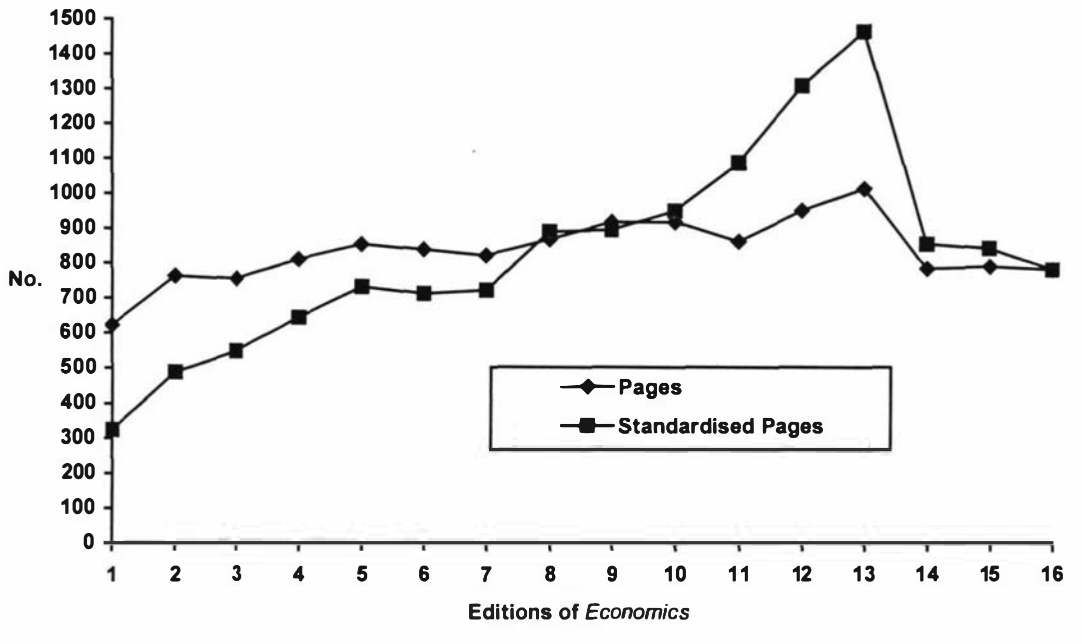

Figure 3.1: Comparing the Number of Pages and Standardised Pages of *Economics*

When examining the number of standardised pages of *Economics* over the editions it is clear that the 'largest' textbook was the Thirteenth Edition (1989) with 1462 standardised pages. There is a 352 percent increase in the number of standardised pages from the First to Thirteenth Edition (1948-1989). However, the Fourteenth Edition (1992) has 607 less pages than the Thirteenth. Just under a half of the Thirteenth's standardised pages were shed. The Fifteenth and Sixteenth Editions (1995, 1998) were slimmer again. From the Thirteenth to

Sixteenth Edition the number of standardised pages fell by 46.6 percent. The philosophy of retaining only the material that was "central to modern economics" (Sam. 14 1992, xvi), became the new approach of textbook compilation. Samuelson (Sam. 16 1998, xxiv) contends that: "We have therefore chosen to focus on the central core of economics - on those enduring truths which will be just as important in the twenty-first century as they were in the twentieth."

An extra 237 words per page appear in the Sixteenth Edition (1998) when compared with the First (1948). Overall, there is a 53.1 percent increase in the number of words per page from the First to Sixteenth Edition. The Eleventh Edition (1980) has the largest number of words per page, 782. There is a 75.3 percent increase in the number of words per page from the First to Eleventh Edition. However, there is a decrease in the number of words per page from the Eleventh to Sixteenth Edition of 12.7 percent.

Changes in the paper size, the layout, and font used in the textbook help explain the change in the number of pages and words per page over the editions. In an attempt to satisfy the pressures from readers and academic departments for a 'smaller' textbook, publishers have made changes to page length, font size, line length, and the number of lines per page. The First Edition (1948) is twenty-four centimetres long, sixteen centimetres wide and 5.5 centimetres deep. The Sixteenth (1998) is 26.5 centimetres long, twenty-one centimetres wide and 3.5 centimetres deep. The Sixteenth Edition is 2.5 centimetres longer, five centimetres wider, and has two centimetres less depth than the First Edition. The Sixteenth Edition has more words per page, and lines per page than the First, but it actually looks 'slimmer' than the First Edition.

The introductory economics textbook market has both implicit and explicit forces that work to create a relatively uniform group of mainstream economics textbooks. Carvellas, Kessel, and Ramazani (1996, 235) maintain that: "Market forces have not been kind to the authors of principles text who have moved too far from convention...The theory of imperfect competition suggests that firms will produce products that do not stray too far from their competitors." New entrants into the textbook market face financial hurdles, issues of consumer loyalty, and the expense to economics departments of changing a textbook. These barriers impact on the type of textbook produced for the marketplace. Innovation in introductory economics textbooks is also constrained by the structure of the university semester system (two sets of fifteen weeks in the United States), the costs of entering the market, the sluggishness of consumers and institutions to switch to a new textbook, and the seeming "shortage of new paradigms acceptable to conventional economists" (Carvellas, Kessel and Ramazani 1996, 238).

The chapter now moves to examine the structure of the textbook, beginning with a study of the "Preface" of *Economics*.

3.3.1 The "Preface"

The preface provides an author with an opportunity to share his or her thoughts on the style and nature of the book. The "Preface" is a foundation stone of *Economics*. It provides an indicator of the themes and structure of the textbook ahead. All editions of *Economics* have a preface to introduce the reader to the textbook. The "Preface" is a place where Samuelson describes the scope, and nature of his textbook. He gives an indication as to the emphasis of the textbook, and outlines the changes he has made from one edition to the next. Each edition of the textbook has a theme(s) running through it, which is outlined in the "Preface." An examination of the evolution of the "Preface" provides a good signal of how *Economics* has changed over the years.

In the "Preface" to the First Edition (1948) readers are made aware of the central issues facing the American economy and society - unemployment and depression. The theme of the First Edition is that of national income and output, and depression. Written after the Great Depression and WWII, and influenced by Samuelson's assertion that the end of WWII would bring with it both unemployment and depression, the tone of the textbook is therefore not surprising. This is evident in the second paragraph of *Economics*: "When, and if, the next great depression comes along, any one of us may be completely unemployed - without income or prospects...There is no vaccination or advance immunity from this modern-day plague. It is no respecter of class or rank" (Sam. 1 1948, 3).

However, mass unemployment and depression did not occur in America at the end of WWII. In the Second Edition (1951) the emphasis then shifts to the problems of inflation and the national security economy. There is also an increase in the amount of space given to labour and agriculture. By the Third Edition (1955) growth, security, and the grand neo-classical synthesis are now the prevailing themes. These continue through to the Seventh Edition (1967). Samuelson (Sam. 3 1955, vi) presents introductory economics students with his grand neo-classical synthesis in the "Preface" to the Third Edition:

> "Repeatedly throughout the book I have set forth what I call a 'grand neoclassical synthesis.' This is a synthesis of (1) the valid core of modern income determination with (2) the classical economic principles. Its basic tenet is this: Solving the vital problems of monetary and fiscal policy by the tools of income analysis will *validate* and bring back into relevance the classical verities."

The Fourth Edition (1958) gives increasing emphasis to the issues of monetary policy and the problems of inflation. The "Preface" indicates that a new chapter is added presenting the economics of nuclear energy and automation. These themes continue into the Fifth Edition (1961) with new chapters included on economic growth in advanced economies, the changing international position of the United States, and the issue of 'cost-push' inflation. Growth and inflation are two key issues presented in the "Preface" of the Sixth Edition (1964). This edition includes a new chapter on the theory of growth.

In the Seventh Edition (1967) 'new economics' is introduced and the grand neo-classical synthesis terminology is downplayed. Samuelson (Sam. 7 1967, vi) observes in the "Preface" of this edition:

> "The 'new economics' that people are currently talking about – and which connoisseurs know is not all that new or different – represents in a sense a vindication of the macroeconomics approach my generation has been trying to develop and teach. 'Nature imitates art.' The world is catching up at long last with the scholar's workshop. All the greater is the challenge to new innovation."

The Eighth Edition (1970) focuses on the widening gap between the less-developed and advanced economies in the world, as well as an emphasis on efficiency. In the Ninth Edition (1973) inflation from the cost side is emphasised. Growth and ecological issues are discussed, as well as the problems of discrimination. A new chapter is included which brings the evolution of economic thought to introductory economics students. The "Preface" also indicates that Marxian economics appears in the textbook in a direct way:

> "In this edition I [Samuelson] have tried to treat Karl Marx as neither God nor Devil – but as a secular scholar whom half the world's population deem important. The rudiments of mature Marxism, as well as the insights of the resurrected Young Marx, are newly discussed in this edition" (Sam. 9, 1973, ix).

The Tenth Edition (1976) focuses on stagflation and 'new microeconomics,' with an increasing emphasis on energy economics and environmental constraints. The changes in the international monetary system are included, such as the changes in exchange rates, and the status of gold. There is also note made of the problems that exist due to the transfer of wealth to the OPEC nations. Stagflation is still prominent in the Eleventh Edition (1980) which also focuses on the role of rational expectations and efficient markets. The "Preface" indicates that the appendix on game theory, from previous editions, has gone to make way for the new microeconomics of law, sociobiologic altruism, and entropy economics.

The Twelfth Edition's (1985) "Preface" outlines Samuelson's desire for *Economics* to embody an authoritative, clear, and comprehensive coverage of modern economics. This Edition focuses on high unemployment, volatile inflation and interest rates, monetarism, and budget deficits. Aggregate demand and supply analysis is included in a revised macroeconomics section. The "Preface" indicates that the chapters on monetary theory and policy have also been revised, with a complete introductory analysis of rational-expectations, the policy-ineffectiveness theorem, the Lucas critique, and the economics of deficit expenditure. One of the major changes to *Economics* highlighted in the "Preface" of the Twelfth Edition is the inclusion of a glossary, this continues through to the latest edition.

The "Preface" of the Thirteenth Edition (1989) emphasises the importance of *Economics* as an introductory economics textbook: "This book has served as the standard bearer for the teaching of elementary economics since the landmark 1948 edition" (Sam. 13 1989, ix). The role of textbooks to impart knowledge is indicated with the beginning quote to the "Preface" used by Samuelson. He (Sam. 13 1989, ix) leads with a statement by Barbara Tuchman: "Books are the carriers of civilization."

Markets are 'rediscovered' in the Fourteenth Edition (1992) as command style economies crumbled. This Edition represents change in the style of *Economics*, from a comprehensive encyclopaedic approach to a textbook that has undergone "weight-loss" (Sam. 14 1992, xvi). A quarter of the pages from the Thirteenth to the Fourteenth Edition (1989-1992) disappears, and the structure of *Economics* changes with microeconomics now being placed before macroeconomics in the textbook ordering. Greater emphasis is also put on the open economy. The 'small is beautiful' editorial approach continues through to the Sixteenth Edition (1998) where farming, unionism, and Marxian economics in particular are severely trimmed. However, policy issues such as the environment, health care, and international issues are given more prominence.

The emphasis in the Fifteenth and Sixteenth Editions (1995, 1998) is on the analytical core of economics, with greater focus placed on the forces underlying long-run growth, and the efficiency of the modern mixed market economy. The role of the market is emphasised, and there is a look at the changing role of government in the new millennium. Health care economics, and issues surrounding the management of the global economy occupy more space in the editions. In the "Preface" of the Sixteenth Edition Samuelson (Sam. 16 1998, xxix) observes: "Economics is a dynamic science - changing to reflect the shifting trends in economic affairs, in the environment, in the world economy, and in society at large. As economics and the world around it evolve, so does this book."

Samuelson has used the "Preface" of each edition to indicate the developments and changes made to *Economics*, and to share thoughts about the past and the future. The "Preface" allows the reader a quick overview of the style and nature of the textbook. It also signals the key issues and topics of the day that are presented.

From the "Preface," this section now moves to explore the chapters in the sixteen editions of *Economics*. An examination of their subject composition and titles follow.

3.3.2 The Chapters

In descriptive bibliography a question that needs to be answered is how was the textbook put together. A review of the chapters of the sixteen editions of *Economics* provides information as to the breakdown of the textbook between introductory chapters, microeconomics, macroeconomics, and international economics. Examining the chapter titles shows how the emphasis placed on these sections of the textbook has changed over the fifty years.

The number of chapters in *Economics* ranges between twenty-seven to forty-three, an average of 38.4 chapters per edition. The textbook can be split into four separate sections: introductory chapters, microeconomic theory and analysis, macroeconomic theory and analysis, and international trade and open economy chapters. Table 3.3 presents the number of chapters, and their composition through the sixteen editions of *Economics*.

Table 3.3: Total Number of Chapters in *Economics*, and the Content Composition Across Editions

Edition	Number of Chapters	Introductory Chapters	Micro Chapters	Macro Chapters	International Chapters
1	27	4	11	10	2
2	35	4	16	11	4
3	37	4	17	12	4
4	38	4	18	12	4
5	37	4	17	12	4
6	38	4	16	14	4
7	40	4	17	15	4
8	42	4	19	15	4
9	43	4	18	17	4
10	43	4	18	17	4
11	43	4	18	17	4
12	40	4	15	17	4
13	40	4	15	17	4
14	39	4	16	15	4
15	37	3	15	15	4
16	36	3	15	14	4

There is a constant number of four introductory chapters, with the exception of the Fifteen and Sixteenth Editions (1995, 1998) that only have three. In these editions the chapter "Basic Problems of Economic Organization" is reduced and its contents included in the first introductory chapter, "The Fundamentals of Economics." With the exception of the First Edition (1948), all other editions have four international chapters. Even though the number of international chapters remains constant, this does not mean that there is not a strong international emphasis in *Economics*. Chapter Seven of this thesis discusses international economics in *Economics*.

Figure 3.2 compares the number of chapters, and the percentage of the textbook given to microeconomics and macroeconomics over the sixteen editions of *Economics*.

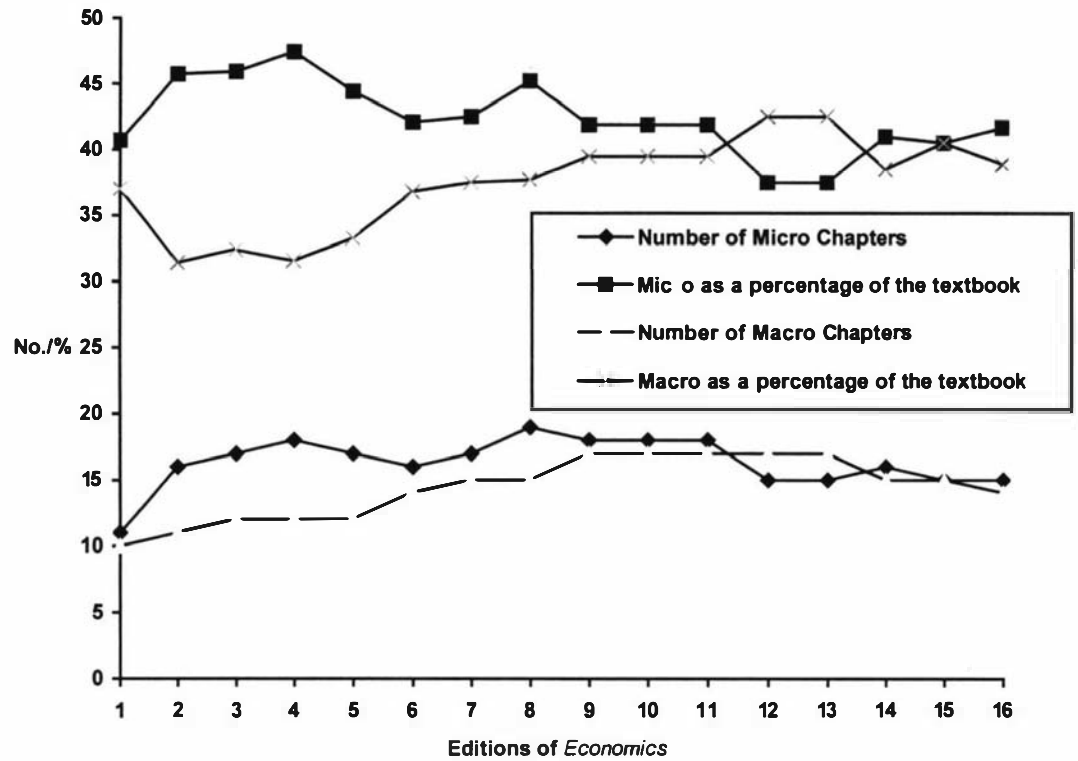

Figure 3.2: Number of Chapters and Percentage of Textbook Given to Microeconomics and Macroeconomics over the Sixteen Editions of *Economics*

Figure 3.2 shows that the percentage of microeconomics chapters in the textbook initially increases. From the First to Fourth Edition (1948-1958) it increases from 40.7 percent to 47.4 percent of the textbook. It then declines before increasing in the Eighth Edition (1980), falling again in the Ninth through Thirteenth Editions (1973-1989) to 37.5 percent of the textbook. From the Fourteenth Edition (1992) onwards, however, the percentage of microeconomics chapters increases to 41.7 percent in the Sixteenth Edition (1998). There is an overall increase in the percentage of microeconomics chapters in *Economics* (the First to Sixteenth Edition) of one percent. This shows that the relative weight of microeconomics in *Economics* has changed very little over the sixteen editions.

The percentage of macroeconomics chapters in the textbook initially declines, but increases from the Second to Thirteenth Edition (1951-1989). It peaks in the Thirteenth Edition with 42.5 percent of the textbook. There is another decline in the Fourteenth Edition (1992), before the percentage of macroeconomics chapters increases in the Fifteenth Edition (1995). It falls again in the Sixteenth Edition (1998), with the percentage of macroeconomics chapters in the textbook being 38.9 percent. Initially, macroeconomics chapters make up thirty-seven percent of the textbook. By the Sixteenth Edition they make up 38.9 percent of the textbook. There is an overall increase in the proportion of macroeconomics chapters in *Economics* of around two percent. This increasing emphasis in macroeconomic theory and analysis, does not, however, mean that microeconomics chapters were eliminated to make room for the new material; instead *Economics* just got larger. Part of the decline in the Fourteenth (1992), and later editions, of the number of both microeconomics and macroeconomics chapters has been caused by the desire to reduce the size of the textbook. However, both the percentage of microeconomics and macroeconomics chapters in *Economics* have increased from the First Edition (1948) when compared with the latest edition, the Sixteenth. Chapter Four of this thesis provides a further examination of the microeconomics and macroeconomics sections as it analyses the content of *Economics*.

This section now moves to review the appendices that are attached to certain chapters. Appendices represent the 'extra' material provided in the textbook. How some of these sections 'move about' in the textbook (from appendices to the body of the textbook, then perhaps out altogether) reveals much about the changing nature of mainstream economics.

3.3.3 The Appendices

Appendices represent additional material to supplement a chapter. They provide further discussion to amplify the chapter points, and they also supply optional material for the lecturer to challenge students, and extend the course. Appendices also act as a 'filter' in some cases to prevent *Economics* from falling victim to fads. The 'new' topic/theory may first appear in an appendix until it is time proven, and is able to be slotted into the main body of the textbook. While Samuelson has always used appendices in *Economics*, the number of them, and their content, have changed over the editions. Figure 3.3 presents the number of appendices and the number of chapters in *Economics* over the sixteen editions.

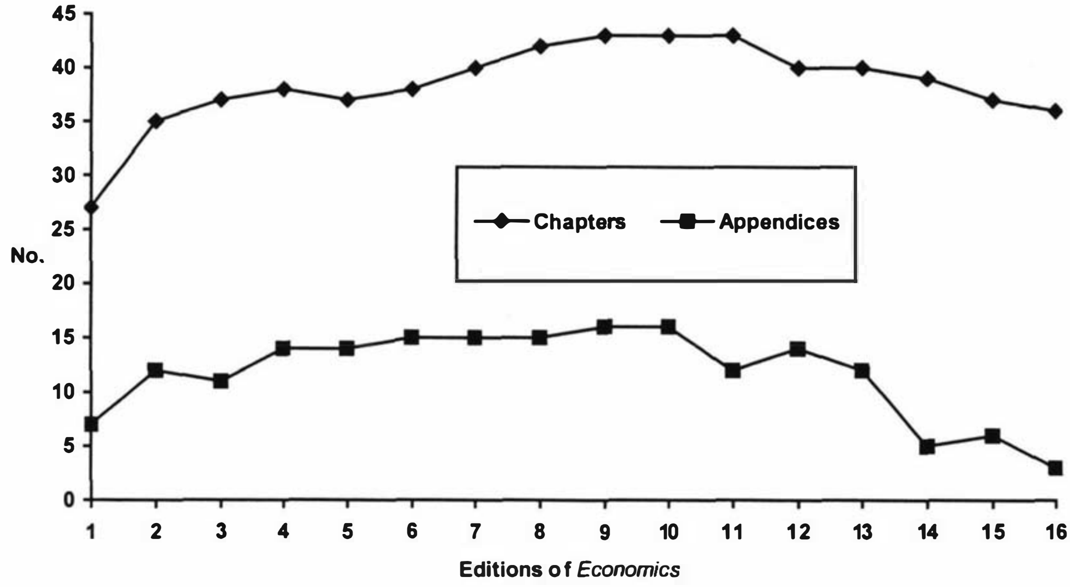

Figure 3.3: Comparing the Number of Appendices and Chapters in *Economics*

In all editions of *Economics,* appendices have appeared. In the Ninth and Tenth Editions (1973, 1976), sixteen chapters have an appendix - the largest number of appendices of the sixteen editions. The Sixteenth Edition (1998) has the smallest number of appendices with only three. Between the Second and Thirteenth Editions (1951-1989), there are on average 13.8 appendices per edition. However, over the entire sixteen editions there are on average 11.7 appendices. Comparing the First and Sixteenth Editions (1948, 1998) there is an overall reduction by 57.1 percent of appendices. The changes in the number of appendices occur in two stages. First, from the First to Ninth and Tenth Editions (1948-1976) there is a 128.6 percent increase in appendices. Second, this drops off markedly (by 81.3 percent) from the Tenth to Sixteenth Edition (1976-1998); seven appendices are cut from the Thirteenth to Fourteenth Edition (1989-1992).

The First Edition (1948) has seven appendices, one of which only appears in the First Edition - "Four Quantitative Paths to Full Employment." "Questions and Problems on Supply and Demand" appears throughout the first fifteen editions as an appendix, and is then integrated into the main body of the textbook in the Sixteenth Edition (1998). Samuelson includes an appendix on basic accounting methods in the First Edition. It continues through to the

Fourteenth Edition (1992) when it is then integrated into the main textbook in the chapter, "Analysis of Costs." "A Few Mechanics of International Finance" continues as an appendix to the Sixth Edition (1964), when the gold standard material is then incorporated into the main body of the textbook. The multiplier material from this appendix appears in a new appendix, "Income and Unemployment Aspects of International Trade," before being integrated into the main textbook in the Twelfth Edition (1985). The floating exchange rate material is also integrated into the main textbook in the Sixth Edition. Two appendices "Geometric Analysis of Consumer Equilibrium," and "Graphical Depiction of Production Equilibrium" appear throughout all the sixteen editions. The "Graphical Depiction of Production Equilibrium" underwent a name change in the Thirteenth Edition (1989) to "Production, Cost Theory, and Decisions of the Firm." The final appendix in the First Edition, "Some Qualifications to the Discussion of Comparative Advantage," continues as an appendix until the Thirteenth Edition, when it is integrated into the main body of the textbook.

The Second Edition (1951) has twelve appendices, five from the First Edition (1948), and seven new ones. "Statistics" is attached to the chapter on national income and it continues as an appendix until the Eleventh Edition (1980). In the Eleventh Edition, the national income data is integrated into the main body of the textbook. Two appendices appear only in the Second Edition - "Two Kinds of Equality of Saving and Investment," and "Current Fiscal Policy." In both cases, some of the information from each appendix is integrated into the main textbook. "The 'Quantity Theory' and the Liquidity Demand for Money" is introduced as an appendix in the Second Edition, and continues until the Fifth Edition (1961), when it is integrated into the main body of the textbook. "Cost in Relation to Competitive Supply" remains as an appendix until the Sixth Edition (1964), when a chapter on "Cost and Supply" appears which includes the material from this appendix. When the chapter disappears in the Twelfth Edition (1985), the material is included in a new chapter examining the equilibrium of the firm. This chapter continues through to the present edition. "The Birds-Eye View of Marginal Products and Distribution in the Simplest Case" appears as an appendix until the Sixth Edition, when some of the material on marginal product and the demand for labour is incorporated into the main textbook. The last new appendix in the Second Edition, "Theory of Saving, Investment, and Interest," changes its name through the editions until the Fourteenth (1992), when the present value and interest material is integrated into the main textbook.

The Third Edition (1955) has eleven appendices, ten of them from previous editions. Two of the appendices from the Second Edition (1951) are gone, and a new appendix is added – "Review of Commodity and Factor Pricing: General Equilibrium and Parable of Ideal Welfare Pricing." This appendix examines the issue of Utopian Pricing and continues until the Thirteenth Edition (1989), when it disappears altogether.

The Fourth Edition (1958) has fourteen appendices, twelve from previous editions and two new ones. "Graphical Analysis of a Tariff's Effects" appears only in the Fourth Edition, from the Fifth Edition (1961) onwards it is integrated into the main body of the textbook. The other appendix, "Thumbnail Sketch of the History of Economic Doctrine" appears in the Fourth and Fifth Editions. From the Sixth Edition (1964) onwards this material appears in the main textbook in chapters entitled, "Alternative Economic Systems" and "The Winds of Change: Evolution of Economic Doctrines." In the Sixteenth Edition (1998) the material is placed in the chapter, "The Warring Schools of Macroeconomics."

The Fifth Edition (1961) has fourteen appendices, eleven from previous editions and three new ones. One appendix, "Proposed Reforms for the Banking System," appears only in the Fifth Edition. "Mechanism of Money and Income Determination" continues as an appendix until the Eleventh Edition (1980), then the issues of the liquidity and velocity of money are incorporated into the main body of the textbook. "The Economics of Speculation, Risk and Insurance" appears as an appendix until the Fourteenth Edition (1992), when it is incorporated into the textbook in a section including game theory.

The Sixth Edition (1964) has fifteen appendices, eleven from previous editions and four new ones. "Stock Market Fluctuations" continues as an appendix until the Sixteenth Edition (1998), when it is integrated into the main textbook in a chapter on "Money and Commercial Banking." "False and Genuine Burdens of the Public Debt" appendix appears until the Eleventh Edition (1980), when it is incorporated into the main body of the textbook. "Additional Efficiency Aspects of Competitive Pricing" does not appear as an appendix in the Eighth Edition (1970), instead, issues of external economies and diseconomies are integrated into the main body of the textbook. The final new appendix in the Sixth Edition is "Modern Discussion of Development Theory," which remains until the Fourteenth Edition (1992), when some of the material is incorporated into the main textbook.

The Seventh Edition (1967) has fifteen appendices, fourteen from previous chapters and one new appendix. "The Ideal Regulation of Monopoly Pricing" continues until the Twelfth Edition (1980), where it is incorporated into the main body of the textbook. There are no changes to the appendices of the Eighth Edition (1970) from the Seventh Edition. The Ninth Edition (1973) has sixteen appendices, fifteen from the previous editions, and one new one. "The Rudiments of Marxian Economics" appendix continues until the Twelfth Edition (1985), when it simply disappears from the textbook.

There are no changes to the appendices of the Tenth Edition (1976) from the Ninth Edition (1973). The Eleventh Edition (1980) has twelve appendices, no new appendices, just four dropped: "Official National Income Data," "Mechanisms of Monetarism and Income Determinations," "False and Genuine Burdens of the Public Debt," and "Economics of Speculation, Risk and Insurance." Much of the material from these appendices is integrated into the main textbook.

The Twelfth Edition (1985) has fourteen appendices, ten from previous editions, and four new ones. "How to Read Graphs" is attached to the "Introduction," and it continues through to the Sixteenth Edition. "The Algebra of the Multiplier" appendix appears in the Twelfth and Thirteenth Editions (1989), and reappears in the Fifteenth Edition (1995). However, it is not included as an appendix in the Sixteenth Edition (1998), and does not appear in the main body of the textbook in the Fourteenth or Sixteenth Edition (1992, 1998). "The Rational-Expectations Revolution" is incorporated into the main textbook in the Fourteenth Edition and continues as such through to the Sixteenth Edition. "The Advanced Treatment of Monetary and Fiscal Policy," which presents the IS-LM analysis, continues until the Fourteenth Edition, when it disappears from the textbook altogether.

The Thirteenth Edition (1989) has twelve appendices, eleven from previous editions, and one new appendix. "Game Theory" appears as an appendix in the Thirteenth Edition only; from the Fourteenth Edition (1992) on, it is integrated into the main body of the textbook. The Fourteenth Edition has five appendices, all from past editions, seven less than the previous edition. The Fifteenth Edition (1995) has six appendices, the single change being the reintroduction of the "Algebra of the Multiplier." The Sixteenth Edition (1998) has three appendices, all from previous editions, representing the least amount of additional appendix material. From a peak of sixteen appendices, the latest edition of *Economics* has only three.

Samuelson has used appendices to provide readers with additional information and further discussion of topics from the chapter. Two examples being the geometric analysis of consumer equilibrium, and the graphical analysis of production equilibrium. Appendices have also had a strategic use as a place where economic issues and topics can be 'tested' before they are integrated into the main body of the textbook. The Phillips curve, rational expectations, and game theory are examples of this. Some material has always remained in an appendix before disappearing from the textbook, such as utopian pricing, proposed banking reforms, and the rudiments of Marxian economics. Other useful extra material is also included as an appendix, for example basic accounting methods (before being integrated into the textbook in the Fifteenth Edition (1995), and how to read graphs. The transformation of the appendix material in *Economics* through its sixteen editions in itself reflects the changing views of the presentation of the principles of economics, and the principles themselves.

This section now moves to examine the index of *Economics,* and how what appears in the textbook has changed through the sixteen editions.

3.3.4 The Index[10]

An index is another useful place to get an overview of a book. In *Economics,* it lists the names of people, industries, countries, as well as the concepts appearing in each successive edition. In the sixteen editions of *Economics,* 784 names appear in the index, representing an average of forty-nine names in every edition. People like Thomas Carlyle, Alexander Hamilton, David Hume, Abraham Lincoln, and F.D. Roosevelt appear in all editions. Others notable for numerous appearances in *Economics* are: Friedman (fourteen editions); Lenin (thirteen editions); Stalin, Galbraith, and Adam Smith (twelve editions); Winston Churchill (eleven editions); Adolf Hitler, Plato, and Charles Darwin (ten editions).

[10] See Appendix Three for further a selection of words that appear in the index of *Economics*

Two examples in *Economics* of how Churchill, and Stalin's rule are portrayed to readers are as follows:

- "Winston Churchill was a great man - a leader without peer, an orator, a gifted writer, and a shrewd judge of the Hitlerian threat while most around him slept. Yet all his life, Churchill was a babe in the woods when it came to economics" (Sam. 10 1976, 5).

- "Experts tell me that back in Stalin's day my book [*Economics*] was kept on the special reserve shelf in the library, along with books on sex, forbidden to all but the specially licensed readers" (Sam. 15 1995, xxvii).

The types of people vary widely from thinkers and philosophers like Plato and Aristotle, to national leaders like Kennedy and Krushchev. Singers such as Whitney Houston, Bob Dylan, and actors like Mel Gibson and Bill Cosby, also appear. Prominent sportspeople such as Babe Ruth and Michael Jordon are included, along with novelists for example, Stephen King and Danielle Steel. Top businesspeople like Bill Gates, and fictional characters like Polonius from Shakespeare's *Hamlet,* all make an appearance in *Economics*.

In the Fourteenth and Sixteenth Editions Samuelson uses high-paid 'stars' to illustrate the rent elements in wages of unique individuals, and to depict the idea of a 'winner-take-all' society in the game theory section:

- "Reported annual earnings for these stars include such enormous figures as $57 million for entertainer Bill Cosby, $5.3 million a year for baseball's Roger Clemens, $3.2 million for basketball star Michael Jordon, and $1.4 million for tennis player Martina Navratilova" (Sam. 14 1992, 237).

- "A top fashion model like Claudia Schiffer might be paid $25,000 for a fashion show, while most models make nothing. Best-selling authors like Stephen King or Danielle Steel are paid up to $60 million for the rights to their books, while surveys indicate that the average writer makes not much more than the minimum wage. A few movie superstars like Mel Gibson or Kevin Costner get millions of dollars per film. By contrast, in a recent year, only one-tenth of the members of the actors' guild were actually paid for appearing in films, while hopefuls kept the wolf from the door with activities such as driving taxis and waiting on tables" (Sam. 16 1998, 202-03).

Of course, numerous economists are included throughout the editions. They are by far the most represented group.

Sixty-one countries, excluding the United States of America, appear in the index over the sixteen editions.[11] The former Soviet Union appears in all editions of *Economics*. Other countries that make a high number of appearances include: Great Britain (fifteen editions); Japan, Germany, and Brazil (thirteen editions); Sweden (twelve editions); Canada, China, and France (eleven editions); India (ten editions); and Argentina (nine editions). Throughout the editions, different countries (Vietnam, Korea, Saudi Arabia, Mexico, and Singapore) appear and disappear based on the changing world events. For example, in the Fourteenth Edition, Samuelson (Sam. 14 1992, 485) says: "Trading ties between Japan, Mexico, Canada, and the United States are closer today than were those between New York and California a century ago." It is fair to say, however, that through the sixteen editions of *Economics,* the Soviet Union and the Russian economy is the most extensively discussed country second only to the United States and the American economy. *Economics* reflects the political and economic systems of the United States and the Soviet Union, their economic indicators and the changes to these over time. Samuelson presents the readers with the actual events and developments in these two powerful economies, and through them relate economic theory in a way that is topical at the time.

Notable industries to make an appearance in *Economics* are: the automobile, steel, and oil industry (twelve editions); the American Tobacco Industry (eleven editions); American Telegraph and Telephone, the railroad, and nuclear energy industry (ten editions); and the aluminium industry (nine editions). For example, when comparing perfect competition and imperfect competition in the Tenth Edition actual industries and issues are used:

> "Neither aluminum nor steel meets the definition of perfect competition. For a long time there was only one aluminum company, Alcoa (Aluminum Company of America); and even today there are only Alcoa, Reynolds, Kaiser, and one or two others. Contrast this with the case of thousands, if not millions, of cotton and wheat farmers" (Sam. 10 1976, 484).

As well as various industries, labour groups are also discussed. In the First Edition readers are made aware of the torrid relationship (at times) between companies and unions:

> "White doesn't have to read the report of a congressional committee to refresh his memory of how the company at first hired 'finks' and 'goons' - gunners and spies - from a strikebreaking agency, in order to beat up union organizers; or how men who joined the union were laid off on the pretext of inefficiency and then put on an employers' 'black list' as far as getting a job elsewhere; or how a 'company' or

[11] See Appendix Five for a list of the countries appearing in the index of *Economics* and in what edition.

'stooge' union was encouraged by management when it began to see the handwriting on the wall. Finally, after a number of illegal 'sit-down' and 'slow-down' strikes, and after a dozen people on both sides were killed in violent picketing, the Federal government's NLRB (National Labor Relations Board) held an election in the plant to see whether the union should be reorganized as 'sole bargaining' agent, and the UAW [United Automobile, Aircraft, and Implement Workers of America] won with a comfortable majority" (Sam. 1 1948, 190).

In the Fifth Edition the labour group the Knights of Labour is discussed:

> "At first this was a secret society which all but 'lawyers, bankers, gamblers or liquor dealers, and Pinkerton detectives' could join. Later, secrecy was dropped; and by 1886, the highwater mark, the Knights had some 700,000 members. The Knights represented an attempt to form *one great labor union* to speak for all labor" (Sam. 5 1961, 160).

The grand neo-classical synthesis appears in the index of *Economics* in the Third to Seventh Editions (1955-1967). Microeconomics and macroeconomics appear in the index of thirteen editions of *Economics*, appearing for the first time in the Fourth Edition (1958). Monetarism and rational expectations make their first appearance in the Eighth Edition (1970). The economics of love is discussed in the Ninth to Eleventh Editions (1973-1980), Samuelson (Sam. 10 1976, 810) writes in the Tenth Edition: "Love, not in the Greek sense of *eros* (which is another story), but in the sense of *agape*, concern for other humans, is after all good business and good economics." Stagflation first appears in the Ninth Edition (1973), and aggregate demand and supply analysis does not appear in *Economics* until the Twelfth Edition (1985). Glasnost and perestroika appear in the textbook from the Thirteenth Edition (1989).

Capitalism, communism, GNP, socialism, and welfare economics appear in all sixteen editions. The discussion of communism throughout the editions is linked to the inclusion of the Soviet Union, Cuba, and China in the textbook. Fascism, racial discrimination, war economics and secular stagnation[12] appear in eleven editions of *Economics.*

Samuelson's *Economics* includes a variety of people, places, everyday events, and issues readers can identify with. Cartels (predominantly OPEC) and gambling appear in twelve

[12] "...Harvard's Alvin Hansen called 'secular stagnation' - which means a long period in which (1) slowing population increase, (2) passing of the frontier's free land, (3) high corporate saving, (4) the vast piling up capital goods, and (5) a bias toward capital-saving inventions will mean depressed investment schedules relative to saving schedules" (Sam. 5 1961, 392).

editions of *Economics*. In the Fifth Edition Samuelson discusses the role loan sharks play and the issue of gambling:

- "The curse of the poor is their poverty. They go into debt because of a lack of money, and they cannot get out for the same reason. A loan shark will occasionally use violence, but more often he blackmails his victim by threatening to tell his boss or wife" (Sam. 5 1961, 140).

- "Why is gambling considered such a bad thing? Part of the reason, perhaps the most important part, lies in the field of morals, ethics, and religion; upon these the economist is not qualified to pass exact judgment. There is, however, a substantial economic case to be made against gambling" (Sam. 5 1961, 510).

Why does Samuelson include a large number and range of people, places, and events in his textbook? It has been claimed that: "the inclusion in Samuelson's textbook of such diverse topics as pollution, racial discrimination, and the military-industrial complex was essentially a commercial response...designed to consolidate Samuelson's position in the lucrative textbook market" (Linder 1970, vi). However, the variety of singers, models, actors, sportspeople, countries, events, and the like represent the attempt by Samuelson to keep *Economics* up-to-date. For the textbook to be stimulating in its examples and references, by including people that the students of a particular time would be familiar with. To make the principles of economics accessible and relevant Samuelson endeavours to reach readers through everyday realities of their time - loan sharks, pollution, discrimination. Movie actors, sportspeople, and other popular figures keeps things appealing for readers, at the same time they play a useful part in serving as examples of economic theory in practice. As far as possible *Economics* presents the countries, issues, and world leaders to readers making the news, guiding them through the minefield of issues and conflicts that exist. In Samuelson's endeavour to advance economic understanding each edition of *Economics* needed to be relevant to its readership and include the topical issues of the time.

3.4 Conclusion

> **"The extraordinary success of *Economics* is something of a mystery, for the book is not easy – as witnessed by the fact that simpler texts that follow Samuelson's structure have found a large market" (Fischer 1987, 241).**

Applying a bibliographical scholarship approach, with some of the ideas from descriptive bibliography to study the successive editions of an introductory economics textbook is new. It allows the textbook to be examined as a physical object in itself, and its evolution to be scrutinised. Over the fifty-year period *Economics* has been published, changes have been made to its physical structure and presentation. *Economics* has changed in size; the number of words per page has changed, as have the number of chapters and appendices used. An evolution has also taken place in the theme of each edition of the textbook. These changes are initially signalled in the "Preface," and seen in the composition of the sections of the textbook (micro, macro and international), and evident in the index.

A commitment to present a clear, concise, and exciting introductory economics textbook underpins the sixteen editions. More than just an introduction to a discipline his textbook has also been used by graduate students (and economists alike) as a ready-reference textbook of economic concepts and theory.

Samuelson has a very student-oriented approach when writing his textbook. He uses well-known people, events, and relevant issues to illustrate economic theory and present economic ideas. Samuelson (Sam. 15 1995, xxxiv) highlights this in the "Preface" to the Fifteenth Edition:

> "Above All: A Clear Explanation of Modern Economics...present economics in a clear and student-friendly way...we want students first to understand the enduring principles and then to be able to apply them to make the world a better place for them, their families, and their communities. Nothing aids understanding better than a clear and simple exposition."

In a competitive introductory economics textbook market Samuelson's *Economics* still retains a place, fifty years after its First Edition was published. Clearly, Samuelson's approach in presentation and style, a benchmark at the time of the First Edition, still 'works' at the end of the 1990s and beginning of the new century. That *Economics* has evolved and kept up with the changing times, is in no small part a secret of it success.

Chapter Four:

Analysing *Economics*: Content

"His [Samuelson's] pervasive influence on contemporary economics has also come largely from his role as teacher to generations of economists the world over ever since the first appearance of his masterly and controversial textbook in 1948" (Feiwel 1982a, 1-2).

4.1 Introduction

> **"...it does not take a race of supermen to practice fruitfully that discipline suspended midway between an art and a science which men call economics" (Sam. 6 1964, 6).**

The analysis of Samuelson's *Economics* is in two parts. First, is an examination of the physical characteristics of the textbook, which was undertaken in the previous chapter. The second part is to analyse the content of *Economics*.

This chapter begins by an examining the first and last statements in *Economics* over the sixteen editions. It then moves to look at the microeconomics and macroeconomics sections in the textbook. A comparative study of the First and Sixteenth Editions of *Economics,* published fifty years apart is then undertaken. The second part of this chapter then moves to examine a selection of economic paradigms. It looks at the grand neo-classical synthesis, some of the challenges to it, and changes in some selected analytical concepts. The chapter concludes with an examination of Marxian economics in *Economics*.

4.2 The First and Last Statements in *Economics*

> **"The Dean of the Harvard Law School used to address the entering class: 'Take a good look at the man on your right, and the man at your left; because next year one of you won't be here.' Much the same can be said of everyone's stake in the successful functioning of the economic system" (Sam. 1 1948, 3).**

Reading the first and last statements in Samuelson's *Economics* provides a surprising insight to his concerns of the time, and hopes for the future. At times quirky, other times philosophical, these statements set the scene, and end the tome – the 'beginning and the end.'

Table 4.1: The First and Last Statements in *Economics*

Ed.	First Statement	Last Statement
1, 1948 p 3 and p 608	The Dean of the Harvard Law School used to address the entering class: 'Take a good look at the man on your right, and the man at your left; because next year one of you won't be here.' Much the same can be said of everyone's stake in the successful functioning of the economic system.	All this we can look forward to with confidence, if intelligence can be found to understand our modern economic system and to keep it functioning well.
2, 1951 p 3 and p 746	A well-known college administrator used to address the entering class: 'Take a good look at the man on your right and the man on your left, because next year one of you won't be here.' If the future should be like the past, then of any three readers of this book, a similar statement may be made: There is a strong probability that one, at some period of his life, will be hard hit by a depression or he may have his lifetime savings wiped out by price inflation. And all three will find that economic events play a dominant role in their everyday lives.	It is too easy to compare the obvious imperfection of our known system with the ideal perfections of an unknown planned order. And it is only too easy to gloss over the tremendous dynamic vitality of our mixed free enterprise system, which, with all its faults, has given the world a century of progress such as an actual socialized order might find it impossible to equal.
3, 1955 p 3 and p 734	A well-known college dean used to address the entering class: 'Take a good look at the man on your right and the man on your left, because next year one of you won't be here.' If the future should be like the past, then of any three readers of this book a similar statement can be made: There is a strong probability that one, at some period of his life, will be hard hit by a depression or may have his lifetime savings wiped out by price inflation. And all three will find that economic events play a dominant role in their everyday lives.	We may conclude on a note of profound optimism. The American economy is in better shape in the 1950's than it ever was in the past. At the present time, possessing only 6 per cent of the world's population, it produces some 40 per cent of the world's income. And with all its defects, it has behind it a record of the most rapid advance of productivity and living standards ever achieved anywhere. Our mixed economy - wars aside - has a great future before it.
4, 1958 p 3 and p 786	A well-known college dean used to address the entering class: 'Take a good look at the man on your right and the man on your left, because next year one of you won't be here.' If the future should be like the past, then of any three readers of this book, a similar statement can be made: There is a strong probability that one, at some period of his life, will be hard hit by a depression or may have his lifetime savings wiped out by price inflation. And all three will find that economic events play a dominant role in their everyday lives.	Today most economists in the Free World attempt what is in this book called a 'neoclassicial synthesis': *i.e.*, by effective monetary and fiscal policies they try to make a marriage between the classical microeconomics of Smith and Marshall and the macroeconomics of modern income determination, combining what is sound in each approach. Economists who use these same tools range in their political beliefs from conservatives like London's Lionel Robbins to New Dealers like Alvin Hansen. But they all call a spade a spade.

5, 1961 p 3 and p 836	Doctor Watson has told us how very astonished he was to learn that the great Sherlock Holmes had never heard of the solar system. Even greater was his surprise to learn that Holmes had no intention of listening to its description, on the odd psychological theory that the brain is like an attic - with only room for so much in it - so that knowledge of the solar system would be pushing out knowledge of more important things such as the ear-lobe characteristics of lady shoplifters.	Today most economists in the free world attempt what is in this book called a 'neoclassicial synthesis': *i.e.*, by effective monetary and fiscal policies they try to make a marriage between the classical microeconomics of Smith and Marshall and the macroeconomics of modern income determination, combining what is sound in each approach. Economists who use these same tools range in their political beliefs from conservatives such as London's Lionel Robbins to New Dealers such as Alvin Hansen or middle-of-the-roaders such as Yale's James Tobin. But they all call a spade a spade.
6, 1964 p 3 and p 810	Doctor Watson has told us how astonished he was to learn that the great Sherlock Holmes had never heard of the solar system. Even greater was his surprise to learn that Holmes had no intention of listening to its description, on the odd psychological theory that the brain is like an attic - with room for only so much in it - so that knowledge of the planets would be pushing out knowledge of more important things such as ear-lobe characteristics of lady shoplifters.	The reader who has persisted this far now has a general knowledge of the economic analysis that is used all over the world - in the United States, Britain, Western Europe, Latin America, Africa, and Asia. The tools of economic analysis, developed and tested over more than a century, are turning out to have an applicability beyond the range of economics narrowly defined. In the hands of scholars like Michigan's Kenneth Boulding, they are applied to the pressing problem of conflict resolution and struggle; in countless departments of operations research, and in the Pentagon military establishment itself, they are being used to increase the efficiency of executive decision making. Like a gun, which can be used to defend a home or bully a harmless stranger, these tools have an efficiency whose final contribution to welfare must depend on how and by whom they are used. They also have a certain austere aesthetic grace.
7, 1967 p 1 and p 793	Half a century ago, when the Harvard Business School was founded, President A. Lawrence Lowell described business as 'the oldest of the arts, the newest of the professions.' Almost the same words can be used to describe economics - the oldest of the arts, the newest of the sciences.	The reader who has persisted this far now has a general knowledge of the economic analysis that is used all over the world - in the United States, Britain, Western Europe, Latin America, Africa, and Asia. The tools of economic analysis, developed and tested over more than a century, are turning out to have an applicability beyond the range of economics narrowly defined. In the hands of scholars like Michigan's Kenneth Boulding, they are applied to the pressing problem of conflict resolution and struggle; in countless departments of operations research, and in the Pentagon military establishment itself, they are being used to increase the efficiency of executive decision making. Like a gun, which can be used to defend a home or bully a harmless stranger, these tools have an efficiency whose final contribution to welfare must depend on how they are used and by whom. They also have a certain austere aesthetic grace.

8, 1970 p 1 and p 835	Half a century ago, when the Harvard Business School was founded, President A. Lawrence Lowell described business as 'the oldest of the arts, the newest of the professions.' Almost the same words can be used to describe economics: the oldest of the arts, the newest of the sciences – indeed the queen of the social sciences.	Speaking for myself, I read in the face of history the more optimistic message: One can have the best of both worlds – programmed improvement of the workings of the market economy along with those best things of life that aren't measured in gross national product – freedom to do one's own thing, freedom to criticize and freedom to change.
9, 1973 p 1 and p 885	When the Harvard Business School was founded more than half a century ago, President A. Lawrence Lowell described business as 'the oldest of the arts, the newest of the professions.' Almost the same words can be used to describe political economy: the oldest of the arts, the newest of the sciences – indeed the queen of the social sciences.	Speaking for myself, I venture to read in the face of history the more optimistic message: One can have the best of both worlds – programmed improvement of the workings of the market economy along with those best things of life that aren't measured in gross national product – freedom to do one's own thing, freedom to criticize and freedom to change.
10, 1976 p 1 and p 886	When the Harvard Business School was founded more than half a century ago, President A. Lawrence Lowell described business as 'the oldest of the arts, the newest of the professions.' Almost the same words can be used to describe political economy: the oldest of the arts, the newest of the sciences – indeed the queen of the social sciences.	Speaking for myself, I venture to read in the face of history the more optimistic message: One can try to have the best of both worlds – programmed improvement of the workings of the market economy along with those best things of life that aren't measured in gross national product – freedom to do one's own thing, freedom to criticize and freedom to change.
11, 1980 p 1 and p 827	Why study economics? People have done it for many reasons. In the hope of making money. Because people keep treating you as an illiterate if you can't understand how the laws of supply and demand apply to energy. Because you have heard political economy called the Queen of the Social Sciences – oldest of the arts, newest of the sciences.	Speaking for myself, I venture to read in the face of history the more optimistic message: One can try to have the best of both worlds: Some programmed improvement of the workings of the market economy, and still those best things of life that aren't measured in gross national product – freedom to criticize, freedom to change, and freedom to do one's own thing.
12, 1985 p 3 and p 895	Why study economics? People have done it for many reasons. Because they hope to make money. Because people are treated as an illiterate if they can't understand how the laws of supply and demand apply to oil. Because they have heard economics called the queen of the social sciences – oldest of the arts, newest of the sciences.	In closing may we say that, like Martin Luther King, Jr., we too have a dream. It is a dream that the remarkable efficiency of markets can in East and West be harnessed to the purposes of the humane society. Yes, the heart has reasons that reason will never know. But economics, poised between an art and a science, can best serve by combining reasons drawn from evidence with purposes drawn from the heart.

13, 1989 p 3 and p 963	As you begin your reading, you are probably wondering, why study economics? In fact, people do it for countless reasons. Some study economics because they hope to make money. Others worry that they will be illiterate if they cannot understand the laws of supply and demand. People are also concerned to learn how budget deficits and inflation will affect their future.	The deepest economic question facing advanced economies is not *how, what*, or *for whom* - but *for what*? One answer was given by the first Keynesian President, John F. Kennedy, who shared his vision of the just society a quarter-century ago: 'Now the trumpet summons us again - not as a call to bear arms [but in] a struggle against the common enemies of man: tyranny, poverty, disease, and war itself.' Ultimately, this might serve as the trumpet call for our sciences as well. The heart has reasons that reason will never know. Economics, poised between an art and a science, can combat the common enemies of humanity by combining reasons drawn from history with purposes drawn from the heart.
14, 1992 p 2 and p 724	As you begin your reading, you are probably wondering, Why study economics? In fact, people do it for countless reasons. Some study economics because they hope to make money. Others worry that they will be illiterate if they cannot understand the laws of supply and demand. People are also concerned to learn how recession or rising oil prices will affect their future.	Even though market economies are many times wealthier than they were in the age of Adam Smith, the vitality of economics knows no diminishing returns. The catalogue of unsolved economic problems remains long. Yet we remain cautiously optimistic that the study of economics will enhance not only the gross national product but also those best things in life that are beyond the marketplace - freedom to criticize, freedom to change, and freedom to pursue one's own dreams.
15, 1995 p 3 and p 740	Ever since the great economist Adam Smith wrote these words ["It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest" Adam Smith, *The Wealth of Nations* (1776)] over 200 years ago, much of the world has experienced an era of unimagined prosperity...But has widespread prosperity led to a happy and fulfilled life for all people in the rich countries? Has competition eased up? Not at all. Most people are still striving to better themselves.	Even though market economies are many times wealthier than they were in the age of Adam Smith, the vitality of economics knows no diminishing returns. The catalogue of unsolved economic problems remains long. Yet we are firmly convinced that the study of economics will enhance not only the gross domestic product but also those best things in life that are beyond the marketplace - freedom to criticize, freedom to change, and freedom to pursue one's own dreams.
16, 1998 p 3 and p 736	Pause for a moment to consider the paradoxical words above, penned in 1776 by Adam Smith, the founder of modern economics ["It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest" Adam Smith, *The Wealth of Nations* (1776)]. That same year was also marked by the American Declaration of Independence. It is no coincidence that both ideas appeared at the same time. Just as the American revolutionaries were proclaiming freedom from tyranny, Adam Smith was preaching a revolutionary doctrine emancipating trade and industry from the shackles of a feudal aristocracy.	In the end, we render two cheers for the market, but not three. The last cheer is reserved for that day when everyone has the opportunity for a good job, an adequate income, and a safe environment. These are worthy goals for economics and for economists in the next 50 years!

The first four editions (1948-1958) of *Economics* begin fundamentally the same way. Samuelson reminds young men of the painful reality of depression that causes unemployment and price inflation to wipe out their savings. He also points out that understanding economics is necessary for citizens as economic concepts and policy impact on their daily life. The Fifth and Sixth Editions (1961-64) use a Sherlock Holmes and Doctor Watson analogy to explain the relevance of economic knowledge.

In the next four editions (Seventh to Tenth 1967-1976) *Economics* begins with the description of economics as the oldest of the arts and the newest of the sciences. In the Eighth to Tenth Edition (1970-1976) economics is called the "queen of the social sciences" (Sam. 8 1970, 1). Social science examines human society and social relationships, Samuelson sees *Economics* as reflecting this aspect as it tackles economic theory. An interesting change in wording is made in the Ninth and Tenth Edition, instead of economics being the oldest of the arts it is now described as "political economy" (Sam. 9 1973, 1). Political economy, implying perhaps a more government/institutional emphasis in the textbook.

Samuelson (Sam. 11 1980, 1) asks in the Eleventh to Fourteenth Editions (1980-1992) the rhetorical question: "Why study economics?" Two key answers are provided: to make money, and to avoid being seen as economically illiterate. In the Eleventh, Twelfth and Fourteenth Editions a new reason is added: so students can understand the supply and demand of energy - specifically oil. In the Thirteenth Edition (1989) Samuelson gives yet another reason: so students can understand budget deficits and inflation. His answers to the question reflect the particular economic environment at the time that readers were facing and needing to understand.

Samuelson (Sam. 15 1995, 3) begins the Fifteenth and Sixteenth Editions (1995-98) by quoting Adam Smith in *The Wealth of Nations*: "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest." He presents the issue of prosperity versus happiness, and links *The Wealth of Nations* to the American Declaration of Independence - both documents representing freedom.

The last statements in *Economics* are equally notable in presenting the evolving nature of this textbook and Samuelson's thinking. Samuelson talks about confidence in the future and expected growth to end the first three editions (1948-1955) very optimistically. In the Second Edition Samuelson indicates that the mixed free enterprise system, though not perfect, is creating more growth and progress in nations than socialised systems. He continues to emphasise the strength of the United States' economy in the 1950s, at the end of the Third Edition.

The next four editions, Fourth to Seventh Edition (1958-1967) end with Samuelson discussing the neo-classical synthesis. The Sixth and Seventh Edition (1964, 1967) do not use the words 'neo-classical synthesis,' but Samuelson's meaning is the same. These editions discuss the economic analysis used in the 'free world' by economists such as Lionel Robbins, Alvin Hansen, James Tobin, and Kenneth Boulding. In the Sixth and Seventh Edition, Samuelson further states the role of economics both in academic circles, and in the Pentagon military establishment. A gun is used by Samuelson to illustrate how economic tools can be used to defend a home, bully a stranger, or contribute to welfare, depending on how it is used.

The next four editions (Eighth to Eleventh Edition 1970-1980) also end on a very optimistic note. Samuelson sees the future holding a two-fold promise of further improvement of market economies, as well as things that GNP can not measure, such as freedom. Samuelson elaborates on his ideas of freedom - the freedom to do one's own thing, to criticise, and to change. In the Eleventh Edition he changes the order: the freedom to criticise is first, then the freedom to change, and to do one's own thing - putting self-interest last.

In the Twelfth and Thirteenth Editions (1985, 1989) Samuelson ends with two significant leaders. First, in the Twelfth, he states that like Martin Luther King Jr., he too has a dream - the efficiency of the market system to be harnessed to create a humane society for all. Martin Luther King Jr. is replaced in the Thirteenth Edition by President John F. Kennedy, reminding readers of Kennedy's vision to bear arms against the common enemies of man: tyranny, poverty, disease, and war. In both editions the role of the heart in economics is mentioned: "the heart has reasons that reason will never know. *Economics*, poised between an art and a science, can combat the common enemies of humanity by combining reasons drawn from history with purposes drawn from the heart" (Sam. 13 1989, 963).

In the last three editions (Fourteen to Sixteen 1992-1998) Samuelson reflects back on market economies, wealthier than Adam Smith's day, still with problems, but with a bright future. As in the Eighth to Eleventh Editions (1970-1980), Samuelson sees the future as holding a two-fold promise: further improvement of GNP (later GDP), and the things that GNP can not measure - the freedom to criticise, the freedom to change, and the freedom to pursue one's own dreams. The Sixteenth Edition changes slightly, Samuelson gives two cheers to the market, while reserving the third cheer for a time where everyone has a good job, an adequate income, and a safe environment.

Samuelson typically ends on a 'high note.' He is positive about the strength of 'free world' economies - emphasising freedom. He reminds readers of important men and their statements, as well as making his own - economics from the heart.

The opening and closing statements in the sixteen editions of *Economics* can readily be grouped under three subheadings. The first is the reality of the impact of economic issues on the individual. The opening statements of Editions One through Six (1948-1964), and Eleven through Sixteen (1980-1998) emphasise why a reader undertakes the journey into the economics discipline. The second is an examination of economics as a social science, with the definite models, theories, and the structure and validity of a 'science.' However, economics is portrayed as softer than the physical sciences more like an art, it examines issues with reference to the 'heart.' The concluding statements of Editions Four through Seven (1958-1967), and Twelve and Thirteen (1980-1985), reflect this, along with the opening statements of Editions Eight through Ten (1970-1976). The third subheading is freedom:

> "As a scholarly discipline, economics is only two centuries old. Adam Smith published his pathbreaking book *The Wealth of Nations* in 1776, a year notable also for the Declaration of Independence. It is no coincidence that both documents appeared the same year: Political freedom from the tyranny of monarchy was closely related to emancipation of prices and wages from the interfering hand of state regulation" (Sam. 12 1985, 3).

Linking the American Declaration of Independence with *The Wealth of Nations*, Samuelson reminds readers of the scope and responsibility that freedom provides. *Economics* points out that despite the freedom provided the economy and society through *The Wealth of Nations* and the Declaration of Independence, the reality is there are still problems in society that need to be addressed: "The last cheer is reserved for that day when everyone has the opportunity for a good job, an adequate income, and a safe environment. These are worthy goals for economics and for economists in the next 50 years!" (Sam. 16 1998, 736).

Sections 4.3 and 4.4 review the section of microeconomics and macroeconomics in Samuelson's *Economics*. This closer look at these sections makes it possible to see the development made in each of these sections, the 'core' theory that exists in each, and how this is portrayed in the successive editions of *Economics*.

4.3 Microeconomics

> **"He's [Samuelson] no master of suspense. You won't find any bosoms heaving, hearts beating heavily, or gun-toting terrorists trying to outmaneuver the good guy in any of his works. But you might learn how to transform those guns into butter" (Boston Globe, 03/01/98).**

The First Edition of *Economics* (1948) presents the 'general equilibrium' approach in microeconomics. *Economics*' approach to macroeconomic and microeconomic theory was 'different' and set the stage for a new way of teaching and learning economics. This was highlighted in *The Economist* (1997b, 60): "The book has great strengths. In microeconomics in particular, the pedagogy Mr Samuelson developed - diagrams of supply and demand, or cost curves, for instance - still set the discipline's standard." Samuelson (1999, 352) when reflecting on his textbook *Economics* observes:

> "I had almost forgotten, it [*Economics*] was not merely the first textbook to bring effectively to beginners macroeconomic modeling along Keynesian and post-Keynesian lines. It was that. But in addition, this book brought into the basic economics course numerous innovations in microeconomics that are today taken for granted. Even a fond author forgets the merits of a favorite brainchild."

In general the amount of space given to microeconomic theory and topics has fluctuated around forty percent of the textbook. Throughout the sixteen editions of *Economics* microeconomic topics and concepts have remained relatively unchanged. From the Seventh and Eighth Editions (1967, 1970-) on there is an integration of new microeconomic issues, such as, the economics of the environment, economics of health care, economics of time, and game theory. A core of microeconomic theory and analysis exists in all editions of

Economics, though its presentation and examples may have evolved through the editions. The core of microeconomics found in *Economics* can be listed as:

- Opportunity cost and the production possibility frontier
- Demand and supply
- Elasticity
- Utility theory
- Income distribution and the Lorenz curve
- Theory of the firm and production functions.

Samuelson is renowned for his classic 'guns and butter' presentation of the production transformation schedule (production possibility frontier, PPF) – the illustration that spans the sixteen editions. In the First Edition he (Sam. 1 1948, 18) explains to readers:

> "Let us, therefore, simplify (idealize, abstract) and assume that there are *only two* different goods or classes of goods to be produced. For dramatic purposes, let us consider the famous pair, butter and guns, two commodities popularly used to illustrate the wartime problem of choosing between civilian and military production."

For those readers uncomfortable with the guns and butter selection of goods, Samuelson provides alternatives: "Those who are war-weary may substitute any other two commodities such as bread and wine, or if they are teetotalers, bread and hyacinths, or for prosaic souls, food and clothing" (Sam. 1 1948, 18). The question of where Samuelson got his pair, 'guns and butter' is addressed in the Eighth Edition: "...we can choose the pair Adolf Hitler ranted about - guns and butter" (Sam. 8 1970, 20).

In this section in the First Edition (1948) Samuelson presents the following: a table of alternative possibilities of guns and butter, a pictorial figure of alternative production possibilities with small guns and packets of butter, a graphical figure of points of transforming butter into guns plotted on axes, and the production possibilities or transformation curve of guns and butter. He then goes on to compare an economy's position relative to its PPF, comparing the United States in the 1940s, 1933 Germany, and WWII Russia. This portrayal continues to the Seventh Edition (1967). The pictorial figure of alternative production possibilities of guns and butter can be seen in Figure 4.1 below.

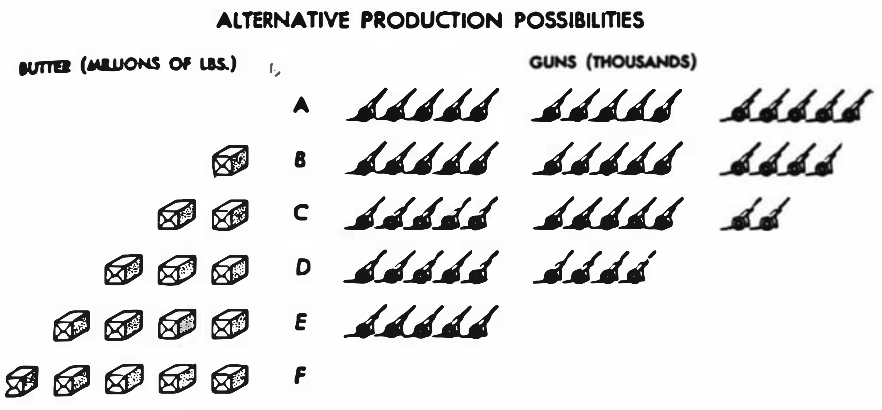

Figure 4.1: Samuelson's Guns and Butter Figure (Sam. 1 1948, 19)

In the Eighth Edition (1970) the pictorial figure of guns and butter is removed, and a discussion of an economy's inefficient organisation in relation to the 1960s in China is added: "...when the ideological drive for a 'great leap forward' resulted in ousting of experts and a disastrous attempt to make steel in backyard furnaces" (Sam. 8 1970, 20). This continues until the Twelfth Edition (1985) when no mention is made of China. Instead, the example is replaced with a discussion of Poland: "...after the general strikes in Poland of 1981 and 1982...output fell dramatically as the price system broke down" (Sam. 12 1985, 29). For the Thirteen Edition only, Samuelson (Sam. 13 1989, 29) adds: "Deregulation or removing government rules on business operations, such as occurred for airlines in the United States in the last decade, can improve efficiency and move the economy toward its frontier."

The Fifteenth Edition (1995) sees the removal of the post-WWII country comparison, and the discussions of Poland. Samuelson (Sam. 15 1995, 12) does include in this edition, however, a discussion about post-Communist Russia:

> "...during the early 1990s in Russia ...[the] country threw off its socialist planning system and substituted a free-market economy. Because of the disruptive changes in the economic system, output fell and unemployment rose as people attempted to adapt to the changed prices, laws, and incomes."

This continues into the Sixteenth Edition where Samuelson (Sam. 16 1998, 10) removes "Russia" and replaces it with "countries."

The PPF discussion is extended in the Sixth Edition (1964) where it explores: 'poor versus developed nations,' 'frontier versus interdependent society,' 'before thrift versus after thrift,' 'high investment versus high invention nation,' and 'balanced growth versus fixity of land.' In the Twelfth Edition (1985) the 'before thrift versus after thrift' example is replaced with 'before investment versus after investment.' In the Thirteenth Edition (1989) the 'independent society' is replaced by 'urban society,' and the 'balanced growth versus fixity of land' example is removed. In the Fourteenth Edition (1992) the 'high investment nation versus high invention nation' example is also removed. The Fifteenth and Sixteenth Editions (1995, 1998), sees the 'production possibility frontier' section moving from Chapter Two and into Chapter One, "Introduction." A staple in the core of microeconomic theory, the PPF, and especially Samuelson's 'guns and butter' presentation, has remained fundamentally the same throughout the sixteen editions.

Demand and supply analysis is a cornerstone in the presentation of the principles of economics. It is used to explain consumer and producer behaviour, and when discussing any market (for example, the labour market, foreign exchange market, and the housing market). Demand and supply are the key tools in presenting the interactions in a market and utilising the *ceteris paribus* assumption, portraying the cause and effect of external changes to new equilibrium positions. Presented graphically and through the use of schedules, demand and supply is utilised to depict real world examples and issues, for example farming and excise taxes. Throughout the sixteen editions, an extension to the discussion of demand and supply, substitute and complementary goods, and consumer surplus is included in an appendix. The appendix presents consumer equilibrium using geometric analysis, indifference curves and budget lines.

The concept of elasticity is also in the core of microeconomic theory, and has been presented numerically and graphically. The First Edition (1948) examines only the elasticity of demand. It is not until the Fifth Edition (1961) that the elasticity of supply is presented. The concept of elasticity, in conjunction with demand and supply curves, is used to demonstrate the decline in farming, the impact of a per unit tax on goods and services, and in more recent editions the economics of addiction:

> "The markets for addictive substances are big business. Annual cigarette expenditures today are around $50 billion, while those on alcohol are about $30 billion. Numbers for illegal drugs are obviously conjectural, but estimates of total spending range from

> $20 to $50 billion annually. Consumption of these substances may harm the users and often impose costs and harms on society. The harm to users includes early mortality and a wide range of medical problems in the case of cigarettes; 10,000 highway fatalities a year attributed to alcohol; binges and psychosis in the use of crack cocaine; and failures in school, job, and family, along with high levels of AIDS, from intravenous heroin use" (Sam. 16 1998, 89).

Utility theory is linked to gambling and insurance in the first four editions of the textbook (1948-1958). In the Fifth Edition (1961) it is included in the section on consumer equilibrium with a graphical and numerical presentation of utility theory. Though utility is still linked to gambling and insurance (appearing in the Sixth Edition, 1964, appendix "Economics of Speculation, Risk, Insurance"), it continues to be presented in the section on consumer theory and equilibrium condition setting.

A sizeable portion of the core of the microeconomic theory in *Economics* focuses on the presentation of the theory of the firm - perfect and imperfect competition. In this section, Samuelson portrays the firm and industry in various market structures using cost and revenue curves to calculate profit, output, and price. Shutdown and break-even points, the supply curves of the competitive firm and industry, increasing and decreasing costs, and profit maximisation are all presented graphically, and numerically.

The Fifth Edition (1961) discusses the monopoly equilibrium, the Chamberlin large group, and the oligopolist's equilibrium graphs. The kinked oligopoly demand graph appears in the Seventh Edition (1967), and disappears in the Twelfth Edition (1985). In the Eighth Edition (1970), an appendix "Monopoly Regulation and Exploitation, and Game Theory," is included. It presents price cutting warfare, the profit pay-off matrix, and the prisoner's dilemma. In the Fourteenth Edition (1992), the game theory matrices are incorporated into the main body of the textbook, including the pollution game, and free trade versus protection game.

Issues such as product differentiation and barriers to entry in industries are presented using modern examples:

> "Sometimes it is possible for companies to create barriers to entry for potential rivals by using advertising and product differentiation. Advertising can create product awareness and loyalty to well-known brands. For example, Pepsi and Coca-Cola spend together hundreds of millions of dollars per year advertising their brands, which makes it very expensive for any potential rivals to enter the cola market" (Sam. 16 1998, 161).

Samuelson (Sam. 16 1998, 349) introduces to readers the concept of innovation and profits using names familiar to them for example:

> "The people who invented new products or services organized the companies that brought them to market got rich on the 'Schumpeterian profits' from these innovations. This group of wealthy individuals includes folk heroes like Bill Gates, who built software giant Microsoft, or Sam Walton, who founded Wal-Mart."

In the Tenth Edition (1976), the 'new microeconomics' appears including the economics of time, human capital, economics theories of population, economics of law, and the economics of love and altruism. The new microeconomics is presented in a chapter entitled, "The Quality of Life: Poverty and Inequality, Ecology and Growth, Love and Justice." This chapter is removed in the Twelfth Edition (1985), but some of the material from the chapter is incorporated into the main body of the textbook. In the Tenth Edition Samuelson (Sam. 10 1976, 806-807) uses the following example to portray the economics of time:

> "If we are retired and have a low pension income, we spend much time in shopping for bargains; and we find it rational to buy food that is underprocessed, utilizing our inexpensive leisure time to do the preparations ourselves. By contrast, if you are a high-paid career woman, you rationally conserve time by shopping in an expensive store with many salespersons; you may order your groceries delivered by phone, paying for the special privileges; your table napkins are disposable, and your corn flakes come in a single-serving aluminum-foil container that is very expensive indeed."

Samuelson discusses the economics of the environment since the Eighth Edition (1970), including sections on urban blight, entropy, and the ecology of nature. Samuelson observes (Sam. 10 1976, 810) in the Tenth Edition: "One sees in today's cities in exaggerated degree a problem common to all modern life, namely, contamination of the general environment...Certainly man is the only animal who has managed to pollute the atmosphere itself." The Fifteenth and Sixteenth Editions (1995, 1998) have chapters entitled, "Natural Resources and Environmental Economics" and "Protecting the Environment," respectively, which provide a greater analysis of the economics of environmental externalities, emission controls, and climate change.

In the Ninth Edition (1973), the economics of health care appears, together with hospitals and asylums, private charity and welfare assistance. This continues through to the Sixteenth Edition (1998) where a large section on the economics of health care and health care reform is presented.

The core of microeconomics as presented by Samuelson in *Economics* has changed very little over the sixteen editions. The examples and applications have changed to ensure that it remains relevant and useful in the eyes of the readers, but the core theory is the same. This is not to say, however, that Samuelson has neglected to introduce new microeconomic ideas. For example, the economics of addiction, innovation, and the economics of health care appear in *Economics.* The principles of microeconomics remain stable. This stability attests to the strength of these principles through time.

4.4 Macroeconomics

> **Is there a core in macroeconomics? "That core is very close in spirit to what Paul Samuelson identified more than 40 years ago as the 'neo-classical synthesis.' It is based on two propositions: (i) In the short run, movements in economic activity are dominated by movements in aggregate demand; (ii) Over time, the economy tends to return to a steady-state growth path" (Blanchard 1997, 244).**

Macroeconomics,[1] a term that does not appear in *Economics* until the Fourth Edition (1958), has a less stable core than microeconomics. McConnell (1988, 150) considered the "real genius of Samuelson's *Economics* [to be] the *successful* introduction of macro theory at the principles level."

Some economists believe that macroeconomics has 'gone out of fashion,'[2] even in an era where past macroeconomic concerns are very relevant today. Because of the controversies in macroeconomics Krugman (1998b) argues that the macroeconomics section of some textbooks (for example Mankiw's book): "dwell on 'safe' issues like growth and inflation as long as possible, introducing the question of recessions and what to do about them almost as a footnote." Krugman (1998b) recognises that Samuelson:

> "knew what too many latter-day economists have forgotten: Macroeconomics is crucial to the public credibility of economics as a whole. Analytical, model-oriented thinking came to dominate American economics mainly because supernerds like Samuelson had

[1] "*Macroeconomics* was not in the index of my *Economics* first edition. Subsequent research suggests, however, that Erik Lindall (1939) [*Studies in the Theory of Money and Capital,* London: Allen and Unwin, 1939] first used the word in Swedish and English print" (Samuelson 1997, 157).

[2] Paul Krugman, "Size Does Matter: in Defence of Macroeconomics," posted on his website, Thursday July 9, 1998b.

something useful to say about the Great Depression, and their pompous, windy rivals did not."

Samuelson sees macroeconomics as being very relevant and important today. In the Sixteenth Edition of *Economics* he (Sam. 16 1998, 371-72) observes that:

> "Macroeconomic issues have dominated the political and economic agenda for much of the twentieth century. In the 1930s, when production, employment, and prices collapsed in the United States and across much of the industrial world, economists and political leaders wrestled with the calamity of the Great Depression. During World War II and again during the Vietnam war in the 1960s, the problem was one of managing a sustained boom and containing high inflation. In the 1970s the burning issue was 'stagflation'...Eventually, macroeconomic failures brought down the communist regimes and convinced people of the economic superiority of private markets as the best approach to encouraging rapid economic growth."

Since 1948 and the publication of *Economics*, textbooks began with macroeconomics, focussing on booms and busts, before dealing with microeconomics. *Economics* presented the 'neo-classical synthesis' and 'new economics' that impacted on the economics discipline between 1945 and 1970. This was essentially a fiscalist Keynesian macroeconomic approach, and a Marshallian microeconomic approach including imperfect competition (Bronfenbrenner 1982). Samuelson initially thought it important to begin *Economics* with the macroeconomics section including Keynesian economics, believing that students found the microeconomics section more interesting when they had first understood the workings of the economy. However, this changed in the Fourteenth Edition (1992), and microeconomics is now placed before macroeconomics in section order. This is standard in principles of economics textbooks today.

Samuelson (Sam. 10 1976, 845) points out to readers that:

> "The whole of this book [*Economics*] has been devoted to modern post-Keynesian political economy – the mainstream economics that prevails in America and Scandinavia, in England and Holland; and that is coming to prevail increasingly in Japan, France, Germany, Italy, and most of the Western world. The fruits of post-Keynesian economics have been the better working of the mixed economy."

As was reported in the *Boston Globe* (03/01/98): "Samuelson's *Economics* has been acclaimed for its conversational and uncondenscending style in explaining macroeconomics, the theory of how all forces work together to allow some economies to collapse and others to flourish." Macroeconomics has changed more than microeconomics over the past fifty years. This is due to the changing fortunes of Keynesianism and the rise of alternative schools of thought in the discipline. Maxwell (1999, 124) argues that:

> "The body of theory has changed a lot in macroeconomics and relatively less in microeconomics. In macroeconomics this is a reflection of the rise of Keynesian theory and its fall from fashion. It also reflects the more recent challenge of other schools of thought. Monetarism, supply-side economics, rational expectations, real business cycles, new Keynesian perspectives and the rising importance of international trade and finance have all appeared more comprehensively in recent times."

Macroeconomic theory and topics have had an upward trend from the First Edition, and fluctuates around thirty-six percent of the textbook. It is possible to outline some central topics that the macroeconomics section of *Economics* has included throughout its sixteen editions. These topics can be listed as follows:

- National income accounting
- Consumption and savings functions
- Investment
- Fiscal and monetary policy
- Money and banking.

National income accounting is a relatively stable section in macroeconomic theory in *Economics.* From the Ninth Edition (1973) on, a comparison between net economic welfare and GNP is also included. Until the Fourteenth Edition (1992), national income accounting uses the income and expenditure approach to calculate a nation's Gross National Product. From the Fourteenth Edition on, the same approaches are used to calculate Gross Domestic Product, giving a separate definition for GNP. Deflators and growth rates are calculated, and a breakdown of the national income components is examined in each of the editions.

The grand neo-classical synthesis is outlined by Samuelson in the Third Edition (1955). From the Eighth Edition (1970) on, however, Samuelson is not as direct in his presentation of the neo-classical synthesis. The essence of this synthesis is evident throughout each of his editions however. In the Sixteenth Edition, Samuelson (Sam. 16 1998, 621) maintains that:

> "Our philosophy in this textbook is to consider all the important schools of thought. We tend to emphasize the modern mainstream Keynesian approach as the best way to explain the business cycle in market economy. But the forces behind long-run economic growth are best understood by using the neoclassical model."

For the most part, the theory of income determination, or the modern theory of income analysis, presented in *Economics* is that attributed to Keynes. The Keynesian cross/forty-five degree line model has been the dominant tool used to portray and examine the macroeconomy. The forty-five degree diagram appears in the First Edition in 1948. Samuelson presents to introductory economics students a readable version of a model he devised, and presented in journal articles on the interaction of the multiplier and the acceleration principle.[3] Samuelson's *Economics* is the first introductory economics textbook to successfully present the 'Keynesian' analysis to students. Pearce and Hoover (1995, 193) argue that:

> "Samuelson's *Economics* succeeded in establishing normal science where earlier textbooks had failed in large measure because, unlike the authors of those earlier books. Samuelson did not attempt to explicitly and faithfully reproduce Keynes's ideas...In some sense, Samuelson's macroeconomic model is the product of a virgin birth...Samuelson's model is called Keynesian, though it bears a highly circumscribed relation to *The General Theory*...identification with a Keynesian school of thought was a secondary consideration for Samuelson, and that the development of his model was not substantially constrained by considerations of fidelity to Keynes's intentions, exposition, or method. Samuelson serves the god of economics, not the law of Keynes."

In the Twelfth Edition (1985), aggregate demand and supply analysis is introduced. In a sense it is grafted onto the Keynesian multiplier model. Samuelson (Sam. 12 1985, 96) now contends that: "The major task of macroeconomic policy making in a modern economy is to diagnose the pattern of shocks hitting the *AS* or *AD* curves and to prescribe the appropriate policies." Through to the latest edition, Samuelson (Sam. 16 1998, 446) maintains that "the *Keynesian multiplier*...is the simplest approach to understanding the way that changes in aggregate demand affect national output."

In the early editions of *Economics* there is a sense of one mainstream view of macroeconomic thought. In the later editions, however, it is acknowledged that:

> "Historians of science observe that the progress of science is discontinuous. New schools of thought rise, spread their influence, and convince skeptics. Perhaps somewhere in the warring schools of macroeconomics...lie the seeds of the new theory that will resolve the painful dilemmas of the mixed market economy" (Sam. 15 1995, 600).

Various schools of thought and different economic models and ideas appear throughout the sixteen editions of *Economics*. Some examples are the welfare and institutionalist schools,

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[3] Samuelson, P. "Interactions Between the Multiplier Analysis and the Principle of Acceleration." *Review of Economics and Statistics* 21 (1939a) : 75-78.
Samuelson, P. "A Synthesis of the Principle of Acceleration and the Multiplier." *Journal of Political Economy* 47 (1939b) : 786-97.

supply-side economics, rational expectations, classical economics and new-classical economics, the real business cycle theory, monetarism, Keynesian, new-Keynesian and post-Keynesian economics. From being a discipline with a unified accepted set of paradigms, by the Sixteenth Edition the discipline is described as being "in great ferment" (Sam. 16 1998, 372). Samuelson wonders if a new synthesis will be created to solve the problems of the new millennium. However, despite the various schools of thought and competing ideas, some economists see Samuelson's *Economics* as not only standing for the voice of orthodoxy, but also the voice of scientific neutrality and harmony (Pearce and Hoover 1995).

The chapter now moves to a closer look at the First and Sixteenth Editions (1948, 1998) of *Economics.* First taken separately, and then together these two textbooks are analysed and compared.

4.5 A Comparative Analysis: the First and Sixteenth Editions of *Economics*

Comparing both the First and Sixteenth Edition (1948, 1998) of *Economics* separately, allows an examination of some of the issues, events, key players, and thinking reflected in the textbook at the time. Two editions of the same textbook, written fifty years apart, will undoubtedly have a different emphasis and content. Section 4.5.1 looks at the First Edition, Section 4.5.2 the Sixteenth Edition, and Section 4.5.3 compares them with each other.

4.5.1 The First Edition 1948

> **"*Economics: An Introductory Analysis* runs some of the risks of the experimental. Whether these risks are justified by the undoubted gains in realism, in conformity to the shape of economic problems as they present themselves to the ordinary citizen, is a question almost impossible to answer *a priori*. The proper people to answer it would be the students for whom [the book was] written" (Croome 1949, 92).**

The First Edition of *Economics* reflects the concerns of the immediate post-war era, and provides an insight into the society of the time. The student who this textbook is written for is a young man, possibly an ex-serviceman, and probably European. The references and language used indicate this. Samuelson's aim is to prepare the returning soldier to the post-WWII economy and society. The First Edition deals with issues of insurance, mortgages, government policy, and planning for the future.

Chapter Four, "Individual and Family Income," includes sections on war prosperity and incomes, and the positions of minorities. Explicit discrimination existed in society, against minority groups and women. Statements appearing in *Economics* in this chapter include the following:

- "...an astonishing number of wives have no conception of their husbands' pay checks" (Sam. 1 1948, 61).
- "For it is in the wake of layoffs and economic insecurity that the disruptive cry against minorities - against Negro, Jew, Catholic, 'Okie' - gathers the force to cause our democratic institutions to tremble" (Sam. 1 1948, 84).

Chapter Ten, "Personal Finance and Social Security," includes sections on how to borrow money, the economics of home ownership and buying life insurance. *Economics* advises readers on how to get themselves set up with a home and insurance. After the turbulence of the recent depression and war years, and the potential threat of another war to come, this was considered an important issue.

Chapter Fifteen, "Federal Reserve and Central Bank Monetary Policy," has sections on controlling the business cycle by controlling the quantity of money, war finance and the banks, and the inadequacies of monetary control of the business cycle. This chapter indicates to readers the necessity of government intervention through fiscal policy due to the inability of monetary policy to control the business cycle. Exports and jobs, full employment at home, and the Marshall Plan for Europe are section headings in Chapter Sixteen, "International Finance and Domestic Employment." Chapter Twenty-Six, "Social Movements and Economic Welfare," includes sections on fascism, communism, and socialism.

Samuelson sees a very bright future ahead - prosperity, jobs, and reduction in poverty. In the epilogue to the First Edition, Samuelson (Sam. 1 1948, 606-08) highlights to readers that:

> "The average hours of work per week have dropped from 70 to 40 within the past century. Total man-hours have continued to increase because of population growth...real national income has doubled every generation and gives promise of

continuing to do so in the future...fewer and fewer of the population will fall below the poverty line."

The First Edition of Samuelson's *Economics* received both negative and positive reviews. Hart (1948) listed areas of concern with the First Edition including: an inadequate attention to inter-war and post-war practices in international relations, the Keynesian marginal efficiency of capital was left out, there was a soft pedalling of the influence of debt and liquidity, and Samuelson was unduly preoccupied with static equilibrium. Croome (1949, 91), by contrast, observes that:

> "Professor Samuelson gives no formal bibliography, but text and footnotes abound in stimulating references; the reader is given not merely specific clues to follow, but a lively sense of a whole confraternity of economists thrashing out problems, comparing notes, developing and discarding theories - and a healthy impression of the fallibility of experts."

Overall, the First Edition of *Economics* met with a good response. It became the benchmark of introductory economics textbooks to come.

4.5.2 The Sixteenth Edition 1998

> **"This is the age of the global marketplace" (Sam. 16 1998, 3).**

Fifty years after the publication of the First Edition, *Economics* has changed considerably. The language used has noticeably changed - there are no references to 'housewives' or 'Negroes'. Readers come from a variety of ethnic, social, cultural, and age groups, both women and men. *Economics*, however, still reflects world events and thinking. Now the central concern of the textbook is to ensure that students gain a good understanding of the modern mixed market economy.

Scarcity and efficiency are outlined as the twin themes of economics in the Sixteenth Edition, the overriding premise of the textbook being the role of the market. Chapter Two, "The Shifting Boundary between Markets and Governments," includes a section on the twilight of the welfare state. This indicates a distinct change in the government's role, and an increasing emphasis on the market, with less reliance on the state and more individual accountability and effort. Reviews and reductions of the welfare state are also indicators of this move.

The chapters included in this edition of *Economics* also provide an insight into market failure. Readers are made aware that the market does not always get it right or provide all the goods and services that society needs. Therefore there is still a role for government in a free-market economy:

- Chapter Eleven, "Uncertainty and Game Theory," includes sections on the troubling rise of gambling, and the market failures in information dissemination.
- Chapter Seventeen, "Curbing Market Power," includes a section on deregulation in the airline and electricity industry.
- Chapter Eighteen, "Protecting the Environment," has sections on population, pollution, living standards, renewable and non-renewable resources, valuing damages, and climate change.
- Chapter Nineteen, "Efficiency vs. Equality: the Big Trade-off," includes the battle over welfare reform, and an important section on health care.

The macroeconomics section has changed dramatically from a closed American economy approach, to an open economy, interdependent world approach. This is seen through the macroeconomic chapter topics and discussion:

- Chapter Twenty, "Overview of Macroeconomics," includes the foreign connection, along with a discussion of the macroeconomy and aggregate demand and supply.
- Chapter Twenty-Six, "Central Banking and Monetary Policy," includes open-market operations and monetary policy in the open economy.
- Chapter Twenty-Eight, "The Challenge of Economic Development," discusses industrialisation versus agriculture, state versus the market, the Asian models, the Chinese giant, market Leninism, the failed model Soviet communism, and from Marx to the market.
- Chapter Thirty-Six, "Managing the Global Economy," includes a section on the coming common currency in the European Union, the Euro.

4.5.3 Comparing the First and Sixteenth Editions of *Economics*

The Sixteenth Edition was published in quite a different world from that of the First. Communism had withered away in the Soviet Union, man had been to the moon and back, women were leaders of countries, computer and Internet technology had changed the way businesses operated. These differences come through in the Sixteenth Edition. However, reading the Sixteenth Edition readers still get a very real sense of Samuelson's First Edition:

the 'guns and butter' PPF presentation, exposure of the reader to a number of different economic ideas and concepts, and the use of popular figures and events to provide examples and extension to the theory. Table 4.2 compares the physical characteristics of the First and Sixteenth Editions of *Economics*.

Table 4.2: Comparing the First and Sixteenth Editions of *Economics*

	First Edition	Sixteenth Edition
Number of chapters	27	36
Number of pages	622	781
Number of words per page	446	683
Number of equations	31	67
Number of graphs	70	277
Glossary	None	Included
Index	Included	Included
Introductory Chapters	4	4
Chapters of Macro	8	13
Chapters of Micro	12	16
International Economic Chapters	3	3
Epilogue	Included	Included
Central theme	National income, unemployment and depression	Markets
Beginning chapter quotes	None	Included
End of chapter summary	Included	Included
End of chapter problems	Included	Included
Number of appendices	7	3

There are nine extra chapters, an additional 159 pages, and one-and-half times the number of words per page in the Sixteenth Edition when compared to the First. The Sixteenth Edition has over twice the number of equations, and nearly four times the number of graphs. In both editions, there are four introductory chapters, three trade chapters, and an epilogue. In the Sixteenth Edition, there are five extra macroeconomics chapters and four microeconomics chapters. The central theme of the First Edition is national income, unemployment and depression, while the Sixteenth Edition's key theme is markets. In both editions, Samuelson includes end-of-chapter summaries and problems, which were certainly a pedagogical innovation in 1948. Both editions have appendices to chapters, though the Sixteenth Edition has four fewer than the First.

In the First Edition the introductory chapters make up 14.8 percent of the total chapters, forty-four percent of the chapters cover microeconomic analysis, 29.6 percent macroeconomic analysis, and eleven percent international economics. The Sixteenth Edition has eleven percent of the chapters covering the introductory material, forty-four percent making up the microeconomic analysis section, thirty-six percent macroeconomic analysis, and 8.3 percent dealing with international economics. The First and Sixteenth Editions of *Economics* have the same percentage of the textbook focused on microeconomic analysis. However, macroeconomic analysis in the Sixteenth Edition has increased by more than six percent. Though the percentage of international economics chapters has decreased from the First to Sixteenth Edition, international economics is included in a more extensive way in 1998 than it is in the First Edition.

The people, industries, events, and issues that appear in the two editions are different. The First Edition includes people like Calvin Coolidge, Friedrich Engels, Adolf Hitler, Herbert Hoover, Benito Mussolini, William Shakespeare, and Oscar Wilde. The Sixteenth Edition's index lists: Alan Blinder, George Bush, Bill Clinton, Bill Cosby, Deng Xiaopeng, Bill Gates, Mel Gibson, Paul Krugman, Claudia Schiffer, Margaret Thatcher, and Boris Yeltsin.

Some of the central issues and industries that appear in the index of the First Edition include: atomic energy, fascism, job opportunities for Negro, Knights of Labour, Marshall Plan, secular stagnation, and the toothpaste company. In the Sixteenth Edition, the list is somewhat different: aggregate demand and supply, addiction, Apple Computer, Coca Cola, deregulation, econometrics, emissions, Exxon Valdez, IBM, Microsoft Corporation, NAFTA, NAIRU, OPEC, Pepsi, stagflation, teenage unemployment, Walmart, and Windows 95. Capitalism, communism, gambling, GNP, socialism, and welfare economics appear in both editions. The terms 'Negro,' 'businessman,' and 'females' appear in the First Edition, and the term 'women' appears in the Sixteenth Edition showing the move to a more 'politically correct' world.

The First and Sixteenth Editions of *Economics* reflect the thinking and events of two periods of time - 1948 and 1998 - and both present the core of microeconomic and macroeconomic theory. Samuelson's uses world events, popularly known people, and issues to provide information to the reader, and to extend the theory so that it is useful and relevant in both editions. Back in 1949 Croome (1949, 90) observed that: "Professor Samuelson (besides writing genuine, human English instead of textbookese) uses precept and example to relate his teaching to reality and to keep that relation constantly in the student's mind." This holds true for his Sixteenth Edition published fifty years after Croome made this observation. Part of the success of the First Edition has to be that there ever was a Sixteenth Edition.

4.6 Competing Economic Paradigms

> **"Fashion always plays an important role in economic science; new concepts become the *mode*, then are *passé*" (Samuelson 1972b, 166).**

Mainstream economics has evolved through time, taking on board some of the new ideas and theories permanently into its core, resulting in a paradigm shift. Other ideas have been merely fads that have had a moment of glory, but not stood the test of either scientific rigor or time. Samuelson, through *Economics*, has endeavoured to present controversies, different ideas and concepts, as well as the mainstream core of economics. He believes that the teaching of economics has to be topical, and present the state of the debate in mainstream economics, and that this should be done in an appealing way for students, to encourage them to think further about economic issues. Samuelson wants to introduce students to the different opinions and ideas of economists, exposing them to some of the central debates in economic thinking. The Keynesian revolution altered mainstream economic thinking: a paradigm shift occurred. This new influence on economic thought caused debate and controversy.

The grand neo-classical synthesis developed by Samuelson attempted to bring together Keynesian economics (macroeconomics) and classical microeconomics, thereby creating a stable core in economics. This synthesis was introduced to students in the Third Edition of *Economics*, and though the terminology is now not used, it continues to be the solid foundation of the Sixteenth Edition. Two of the challenges to the grand neo-classical synthesis were monetarism and rational expectations.

This section of the chapter first examines the grand neo-classical synthesis and its presentation in *Economics*, before moving to explore two of its challenges - monetarism and rational expectations. The chapter then moves to examine some selected analytical concepts - the

Laffer curve, the 'kinked' demand curve, the Phillips curve, and Say's Law - and how they have changed through their life-cycle in *Economics*. The section concludes with an examination of Marxian economics in *Economics*.

4.6.1 Grand Neo-classical Synthesis

> **"Paul Samuelson's greatest contribution to macroeconomics was the neo-classical synthesis of which he was the principal architect. This Weltanschauung reconciled the classical and Keynesian strands of his thinking and that of many of his contemporaries. It became orthodox doctrine for a generation of economists and for many of their students" (Tobin 1983, 197).**

In the Second Edition of *Economics*, Samuelson (Sam. 2 1951, 260) observes: "90 per cent of American economists have stopped being 'Keynesian economists' or 'anti-Keynesian economists.' Instead they have worked toward a synthesis of whatever is valuable in older economics and in modern theories of income determination." Samuelson introduces to the discipline a new paradigm, one that had a notable impact on mainstream economic thought - the grand neo-classical synthesis:

> "Particularly in the writings of such American economists as Solow, Tobin, and myself [Samuelson], attention was focused on a managed economy which through skillful use of fiscal and monetary policy channeled the Keynesian forces of effective demand into behaving like a neoclassical model. All this can be found in all but the first two editions of my elementary textbook, in Tobin's *Journal of Political Economy* article of 1955, in T. Swan's *Economic Review* article of 1956, and in Solow's *Quarterly Journal of Economics* article of 1956" (Samuelson 1964b, 341).

Samuelson coined the phrase grand neo-classical synthesis, a mix of Keynesian and classical economics:

> "In view of the controversial nature of the subject, the shifting conceptions in time, and its dominance over postwar American mainstream economics, it is advisable to glean the essence of the synthesis from Samuelson's 1951 statement: 'My viewpoint is that of a general neoclassical theory that incorporates into the classical tradition whatever parts of the Keynesian and neo-Keynesian analysis that seem to possess descriptive validity for the present-day economy. In its general outline, I think this is the viewpoint that Marshall, Walras, and Wicksell would subscribe to if they were alive today; and I am inclined to think that Adam Smith himself would claim an important share in its formulation' [Samuelson 1966, p. 1271]" (Feiwel 1982, 206).

This phrase - grand neo-classical synthesis - represented the consensus view of economists in terms of macroeconomics that existed in the mid-1950s in the United States. Samuelson (Sam.

3 1955, 360) describes his synthesis to readers of his introductory economics textbook in the Third Edition:

> "Here at the end of Part Two's analysis of aggregative economics or macroeconomics, it is fitting to formulate an important tenet of modern economics. Neoclassical synthesis: by means of appropriately reinforcing monetary and fiscal policies, our mixed-enterprise system can avoid the excesses of boom and slump and can look forward to healthy progressive growth. This fundamental being understood, the paradoxes that robbed the older classical principles dealing with small-scale 'microeconomics' of much of their relevance and validity - these paradoxes will now lose their sting. In short, mastery of the modern analysis of income determination genuinely validates the basic classical pricing principles; and - perhaps for the first time - the economist is justified in saying that the broad cleavage between microeconomics and macroeconomics has been closed."

The grand neo-classical synthesis was designed to bring together aggregate macroeconomics, and the traditional microeconomics into "complementing unity" (Sam. 3 1955, vi). Samuelson was hopeful that the economic policies from this paradigm would bring growth and prosperity to economies. In 1964, he (1964, 341) highlighted this vision:

> "One of the consequences of the neo-classical synthesis was the sanguine hope that a modern society could increase its rate of growth at full employment by coaxing out a deepening of capital investment through expansionary monetary policy, while using an austere enough fiscal policy to prevent demand-pull inflation. These combined devices could, in effect, lower the share of full employment income going to consumption and yet not jeopardise full employment itself."

It remained a dominant paradigm in mainstream economics for another twenty years, with contributions from Hicks (the Hicks-Hansen IS-LM model was a strong feature of the neo-classical synthesis in the 1950s and 1960s), Modigliani, Solow and Tobin (Blanchard 1987, 634). The synthesis had been very successful during the Kennedy years and the beginning of the Johnson administration, largely due to its empirical success. Unlike original neo-classical theory, this synthesis did not expect full employment under free market conditions, but advocated the appropriate use of monetary and fiscal policies to manage the economy. As the international economy remained buoyant and calm, all seemed well.

The world economy changed in the 1970s. Cost shocks hit countries through the oil crises and harvest failures, and inflation began to demand a dominant place in economic thinking. By the 1970s, the neo-classical synthesis began to be seriously challenged. The 'fine-tuning' of the economy was becoming more difficult to achieve and justify. Cost shocks hit the supply side of the economy, stagflation ensued, and economic policy did not seem to have an answer.

Economists from the left and right started challenging the assumptions, methodology, and the relevant policy implications of the synthesis. Were there underlying problems that meant the synthesis was not the panacea it was said to be? Blanchard (1987, 634) argued that:

> "The synthesis had however suffered from the start from schizophrenia in its relation to microeconomics. This schizophrenia was eventually to lead to a serious crisis, under the challenge of the 'new classical macroeconomics' led by Lucas, Sargent and others, from which it has not yet emerged."

Samuelson reacted to the challenge and dropped the term 'grand neo-classical synthesis' in the Eighth Edition (1970). In the later years Samuelson (Samuelson 1997, 155) explained that he dropped the term as it "smacked too much of complacency: perfection is at hand, economics is an exact science blahblah." However, even if the terminology was removed, the ideas and goals of the synthesis remained in later editions of the textbook. The mix of Keynesian and classical models developed in the 1950s, and refined through the years are still at the heart of Samuelson's *Economics*. Some still see it as the essential core of macroeconomics and not to be tampered with (Skousen 1991). Two challenges to the apparent weaknesses of the grand neo-classical synthesis, which Samuelson did not favour himself, were monetarism and rational expectations.

4.6.2 Challenges to the Grand Neo-classical Synthesis

Through the editions of *Economics* various challenges to mainstream economics, both modern and historical are presented. Some of these competing paradigms were integrated (or parts of the paradigms) into mainstream economic thinking. Others were passing ideas and 'fads.' Two challenges to the grand neo-classical synthesis were monetarism, and rational expectations.

Monetarism

> **"Samuelson admitted that in earlier writings he tended to understate the role of money and the potency of monetary policy. But he does not agree with those 'who think that monetary policy by itself is the sole or principal mechanism for controlling the aggregative behavior of a modern economy. I believe such a view to be factually wrong or irrelevant; and would add that, even if monetary policies truly had this exaggerated degree of potency, I would not deem it optimal social policy to rely exclusively or primarily upon that weapon alone' [Samuelson 1966, p. 1361]" (Feiwel 1982, 220).**

One of the most public challenges to Keynesian economics and the grand neo-classical synthesis came from 'monetarism,' specifically a refinement of the neo-classical quantity theory of money. In the 1960s and 1970s, there was a change in thinking among academics, politicians, and the public. Some economists, policy-makers, and members of the public were beginning to question the role and place of government in the economy, and how effective the government's role as regulators and controllers of the economy actually was. The rise in inflation and unemployment in the 1970s forced mainstream economists to reassess their macroeconomic theories and strategies. Massive monetary expansion brought on by the deficit financed war effort, and the rising energy prices created high inflation for many nations.

American government expenditure had increased in the 1970s. More was being spent on transfer payments to citizens, and less on the purchase of capital goods and services. Taxation was increasing, as were compliance costs of government regulation. A reduction in incentives and an increasingly regulated economy caused the level of savings and investment to decline. There was also increasing foreign competition in trade, which brought increased calls for protectionist policies as industries buckled under the strain of increasing energy prices and higher wages. New answers needed to be found in this changing and turbulent situation.

Monetarism was based on optimising behaviour. Its proponents had a more mathematical orientation, rejected Keynesianism, and believed in limited government. Friedman, among other 'monetarists,' believed that inflation could only be reduced if there was a reduction in monetary expansion. He proposed that the Federal Reserve keep the money supply steady, increasing it slowly with inflation and the long-run growth rate. Friedman advocated following rules, rather than active government intervention to control the money supply (to keep it in step with the country's ability to produce goods), with the aim of reducing inflation. A reduction of government spending was also advocated, with increased privatisation to create greater efficiency, and credit restricted by high interest rates.[4]

[4] "On the whole, the monetarism for which Friedman first became famous seems clever, brilliantly argued, but shallow - and perhaps even a bit disingenuous. Friedman's writings from that period have the feel of a smart man who knows what he wants to believe, looking hard for supporting arguments" (Krugman 1994, 39-40).

Samuelson was slow to 'warm' to the monetarist philosophy and economic policies. Reflecting back on the earlier editions of *Economics* he (Samuelson 1999, 353) acknowledges that: "Fiscal policy was given too much emphasis at the expense of monetary policy. Yes. Can this be excused by the fact that not until the 1951 Accord did the Federal Reserve get back its freedom to exercise an autonomous monetary policy? Admittedly, that is an excuse in part."

In the Third Edition of *Economics* Samuelson (Sam. 3 1955, 316) indicates to readers that: "Today few economists regard Federal Reserve monetary policy as a panacea for controlling the business cycle." Up until the Eighth Edition he still presents monetarism as an "extreme view" (Sam. 8 1970, 309). In Eighth Edition of *Economics* he includes the statement that: "in 1970, post-Keynesians accord an importance to the role of money in the process of income determination that would have surprised the first disciples of Keynes" (Sam. 8 1970, 194). Later in this edition Samuelson (Sam. 8 1970, 309) argues that: "where monetarism differs from this so-called 'post-Keynesian neoclassical synthesis,' it is essentially wrong and indeed an extreme." Despite this, a greater significance is given to the role of money in this edition. Samuelson concedes in the next edition that "both fiscal and monetary policies matter much" (Sam. 9 1973, 329). By the Eleventh Edition he (Sam. 11 1980, 310) acknowledges:

> "that the best of what has been validated in the post-Keynesian models can be - and ought to be - combined with the insights of monetarism and of the newest school of rational expectations...The good author, I believe, owes the reader a fair account of the opposing contentions."

Monetarism influenced economic policy in the United States and the United Kingdom in the late 1970s and 1980s: "This powerful philosophy [monetarism] has had a major impact on the economic policies of the Thatcher government in Britain since 1979 as well as on those of the Reagan administration in the United States" (Sam. 12 1985, 323). Samuelson (Sam. 13 1989, 362) describes how the Chairman of the American Federal Reserve, Paul Volcker: "launched a fierce counterattack against inflation in what has been called a monetarist experiment." By the end of 1982, however, this experiment was stopped, and the reasons for the halt of the monetarist experiment are outlined in the Thirteenth Edition:

> "...because of the perceived need to loosen monetary policy during the deep recession, because of growing political opposition to the Federal Reserve's tight-money policies, because of confusion about the definition of the money supply in light of changes in banking law and practices, and because of the extraordinary drop in velocity" (Sam. 13 1989, 363).

By 1995, and the Fifteenth Edition, Samuelson presents monetary policy as the dominant policy for stabilisation. He (Sam. 15 1995, 645) says: "Fiscal policy is no longer a major tool of stabilization policy in the United States. Over the foreseeable future, stabilization policy will be performed by Federal Reserve monetary policy." From a slow start, Samuelson in *Economics* embraces the central role of monetary policy in providing stabilisation for an economy - however, always with a note of caution.

As the concept of a single dominant mainstream paradigm broke down in the 1960s and 1970s, new-classical macroeconomics emerged. Part of the new-classical thought was the concept of rational expectations.

Rational Expectations

"...suppose that Congress always boosts spending in election years. Rational-expectations theory assumes that people will anticipate this kind of behavior and act accordingly" (Sam. 16 1998, 632).

The theory of rational expectations came into mainstream economic thought during the 1970s. Robert Muth initially modelled the idea in the early 1960s. Rational expectations focussed on a far more passive approach by government when influencing the economy using fiscal and monetary tools. Snowden, Vane and Wynarczyk (1996, 192) argue that: "The use of the word 'rational' in the presentation of the hypothesis proved to be an important 'rhetorical' weapon in the battle to win the minds of macroeconomists during the 1970s." As the rational expectations approach took off it further reduced the emphasis on Keynesianism. Samuelson (1987b, 110), however, only saw rational expectations as a "game with an interesting technique," saying "all our brightest and best under forty are whoring after the new explorations." Samuelson (Sam. 12 1985, 764) reflects this sentiment (though greatly toned down) in the Twelfth Edition of *Economics*: "Such an approach has fallen on deaf ears among many older mainstream economists, people who fought to introduce Keynesian ideas into economic policy. But younger theorists often take inspiration from the ideas and approaches of the rational-expectations schools."

A key assumption behind the rational expectations hypothesis is that firms and consumers base their decision-making on the efficient use of all the information available to them. Rational expectations is a ‘forward-looking’ approach, where systematically incorrect expectations cannot be made over time. The “rational-expectations hypothesis holds that people make unbiased forecasts. A more controversial assumption is that people use all available information and economic theory” (Sam. 15 1995, 612).

Rational expectations first appears in *Economics* in the Eleventh Edition (1980). It has a brief descriptive statement located in a footnote, in a section called “Monetarism and ‘Rational-Expectations’ Schools” in the chapter, “Federal Reserve and Central Bank Monetary Policy.” There is a distinct change in the Twelfth Edition where Samuelson (Sam. 12 1985, viii) says in the “Preface:”

> “We provide a complete introductory analysis of rational-expectations macroeconomics. The policy-ineffectiveness theorem, the Lucas critique, the case for fixed rules - along with critiques of rational-expectations macroeconomics - appear in a self-contained Appendix. And throughout the whole of the macroeconomics discussion, the thrust of the new school is kept in mind.”

Rational expectations appears in the chapter, “Winds of Change: Economic Alternatives,” which includes a discussion of new-classical economics. The rational expectations revolution is also presented as an appendix to the chapter, “Monetarism and the Demand for Money.” The discussion of the rational expectations approach is eleven pages long, which represents less than one percent of the total number of pages in the textbook, and continues as such in the Thirteenth Edition (1989).

The Fourteenth Edition presents rational expectations in the chapter, “Winds of Change: the Triumph of the Market,” and five pages in the chapter, “Issues in Economic Stabilization.” Samuelson (Sam. 14 1992, xvii) says in the “Preface:” “we have streamlined the treatment of macroeconomics by shortening the analysis of rational-expectations macroeconomics and moving it from an appendix into Chapter 35.”

In the early 1990s, the dominance of monetarist and rational expectations theorists in mainstream theory and policy began to decline. The amount of textbook space given to rational expectations in the Fifteenth and Sixteenth Editions (1995, 1998) matches this fall. The discussion is essentially down to three paragraphs in a section on new-classical macroeconomics. Samuelson (Sam. 16 1998, 632) does say, however:

"Expectations are important in economic life. They influence how much investors will spend on investment goods and whether consumers spend or save for the future...The key new assumption in new classical macroeconomics is that because of rational expectations the government cannot fool the people with systematic economic policies."

The amount of textbook space devoted to rational expectations is low at less than one percent at its peak when compared with Marxian economics in *Economics,* which reached a peak in the Eleventh Edition (1980) with 6.2 percent of the total number of pages in that edition. When looking at the amount of space given to rational expectations and Say's Law a comparable pattern is evident. Say's Law peaked in the Eleventh Edition and represented 0.8 percent of the total pages in this edition, similar to that of rational expectations. Rational expectations is not a topic favoured by Samuelson and its treatment in *Economics* bears this out.

From an "interesting technique" that the younger economists were "whoring after" (Samuelson 1987b, 110), to a concession that expectations are important to consider when policy decisions are made, rational expectations had its time in the mainstream spotlight, and its time in *Economics*. It is not absent from the textbook in the latest edition, but certainly reduced from the 'heady' days of the Twelfth and Thirteenth Editions (1985, 1989).

4.6.3 Selected Analytical Concepts

Despite Samuelson's own misgivings about certain economic concepts, he considers it important to expose readers of his introductory textbook to a range of current economic techniques and ideas. What follows is a review of how some selected analytical concepts are presented in *Economics*: the Laffer curve, the 'kinked' demand curve, the Phillips curve, and Say's Law.

The Laffer Curve

"The supply-side school argued that the disincentive effects of high marginal tax rates were responsible for many of the nation's ills - low saving, recession, stagnant productivity, and high inflation. Led by Arthur Laffer, along with Jude Wanniski, Norman Ture, and Paul Craig Roberts, this group emphasized the importance of low marginal tax rates for good economic performance. And one of the major analytical tools introduced by this group was the Laffer curve" (Sam. 12 1985, 736).

The Laffer curve shows the relationship between tax revenues and tax rates. The theory simply says that with a zero tax rate there are no tax revenues, and when tax rates are one hundred percent, no one will work, therefore no tax revenues will exist either. As taxes increase from zero, tax revenues will rise until they reach a point of maximum revenue. Once maximum is reached and taxes continue to rise, people will begin to work less, and there will be a reduction in saving, people will also move more of their transactions to the underground economy. The concern of supply-side conservative economists in the 1980s was that the tax rates in the United States were too high, thus providing a disincentive to work and save. Samuelson (Sam. 14 1992, 314) describes this group of supply-side economists in the Fourteenth Edition: "inspired by Columbia's Robert Mundell, this group emphasized the importance of low marginal tax rates for good economic performance. One of the analytical tools introduced by this group was the Laffer curve, named for California economist and sometime senatorial candidate Arthur Laffer."

The Laffer curve first appears in *Economics* in the Twelfth Edition (1985) where it is presented descriptively and graphically. Samuelson (Sam. 12 1985, 737) states in this edition that: "the Laffer curve is a device for showing how taxes may produce such distortions and disincentives that revenues are actually reduced as tax rates are increased." This descriptive and graphical portrayal of the Laffer curve continues in *Economics* to the Fifteenth Edition (1995).

Ronald Reagan took the Laffer curve on board his policy platform. He implemented a series of tax cuts as President of the United States in the 1980s: "They [Jack Kemp, Art Laffer, and Jude Wanniski] told him [Reagan] about the 'Laffer curve.' It set off a symphony in his ears. He [Reagan] knew instantly that is was true and would never doubt it a moment thereafter" (Sam. 13 1989, 796).[5]

In the mid-1980s, questions were raised about the validity of Laffer's proposition - did it actually work? "What I [Samuelson] encountered was little genuine belief in Laffer-curve miracles. It is expedient to reserve judgment on that issue, so that one can continue to dangle

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[5] The Reagan administration's attachment to the Laffer curve may well be an example of what Krugman (1994, 290) referred to as Gresham's Law; "Once an administration has decided to accept a set of basically bad ideas in one place, there is a sort of Gresham's Law in which these bad ideas drive out good ones even in seemingly unrelated areas."

out hope to help sell the program of tax cuts now" (Samuelson 1983a, 21). The federal budget figures for 1979 and 1983 tended to suggest to Samuelson (Sam. 13 1989, 796) that the promised increase in tax revenues from the tax cuts were not a reality: "The Laffer-curve prediction that revenues would rise following the tax cuts has proven false; indeed, federal revenues shrank and the federal budget consequently moved from an approximate balance in 1979 to a gaping $200 billion deficit after 1983." In the Fourteenth Edition Samuelson (Sam. 14 1992, 332) argues that: "the central prediction of the supply-side economists - that working and saving would increase dramatically as marginal tax rates were cut - has up to now proven incorrect. By the usual scientific standards, the supply-side experiment suggests that the underlying theory should be rejected."

The Sixteenth Edition (1998) does not include a graphical presentation of the Laffer curve. In the final analysis Samuelson sees the Laffer curve as inadequate economic theory, one that was certainly not proven empirically. Keynesian economists attacked supply-side economic theory and policy implications. In the end it was more than just Keynesians who disagreed with the Laffer curve and its prediction that lower taxes would lead to an increase in government revenues. Samuelson (Sam. 16 1998, 639) observes in the Sixteenth Edition: "Mainstream economists across the political spectrum, and even some supply-side economists, have scoffed at the Laffer proposition that cutting tax rates today would increase tax revenues."

The 'Kinked' Demand Curve

> **"Sweezy's early oligopoly theory is related to his prior critique of expectation in neo-classical models and to his subsequent movement toward an explicitly Marxian position" (Burkett 1991, 59).**

Paul Sweezy, an American economist, developed an oligopoly theory where his demand curve was more elastic at the top than at the bottom - it was 'kinked'. The 'kinked' demand curve explained why the prices that were set by competing oligopolists tended to be stable. If one firm was to increase their price, and their rivals did not match the rise, they would lose sales. If the firm charged a lower price it would not gain any sales, as their competing firms would follow suit. Price increases and decreases were therefore self-defeating. The expectations that oligopolists firms had about their competitors' behaviour dictated their pricing strategies. Prices were likely to be 'sticky' even if costs changed in this explanation.

The 'kinked' demand curve discussion of oligopoly first appears in the Fifth Edition (1955) of *Economics*, and continues as a brief discussion until the Eighth Edition (1970). In the Eighth through Eleventh Editions (1970-1980) a more extensive presentation of the 'kinked' demand curve appears. A four-paragraph section including a graphical presentation outlines how a 'kinked' demand curve explains the rigidity of oligopolists' prices. Samuelson (Sam. 10 1976, 516) points out to readers in the Tenth Edition:

> "A 'cornered' or 'kinked' demand curve around an administered level of markup price - because P cuts are matched and P increases are not - can help explain rigidity of oligopoly price compared with both perfect-competition and complete-monopoly flexible price. Also, this rigidity makes tacit agreement more easily possible."

From the Twelfth Edition (1985) the oligopolists 'kinked' demand curve model of pricing behaviour disappears. The idea that an oligopoly market had a pricing structure that was any more (or less) stable than any other industry type was questioned. Instead, the section on oligopolistic market structures includes the collusive oligopoly and dominant-firm oligopoly models, and moves away from the idea of the rigidity of prices.

Paul Sweezy appears in the index of *Economics* in Editions Nine through to Fourteen (1973-1992). Interestingly, however, he appears not for his theory of oligopoly, but rather mention is made of him in the "Winds of Change" chapter in a section on the New Left: "The central figures were socialists like Marx and Engels, communists like Lenin, anarchists like Proudhon, and neo-Marxists of the 1950s like Baran and Sweezy" (Sam. 14 1992, 380). Sweezy's oligopoly model appears in *Economics* from 1961-1980, but he is not connected to it. Instead it is his affiliation with the economics of the left that has placed him in the textbook.

The Sixteenth Edition of *Economics* does not include the 'kinked' demand curve or references to Sweezy. The 'kinked' demand curve is a model that Samuelson considers has had its day in introductory economics courses, now it is not considered part of mainstream economic thought, as he omits it from the current edition of *Economics*.

The Phillips Curve

> **"In an innovative paper in 1958, Bill Phillips, a British engineer turned economist...produced a statistical relationship which demonstrated a negative relationship between money wages and unemployment, using British historical data from 1861 to 1913. In other words, when unemployment rose, the rate of income of money wages fell, and vice versa. This relationship became famous in economics, known in the literature as the Phillips curve" (Ormerod 1995, 119).**

In 1958, William Phillips portrayed a statistical relationship that showed a negative relationship between money wages and unemployment, using British historical data from 1861 to 1913. It seemed that when unemployment increased, the rate of increase of money wages decreased, with the reverse being true also. This relationship became known in economic circles as the Phillips curve. Researchers then tried to repeat the study and found similar kinds of relationships in the data for the period after WWII, both in Britain and in other countries. Snowden, Vane and Wynarczyk (1996, 150) contend that: "The Phillips curve was quickly adopted by orthodox Keynesians as it provided an explanation of price determination and inflation which was missing in the then prevailing macroeconomic model." The forty-five degree diagram did not adequately portray and explain the phenomenon of inflation, so the Phillips curve was quickly embraced to compensate for this deficiency. Pearce and Hoover (1995, 205) point out that:

> "The fact that the 45-degree diagram was inadequate to the analysis of inflation probably explains the rapidity with which the Phillips curve was incorporated into Samuelson's *Economics*. Phillips's article on wage inflation and unemployment was published in 1958; Samuelson and Solow extended it to price inflation and used it for policy analysis in an article in the *American Economic Review* in 1960. And it appears in *Economics* for the first time in the fifth edition, published in 1961."

In their 1960 article[6] in the *American Economic Review,* Samuelson and Solow extended the Phillips curve to incorporate price inflation, and used it for policy analysis. Samuelson and Solow's conclusions were hedged with some cautions about the margins of error in their estimates. They did, however, provide two clear guidelines for American policy-makers: (1) to have zero inflation in the United States, an unemployment rate of five to six percent was required, and (2) at an unemployment rate of three percent (the full employment level) inflation would be in the range between four and five percent per year. It now seemed that economic policy-makers could well have a large degree of control over the economy at the

[6] Samuelson, P. and R. Solow. "Analytical Aspects of Anti-Inflationary Policy." *American Economic Review* 50 (1960) : 177-194.

macro-level. This blended well with the existing Keynesian framework, as the manipulation of tax rates, interest rates, public spending, and the level of unemployment could be decided by the government. This extension of the Phillips curve by Samuelson and Solow, incorporating the inflation rate seemed now to provide governments with the power to choose between inflation and unemployment levels.

By the late 1960s and early 1970s, however, with inflation and unemployment on the increase, an era of stagflation began. The pre-1972 Phillips curves were not able to handle the food and energy shocks that dominated the period from 1972 to 1981. As a consequence policy-makers dramatically underestimated the level of inflation. This was because of the unstated assumption that the macroeconomic shocks came solely from the demand side, an assumption eventually proven incorrect through the events of the 1970s and 1980s. The model could generate a positively sloped Phillips curve if the shocks came from the supply-side, which is what the econometric evidence pointed to (Blinder, 1988). The seeming instability of the Phillips curve gave Friedman and others the chance to attack the concept of government choosing between different combinations of unemployment and inflation rates. Monetarists saw this as an opportunity to discredit Keynesian economics, and the large role government had in 'tinkering' with the economy through changes in taxation and expenditure.

By the end of the 1970s, most of the mainstream American Keynesian economists had accepted that the long-run Phillips curve was vertical. Controversy then grew among economists over the length of time it would take an economy to return to the long-run equilibrium position. Debates over rationality, the natural rate of unemployment and equilibrium continue to dominate economic discussion on inflation and unemployment.

In the Fifth Edition (1961) of *Economics* the Phillips curve first appears. It is presented in an appendix to the chapter, "Synthesis of Monetary Analysis and Income Analysis," illustrated by one graph. By the Eighth Edition (1970), the Phillips curve (previously in an appendix), is fully integrated into the main body of the textbook, and is extended to include three graphs. Samuelson discusses the instability of the Phillips curve and acknowledges the economics profession's turn toward the expectations-augmented Phillips curve. He (Sam. 8 1970, 811) points out to readers: "we should reemphasize that economics is not an exact science. The data will not really fit any one Phillips curve perfectly. More important still is the fact that the measured Phillips curves represent *short-term* relationships which will shift in the longer run."

In the Fifth Edition, Samuelson presents how a society, or an economy, could obtain a better Phillips curve. This idea is not developed further until the Ninth Edition (1973). Until the Ninth Edition the Phillips curve is presented in a descriptive way, portraying the inflationary problem that confronts policy-makers when choosing between feasible combinations of inflation and unemployment. When stagflation took hold, Samuelson revisits the Phillips curve and suggests three policy approaches to improve the trade-off in the Phillips curve to lower the natural rate of unemployment:

> "(1) *manpower training programs and improved labor-market mechanisms*...(2) *Reduction of discrimination* against particular classes in the labor force...and *increased realism* on the side of would-be workers concerning the renumerations and qualifications relevant to viable employment opportunities [and]...(3) A program to make the *government the employer of last resort*" (Sam. 9 1973, 836).

The Phillips curve is portrayed graphically and descriptively from the Fifth through to Sixteenth Editions (1961-1998). In the Fifth to Seventh Editions (1961-1967) the section has only one graph, increasing to three graphs in the Eighth Edition (1970). The highest number of graphs in the Phillips curve section is in the Thirteenth and Fourteenth Editions (1989, 1992), with six graphs. This represents just over two percent of the total number of graphs in the textbook.

Until the Eighth Edition (1970), the Phillips curve is portrayed only as a downward sloping curve. From the Eighth Edition onwards the more vertically sloped long-term Phillips curve is also portrayed. In the Twelfth Edition (1985) a comparison of the Phillips curve in 1960 and 1982 appears called the 'Phillips Curl.'

In the Thirteenth Edition (1989), Samuelson asks if the Phillips curve is dead. It seems not as the Fourteenth Edition (1992) presents an adapted Phillips curve with new-classical ideas, the rational-expectations (or new-classical) Phillips curve, and the actual and natural rates of unemployment graph. In the Fifteenth and Sixteenth Editions (1995, 1998) the Phillips curve appears in the chapter, "The Warring Schools of Macroeconomics," still commanding a similar amount of textbook space, including five graphs. Though the original Phillips curve has changed since it was first introduced in *Economics* in 1961, it has evolved and developed into a theory still considered useful to be introduced to students in the late 1990s and the early twenty-first century.

Say's Law

Classical economists "knew about business cycles, but they viewed them as temporary and self-correcting aberrations. Their analysis revolved around Say's Law of Markets" (Sam. 16 1998, 622).

Jean-Baptiste Say (1767-1832) wrote *A Treatise on Political Economy*, published in 1803. He believed that if an economy produced more goods it would increase income, which in turn would increase the demand for other goods. Producing more output would increase national income, and markets would adjust fully and automatically. Therefore, overproduction was impossible as supply created its own demand. This law has been vigorously debated since 1803, in part due to the ambiguities surrounding it, and also its relevance to the changing economic environment. Say's Law first appeared in the Fifth Edition of Samuelson's *Economics* in 1961, and has remained in *Economics* through to the current Sixteen Edition.

Say's Law focussed on the theory that supply creates its own demand, so no excess supply (or glut) was possible; exchange was in goods, and money had no independent role. A partial glut in the short-run was restored quickly through competition, using the price mechanism and capital mobility, output and capital accumulation could increase indefinitely. Samuelson (Sam. 16 1998, 622) observes in the Sixteenth Edition:

> "This theory, propounded in 1803 by the French economist J. B. Say, states that overproduction is impossible by its very nature. This is sometimes expressed today as 'supply creates its own demand.' What is the rationale for Say's Law? It rests on a view that there is no essential difference between a monetary economy and a barter economy - that whatever factories can produce, workers can afford to buy."

Say looked at the long-run situation and saw no limits to the possible growth in output or demand. He did acknowledge, however, that in the short-run things could be different, with a partial glut of some goods. Say did not consider this would lead to a general glut over the whole economy. Oser and Brue (1988) see Say's Law as dominating economic thinking until the Keynesian Revolution. Galbraith (1987) views the overthrowing of Say's Law as marking the birth of macroeconomics. Samuelson (Sam. 14 1992, 379) in *Economics* argues that:

"Keynes' breakthrough mortally wounded the belief in Say's Law (which held overproduction to be impossible)."

Say's Law first appears in the index of *Economics* in the Fifth Edition, and remains in the textbook through to the current Sixteenth Edition (1961-1998). In the Ninth through Thirteenth Editions (1973-1989), Say's Law appears in three or four different chapters, with four to seven different page references in the index. The Eleventh Edition (1980) of *Economics* has the greatest number of page references to Say's Law in the index, representing 0.8 percent of the total pages in this edition.

In the Fifth Edition (1961) Say's Law first appears in the chapter "Synthesis of Monetary Analysis and Income Analysis," where it remains until the Eleventh Edition (1980). In the Eighth Edition (1970) it also appears in the chapter "The Theory of Growth," where it remains until the Eleventh Edition. In the Ninth Edition (1973) it appears in the chapter "Winds of Change: Evolution of Economic Doctrines," remaining here until the Fourteenth Edition (1992). In the Eleventh Edition it also appears in the chapter "Income Determination: Simple Multiplier Theory." The Twelfth and Thirteenth Editions (1985, 1989) see Say's Law appearing in the chapters, "Fiscal-Monetary Mix and Government Deficits," and "Interest, Profits and Capital." In the Fourteenth Edition it appears in the chapter "Fundamentals of Aggregate Supply and Demand," and appears in the chapter "The Warring Schools of Macroeconomics" in the Fifteenth and Sixteenth Editions (1995-1998).

In the Twelfth Edition (1985) there is a dramatic decrease in the amount of space given to Say's Law. This edition kept little of the descriptive information from previous editions, and instead Say's Law takes on a more historical note. The Twelfth Edition, however, also includes a graphical presentation of Say's Law, and this remains in the textbook through to the current Sixteenth Edition (1998). Samuelson (Sam. 16 1998, 622) uses the graphical presentation to portray what he sees as: "The durable and valid core of Say's Law and of the classical approach...[It is] an economy where prices and real wages are determined in competitive markets, moving flexibly up and down to eliminate any excess demand or supply." Say's Law, developed and debated since 1803, still retains a place in the current edition of *Economics*, enduring the test of time to retain a place in modern mainstream economics.

4.6.4 Marxism

> **"John Maynard Keynes was scientifically the greatest economist of this century. Only Adam Smith and Leon Walras can be mentioned in the same breath with him. Karl Marx can be mentioned in the same breath with Mohammed and Jesus" (Samuelson, 1983b, 167).**

Socialist thought has encompassed various types of socialism including Marxism. It rejects the classical notion of the harmony of interests, the concept of laissez-faire, and Say's Law of markets. Instead, socialism advocates the belief in the perfectibility of people, collective action, and public ownership. Marxist socialism focuses on the labour theory of value, the theory of exploitation, and the law of motion of capitalism. Samuelson (Sam. 5 1961, 823) says of Marx in the Fifth Edition of *Economics*: "Karl Marx (1818-1883), who began as a student of Hegelian philosophy but ended up as the messiah of a new doctrine of 'scientific socialism,' worked in exile with his friend and financial sponsor Friedrich Engels to establish a whole new theory of economics and history."

Samuelson makes references to Marxian economics in all editions of *Economics*.[7] Karl Marx, and some of his thinking and theory, has been incorporated into the main body of Samuelson's *Economics*. Throughout the sixteen editions Samuelson has compared and contrasted communism[8] and capitalism, the former Soviet Union and America. In the Sixteenth Edition Samuelson (Sam. 16 1998, 551) provides readers with an insight into the message of Marxian communism:

> "In Marx's view, the injustice of capitalists' receiving unearned income justifies transferring the ownership of factories and other means of production from capitalists to workers. He trumpeted his message in The Communist Manifesto (1848): 'Let the ruling classes tremble at a Communist Revolution. The proletariats have nothing to lose but their chains.' And the ruling capitalist classes did tremble at Marxism for more than a century!"

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[7] A criticism of Gurley (1975, 433) about the presentation of Marxian economics in introductory economics textbooks was that "not only [was Marxian economics] generally emasculated by these authors, but it is also treated in such isolation from the rest of the material that it appears to be some new, exotic 'field' in economics, rather than what it is, a mode of thought that challenges every single aspect of conventional economic theory - the ideological counterpart of the working classes challenge to every single aspect of the monopoly of private property ownership."

[8] Revolutionary socialism was based on the theories of political philosophers Karl Marx and Friedrich Engels, emphasising the common ownership of the factors of production and a planned economy. The principle being, you work to your capacity and receive according to your needs. Politically, communism seeks the overthrow of capitalism through a proletarian revolution.

Table 4.3 shows the number of pages in the sixteen editions of *Economics* that refer to Karl Marx and Marxian economics. It also relates this as a percentage of the pages in the edition, and as a percentage of standardised pages.

Table 4.3: The Number of Pages with Reference to Karl Marx and Marxian Economics in the Sixteen Editions of *Economics*

Edition	Total Number of Pages in the Edition	Percentage of the Number of Pages of the Edition	Percentage of Standardised Pages
1	5	0.8	1.5
2	5	0.7	0.8
3	9	1.2	1.6
4	9	1.1	1.4
5	11	1.3	1.5
6	16	1.9	2.3
7	17	2.0	2.4
8	21	2.4	2.4
9	48	5.2	5.4
10	45	4.9	4.7
11	53	6.2	4.9
12	16	1.7	1.2
13	23	2.3	1.6
14	14	1.8	1.6
15	3	0.4	0.4
16	4	0.5	0.5

Table 4.3 clearly shows the rise of Marxian economic discussion in *Economics* up to the Eleventh Edition (1980). From five pages in the First Edition (1948) to fifty-three in the Eleventh Edition, there is an increase of 960 percent. However, there is also a decline in the space devoted to Marxian economics from the Thirteenth Edition (1989), down to four pages in the Sixteenth Edition (1998), a page less than the First Edition. In the Eleventh Edition 6.2 percent of the pages in the textbook are related to Marx and Marxian economics, now in the Sixteenth Edition it is only 0.5 percent, a decline of ninety-two percent. Considering the amount of Marxian economic discussion in terms of a percentage of standardised pages, the Ninth Edition has the highest percentage with 5.4 percent, then the Eleventh Edition with 4.9 percent. Both as a percentage of the number of pages of the edition and of standardised pages, Marxian economics is less in the Sixteenth Edition than the First. However, it is certain that

Marxian economics and Karl Marx himself were considered important to Samuelson to present to introductory economics students in *Economics*. The amount of space devoted to Marx and Marxian economics is far greater than that given to rational expectations and Say's Law for example.

In the first eleven editions of *Economics* (1948-1980), an historical note on Marxian communism and Soviet Russia is included in the chapter discussing social movements and economic welfare. Karl Marx is described by Samuelson (Sam. 3 1955, 12) as the:

> "black sheep, who was beyond the pale of the true classical tradition. Karl Marx, an exile from Germany, worked away in the British Museum vowing that the bourgeoisie would pay for the suffering his boils caused him as he sat working out his theories of the inevitable downfall of capitalism."

The iron law of wages, as well as discussions of other aspects of Marxian labour theory, for example, the reserve army of the unemployed appear in *Economics*:

- "He [Marx] put great emphasis upon the 'reserve army of the unemployed.' In effect, employers were supposed to lead their workers to the factory windows and point to the unemployed workers out at the factory gates, eager to work for less. This, Marx thought, would depress wages to the subsistence level" (Sam. 6 1964, 553).

- "A careful study shows that Marx's theory of prices differed little from the labor theory of value laid out by Ricardo a half-century earlier. Instead, Marx attempted to expose the nature of profit. In essence, he hoped to show that profits – that part of output that is produced by workers but received by capitalists – amount to 'unearned income'...Marx attempted to deduce 'scientifically' the inevitable transition from capitalism to socialism" (Sam. 14 1992, 385).

In the Fourth and Fifth Editions (1958-1961), Marx's scientific socialism versus utopian socialism is presented in an appendix, "A Thumbnail Sketch of the History of Economic Doctrines." In the Seventh Edition Samuelson (Sam. 7 1967, 1) reminds readers that: "A billion people, one-third of the world's population, blindly regard *Das Kapital* as economic gospel." A 'gospel' Samuelson in later editions explores in more detail. The Ninth to Thirteenth Editions (1973-1989) represent the most dominant period of Marx and Marxian economics in Samuelson's *Economics*.

In the "Preface" to the Ninth Edition, Samuelson (Sam. 9 1973, ix) presents his rationale for the inclusion of more Marxian economics:

> "It is a scandal that, until recently, even majors in economics were taught nothing of Karl Marx except that he was an unsound fellow. This was not out of intimidation by the plutocratic interests, but rather reflection of the fact that such independent and impassioned teachers of the last generation as John Maynard Keynes thought Marx sterile and dull. In this edition, I have tried to treat Karl Marx as neither God nor Devil - but as a secular scholar whom half the world's population deem important. The rudiments of mature Marxism, as well as the insights of the resurrected Young Marx, are newly discussed in this revision."

From the Ninth to Eleventh Editions (1973-1980) the chapter, "The Winds of Change," contains a biography of Marx, Marx's schemata, crisis in Marxism and the New Left, and the young Karl Marx:

> "The young Karl Marx, while still in his neo-Hegelian stage and before he had studied political economy, prophetically discerned the inhumane (and inhuman!) alienation involved in modern industry. Although his emphasis changed in maturity, Marx never completely lost sight of alienation" (Sam. 10 1976, 53-54).

This chapter also has an appendix, "Rudiments of Marxian Economics," which includes a discussion on surplus value and exploitation, rejection of marginal productivity distribution theory, steady expanded reproduction, and secularising Marxian economics.

In the Twelfth and Thirteenth Editions (1985, 1989), there is a change in the amount of Marxian economics in the textbook. "The Winds of Change" chapter now only includes the biography of Karl Marx. Marxian economics, alternative economic systems, and the appendix, "Rudiments of Marxian Economics," are dropped. Marxian economics is still discussed in later editions, but in a much-reduced way. Although the amount of space devoted to Marx in *Economics* has decreased Samuelson (Sam. 14 1992, 385) still recognises the importance of Marxian thought, and says:

> "The economic interpretation of history is one of Marx's lasting contributions to Western thought. Marx argued that economic interests lie behind and determine our values. Why do business executives vote for conservative candidates, while labor leaders support those who advocate raising the minimum wage or increasing unemployment benefits? The reason, Marx held, is that people's beliefs and ideologies reflect the material interests of their social and economic class."

In the Fifteenth and Sixteenth Editions (1995, 1998) Marxian economics appears in the chapter "Problems of Economic Growth and Development." The sections are entitled; "Marxism: the roots of communism," and "From Marx to the market," wording closely allied to the real-world position of communism. The decline in Marxian economic discussion coincides with the changes in the communist world, the fall of the Berlin Wall, the defeat of communist regimes in Czechoslovakia and Rumania, and the break-up of the Soviet Union. Instead of capitalism self-destructing, as Marxists believed, communism was defeated through internal tensions and turned to democracy and the market.

Although Samuelson discusses Karl Marx and Marxian economics in all editions of *Economics*, there are, however, peaks and troughs in the amount of space dedicated to Marx and his theories. Not all commentators are positive about the presentation of Marx and Marxian economics in Samuelson's textbook. Gurley (1975, 433) contends that: "Even Paul Samuelson, who has by far the best discussion of Karl Marx among the textbook authors I have read, presents Marx incorrectly at times, superficially at other times, sometimes shabbily, and often with trickery."

Despite this, Marx has stood the test of time, as an economic thinker who, Samuelson considers introductory economics students should be exposed to as they work through their principles course. Samuelson (Sam. 15 1995, 7) observes that: "*Marx was the most influential and perceptive critic of the market economy ever.*"

4.7 Conclusion

> **"What sex is to the biology classroom, stocks and investment riskiness is to the sophomore economics lecture hall. That chapter on personal finance, put there to keep hard-boiled MIT electrical engineers awake, helped make introductory economics the largest elective course at hundreds of colleges" (Samuelson 1999, 352-53)**

Economic thought evolves partly due to new problems and changes in the world environment, and partly due to the economic thinkers of the time. The Keynesian revolution changed the way economists looked at economic problems. It also gave rise to various schools of thought, each presenting different ways of examining economic issues and the economic environment. The grand neo-classical synthesis attempted to breach the gap between macro and microeconomics. Monetarists, New-Classicists, Supply-side economists all proposed new theories and models, which competed against each other to be held as the dominant paradigm of mainstream economic thought, and which their proponents hoped would solve the problems of the time.

The critical and hesitant treatment by Samuelson in *Economics* of both Monetarism and Rational Expectations shows to what extent Samuelson's own important contribution - the grand neo-classical synthesis - pervades not only his book, but also the teaching of undergraduate economics. Samuelson's grand neo-classical synthesis still dominates introductory economics. Why? Because of the incredibly robust framework that Samuelson presented in the Third Edition of *Economics* in 1955.

The Laffer curve, the 'kinked' demand curve, the Phillips curve and Say's Law are very different aspects of economics, each occupying space over the sixteen editions of *Economics*. Through the last sixteen editions, and fifty years, many passing fads have had their moment in the spotlight, while other more concrete topics and theories have lasted the test of time. The Laffer curve and 'kinked' demand curve would fall into the 'passing fad' category.

Samuelson appears to believe in the importance of presenting introductory economics students to a wide range of economic ideas and modes of thought, hence the inclusion of new, sometimes controversial topics into *Economics*. Samuelson also considers it essential to expose introductory economics students to various economic thinkers and philosophers, from Adam Smith to Karl Marx, Milton Friedman to Robert Lucas.[9] Samuelson acknowledges this in the Tenth Edition (Sam. 10 1976, 845):

> "What we need to do at this point is to render justice to the *critiques* of conventional political economy that have prevailed in the past, that prevail now, and that will undoubtedly continue to flourish in the future. For, as Kuhn reminds us, a discipline that does not stay young, alive, and open will find itself elbowed out by the competition of fresh paradigms and preoccupations."

The ability of *Economics* to evolve has been the key to its survival. Samuelson (Sam. 16 1998, 621) outlines that his philosophy for *Economics* "is to consider all the important schools of thought...Historians of science observe that the progress of science is discontinuous. New schools of thought rise, spread their influence, and convince skeptics."

[9] "I believe it is healthy for a discipline like economics to evolve in response to new developments and better understandings of historical reality...Funeral by funeral, economics does make progress" (Samuelson 1997, 159).

Samuelson sees the introduction to the discipline of economics as one that should be enjoyable and exciting. His words to a student reading his textbook convey this:

> "...we envy you, the beginning student, as you set out to explore the exciting world of economics for the first time. This is a thrill that, alas, you can experience only once in a lifetime. So, as you embark, we wish you bon voyage!" (Sam. 16 1998, xxxv).

Chapter Five:

Mathematisation and *Economics*

"Samuelson sees mathematics as much more than a mere device to clarify verbal arguments. 'With the assistance of mathematics,' he observes, 'I can see a property of the ninety-nine dimensional surfaces hidden from the naked eye.' Mathematics, in other words, can reveal aspects of economic theory which are not apparent from intuition alone" (Briet and Ransom 1982, 112).

5.1 Introduction

> **"Attacks on the excessive formalism of economics – on its reliance on abstract models, on its use of too much mathematics – have been a constant for the past 150 years. Some of those attacks have come from knowledgeable insiders – from the likes of McCloskey (1997) or even Marshall. More often, however, the attacks have come from outsiders – from journalists, political crusaders, and so on" (Krugman 1998a, 1829).**

Since 1945, the mathematical emphasis in economics has increased, with Paul Samuelson having a leading role in this revolution. The dominance of Keynesianism in economic theory and policy, as well as the change in methodology towards a more mathematical approach, appeared to give economics its real 'scientific' status. This was further advanced with the introduction in 1969 of a Nobel Prize in Economic Science. Debreu (1987, 402) contends:

> "The pursuit of logical rigour also contributed powerfully to the rapid expansion of mathematical economics after World War II. It made it possible for research workers to use the precisely stated and flawlessly proved results that appeared in the literature without scrutinizing their statements and their proofs in every detail."

It is said that there have been three great 'waves' in modern economics: the Keynesian revolution, the imperfect-competition revolution, and the mathematical and econometric revolution. Feiwel (1982a, 4) asserts that: "Samuelson made the greatest splash in the 'third wave' of modern economics...mathematization." This 'third wave' in modern mainstream economics, mathematisation, is a category of formalism.

Since the beginning, and again over the last few decades, criticism has arisen over the extent of formalism in economics. As economists and others have examined the public face of the economics discipline, they worry that the extensive use (perhaps in some cases exclusive use) of mathematical methodology is creating a barrier to the general public and potential economics students.

In 1998, *The Economic Journal* (Vol. 108), included a section called "Controversy: Formalism in Economics," the contributors were Dow, Krugman, Weintraub, Backhouse, and Chick. They recognised formalism as:

> "an important part of the discussion of the public image of economics...formalism being seen as a potential barrier to communication with non-economists, including potential students of economics. At issue here is not only whether non-economists

may be deterred by the perceived difficulty of formal techniques, but also whether they perceive a formalist approach as making it difficult for economics to maintain its relevance for real-world issues" (Dow, 1998, 1826).

Formalism has enabled great progress in economics, and has facilitated developments in economic theory testing and modelling. It has led to advances in economics in a number of ways as outlined by Woo (1986):

- It has resulted in the standardisation of the terminology and the methods of analysis in the science.
- It has enabled the essential nature of theories to be determined.
- It has provided a degree of objectivity.
- It has made the assumptions clear.

The terms formalism, abstraction, axiomatisation, and mathematisation are often used arbitrarily to mean a variety of things. The definitions of these terms are not clear. Weintraub (1998) agrees that the definitions of the words 'rigorous,' 'mathematical,' and 'formal' are not clear, nor are their links with each other. He considers that economists today equate rigour with axiomatics and formalist mathematics. O'Donnell (1995, 1) argues that formalism means the "symbolic representation, mathematics, and statistical inference or econometrics."[1] Some economists like Samuelson[2] see mathematics as a language, while others see it as a process.

Backhouse (1998) examines the question of what formalism is. He categorises it into three parts: axiomatisation, mathematisation, and methodological formalism.

Axiomatisation is defined as reducing knowledge into a set of established, widely accepted principles – axioms. Then by utilising a defined logical rule (or rules) it is possible to obtain

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[1] "The 'algebraic' mode of mathematical analysis is related to 'scholasticism.' Both are characterised by formal precision and rigour and as a result have contributions to make in economics...on the other hand, the 'symbolic' mode of mathematical usage is related to the 'quasi-formal style' or 'symptomatic thinking'...this approach, based on logic applied to complex material exhibiting variable mixtures of change and constancy, aimed at a 'middle way' between scholasticism (or completely formal or watertight thinking) on the one side, and woolliness (or confusion or obscurity) on the other" (O'Donnell 1995, 7).

[2] For Samuelson "mathematics is literally *language* (not merely a language, as Willard Gibbs says) and great fun, to boot" (Silk 1974, 41).

propositions from the axioms. Backhouse (1998, 1848) contends that: "Proof is simply a matter of applying logical rules. It is a mechanical process." Mathematisation is defined as the use of mathematical techniques in economic arguments, for example geometry and algebra.[3] The use of mathematical techniques in economics portrays the change in the rhetoric and pedagogy of the discipline. The third category, methodological formalism, is defined as using an agreed set of methods to solve different types of economic problems. For example, there is an increasing use of optimising models of behaviour and probabilistic models in solving economic problems. Backhouse (1998, 1849) argues that:

> "What they [formalism categories] have in common is the breaking down of a complex chain of reasoning into an explicitly stated series of steps, each of which is sufficiently simple for there to be an agreed procedure for dealing with it. The resulting chain of reasoning can then be believed with confidence."

This chapter considers how the mathematisation of economics has influenced modern mainstream economics. Samuelson and his role in the mathematisation of economics is then examined. Finally, Samuelson's textbook *Economics* is analysed to see how it has been influenced by the mathematisation of the discipline. An examination of the impact of mathematisation in *Economics* is undertaken by reviewing the theory of income determination section over the sixteen editions.

5.2 Mathematisation

> **What is practised in economics is "not the application of mathematics to the economic problems of the real world. Rather it is the application of highly precise and elaborate mathematics to an entirely imaginary and fanciful economic cloud cuckoo land" (Blatt 1983, 171).**

The prestige and accomplishments of the physical sciences, especially physics, influenced economics in the nineteenth century. Economists of the time were aware of the power that mathematics played in this, and began turning their attention and analysis in that direction. In 1838, Cournot published *Recherches sur les principes mathematiques de la theorie des*

[3] "Mathematics can serve useful functions in economics in two ways. One way is the algebraic, where variables either clearly possess numerical or mathematical properties or can have these attributed to them by means of simplifying assumptions, so that relevant mathematical manipulations may be performed...the other way is the symbolic, where mathematical formulation provides a general way of expressing and thinking about relationships between concepts" (O'Donnell 1995, 7).

richesses; it had mathematical form and economic content. In 1874, Leon Walras of the University of Lausanne, published *Elements d'economie politique pure.* Originally trained as a physicist, Walras introduced mathematical systems of analysis into economics, some of which have remained in mainstream economics today - such as the Walrasian General Equilibrium model. Pareto, of the University of Lausanne (from 1896 to 1897), published *Cours d'economie politique*, *Manuel d'economie politique* (1909), and "Economie mathematique" in 1911. These scholars used a high degree of mathematical reasoning and expression, and their work readily lent itself to a comparison with physics. The introduction of mathematics into more and more areas of economic theory caused an increase in the mathematical application to questions raised by economic theorists. Some mathematicians were attracted to these areas of economics, thereby increasing their mathematical methodology and rigor.

A body of groundbreaking research and work was undertaken during the late 1930s through to the 1950s. In 1939, Hicks published *Value and Capital.* Allais published *A la recherche d'une discipline economique* in 1943. Von Neumann and Morgenstern brought out *Theory of Games and Economic Behaviour* in 1944, and Samuelson's *Foundations of Economic Analysis* was published in 1947. All four treatises further introduced mathematical techniques into economic theory and discussion. Econometric models that were created and used during WWII to aid wartime planning, and post-war development further facilitated the move towards mathematisation in economic literature.

Klein (1954, 360) argued that non-mathematical economists' "contributions to economic analysis often tend to be fat, sloppy, and vague. There is a real merit in condensing wordy volumes of manuscripts into a few understandable pages." However, as Samuelson (1954, 380) pointed out this mathematical revolution in economics was not easy for some:

> "For make no mistake about it: to every economist of the present generation, mathematics presents a psychological problem. Each meets this problem in his own way. Some sublimate their feelings and transfer from economic theory into the area of history of doctrines or...labor economics. Others wrestle with the devil and pass sleepy weekends browsing and rebrowsing through the early chapters of R.G.D. Allen's invaluable handbook. Still others ultimately reach a kind of equilibrium without ever having made up their minds whether the hills off are truly green or whether instead the grapes therein are truly sour."

The scope and expansion of mathematical economics can be seen as a dynamic process that began in universities in the 1950s. Grubel and Boland (1986, 423) contend that mathematical economics: "captured university committees which set curricula and grant financial assistance to graduate students during an era of great optimism about the usefulness of natural science methodology to the social sciences in the 1950s and 1960s." This led to a greater demand for teachers of economics trained in mathematics, increased research output, and the development of new journals. These were all indicators of the growing importance and significance of this group of economists' work.

Not all economists fully embraced the increasing strength and dominance of mathematical economics. Novick (1954, 357) was particularly outspoken about the increased role of mathematics in economics: "This method of expression has been used occasionally in economics, but within the last fifteen years, and particularly since 1945, there has been an increasing use of mathematics as an expository device in the sciences of society. The result has been a most unfortunate one." Schoeffler (1954, 88) reiterated this view: "There is a tendency for the users of mathematics to become so enamored of and even hypnotized by their apparatus of reasoning that their very perception of the world around them becomes affected." The concern of many economists (and non-economists) was the perceived gap between esoteric economic theory and thinking, and reality (or practice).

Certainly the increased use of mathematical techniques and language did impact on the ability of economists to communicate with the general public, and perhaps with each other. For some economists, the scientific authority and precision that the mathematical techniques allowed provided an end rather than a means:

> "It is certainly the case that mathematics is no more than a language of science, and mathematical economics an extension of the verbal-logical Ricardian abstract economics, but because mathematics is powerful it will always become an object of fetishism, unlike abstract reasoning in words...mathematical economists construct a mountain as it were from these sorts of quasi-scientific (or pseudo-scientific) pieces, and worship as gods those who have contributed to making the mountain a high one" (Morishima 1984, 70).

Kuenne (1982, 271-72) points out that this has "led otherwise balanced theorists into such sterile talmudism as to ponder whether this or that excess demand correspondence is or is not upper semi-continuous in a never-never land of their own creation." Some economists contend that what counts as economic knowledge is only that which is in mathematical form or is easily translatable to it. Woo (1986, 9) observes that "mathematicization in economics has developed to the point where it appears that only economic knowledge in the mathematical form or translatable into the mathematical form constitutes significant and therefore respectable economic knowledge."

When economists do not write for non-economist audiences, removing their formal techniques, then the discipline separates itself from the general public and the potential student. This reduces the perceived impact of economists on public policy and opinion. Krugman (1998a, 1836) asks an important question:

> "How may good economists actually do write carefully constructed, well-targeted articles based on serious economic analysis, for a wider audience? I believe that the number in the United States can be counted on the fingers of one hand. This is absurdly low given both the size of the profession and the stakes involved: such articles, together with non-technical books aimed at a broader audience, can sometimes exert a startling influence on public discussion and even on policy. Yet for the most part good economists have simply abandoned this kind of writing, leaving the field wide open for this sort of person who hates economists because they insist that his argument adds up."

Some in the general public, business people, and the introductory economics students perceive mathematical economics as irrelevant. It is this perception that draws people away from economics in all its forms. It is not only non-economists who are concerned by the extent of the use of mathematics in economics, and the less applied and relevant nature of the economics that is taught and published. Parker (1993, 3) points out that:

> "the heavy reliance on advanced mathematical techniques has led finally to a rebellion within the economics mainstream. Asked by COGEE [Commission on Graduate Education in Economics of the American Economic Association] whether economics training now 'overemphasizes mathematical and statistical tools at the expense of substance,' 61 percent of graduate professors agreed. 'Our major concern focuses on the extent to which graduate education in economics may have become too removed from real economic problems,' the commission writes."

This is reiterated by Uchitelle (1999) when commenting that: "the graduate school training in economics, with its heavy emphasis on mathematics and mathematical modeling of abstract situations, does not relate easily to the issues of the day."

There is also a school of thought that believes that economics journals have become less relevant, and more remote due to the high level of mathematical content. Skousen (1991, 3) argues that: "The vast majority of articles in the professional journals are highly mathematical exercises in pure theory, far removed from practical values." This point is reiterated by Friedman (1992, 38): "Again and again, I have read articles written primarily in mathematics, in which the central conclusions and reasoning could readily have been restated in English, and the mathematics relegated to an appendix, making the article far more accessible to the reader." Bennett and Johnson (1979), and Grubel and Boland (1986) carried out studies into the amount of mathematics in top economics journals.

The journals examined in Bennett and Johnson's (1979) study were: *Kyklos, Economic Journal, Economic Inquiry, American Economic Review, Canadian Journal of Economics, Journal of Political Economy, Land Economics, Review of Economic Studies, Southern Economic Journal.* Bennett and Johnson (1979, 40) argue that: "Even the casual observer is aware that a far greater emphasis is now placed on mathematical rigor and econometric quantification than in the past. They (1979, 40) found that "there was a dramatic increase from the base year in the percent of pages with equations." Six of the nine journals Bennett and Johnson examined had equations on more than twenty percent of their pages. Four journals had equations on more than thirty-five percent of their pages. Bennett and Johnson (1979, 42) further commented that:

> "The change that has taken place in the accepted economic approach could well result in a paradox: the purpose of a professional periodical is to enlighten its readers. Nevertheless, the increasing use of quantitative presentations can make much of the literature ever more inaccessible to a substantial segment of the profession."

The journals examined in Grubel and Boland's (1986) study were: *American Economic Review, Weltwirtschaftlicher Archiv, Economic Journal, Kyklos, Review of Economic Studies, Brookings Papers, Quarterly Journal of Economics, Journal of Monetary Economics, Canadian Journal of Economics, Review of Economics and Statistics, Journal of Economic Theory, International Economic Review, Bell/Rand Journal, Journal of Political Economy.* Grubel and Boland (1986) found that among the older, more established journals there was an increasing amount of space given to mathematical models. This had been a continuous progression since WWII when about half of the journal space was devoted to mathematical models. There had also been a further increase in the total journal space devoted to pure mathematical models since several new journals had been committed to the publication of this material from their inception. Journals such as the *Journal of Economic Theory, Review of Economic Studies, International Economics Review,* and the *Bell/Rand Journal* had the highest proportion of mathematical materials in their journals. An upward trend was found in the use of mathematics in the papers of most journals surveyed. Grubel and Boland's (1986, 439) study reached the following conclusion: "Our study has one rather clear-cut conclusion: The editors of economics journals should reduce the space devoted to mathematically oriented material."

Grubel and Boland (1986) also surveyed three different sets of economists: four hundred people listed in the *American Economics Association 1978 Handbook*, two hundred people from the Canadian Economics Association, and two hundred names from Blaug and Sturges (1983),[4] including the names of all living Nobel Prize winning Laureates of economics. The questionnaire asked about the appropriate role, level, and use of mathematical economics. From the results two interesting points emerged. First, around sixty percent of the respondents believed that mathematics leaves a student poorly prepared for non-academic employment. Second, the level of mathematics in journals was said, by sixty-four percent of the respondents, to be too high. This conclusion was echoed by Nobel Prize winning Laureate Wassily Leontief:

> "Professional economic journals are filled with mathematical formulas leading the reader from sets of more or less plausible but entirely arbitrary assumptions to precisely stated but irrelevant theoretical conclusions...Year after year economic theorists continue to produce scores of mathematical models and to explore in great detail their formal properties; and the econometricians fit algebraic functions of all possible shapes to essentially the same sets of data without being able to advance, in any perceptible way, a systematic understanding of the structure and the operations of a real economic system" (Lawson 1997a).

The neglect of the 'real world' in modern economics is a position many economists seem content to accept. However, Hansen (1975, 434) comments on the need to stay topical and relevant in the teaching and presenting of economics:

> "The emergence of new issues and problems - the Vietnam war, poverty, environment, and the like, coupled with the challenge posed by radical economics - has called for new or at least different, approaches than those customarily used in principles courses. Closely related is the shift in research interests of faculty who perceived a growing gap between what was traditionally taught and the things of most interest and concern to them. At the same time, student pressures for better teaching, greater 'relevance,' and other academic reforms sensitised faculty to the need for rethinking their teaching of the principles course, both with respect to what they were teaching, and how they were teaching it."

[4] Blaug, M. and P. Sturges. ed. *Who's Who in Economics: A Biographical Dictionary of Major Economists 1700-1981*. Brighton: Wheatsheaf, 1983.

It is perceived by many that it is time for economists to rediscover reality. This has implications for society in general, and the discipline as a whole. Economists today are finding themselves in the position that some of the most influential people presenting economic policy, and commenting on the economic planning and direction of a country, are not economists. In fact, economic policy and planning work is being done outside economics departments, and not necessarily even in academic institutions. These people may be demographers, sociologists, historians, and journalists. Uchitelle (1999) observes: "Economics, practical, non-mathematical economics, is increasingly practiced by lawyers and by people trained at graduate business schools or at public policy institutes - training that belongs in the graduate schools that 'license' economists." The concern for academic economists is serious, as Lawson (1997a) argues:

> "For if those of us in economics faculties do not soon move to recover reality, at least in our teaching, we may eventually find that we have lost most of our best students and researchers to other academic departments. In other words, we may find that we need to recover our status as a viable academic discipline as well."

Studies in the United States,[5] Australia,[6] and New Zealand[7] have found that student numbers completing degrees in economics are declining: "...over the 4-year period of decline, from 1991-92 to 1995-96, the annual number of undergraduate economics degrees earned in the United States has fallen almost 27 percent" (Siegfried 1997, 279). Lewis and Norris in their 1997 study found that there was a thirteen percent fall in the total number of students enrolling in economics degrees in Australian universities over the 1991-1996 period. Bartlett (1995) observed that one of the reasons for the decline in student numbers in economics programmes was that students were less prepared in mathematics. Haslehurst, Hopkins and Thorpe (1997) contend that the perception of economics as rigorous, and/or boring was another factor in falling enrolments in economics degrees. Millmow (1997, 93) argues that a significant part of problem seems to be that: "Economists seem to have lost the ability to communicate what their discipline is about and how a command of economic principles will, in fact, strengthen

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[5] Siegfried, J. "Trends in Undergraduate Economics Degrees: A 1993-94 Update." *Journal of Economic Education* 26 (1995) : 282-87. Siegfried, J. "Trends in Undergraduate Economics Degrees: An Update." *Journal of Economic Education* 28 (1997) : 279-81. Siegfried, J. "Trends in Undergraduate Economics Degrees: A 1996-97 Update." *Journal* of Economic Education 29 (1998) : 285-88.

[6] Hodgkinson, A. and N. Perera. "Why Aren't They Taking Economics? Attitudes of First Year Students - University of Wollongong: Case Study." University of Wollongong Department of Economics, Working Paper Series, WP96-13, 1996. Lewis, P. and K. Norris. "Recent Changes in Economics Enrolments." *Economic Papers* 16 (1997) : 1-13.

[7] Alvey, J. and L. Smith. "Recent Changes in Economics Enrolments: A Note Comparing the Situation in New Zealand." *Economic Papers* 18 (1999) : 91-95.

business minds." In academic institutions falling student numbers in economics is a reality, a possible reason for this is linked to the increased mathematisation of the discipline which is a real concern. Economists need to ensure that their discipline is accessible - to other economists, to the student, and to the public.

Marshall (as quoted in Sills and Merton 1991, 151) presented his approach to using mathematics in economic analysis:

> "(1) Use mathematics as a shorthand language, rather than as an engine of inquiry. (2) Keep to [this] till you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life. (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3."

Krugman (1998a, 1836) revises Marshall's rules and presents them for present day economists:

> "(1) Figure out what you think about an issue, working back and forth among verbal intuition, evidence, and [mathematics], as much as you need. (2) Stay with it till you are done. (3) Publish the intuition, the math, and the evidence - all three - in an economics journal. (4) But also try to find a way of expressing the idea without the formal apparatus. (5) If you can, publish that where it can do the world some good."

Does the use of mathematics in economics provide any rewards and improvement in the economics discipline? Certainly no serious economist is against using mathematical techniques. Mathematisation can provide the opportunity to see beyond the obvious. It extends, fine-tunes and provides results that may have otherwise been unavailable. The mathematisation of economics can and does provide benefits to the discipline. As a methodology it has a lot to offer even though as a language it is restricted to those who can translate and understand it.

The next question is where does Samuelson fit into the 'third wave'? What is his role and influence? This next section answers these questions before moving on to examine the influence of mathematisation in *Economics*.

5.3 Samuelson and Mathematics

> **"To those who accuse him of the mathematization of economics, Samuelson answers; 'that is one of the mortal sins for which I shall have to do some explaining when I arrive at heaven's pearly gates'" (Feiwel 1982b, 169).**

To Fischer (1987, 234) Paul Samuelson, more than any other economist, has "brought economics from its pre-1930s verbal and diagrammatic mode of analysis to the quantitative mathematical style and methods of reasoning that have dominated for the last three decades." In 1970, Samuelson won the Nobel Prize in Economic Science, the first American to do so. The citation for his Nobel Prize reads: "for scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economics science" (Lindbeck 1985, 40). Samuelson (1998, 1376) says of himself: "I was vaccinated early to understand that economics and physics could share the same formal mathematical theorems...while still not resting on the same empirical foundations and certainties." This connection to physics, and the scientific nature of economics is evident with the bulk of Samuelson's work collected under the title *The Collected Scientific Papers of Paul A Samuelson.*

As an undergraduate student in Chicago, Paul Samuelson realised that mathematics was going to revolutionise economics. Samuelson (1972b, 160) reflects:

> "Still to a person of analytical ability, perceptive enough to realize that mathematical equipment was a powerful sword in economics, the world of economics was his oyster in 1935. The terrain was shrewn with beautiful theorems begging to be picked up and arranged in unified order."

As a graduate student at Harvard it was Samuelson who strove to clarify and progress economic theory using mathematical techniques. When discussing the three revolutions that hit modern economics Samuelson (1998, 1379) observes: "Had I remained on the Chicago Midway, I might well have missed out on the three revolutions that remade mainstream economics: the Keynesian Revolution, the Imperfect-Competition Revolution, and the Mathematical-Economics Revolution."

Samuelson's PhD thesis, *Foundations of Economic Analysis* published in 1947, used mathematics to present and elaborate on economic theory. Feiwel (1982a, 4-5) says of this work:

> "Using his innovative powers and analytical and mathematical skills, he [Samuelson] investigated the common elements and aimed at deducing the general principles and unifying the various parts of economic theory. Thus, he concentrated, inter alia, on the nature of the equilibrium system, on the general structure of the problem of maximization under constraints, on the statics and dynamics of nonmaximum systems, and on the relationship between comparative statics and dynamics. The result was a sifting through, a creative reconstruction, a rigorous formulation of a significant part of received theory with new or refined theorems and novel applications."

Samuelson's approach in *Foundations* was a distinct change from the neo-classical approach of Marshall. Marshall put the role of mathematics in a secondary position, and warned the economics profession against putting literary propositions into mathematical form. It was Samuelson at the beginning of *Foundations* who regarded that "this dictum should be 'exactly reversed'; it is the effort of converting *essentially mathematical* propositions into *literary* form that is wasteful and 'involves...mental gymnastics of a peculiarly depraved type'" (Breit and Ransom 1982, 112). Thirty-five years later Samuelson published an enlarged and updated edition of *Foundations*. He (1998, 1378) saw that this "new stone caused no great ripples in the pond of modern mainstream economics. By 1983 we were all, so to speak, mathematical economists; and several hundred specialized books were available to cover each corner of up-to-date economics."

To Samuelson mathematical methods, when used correctly, enable the vision and analysis of ever more realistic and complicated hypotheses, rather than making theory more abstract. He seemed to have an aptitude to construct and portray economic concepts using mathematical models. It may be argued that one of Samuelson's major contributions to economics lies in the development of mathematical tools and applying them to economic theory. He views mathematics as a language, and a tool used to solve problems, not an end in itself. Using mathematical methodology Samuelson has been able to extend economic theory in a number of different areas, and to help solve some of the basic problems in economics.

Samuelson has written extensively in many areas of economics, and has notably influenced the development and extension of mathematical models to economic problems. His use of mathematics in economics has provided a greater understanding of, and pushed further the boundaries of innovation, and thought. For Samuelson, mathematics in economics goes further than mere descriptive analysis. Lindbeck (1970, 343) points out that:

> "One of the most characteristic features of the development of economic theory during the past few decades is the increased formalization of analytical techniques, partly through mathematical tools. Perhaps we can distinguish between two branches of this development: one - econometrics - designed for immediate statistical application, with pioneers such as Frisch and Tinbergen; the other - 'pure' theory - directed more towards 'basic' theoretical research, without intentions of *immediate* statistical testing or estimation. It is in the latter branch that Paul Samuelson, together with J.R. Hicks, has exerted an enormous influence."

Arrow (1967) highlights six important areas of Samuelson's contributions to economics:

- Consumption theory - the revealed preference approach.
- Capital theory - intertemporal optimisation and turnpike theorems.
- Non-substitution theorems.
- Determination of factor prices by commodity prices - originally developed with regard to foreign trade problems.
- Stability analysis - the consistent definition of the dynamics of price formation in disequilibrium.
- Formal analogies between dynamic systems and economics - the Le Chatelier Principle, the envelope theorems, and the structure of a minimum equilibrium system.

Mirowski (1989, 378) asserts that "it was Samuelson, and not Friedman, who by both word and deed was responsible for the twentieth-century self-image of the neoclassical economist as scientist." Samuelson has employed the tactic of using words and connotations of the physical sciences in his writings, and has been called "the master of scientific rhetoric" (Mirowski 1989, 382). Examples of this are not hard to find. Samuelson's *Collected Scientific Papers* have titles such as: "A Quantum Theory Model of Economics," "The Law of the Conservation of the Capital-Output Ratio," "Two Conservation Laws in Theoretical Economics," and "A Biological Least-Action Principle." Lindbeck (1970, 352) argues that:

> "From the point of view of scientific methods, Samuelson seems to have received his main inspiration from the natural sciences, perhaps particularly from classical mechanics (such as the Le Chatelier principle) and thermodynamics. Thus, Samuelson's works illustrate the fruitfulness of importing established analytical techniques from one science to another - in this case from physics to economics."

Samuelson, the scientist, wanted to create a more rigorous, and important role and position, for economics in the field of science.[8] Through the incorporation of mathematics, and

[8] "All men are mortal. Scientists are men. Ergo scientists are mortal. But science is immortal. Just as poetry is that which escapes in translation, scientific knowledge is that Cheshire residue which remains after you have boiled off the scientist cats" (Samuelson 1975, 9).

terminology borrowed from the physical sciences, he attempted to legitimise economics as a science, and create a unified body of mainstream economic thought. Pearce and Hoover (1995, 198) point out that:

> "Science, for Samuelson, is not just a matter of naïve realism; it also relies on a neutral and generally applicable analytical framework: 'The important thing is to provide the analytical machinery that will enable the reader to arrive at, and defend, his own opinion, and, what is hardly less important, to understand the position of those with whom he most disagrees' [Samuelson 1948, vi]" (Pearce and Hoover 1995, 198).

Samuelson has played an important role in the history of economic analysis, by helping overcome some of the resistance to the use of mathematics in economics. By the end of the 1960s, however, Samuelson admitted that the mathematisation of economic theory was producing diminishing returns to the discipline and the economy. He, like "Dennis Robertson, was deeply disturbed by the failure of economic models to represent some of the fundamentals of human behavior - love, passion, hate, greed, vengeance" (Akerlof 1982, 338). Samuelson, though a supporter (and user) of mathematical applications, believes strongly in making economic research it accessible to non-economists as well.

Samuelson was a leading figure in the 'third wave' in modern economics. Even as an undergraduate student he saw the possibilities of mathematics in improving and expanding the economics discipline. Throughout his academic career he has researched and published extensively utilising mathematical methodology - extending it into areas of economic theory previously not touched. Despite Samuelson's obvious love of the mathematical language and methodology, he never failed to make himself and his work understandable to economists, non-economists, and students.

The next section of this chapter examines the impact of mathematics in Samuelson's introductory economics textbook, *Economics*.

5.4 Mathematics in *Economics*

> **"...who could have known that the young author of a number of profound and original papers in mathematical economic theory would not only continually create similarly fundamental analytical works but also produce a pedagogical masterpiece that was to become one of the most successful and influential economics texts of all time? And who could possibly have comprehended that the very same person was a future advisor to American presidents and the future author of a widely read column in a popular newsmagazine?" (Bergson 1982, 335).**

The use of graphs and algebra in introductory economics textbooks is today a 'fact of life;' graphs in particular are employed extensively. Mathematical techniques are used to present (and extend) economic ideas and to simplify (at times) wordy explanations. The questions are: How has Samuelson's predilection for a mathematical approach manifested itself in *Economics*? Has the amount of space given to graphs and equations increased over time? Critics such as Bell (1988) say that graphs and equations take up too much space in introductory economics textbooks.[9] Others feel that Samuelson has increased the mathematical content in his textbook at the expense of written explanations. Sobel (1980, 106) observes that: "The book [*Economics*] remained quite readable, but, true to his natural bent, Samuelson attempted to wean students from words and towards numbers." By examining the sixteen editions of *Economics,* the nature of the mathematical presentation Samuelson uses to demonstrate the principles of economics can be evaluated. This section first takes an overall look at the number of equations and graphs in the textbook, before examining the use of equations and graphs separately. Section 5.5 then presents a case study of the mathematisation in *Economics* by looking at the theory of income analysis sections over the sixteen editions of the textbook.

Hart (1948, 911) reviewed the First Edition of *Economics* and noted that: "The use of mathematics is held to an irreducible minimum: algebraic formulas are eliminated, diagrams are few and for the most part very clearly labelled; most of the mathematics is arithmetical illustration, with lavish verbal explanations." However, as later editions were published *Economics* was considered to have "a greater degree of intellectual sophistication" (Carvellas, Kessel and Ramazani 1996, 227), in terms of its analytical rigor and theoretical presentation.

[9] Bell (1988, 137) says: "Too much space goes to graphs and equations, with no facts at all, or to pedagogical examples with cooked-up numbers."

Has *Economics* become more mathematical since the First Edition in 1948? Table 5.1 presents the number of equations and graphs in *Economics*, and the number of equations and graphs as a percentage of standardised pages.

Table 5.1: The Number of Equations and Graphs in *Economics*

Edition	Standardised Pages	Number of Equations	Equations as percentage of standardised pages	Number of Graphs	Graphs as percentage of standardised pages
1	323.5	31	9.6	70	21.6
2	489.7	31	6.3	117	23.9
3	546.4	34	6.2	119	21.8
4	644.5	34	5.3	134	20.8
5	731.1	34	4.7	152	20.8
6	710.9	51	7.2	159	22.4
7	721.5	51	7.1	167	23.1
8	889.8	60	6.7	175	19.7
9	893.8	67	7.5	188	21.0
10	949.0	69	7.3	191	20.1
11	1086.8	59	5.4	181	16.7
12	1306.1	56	4.3	247	18.9
13	1462.0	66	4.5	262	17.9
14	855.0	42	4.9	244	28.5
15	842.6	67	8.0	251	29.8
16	781.0	67	8.6	277	35.5

From Table 5.1, it can be seen that there are more than twice the number of equations in the Sixteenth Edition (1998) of *Economics* as compared to the First (1948), and nearly four times the number of graphs as compared to the First Edition. The average number of equations in an edition of *Economics* is 51.2,[10] which is 20.2 more than the First Edition, and 15.8 less than the Sixteenth. The average number of graphs is 183.4,[11] which is 113.4 more than the First Edition, and 93.6 less than the Sixteenth Edition. Taken on face value it can be said that there has been an increase in the mathematical content of Samuelson's introductory economics textbook, and in the presentation of the material. Samuelson, it seems, has presented the economic principles with a greater emphasis on equations and graphs.

[10] The median number of equations in an edition of *Economics* is 53.5.

[11] The median number of graphs in an edition of *Economics* is 178.

Isolating the total number of equations, and examining them as a percentage of standardised pages, will provide a better view of the algebraic (numerical) approach in *Economics*. Figure 5.1 presents the total number of equations, and the number of equations as a percentage of standardised pages over the sixteen editions of *Economics*.

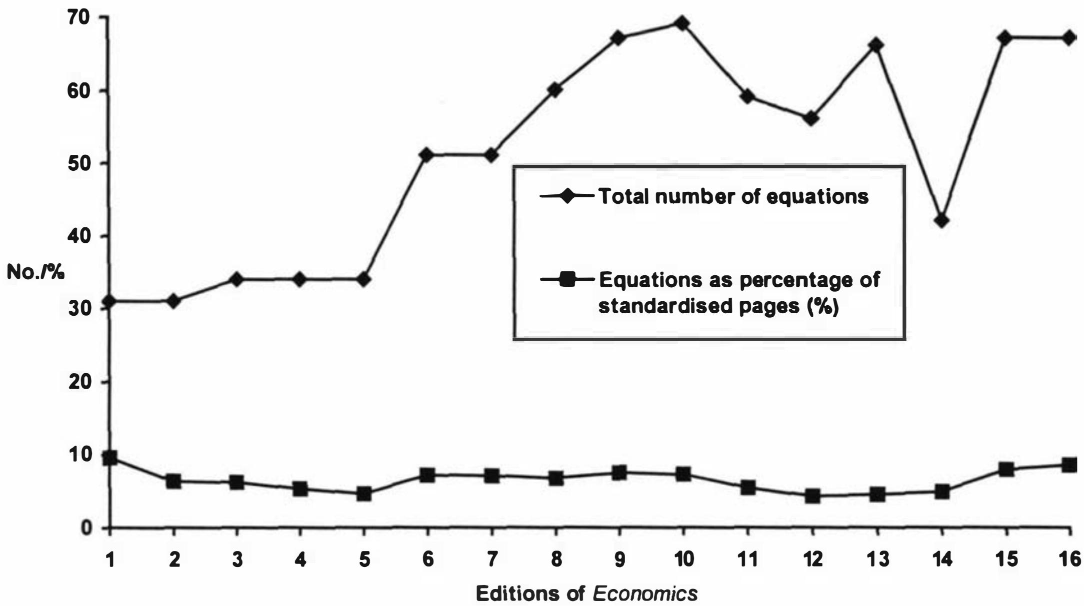

Figure 5.1: Total Number of Equations and as a Percentage of the Standardised Pages across the Editions

There are thirty-one equations in the First Edition (1948) of the textbook; this increases through to the Tenth Edition (1976) with sixty-nine equations. There is a decline in the number of equations in the textbook from the Tenth Edition to the Twelfth Edition (1985), before it increases again in the Thirteenth (1989). The Fourteenth Edition (1992) has twenty-four fewer equations than the previous edition, a marked decline. The number of equations, however, increases in the Fifteenth Edition (1995) to sixty-seven, and remains at this number in the Sixteenth Edition (1998).

By examining the number of equations as a percentage of standardised pages, however, it is possible to see another view. In the First Edition (1948), 9.6 percent of the pages feature an equation. This percentage declines through to the Fifth Edition (1961). The percentage of standardised pages with an equation then rises in the Fifth to Tenth Editions (1961-1976), before decreasing again in the Eleventh and Twelfth Editions (1980-1985). The Thirteenth through to Sixteenth Editions (1989-1998) have an increasing percentage of equations per edition; this is despite the dramatic fall in the total number of equations in the Fourteenth Edition.[12] The Sixteenth Edition has an equation on 8.6 percent of its pages, which is a one percent decline from the First Edition. So how accurate is it to say that there has been an increasing emphasis on the algebraic presentation of economic ideas and concepts in *Economics*? In fact, there has been very little change in the amount of algebraic content, especially when considering that the First Edition is the edition with the greatest number of equations as a percentage of its standardised pages.

Repeating this exercise and isolating the total number of graphs, it is possible to get a better perspective of the graphical approach in *Economics*. Figure 5.2 presents the total number of graphs, and the number of graphs as a percentage of standardised pages across the sixteen editions of *Economics*.

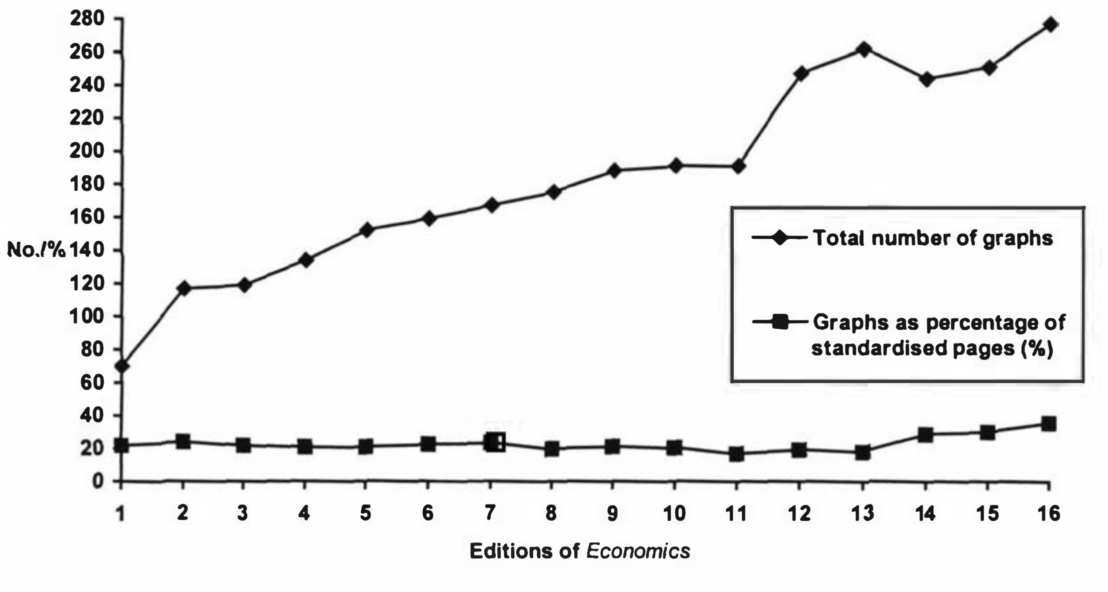

Figure 5.2: Total Number of Graphs and as a Percentage of the Standardised Pages across the Editions

[12] This coincided with the removal of nearly a quarter of the pages of the textbook from the Thirteenth Edition.

The number of graphs in *Economics* has had a more dramatic rise than the number of equations over the course of the sixteen editions. The First Edition (1948) has seventy graphs scattered through it. This count steadily increases to the Thirteenth (and largest) Edition (1989) where 262 graphs are used. The number of graphs then drops back in the Fourteenth Edition (1992).[13] There is, however, an increase in the number of graphs in the Sixteenth Edition (1998). This is also the edition that has the highest number of graphs with 277. Overall, there has been an increase of 207 graphs from the First to Sixteenth Edition, almost four times the number of graphs from the First Edition.

When looking at the number of graphs as a percentage of standardised pages there is a more stable relationship over time. In the First Edition (1948) twenty-two percent of its pages contain a graph. This percentage stays around the region of twenty to twenty-four percent until the Eleventh Edition (1980), where it dips to 16.7 percent. The number of graphs as a percentage of standardised pages, however, increases in the Fourteenth to Sixteenth Editions (1992-1998).

The Sixteenth Edition includes a graph on 35.5 percent of its pages, an increase of 61.4 percent from the First Edition. A further indication of the greater use and importance of graphical analysis is also evident by the addition of an appendix in the Twelfth Edition (1985), "How to Read Graphs." This appendix has remained through to the Sixteenth Edition of *Economics*.

It is clear that as topics have changed over the editions, so has the nature of their presentation. Some topics have a greater propensity for mathematical expression than others. This means that depending on the emphasis and changing nature of the principles of economics, there may be greater (or less) mathematical expression of concepts. An example is the rudiments of Marxian economic thought that appears in the Ninth through Eleventh Editions (1973-1980) of *Economics*, and is presented using algebraic notation.[14] The trend in Samuelson's *Economics* is an increasing emphasis on graphical presentation and analysis, and a more limited role for

[13] This coincided with the removal of nearly a quarter of the pages of the textbook from the Thirteenth Edition.
[14] This section appears in *Economics* in the Ninth through to Eleventh Editions (1973-1980) as an appendix, "Rudiments of Marxian Economics."

algebraic manipulation. Graphs in particular are used to extend the written theory and aid in its understanding.

Another point to consider is the marketability of the textbook to economics departments and students. If it is too mathematical then there may be a hesitation (or disinclination) to adopt the textbook in an introductory economics course, with many students coming to university less mathematically prepared and able than in the past (Bartlett 1995). Therefore, textbooks that are too mathematically rigorous may not be the preferred textbook for an introductory economics course, especially with the drive to increase student numbers in economics courses.

What does Samuelson say about the presentation of introductory economics to students? Does he believe the mathematical style of presentation needs to be utilised at lower levels of economics teaching? Samuelson explains in the First and Sixth Editions:

- "This [PPF] can be illustrated quantitatively by simple arithmetic examples and by means of geometrical diagrams. It has been found that diagrams and graphs are important visual aids in many parts of economics, so that a little care at the beginning in understanding them will be rewarded manyfold later on" (Sam. 1 1948, 17).

- "Although every introductory textbook must contain geometrical diagrams, knowledge of *mathematics* itself is needed only for the higher reaches of economic theory. Logical reasoning is the key to success in the mastery of basic economic principles, and shrewd weighing of empirical evidence is the key to success in mastery of economic applications" (Sam. 6 1964, 6).

Samuelson's own philosophy of downplaying the algebraic presentation of economic concepts at the introductory level explains his approach in *Economics*. Graphs, if presented clearly, go a long way in aiding students' understanding of economic concepts, for example, costs and revenues in the theory of the firm. Samuelson caters for students' need to make sense of the mathematical tool that is extensively used with the provision of an appendix on how to read and understand graphs.

Overall, it is not accurate to say that *Economics* has become more mathematically rigorous. The number of equations as a percentage of standardised pages is actually higher in the First Edition (1948) than the latest. There has been very little change in the amount of algebraic content over the sixteen editions of *Economics*, but graphs have become an increasingly important tools used to present economic theory. The introduction of an appendix, "How to

Read Graphs," aids the reader in their understanding of graphs and their use. Possibly part of the drive to keep textbooks 'thin' is in no small way a factor in the increasing use of graphs to conserve space and reduce lengthy verbal discussions and explanations.

5.5 Case Study of Mathematisation in *Economics:* The Theory of Income Analysis Section

> **"When economists attempt to understand why major increases in wartime military spending lead to rapid increases in GDP, or why the tax cuts of the 1960s or 1980s ushered in long periods of business-cycle expansions, they often turn to the multiplier model for the simplest explanation" (Sam. 16 1998, 446).**

The modern theory of income analysis provides an example of how mathematical techniques are used to explain and portray an economic concept. This section presents Samuelson's interpretation of the Keynesian income analysis for introductory economics students. Its major emphasis is on how the level of total spending and output in an economy is determined by investment and savings. Through the basic multiplier model Samuelson shows the effect that shifts in aggregate demand have on output and income, and how this links to unemployment. The section includes the forty-five degree diagram,[15] arithmetic and geometric analysis of the multiplier, and equilibrium tables. The number of graphs and equations, and their number as a percentage of the number of pages in the section of each edition of *Economics* is presented in Table 5.2 below.

[15] The forty-five degree diagram used in the First and Sixteenth Editions of *Economics* is presented in Appendix Four.

Table 5.2: The Number of Pages, Equations and Graphs in the Income Determination Section in *Economics*

Edition	Pages[16]	Number of Equations[17]	Equations as percentage of pages	Number of Graphs	Graphs as percentage of pages
1	26	1	3.8	6	23.0
2	27	4	14.8	11	40.7
3	23	4	17.4	12	52.1
4	27	4	14.8	12	44.4
5	27	4	14.8	12	44.0
6	28	5	17.9	17	60.7
7	26	6	23.0	18	69.2
8	25	5	20.0	18	72.0
9	28	5	17.9	18	64.3
10	28	5	17.9	18	64.3
11	26	5	19.2	18	69.2
12	40	15	37.5	14	35.0
13	54	19	35.2	21	38.8
14	25	6	24.0	11	44.0
15	35	17	48.6	10	28.6
16	18	6	33.3	9	50.0

There is an average of 28.9 pages in this section over the sixteen editions,[18] which is 2.9 more than the First Edition (1948), and 10.9 more than the Sixteenth Edition (1998). The edition with the largest income determination section is the Thirteenth (1989). It contains fifty-four pages, nineteen equations, and twenty-one graphs in the section, amounting to twenty-eight more pages than the First Edition, and thirty-six more than the Sixteenth. The Thirteenth Edition has eighteen more equations than the First Edition, and thirteen more than the Sixteenth. This edition also has fifteen more graphs than the First Edition, and twelve more than the Sixteenth.

Up to the Eleventh Edition (1980) the number of pages devoted to the theory of income analysis is in the mid-to-high-twenties, with the lowest at twenty-three pages, and the highest at twenty-eight pages. After the Eleventh Edition the number of pages increases, peaking in

[16] Editions One to Six (1948-1964) have the theory of income determination in one chapter and Editions Seven to Sixteen (1967-1998) have the theory of income determination in two chapters. The number of pages in Editions Twelve, Thirteen and Fifteen (1985, 1989, 1995) also include the appendix, "The Algebra of the Multiplier."
[17] Editions Twelve, Thirteen and Fifteen (1985, 1989, 1995) of *Economics* have an appendix, "The Algebra of the Multiplier" which has nine equations, these are included in the number of equations in the table.
[18] There is a median of twenty-seven pages in this section.

the Thirteenth Edition (1989) with fifty-four pages. The number of pages in the Sixteenth Edition (1998) declines dramatically to eighteen pages, which is eight fewer than the First Edition (1948).

It can be seen from Table 5.2 that Editions Twelve, Thirteen, and Fifteen (1985, 1989, 1995) have the greatest number of equations in the section on income analysis, as compared to all other editions. There is an average of 6.9 equations in this section,[19] which is 5.9 more than the First Edition (1948), and 0.9 more than the Sixteenth (1998). When comparing the First and Sixteenth Editions there are five more equations in the Sixteenth than the First. So it would appear that there is an increasing use of algebra to explain the theory of income analysis.

The total number of equations and their expression as a percentage of pages in the section on income analysis will provide a clearer view of the development of equations used in the sections of income analysis. Figure 5.3 presents the total number of equations and their number as a percentage of pages across the sixteen editions.

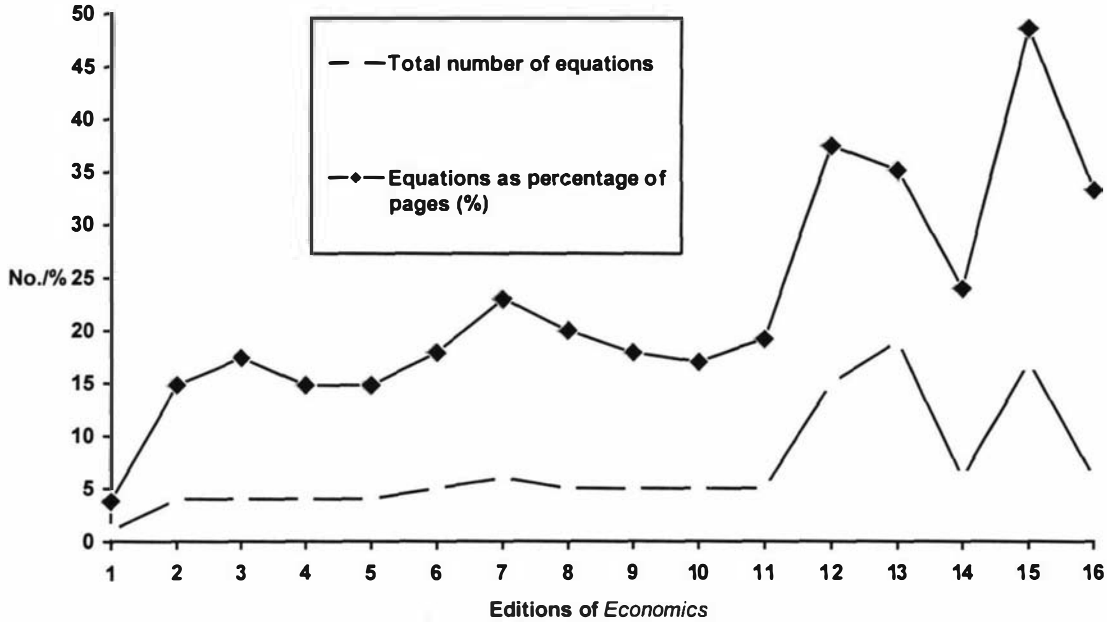

Figure 5.3: The Number of Equations in the Section, the Theory of Income Determination in *Economics*

[19] There is a median of five equations in this section.

The increase in the number of equations in the Twelfth, Thirteenth, and Fifteenth Editions (1985, 1989, 1995) is evident from Figure 5.3. This trend is mimicked in the expression of equations as a percentage of pages. Up until the Twelfth Edition, the number of equations is relatively steady. It is certainly evident that the percentage of pages with equations increases dramatically from an initial 3.8 percent in the First Edition (1948), to a peak of 48.6 percent in the Fifteenth Edition. The percentage then decreases to 33.3 percent in the Sixteenth Edition (1998), but this is still considerably more than in the First Edition. This section on income analysis, then, has seen an increase in the use of algebraic presentation over the editions of *Economics*, though the present edition contains fewer algebraic equations than the previous Fifteenth Edition, falling by 64.7 percent.

The average number of graphs is 14.1,[20] which is 8.1 more than the First Edition (1948), and 5.1 more than the Sixteenth Edition (1998). The First Edition in fact has only three fewer graphs than the Sixteenth Edition. Examining the total number of graphs, and looking at them as a percentage of pages in the section on income analysis will allow a clearer view of the graphical approach. Figure 5.4 presents the total number of graphs and their number as a percentage of pages across the sixteen editions of *Economics*.

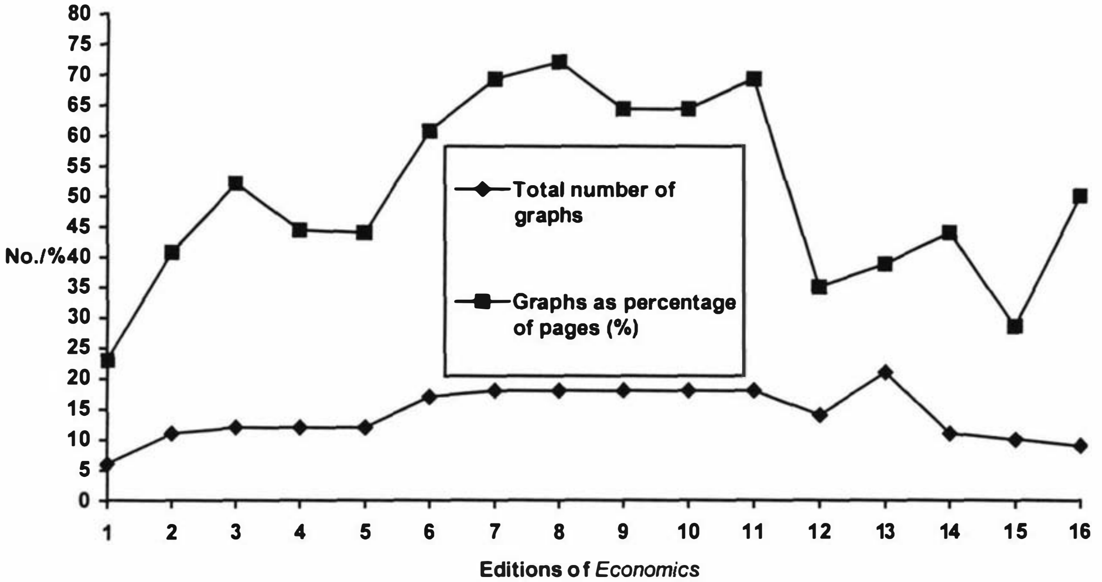

Figure 5.4: The Number of Graphs in the Section, the Theory of Income Determination in *Economics*

[20] The median number of graphs is twelve.

There is a relatively steady increase in the number of graphs in the income determination section to the Eleventh Edition (1980). In the Twelfth Edition (1985) there is a decline in the number of graphs, before increasing again in the Thirteenth Edition (1989). From the Thirteenth Edition on, however, there is a decrease in the number of graphs. In the Sixteenth Edition (1998) there are nine graphs, which is one fewer than the previous edition.

When examining graphs as a percentage of pages in the income analysis section the trend is more erratic. The number of graphs as a percentage of the pages increases to the Third Edition (1955). It then declines in the Fourth and Fifth Editions (1958, 1961), before rising again in the Eighth Edition (1970) - the peak edition with graphs appearing on seventy-two percent of the pages. The percentage then decreases in the Ninth and Tenth Editions (1973, 1976) before rising again in the Eleventh Edition (1980). The number of graphs as a percentage of the pages then falls dramatically in the Twelfth Edition (1985) to thirty-five percent (compared with 69.2 percent in the previous edition). The percentage does increase in the Thirteenth and Fourteenth Editions (1985, 1992) before declining again in the Fifteenth Edition (1995). The percentage then increases in the Sixteenth Edition (1998), with graphs appearing on fifty percent of the pages in the section. The lowest number of graphs as a percentage of the pages in the income analysis section is the First (1948) with twenty-three percent, followed by the Fifteenth Edition with 28.6 percent. Overall, it is possible to say that this section has seen an increase in its graphical content over the sixteen editions. Although the total number of graphs used in the Sixteenth Edition (present edition) is less than the Fifteen Edition, graphs as a percentage of pages in the income analysis section is higher in the Sixteenth Edition than the Fifteenth.

The case study of the theory of income analysis section in *Economics* provides a good example of how the use of equations and graphs has changed over the sixteen editions of Samuelson's textbook. Many (including Samuelson) consider this section to be crucial to the macroeconomic theory presented in introductory economics. Though the total number of both equations and graphs has increased through the editions of *Economics*, they have both declined in the Sixteenth Edition (1998), indicating a move away from a more mathematical approach. Samuelson only uses five more equations in the Sixteenth Edition than the First (1948), and three more graphs. This does not represent a highly mathematical representation of income determination. It is interesting to note, however, that the number of both equations and graphs as a percentage of pages in the section is larger in the Sixteenth Edition than the First. The percentage of equations decreases in the Sixteenth from the Fifteenth Edition (1995); however, the reverse is true for graphs. The explanation for this is the dramatic decrease in the amount of space given to this section on income analysis, decreasing from thirty-five pages in the Fifteenth Edition to eighteen in the Sixteenth.

5.6 Conclusion

> **Mathematics is seen as "a young man's game...And it is historically true that the really great achievements in pure mathematics have usually been made by men when they were in the first brilliance of their youth" (Samuelson 1954, 380).**

Since the 1930s people such as Tinbergen, Frisch, Klein, Kalecki, Hicks, Allen, Lange, and Samuelson have represented a large part of the core of the 'third wave' of modern economics - mathematisation. The economics discipline has come to have a more scientific nature and perception, and Nobel Prize winning laureates in Economic Science have existed since 1969. This increasing formalism, however, has been met with resistance and criticism. Over the past fifty years, concern relating to the increasing distance between mathematical rigor and reality has been heard. Two key criticisms are that economics has lost touch with reality, and is less relevant to the modern society and its people. Samuelson (1983a, 12) observes: "Modern advanced treatises on economics bristle with mathematical equations and statistical regressions. Their findings affect statesmen and public opinion only after a trickle-down process." This has implications for academic economists and the institutions they work in as many face falling student numbers in economics degrees.

Paul Samuelson believes strongly in the importance and power of mathematics to aid in the progress of the economics discipline. His contribution to the mathematisation of economics is undisputed, and his use of mathematics in economics is widespread. This first American economist to win a Nobel Prize in Economic Science, however, has always retained the ability to communicate his research to his colleagues and the general public alike. Hurwicz (1970, 720) highlights this when saying: "By explaining, in nontechnical terms, the relationship of [Samuelson's] often quite technical contribution to the work of others, he educates a broader public and encourages further development."

Samuelson's introductory economics textbook, *Economics*, has spanned the last fifty years of modern economics. It does depict the increasing use of graphical analysis to present and teach the principles of economics. However, it does not reflect the trend towards an increasing use of numerical or algebraic analysis, in the economics discipline, and Samuelson's own preference for mathematical expression as a language in economic theory. Samuelson's (Sam. 16 1998, xxvii) philosophy is unambiguous when he writes: "...*after* you have mastered instruction in so-called microeconomics and macroeconomics, there will remain no mysteries. If it doesn't make good sense, it isn't good economics."

Chapter Six:

The Government and the Market

"An electorate gets the economic policies it deserves. That's democracy...Blame the schnook – that's you and me – who fell for the blarney. Otherwise, for the rest of this century we shall, at best, undo and reverse some of the harm that is the legacy of the 1980s" (Samuelson 1993, 21).

6.1 Introduction

> **"Though he [Samuelson] has remained resistant to the Chicago School's almost complete trust in the marketplace and its laissez-faire philosophy, Samuelson has also grown wary of putting too much trust in government. One of the main changes in his political philosophy was produced by Senator Joseph McCarthy of Wisconsin and his 'witch-hunting' techniques" (Silk 1974, 20).**

This chapter examines one of the central issues of the last fifty years, the role of the government versus the market - laissez-faire versus big government, regulation versus deregulation. The role and stature of these two institutions has dominated, and still dominates the economic and political landscape. The government and market operate under different philosophies and objectives. The profit driven market motive can not always be applied to all areas of the economy and society. It has been argued that:

> "The biggest economic-policy mistake of the past 50 years, in rich and poor countries alike, has been and still is to expect too much of government. Statism has always found all the support it needs among mainstream economists...This is not a failure of economics, in fact, but of modern (one might say Samuelsonian) economics. The classical economists viewed the market economy with a kind of awe...Today precious few textbooks even try to guide their readers to any such inspiration. Implicitly, at least, their message is too often quite the opposite: that markets aren't perfect and governments (advised by economists) can be" (*The Economist* 1997a, 13).

The influence of the government and the market is affected by political ideology and world events. The changing emphasis and role of government and the market in the economy is reflected in the sixteen editions of *Economics*.

The point of this chapter is to introduce some of the major junctures over the past fifty years in the role of the government and the market in the economy, and look specifically at their reflection in Samuelson's *Economics* - exploring how the changing nature of the dominance and effectiveness of these institutions has been portrayed to the reader. This chapter is split into two sections. The first section examines the role of government; its purchase of goods and services, regulation (and deregulation), the welfare state, and stabilisation policy, and how they are presented in *Economics*. The second part looks at the market, the free-market approach, issues of market failure, and how the market is reflected in *Economics*.

6.2 The Role of Government

> **"...a 1970 economic treatise has need for love and for common rules of the road that we coercively enforce on ourselves. The truths of economics cannot be captured in even a hundred laws. But somewhere on the sacred tablets this truth is written: do not render unto the market that which is not the market's" (Samuelson 1983a, 11).**

The role and activities of government in the economy have been increasing since the nineteenth century, and more specifically since the 1930s. There have been increases in government control in the economy through regulation and laws, government expenditure, welfare expenditure, and a redefined role of government to stabilise the economy. The influence of the government on the modern economy is widespread, Ormerod (1994, 63) argues that:

> "Infant industries - even when they have become industrial giants - have sheltered behind tariff barriers; government subsidies have been widespread; there has been active state intervention in the economy...Even Far Eastern economies such as South Korea and Singapore, which are held up as models of free-market principles, do not in practice conform to the ideal. The governments of these countries possess a degree of internal power which is far greater than is norm in Western societies, and they are not afraid to use it."

From the 1930s there was the expectation that government would provide more guidance and control in the economy, and support those who were unable to do so themselves. Over time more and more of the American national income was transferred through the tax system and welfare system, from those better off to those in need. Governments were also acting to solve issues of efficiency by attempting to address market failures like monopolies and externalities. The provision of a stable economic environment where the peaks and troughs of the business cycle were reduced was also considered a governmental role.

Governments in most Western democracies are called on by their citizenry to defend their borders, create stable and prosperous economies, provide public health and education, control pollution, and provide a legal framework to protect all interests in the economy. Governments have regulated tariffs, utilities and railroads, provided social security, and minimum wage regulations. At the same time they have faced criticisms about the impact of some of their policies - which were designed to benefit the public interest - on the grounds of efficiency and private incentives.

Through the sixteen editions of *Economics* the role of government and its dominance in society and the economy is apparent. In the First Edition of *Economics* readers are told: "The activities of the state are becoming an increasingly important part of the study of modern economics. This is reflected in the quantitative growth of government expenditure and in the great expansion of direct regulation of economic life" (Sam. 1 1948, 150). A few pages later they are reminded that: "No longer is modern man able to believe 'that government governs best which governs least'" (Sam. 1 1948, 152). The reason for this increased involvement by government is highlighted in the Fifth Edition: "Government came into existence once people realized, 'Everybody's business is nobody's business'" (Sam. 5 1961, 45).

The post-WWII type of government apparent in some countries of the world is presented in the Third Edition: "In Sweden, Norway, Denmark, Australia, and New Zealand, the so-called 'middle-way' of moderate labor socialism has now been in power, or near to it, for a quarter of a century" (Sam. 3 1955, 732). These governments undertake to ensure some of society's minimum standards are met:

> "Society now rules that children shall not have rickets because of the bad luck or weakness of their parents, that poor people shall not die young because of insufficient money for operations and needed care, that the old shall be able to live out their years with some minimum of income" (Sam. 4 1958, 121).

The cyclical role of government is reflected in the Thirteenth Edition:

> "Over the span of the last century, the governments of most advanced economies have steadily increased their control and influence over economic activity. This trend is reflected in the growth of government expenditure and taxation, in the increasing share of national income devoted to transfers and income-support payments, and in the increase in legal and regulatory controls over economic life...During the most recent era, under the inspiration of political leaders like President Reagan in the United States and Prime Minister Thatcher in Britain, most industrial countries have witnessed a retrenchment in the activities of government during the 1980s" (Sam. 13 1989, 755).

6.2.1 Government Purchase of Goods and Services

Since WWII a major goal of government's economic policy was to increase the income and the wealth base in the country. From the late 1960s to the 1980s the focus shifted from increasing income and wealth, to redistributing it. American society now accepted that there were minimum standards of life, and the impositions of these were to be goals of modern governments. Governments were to provide certain necessary public services that were essential for the community, which were otherwise not provided through the private sector. Boskin (1987, 16-18) reveals that: "By the late 1970s the federal government was spending more on transfer payments to individuals ($235 billion in 1980) than on purchases of goods and services ($190 billion)."

The American government since 1945 has spent a large amount of its national income on defence and its nuclear programme. Higgs (1993, 35) observes that the: "Costs associated with the Cold War have varied between 4 and 13 percent of gross national product annually during the 'peacetime' years of the past four decades." This further increased in 1965 with Johnson's decision to increase the American involvement in the Vietnam War. Under President Reagan defence expenditure rose again in the 1980s. The two 'miracle' nations since 1950 have been Germany and Japan, both of whom were defeated in WWII, and therefore not allowed to spend vast amounts of their national income on creating a large military force. While America was spending this money on defence and space exploration, countries like Japan and Germany were spending it on new technology and non-defence research and development.

The government purchases of goods and services is presented from the First Edition of *Economics*: "The United States government is the biggest business on earth. It buys more typewriters and more cement, meets a bigger payroll, and handles more money than any other organization anywhere" (Sam. 1 1948, 155).

Much is made in *Economics* of the ramifications and implications of the high levels of American defence expenditure. In the Second Edition Samuelson (Sam. 2 1951, 165) points out that: "Since the Korean war of 1950, the United States has again found it necessary to draft men and to expand vastly our defense expenditure." Though the amount spent on defence in America had been relatively high since 1945, it rose again dramatically in the 1980s:

- "...the nation gears up to meet foreign military threats by raising defense spending by $200 billion. Such sudden increases have occurred at many points in the history of the United States, such as in the early 1940s for World War II, in 1951 for the Korean war, in the mid-1960s for the Vietnam war, and in the early 1980s during the Reagan defense buildup" (Sam. 13 1989, 182).

- "By far the largest item is national security and international affairs, which includes the cost of equipping and staffing the Department of Defense" (Sam. 13 1989, 782).

Under President Reagan expenditure on defence rose by over $100 billion dollars from 1979 to 1987. Samuelson (Sam. 15 1995, 465) highlights this expenditure to readers in the Fifteen Edition:

> *"In the early 1980s the U.S. decided to counter the Soviet threat by undertaking a tremendous expansion of defense spending under President Reagan. In 1987 dollars the defence budget soared from $185 billion in 1979 to $292 billion in 1987, when it was more than 6 percent of GDP. After that peak, defense spending as a share of GDP started drifting down. The cuts in defense spending accelerated beginning in 1990, when it became clear that the cold war was finally over and Soviet communism was no longer a military danger."*

Economics reflects Samuelson's concern about the amount of government expenditure on space and defence research rather than that applicable to civilian life, and increasing business productivity and efficiency:

- "There is nothing special about *G* spending on jet bombers, intercontinental missiles, and moon rockets...It may cost $10 million to find a reliable control device that can be put into a match box; but to produce ordinary civilian products, there is no need to keep parts as light, small, and dependable as in traveling to the moon" (Sam. 8 1970, 804).

- "Anyone who understands macroeconomic analysis can realize that there is nothing that spending money in Indochina or the Mideast can succeed in accomplishing which cannot be accomplished as well or better by spending on useful projects at home. Does building missiles and warheads create jobs and secondary chains of multiplied respending? Then so too will building new factories, better roads, and schools, cleaning up our rivers, and providing minimum income-supplements for our aged and handicapped" (Sam. 10 1976, 821).

- "A country like Japan, with little military power, has become the envy of the world because its people have enjoyed decades of low unemployment, low inflation, and rising living standards. By comparison, think of the former Soviet Union, which was a vast country teeming with natural resources and possessing 45,000 nuclear warheads in its arsenal. The inability of that country to produce adequate butter for its citizens along with guns for its armies brought down the communist state and turned Russia into a supplicant for Western financial aid" (Sam. 15 1995, 381).

Where Japan and Germany were spending the bulk of their research and development money on new electronics and other civilian technologies, around one-third of American research expenditure was spent on defence and space development:

> "Compared to most other high-income countries, the United States spends a large share of its research dollars on defense and space. While Japan and Germany are investing in new electronics or automotive technologies, about one-third of U.S. R&D

> is on defense and space applications. While these efforts may produce spectacular displays of military prowess, few demonstrable benefits to civilian technology can be found" (Sam. 16 1998, 535).

Not all the goods and services needed in society are provided for by private sector. *Economics* lists expenditure on public works, slum clearance, road construction, urban renewal, mental institutions, and health as important for society and a good use of public money (Sam. 10 1976, 559). However, the path to government provision has not always gone smoothly as readers are made aware in the Fifteenth Edition:

> "In the early 1990s, Americans engaged in a protracted struggle over the way that health care should be organized and financed. Under the leadership of President Bill Clinton, liberals wanted to extend government controls over the vast and growing health-care system and extend coverage to all Americans; conservatives worried about the inefficiencies that result from the heavy hand of government and warned particularly about the dangers of price control" (Sam. 15 1995, 289).

The positive effects of government intervention in the form of government expenditure in the economy are outlined in *Economics*. Samuelson reminds readers that government (often times in conjunction with the private sector) has reduced malnutrition, conquered diseases like smallpox, increased literacy and life expectancy, decreased the effects of inflation and unemployment, brought health care to the poor, explored outer space, and discovered the DNA molecule (Sam. 16 1998, 39-40).

As well as government expenditure on goods and services, many governments created a social security system – the welfare state.

6.2.2 The Welfare State

In 1937, the Social Security Act was passed in America to help protect the elderly and unemployed. At the time of its passing some were concerned that the Social Security Act was putting America on the road to socialism. Other countries also passed social security legislation. Sweden, the United Kingdom, and New Zealand brought in extensive welfare systems with a 'cradle to grave' philosophy of support for their citizens. It was believed by many in America (and other countries) that the difficulties that befell people were the responsibility of government to solve. As American administrations changed, the scope and expenditure on welfare payments increased.

When it was discovered in the 1960s that many children and adults in America were still struggling, Kennedy, Johnson, and later Nixon increased welfare spending, and instituted an expansion of the food stamp programme. In the 1970s, however, concern was being expressed about the size and scope of the welfare system, especially its inefficiencies. During the 1980s a new message was heard – individual responsibility. The Reagan administration, though committed to the maintenance of a 'safety net' for those in need, saw the government's role in redistributing income to be limited to those at, near, or below the poverty line (Boskin 1987).

By the 1990s the welfare system as it was currently being operated had few advocates. There was no single view of what to do next. Some wanted the system dismantled, while others wanted it strengthened. In 1996, Clinton began welfare reform in America, particularly aimed at the cash assistance programmes, in an attempt to create more independence and less reliance on the state.

Right from the First Edition of *Economics,* Samuelson presents with the amount of government expenditure on the welfare system. Tables in each edition show the percentage of federal expenditure on the various sectors of the economy – the rise in welfare spending is evident. In the First Edition of *Economics* readers are made aware of the necessity for a systematic welfare structure to exist rather than it be "left to fall upon the individual or upon haphazard charity" (Sam.1 1948, 222). However, even in this edition, published eleven years after the 1937 Social Security Act was passed, readers are told that this area of government expenditure would "loom large in the decades ahead" (Sam.1 1948, 160). Samuelson (1999, 32) nearly fifty years later, points out:

> "I do not recall any previous texts that discussed the economics of *social security* and that included long ago a warning that the dynamics of demography would mandate an inevitable increase in the funding needed to provide for the foreseeable growth in the ratio of aged dependants to working-age numbers."

The development of the social welfare system in other countries of the world is highlighted in the Fourth Edition: "Canada, England, France, Sweden, and other governments have begun to give 'family allowances' every month, the amount varying with the number of children in the family. This is done both for humanitarian reasons and to try to stimulate population growth" (Sam. 4 1958, 166-67). The 'cradle to grave' phrase was first used in *Economics* in this edition:

> "Other countries, such as Britain and Scandinavia, have gone much further in the direction of a so-called welfare state than has the United States. Thus, in Britain a program of 'cradle to grace' social security provides aid to a child's family at his birth and family allowances while he is a minor, gives him virtually feeless medical and dental care all his life, and helps provide him with income when unemployed, ill, or retired. After he is dead, the state helps to defray his funeral expenses and support his survivors" (Sam. 4 1958, 179).

The resilience of the welfare programme is reflected in the Third and Tenth Editions of *Economics*:

- "...when Labor loses in Australia and New Zealand, the winning party has no thought of dismantling the above basic [welfare] programs. When Denmark or Sweden are ruled by a coalition government, the same truth holds. In the United Kingdom the Conservative government too adheres to these same basic precepts. And in the United States, not only the Republican platform, but the actual day-to-day operations of a Republican-dominated Congress act to preserve and strengthen social security systems and to offset inflationary or deflationary forces that keep our economy from the path of economic progress" (Sam. 3 1955, 733).

- "Conservative, liberal, and radical parties may win and lose future elections, but the apparatus of the welfare state persist: in Protestant Norway and Catholic Italy; in outlying Australia and the home countries of England; in free enterprise Switzerland and planned Sweden; in America, the early prototype of Smith's utopia" (Sam. 10 1976, 798).

The Tenth Edition includes a chapter, "The Quality of Life: Poverty and Inequality, Ecology and Growth, Love and Justice," which gives an overview of the welfare system and offers some criticism of it, as well:

- "As every schoolboy now knows, the century since 1880 has been the century of state intervention in economic life. Gladstone and Disraeli in England and Bismarck in Germany began in Europe of the last century what Franklin Roosevelt and the Great Depression accelerated in America of this century – namely, the modern welfare state or the mixed economy" (Sam. 10 1976, 797).

- "Years ago, private charity had to play a significant if inadequate role: hand-me-downs for the poor, church missions and soup kitchens, handouts for beggars, and free medical clinics were part of the conscience money that the lucky paid to the unlucky...Private charity was never adequate (even though the situation would often have been frightful without it). Today, it is quite eclipsed in relative importance by the welfare functions of the state" (Sam. 10 1976, 803).

- "Because the minimum standards insisted upon by modern society have risen significantly, the cost of welfare programs has burgeoned in recent decades...a Gallup-like poll in 1976 would show that half the public think that welfare assistance is shot through with gross abuses...Among informed professionals in the area of welfare and social psychology, there is a similar feeling of disquiet with the present apparatus of welfare assistance. It is indeed costly. And often inefficient...Economically, the traditional system of welfare payments

> geared to need and earnings involves massive hidden costs in terms of *disincentive* effects. Literally billions of dollars of lost national product stems from the disincentive structure of existing relief systems" (Sam. 10 1976, 804).

When discussing political evolution in relation to the economic role of government in the Thirteenth Edition Samuelson uses the welfare system as an example:

> "The social security system introduced by Franklin Roosevelt was espoused as essential to protecting the well-being of older citizens, as a kind of public pension system. Opponents denounced social security as an ominous victory of socialism during the troubled 1930s. Newspapers of the day recorded similar sentiments about public subsidies for medical care, regulation of factory conditions, legal protection for unions, and antipollution laws...The much-criticized social security system of the 1930s was defended by conservative President Ronald Reagan in the 1980s as part of the 'social safety net.' The public has come to accept government constraints on laissez-faire capitalism, constraints that changed the very nature of capitalism. Private property is less and less wholly private. Free enterprise has become progressively less free. Irreversible evolution is part of history" (Sam. 13 1989, 759).

Later in this edition Samuelson presents readers with information on government spending on entitlement programmes, which grew from twenty percent of the national budget in 1960 to forty-five percent by 1989:

> "The most rapidly expanding item in the last two decades has been 'entitlement programs' – those that provide benefits or payments to any persons who meet certain eligibility requirements set down by law. The major entitlements are social security (old-age, survivors, and disability insurance), health programs (including Medicare for those over 65 and Medicaid for indigent families), and income security programs (including payments for food, unemployment insurance, and cash payments to the poor)" (Sam. 13 1989, 782).

Readers are made aware of the reality of the welfare system in the new market environment a few pages later: "Faced with the alternative approaches to poverty, America has moved away from the carrots of government assistance and toward the sticks of market necessity" (Sam. 13 1989, 819). The government still needed, however, to provide a safety net for people, as this example in the Fifteenth Edition illustrates: "Robert Clark, homeless and unemployed. A roofer and Vietnam veteran, he came to Miami from Detroit looking for work after Hurricane Andrew hit in 1992. Now he sleeps on the city streets on a piece of cardboard covered by a stolen sheet" (Sam. 15 1995, 201).

The Sixteenth Edition begins with the statement:

> "In 1996, the United States removed its guarantee of income support for poor families. Everywhere, countries are rethinking the boundaries between state and market, trying

> to balance the growing need for providing public services with the increasing clamor for cutting taxes and shrinking government" (Sam. 16 1998, 3).

Figures included later in this edition indicate that in 1929 almost no Americans received their income from government transfer payments, whereas by 1996, seventeen percent of Americans did (Sam. 16 1998, 211). However, the progress to a more equal society is still a long way off as Samuelson (Sam. 16 1998, 244) points out:

> "Progress is being made, but the results are uneven. In recent years, members of the disadvantaged groups have entered the best educational institutions and the highest-paying professions in large numbers...But substantial differences in incomes, wealth, and jobs persist. The deteriorating social order in central cities, the disintegration of the traditional nuclear family, cuts in government social programs, a backlash against many antidiscrimination programs, and the declining relative wages of the unskilled have led to declining living standards for many minority groups. Women and minorities have succeeded at the ballot box, but they continue to have lagging incomes in the marketplace."

A few pages later *Economics* poses a commonly asked question: "How much of the economic pie must be sacrificed in order to divide it more equally?" (Sam. 16 1998, 343). This question, with its range of complicated answers still haunts policy-makers and society sixty years after the 1937 Act.

As well as providing for their citizens through a social security system, governments have also increased their influence on the economy through the use of laws and regulation.

6.2.3 Regulation and Deregulation

Since the election of Franklin Roosevelt in 1932 the American government has increased its control on the economy through regulation, often in the face of opposition. Social regulations have also arisen over the last fifty years, controlling worker health and safety, air and water quality, and nuclear plant safety, for example. Often the passing of these regulations has brought protests from a myriad of interest groups that felt their constitutional rights were being infringed. Governments have also set rules defining property and laws pertaining to contracts, labour management and business operation, in an attempt to create an environment where business could flourish and society was protected.

In the 1970s many criticised the extent and scope of government regulation in the American economy. Concern arose particularly over the extent to which government regulatory power was creating monopolies rather than preventing them, and that the proliferation of regulations stunted business operation rather than improving it. Krugman (1994a, 76) points out that the "costs of regulation arguably grew larger during the 1970s, as government came to play a larger role in environmental and safety issues. In fact, some economists suggested that it was increased regulation, not higher effective tax rates, that really explained the productivity slowdown."

Amidst this change in the thinking of government intervention in the economy President Reagan was elected, whose administration was said to be based on the free-market, and less government involvement in the economy. Reagan focused on the supply-side of the economy and implemented microeconomic policies to improve productivity and economic efficiency, reducing taxes and regulations. Deregulation would "lower costs of various activities by reducing the number of regulations, taking economic effects into account in evaluating the desirability of 'social' regulations, and increasing competition in economically regulated industries" (Boskin 1987, 53). Government owned industries were sold and a greater participation by the private sector was advocated. Industries like the airlines were deregulated, creating changes in the sector. New players entered the market, while others left or went bankrupt.

This revolution in philosophy transformed the role of government beyond North America. National leaders like Margaret Thatcher in the United Kingdom and David Lange in New Zealand also advocated deregulation, privatisation, the need for self-reliance, and minimal government intervention - and it was not only in Western economies that this reduction of government regulation and involvement in the economy took place. Ormerod (1995, 68) contends that:

> "centre-left governments...[such as]...France under Mitterrand, Spain under Gonzalez, Australia under Hawke and Keating and New Zealand under Lange are all examples of countries in which notionally social-democratic governments adopted most of the policy agenda of Margaret Thatcher and Ronald Reagan...The Labour Party in New Zealand, for example, had a tradition of economic regulation and intervention which was almost unparalleled outside the Soviet bloc. Yet in government in the 1980s the party introduced a free-market reform programme that drew the admiration of a former adviser to Margaret Thatcher, who said it had moved more quickly and more brutally to liberalise the economy than she would have ever dared."

The regulatory role of government had increased since the 1930s, but declined in the 1980s when words like 'privatisation,' 'deregulation,' and 'user-pays' became part of the vocabulary. As the 1990s began, however, the pendulum in the United States began to swing back under the new administration of Bill Clinton with greater government intervention in the economy - especially social regulation and health care.

The extent of government regulation, and control are evident from the First Edition of *Economics*, and still discussed forty-one years later in the Thirteenth Edition:

- "...the legal property rights of an individual are relative and limited. Society determines how much of his property a man may bequeath to his heirs and how much must go in inheritance and estate taxes to the public treasury. Society determines how much the owners of public-utility companies - such as electric-light and gas companies - can earn and how they shall run their business. Even a man's home is not his castle. He must obey zoning laws and, if necessary, make way for a railroad or slum-clearance project. Interestingly enough, two-thirds of society's economic income cannot be capitalized into private property. Since slavery was abolished, human earning power is forbidden by law to be capitalized. A man is not free to sell even himself" (Sam.1 1948, 51).

- "override consumer preference. Is it possible that Congress knows better than consumers what is really good and evil? Take heroin as an example. Governments do not treat consumers as sovereigns who can decide how much heroin they will spend their dollar votes on. Where heroin is concerned, the state adopts a paternalistic attitude, treating consumers like children. Society also controls people's behavior regarding cigarettes and other cancer-causing substances" (Sam. 13 1989, 441).

Further in the First Edition, and years later in the Fifteenth Edition it is apparent to readers that not all regulation is able to go through smoothly:

- "Against the heavy opposition of business interests, Congress passed pure food and drug acts, but an American is still free to poison himself with hair dyes and to go to an early grave as a result of taking patent medicines and being his own doctor" (Sam. 1 1948, 207).

- "Poised between voters and politicians stand organisations known as *interest groups*, which represent people or businesses that are organized to lobby for a specific set of interests or issues. For example, the National Rifle Association defends the right of citizens to bear arms; the Iron and Steel Institute attempts to limit steel imports; the Environmental Defense Fund presses for more stringent control of pollution. Sometimes, interest groups assume a degree of political power far beyond the numerical size of their membership. When interest groups 'capture' regulatory agencies or legislative bodies, we have a case of *nonrepresentative government*" (Sam. 15 1995, 283).

Economics outlines some of the ways government influences society and the economy, for example; government controls the police, sets speed limits, pollution laws, minimum wages, prohibits drugs, taxes and spends in the economy. The Thirteenth and Fourteenth Editions reflect the peak of government regulation in the American economy:

- "The mid-1970s recorded the high-water mark of economic regulation, with many conservatives portraying the United States as a planned economy run by regulatory agencies" (Sam. 13 1989, 758).

- "The years from 1965 to 1980 represented the heyday of regulatory institution-building. The United States legislated programs to deal with traffic safety, air and water pollution, hazards of the workplace, mine safety and strip mining, and the dangers from nuclear power and toxic wastes" (Sam. 14 1992, 328).

As the 'privatisation,' 'user pays,' and 'deregulation' policies were instituted in the 1980s, they are reflected in *Economics*. The American domestic airline industry is an example of deregulation, which is introduced to readers in the Thirteenth Edition:

> "Until the late 1970s, the federal Civil Aeronautics Board limited competition among airlines by restricting the entry of both new and established airlines into most cities...Criticisms led to a complete deregulation by 1980, and the industry saw the growth of many upstart airlines like Continental Airlines and Texas Air along with the bankruptcy of poorly managed airlines" (Sam. 13 1989, 435).

Later in this edition, the Reagan fiscal revolution, its policies relating to government regulating in the economy, and the principles underlying it, are outlined for readers:

> "The Reagan fiscal revolution (1981-1988) stood on four pillars: an economic policy that moved away from Keynesian demand management toward concern with promoting free and unfettered private enterprise; a budget policy that bolstered defense, cut civilian programs, and gave little weight to the potential damage done by fiscal deficits; a regulatory program reducing the burden of federal regulations, especially those in health, safety, and, the environment; and most important, lower tax rates and burdens" (Sam. 13 1989, 801).

The transformation of the economy in many countries of the world, due to changing political philosophies, is depicted in the later editions of *Economics:*

> "In the 1980s, the wheel turned full circle. The capitalist countries of the West and socialist countries of the East rediscovered the power of the market to produce rapid technological change and high living standards. In the West, governments reduced the regulatory burdens on industry and decontrolled prices. The most dramatic development occurred in Eastern Europe, where the peaceful revolution of 1989 forced the socialist countries to cast off their central-planning apparatus and allow market forces again to spring up" (Sam. 14 1992, 3).

The change in the regulatory role of government over the past fifty years is apparent. So too is the change in the government's role through fiscal policy to provide a strong lead in stabilising the business cycle of the economy.

6.2.4 Stabilisation Policy

Governments recognised after the Great Depression that they needed to be able to influence the business cycle so as to prevent severe depressions and inflationary booms. Controlling the business cycle was seen as crucial in maintaining the political and economic structures of democracies. Society was also calling on government to take a more interventionist stance to prevent the high levels of unemployment, weak economic growth, and unstable prices of the past. After WWII:

> "American planners would reestablish Alfred Marshall's global interdependence and harmony theory, this time with Keynesian, state-participation Principles of Economics. Business cycles were to be flattened out or even eliminated, by the 'fine tuning' of monetary and fiscal policy. The modified social-Darwinism that had haunted Alfred Marshall's Christian-ethical vision of a just society was to be superseded by a kind of social democracy: the welfare state" (Wuliger 1992, 5).

Until the 1970s the positive role fiscal policy could play in stabilising the macroeconomy was emphasised. Taxation and government expenditure were advocated as the tools used to ensure economic stability. Boskin (1987, 28) asserts that:

> "The Keynesian economics of the 1950s and 1960s seemed to indicate that during a recession, straightforward government manipulation of aggregate demand could raise output and employment more quickly than the private market, while during times of inflation, a government reduction of aggregate demand could dampen economic fluctuations."

The 1970s brought two major oil shocks, harvest failures, commodity shortages, a breakdown in the international financial system, and a continuation of the trend towards increasing government regulations and intervention through a 'welfare state.' There was a slump in economic growth, an increase in inflation, and unemployment grew – stagflation hit the world economy. The ability of fiscal policy to stabilise the macroeconomy waned, as did people's belief that it could. Concerns about increasing budget deficits grew in the 1980s, and changes needed to be made to the management of the economy. The emphasis on monetary policy increased. A change emerged in the central devices used for stabilisation in the economy –

from fiscal policy to monetary policy - with monetary policy controlled mainly by an independent Central Bank (Federal Reserve in America) rather than the government itself.

From the First Edition of *Economics,* Samuelson stresses the role government has to play in the stabilisation of the economy, to avoid the violent swings of the business cycle and maintain an average level of income thereby preventing inflation. Hart (1948, 912) when reviewing the First Edition of *Economics* contends that: "Samuelson stresses the responsibilities for economic stabilisation which fall upon government because of the inherent instability of the private economy, and the fact that government cannot evade responsibility for the distribution of income and wealth."

In the Fourth Edition Samuelson outlines the four intrinsic automatic stabilisers of the modern fiscal system: (1) automatic changes in tax receipts, (2) unemployment compensation and other welfare transfers, (3) farm aid programmes, and (4) corporate savings and family savings (Sam. 4 1958, 345-46). In the next edition fiscal and monetary authorities are described as: "'lean[ing] against the prevailing economic winds,' thereby helping provide a favorable economic environment" (Sam. 5 1961, 387).

The leading role of government in maintaining stability in the economy is outlined to the reader in the Sixth Edition:

> "...an important function performed by modern governments involves the control of runaway price inflation and the prevention of chronic unemployment and stagnant growth...Since the beginning of recorded history, governments have had constitutional authority over money. But only in the last 40 years has it become widely recognized that *fiscal policy of government* - variations in expenditure and tax totals, which create a surplus or deficit rather than a balanced budget - has profound effects on unemployment, total production, money and real incomes, and on the level of prices. Bad fiscal policy can make the business cycle worse. Stabilizing fiscal policy can moderate the ups and downs of business" (Sam. 6 1964, 151).

This is followed in the Seventh Edition with the statement that the:

> "business cycle has been tamed, even if not completely made a thing of the past. Although democratic mixed economies are unlikely to experience old-fashioned prolonged depressions ever again, recessions will no doubt still occur even though fiscal and monetary policies can moderate their frequency, intensity, and duration" (Sam. 7 1967, 256).

This, however, was not to last. The effects of the price shocks of the 1970s and the role of the Federal Reserve to reduce excessive spending in the economy are vividly described in the Fourteenth Edition:

> "Double-digit inflation was unacceptable, and the Federal Reserve took steps to slow inflation. Paul Volcker, then Chairman of the Federal Reserve Board, used monetary policy to raise interest rates in 1979...Interest rates rose sharply in 1979 and 1980, the stock market fell, and credit was hard to find. The Federal's tight-money policy slowed spending by consumers and businesses. Particularly hard-hit were interest-sensitive components of aggregate demand. After 1979, housing construction, automobile purchases, business investment, and net exports declined sharply" (Sam. 14 1992, 411).

In the Sixteenth Edition Samuelson makes a statement which indicates the change in thinking and operation of stabilisation policy in the economy: "Fiscal policy is no longer a major tool of stabilization policy in the United States. Over the foreseeable future, stabilization policy will be primarily handled by the Federal Reserve monetary policy" (Sam. 16 1998, 655). From a highly regulated and controlled economy, America (and many other countries) has moved to a more deregulated economy using monetary policy as the key policy for stabilisation.

The chapter now moves on to the second part, which examines the market.

6.3 The Market

> **"The moral is to render unto the market that which the market can handle. Except in time of siege do not squander patriotism and agape on the allocating of beefsteak" (Samuelson 1983a, 10).**

Over the last fifty years there has been a change in the dominance of free-market policy in the economy. The supremacy of the market to organise the demand and supply of billions of goods and services in Western democratic economies has always existed. Markets are seen as the backbone of an economy; their breakdown can have serious economic and political consequences for an economy. Up until the 1980s and 1990s, however, the sovereignty of the market has been limited to a large degree by 'big government' – regulation and intervention.

Governments at times do intervene in markets. They can influence price by creating policy to affect supply or demand, for example by imposing tariffs or quotas. In markets where high prices are a problem government can set price ceilings. Where prices are too low, they can impose price floors, for example minimum wages. Governments may also intervene in markets that are controlled by monopolistic practices, or produce externalities. The government will also often intervene to provide greater equity in the distribution of income, as the distribution of income in a free-market economy is often perceived as 'unfair.'

The 1980s brought a dramatic change in the significance of the market in the economy. In both Western and socialist countries the market was 'rediscovered' and embraced. Government industries were privatised, regulations reduced, and prices freed from control. The market was seen as the engine to produce growth, and advances in living standards. This movement was most evident in Eastern Europe where the market-revolution succeeded central planning.

Samuelson is unambiguous in his position towards the laissez-faire system, which, in his view, does not create a society where all are made better off or, where all resources are used fairly. This is because not all people have the same natural or inherited abilities, resources or, purchasing power. Therefore, some may be very poor with little chance of improving, while others remain very rich, perhaps not even through their own accomplishments. Samuelson (1987, 2) "emphasizes the need for efficient rather than limited government. He considers himself to be a liberal, defined as one concerned with improvements in living standards and reductions in inequality."

In the First Edition (1948) of *Economics* Samuelson reminds readers of the orderliness of the competitive market system:

> "...a competitive system of markets and prices - whatever else it may be, however imperfectly it may function - is not a system of chaos and anarchy. There is in it a certain order and orderliness. It works. It functions. Without intelligence it solves one of the most complex problems imaginable, involving thousands of unknown variables and relations. Nobody designed it. Like Topsy it just grew, and like human nature, it is changing; but at least it meets the first test of any social organization - it is able to survive" (Sam.1 1948, 35).

Fifty years later in the Sixteenth Edition readers are reminded that markets like the weather "are always changing, dynamic, unpredictable, subject to frequent periods of storm and calm, complex, and fascinating" (Sam. 16 1998, 43).

When markets fail and the price system fails it has serious effects in the economy. A vivid example of this appears in the Second Edition:

> "A dramatic example of the importance of a pricing system is post-war Western Germany. In 1946-47 production and consumption had dropped away to almost nothing. Neither wartime bombing damage nor post-war reparation payments could account for this breakdown. The paralysis of the price mechanism was clearly to blame: Money was worthless; factories closed down for lack of materials; trains could not run for lack of coal; coal could not be mined because miners were hungry; miners were hungry because peasants would not sell food for money and no industrial goods were available to give them" (Sam. 2 1951, 36-37).

Economics presents readers with examples that show that on occasions governments intervene in the free-market sometimes to address inequities in the system or, for self-interested reasons:

- "Spillovers sometimes cause harm or good that is not included in the calculations of free and unregulated markets. Monopolies may take over industries. And the income distribution churned out by the invisible hand may be socially unacceptable. In each case, governments may guide the economy toward outcomes that society prefers" (Sam. 13 1989, 441).

- "Governments affect price by influencing supply or demand or both. Over the ages, governments have raised prices by restricting output. The embargo of Iraq in 1990 curbed oil production and raised oil prices sharply. Brazil has burned coffee to raise its price...In the face of rising prices, governments often control prices, as the American government did for oil from 1973 to 1981, a period of sharply rising energy prices" (Sam. 14 1992, 76-77).

However, the influence of government on the private sector has not been a consistent one as Samuelson explains in the Fifteenth Edition:

> "Government encroachments on the private sector has not been continuous; rather, following the cycle of politics, capitalist economies take two steps forward, then one step backward, on the road to greater government involvement. Not too long ago, we witnessed the *reemergence of the market* in both capitalist and socialist countries. The crusade for reduced government involvement launched during the Reagan and Bush administrations in the United States (1981-1993) was joined by governments in many other countries. But then the pendulum swung in the other direction as the new administration of Bill Clinton introduced programs to increase government control over the giant medical-care sector. Throughout, the electorate has remained divided on the proper role of government""(Sam. 15 1995, 276).

The next section of this chapter provides a brief overview of the free-market approach and the changes that took place around the world in the 1980s and 1990s as nations embraced more of a market approach in their economies. This is followed by an examination of market failure, specifically monopoly, externalities, and the distribution of income.

6.3.1 The Free-Market System

The nineteenth century was a period when a relatively laissez-faire model of fiscal management was practised in America. This period was one of economic prosperity. What the model did not address were issues of fairness and equity.

Khrushchev predicted that capitalist America would be buried by communism. Many countries in Eastern Europe, China, and Cuba ran seemingly successful economies under the socialist umbrella. In socialist countries, governments attempted to control demand and supply through law, regulations, propaganda and penalties, and implemented a controlled central plan for the economy. Things changed in the 1980s. Inhabitants of the socialist countries of the world began to see that the market economies of the West provided higher standards of living, greater technological advance, and material prosperity, which left them far behind. Stagnating economies and severe repressive governments in Eastern Europe began to exact a political penalty. The most obvious manifestation of this was the overthrow of these governments, and the 'rapid' dismantling of the former Soviet Union. In China changes began after the death of Mao Tse-tung. Though still run by a communist dictatorship, China allowed markets to operate inside its borders. Developing countries also moved to a more market approach. Mexico, Chile, and Thailand reduced the role and influence of government in the economy in an attempt to encourage greater efficiency and growth.

By the end of the 1980s and early 1990s many communist regimes collapsed around the world. However, these newly decentralised, deregulated, market-oriented economies did not just leap into a boom time. In fact most experienced unemployment and decreasing economic growth. By the 1990s the free-market system was strongly influencing both Western democratic nations and socialist countries alike.

In the First Edition of *Economics* nineteenth century America is described as operating "the state of *laissez faire* which Carlyle called 'anarchy plus the constable'" (Sam. 1 1948, 152). The result was said to be:

> "a century of rapid material progress and an environment of individual freedom. Also there resulted periodic business crises, wasteful exhaustion of irreplaceable material resources, extremes of poverty and wealth, corruption of government by vested interest groups, and too often the supplanting of self-regulating competition in favor of all-consuming monopoly" (Sam.1 1948, 152).

Samuelson reflects on the laissez-faire economy in the Tenth and Fourteenth Editions, making readers aware of the potential inequalities that are inherent in the system:

- "From Smith's time at least, men saw beauty in the laissez-faire mechanism and inferred that it must have teleological significance in giving efficiency. But they were often uncritical, and often they overlooked the assumption that dollar votes were to be distributed in the ethically desired way; and they could not prove what they believed" (Sam. 10 1976, 641-42).

- "...under laissez-faire, perfect competition could lead to massive inequality, to malnourished children who grow up to produce more malnourished children, and to the perpetuation of inequality of incomes and wealth for generation after generation. Or, if the initial distribution of wealth, genetic abilities, education, and training happened to be spread quite evenly, perfect competition might lead to a society characterized by near-equality of wages, incomes and property" (Sam. 14 1992, 295).

The market revolution at the end of the 1980s and into the 1990s is documented in *Economics*. In the Fourteenth Edition Samuelson (Sam. 14 1992, 375) reminds readers that:

> "Modern economics focuses primarily on the workings of a market economy like the United States, and the effectiveness of the market is today increasingly appreciated throughout the world. Nowhere is the allure of the market stronger than in socialist countries."

The transformation of socialist countries is vividly described to readers, as are the processes some took to change their economies:

- "During this century, Marxism claimed the allegiance of nearly 2 billion people, while socialism has been championed by many of the great Western thinkers. A half-century ago, in the midst of a great depression and armies of unemployed workers, many economists and political leaders were haunted by the thought that capitalism was doomed" (Sam. 14 1992, 375).

- "The *big-bang approach* was tried in Poland in January 1990, when the Polish government removed controls on most prices and opened the economy to foreign trade" (Sam. 14 1992, 391).

- "The step-by-step approach has been adopted by the Soviet Union and most other Eastern European countries. In the early years of *perestroika* (restructuring) under President Gorbachev...Under pressure from a deteriorating economy and from his political opposition, particularly Russian President Yeltsin, a group of radical economists, led by Stanislav Shatalin, proposed a '500-day plan.' Under the 500-day plan, the Soviet Union would turn much of the power of the central government over to the republics and would introduce a market in a whirlwind 500 days. The Soviet government came to the brink of this radical reform in the fall of 1990 and then retreated" (Sam. 14 1992, 391-92).

Samuelson uses the demolition of the Berlin Wall as a dramatic example of the breakdown of the old regimes: "The lesson of recent history is that economic ideals can break down walls and topple governments" (Sam. 14 1992, 375). Early in the Fifteenth Edition Samuelson comments enthusiastically:

> "How wrong Khrushchev was! The last 10 years have seen a dramatic return to the market around the world. After decades of extolling the advantages of central planning and a government-run command economy, Russia and most of the countries of Eastern Europe started the difficult transition to a decentralized, market economy. China, while still run by the communist party, has enjoyed an economic boom in the late 1980s and early 1990s by allowing markets to grow up" (Sam. 15 1995, 22).

Economics then goes on to describe and explain in the Fifteenth Edition the changes in Eastern Europe, the Soviet Union, Poland, and China:

- "They [leaders of centrally planned economies] had seen West Germany become the powerhouse of Europe while East Germany stagnated; they lived in a Czechoslovakia poisoned by toxic wastes while southern neighbor Austria, with its mixed capitalist system, was a rural idyll" (Sam. 15 1995, 263).

- "By the end of the 1980s, socialist Eastern Europe and the Soviet empire were [in] ruins, with long lines for bread and other necessities in the stores, low and declining living standards, outdated technologies, and deteriorating environmental conditions. This large and once-prosperous region had been laid low, not by war or pestilence, but by an ambitious social experiment called *socialist central planning*, devised by Vladimir Lenin and his communist followers. When the communists were thrown out of office in 1989-1991, the new leaders of the affected countries, people like the playwright-turned-president Vaclav Havel of Czechoslovakia, decided without hesitation that introducing a market economy in most sectors was the first step toward regaining economic health" (Sam. 15 1995, 263).

- "After the death of the revolutionary leader Mao Ze-dong, a new generation concluded that economic reform was necessary if the communist party was to survive. Under Deng Xiaoping, China began a gradual process of decentralizing economic power without implementing political reforms; the democracy movement was ruthlessly repressed in Tiananmen Square in 1989, and the communist party continued to monopolize the political process" (Sam. 15 1995, 713).

Not every economy, however, prospered as governments reduced their role in the economy in favour of the market. Former communist countries who moved to a market model faced increasing pressure on its infrastructure. The sudden change from the existing model to a new one was at times chaotic. In some countries the whole legal framework itself broke down such as in Yugoslavia, and the former Soviet Union, creating chaos and the disintegration of the formal market system:

- "...for the newborn post-socialist countries of Eastern Europe, the first taste of the market was of depression and unemployment" (Sam. 14 1992, 471).

- "*...when the legal framework breaks down, as in the former Yugoslavia or sometimes even in impoverished urban areas of America, people begin to fear for their lives and have little time or inclination to make long-term investments for the future. Production falls and the quality of life deteriorates. Indeed, many of the most horrifying African famines are caused by civil war and the breakdown in the legal order, not by bad weather*" (Sam. 15 1995, 30).

- "In addition to these uncertainties is a set of political risks involved in dealing with a divided central government in Moscow, with autonomous regions, with localities, and with the Russian 'mafia' in a country where property rights, bribes, and taxation are subject to haggling and the rule of bureaucracy rather than the rule of law" (Sam. 16 1998, 188).

The market transformation was not always easy, nor did it guarantee instant positive results. Free markets though improving efficiency, can and do fail.

6.3.2 Market Failure

The market is not without limitations - it even at times, fails. Section 6.3.2 examines three examples of market failure; monopoly, externalities, and income distribution.

Monopoly

"In today's economy, perfectly competitive markets are the ideal: much longed for, seldom found. When you buy your car from Ford or Toyota, your hamburgers from McDonald's or Wendy's, or your computer from IBM or Apple, you are dealing with firms large enough to affect the market price" (Sam. 15 1995, 148).

The market system is not a universally perfectly competitive one: monopoly elements exist, which distort prices, market information, and the distribution of resources. In American and many Western democracies monopoly power is not seen as positive or acceptable by government, and governments implement policies to address the non-competitive behaviour.

Governments do take action when they see prices are too high, resources are being wasted, consumer information is distorted, and extraordinary profits are being made. Galbraith (1987, 162) argues: "The advocate of the antitrust law could see himself as protecting both the public interest and a substantial business interest as well. But, above all, he could see himself as a defender of conceded flaw in an otherwise perfect system."

American administrations have spent much time and money enforcing the antitrust laws they have enacted over the last one hundred years. Galbraith (1982, 243) asserts that: "Antimonopoly policy would remain in the United States as an answer to ostentatious monopoly, flagrant price fixing and consumer price abuse and would have a deeply respectful treatment in textbook instruction." Over the years governments have used a number of techniques to control the imperfectly competitive market - from taxation to government ownership, price controls to antitrust policy. From the 1950s to the 1980s many worried that the vigorous pursuit of antitrust cases and heavy regulation was having a negative effect on research, development, and innovation - even with government working to create intellectual property rights and patent laws to protect invention and innovation.

Governments, though concerned with imperfect competition in their domestic economies, have also been increasingly conscious of monopoly elements in their trading partners, which might negatively impact on their own economy. Policies such as anti-dumping legislation go some way to help prevent some of the negative impacts of this threat.

According to Samuelson's (Sam. 1 1948, 40) textbook governments "shape, regulate, and influence our world of monopolistic competition in order to create a more tolerable and workable competitive regime." In the Fifth Edition readers are made aware of how seriously the American government treats monopoly power, both domestically and in foreign nations:

- "...both Republicans and Democrats are spending more and more money on lawyers and investigators to enforce the antitrust laws with ever-increasing vigor. Firms no longer dare to use group practices which used to be standard in American industry. Judges are tougher and tougher in their judgments. More and more do they weaken the powers that a business firm has to exploit its patents and its market advantages" (Sam. 5 1961, 561).

- "After WWII, American occupational authorities in Japan and Germany tried to introduce legislation in those countries to break up their old combines. For a while this seemed to succeed. Then as those nations began to stand on their own feet, they did begin to revert to their old tolerance of monopoly...American enterprise is kept on the defensive and would never dream of adopting the flagrant devices that are all too common in most parts of the globe" (Sam. 5 1961, 562).

The determined approach by the American government to the issues of monopoly power is explained by Samuelson (Sam. 13 1989, 44) in the Thirteenth Edition: "Government does not accept as inevitable all exercise of monopoly power. Since the 1890s, the federal government has imposed both antitrust laws and economic regulation in the name of improving the workings of our imperfectly competitive market system."

One of the key problems of imperfect markets is the flow of information to consumers and competitors, which causes governments to intervene, sometimes to protect the consumer and other times to protect valuable information:

- "Unregulated markets may provide too little information for consumers to make well-informed decisions. That's why pharmaceutical companies are required to provide government with extensive data on the safety and usefulness of new drugs before they can be sold...in addition, government may use its spending power to collect and provide information itself, as it does with automobile crash and safety data" (Sam. 15 1995, 280).

- "Because the rewards of producing valuable information like inventions are reduced by imitation, governments take steps to create **intellectual property rights**. These are special laws governing patents, copyrights, trade secrets, and, most recently, electronic media...The growth of electronic storage, access, and transmission of information highlights the dilemma of providing incentives for creating new information. With the low and decreasing cost of electronic information systems like the Internet, it is technologically possible to make most information available to everyone, everywhere, at essentially zero resource cost" (Sam. 16 1998, 180).

Market failure is not always as blatant or negative as monopoly. Externalities represent another example of market failure, but they may have positive or negative effects on the economy and society.

Externalities

"Say the populace decides that it wants to devote more resources to improving public health or reducing famine; or that the country needs to mobilize when the armies of a foreign dictator overrun a friendly country and attack our ships; or that protecting our precious environment for future generations is a key national priority; or that more resources should be devoted to educating the young; or that the rich are getting too large a slice of the national pie and more resources should flow to the poor; or that unemployment in a deep recession should be reduced. The market cannot automatically solve these problems. Each of these objectives can be met if and only if the government changes its taxes, spending, or regulations" (Sam. 16 1998, 282).

An activity that can make some people better (or worse) off, without any payment or compensation being paid, is an externality. The market does not take account of these 'spillovers,' therefore governments frequently to intervene to regulate these effects.

The problem with externalities is there is often no incentive to prevent the externality from occurring. In the case of negative externalities government regulation and intervention is usually called for. Through direct controls, financial incentives, and penalties governments can induce industry to reduce negative externalities (or perhaps to increase positive externalities). Some economists (and members of the public) are critical of government involvement and ability to take action in the worst cases of spillovers created by the market. Krugman (1994a, 80) points out that:

> "Economists pleaded for some use of the market mechanism - for taxes on pollution, or for auctioning off the rights to release pollutants. Instead, U.S. environmental regulations imposed detailed and inflexible rules, giving no incentive for firms that could cheaply have reduced pollution further to do so, offering no incentive for innovative ways to reduce it, and offering no recourse for firms for whom the costs of pollution reduction were prohibitive."

Not all solutions to the problem of externalities, however, need to come from the government. It is possible through private negotiation and liability rules that the problem of the externality may be solved without direct government action.

In the Sixth Edition Samuelson (Sam. 6 1964, 159) describes two cases of externality:

> "so-called 'external diseconomies,' such as the smoke from my factory chimney which contaminates the air for all; and 'external economies,' such as the advantage your fruit trees get from the straying bees I raise to help pollinate my own fruit trees."

Government regulation in the markets with externalities is discussed in the Thirteenth Edition:

> "Government *regulations* operate with varying degrees of effectiveness to control externalities like air and water pollution, strip mining, hazardous wastes, unsafe drugs and foods, and radioactive materials. Critics of regulation complain that government economic activity is unnecessarily coercive...While the optimal scope of government intervention will never be resolved" (Sam. 13 1989, 44-45).

Later in the Thirteenth Edition readers are reminded of some of the positive and negative externalities that have existed, and do exist in society:

> "In earlier centuries, unsuspecting people could be struck down by plague or smallpox, while today the deadly AIDS virus can infect health-care professionals or

unwary partners in drugs or sex. Such externalities are realities that call for government action in modern society. We benefit from positive externalities as well. Inventors like Edison (light bulb and phonograph), Bell (telephone), Salk (polio vaccine), Farnsworth (television), Carrier (air conditioning), and Carlson (xerography) garnered but a small fraction of the profound benefits of their work. Think also of the radio and TV signals that we receive free of charge or of the public-health policies that have all but eradicated smallpox, polio, typhus, and malaria. For all these externalities, governments have alleviated inefficient, laissez-faire outcomes by taking collective action" (Sam. 13 1989, 773).

The seriousness of negative externalities to society is again brought home to readers in the Fifteenth Edition:

> "As our society has become more densely populated and as the volume of production of energy, chemicals, and other materials increases, negative externalities or spillover effects have grown from little nuisances into major threats. This is where governments come in. Government *regulations* are designed to control externalities" (Sam. 15 1995, 32).

Market failure in the form of monopoly elements in markets and externalities have the potential to cause significant negative impacts on society. This generally means that government, to solve these market failures, imposes regulations and laws. A third market failure is that of the inequality of the distribution of income, which again often requires governments to intervene.

Income Distribution

> **"Anyone who possesses fertile well-located land or widely admired crooning ability will be supplied with many dollar votes for their use in the markets for consumer goods. Anyone without property and with skills that the market cares little about will receive a low annual income" (Sam. 5 1961, 57).**

One of the biggest problems of the market system is that not everyone has the same purchasing power or the abilities and opportunities to earn higher incomes. There are inherent inequities in the market system that allow some to have very low standards of income, while others enjoy very high incomes.

The presence of discrimination in the labour market also often motivates governments to become involved in the market. When members in society are excluded from certain jobs or occupations, governments may step in creating laws to ban discriminatory practices. Such legislation may go some way to enable all groups in a society to compete for jobs and earn good incomes. Income inequalities are often politically and ethically unacceptable. Not everyone, however, accepts that government should intervene in the distribution of income in an economy.

Even today the market dominated economies of many countries still have issues of income inequality, people trapped in low paid dead-end jobs, and people living in poor neighbourhoods. The prosperity brought by the market economy has not been (and is not) shared by all. One of the most difficult aspects of the free-market system is that of providing an egalitarian distribution of income:

> "The United States in recent times has had both an unequal an increasingly unequal distribution of income. Paul Krugman has estimated that in the 1980s '70 percent of the rise in average family income [went] to the top 1 percent of families.... The 1 percent of families with the highest incomes received about 12 percent of overall pretax income, while the wealthiest 1 percent of families had some 39 percent of net worth'" (Galbraith 1995, 252).

Income distribution appears in all sixteen editions of *Economics* utilising the Lorenz curve in its presentation. Each edition has updated statistics, using the Lorenz curve to show: for example, income inequalities, the inequality of wealth and income, and the inequality of income over selected professions. In the First Edition (1948), the inequality in the actual distribution of United States income 1935-36 is presented. Fifty years later the inequality of the distribution of income (using 1995 data) is shown in the Sixteenth Edition. Table 6.1 shows the inequalities in the distribution of income in American households as presented in the First and Sixteenth Editions (1948, 1998) of *Economics*.

Table 6.1: The Inequalities in the Distribution of Income in American Households 1935-1936 and 1995 as Presented in the First and Sixteenth Editions of *Economics*

Inequality in the Actual Distribution of Income, 1935-1936

Per cent of people	0	10	25	50	75	100
Per cent of income	0	1.7	6.8	20.5	43.1	100

(Sam. 1 1948, 66).

Distribution of Money Incomes of American Households, 1995

Income Class of Households	Income Range	Percentage of all Households in this Class	Percentage of Total Income Received by Households in this Class
Lowest Fifth	Under $14,399	20.0	3.7
Second Fifth	$14,400-$26,899	20.0	9.1
Third Fifth	$26,900-$41,999	20.0	15.2
Fourth Fifth	$42,000-$65,099	20.0	23.3
Highest Fifth	$65,100 and over	20.0	48.7
Top 5 percent	$113,000 and over	5.0	21.0

(Sam. 16 1998, 344).

Samuelson (Sam. 1 1948, 62) presents readers with a vivid example of the perceived American standard of living in the First Edition of *Economics*:

> "In the absence of statistical knowledge, it is understandable that one should form an impression of the American standard of living from the full-page magazine advertisements that portray a jolly American family in an air-conditioned home with a Buick and a station wagon and all the other good things that go to make up comfortable living. Actually, of course, this sort of life is immeasurably beyond the grasp of 95 per cent of the American public, and even far beyond the means of most families from which the selected group of college students come."

This same example, up-dated forty-one years late in the Thirteenth Edition, provides an interesting insight into how the symbols of material wealth have changed:

> "In the absence of statistical knowledge, it is understandable that one should form an impression of the American standard of living from TV commercials showing a healthy white family standing in front of a split-level house, both parents about to rush off to work in their brand-new luxury compacts, with a garage full of boats and power lawn mowers in the background. Actually, this sort of picture is highly unrepresentative of the kind of life that 90 percent of Americans lead" (Sam. 13 1989, 643)

A common statement made about the discovery of oil is repeated in the Eighth Edition of *Economics*: "'There's nothing wrong with any poor country that discovery of oil can't cure.' The fact that primitive Kuwait falls...in the most prosperous category illustrates the point. Venezuela, Iraq, Saudi Arabia, Libya, Iran, Kuwait, and now Alaska, are cases where oil could help finance development" (Sam. 8 1970, 753). In later editions, Samuelson reminds readers that the wealth from oil is not always good for all members in a country, as the income distribution is often very unfair and corruption rife:

> "Economists suspect that natural wealth from oil or minerals is not an unalloyed blessing. Some countries - like the United States, Canada, and Norway - have used their natural wealth to form the solid base of industrial expansion. In other countries, the wealth has been like loot subject to plunder and *rent seeking* by corrupt leaders and military cliques. Countries like Nigeria and Congo (formally Zaire), which are fabulously wealthy in terms of mineral resources, failed to convert their underground assets into productive human or tangible capital because of venal rulers who drained that wealth into their own bank accounts and conspicuous consumption" (Sam. 16 1998, 542).

In the Sixteenth Edition Samuelson (Sam. 16 1998, 37) reminds readers that:

> "For most of American history, economic growth was a rising tide that lifted all boats, raising the incomes of the poor as well as those of the rich. But over the last two decades, changes in family structure and declining wages of the less skilled and less educated have reversed the trend. With a return to greater emphasis on the market has come greater homelessness, more children living in poverty, and the deterioration of many of America's central cities."

Having examined the government and the market separately the chapter moves to discuss how the modern mixed market system is portrayed in *Economics*.

6.4 The Modern Mixed Market System

> **"Diatribes against government forget the many successes of collective action over the last century. We have reduced malnutrition and conquered many terrible diseases like smallpox. Government programs have increased literacy and life expectancy. Macroeconomic successes have reduced the sting of inflation and unemployment, while government transfer programs have brought health care to the poor and improved the quality of life for the aged. State-supported science has penetrated the atom, discovered the DNA molecule, and explored outer space" (Sam. 16 1998, 39-40).**

Throughout the sixteen editions of *Economics* Samuelson has advocated a mixed economy, where the government and the market work together for the good of the economy and its people. In this mixed economy both private and public institutions have a degree of economic control, with the serious flaws of the market system controlled by government intervention. Samuelson (Sam. 15 1995, 22) describes this role of government in relation to the market:

> "That markets are powerful engines of growth is undeniable. But don't go the next step and believe that government is an unnecessary vestige from an earlier age. Government plays a key role by providing a secure climate in which markets can flourish and by curbing the excesses of unfettered markets. The prosperity of a

modern economy depends on getting the proper balance and division of responsibilities between markets and government."

Samuelson acknowledges that no economy of the world operates under the conditions of the perfectly competitive system, with the smooth functioning of the 'invisible hand.' Inefficiencies, inequities, and market failures are rife. Not all that can be produced by people is considered safe and good for society to consume; limits are often placed on the sovereignty of the consumer. To undertake some of the highly expensive and high risk ventures of exploring space, and sending troops into war, the public sector has to fund these activities. Samuelson (Sam. 14 1992, 153) argues in *Economics* that the conflict "between efficiency and fairness [is] one of the most profound questions of value that a society faces."

Samuelson continually maintains that economics cannot answer the normative question of how much low income families should receive from the state or how high taxes should be. But economics can help in designing programmes to implement these policies and evaluate their outcomes. Samuelson (Sam. 15 1995, 273) contends: "What an economist does, therefore, is try very hard to keep positive science cleanly separated from normative judgments, to keep a hard head at the service of a soft heart."

Throughout the sixteen editions of *Economics,* while discussing market failure, Samuelson does not ignore the problem of government failure:

- "In some markets, firms emit pollution into the air or water or dump toxic wastes into the soil. In each of these cases market failure leads to inefficient production or consumption, and there may be a role for government to cure the disease. But, while evaluating the role of government in curing economic ailments, we must also be alert to 'government failures' – situations in which governmental attempts to solve problems may make them worse or cause other problems" (Sam. 13 1989, 43-44).

- "Critics of government say that the state is overly intrusive; governments create monopoly; government failures are just as pervasive as market failures; high taxes distort the allocation of resources; social security reduces saving; environmental regulation dulls the spirit of enterprise; government attempts to stabilize the economy must fail at best and increase inflation at worst; and inflation chokes off investment. In short, for some, government is the problem rather than the solution" (Sam. 16 1998, 39).

A classic example used by Samuelson of government intervention when the market mechanism is said to operate unfairly is the use of minimum wage legislation in the unskilled labour market. Government sometimes legislates a price floor – minimum wage – so that those workers have a bottom line at which they are paid. The aim is to eliminate exploitation in the labour market and provide incentives for unemployed people to work. These minimum rates, however, may hurt those they are designed to help by increasing unemployment in the market, as a result of less demand for the labour and increased supply. This is an example where government intervention in the market to solve inequality may instead create additional difficulties for unskilled workers.

Since the end of the Depression most Western countries experienced the increasing role of government in the economy and society. The welfare state was created and flourished, governments provided a large range of public goods and services, regulatory control was extensive, and governments played a key role in maintaining stability in the economy. This changed in the 1980s when governments in many countries moved to reduce their role and the extent of their direct involvement in the economy. By the 1990s many previously socialist countries also moved to a 'less-government, more-market approach.' Countries were rethinking the boundaries of the government and the market.

What exists now in the United States Samuelson believes, is a mixed market economy, which retains a welfare system, at the same time as it adopts a more market orientation. Those countries that remain strongly committed to the 'cradle to grave' welfare system are now finding things difficult and unsustainable.

The Sixteenth Edition outlines this change in definition and approach in the state provision of welfare assistance:

- "As the mixed economy marks its centenary, how should its mission be redefined? The central lesson we read from America and Europe is the following: The critical role of the government also lends a special responsibility for government to operate efficiently. Every public dollar spent on wasteful programs could be used for promoting scientific research or alleviating hunger. Every private dollar wasted because of inefficient taxation reduces people's opportunity to improve their housing or go to college. The central premise of economics is that resources are scarce - and this applies equally to private funds and to government funds, which must be pried out of taxpayers" (Sam. 16 1998, 365).

- "Europe - the cradle of the welfare state - models itself as the 'compassionate economy' and is a stark contrast [to the United States]. European workers of the 1990s are 'protected' by strong unions, generous income-support systems, high minimum wages, and many restraints on hiring and firing. But weakening of market forces has led to hardening of the economic arteries as microeconomic generosity led to macroeconomic inefficiency.

> With growing inflexibility of its welfare and labor market institutions, the lowest sustainable unemployment rate in Europe has climbed steadily over the last three decades. By 1997, the European unemployment rate was twice that in the United States. Many European politicians are asking themselves whether they should in some degree emulate the ruthless competitiveness of the American model" (Sam. 16 1998, 735-36).

As the American economy has changed over the past fifty years so has the role and scope of government, often facilitated by changes in political administrations. A brief survey of the changes in the economy over the past fifty years appears in the Sixteenth Edition:

> "The U.S. economy has changed enormously over the last 50 years. A much smaller share of the population work in factories, and many more people work behind desks and in stores and hospitals. Taxes are higher, and big government has become a permanent part of the economic landscape. Technology has revolutionized daily life: advanced telecommunications systems enable businesses to spread their operations across the country and around the world, and ever-more-powerful computers have eliminated many of the repetitive tasks which used to employ so many people. Goods and money flow much more easily across national boundaries, and, after dominating the world economy in the years following World War II, the United States now faces competition from countries large and small" (Sam. 16 1998, 644).

Though chapter titles are just an indication of what may follow in the chapter, they can provide an overview of the emphasis of the textbook. One of the central issues in *Economics* has been the changing role of government. Selecting some key words that appear in chapter titles can reveal how the emphasis of *Economics* has changed through the editions. Table 6.2 presents the number of chapters through the editions of *Economics* that have 'individual' or 'personal,' 'government' or 'Federal,' and 'market,' in their title.

Table 6.2: The Total Number of Chapters in *Economics* with 'Individual' or 'Personal,' 'Government' or 'Federal,' and 'Market' in their Titles

Edition	No. of Chapters	Individual or Personal	Percentage of Chapters with Individual	Government or Federal	Percentage of Chapters with Government	Market	Percentage of Chapters with Market
1	27	3	11.0	2	7.4	0	0
2	35	3	5.7	3	8.6	0	0
3	37	2	5.4	3	8.1	0	0
4	38	2	5.3	3	7.9	0	0
5	37	2	5.5	3	8.3	0	0
6	38	1	2.6	3	7.9	0	0
7	40	1	2.5	3	7.5	0	0
8	42	0	0	3	7.1	0	0
9	43	0	0	3	7.0	0	0
10	43	0	0	3	7.0	0	0
11	43	0	0	3	7.0	0	0
12	40	0	0	3	7.3	1	2.5
13	40	1	2.5	4	10.0	4	10.0
14	39	0	0	3	7.7	7	17.9
15	37	0	0	2	5.4	5	13.5
16	36	0	0	1	2.6	3	13.0

The words 'individual' and 'personal' are used in chapter titles from the First to Seventh Editions (1948-1967), and appear again in the Thirteenth Edition (1989). 'Government' or 'Federal' appears in at least one chapter title in all editions. Until the Twelfth Edition (1985), there are no chapter titles in *Economics* containing the word 'market'. When the word 'market' does appear, it dominates chapter titles, appearing in seven chapter titles in the Fourteenth Edition (1992). This represents eighteen percent of the chapters, far more than 'Government' or 'individual' in previous editions.

Over the sixteen editions of *Economics*, there have been eighteen chapters with 'market' in the title, sixteen with 'government', and five using the term 'mixed economy.' In the first few editions Samuelson includes a chapter "The Functioning of a 'Mixed' Capitalist Enterprise System." In the Sixteenth Edition (1998), "The Shifting Boundary between Markets and Government" is presented. The chapter, "The Winds of Change," has evolved through the editions, until the Twelfth Edition (1985), it is entitled, "The Winds of Change: Alternative Economic Systems." In the Twelfth and Thirteenth Editions (1980, 1985) it is entitled, "The Winds of Change: Economic Alternatives," and in the Fourteenth Edition (1992), "The Winds of Change: the Triumph of the Market." From the late 1980s and into the 1990s, market orientation and the strength of the market are seen as the dominant force in the economy - both in Western democracies and in formerly communist countries - and is increasingly presented in *Economics*.

The change in chapter titles reflects the changing themes in *Economics*, moving from the government to the market. It represents the change in the 1980s in the role of government, the push for deregulation, privatisation, and a 'smaller' government sector in the economy. The rise in the use of the word 'market' almost matching the fall in the use of the word 'government' in chapter titles used in *Economics*.

The modern mixed market system is clearly advocated by Samuelson, and presented to readers in *Economics*. Thought he acknowledges it is not a perfect system, it is certainly superior to both pure laissez-faire and socialist planned economies. In the Sixth Edition of *Economics* Samuelson states:

> "It is too easy to compare the obvious imperfections of our known system with the ideal perfections of a nonexistent planned order. And it is only too easy to gloss over the tremendous dynamic vitality of our mixed free enterprise system, which, with all its faults, has given the world a century of progress such as actual socialized order might find it impossible to equal...Our mixed economy - wars aside - has a great future before it" (Sam. 6 1964, 809).

6.5 Conclusion

> **"In closing may we say that, like Martin Luther King, Jr., we too have a dream. It is a dream that the remarkable efficiency of markets can in East and West, be harnessed to the purposes of the humane society. Yes, the heart has reasons that reason will never know. But economics, poised between an art and a science, can best serve by combining reasons drawn from evidence with purposes drawn from the heart" (Sam. 12 1985, 895).**

Samuelson's own views on active government involvement in the economy and scepticism of market solutions are evident in his textbook. Lindbeck (1970, 354) argues that:

> "In fact a survey of Samuelson's main research areas also becomes a survey of many of the great economic problems of our time. Samuelson himself has also demonstrated the strength of his analytical tools by dealing with important practical policy problems as an economic advisor to the Government, in his often popular interventions in economic policy discussions and, of course, in his widely read textbook."

Samuelson presents the mixed economy, where both the market and government work together to create a prosperous and equitable society despite the different philosophies and objectives that each operate under:

> "Although Mr Samuelson claimed that he had no great message to impart in his first textbook, he was actually introducing, explaining and advocating the then-revolutionary economics of John Maynard Keynes. Hence the book reflected a belief in the need for active government and scepticism about market outcomes" (*The Economist* 1997b, 60).

Samuelson's *Economics* tracks and reflects the changes in the thinking and practice of the government and market in the modern economy. The period from 1945 to the 1980s was dominated by 'big government,' highly interventionist economies. In the West, government regulation decreased, leaving room for greater privatisation and an increasing emphasis on self-reliance as opposed to state-reliance. Socialist governments operated under highly regulated centrally planned systems. This changed in the 1980s when the market-revolution took place. These highly centralised, regulated economies were transformed as nations accepted the market philosophy. As Samuelson (Sam. 16 1998, 667) vividly describes in the Sixteenth Edition:

> "All the time, Marxists carped that capitalism was doomed to crash in a cataclysmic depression; ecologists fretted that market economies would choke in their own fumes and wastes; and libertarians worried that the government-sponsored remedies were worse than the diseases. But the pessimists over-looked the spirit of enterprise which was unleashed by the free market, and which led to a continuous stream of technological improvements."

The market system, however, is not perfect; it has failures with some leading to serious negative effects in an economy. Monopolistic elements, negative externalities, and unequal income distribution are three examples of market failure. Markets also fail to provide all the goods and services modern society demands, with governments inevitably stepping in to provide these goods, such as defence, law and order for example.

The role of the market versus government intervention is an issue for the voters, politicians, and economists to debate, with plenty of room for disagreement. Depending on a person's ideological, philosophical and political leanings, the scope and role of the market vis-à-vis government will be different

What society has to do, Samuelson believes, is strike the right balance between government intervention and the market economy. It is important readers understand the crucial role that each institution plays in the economy. In the First Edition of *Economics* Samuelson puts it eloquently, when saying "it would be fruitless to try to decide whether public enterprise or private enterprise is the more important - as fruitless as to debate hereditary versus the environment." Samuelson (Sam. 16 1998, 40) believes that governments had a role in the economies of the twentieth century, and will continue to do so in the economies of the twenty-first century:

> "Government's successes and failures remind us that drawing the right boundary between market and government is an enduring problem. The tools of economics are indispensable to help societies find the *golden mean* between *laissez faire* market mechanisms and democratic rules of the road: the good Mixed Economy is, perforce, the Limited Mixed Economy. But those who would reduce government to a constable plus a few lighthouses are living in the last century. An efficient and humane society requires both halves of the mixed system - market and government. Operating a modern economy without both is like trying to clap with one hand."

Chapter Seven:

The International Economy

"Paul often began his lecture on international trade by stating that he was going to prove that even if he, Paul, could type better than anybody else it was not necessarily true that he should really spend all his life in the typing profession because what mattered was his relative skill at typing" (Ashenfelter 1999, 359).

7.1 Introduction

> **"A bank in Austria fails and the natives in Fiji, who carry water in empty Standard Oil cans and clothe their infants in Pillsbury flour bags, lose their livelihood - yes, and may even starve" (Sam. 1 1948, 53).**

This chapter focuses on the international economy, how the international economy has changed over the last fifty years, and how this is reflected in Samuelson's *Economics*. Since 1945, the international economy, and an interdependent world, has occupied an increasingly important place in economic thinking, policy-making, and ultimately in the principles of economics.

The focus of introductory economics textbooks fifty years ago was very much on the closed economy, with a few chapters presenting international economics tacked on at the end of the textbook, and a scattering of examples throughout the body of the book. Stiglitz (1993, 27) observes:

> "At the time Samuelson's textbook - which set the tone for the generation of books to follow - was written, it was perhaps understandable that economics, at least in America, would be approached from the perspective of a closed economy...with this closed-economy perspective as its starting point, the evolution of the modern American undergraduate textbook is also perhaps understandable: as international issues mattered more and more in the 1960's and 1970's, additional material was added incrementally."

Today there is much more of an international flavour to the principles of economics textbooks. The countries used as examples in the international economics discussion have changed, as has the presentation of the open economy as a fundamental economic model. The increasing influence of international economics is reflected in the changing emphasis evident in the sixteen editions of *Economics*.

This chapter begins by examining the presentation of the post-war international economy. A discussion of international economics in *Economics* then follows, looking at the physical characteristics of its presentation. The chapter then examines the open economy model, and the issue of protectionism.

7.2 The International Economy

> **"Brown men in Malaya give us rubber; we give monocled Englishmen wheat; Englishmen give Malayans cotton shirts. *Each of us ends up consuming more than he could alone produce!* That's the essence of foreign trade" (Sam. 4 1958, 627)**

The international economy has seen some significant developments relating to trade since 1945. Trade between nations of the world has increased, in large part due to the creation of the General Agreement on Tariffs and Trade (GATT), which in 1995 became the World Trade Organisation (WTO), where nations meet to discuss international trade issues. Bhagwati (1994a, 235) points out that:

> "The 1950s to 1970s were the decades of increasingly freer trade in the developed countries. Successive GATT Rounds of negotiations brought tariffs down to low levels. Trade expansion and income growth interacted virtuously to make these two decades the Golden Age that the later, more troubled years in the 1970s would contrast unhappily with."

There has also been an increase in regionalism and the creation of trading blocs, most notably the European Union (EU), which has become a large trading bloc in the world economy. Despite the move towards free trade and increasing international co-operation there has been (and is) a strong nationalistic protectionist lobby in most nations, which at times influences, and indeed dominates political decision making. Bhagwati (1994a, 236) contends that: "the 1970s to 1980s were characterized by contrasting phenomena:

- a substantial threat to free trade from the demands for protection from the many developing countries which, in fact, embraced extensive protection as part of their developmental strategy of import substitution; and a reduced threat to free trade from the developed countries which pursued trade liberalization instead; and

- a substantial concern with market failure (through factor markets) and non-economic objectives, both stemming from developing-country concerns, which implied increased legitimacy for intervention and presumably therefore for trade protection; and a strengthening of the theoretical case for free trade."

7.2.1 Trade Liberalisation

The United Nations member governments (except the Communist bloc) came together after the war to reduce trade barriers; this resulted in 1947 in the GATT (Japan later joined in 1955). The Bretton Woods Agreement and the GATT had a similar objective: to create an environment for international economic growth, thereby eliminating recession, which many believed was a contributory factor to war.

The 1950s through to the 1970s represented a period of increasing free trade in developed countries. The GATT rounds further promoted this. The Kennedy Round in the early 1960's was the sixth round of reciprocal tariff reductions since 1947. It created large tariff cuts from 1967. In 1979, the Tokyo Round resulted in further tariff cuts. The Uruguay Round of GATT, completed in 1994, was considered the most ambitious and comprehensive of the rounds. An agreement was reached between 115 countries to lower tariffs, and prevent protection through subsidies or favourable treatment from government purchases. It was described as the "biggest tax cut in the history of the world" (Parkin 1996, 898).

There is a general agreement, however, that Non-Tariff Barriers (NTBs) are still a severe impediment to international trade:

> "...the average United States tariff rate is 4 percent. But, if you add the NTBs to tariffs the estimated average amount of overall protection is 18 percent. Total protection in the European Union is higher than the United States, and that in other developed countries and Japan is higher still. LDCs and some of the newly industrialised countries are said to have the highest protection rates of all" (Parkin, 1996, 902).

In the Fifth Edition of *Economics* readers are made aware that:

> "economists - who are supposed to agree on almost nothing - were unanimously opposed to the extreme tariff rates in the Smoot-Hawley Tariff of the early thirties and have been overwhelmingly in favor of the Hull Reciprocal Trade Agreements and the proposed GATT (General Agreement on Tariffs and Trade) aimed at lowering trade barriers" (Sam. 5 1961, 750).

The various GATT rounds are outlined in the editions of *Economics*. In the Sixth and Seventh Editions mention is made of the Kennedy Round:

- "All stand to gain if fruitful multilateral trade can be restored...GATT (the General Agreement on Tariffs and Trade) is a more important development toward international cooperation. The Kennedy Trade Act (1962) looks to a new round of reciprocal tariff cuts, a fitting memorial to the man" (Sam. 6 1964, 705).

- "The Kennedy Trade Act (1962) gives hope for further multilateral progress, as does the 'Kennedy Round' of international negotiations to reduce tariffs multilaterally as the 1970s come into view" (Sam. 7 1967, 678).

Despite what many people in the 1960s thought, Samuelson points out to readers that America had greatly reduced their tariffs:

> "The Cordell Hull reciprocal-trade program for reducing American and other tariffs has now been with us for more than a quarter of a century. Contrary to common opinion, our high 1930 tariffs have been cut substantially (in some cases they have been halved and then halved again" (Sam. 6 1964, 705).

In the Sixteenth Edition the process through which the negotiating of free trade since WWII is discussed:

> "At the end of World War II, the international community established a number of institutions to promote peace and economic prosperity through cooperative policies. One of the most successful of these was the General Agreement on Tariffs and Trade (GATT), which became the World Trade Organization (WTO) at the beginning of 1995. Their charters speak of raising living standards through 'substantial reduction of tariffs and other barriers to trade and the elimination of discriminatory treatment in international commerce.' The WTO currently has 130 member countries, which account for 90 percent of international trade" (Sam. 16 1998, 708).

The other post-WWII phenomenon was regional trade groups and blocs, the most prominent being the European Union - EU.

7.2.2 Regionalism and Trade Groups

After WWII there was an increasing commitment to regional and international economic and political co-operation, as exemplified by the American Marshall Plan and the European Economic Community (EEC).

In 1957, Belgium, France, Italy, Luxembourg, the Netherlands, and Western Germany signed treaties to create a Common Market - the EEC. The European Community (EC) was formed in 1967 from the European Coal and Steel Community (ECSC), the European Economic Community (EEC), and the European Atomic Energy Community (Euratom). By 1985, the EC accounted for forty percent of the world's production and trade, and was seen in political terms as the 'third superpower' after the United States and the Soviet Union. In 1993 the EC became known as the European Union (EU). The EU is working towards further centralisation of fiscal and monetary controls, including a common currency. The Euro dollar came into existence formally on the first of January 1999, with a three year implementation period.

At the end of the 1980s and early 1990s governments took steps to encourage free trade and broaden their markets. Three such plans were: (1) in 1987, the United States and Canada negotiated a set of principles for free trade between the two countries; (2) 'Europe 1992' was another move towards regional free trade; and (3) in 1988, the United States enacted landmark trade legislation in response to the enormous trade deficits, attempting to require 'fair' trade as well as free trade.

The American-Canadian agreement was particularly important for the United States as Canada is its largest trading partner. President Bush also proposed to extend the North American Free Trade region to include Mexico, the third largest trading partner of the United States. Bhagwati (1994b, 17) points out that: "NAFTA signifies a very definite change in U.S. policy – a departure from our traditional philosophy of exclusive attachment to multilateralism established after World War II. This country always opposed trade discrimination, and hence was lukewarm, at best, about regional or other discriminatory free-trade arrangements."

Readers of *Economics* are made aware of the origins and significance regionalism in the international economy, for example the EEC and the EU:

- "One of the most exciting international developments of the century has been the formation of the six-nation European Common Market. In 1957 Belgium, France, Italy, Luxembourg, The Netherlands, and West Germany signed treaties to create a Common Market...It looks to become the second-largest free-trade areas in the world" (Sam. 6 1964, 705-6).

- "A classic example of broadening the market was the European Common Market, which lowered tariffs, encouraged market integration, and thereby promoted vigorous and effective competition" (Sam. 13 1989, 573).

- "This plan for the 12 nations of the European Community, designed to be completed by 1992, will reduce all internal tariff and regulatory barriers to trade, will harmonize taxes and subsidies, and will allow companies operating in Europe to manage their production and trade with much the same freedom as do companies in the United States" (Sam. 13 1989, 932-33).

In the Fourteenth and Fifteenth Editions Samuelson emphasises the strength of the trading relationship between the United States and Canada, and the United States and Mexico:

- Canada is American's largest trading partner "with total trade flows between the two of $176 billion in 1990" (Sam. 14 1992, 689).

- "In 1993...the U.S., Mexico, and Canada concluded the North American Free Trade Agreement (NAFTA) to lower trade barriers in that prosperous region with the aim of enhancing trade and economic growth" (Sam. 15 1995, 281).

Despite the international co-operation, GATT rounds, and regional groupings, protectionism and trade restrictions were still (are still) significant issues.

7.2.3 Protectionism

Tariffs on foreign goods and services have been widely used in many countries. The average American tariff rate reached a peak of twenty percent in 1933 after the passage of the Smoot-Hawley Act (Parkin 1996, 898). Other measures were also used to restrict trade such as quantitative restrictions and exchange controls. The protectionist nature of international trade was, however, questioned, and in 1934 the reciprocal Trade Agreement Act was passed in the United States. This allowed the President to enter into bilateral agreements to reduce American tariffs by up to fifty percent in exchange for reciprocal foreign concessions.

The relatively open global economic system created by the Bretton Woods Agreement and the GATT rounds was eroded in the mid-to-late-1970s. Tariff reductions made during the 1950s and 1960s were now accompanied by a gradual resurgence of protectionism. In 1971, President Nixon, responding to the pressures on the American economy and the American dollar, suspended the convertibility of the dollar into gold, and imposed a tax on imports into America. With these actions, Nixon signalled that the United States, like many other nations in the same period, was re-focusing on domestic rather than international economic matters. During the 1970s, for the first time, the United States began to lose some of its economic edge as a world economic power. There was also a perceived threat in the late 1970s, and early 1980s, from the developing nations, who, it was feared, would take over world markets of some manufactured goods such as textiles, shoes, steel, and automobiles. Bhagwati (1994a, 238) highlights this issue:

> "...there is widespread concern that trade liberalization with the poor countries will impoverish the workers of the rich countries: a fear articulated eloquently by Ross Perot and Pat Choate (1993) in their denunciation of the North American Free Trade Agreement with Mexico as 'a drastic and unfair scheme' that 'will pit American and Mexican workers in a race to the bottom.'"

The ease with which the technologies needed in many industries were transferred to Newly Industrialised Countries (NICs) such as South Korea, Taiwan and Brazil, together with the much lower wages paid in the NICs, seemed to ensure that NIC firms would offer ever stiffer competition to American companies. Japan made the transition from energy-intensive heavy industries (such as shipbuilding and steel) to less energy intensive, more knowledge intensive industries, such as robotics, drugs, computers, and biotechnology.

Over the years periods of recession in the United States have given protectionists more clout in American political circles. Since the 1970s leaders from the steel, automobile, and textile industries, in particular, led the call for protectionism. The American automobile industry lobbied for protection from Japanese automobile imports. The domestic industry was sluggish due to the reduced demand for cars, particularly after the second oil shock, and consumer preferences for smaller, more fuel-efficient cars, also benefited the Japanese. Public pressure and industry lobbying for protectionist bills in Congress enabled the Reagan administration to persuade the Japanese government to 'voluntarily' restrict exports to America. Other countries demanded similar restraints on Japanese automobiles, causing the Japanese to restrict exports to Canada, Germany, Britain, Italy, and France (Ethier 1988).

Large deficits in the American trade balance put additional pressure on Congress to restrict imports into the United States. Gardner and Kimbrough (1989, 211) argue that:

> "The recent large deficits in the U.S. trade balance have led to an increase in protectionist sentiment in Congress. Such sentiment was clearly evident in the early debate on the recently passed trade bill which authorizes increased tariffs and other measures against countries that display 'unfair' trade practices."

There was also increasing concern by domestic producers about foreign competitors achieving an advantage over them due to 'unfair' environmental, labour, and safety standards. Bhagwati (1994a, 237) points out that:

> "In fact, the rise of NTBs in the shape of Voluntary Export Restraints and 'administered protection' in the shape of the unfair use of fair trade mechanisms such as antidumping (AD) actions and (subsidy-) countervailing duties (CVD), got quite out of hand in both the EC and the United States, from the early 1980s."

Samuelson (Sam. 6 1964, 686) reminds readers in the Sixth Edition of *Economics* of the reputation of America as a high-tariff nation, a reputation it needs to shake:

> "Every congressman knows that America has a tremendous diplomatic interest these days in winning friends and allies. And nothing is so disruptive to our popularity abroad as our reputation for being a high-tariff country. We do not deserve that reputation as much as we used to. So it is all the more to our political interest to resist many of the pressures that make for restrictions on international trade."

In the Tenth and Twelfth Editions the international environment of the 1950s-1980s is discussed. Readers note the economic impact of Cold War policy in the United States, and the early positive signs of the 1970s giving way to negative effects in the late 1970s and early 1980s:

- "This growth in the *competitiveness* of foreign economies, plus the expensiveness of America's *cold-war programs* (the Korean conflict, the Vietnam war, the NATO alliance, etc.), plus our *civilian foreign-aid programs*, plus the burgeoning outflow of *direct foreign investments by American corporations* facing juicy profitability opportunities abroad - all these factors led to a gradual cessation of the dollar shortage and an actual swing toward a shortage of foreign currencies" (Sam. 10 1976, 713).

- "...in 1972 and early 1973, all over the world there was one exuberant boom. At one and the same time the production index was booming in Europe, Asia, Australasia, and the Americas. Japan and other nations were in the market competing for the scarce supplies of meat and of various raw materials. Countries like Indonesia and New Zealand found that there was brisk demand for whatever they had to sell: lumber, tin, natural gas, lamb, wool, oil, and so forth" (Sam. 10 1976, 827).

- "The period since 1970 has witnessed numerous disturbances to American's economic relations with its trading partners. A sharp fall in the value of the dollar from 1971 to 1973, the sharp recessions of 1975 and 1982, the very high interest rates of the early 1980s - all these led to massive shifts in export and import markets" (Sam. 12 1985, 84).

Economics presents the various methods used by countries to restrict trade. It is not tariffs and quotas alone that have been used to restrict trade. Along with tariffs and quotas other tools used to restrict trade (the escape clause, anti-dumping duties, unfair trade practices, NTBs, and voluntary export restraints) appear in *Economics*. Table 7.1 matches these protectionist tools to their appearance in successive editions of the textbook.

Table 7.1: Protectionist Tools in *Economics*

Tool	Edition	Year
Tariffs	Editions 1-16	1948-1998
VER	Editions 8-16	1970-1998
Diversification to reduce terms of trade risk	Editions 4-11	1958-1980
NTBs	Editions 4-16	1958-1998
Quotas	Editions 4-16	1958-1998
Escape clause, import relief, anti-dumping tariffs, unfair trading practices	Editions 12-16	1985-1998

Not all of these protectionist tools appear in *Economics* as soon as they are introduced in the economy, a time lag is evident. The United States first used voluntary export restraints in 1956 in the cotton industry against Japan. It took fourteen years (four editions) to make it into *Economics*. NTBs began to appear as protectionist tools soon after WWII. They took thirteen years (three editions) before they were introduced in 1958 into the Fourth Edition of *Economics*. Samuelson emphasises the importance of free trade, and questions much of the rationale behind the imposition of trade restrictions. The emphasis in *Economics* is on open and free trade, rather than protectionist policies and tools.

7.2.4 Leaders in the International Economy

Since the 1950s some countries had been growing at a remarkable rate, and becoming new leaders in the international economy. Bhagwati (1994b, 19) argues: "Power is certainly underplayed by economists as a factor of importance in the world economy. But I think that it matters, not so as to undermine the case for free trade, but from the viewpoint of skewing the gains from trade that free trade brings." Countries like Germany and Japan have become major players in the international community. Since the 1960s previously developing nations like South Korea, Taiwan, Hong Kong, Singapore, Thailand, India, Brazil, Israel, and Mexico were considered 'miracle' economies as their growth rates leapt ahead. By the 1980s the United States was borrowing money from Japan, and Japanese businesses were investing in America.

Today the balance in the international economy has changed; the United States is no longer a single dominant player. The large economies of Japan, Germany, China, and the EU join America as leading international players. Furthermore, the country that was once so dominant in the international community, the former Soviet Union, has declined dramatically.

The rise of developing, and newly developed nations is documented through the editions of *Economics*:

- "The economies that have shown the greatest miracles of growth since 1950 have been Japan, Catholic France and Italy, largely Catholic West Germany, and atheistical Russia. Such predominantly Protestant countries as Canada, Britain, and the United States have done poorly in comparison" (Sam. 6 1964, 760).

- "In West Germany there was a miracle of recovery and development. The same thing happened in The Netherlands, France, Italy, and the Common Market countries of Europe generally. Japan, by a mixture of private initiative and state planning, embarked on a sprint hardly ever before equaled in history. Israel - helped, to be sure, by gifts and loans from abroad - had her miracle decades. Even ancient problem economies, like Greece and Austria, were able to find in the mixed economy a path to rapid and sustained economic growth. Taiwan and Thailand both sprinted forward" (Sam. 7 1967, 779).

- "India, under democracy, made uneven progress - depending on monsoon weather conditions and foreign aid. Pakistan, under military dictatorship and by dint of massive foreign aid to agriculture, was able to increase fertilizer and food production. China was notably successful in producing a uranium bomb, and then later a hydrogen bomb" (Sam. 8 1970, 833).

- "A cynic can find in the annals of the 1960s and 1970s countless examples of governmental and private bungling. But an optimist, looking at 'miracles' of development in Thailand, Taiwan, Korea, Puerto Rico, Brazil, Singapore, Mexico, Israel, and El Salvador, can face the rest of the century with some confidence in the ability of nations to accelerate their own economic development - particularly if given some helping aid" (Sam. 10 1976, 778-79).

- "The most impressive growth performance in the last half-century has occurred in East Asia. Everyone knows about the Japanese miracle, but South Korea, Singapore, Hong Kong, and Thailand have also shown remarkable economic progress" (Sam. 15 1995, 712).

The place of the United States in the international economy, though dominant during the 1950s to 1980s, was not growing at the rates of many of these nations. Samuelson (Sam. 10 1976, 364) reminds readers that:

> "Real GNP growth [in the United States] from 1953 to 1960 averaged out to barely 2½ per cent per year, and this at a time when the miracle nations abroad - Western

> Germany and Japan, Italy, France, and Western Europe generally, were achieving sustained real growth rates several times this amount."

By the 1980s Japan had become a dominant player in the international economy: "Financial linkages come when the United States borrows from Japan to finance its budget deficit or when American pension funds diversify their portfolios by investing in emerging markets in Asia or Latin America" (Sam. 16 1998, 380). Samuelson attributes much of Japan's economic success to it entering the growth rate race later, and being able to imitate foreign technology, protect their domestic industries, and become expert in manufacturing and electronics:

> "Japan joined the industrial race late, and only at the end of the nineteenth century did it send students abroad to study Western technology. The Japanese government took an active role in stimulating the pace of development and in building railroads and utilities. By adopting productive foreign technologies, Japan moved into its position today as the world's second-largest industrial economy" (Sam. 16 1998, 543).

The next section of the chapter looks at how the physical presentation of international economics in *Economics* has changed over the successive editions of the textbook.

7.3 International Economics in *Economics*

> **"If theories, like girls, could win beauty contests, comparative advantage would certainly rate high in that it is an elegantly logical structure" (Sam. 5 1961, 724).**

In a 1992 study Lee examined ten leading introductory economics textbooks of the time: Baumol and Blinder; Bronfenbrenner, Sichel, and Gardner; Dolan and Lindsey; Gwartney and Stroup; Lipsey, Steiner, Purvis and Courant; Mansfield; McConnell and Brue; Samuelson and Nordhaus; Waud; and Wonnacott and Wonnacott. Lee's (1992) study investigated the amount of international coverage the textbooks contained. Lee (1992, 80) "considered an international entry in a textbook to be three or more sentences referring to an international topic appearing in the main body of the text and/or a diagram or table devoted to the subject." His (Lee 1992, 81) results found:

> "McConnell and Brue contains the most international content in terms of the number of occurrences (33) and total pages with international content (75.8), which include pure text, boxed examples, and pedagogical features. Waud has the fewest number for both number of entries (10) and total pages (13.8)."

Samuelson's Thirteenth Edition (used in Lee's study) of *Economics* was third with twenty-seven entries in the textbook, six less than McConnell and Brue. This edition of *Economics* had 57.2 percent of its total pages with international content.

The number of chapters and appendices devoted to international economics over the sixteen editions of *Economics* has changed little over the fifty years. Though a crude measure, it does provide information as to the proportion of specific international economics chapters in the textbook. Table 7.2 presents the number of international chapters and appendices, and the international chapters as a percentage of the total chapters appearing in the sixteen editions of *Economics*.

Table 7.2: The Number of International Chapters and Appendices in *Economics*, and International Chapters as a Percentage of Total Chapters

Edition	Number of International Chapters	Number of Appendices	International Chapters as a Percentage of Total Chapters
1	3	1	11.1
2	4	2	11.4
3	4	2	10.8
4	4	3	10.5
5	4	2	10.8
6	4	2	10.5
7	4	2	10.0
8	4	2	9.5
9	4	2	9.3
10	4	2	9.3
11	4	2	9.3
12	3	1	7.5
13	4	0	10.0
14	4	0	10.3
15	4	0	10.8
16	4	0	11.1

Table 7.2 shows that the number of international chapters in the textbook is relatively constant. There are on average 3.9 international chapters and two appendices per edition (counting only the twelve editions in which international appendices appear). The First Edition's (1948) three

chapters and appendix constitute 11.1 percent of the total chapters. This increases in the Second Edition (1951) with an additional chapter covering the balance of payments. Although the number of total chapters increases, the number of international economics chapters remains the same; therefore, the percentage of international economics chapters declines. The lowest percentage is in the Twelfth Edition (1980) with only 7.5 percent of the total number of chapters covering international economics. The percentage of international economics chapters increases from the Thirteenth Edition (1989) on. In the Sixteenth Edition (1998) there are four international economics chapters, representing 11.1 percent of the total number of chapters, higher than the previous edition, and the same percentage as in the First Edition. Does this indicate that little has changed for international economics in Samuelson's *Economics*?

For a closer examination of the impact of international economics in *Economics* an exploration of the index is useful. Table 7.3 lists the number of subheadings under international trade/foreign trade in the sixteen indexes of *Economics*.

Table 7.3: The Number of Subheadings Under International Trade in the Index of *Economics*

Edition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No.	9	9	12	15	5	16	16	14	18	17	21	22	26	24	26	26

From nine listings in the First Edition (1948) to twenty-six in the Sixteenth (1998), this represents a 189% increase in the number of subheadings for international trade in *Economics*. Table 7.3 shows a determined increase in the inclusion of international trade topics in the textbook. With the later editions (Eleventh Edition on, 1980-) having over twenty subheadings in the index.

Excluding the United States, sixty-one countries appear in the index of sixteen editions of *Economics*. Table 7.4 lists the countries that appear in nine or more editions of *Economics*, and in what edition.

Table 7.4 Countries Listed in the Index in Nine or More Editions of *Economics*

Countries	Number of Times it Appears in *Economics*	Edition
Argentina	9	4, 6-11, 13, 14
Brazil	13	4-16
Canada	11	4-7, 9-11, 13-16
China	11	4-11, 13-15
France	11	4-11, 13-15
Germany	13	4-16
Great Britain	15	1-15
India	10	4-11, 13, 14
Japan	13	4-16
Sweden	12	4-15
USSR/Soviet Union	16	1-16

The former Soviet Union appears in all editions with Great Britain, Japan, Germany, Brazil, Sweden, Canada, China, France, and India also appearing regularly. Changes in the world economy arising from crises or booms are portrayed in the textbook, for example: the OPEC led oil crisis in the 1970s, the Korean and Vietnam wars, the growth of Singapore and Hong Kong, and the international agreements of the EU and NAFTA. The frequent inclusion of other countries in all editions reflects the importance placed on the interdependent international economy:

> "The international business cycle exerts a powerful effect on every nation of the globe; monetary-policy actions in Washington can produce depressions, poverty, and revolution in South America; political disturbances in the Middle East can set off a spiral in oil prices that sends the world into booms or recessions; revolutions in Russia disturb stock markets around the world. To ignore international trade is to miss half the economic ball game" (Sam. 15 1995, 467).

Samuelson (Sam. 16 1998, 380) explains the increasing importance of international trade in growth and performance for economies in the Sixteenth Edition:

> "The goal of expanding international trade has become increasingly important as the nations of the globe have seen that foreign trade spurs efficiency and promotes economic growth. As the costs of transportation and communication have declined, international linkages have become tighter than they were a generation ago. International trade has replaced empire building and military conquest as the surest road to national wealth and influence. Some economies today trade over half their output."

Does the relative stability in the number of international economics chapters and appendices appearing in *Economics* indicate that there has been little expansion in the international economics material presented - especially considering that the first twelve editions also include appendices extending the international economic chapters? I believe not. Samuelson has infused his textbook with international economics and associated topics, and expanded the discussion of the open economy. This is evidenced by the increasing number of subheadings under international trade in the index of *Economics*. International trade issues are no longer just restricted to the traditional international economics chapters, which are generally tucked away at the back of an introductory textbook. This is intentional.

7.3.1 The Open Economy Model

For the most part, the early editions of *Economics* focus on the closed economy model. Though world events are discussed, and examples portraying different economic issues and concepts are drawn from many countries, the focus is on the student's understanding of the closed economy model. The textbook's country of origin provides a context for this focus. America is a large economy, with a large domestic population. Its economy was not (and still is not) as seriously affected by international events, when compared to a small open economy like New Zealand. Its size, stage of development, resources, and dominance in the world economy have protected and insulated it somewhat from external events. This may therefore explain, in part, the focus on the closed economy. The First Edition of *Economics* reminds readers that: "Part of the great prosperity of the United States has resulted from the fortunate fact that there have been no restrictive customs duties within our vast 48 states, and we have constituted the world's greatest free-trade area" (Sam. 1 1948, 554).

Other factors may include the fact that it is only relatively recently that the world economy has become increasingly interdependent, due in part to the vast improvements in telecommunications, computers, international banking, and transportation. As the Thirteenth Edition reflects: "During the 1970s and 1980s, Americans woke up to discover their economic interdependence with the rest of the world. Time and again, people saw how world events could affect financial or goods markets in the United States" (Sam. 13 1989, 937). Now shocks in the Asian money markets create waves across international money markets, and affect other countries' domestic economies. It was not until the 1970s that America realised the extent of this interdependence.

As for the open economy model itself, *Economics* has a discussion of the foreign trade multiplier in an appendix in the First Edition (1948). It remains as a section in an appendix until the Twelfth Edition (1985) where it appears in the body of the textbook. The Twelfth Edition also presents one of the objectives of macroeconomics as achieving "foreign balance," and a macroeconomic instrument as "foreign economics" (Sam. 12 1985, 79). In Chapter Six, "Measuring National Output" imports and exports are included in a discussion of the definition of GNP. It is presented as follows:

> "GNP = (consumption) plus (investment) plus (government spending on goods and services) = C + (domestic investment + exports - imports) + G = C + I + G" (Sam. 12 1985, 113).

Net exports are not a separate variable (component) of GNP in this edition. However, by the next edition GNP is said to be made up of C + I + G + X: "A final component of GNP - increasingly important in recent years - is net exports, the difference between exports and imports of goods and services" (Sam. 13 1989, 113). In the Thirteenth Edition there is a chapter entitled, "The Multiplier Extended: Fiscal Policy and International Trade." Graphs illustrate how fiscal policy and international trade affect output through the multiplier model. The marginal propensity to import and the open economy multiplier are also expressed numerically. The open economy, though got off to a slow start in *Economics*, it increases rapidly in significance in later editions.

Further in the Thirteenth Edition the management of the interdependent international economy is discussed:

> "As economies become more and more open, their policymakers devote increasing attention to managing their *foreign economic policies*. The major tools fall into two categories. First, nations can affect their trade by *trade policies*. These consist of tariffs, quotas, and other devices that restrict or encourage imports and exports...A second set of policies specifically aimed toward the foreign sector is *exchange-market management*...In addition, central bankers and political leaders increasingly gather to *coordinate* their macroeconomic policies, for the monetary and fiscal policies of different countries spill over to affect their neighbors" (Sam. 13 1989, 84).

Emerging from academic institutions and specialised government departments, the open economy model was being presented at all levels of economics, including the introductory level. Open economy macroeconomics was now a key area in American economic policy making and thought. Nations were now linked by trade, labour, and capital flows, thereby creating international interdependence. The effect of the international business cycle was also now recognised by all nations. Countries attempt to work together at various summits on issues of economic policy that affect the international economy and their own domestic economies. This interdependence and need for countries to work together more is reflected in the Thirteenth Edition of *Economics*:

- "Japan, Canada, and the United States are today more closely integrated than were New York and California a century ago; the international business cycle exerts a powerful effect on every nation of the globe; monetary-policy actions in Washington can lead to starvation, poverty, and revolution in South American; movements in trade balances can drive countries into boom or recession" (Sam. 13 1989, 186).

- "From our vantage point, the central lessons of the 1980s is clear: In a world where economies are increasingly linked by trade and capital flows, interdependence is unavoidable. No walls can prevent domestic actions from spilling over territorial boundaries. National strengths can be leveraged in a global marketplace, while national weaknesses fall prey to intense foreign competitors. Isolationism is today no more feasible in economic affairs than it is in political or military affairs" (Sam. 13 1989, 952).

The United States could no longer consider itself outside the events of the world, according to *Economics* "no nation is an island unto itself. Every nation is an open economy, trading goods and services with others" (Sam. 14 1992, 485). This despite the fact that foreign trade represents a relatively small part of American's GDP when compared with other economies, for example New Zealand's, which relies heavily on national income earned from exporting goods and services:

- "While foreign trade represents only a small fraction of our total GNP, the global economy exercises a disproportionate influence on our own living standards and economic life. Events abroad reverberate at home, and America's economic policies have profound impacts on Latin America, Japan, and Europe" (Sam. 13 1989, 82).

- "We ship enormous volumes of goods such as food, airplanes, computers, and construction machinery to other countries; and in return we get hundreds of billions of dollars worth of oil, VCRs, cars, kiwi fruits, and other goods and services. Indeed, in recent years exports have been one of the most rapidly growing sectors of the U.S. economy" (Sam. 15 1995, 663).

The Fifteenth Edition also outlines the four international issues of economic policy: reducing trade barriers, assistance programmes, co-ordinating macroeconomic policies, and protecting the global environment (Sam. 15 1995, 281-82). Readers are made aware of the change in the American perspective towards international trade:

- "In an earlier era, foreign trade exerted only a modest influence on the macroeconomic performance of the United States. We could afford to ignore the economic linkages between nations, leaving that topic to specialists who toiled in universities or in the State Department. But revolutionary developments in communication, transportation, and trade policy have increasingly linked together the economic fortunes of nations" (Sam. 15 1995, 467).

- "Foreign economic relations add another dimension to economic policy. Domestic policymakers must concern themselves with foreign repercussions of domestic policies. Rising interest rates at home change interest rates, exchange rates, and trade balances abroad, and these changes may be unwelcome. Higher interest rates increase debt-service burdens in heavily indebted countries, such as Brazil and Mexico" (Sam. 16 1998, 611).

Samuelson argues in the Sixteenth Edition that two different periods are discernible in twentieth century history. The first, prior to 1945 is characterised by destructive competition - the second (post-WWII) by rapid economic growth through co-operation:

> "A history of the twentieth century shows two distinct periods. The period from 1914 to 1945 was characterized by destructive competition, hot and cold military and trade wars, despotism, and depression. From 1945 to the present, the world has enjoyed cooperation, widening trade linkages, an expansion of democracy, and rapid economic growth...Economically, no nation is an island unto itself. When the bell tolls depressions or financial crisis, the sounds reverberate around the world" (Sam. 16 1998, 712).

This is not to say, however, that all has gone smoothly in the continuing move to a free and open trading world. Protectionist calls still exist, and their arguments are, at times, increasingly nationalistic. "To quote Mr. Blough, 'Can we, for example, be assured of the strong industrial base in steel we need for modern defense if one-quarter or more of the steel we require were imported from countries lying uncomfortably close to the Soviet Union or China?'" (Samuelson 1983a, 251). In *Economics* Samuelson points out the potential absurdities when protectionist policies are taken to extremes.

7.3.2 Protectionism and Free Trade

> **"We gain most in international trade when we buy goods made with labor *lower paid* than our own. When an industry does not have an efficiency exceeding foreign efficiency by the average proportion that our money wages exceed foreign wages, we lack 'comparative advantage' in that industry. And we gain in American living standards by letting that industry shrink." (Samuelson 1983a, 251).**

The free flowing of international trade is an important issue in economics. Samuelson (Sam. 1 1948, 559) in the First Edition of *Economics* contends that:

> "there is essentially only one argument for free or freer trade, but it is an exceedingly powerful one: namely, the fact that *unhampered trade promotes a mutually profitable international division of labor, greatly enhances the potential real national product of all countries, and makes possible higher standards of living all over the globe.*"

Economics reflects the belief in the concept of free trade, and the maintenance of free trade to promote growth and development, domestically and internationally. This belief is unwaveringly evident throughout the sixteen editions. What economists generally agree upon is that the international and domestic community stands to gain in their material standard of living from specialisation and exchange based on a nation's comparative advantage.

Over the editions of *Economics,* there have been changes in the arguments used when discussing protectionist policies, and a change in the geographical and industrial examples used in these discussions. *Economics* reflects the reactive responses to the challenges and issues over the period 1948-1998 that have affected the world economy, and the United States of America in particular. In the early editions of *Economics*, Samuelson (Sam. 5 1961, 767) notes the concern over the impact that Japanese imports were having in the American economy: "Japanese transistor radios and other goods are eagerly bought here and elsewhere, giving Japan a sizable surplus on international account." Through the editions of *Economics* some of the myriad of questions that surround the issue of international trade have been answered. These questions include:

> "Why does the United States import shoes and textiles and export food and computers? Why does Japan usually have a large trade surplus while the Philippines usually runs trade deficits? And how did it come to pass that the United States, which a few years ago was the world's largest creditor nation, has now become the largest debtor nation of all?" (Sam. 14 1992, 660).

Twenty-five different countries (or areas), and forty-six different industries are mentioned in the chapter on free trade and protectionism in the sixteen editions of *Economics*. Samuelson also presents the reader with the various arguments used to justify restricting trade. Fourteen arguments appear in the textbook. These arguments include:

- Keeping the money in the country: "To Abraham Lincoln is sometimes attributed the remark, 'I don't know much about the tariff. But I do know that when I buy a coat from England, I have the coat and England has the money. But when I buy a coat in this country, I have the coat and America has the money'" (Sam. 1 1948, 561-62).

- Protecting the domestic industry: "'Farmers should support a tariff for industry because that will gain them a large home market for their products.' Henry Clay, the perennial candidate who turned out to be neither 'right' nor 'President,' often advanced this argument a century or more ago" (Sam. 1 1948, 563).

- Retaliatory tariffs: "On several occasions in the 1990s, the United States went to the brink of trade wars with Japan and China, threatening high tariffs if the other country did not stop some objectionable trade practice" (Sam. 16 1998, 704).

Some of the arguments appear in all sixteen editions, for example: non-economic goals, tariffs for special interest groups, competition from cheap foreign labour, tariffs for infant industry, and keeping money in the country. Other arguments appear only in some editions. One argument for protectionism, which appears in all editions of *Economics,* is the cheap foreign labour argument.

7.3.3 The 'Cheap Foreign Labour' Argument

> **"The germ of protectionism lies dormant, ever-present in American political life" (Samuelson 1983a, 252).**

The argument of 'competition from cheap foreign labour' has been a strong and pervasive one in American society, and similarly in New Zealand. In this argument alone some interesting changes have occurred in the examples used to explain the 'rationale' behind it. The argument also reveals some of the notable changes in industry that have taken place over the last fifty years.

The cheap foreign labour argument has been used to maintain (or initiate) trade barriers against competition from countries that are perceived to have cheap labour. The argument is presented in the First Edition: "'If we let in goods produced by cheap pauper foreign labor...then the higher standard of living of American workers cannot be maintained'" (Sam. 1 1948, 563-64). In the Fifteenth Edition the argument changes slightly; it is now claimed that there is a need to "protect domestic workers by keeping out or putting high tariffs on goods produced in low-wage countries" (Sam. 15 1995, 693).

Seven examples of 'cheap' foreign labour are used in *Economics* to present this argument in the textbook. They reflect the popular images used by industries, interest groups, and the media at the time. The seven examples are:

(1) Chinese coolies[1]

(2) low-paid Czechoslovakian shoe workers

(3) low-paid Japanese textile workers

(4) low-paid Korean electronics workers

(5) Chinese textile workers

(6) Koreans making circuit boards

(7) Brazilians making carbon steel.

With the exception of Brazil and Czechoslovakia, Asian countries (China, Korea, and Japan) are considered the greatest threat to the United States due to their cheap labour. The example of "Chinese coolies who live on a few cents' worth of rice per day" (Sam. 1 1948, 563) began in the First Edition and continues through to the Eleventh Edition (1948 to 1980).[2] A change occurs in the Twelfth Edition (1985) when Samuelson talks about Chinese textile workers, instead of coolies.

Equally, industries in the United States that have felt threatened by this cheap foreign labour have changed as well. Table 7.5 lists the industries mentioned in the cheap foreign labour argument, the editions in which they appear, and the country perceived as a threat to American industry.

Table 7.5: Industries Used in *Economics* to Illustrate the Cheap Foreign Labour Argument

Industry	Edition	Year	Country
Shoe	1-3	1948-1955	Czechoslovakia
Textile	4-10	1961-1976	Japan
Electronics	11-12	1980-1985	Korea
Textile	12	1985	China
Circuit boards	13	1989	Korea
Carbon steel	13	1989	Brazil

[1] The Oxford Dictionary states that a "coolie...[is an] unskilled native labourer in Eastern countries." I consider that the term 'coolie' was deemed inappropriate to continue using in the textbook to describe Chinese workers, and it is changed in the Twelfth Edition (1985).

[2] Samuelson does not say what the "Chinese coolies" were producing, or in which industry they were involved.

This table gives an indication of the changing nature of industrialisation and manufacturing over the last fifty years, as industry shifted from shoe to circuit board production:

> "If we look at individual industries, we see an incessant change and evolution: industries producing horseshoes or steam engines decline and disappear; steel and textiles fight for their livelihood against lower-cost foreign producers; aircraft and microcomputers become the new buttress of America's industrial system - for a while" (Sam. 13 1989, 851).

These industries are highly representative of those that appeal vigorously to government for the maintenance (or initiation) of tariffs (or other restrictions) to support their domestic industry. Despite the many changes occurring in industry, it appears unlikely that the United States will ever regain its world dominance in such fields as steel[3] and automobiles, with other nations producing them cheaper. These industries are, however, usually the first to call for protection against 'unfair' international competition in an attempt to safeguard their industry:

> "As the U.S. foreign-trade position swung sharply from surplus to deficit, people experienced losses of jobs and profits in agriculture and manufacturing, along with an invasion of foreign products, particularly from Japan and the Pacific Basin. Workers and companies in automobiles, steel, electronics, farming, and many other affected industries saw their livelihood threatened by relatively inexpensive foreign goods" (Sam. 13 1989, 193).

It is not only in America that the protectionist sentiment exists. Readers are told that the protectionist attitude is prevalent in the rest of the world against America. The argument continues with workers in Europe and China (Asia) begging for tariffs saying: "'Protect us from the 'unfair competition' of high paid, efficient American workers who have skills and machinery far better than our own'" (Sam. 1 1948, 564). Samuelson uses the example of an English protectionist who claims that though American workers were paid more than English workers, the American workers were also more efficient than the English workers. In the First Edition: "The English protectionist claims that the American worker in Bridgeport, Conn. who is paid $1.50 per hour is more than three times as efficient as the English worker who gets paid 60 cents an hour" (Sam. 1 1948, 564). Over the editions the wage rate used in the example changes. This example not only presents a discussion of wage rates and efficiency, it also gives an indication of the increase in the money wage rate per hour over the years. This example spans the First through to the Eleventh Edition (1948-1980). The figures

[3] "The steel industry is mounting a strong campaign for protective quotas against competitive imports from abroad. Last year they were asking Congress for 'temporary tariffs'" (Samuelson 1983a, 250).

used in this example shows Samuelson's perception that the level of wage rates continue to be higher in the United States than in the United Kingdom.[4]

The English-American example changes in the Fourteenth Edition, when America is compared with East Asia. If the American "equilibrium wage is 10 times that in East Asia, it is because [America] are on average roughly 10 times more productive in the manufacture of tradable goods" (Sam. 14 1992, 684). The Fifteenth Edition changes again comparing America with Mexico: "If [American] equilibrium wage is 3 times than that in Mexico, it is because [Americans] are on average roughly 3 times more productive in the manufacture of tradable goods" (Sam. 15 1995, 693). The theme is the same. United States workers are more productive and efficient, and are paid more than their counterparts in the rest of the world. This is, however, not seen as an impediment to American free trade policy. In the Sixteenth Edition readers are made aware that "a country will benefit from trade even though its wages are far above those of its trading partners. High wages come from high efficiency, not from tariff protection" (Sam. 16 1998, 704).

Economics outlines the argument that the labour market needs flexibility to adapt to changing production. The assertion here is that labour should move into sectors where the United States is more productive. The Thirteenth Edition lists some of these sectors: "...farming, aircraft, petrochemical, and customized integrated circuits" (Sam. 13 1989, 927). The negative impact on the labour market of this strategy is also discussed. The local labour markets may be "inundated with job seekers," with older workers having "outdated job skills," and

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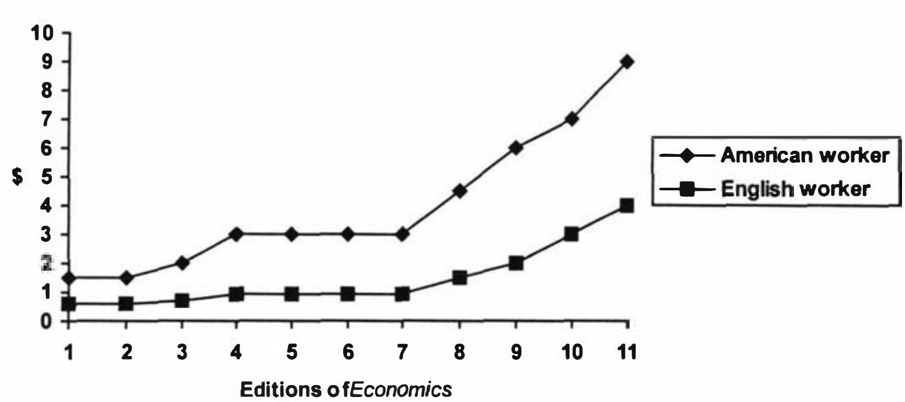

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Figure 6.1: Wage Rates per hour of the American and English Workers in the Cheap Foreign Labour Argument, *Economics* Editions One to Eleven (1948-1980)

consequently having "trouble finding attractive jobs and suffer[ing] a decline in their real income" (Sam. 13 1989, 927-28). Samuelson (Sam. 13 1989, 928) also reminds readers that the "difficulties of displaced workers will be greater when the overall economy is depressed or when the local labor markets have high unemployment." It is clear that this displacement is a short-term transition phase. Though in the short-run it is painful, in the long-run the labour market will "reallocate workers from declining to advancing industries" (Sam. 13 1989, 928).

Overall, the cheap foreign labour argument is presented as an invalid reason to raise tariffs. Emphasis is placed on the role of efficiency and productivity in terms of wage setting, and the need for an economy to produce according to its comparative advantage. In Samuelson's view, if workers move to these industries and upskill then the long-run prospects for a nation are very good.

7.4 Conclusion

> **"Economics and politics mix in ways too complicated to resolve. Some say 'trade follows the flag.' Others say the flag follows trade. Some say the pursuit of economic gain is the primary motive behind the imperialistic search for colonies. Others claim that national power (offensive and defensive) is an end in itself; that economic well-being is sacrificed to this end; and that economic resources are sought for their contribution to military strength (offensive and defensive) rather than for their contribution to economic well-being" (Sam. 10 1976, 662).**

Economics portrays the evolution from a relatively isolated closed economy American approach, to an interdependent world economy. Through the early editions of *Economics* a more closed economy approach is taken, however, as the American economy changes, and the interdependence of the international economy changes so does the emphasis on the open economy. This is seen in the increasing emphasis on the open economy model, and the integration of international economics in the textbook. Samuelson has incorporated much discussion about international trade policy and relations in the sixteen editions of his textbook. Stiglitz (1993, 33) highlights the importance of providing the student with quality teaching of international economics and the international economy:

> "...by not putting policy issues in an international perspective, we provide students with the 'wrong' answers. In other cases, we provide them with no guidance on issues which they see daily in the newspaper, and in doing so, we make our courses less relevant than they might be. Beyond that, textbooks help shape students perceptions of

> the world and of America's place in the world. The challenges of the 21st century will require that those perceptions adapt to the changing realities."

Samuelson has endeavoured to make international economics accessible to students by providing a range of international examples in his textbook that readers can relate to and understand as they cope with the economic theory and concepts he presents. He ensures that readers know that the world is bigger than the United States of America, and the events in one country may have a crucial impact on all countries, including their own. Samuelson (Sam. 16 1998, 380) also reminds readers that:

> "The international economy is an intricate web of trading and financial connections among countries. When the international economic system runs smoothly, it contributes to rapid economic growth; when trading systems break down, production and incomes suffer throughout the world. Countries therefore must monitor their international economic linkages through trade policies and international financial management."

Chapter Eight:

Conclusion

"I found the introductory quotes in each chapter fascinating. They led me to a whole range of books and articles that I had never looked at before and would have had no reason to search out until I read *Economics*. So for at least one student, *Economics* was a mind-broadening experience" (Fischer 1999, 362).

> **"Books are the carriers of civilization. Without books, history is silent, literature dumb, science crippled, thought and speculation at a standstill. They are engines of change, windows on the world, lighthouses erected in a sea of time" Barbara Tuchman (Sam. 13 1989, ix).**

The above statement begins the Thirteenth Edition of *Economics*, and it encapsulates the contribution Samuelson's introductory textbook has made to the economics discipline. *Economics* makes economics accessible to students. Samuelson's textbook provides the world with a common economic language, a language that breaches the divide between the technicalities of advanced economics, and what the non-professional (whether they be student, businessperson, politician etc) needs to know about the modern mixed economy. Samuelson has done more than just provide a vehicle for the dissemination of the principles of economics; he has contributed to the education of students, and advanced economic literacy and understanding in society. His rationale for writing *Economics* is clear:

> "Why does a scholar interested in the frontier of research write a textbook? In my case, for two reasons: I sensed that there was coming to be a widening gap between the technicalities of advanced economics and what the intelligent nonprofessional has to know about the subject if he is to be a good citizen, a competent statesman, and effective businessman, or a cogent critic or defender of the modern mixed economy. And like economists here and abroad, I lamented the fact that in our generation we did not have any great introductory treatise like those which have become classics in other subjects - *The Principles of Psychology* by William James, *Differential and Integral Calculus* by Richard Courant or *Pure Mathematics* by G. H. Hardy, and in the present age *Lecture on Physics* by Nobel laureate Richard Feynman" (Sam. 8 1970, v).

Economics contains the central paradigms of the discipline, and its pedagogy and structure reflect the perceived 'best' way to present economic theory. However, *Economics* encompasses more than economics - it includes history, politics, psychology, sociology, language, and culture.

As a reflection of a discipline, what does the study of the textbook *Economics* show? It demonstrates that economics, as a discipline is dynamic. Macroeconomics in particular has seen (and still sees) many debates and controversies, new theories and ideas. Microeconomics though having a more stable core has evolved over the fifty years, and *Economics* has incorporated the 'new microeconomics' of the environment, love, and addiction for example. The study of *Economics* also supports the view of economics as applicable to everyday problems in all sorts of situations. It also charts the changes in the methodology of economics to a more mathematical approach, evident in the presentation of economic theory in textbooks. Notwithstanding this, Samuelson's *Economics* strives to ensure that the economic theory presented remains 'understandable,' by providing an appendix ("How to Read Graphs") that aids students in using the central mathematical tool utilised in his textbook.

Economics has responded to the changing world environment, as the roles of the government and the market have changed, and as the world has become increasingly interdependent. This much is self-evident in Samuelson's approach. Yet Samuelson's commitment to the principle of accessibility, his belief in the need to be enticing to introductory economics students and relevant to the world it is applied to remains constant over time. This is due in no small part to an underlying conviction of Paul Samuelson that the 'best' economics is that which is made understandable to all. Samuelson, a Nobel Prize winner, an expert theorist and technician of economics, has spent over fifty years of his life making economics, interesting, accessible, and meaningful to those who read his textbook, *Economics*.

The contribution introductory economics textbooks (and courses) make to the discipline of economics has been undervalued. Without quality textbooks and courses students do not continue in economics.[1] Falling rolls lead to fewer academic positions, which leads to less academic research, which in turn contributes to the decline of a discipline. It is necessary to evaluate the role of introductory economics courses and the importance placed on them. It is also important to take stock of the tools used to educate students. This entails evaluating the textbooks, and how they present introductory economics. Educators rely on introductory economics textbooks to complement the lecture material, and inspire students who are embarking on the learning and critical thinking process.

One of the most significant contributions of Paul Samuelson, is not his *Foundations* treatise, the myriad his research, his advice to presidents, but his textbook *Economics*. It set a benchmark, which was followed by many. It changed the way economics was presented to students, what was taught, and how it was taught at university level. Samuelson's use of up-to-date examples, world events, including people and personalities readers know and are familiar with, makes economics seem 'real' to readers. He presents a wide range of economic theory and thought (some he does not wholeheartedly agree with or support), because he believes it to be important to expose readers to a range of ideas and perspectives. *Economics* survives when other textbooks have fallen by the wayside. It does so because of the commitment of the author to continually update its content, to keep

[1] Anderson, Benjamin and Fuss (1994), Bach and Kelley (1984), Bartlett (1993, 1995), Becker and Watts (1996), Case and Dolan (1988), Siegfried (1995, 1997, 1998).

it interesting and relevant. Perhaps it also survives because it is by now a canonical textbook and has earned its 'rightful' place in mainstream economics. Samuelson's passion for the discipline, and introductory teaching, is in no small way manifested in the style, content, and presentation of his textbook.

Examining the successive editions of an introductory economics textbook is new. This approach allows an analysis of the physical characteristics of the textbook, an examination of the changes in the world and society, and the evolution of economic theory. It also shows us what has remained constant over the past fifty years; such as the forty-five degree line diagram, and the 'guns and butter' presentations. Samuelson's core microeconomics theory is essentially immutable through the sixteen editions; this can not be said, however, for the macroeconomics section. Macroeconomics has evolved more as competing schools of thought developed, and expressed their economic ideas.

From Marx to the market, Chinese coolies and Negroes to Mexican-Americans, pretty girls to business people, the ship building industry to the Internet, Western Europe to South East Asia and South America - they all make their appearance in the sixteen editions of *Economics*. With changes in society, the economic and political environments, expectations and needs, *Economics* tracks a path. Samuelson presents the issues and events current at the time of each edition. He continues to present high quality economic theory in a way that is interesting and understandable to readers. The longevity of this textbook is in no small way due to the author, whose focus is always on the student. As Samuelson (1999, 354) says: "My interest was not so much in dollars as in influencing minds."

Appendices

Appendix One:	Paul Anthony Samuelson – biographical sketch
Appendix Two:	William D Nordhaus – biographical sketch
Appendix Three:	A Selection of Words that Appear in the Index of *Economics*
Appendix Four:	The Forty-Five Degree Diagram
Appendix Five:	Countries Appearing in the Index of *Economics*

Appendix One: Paul Anthony Samuelson - biographical sketch

> **"He [Samuelson] is a man of intense and sparkling intellect, passion for his chosen field, scholarly versatility and eclecticism, concern for the improvement of economic welfare, and preference for the middle road. He does not take fools gladly and is known for his wit and abrasive sense of humor" (Feiwel 1982a, 17).**

[1]

Paul Anthony Samuelson (1915-) was born in Gary, Indiana, and received his BA in 1935 from the University of Chicago. He was awarded his MA at Harvard in 1936, and his PhD in 1941.[2] His thesis was entitled, *Foundations of Economic Analysis,*[3] for which he won the David A Wells Prize for Harvard's outstanding economics thesis. Samuelson (Samuelson 1972b, 159) says of himself: "It was as if I were made for economics."

When Samuelson began his study of economics back in 1932 at the University of Chicago, economics was a literary discipline. A few economists such as Harold Hotelling, Ragnar Frisch and R.G. Allen used mathematical symbols, but journals rationed severely anything involving calculus. As Samuelson stated: "The sleeping beauty of political economy was waiting for the enlivening kiss of new methods, new paradigms, new hired hands, and new problems" (Breit and Spencer 1995, 60).

In 1936, while Samuelson (then twenty-one) was at Harvard, Keynes published his *General Theory of Employment, Interest and Money:*

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[1] Photograph of Paul Samuelson from website: http://nobel.sdsc.edu/laureates/economy-1970-bio.html.

[2] "A brash enfant terrible, Paul amazed and delighted his contemporaries and us youngsters by puncturing the classical fallacies of senior professors and unwary visitors or exposing their shaky grasp of new truth" (Tobin 1983, 190).

[3] "As I turn the pages of the book [*Foundations*], I can recall that certain of its theorems were developed in walks along the Charles river; and some while sitting in the front seat of a car, being driven westward at 70 miles an hour by my wife. In those days thinking about economics filled my every hour. I did not say wakeful hour because often I dreamed of theorems in my sleep - some of them true" (Samuelson 1967, 1-2).

"As Samuelson recalled, '*The General Theory* caught most economists under the age of thirty-five with the unexpected virulence of a disease first attacking and decimating an isolated tribe of South Sea islanders. Economists beyond fifty turned out to be quite immune to the ailment. With time, most economists in-between began to run the fever, often without knowing or admitting their condition'" (Sobel 1980, 98).

In 1947 his PhD thesis *Foundations* was published, and won the John Bates Clark Medal from the American Economics Association for the most distinguished work by an economist under the age of forty.

Samuelson had difficulties through these years as well. It was widely recognised that *Foundations* was a major contribution to American Keynesian thought, and winning the David Wells Prize seemed to indicate that Samuelson would be Hansen's logical successor at Harvard. But he faced obstacles which were difficult, if not impossible, to overcome. In the early 1940s Harvard (like many other colleges and universities), practised a barely disguised form of anti-Semitism when it came to making appointments. MIT approached him with an offer of an assistant professorship, which he accepted.[4] Sobel (1980, 101) reflects back on this time: "'It will take half a century for the department to recover from that anti-Semitism,' said Harvard economist Otto Eckstein in 1979. 'Harvard lost the most outstanding economist of the generation.'"

During WWII Samuelson worked for the National Resources Planning Board (1941-43), the War Production Board and the Office of War Mobilisation and Reconstruction (1945). He worked for the United States Treasury from 1945-1952, the Bureau of Budget in 1952, the Research Advisory Panel to the President's National Goals Commission (1959-60), and the Research Advisory Board Committee for Economic Development in 1960. From 1960 to 1961 he was a member of the National Task Force on Economic Education, and has been a consultant to the Rand Corporation since 1949.

[4] "Samuelson's role in this [MIT's] success was pivotal but not domineering. His research habits (including sheer hard work), the open-door policy for students (a lesser burden for someone of whom the students were in awe than for others) and fellow faculty, his absolute refusal to use authority instead of reason in faculty meetings, his zest for conversation about economics, economists, and all else, made him a role model for a department where cooperation and friendliness have been extraordinary" (Fischer 1987, 240).
"He [Samuelson] knows the dangers to a department of lack of intellectual public-spiritedness; he is never so preoccupied with his own research and career that he cannot attend to the development of the Department. He has been the best of colleagues to the junior faculty" (Brown and Solow 1983, xi).

Samuelson also worked as an informal consultant to the United States Treasury, the Council of Economic Advisors, and the Federal Reserve Bank. He was Economic Advisor to Senator, candidate, and President-elect Kennedy, and wrote the 1961 *Samuelson Report on the State of the American Economy to President-elect Kennedy.*[5] Over the years Samuelson refused many offers to be more formally involved in political think tanks, turning down the chair of the Council of Economic Advisors.

Samuelson believes in the mixed economy incorporating the public and private sectors, political and market decisions, social needs and individual freedom, and welfare of the entire economy as well as that of the individual (Silk 1974). For Samuelson all economic decisions have a moral aspect. However, more than most of his colleagues in the 1960s and 1970s, he continued to attempt to keep science and politics separate. Samuelson's opinions are to be found in nearly every corner of economic analysis from the 1930s to the 1990s.

Silk (1974, 3) argues that though Samuelson was: "once regarded as a brash, arrogant opponent by the pillars of the economics establishment, he has lived to embody that establishment in his own person." Samuelson calls himself an eclectic centrist, and one of the last generalists in modern economics. He writes and teaches on very diverse topics from international trade and econometrics, to demography and the history of economic thought. Though writing in many areas of economics Samuelson is most concerned at raising the standard of methodological analysis in economics.[6]

It may be said that Samuelson's most original and important contributions to economics can be classified under four headings: (1) dynamic theory and stability analysis, (2) consumption theory, index theory and welfare theory, (3) general equilibrium theory and its application to real world problems related to international trade, the relationship between factor prices and commodity prices, the place of collective goods in general equilibrium theory, and (4) the theory of capital, interest and intertemporal efficiency of optimality (Lindbeck 1970).

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[5] "Samuelson has been a pioneer in the reconstruction of economics into coherent and orderly discipline. He has done more than anyone of his time to disseminate its insights and to influence government policy at the highest level" (Silk 1974, 42).

[6] "Paul Samuelson has made an indelible imprint on modern economics" (Feiwel 1982a, 1).

Samuelson has helped raise the analytical and methodological level of economic theory. His stature as an outstanding economist was confirmed when in 1970 he was the first American to be awarded the Nobel Prize for Economic Science. The citation for his Nobel prize in Economic Science reads in part: "for scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science" (Lindbeck 1985, 40).

Among economists, Samuelson is 'Mr Science'. He is widely credited with establishing the scientific ideal in economics at the graduate, and professional level, with his 1947 *Foundations of Economic Analysis*. He takes pride in being a scientist, and much of his life's work is gathered under the title *The Collected Scientific Papers of Paul A Samuelson.* Silk (1974, xi) contends that: "Within the American economics establishment, I consider Paul Samuelson to be the vital center, with intellectual and moral views which themselves extend over a wide spectrum and are difficult to categorize."

As a professional Samuelson was a leading advocate of mathematical economics, not only because it was precise but also because such an approach was value free, and thus more scientific. As an undergraduate student Paul Samuelson realised that mathematics was going to revolutionise economics. Of the ever-increasing penetration of economics by mathematics, the work of Samuelson became an outstanding example. Samuelson's use of mathematics in modern economics has been very evident. His many contributions to mathematical economics add rigor to numerous facets of economic theory.

However, Samuelson was not always right. Nearing the end of WWII Samuelson predicted that there would be a major depression when the fighting ended, and the troops came home. With the closing down of procurement programmes and disbandment of the Army and Navy would come large-scale unemployment, and under-utilisation of plant capacity. He could not have been more wrong, and for several years thereafter Samuelson hedged his predictions, though in the 1950s and 1960s he gradually threw off his caution.

Although he has been referred to as "one of the greatest economic theorists of all time" (Arrow 1967, 735), Samuelson can communicate to many different audiences. He has the ability to write highly analytical and mathematical articles that are published in leading journals. For fifteen years he talked with the common people through his *Newsweek* column,[7] has debated policy with Presidents, and has appeared before Congressional Committees since the 1950s. Samuelson, however, prefers to lecture and write, and since 1948 has updated and revised his introductory textbook *Economics* every three years.[8] His influence on modern economics is due, largely, to his role as a teacher of generations of economics students throughout the world, through the medium of his textbook, *Economics*.[9]

An economist and Nobel Prize winning laureate, Paul Samuelson has a notable place in the latter part of the twentieth century.[10] Samuelson's ability to discuss and debate economic policy and theory with peers, Presidents, students, and the general public is one of his enduring qualities.[11] Fischer (1987, 241) says:

> "Samuelson was described in 1967 as 'knocking on the door...of the pantheon of the greats...' (Seligman p. 160). He may have been let in by now. But the final word has to be left to Franco Modigliani, who, after the speeches at the 1983 party at which Samuelson was presented with the Brown-Solow *festschrift*, walked over to the seated Samuelson, wagged his finger at him, and said 'You,' and after a pause, 'You have enriched our lives."

[7] "...for fifteen years he wrote a regular column for *Newsweek*...it is as if the reader were taking a short walk with Samuelson" (Samuelson 1983a, xiii).

[8] "Our corporate history has matured as Paul Samuelson's career has evolved. It has been a time span that has witnessed the development of the original Samuelson textbook for elementary economics courses into a veritable educational institution" (McGraw 1999, 355).

[9] "I have never been to India, Russia, or China, but in my MIT office, I am asked to autograph copies of translations. In one lifetime, while adhering to the same eclectic liberalism, I have been at first denounced as *avant garde* and later castigated as a running jackal of capitalism" (Samuelson 1999, 354).

[10] "One must go back one generation, to the generation of Keynes and Schumpeter, or so it seems to me, to find Samuelson's equal among economists at once generalist and specialist in so many fields. Which conclusion may be damning my generation as much or more than it praises Samuelson!" (Bronfenbrenner 1982, 347).

[11] "...those who have had the privilege of closer association would have a valid complaint if we failed to note the extent to which Samuelson's intellectual brilliance and wit are complemented by personal helpfulness and capacity for friendship" (Hurwicz 1970, 721).

Appendix Two: William D. Nordhaus - biographical sketch

William Nordhaus was born in Albuquerque, New Mexico. His undergraduate studies were completed at Yale University. Nordhaus received his PhD in Economics in 1967 from MIT, Cambridge. He has been on staff at Yale University since 1967, and has been a full professor of economics since 1973. From 1977 to 1979, Nordhaus was a member of the United States President's Council of Economic Advisers. Between 1986 and 1988 he served as the Provost of Yale University, and in 1992 and 1993 was the Vice President for Finance and Administration at Yale.

Nordhaus is a member and senior advisor of the Brookings Panel on Economic Activity, Washington, DC, and is a Fellow of the American Academy of Arts and Sciences. He is current (or past) editor of a number of scientific journals, and has served on the executive committees of the American Economic Association and the Eastern Economic Association. Nordhaus is currently the A. Whitney Griswold Professor of Economics at Yale University.

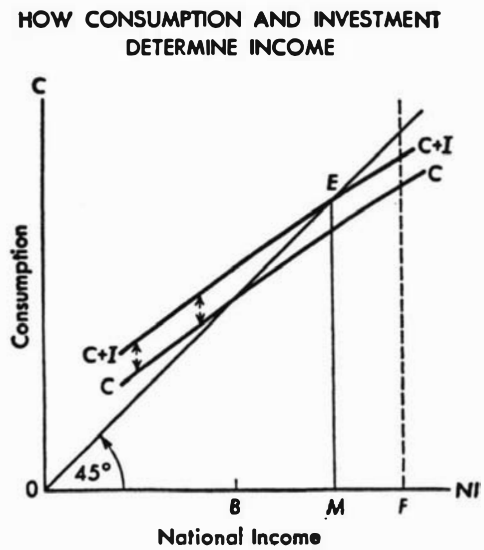
Nordhaus' research focuses on economic growth and natural resources, including pioneering work beginning in the 1970s on the economics of global warming. He has also undertaken studies into wage and price behaviour, augmented national accounting, the political business cycle, productivity, and the costs and benefits of regulation. He has been the co-author of *Economics* since the Twelfth Edition, 1985.

Appendix Three: Table A.1:

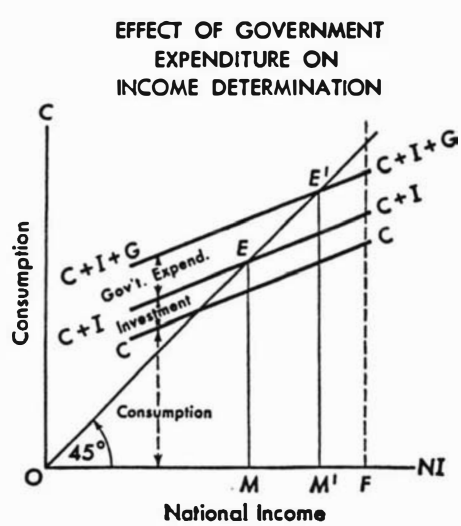
A Selection of Words that Appear in the Index of *Economics*

Word(s)	Number of Times in *Economics*	Editions of *Economics*
45 degree line diagram	12	2-13
AD/AS	5	12-16
Bob Dylan	3	12-14
Computers	7	4, 9-11, 14-16
Communism	16	1-16
Conservation	7	5-11
Cradle to grave	2	3-4
Economics of love	3	9-11
Electronic calculators	1	4
Farming	16	1-16
Fascism	16	1-16
Floating exchange rate	14	3-16
Greenhouse effect	2	14-15
Japan	13	4-16
Keynesian cross diagram	1	14
Korean war	4	6-7, 11, 13
Macroeconomics	13	4-16
Marx(ism)	16	1-16
Mathematics and economics	6	6-11
Michael Jordan	2	15-16
Monetarism	9	8-16
Monetary policy	15	2-16
Neo-classical synthesis	5	3-7
New economics	4	8-11
Nuclear energy	12	4-15
OPEC	7	10-16
Pacific rim countries	2	14-15
Perestroika	3	13-15
Phillips Curve	12	5-16
Protectionism	16	1-16
Public goods	9	8-16
Racial discrimination	12	4-15
Rational expectations	7	10-16
Space programme	1	8
Stagflation	8	9-16
Time	13	4-16
Unions	16	1-16
Vietnam war	9	7-15
War economics	14	2-15

Appendix Four: The Forty-Five Degree Diagram



(Sam. 1 1948, 260).



(Sam. 1 1948, 275).

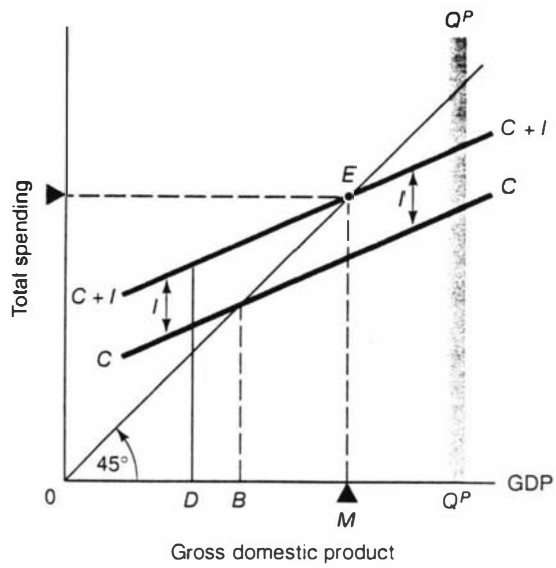


FIGURE 24-3. In the Expenditure Approach, Equilibrium GDP Level Is Found at the Intersection of the $C + I$ Schedule with the 45° Line

(Sam. 16 1998, 449).

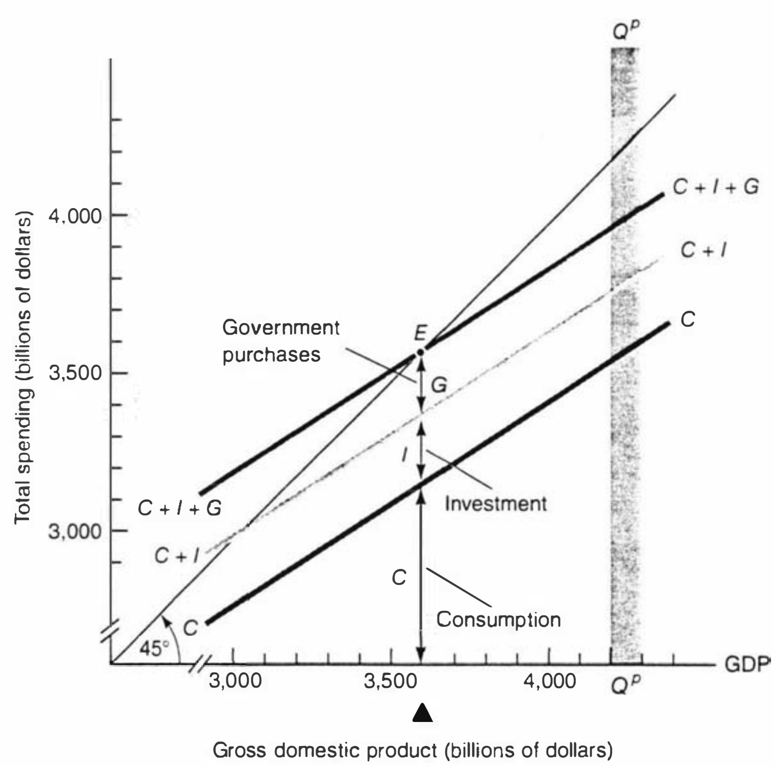


FIGURE 24-7. Government Purchases Add On Just like Investment to Determine Equilibrium GDP

(Sam. 16 1998, 456).

Appendix Five:

Table A.2: Countries Appearing in the Index of *Economics*

Countries	Number of Times in *Economics*	Editions of *Economics*
Africa	2	6, 7
Argentina	9	4, 6-11, 13, 14
Asia	2	6, 7
Australia	3	4, 9, 10
Austria	1	13
Bangladesh	1	14
Belgium	7	4, 6-11
Bolivia	2	13, 14
Brazil	13	4-16
Burma	2	9, 10
Canada	11	4-7, 9-11, 13-16
Ceylon/Sri Lanka	3	6, 7, 11
Chile	8	6-11, 13, 14
China	11	4-11, 13-15
Cuba	3	9-11
Czechoslovakia	4	9-11, 15
Denmark	2	4, 13
East Asian NICs	2	13, 16
Eastern Europe	3	13-15
Egypt	4	6, 7, 9, 10
Eire	1	4
Ethiopia	1	14
Finland	4	9-11, 13
France	11	4-11, 13-15
Germany	13	4-16
Ghana	3	9-11
Great Britain	15	1-15
Greece	5	6, 7, 9-11
Hong Kong	3	13-15
Hungary	7	5, 6, 7, 9, 10, 12, 13
India	10	4-11, 13, 14
Indonesia	4	5, 9-11
Iran	1	11
Iron-curtain countries	1	4
Israel	5	4, 9-11, 13
Italy	6	4, 9-11, 13, 14
Japan	13	4-16
Korea	2	13, 14
Latin America	3	7, 13, 15
Mexico	5	4, 13-16
Netherlands	7	4, 6, 7, 9-11, 13
Norway	1	4
Pakistan	4	8-11
Palestine	1	4
Panama	1	14
Peru	1	14
Poland	3	13-15

Portugal	3	9-11
Saudi Arabia	1	12
Scandinavia	4	4, 6, 7, 13
Singapore	3	13-15
Spain	3	9-11
South Africa	6	6-9, 13, 14
South America	1	4
South Korea	4	6, 7, 14, 15
Sweden	12	4-15
Switzerland	1	4
Taiwan	3	13-15
USSR/Soviet Union	16	1-16
West Germany	6	4, 6, 7, 13-15
Yugoslavia	4	7, 9-11

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