

This dissertation has been 61-4898
microfilmed exactly as received

BRAZELTON, William Robert, 1933-
A CRITICAL COMPARISON OF THE GROWTH
THEORIES OF ALVIN H. HANSEN AND
WILLIAM J. FELLNER.

The University of Oklahoma, Ph.D., 1961
Economics, theory

University Microfilms, Inc., Ann Arbor, Michigan

THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

A CRITICAL COMPARISON OF THE GROWTH THEORIES OF
ALVIN H. HANSEN AND WILLIAM J. FELLNER

A DISSERTATION
SUBMITTED TO THE GRADUATE FACULTY
in partial fulfillment of the requirements for the
degree of
DOCTOR OF PHILOSOPHY

BY
WILLIAM ROBERT BRAZELTON
Norman, Oklahoma
1961

A CRITICAL COMPARISON OF THE GROWTH THEORIES OF
ALVIN H. HANSEN AND WILLIAM J. FELLNER

APPROVED BY

Louis R. Dow

A. J. Kondonass, S

James M. Mungen

Paul A. Dinkler

John E. Rees

DISSERTATION COMMITTEE

ACKNOWLEDGMENTS

The author would like to express his gratitude to those members of the Department of Economics at the University of Oklahoma who have aided so much in the completion of this dissertation. Dr. Alex Kondonassis, Dr. James Reese, and Dr. William Nelson Peach must be mentioned in relation to their work with the candidate at various times and during various stages of the dissertation. Also, a debt of gratitude is owed to Dr. Virgil Wilhite for presenting a basic framework of analysis to help the present candidate to form a more meaningful framework of economic analysis. Also, the author would like to thank Dr. Paul Brinker for the time and trouble of reading and analyzing the dissertation as it neared the final stages of completion.

Special thanks must go to Dr. James Murphy and to Dr. Louis A. Dow. It was Dr. Murphy who was constantly willing to read and analyze and, thus, to strengthen. It was Dr. Dow, however, who gave purpose, meaning, strength and direction to the dissertation and to the candidate himself.

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF ILLUSTRATIONS	vi
 Chapter	
I. INTRODUCTION	1
II. THE KEYNES-HANSEN STAGNATION THESIS	21
III. THE CRITICISMS AND THEIR EVALUATION: POPULATION, THE FRONTIER, TECHNOLOGY, AND MARKET STRUCTURE	68
IV. THE CRITICISMS AND THEIR EVALUATION: SAVINGS, CAPITAL SAVINGS, AND DEPRECIATION RESERVES	100
V. FELLNER AND DYNAMIC GROWTH INTRODUCTION	128
VI. CRITICISM OF THE FELLNER GROWTH THESIS	171
VII. THE BLOCS TO TECHNOLOGICAL PROGRESS	195
VIII. CONCLUSION	218
BIBLIOGRAPHY	222

LIST OF TABLES

Table	Page
1. Annual Deviations of Index of Output per Man-Hour, Manufacturing	183
2. Annual Deviations of Index of Output Per Unit of Labor and Capital, Private Economy . . .	184

LIST OF ILLUSTRATIONS

	Page
Figure	
1. Relationship between Output and Its Constituents in a Condition of Uninterrupted Growth	142
Chart	
I. Outputs Per Man-Hour and Per Unit of Labor and Capital	162
II. Annual Deviations of Index of Output Per Man-Hour, Manufacturing	180
III. Annual Deviations of Index of Output Per Unit of Labor and Capital, Private Economy . . .	180

A CRITICAL COMPARISON OF THE GROWTH THEORIES OF
ALVIN H. HANSEN AND WILLIAM J. FELLNER

CHAPTER I

INTRODUCTION

Historical Perspective

The concept of stagnation is not new to the science¹ of economics. There have been times in history when economics was referred to as the "dismal science." The reasons for such dismalness lie in the long history of economic privation or, more recently, in long-run predictions concerning secular economic stagnation. The general area of study of the present work is the problem of secular stagnation. This chapter deals with the problem from the general, historical perspective, and emphasizes the fact that the problem is not a new one in

¹The use of the term "science of economics" may raise some skeptics to doubt. I use the term in the broad sense to include any field that uses the empirical method of assumptions, hypotheses, theory and the testing of predictions as to actual fact. The fact that it might seem that the empirical method is not used by economists is not because it is not used but, rather, because the field is more complex and, thus, the results less certain. Also, some economists seem to adopt doctrinal fanaticism and, thus, fight hard the accumulation of empirical evidence against them.

economic thought. After this general introduction, the Keynes-Hansen Stagnation Thesis will be dealt with in some detail. Next, the growth thesis of William Fellner will be studied. Lastly, the thesis will deal with the process of technology and technological innovation and the possible institutional hindrances that may develop in an advanced industrial economy to block the introduction of technology. The purposes of the thesis is to show that the development of these institutional blocs to the adoption of technology may contribute to secular stagnation.

A glance at economic history shows the prevalence of some concern over stagnation. From the time of the prophets of the Old Testament to the more recent economics of John Maynard Keynes, the fear of stagnation can be seen either on or below the surface of doctrine. The ancients had a doctrine based on complacency concerning the socio-economic order. The Medieval Church had its own theory, while the theories of Adam Smith and Thomas Malthus also stress the dismal aspects of economic existence. The concern is still with us. In modern times, William Fellner, for example, argues that Keynesian economic thinking can be divided into three separate parts: stagnation, cyclical and fundamental.² Alvin Hansen has further developed the stagnation aspects of the economics of Lord Keynes and, thus, adds to the dismality. Some

¹William Fellner, "What is Surviving?" American Economic Review, Vol. 47 (May, 1957), p. 67.

leading economists still fear the eventuality of stagnation in the capitalist system and there is no dearth of literature written on the subject.³ The present chapter will deal briefly with the concept of stagnation from an historical perspective.

The ancient prophets of the Old Testament often preached about the need for honesty in business dealings and the immorality of usury. Fundamental to their sermonizing was the need for charity and the rewards that a merciful God would give to the charitable person. Such an emphasis upon fair dealings in business and charity towards the lower and working classes probably was correlated with the degree of the poverty and maltreatment present during that time. There was, thus, a feeling of complacency for the conditions of the vast numbers of the populace. This is an understandable doctrine for ancient times because the prophets were primarily ecclesiastical and believed that the obedience to God's commands and the leading of the "good life" were more important than economic growth and welfare. Also, it is conceivable that the prophets saw very little hope for economic betterment due to the dearth of resources and the immobility inherent in the socio-economic order. Thus, continued poverty seemed inevitable,

³The term "stagnation" will be used throughout this work. At times, for variety, the terms "secular stagnation" or "economic maturity" or the term "mature economy" may be used. Economists that fall into the general stagnation school are, in one way or another, Alvin Hansen, Benjamin Higgins, Paul Sweezy, John Kenneth Galbraith and Paul Samuelson.

and perhaps, part of the design of providence.

The next major group of economic doctrines can be attributed to the Medieval Period of Roman Catholic dominance over European economic and social affairs.⁴ Like the ancients, the Medieval Churchmen of Europe believed in the importance of the "good life." It was unimportant to them that man was suffering economic hardship in this world. The task of the Church was to prepare man for the eternal life after the soul left the prison of the temporary body. Thus, obedience to God's commands was much more important than economic progress. Charity and complacency were also stressed. The age old concepts of usury, fair wages, charity and complacency were still in vogue and much discussed. Certainly man--in this world at least--faced a long and probably constant annoyance with the economic hardships of that day.⁵

In the transition from the Medieval period into the industrial period, the concept of the maintenance of socio-economic status quo and the religious emphasis upon the after-life were stressed less while economic development was more emphasized. Moreover, constant, current stagnation was

⁴John Fred Bell, History of Economic Thought (New York: Ronald Press, 1953) and Eric Roll, History of Economic Thought (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957) may be referred to by the reader for a more complete analysis of this period.

⁵Again the works of John Fred Bell and Eric Roll may be referred to for a more complete, but general summary of this period.

minimized and was replaced by anticipated stagnation. The coming of the industrial revolution ended the stagnation of past generations. The same revolution, however, brought about the development of the theoretical concept of the law of diminishing returns. This is a concept leading to the possibility of stagnation, which can generally be defined as follows: At some level of economic development the various factors which make for investment will tend to become less favorable in bringing forth an adequate amount of investment to maintain the attained level of income and employment. In this concept, profits will decrease to a point where the needed investment stimulus is no longer sufficient to sustain economic growth and progress. Such a concept prevails in various forms and in various complexities throughout the works of many economists from Adam Smith to Alvin Hansen.

In 1776, Adam Smith published his now famous treatise on economic affairs.⁶ There seems to be three rather gloomy interrelated concepts in the theories of Smith, David Ricardo and their followers. First of all, there was the concept of the conflict of interests between society and businessmen. This manifested itself in the form of rent. Rent was deducted from the value of the output of labor and entrepreneurs under the assumption that only the labor of workers and of entrepreneurs created value. Ricardo later argued that as the

⁶See the references in footnote 4, above, for more complete summaries.

population increased, inferior land would be put into use for the production of food and a differential could be charged for the higher quality land due to its higher productivity. This differential would go, of course, to the landlord. As the price and population levels increased, rent would become greater and the entrepreneur and the laborer would have to fight it out to see which of them would pay the rent. This concept would result in either a lowering of wages (effective demand) if the wages were temporarily above the subsistence level, or lower profits (the return to investment).

Second, the classical framework was based on the subsistence theory of wages. This meant that the laws of supply and demand would keep wages at a level at which the needed labor force would be able merely to maintain itself by the purchase of food, housing, clothing and the acquisition of the skills necessary for work. Any increase in the subsistence level of wages would come out of profits since profit was that amount left after the labor costs of production were paid in wages or kind to the working class. Thus, higher wages would decrease profits. Indeed, if market wages were to increase above the subsistence level of wages, they would soon fall again since the population and labor force would increase and drive the wages down. An increase in the labor force would result as the demand for labor increased in relation to the supply. Finally, an equilibrium level of the supply of labor and the demand for labor would

reduce wages to the subsistence level and maintain them at this level.

Third, classical economists conceived of the theory of diminishing returns. This doctrine indicated that as more and more capital was put to work, there would be an historical tendency for profits to be driven down to the level of "normal returns."⁷ An historical tendency towards declining prices and profits would not be helpful in maintaining economic growth and investment. Thus, Adam Smith, David Ricardo and their followers were certainly not the most optimistic of economists.

Thomas Robert Malthus was the next great pessimist. He saw the population of the world growing at a rate far in excess of the food supply. Thus, the end result would be eventual starvation for many unless something stopped the growth of population. War, pestilence, disease, and moral restraint were possibilities considered by Malthus. (One cannot blame him for not seeing the sociological significance of an urban environment, the surge in agricultural technology, or the use of contraceptive devices.) He was pessimistic about man's future. Indeed, economic "progress" itself led to these Malthusian ends as higher wages and profits brought about an increase in population. An increase in population

⁷Normal returns are the minimum returns the entrepreneur must receive on his labor and other owned resources to keep them in their present uses. In the stationary state only "normal" returns are received by all entrepreneurs.

resulted in increases in the demand for food. The supply of food was dominated by the rentier class whose monopoly over the land allowed them to increase the price of food and of subsistence. This allowed the rentier class to reap from the wages and profits of others, decreasing the prosperity of the laborer and the entrepreneur.

Malthus, however, had more than a population theory. He also believed in the concept of secular stagnation. Malthus took a view that ran contrary to the views of the other economists of his time and unlike Ricardo, did not see the accumulation of savings and the maintenance of the profit level as the modus vivendi of continued economic progress. In one of his letters to Ricardo, Malthus maintains that:

I don't at all wish to deny that some persons or others are entitled to consume all that is produced; but the grand question is whether it is distributed in such a manner between the different parties concerned as to occasion the most effective demand for future produce: and I distinctly maintain that an attempt to accumulate very rapidly which necessarily implies a considerable diminution of unproductive consumption, by greatly impairing the usual motives to production must prematurely check the progress of wealth. . . . But if it be true that an attempt to accumulate very rapidly will occasion such a division of labor and profits as almost to destroy both the motive and the power of future accumulation and consequently the power of maintaining and employing an increasing population, must it not be acknowledged that such an attempt to accumulate, or that saying too much, may be really prejudicial to the country.⁸

In a later letter to Ricardo, Malthus further states that

⁸John Maynard Keynes, Essays in Biography (New York: Macmillan Company, 1933), p. 142.

But you yourself allow that a great temporary saving, commencing when profits were sufficient to encourage it, might occasion such a division of the produce as would leave no motive to a further increase of production. And if a state of things in which for a time there is no motive to a further increase of production be not properly denominated a stagnation, I do not know what can be so called; particularly as this stagnation must inevitably throw the rising generation out of employment.⁹

Indeed, this is a departure from the classical economists who feared that the impingement of rent and/or the subsistence level of wages upon profits might bring about a stationary economic state. Malthus, on the other hand, feared that profits and savings might increase so as to limit the necessary effective demand. Malthus hoped that

. . . there must be some intermediate point, though the resources of political economy may not be able to ascertain it, where, taking into consideration both the power to produce and the will to consume, the encouragement to the increase of wealth is the greatest.¹⁰

Karl Marx was the next important economic figure. He used the very framework of classical capitalism to show how its inherent qualities would bring about its eventual demise. The presence of a maldistribution of income, subsistence wages, cyclical unemployment, and the reserve army of the unemployed were all inherent disturbances that he believed would destroy the system of capitalism and make possible the creation of a new socio-economic order--communism.¹¹ Certainly,

⁹Ibid., p. 143.

¹⁰Ibid., p. 147.

¹¹Throughout this thesis, whenever the terms "communism" and "socialism" are used, they will not be used interchangeably. "Socialism" will refer to economics with government ownership

this is not the brightest picture for man unless one assumes, along with Marx, that the communist system is without flaws.

Say's Law, however, explicitly denied any concept of stagnation by asserting that supply created its own demand. Goods produced in one period were bought in that period since all income was either spent or saved. Savings and investment would be equal in a competitive market structure because as savings accumulated in excess of investment demand, the interest rate would fail to bring forth an increase in investment. Thus, the economy would be characterized by full employment. One must notice, however, the assumption of a competitive market structure, the ability of slight changes in the interest rate to affect the investment of capital, and the corollary from the above that all money received is spent through consumption or savings since the latter are automatically invested because of the flexibility and effectiveness of the interest rate. One might gather that if there were no return to capital, the interest rate would fall so low as to discourage savings which would increase consumption without employment. This concept tends to differ from that of Smith, Ricardo, Malthus and Marx, but later Say's Law itself was attacked by John Maynard Keynes who did much to cause a renaissance of the concept of secular stagnation.

and control of essential industries whereas "communism" will refer to a system where all of the factors of production and distribution are owned and controlled by the government.

Keynes did nothing to the basic theory that the level of income was dependent upon the amount of investment and consumption. Income in the Keynesian framework is a result of the consumption of consumer and investment goods which represents wages to workers and returns to entrepreneurs. Net investment would not be necessary in maintaining the present level of the economy (in the short run) if savings (on the part of consumers) did not take place. If savings do take place, they must be offset by investment if the entrepreneurs are to get back the funds necessary to cover their production costs. The wearing out of capital goods (in the long run) introduces the necessity for some entrepreneurial savings which must be offset by current investment if the current income level is to be maintained. If there is an equality of savings and investment, the equilibrium may be below the full-employment level which necessitates an amount of investment in excess of savings to bring the income level up to a higher level. This might be difficult. Keynes doubted the ability of the economy to maintain investment because of the fact that

. . . today and presumably for the future the schedule of the marginal efficiency of capital is, for a variety of reasons, much lower than it was in the nineteenth century.¹²

¹²John Maynard Keynes, The General Theory of Employment, Interest and Money (New York: Harcourt, Brace and Company, 1936), p. 308.

Keynes did not, himself, develop an analysis of the possibilities of secular stagnation, but rather made a few rather explicit points (which will be discussed in Chapter II) from which others developed a theory of stagnation or maturity. Alvin Hansen is the chief proponent of the thesis of secular stagnation. It can be said that Hansen reasons that there are three main causes for the rapid economic growth of a country. The causes are increasing population due to a high birth rate or migration, an expanding frontier area opening new fields of investment opportunity, enterprise and social expenditures, and a rapidly progressing or exceedingly stimulating technological advance.¹³ The stagnationists point out that there has been (with the exception of recent years which may or may not be representative) a decline in the rate of increase in population. The declining rate of increase is due to several probable factors: An urban environment where children are no longer economic assets; the breakdown of the woman's position in the home; the high and rising cost of bearing and raising children; and the desire for some peace, quiet, leisure and independence. The recent upsurge in population (which may or may not be permanent) may well be due to international tension and the social boredom associated with a television orientated culture. Psuedo-sexual education might also be one of the causes, as also might the increase in the average

¹³Benjamin Higgins, Economic Development (New York: W. W. Norton and Company, 1959), pp. 183, 188.

per capita income level.

If there is an historical tendency towards a relative decreasing population growth, there could also be a decrease in the stimulus for investment. The stimulus would not be present because population would not be increasing at a rapid enough rate to provide an adequate market to cover the initial cost of investment within a reasonable period of time. Thus, the marginal efficiency of capital would fall.

The absence of a frontier into which the economy might advance is also important. This greatly decreases the marginal efficiency of capital due to the fact that there is no virgin land to conquer economically. Foreign investment has often been argued as a source of this "frontier stimulus," but it seems that even without international restrictions on the free flow of capital and goods the foreign investment opportunities in the so-called underdeveloped countries is limited. Thus, foreign investment might merely be a time-saving, stop-gap measure to delay, but not to prevent, stagnation.

The third source of investment stimulus is technological advance and innovation. The stagnationists fear that as the economy becomes more complex, a particular industry will fail to provide sufficiently adequate investment stimulus.¹⁴ They see no more great innovations such as railroads, canals, or automobiles. The only important innovations available are labor-saving, and these do not stimulate economic growth much.

¹⁴Ibid., p. 172f.

This point will be covered more fully in the following chapter and in the chapter dealing with Fellner's growth thesis. Also, the size and increasing institutional hindrances to investment and stimulation are factors that worry stagnationists.

In the course of the dissertation thus far a great deal has been mentioned about the stagnationists. The reason for this has been to acquaint the reader in a general way with the prominence of stagnation-type thinking in the history of economic thought. None of the views of any of the contributors has been fully presented. Moreover, no mention has been made of the critics of the stagnationists. Many economists, as a matter of fact, stand opposed to the stagnation school. Such prominent names as David McCord Wright, George Terborgh, Frank Knight, Henry Simons and W. J. Fellner stand out as anti-stagnationists. These men attack the stagnationists on the basis of historical tendencies in technology and growth and the fact that they believe generally that a decreasing population growth rate would decrease relative savings. A later chapter will deal with some of the more prominent critics of stagnation.

Current Perspective

The general concept of stagnation depends upon the diminishing returns to capital. The diminishing returns to capital might take place when either or both the capital

accumulation rate is excessive in relation to the growth of the labor force or when the rate of technological advance begins to slow down. In the case of an increase of capital in relation to labor, not enough labor is available for capital and, thus, savings cannot be offset by new investment without the possibility of increasing wages to a point where they impinge upon profits. The concept of the growth of capital and capital input in relation to the growth of labor and labor input makes capital a variable and labor a constant which introduces the law of diminishing returns--specifically, the diminishing returns to capital. What is needed, therefore, are labor-saving innovations.

The growth rate of capital and labor in relation to one another is important. The relative growth rate between capital and labor answers both the questions of what must be done to maintain economic growth and what is happening to the relative shares going to the various factors of production. John Kendrick, in his study of productivity trends, finds that there has been a faster rate of growth of capital in relation to labor.¹⁵ Output per unit of capital has also increased, which points out the capital-labor savings aspects of previous innovations.¹⁶ William Fellner states that the labor force has increased only half as fast as the stock of

¹⁵John W. Kendrick, Productivity Trends: Capital and Labor (New York: National Bureau of Economic Research, Inc., 1956), Occasional Paper 53, p. 10.

¹⁶Ibid.

capital.¹⁷ This implies, therefore, that there may be a problem of diminishing returns to capital. If there has not been a decrease in the relative share going to capital, there must have been a dominance of labor-saving innovations. Since the relative share going to capital has not decreased to any significant degree,¹⁸ the innovations must have been labor-saving in character so as not to increase the relative share going to labor in relation to that going to capital. The question remains whether innovations of a labor-saving character, which have, at the same time, a sufficiently stimulating effect upon the economy, can continue to take place.

(William Fellner believes that such a growth process can take place. He bases this conclusion partly on the fact that things have always worked out in the past.¹⁹ However, Fellner assumes sufficient mobility of resources and a monetary policy compatible to price stability,²⁰ and further implies a concept of competition which appears to be of the order of

¹⁷William Fellner, Trends and Cycles in Economic Activity (New York: Henry Holt and Company, 1956), p. 243.

¹⁸I. B. Kravis, "Relative Income Shares in Fact and Theory," American Economic Review, Vol. 49 (December, 1959), p. 917.

¹⁹Fellner, Trends and Cycles in Economic Activity, p. 389.

²⁰Ibid., pp. 227, 231.

"workable competition"²¹ so that price differentials between industries may develop in order that resource shifts may take place. Thus, because of Fellner's assumptions concerning the historical trend of innovations in relation to the needs of the time, mobility, the price level and monetary policy, he can be confident of a continued growth of the economy.

Alvin Hansen, on the other hand, is not as confident. His concept of a diminishing rate of population increase, the absence of the frontier, the growing importance of depreciation reserves and the decline in the rate of technological advance makes him pessimistic.²² After all, in the face of a declining growth of new markets, the absence of investment outlets in the form of a frontier, and the growing importance of depreciation reserves for investment, where is the investment need going to come from so as to form an investment outlet for the savings of individuals? Also, if one drops Fellner's implication concerning competition and adopts a concept of administered pricing, where does the price flexibility for mobility and for the profitable innovation of technology come from? Hansen forces us to ponder these factors and leaves us

²¹The concept of "workable competition" implies that even though there may not be price competition within an industry, there may be price competition between industries producing substitute goods. The effectiveness of such competition, however, depends upon the degree of substitutability and also assumes that there will not develop formal or informal price agreements or an extension of the concept of the "kinky-demand" curve to an inter-industry basis.

²²Higgins, op. cit., p. 176.

much less optimistic concerning the future.

Relevant to any brief introduction to the respective beliefs of Hansen and Fellner are the statistical data available. These data partly answer the question as to what is happening. John W. Kendrick finds that the output per weighted man-hour has increased since 1889 whereas the output per weighted unit of tangible capital has expressed a more fluctuating increase except for the period from approximately 1945 to present where the general tendency can be seen to be slightly downward.²³ Overall, however, there has been a general upward tendency of the output-capital ratio which indicates a substitution of capital for labor.²⁴ Kendrick's data show, however, a recent downward tendency which may be a sign of danger.²⁵ Such a sign of possible danger may also be indicated by the slight increase in the relative share going to labor as found by Irving B. Kravis.²⁶ Indeed, Solomon Fabricant finds that the output unit per unit of capital fell substantially from 1945 to 1949 and had

²³John W. Kendrick, "Productivity, Costs and Prices: Concepts and Measures," Wages, Prices, Profits and Productivity (New York: American Assembly, June, 1959), p. 45.

²⁴Ibid.

²⁵Ibid., p. 24.

²⁶Kravis, op. cit., p. 917.

fluctuated violently in the years since 1949 to 1959.²⁷

Moses Abramovitz finds that the combined index of resources per capita and of capital per head has declined since 1900, but that the productivity of capital has risen since World War I.²⁸ Thus, he reaches no conclusion.

Kendrick finds that there has been an increase in capital input in relation to labor input so that labor-saving has not been significant.²⁹ Furthermore, the growth of capital has only slightly exceeded the growth of output.³⁰ As has been previously stated, however, Kendrick found in another (and later work) that there has been a recent slight decline in the output of capital which seems to correlate with the finding of Kravis concerning trends in the relative shares. Thus, one might tend to conclude that the danger of diminishing returns to capital may be setting in. This, however, involves a generalization about the future growth of technology. If, for instance, the institutional structure of the market were to bloc the introduction of technology in the future, the appropriate offset to the diminishing returns to capital

²⁷Solomon Fabricant, Basic Facts on Productivity Change (New York: National Bureau of Research, Inc., 1959), Occasional Paper 63, p. 39.

²⁸Moses Abramovitz, Resource and Output Trends in the United States Since 1870 (New York: National Bureau of Economic Research, Inc., 1956), p. 18.

²⁹Kendrick, Productivity Trends: Capital and Labor, p. 10.

³⁰Ibid., p. 11.

would no longer be present. After dealing with the growth theories of Hansen and Fellner, this thesis will analyze the possible deterrent effects the market structure and large-scale industry may have upon the innovation of technology. The purpose of this thesis will be to show that there may be deterrent tendencies within an advanced industrial economy to bloc the introduction of technology. Such blocs to innovations would have a detrimental effect upon the introduction of offsets to diminishing returns of capital, and thus, would have grave implications upon continued economic growth. Such implications may imply chronic unemployment in the future especially in the face of an increase in the labor force. Thus, stagnation may be the reality of the future.

CHAPTER II

THE KEYNES-HANSEN STAGNATION THESIS

Keynes' Contribution to the Thesis

An analysis of the Keynes-Hansen Stagnation Thesis must begin with a discussion of some of the basic Keynesian contributions to the development of the thesis. Actually, Keynes did not deal with the stagnation thesis at any great length. He did, however, indicate in his The General Theory of Employment, Interest and Money several paths that might lead to stagnation. At the time of publication of The General Theory, the depression of the nineteen-thirties was stimulating much criticism of the capitalistic economic system. Keynes saw the economic system of his choosing being endangered and attempted to provide an analysis of the causes of the problems. Also, he implicitly provided an analysis of the possible means of alleviating the problems without a basic change in the economic system.¹

Fundamental to any study of the Keynesian stagnation

¹Lord Keynes, in the last chapter of The General Theory of Employment, Interest, and Money (New York: Harcourt, Brace and Company, 1936) discusses the social philosophy of the General Theory more fully.

thesis are the concepts of the interest rate, the marginal and average propensities to save and to consume, and the marginal efficiency of capital. It is necessary to discuss the propensity to save before the role of investment is considered. Keynes believed that out of any level of income above the culturally-determined subsistence level there would be a tendency on the part of the society to save. The proportion out of current income that is saved is measured by the average propensity to save or, alternately, the average propensity to consume. If, for example, the average propensity to save is one-third, the average propensity to consume is two-thirds. (The sum of society's savings and consumption is the sum total of society's current income.) As both the aggregate and per capita income levels increase (which signifies an increase in national income in excess of population growth), the individual and the society spends absolutely more but also saves absolutely more due to a relative satisfaction of consumer needs. Thus, there is a widening gap between the level of income of the economy and amount consumed out of that income in absolute and relative terms.

For sake of illustration, the economy might be likened to a circular flow system filled with water. In order for a circular flow system to remain full of water, any leakages in the system (savings) must be replenished by new liquids (investments) or else the supply of water in the flow system

will run out. In a dynamic economy, the investment of one time period would, in fact, generate a higher income level and necessitate a greater amount of investment in the next time period. For the time being, however, the water tank and flow system analogy is sufficient. What is said of the water tank can also be applied to the economy. The income-generating sectors of the economy will not continue to produce at any given level if that income which they produce is not returned to them in the way of sales from consumption or in the form of investment funds either directly or indirectly through newly established or enlarged firms.

Keynes believed that in the short run the marginal propensity to consume remained relatively constant and that the average propensity to consume was culturally determined, given the level of income. Since there are cycles in our economic system, Keynes, as had others before him, concluded that investment, the other component of income, is the fluctuating, independent variable. Keynes also believed that:

Thus our four conditions together are adequate to explain the outstanding features of our actual experience;-- namely, that we oscillate, avoiding the gravest extremes of fluctuation in employment and prices in both directions, round an intermediate position appreciably below full employment. . . .

Consumption, however, it should be pointed out, is not necessarily constant over time, but rather is a function of income change. The change in income, on the other hand, is determined by changes in the amount of investment. If

consumption is a function of income and if changes in income are dependent upon changes in investment, the economy--since investment is the independent, fluctuating variable--is subject to cyclical movements which are set in motion by changes in the rate of investment. These cyclical disturbances are caused by drops in the marginal efficiency of capital relative to the rate of interest. The relative drop in the marginal efficiency of capital may be due to an increase in the cost of capital goods or some decrease in the rate of expectations regarding future profits due perhaps to mere psychological reactions. The relative increase in the interest rate could be caused by a decrease in the stock of money. Also, it could be increased because of psychological reactions to various economic signs bringing about a hoarding of funds for later speculation. A secular or long-run disturbance, on the other hand, might be caused by diminishing returns to capital, a relative dearth in technological change or, in general, a decline in long-run profit expectations. Since investment is the variable endangering the present income level and causing upward and downward fluctuations, the determinants of investment must be studied. These determinants were summarized by Keynes under the heading of the inducement to investment.

The inducement to invest is determined by two factors. The first of these is the rate of long-run anticipations concerning the rate of interest; the second is the marginal

efficiency of investment. The interest rate is, in the Keynesian framework, determined by the quantity of money in circulation and the desire of the community to hold idle cash balances--its liquidity preference. The marginal efficiency of capital is determined by replacement costs and profit expectations. This implies that if the replacement cost is too great, or the interest rate is too high in relation to profit expectations, the marginal efficiency of capital will be low or zero. If the marginal efficiency of capital is low or zero, there will be little or no investment taking place. If there is no investment taking place, the level of income must fall because income is the sum total of both investment and consumption. Thus, at various times, the inducement to invest is lower than at other times because of the level of the interest rate relative to the marginal efficiency of capital.

It is necessary to lower the rate of interest relative to the marginal efficiency of capital in order to raise income to a full employment level. At full employment, the marginal efficiency of capital and the interest rate should be equated so as not to push the economy into inflation. The marginal efficiency of capital is roughly the return that the entrepreneur expects to receive on his investment. The interest rate is the cost which he expects to pay for the funds he uses in order to carry out his investment plans. Assuming a perfectly elastic supply curve of funds for

investment,² Keynes argued that a low interest rate in relation to the marginal efficiency of capital is, therefore, advantageous to the economy as a whole in order to stimulate investment. A low interest rate would mean that it would cost less for the entrepreneur to borrow money to carry forth his investment plans. In his General Theory, Keynes points to the need for a low interest rate by categorically stating that:

. . . it is to our best advantage to reduce the rate of interest to that point relative to the schedule of the marginal efficiency of capital at which there is full employment.³

A low interest rate would involve a monetary policy designed to keep the money market from becoming "tight" if there is a tendency towards less than full employment. Keynes, however, did not believe that low interest rates are the sole answer to the problem.

For my own part I am now somewhat skeptical of the success of a merely monetary policy directed towards influencing the rate of interest. I expect to see the State, which is in a position to calculate the marginal efficiency of capital-goods on long views and on the basis of the general social advantage, taking an ever greater responsibility for directly organizing investment; since it seems likely that the fluctuations in the market estimation of the marginal efficiency of different types of capital, calculated on the principles I have described

²Ibid., p. 111. Alvin Hansen, A Guide to Keynes (New York: McGraw-Hill Book Company, Inc., 1953), p. 81.

³John Maynard Keynes, The General Theory of Employment, Interest, and Money (New York: Harcourt, Brace and Company, 1936), p. 375.

above, will be too great to be offset by any practicable change in the rate of interest.⁴

The preceding discussion leads to the conclusion that Keynes did not believe that the interest rate was the automatic equilibrator that the classical economists believed it to be. Indeed it is evident that he did not believe the interest rate ever to have been effective in bringing about full employment.

Except for during the war [World War I], I doubt if we have any recent experience of a boom so strong that it led to full employment.⁵

And Keynes was by no means optimistic about the future; in his analysis of the marginal efficiency of capital, he states that:

It is impossible to study the notions to which the mercantilists were led by their actual experiences, without perceiving that there has been a chronic tendency throughout human history for the propensity to save to be stronger than the inducement to invest. The weakness of the inducement to invest has been at all times the key to the problem. Today the explanation of the weakness of this inducement may chiefly lie in the extent of existing accumulations; whereas, formerly, risks and hazards of all kinds may have played a larger part. But the result is the same. The desire of the individual to augment his personal wealth by abstaining from consumption has usually been stronger than the inducement of the entrepreneur to augment the national wealth by employing labour on the construction of durable assets.⁶

Keynes, in short, believed that investment was

⁴Ibid., p. 164.

⁵Ibid., p. 332.

⁶Ibid., pp. 347-348.

determined by the relationship of the interest rate to the marginal efficiency of capital. The interest rate, however, might not be really too instrumental because of the possibility that it might not fall far enough below the trend line of the marginal efficiency of capital to bring forth adequate investment returns. The inducement to invest, therefore, may be considered to be the real "sour apple" in the institutional framework. As more and more capital is used, the rate of return in any industry or in the economy as a whole falls unless, of course, technology offsets diminishing returns to capital. As the income level increases, the savings of the society will increase relative to the increase in the size of incomes. This means that less goods are being sold relative to the income level and income generating capacity of the economy. Therefore, the marginal efficiency of capital is low. Thus, discussion again leads to the Keynesian conclusion that:

Today and presumably for the future the schedule of the marginal efficiency of capital is, for a variety of reasons, much lower than it was in the nineteenth century.⁷

Thus, the General Theory, concludes that the marginal efficiency of capital and the inducement to invest must be high in relation to the cost of investing if there is to be continuing full employment. In an economy, however, where it may not be possible to lower the rate of interest to a

⁷Keynes, The General Theory, p. 308.

point low enough to provide for a sufficient profit, the main emphasis must fall not on the interest rate, but, rather, on the factors that determine the marginal efficiency of capital and the inducement to invest. In other words, what are the essential ingredients that are necessary for an expanding economy? What must be present in the economy to increase the marginal efficiency of capital relative to the interest rate (besides lowering the interest rate beyond a practical degree or point) in order that investment might be forthcoming? John Maynard Keynes did not deal with these problems specifically. He did, however, indicate what he believed to be the general trend in the rate of social investment.

The State will have to exercise a guiding influence on the propensity to consume partly through its scheme of taxation, partly by fixing the rate of interest, and partly perhaps in other ways. Furthermore, it seems unlikely that the influence of banking policy on the rate of interest will be sufficient by itself to determine an optimum rate of investment. I conceive, therefore, that a somewhat comprehensive socialization of investment will prove the only means of securing an approximation of full employment; though this need not exclude all manner of compromises and of devices by which public authority will co-operate with private initiative.⁸

Hansen's Version of the Thesis

Alvin Hansen is perhaps the most famous of the American disciples of Lord Keynes. Traditionally Hansen's name is linked to Keynes in terms of the modern Stagnation School of

⁸Ibid., p. 378.

economics. Hansen, however, has been more important in the development of the Stagnation Thesis than Lord Keynes. The latter merely placed the general conceptual analysis before Hansen who, in turn, developed the Stagnation Thesis within the Keynesian framework. John Maynard Keynes, it should be pointed out, never refuted the Hansen additions to this theory, even though he was alive for several years after the popular acceptance of the so-called Keynes-Hansen Stagnation Thesis. In his version of the Stagnation Thesis, Hansen deals with the questions concerning the essential ingredients of an expanding economy. He further evaluates what must be present in the economy if the marginal efficiency of capital is to rise relative to the interest rate and, thus increase the inducement to invest.

The Keynes-Hansen Stagnation Thesis states that under conditions of laissez-faire, capitalism would be subject to increasing unemployment.⁹ Hansen based this theory on the secular decline of the factors of dynamic growth and applies this theory to the United States. The growth of output will rise and will continue to rise only if there is an increase in the size of the labor force, the known resource base, the stock of capital and the level of technology.¹⁰ As

⁹Benjamin Higgins, Economic Development (New York: W. W. Norton Company, 1959), p. 169.

¹⁰Ibid., p. 170.

for the American economy, Hansen states that there had been a decline in the rate of growth of the population, the disappearance of the frontier and a slowing down of the rate of resource discovery and the rate of technological development.¹¹ Thus, private investment falls because of the decline in the net effects on autonomous investment of population and resource growth and technology.¹² Because of the absence of frontiers, the decline in the rate of growth of population, and the decline in the growth of the level of technology the economy would fall into stagnation. This might be further aggravated by the dominance of capital saving innovations, the lack of great new industries, a rising propensity to save and the loss of the "frontier spirit."¹³ Hansen, because of the decline of the factors of dynamic growth and the emergence of other aggravating factors, felt that there is little to look forward to as far as laissez-faire capitalism is concerned.

Hansen is dealing primarily with the secular trend of employment and output. His analysis has some relationship to short-run business cycle theory, but the present work will deal only with the secular trend towards stagnation. Hansen postulates that the economy will tend to stagnate because of the insufficiency of investment outlets and the changing institutional market structure. He fears that there will be

¹¹Ibid., p. 170.

¹²Ibid.

¹³Ibid., p. 171ff.

a divergence between the full-employment level of income and the actual level of income.¹⁴ Also, for analytical purposes, Hansen holds fiscal policy constant so that he might analyze the private sector, which traditionally has been the most important in free enterprise, capitalistic economies.¹⁵

There seems to be little agreement on the essential ingredients of Hansen's Stagnation Thesis. For example, in his critique of the Thesis, Benjamin Higgins argues that Hansen believed that there are four aggravating factors that contribute to stagnation.¹⁶ These consist of the rising dominance of capital-saving innovations, the diminishing importance of "great new industries" to stimulate economic progress, the loss of the frontier spirit resulting in a lessening of the spirit of adventure and enterprise, and the possibility of a rising propensity to save.¹⁷ Higgins also deals with Hansen's views concerning the growth of population.¹⁸

John Fred Bell, on the other hand, maintains that the essentials of the Stagnation or mature economy thesis are:

¹⁴Higgins, Economic Development, p. 169.

¹⁵Ibid., p. 170. Hansen, however, realizes the importance of fiscal and monetary policy and recommends strongly their use. Benjamin Higgins briefly considers the policy implications on pages 167-171 of Economic Development.

¹⁶Ibid., p. 171ff.

¹⁷Ibid.

¹⁸Ibid., p. 184.

A decline in the population growth; the disappearance of frontiers; the non-existence of new industries of a greatly stimulating nature; and the increasing proportion of reserves for depreciation.¹⁹ These are narrower than the factors considered by Higgins. Bell, for example, uses the words "disappearance of frontiers"²⁰ whereas Higgins uses the words "frontier spirit."²¹ Also, Bell refers to "increasing importance of depreciation reserves"²² whereas Higgins refers to the "institutionalization of savings."²³ The "institutionalization of savings" might be said to involve both depreciation allowances and retained earnings for internal financing resulting in what might be an increase in the propensity to save. Thus, Higgins has enlarged the concepts and has not restricted the thesis to the narrow confines suggested by Bell.²⁴ The scope of the Thesis,

¹⁹John Fred Bell, A History of Economic Thought (New York: The Ronald Press Company, 1953), p. 611.

²⁰Ibid.

²¹Higgins, Economic Development, p. 173.

²²Bell, op. cit., p. 611.

²³Higgins, Economic Development, p. 174.

²⁴It should be pointed out, however, that both Hansen and Keynes seem to have a broader view of the factors leading to stagnation and an increase in savings. Alvin Hansen in his A Guide to Keynes gives a summary of what Keynes believed to be the motivations for the current level of savings and any increase in the level of savings on pages 70-72. Keynes, himself, deals with these factors (which he divides into subjective factors and objective factors) primarily in Chapters Eight and Nine of his The General Theory of Employment, Interest and Money.

however, can be broadened even further by adding the concepts of an oligopolistic market structure and the possibility that innovations may be also too labor-saving resulting in unemployment as well as too capital-saving. Labor-saving and capital-saving qualities of investment relate closely to the problems presented by anti-stagnationist growth theorists, such as William Fellner, whose theory is discussed and evaluated later. Moreover, the trend in wages and prices as a possible stimulant or hindrance to continued economic growth along the full-employment line may be considered.

Alvin Hansen, himself, sums up his own Thesis by stating that, in the past at least, economic progress has depended upon four things. Briefly, these are inventions, the discovery of new territory and/or resources and their development, and the growth of population.²⁵ In a period of time when these influences remain strong there will be little deviation from the trend line; but in a time when these are not operative the emphasis of economic theory will have to shift from a study of business cycles to a study of the maintenance of continuing full-employment or, perhaps, the possibility of a chronic tendency towards a state of less than

²⁵Alvin Hansen, Fiscal Policy and Business Cycles (New York: W. W. Norton Company, 1938), p. 289. It should be noted that Hansen's list bears great similarity to the list of innovations set forth by Joseph Schumpeter in his Business Cycles, Vol. I on p. 84. Actually, the term "invention" as used by Hansen seems to blend itself rather nicely into a semblance of the term "innovation" as used by Schumpeter.

full-employment.²⁶ Hansen argues that, historically, as these influences became weak there was a tendency for recoveries to become weak. And during the 1930's there developed a concern over the factors making for the weak recoveries, especially since there also arose the fear that these influences might also contribute strongly to an emerging state of stagnation.²⁷ In the remainder of this chapter these four influences are discussed in some detail. Discussion, however, is strictly expository; critical evaluation of the thesis is provided in the subsequent chapter.

Population Growth

Population growth is one of the important factors of the Keynes-Hansen Stagnation Thesis. A rapidly expanding population may mean (so long as there exists adequate purchasing power on the part of the new and old inhabitants) that there will be new markets for investors and businessmen. Therefore, a more rapid population growth would probably mean a more rapid rate of economic progress, ceteris paribus. Investment decisions are easier and returns are more certain. Hansen believes, however, that the great population increase of the nineteenth century which made possible such great industrial and economic progress was unique in history.²⁸

²⁶Ibid., p. 353.

²⁷Ibid.

²⁸Ibid.

If this population increase was unique, then it might be inferred (ceteris paribus) that the rate of economic growth might diminish and that investment might decline relatively. It is, indeed, hard to deny the stimulating effect on investment and economic growth of a quadrupling of English population, a tripling of Europe's population and fifteen-fold increase in United States' population during the nineteenth century.²⁹ In the nineteen-thirties, however, the United States was passing into an era of relative population stagnation, so far as both numbers and rates of increase were concerned.³⁰ Between 1850 and 1900, the population of the United States increased from twenty-three to seventy-six million.³¹ Population increases per decade as high as thirty-five per cent have given way to increases of less than twenty per cent per decade.³² Indeed, from 1900 to 1910 there was an increase of approximately sixteen million persons, whereas from 1930 to 1940 the increase was less than nine million.³³ Market expansion, thus, was more promising in earlier than in more recent decades.

²⁹Alvin Hansen, Full Recovery or Stagnation (New York: W. W. Norton and Company, 1938), p. 289.

³⁰Alvin Hansen, Economic Stabilization in an Unbalanced World (New York: W. W. Norton and Company, 1932), p. 213.

³¹U. S. Bureau of the Census, Statistical Abstract of the United States: 1958 (79th ed.; Washington: U. S. Government Printing Office, 1958), p. 5.

³²Ibid.

³³Ibid.

The decades of the nineteen-forties and the nineteen-fifties show a population increase of nineteen million and twenty-six million, respectively.³⁴ This is an increase of fourteen per cent per decade. Still, however, this is a relative decrease from the growth of earlier decades in the nineteenth century. Also, there is no statistical or theoretical proof that the increase in the birth rate in the nineteen-forties and fifties is permanent. It may well have been caused by sociological factors dominant in those decades. In fact, Henry Villard goes so far as to say that:

. . . drastic declines in birth rates in many areas could result if ready availability of birth control or abortion made it possible to eliminate "unwanted" children.³⁵

Hansen believes that the decrease in the birth rate is in large part a result of the process of economic growth itself, especially as this is accompanied by urbanization. Modern urban facilities make birth-control techniques known and more readily available; the child is no longer an economic asset as he was on the farm and must now be educated and trained at a cost to the family; and the urban stresses and strains may well be unfavorable to fertility.³⁶ The city-born child has become a liability because of the cost of

³⁴Ibid.

³⁵Henry Villard, "Population and Economic Growth: Comment," American Economic Review (Evanston, Ill.: American Economic Association, June, 1960), p. 438.

³⁶Hansen, Economic Stabilization in an Unbalanced World, p. 225.

education, and the breakdown of the old family custom of the under-aged child's income belonging to the head of the house. Also, the fact that modern labor markets often require skills and involve dangers which close many jobs to child labor due to legal, union and managerial restrictions is a contributory factor. Thus, the former asset may well become a liability and result in a lower family standard of living in a social framework which emphasizes the height of one's standard of living as an important determinant of social success or failure.

Other problems, however, accompany the decrease in the rate of population growth. The change in the age structure of the population is important. Hansen points to the German situation of the nineteen-thirties as an example of the age-distribution problem.³⁷ The problem of a stationary population as far as investment is concerned is simply that the economic system needs only to replace worn-out machinery whereas a growing population necessitates the use of additional machines to equip the additional number of workers.³⁸ In the case of a stationary population, it is thus possible to stress consumer goods rather than producers goods (assuming that resources are mobile, technology forthcoming to make the shift possible, and a demand for consumer goods).³⁹ Finally, as the demand

³⁷Ibid., p. 229.

³⁸Ibid., p. 232.

³⁹Ibid.

for goods becomes relatively inelastic, due to an approximate saturation of consumer wants,⁴⁰ services will tend to be emphasized.⁴¹

But the situation is not quite this simple. A new problem arises when there are more older workers in industry, as would be in a relatively stationary population.⁴² An increasing number of elderly people to support involves greater costs than the support of an equal number of children.⁴³ However, there could be a higher rate of personal savings⁴⁴ because of old-age savings.⁴⁵ On the other hand, there may

⁴⁰There is still much controversy as to whether there is or is not a "saturation point" in relation to consumer wants. The economic writings of some for example, stress the belief that there is little basis for the concept of the saturation of consumer wants. See, for example, E. Swanson and E. P. Schmidt, Economic Stagnation or Progress (New York: McGraw-Hill Book Company, 1946).

⁴¹Ibid., p. 233.

⁴²Ibid.

⁴³Ibid.

⁴⁴This assumes, of course, that for the time being, there would not be a greater number of elderly persons than younger persons. Also, it assumes that the funds derived from payments to the Social Security System were not lent out during the period of surplus which has not been the case in the past. Their being lent out to other government agencies could be a stimulating factor to decrease the effect of any increase in personal savings forthcoming from increased Social Security coverage.

⁴⁵Hansen, Economic Stagnation in an Unbalanced World, p. 234.

be a heavier burden of taxes to reduce the savings of the rich and less need for personal savings in the economy at large because of governmental old-age programs and because of the declining need for housing and capital equipment.⁴⁶ Indeed, this change in emphasis results in a possible decline in the ratio of capital to output since the demand for personal services can be met without the large amounts of capital investment required by construction and capital equipment that are no longer needed.⁴⁷ This, of course, may well mean that savings will not find investment outlets since the ratio of capital to output has declined. If, however, taxes are taken from the rich to provide for retired workers, this may decrease total savings,⁴⁸ but, under the present system of social security in the United States, this is not the method of finding investment outlets for a given level of savings in face of a declining ratio of capital to output. It seems possible that after the situation has balanced out there may be as many more saving for old age as there are

⁴⁶Ibid.

⁴⁷Alvin Hansen, "Progress and Declining Population," American Economic Review, Vol. 29 (March, 1939), No. 1, Part I, p. 7.

⁴⁸The consumption function is, of course, an aggregate of the consumption functions of the various income classes within the economy. The upper income class would, as a whole, tend to have lower marginal propensity to consume relative to lower income classes and particularly in relation to those of lower income classes who were retired.

dissaving in retirement. This would, at best, offset the savings of workers planning for retirement. It would not influence the amount of savings being carried on by the upper income class unless the latter were partly subsidizing the former. If such subsidization were the case, the propensity to save may decrease. If it were not the case, there may be no change, or an adverse change, if the dissaving of those retired did not equalize the saving of those planning to retire. The problem may be aggravated by a decline in the capital to output ratio which would decrease the relative need for capital and accumulations without changing the rate of capital accumulation. The decline in capital to output ratio also may be due to the change in the character of investment outlets caused by the change in the growth and structure of the population.⁴⁹

It must be remembered that, as Higgins states, if the population growth rate declines, the marginal productivity of capital will remain constant only if the amount of savings (capital accumulation) decreases.⁵⁰ The only time that an advanced industrial economy might want an increase in savings would be when an expanding population was increasing the demand for goods and services--but even then capital accumulation must not exceed the population growth if the marginal

⁴⁹Higgins, Economic Development, p. 185.

⁵⁰Ibid., p. 183.

productivity of capital is to remain unchanged, other factors held constant.

This analysis relates only to industrially advanced countries. An underdeveloped country similar to India, for example, would welcome (for purpose of economic progress and per capita income growth) a decrease in the population growth. India, however, is faced with insufficient capital to provide employment for and goods and services to its growing population. The United States, on the other hand, has apparently an adequate amount of capital funds available in various forms such as the savings of corporations, banks, and other financial institutions. Indeed, the deposits in mutual savings banks totaled over thirty-four billion dollars and the total assets of savings and loan associations totaled over sixty-two billion dollars, with cash assets of nearly two billion dollars, whereas life insurance companies held over one hundred and twelve billion dollars in assets as of October of 1959.⁵¹

Such an increase in money savings (similar to that found in the United States' economy) along with a decrease in population growth would not be unwelcome in an underdeveloped economy. Such an increase in savings may, in time, however, cause much concern in the United States.⁵² This potential

⁵¹Board of Governors, Federal Reserve Bulletin (Washington, March, 1960), pp. 292-297.

⁵²Refer to footnote 63 below and to pages 14 and 17-21.

concern may indeed materialize if population increase changes and age-group changes bring about a lower capital-output ratio. Such changes in the growth of population and the structure of the population would result in a less stimulating market for new goods and thus a lowering of the marginal productivity of capital. This, in time, could create an excess of savings relative to investment needs. The problem of savings and capital-output ratios shall be dealt with separately later on. It is mentioned at this time merely to emphasize that the population, frontier, savings and technology aspects of the Keynes-Hansen Stagnation Thesis are quite interdependent.

The Frontier

Hansen views the frontier as one of the dominant factors of economic and industrial progress. The frontier, by giving the economy new lands, markets and resources to develop, provided a great outlet for investment funds that were accumulating in the more developed areas of the United States. It might seem that, after the frontier ceased to exist, the outlet for these funds might also cease to exist. Indeed, it may be said that where Frederick Jackson Turner saw the passing of the frontier in relation to the sociological effects of the passage of this traditional means by which many in America had channeled their hopes for a better existence, Alvin Hansen sees the frontier's passage as a loss of traditional outlets for investment funds. Thus, the passage

of the frontier "safety valve"⁵³ can be said to have both sociological and economic consequences.

Hansen maintains that the frontier served as a major stimulating factor to the American economy.⁵⁴ The frontier, while lying vacant was not a stimulating factor; rather it was the attempt of the American people to develop this vast land mass and to extend our borders from the Atlantic to the Pacific that provided the investment stimulus.⁵⁵

The period from 1843 to 1873 illustrates this point. Hansen points out that this period was characterized by price increases⁵⁶ which were in large part caused by the frontier

⁵³The reader could well benefit from an investigation of Ray Allen Billington's Westward Expansion published by the MacMillan Company of New York in 1949. Specific mention of the "safety valve" along with the significance of the "safety valve" can be found on page 10 of the introduction. The reader is also recommended to look at The Frontier in American History by Frederick Jackson Turner. In this work, Turner analyzes the problems that the closing of the frontier caused in economic, social and political history. For a concise summarization, the pages from 218 to 221 of Turner's book may prove of value and interest.

⁵⁴Hansen, Fiscal Policy and Business Cycles, p. 352.

⁵⁵The term "frontier" does not refer to a specific "line" or "border" but rather to the expanse of underdeveloped land beyond an area of relatively developed land. Thus, as far as the United States is concerned, the West would fit into this definition of "frontier." For further clarification, see Benjamin Higgins, Economic Development, pp. 189-192.

⁵⁶Alvin Hansen, Business Cycles and National Income (New York: W. W. Norton and Company, 1951), p. 55.

railroad boom of those years.⁵⁷ The years of generally falling prices between 1873 and 1897 were due in part to a decline in railroad building in the frontier area.⁵⁸ Economic historians seem also to attribute much investment and, thus, much of the economic stimulation in the United States during the period from 1860 to 1873 to railroad building. However, overbuilding and overcapitalization brought about a termination of further construction which, in turn, contributed to the Panic of 1873.⁵⁹

It is not difficult to understand (if any population loss in the old section was being replenished through a higher birth rate or immigration from an "outside" area into that section) how the development of a frontier would stimulate an economic system. As more and more people moved west to escape eastern hardships, more and more investments of numerous types took place to accommodate the growing sectional population. In the east, on the other hand, the population flight westward was being offset by immigration from abroad.⁶⁰ The east was also being economically benefited by

⁵⁷Ibid., p. 61.

⁵⁸Ibid.

⁵⁹Harold Underwood Faulkner, American Economic History (New York: Harper and Brothers, 1954), p. 477. Frederick Jackson Turner, The frontier in American History, p. 276. Allen Billington, Westward Expansion. Gilbert C. Fite and Jim E. Reese, An Economic History of the United States (Boston, Mass.: Houghton-Mifflin Company, 1959).

⁶⁰Harold Underwood Faulkner, American Economic History, p. 397.

the flow of capital from abroad and the adoption of technology, both to improve existing output and to introduce new products. Immigration from abroad, the growth of capital and technology, as well as the increasing capital and consumer goods demand in the growing frontier area, combined to stimulate economic growth in the East. Thus, the increasing investment in the West was not offset by declining investment in the East.

The western movement had to be accompanied by the expansion of such facilities as housing, transportation, communication and the necessary implements for the development of land and resources. Thus, the construction of these facilities provided jobs on railroads in the area and profits for capitalistic financiers in the financial centers of the country. The presence of a developing frontier and an expanding population combined to help make American capitalism quite unique so far as economic growth is concerned. Indeed, Hansen goes so far as to state that:

This one central fact of growth and expansion dominated the whole of economic life. It minimized the risk of new ventures. If optimism had carried railroad building too far at the moment, if a city had temporarily overbuilt, the damage was short-lived. Expansion and growth soon made good the error. Businessmen could look far into the future with gigantic plants which had no relation to present and which were based upon the expectation of growth and expansion.⁶¹

⁶¹Hansen, Fiscal Policy and Business Cycles, p. 347.

Yet, it cannot be denied that, even under the favorable conditions of rapid expansion, heavy losses alongside rich gains were sustained. Yet, despite those losses, hope always ran high with respect to new ventures. Our current less rapidly expanding economy of the pre-war century was capable of riding roughshod over risk. I think we must face the fact that we live today in a peculiarly risky world, and this fact has a repressive effect. It makes the problem of adequate private investment outlets more difficult.⁶²

Thus, the loss of a frontier and a decline in the rate of population increase makes investment outlets harder to find and more risky. Moreover, the repressive effect of excess savings may also take place.

The United States is not alone in the world as a former possessor of a frontier. Great Britain had non-adjacent frontiers in Canada, India, Africa and Australia to which investment funds could flow. From these under-developed frontier areas, profits could flow back to London in much the same manner as profits flowed from our western frontier to the financial centers of the east coast of the United States. The loss of former colonies along with the development of capital accumulation in the colonies ended the monopoly given to London financiers by the Mercantilist reign of British colonialism. Thus, frontiers declined also for Great Britain.

Many argue that investment in the foreign under-developed countries will replace our former frontier as an outlet for investment funds. This is, of course, quite

⁶²Ibid., p. 348.

conceivable in theory; but there still remains the problem of what is to be done when these countries are developed sufficiently to use their own domestic capital. Foreign investment, then serves only as a temporary outlet for investment funds.

The Institutionalization of Savings

The concept of savings has been referred to on several occasions thus far. It is now necessary to examine in more detail Hansen's views on this important element in his Stagnation Thesis.

There is some controversy and misunderstanding among economists as to whether Hansen is speaking of the rise in total savings due to higher income or the rise in the average propensity to save. Higgins contends that Hansen refers to a rise in the average propensity to save.⁶³ However, this conclusion is not necessary since, even with a constant average propensity to save, the increase in the total savings due to higher income levels would lead to secular unemployment if there occurred a weakening of the basic underlying forces of economic growth.⁶⁴ If Higgins is correct in this analysis, it is possible to state Hansen's fears concerning an increase in savings in either relative or absolute terms.

⁶³Benjamin Higgins, "Concepts and Criteria of Secular Stagnation," Income, Employment and Public Policy, Essays in Honor of Alvin H. Hansen (New York: W. W. Norton and Company, 1948), p. 96.

⁶⁴Higgins, Economic Development, p. 174.

One of the main points in Hansen's treatment of increasing savings (as well as the conclusion that he was specifically dealing with a rise in the propensity to save) is the concept of institutionalized savings. There is, for example, an increasing amount of savings being carried on by five main groups in the economy: Life insurance companies, building and loan societies, savings banks, the larger corporations (undistributed profits and depreciation reserves), and the statutory savings of local authorities.⁶⁵ It may be argued that this institutionalization of savings will lead to

⁶⁵Hansen, Full Recovery or Stagnation, p. 308. Also refer to Federal Reserve Bulletin (Washington, March, 1960), pp. 296-297 and 428. Therein it will be found that the assets of mutual savings banks, savings and loan associations and life insurance companies has increased since 1941 from 48 billion to 208 billion in 1959. Referring to the Federal Reserve Bulletin of December, 1959, p. 1543 the 1941 savings figures represent a percentage of 1941 National Income of 45%, Personal Income of 49% and Disposable Income of 51%. The 1959 savings figure represents a percentage figure of National Income of 51%, of Personal Income of 57%, of Disposable Income of 65%. This is an increase over 1941 of 4%, 5%, and 11%, respectively. This may be significant in relation to the answers to two questions: namely (1) has this percentage increase been a result of an increase in the percentage saved out of incomes from 1941 to 1959 and (2) has there been a decrease in other forms of saving or the introduction of new forms of outlets for investment funds. Regardless of the answer to these questions, the main emphasis of the dissertation will be on institutional blocs to the innovation of technology. For a further discussion of this problem of savings see page 14 and pages 17-21.

Life insurance companies, building and loan societies and savings banks can be said to merely absorb the savings of the members of the economy. However, it should be remembered that these institutions have made it possible for some to save more than previously.

greater average propensities to save. The corporation saves for further financing in a subsequent time period, perhaps years in the future. Insurance premiums increase overall savings of various classes that might otherwise not save, and this must be met.⁶⁶ Hansen emphasizes this last point by stressing the climb in premium payments from four billion dollars in 1910 to over twenty-eight billion dollars in 1938.⁶⁷ This was accompanied by depreciation allowances of over five billion dollars and retained earnings of two billion dollars per annum from 1925-1929.⁶⁸ This represents an increase in the savings of corporations. Higgins points out, however, that in order for these data to be meaningful it is necessary to show that these premiums and retained earnings were an increasing percentage of national income.⁶⁹ Also, it is necessary further to examine the strength of the growth factors, since the increase in institutional savings

⁶⁶A government plan along the lines of health, life or retirement insurance of some sort might be a more economically feasible plan because of the absence of the need for profit and, also, because the government might lend any surplus that might accumulate for a time to other government agencies through the transfer of government bonds which would stimulate the economy by decreasing the effect of the increase in savings possibly created by such a program.

⁶⁷Hansen, Fiscal Policy and Business Cycles, p. 387.

⁶⁸Ibid., p. 385.

⁶⁹Higgins, "Concepts and Criteria of Secular Stagnation," p. 97f.

may not be offset by a decrease in savings in the traditional sectors of the economy. If these traditional sources of savings are not being offset by taxes or consumption, the propensity to save is, indeed, increasing.

It may well be, however, that the individuals paying the premiums may regard them as a form of savings. If this is the case, the amount of savings done through institutions similar to insurance companies may merely be a method of savings replacing older methods. Any potential increase in savings that might result would only be caused by the extension of insurance coverage to groups that did not save prior to the growth of insurance firms. Moreover, if many persons consider home payments as a form of savings, these may also merely offset former saving methods. On the other hand, it could increase savings as housing was bought by more and more persons and interest payments by them resulted in a shift of income upwards from the borrowers to the lenders.

Much empirical research needs to be done in this field. It is necessary to realize that any empirical study involving the growth of savings encounters problems of defining savings. Are insurance premiums and house payments regarded as savings by the payer? Further, is the acquisition by insurance companies of corporate securities, savings or investment, or both? This, of course, requires a study of what securities are purchased (i.e. old or newly issued

securities) and what the person or corporation does with the funds received through the sale of the securities to the insurance institution.

Although insurance is definitely a greater percentage of National Income today than in decades past, this alone does not mean that there has been a rise in the propensity to save since insurance-type saving may have merely compensated for the decline in former methods of savings.⁷⁰ However, it must now be realized that the availability of insurance to lower income groups may increase their propensity to save--if, that is, they were not saving before. Social Security fits into this questionable category. Social Security payments have increased from two hundred million dollars in 1929 to over eighteen billion in 1959.⁷¹ This, however, represents a percentage of Gross National Product of only .002 per cent and .03 per cent, respectively.⁷² This hardly seems significant, especially when the relationship of payments currently being paid in to benefits currently being paid out (or the financing of other government agencies through the process of borrowing from the Social Security funds) is considered.

⁷⁰Ibid.

⁷¹Board of Governors, Federal Reserve Bulletin (Washington, March, 1960), p. 329.

⁷²Ibid. The percentage of income figures are my own derived from the given figures on page 329 of the Federal Reserve Bulletin, March, 1960.

Economic thinking of the Classical and Neo-Classical variety assumed a rather optimistic outlook for increased savings. Increased savings result in a decrease in the interest rate and, thus, an increase in investment. Keynes' The General Theory, however, introduces a basic criticism of this position. Keynes argued that the interest rate is also a cost of holding money and risk-of-lending rate,⁷³ and thus it cannot fall below a certain level. Hansen believes further that investors prefer liquidity to such forms of investment as bonds when the bonds fall below a certain interest yield.⁷⁴ This would seem to follow from the concept of the interest rate as a cost and risk of borrowing rate. Due to the fact that the interest rate cannot, therefore, move below a certain level set by the cost and risk-of-lending rate (even if it can be assumed as a variable), it is no longer as automatic an equilibrator as the Classicalists believed it to be. If there has been an increase in savings, the interest rate will not necessarily and automatically equilibrate the level of savings and investment, and the problem of absorbing savings becomes, therefore, greater as savings become greater.

The problem of increasing relative and absolute

⁷³Hansen, Full Recovery or Stagnation, p. 23.

⁷⁴Ibid.

savings may seem to be de-emphasized by the upward drift in the consumption function between the years 1919-1936.⁷⁵

Benjamin Higgins has stressed, however, that the upward drift took place since there were sharp drops in income during the periods from 1920-1922 and 1929-1933.⁷⁶

Thus this period (1919-1935) was one in which the squeezing out of savings took place with a vengeance. The result is that the data of consumption and income--which by definition are ex post or realized positions--record the "upward drift" despite the downward drift of the long run ex ante consumption function. . . . The upward drift of the consumption function is the result of the particular depth and duration of the Great Depression, resulting partly from a rising trend in the ex ante propensity to save! This part of the Hansen thesis is thus an application to the theory of trend of a proposition now generally accepted with respect to economic fluctuations: the effort to save more, unless offset by higher investment, will result in the society's actually saving less.⁷⁷

Despite Higgins' refutation of the secular "upward drift in the consumption function," there still remains the fact that such a refutation may not be necessary. In the Hansen model savings are held to be not only greater, but also less flexible because of institutionalized savings replacing individual's decisions to save;⁷⁸ but it is unnecessary for the propensity to save itself to rise or remain constant for the thesis to be valid. It can, in fact,

⁷⁵Higgins, Economic Development, p. 175.

⁷⁶Ibid.

⁷⁷Ibid.

⁷⁸Ibid., p. 174.

fall, and the thesis still remains valid. It is necessary only for ex ante savings to rise in the face of a fall in investment due to the weakening of growth forces.⁷⁹

This mention of the possibility of a fall in investment shows once again the significance of the role played by investment. It is now necessary to furnish a discussion of technology (a point discussed in greater detail later) and offsets to diminishing returns or innovations upon which the problem of stagnation rests in a private enterprise type of economic system.

Technological Factors

Consideration of the adaptability of technology introduces another form of what may be called "savings" but which, for the sake of clarity, should more properly be called "capital-savings." Hansen considers capital-savings as a danger to economic growth in that capital-savings release capital via technological improvements and require less capital than do the methods of production used at the time of their introduction. Thus, it may be that capital-saving improvements replace capital-using improvements. This results in less expensive machinery being used at the same time that the absolute amount of real savings is increasing.⁸⁰ This type

⁷⁹Ibid.

⁸⁰That is, if the average propensity to consume remains constant while the savings absorption characteristics of investment decline (because of the shift from capital-using machinery to capital-savings machinery), there may be an increase in the amount of savings in relation to the amount which can be absorbed by the investment in capital goods.

of improvement, therefore, may help to make the equality of savings and investment more difficult than it was before the adoption of the new process or machine. This is true since investment goods are now less expensive and the demand for goods is not rising. This assumes a relatively stable population and a decline in frontiers as an outlet for investment funds. Since the demand for goods is not rising, the introduction of capital-saving improvements has the net effect of a release of capital. Thus, the needed equality between savings and investment would become more difficult to maintain than before.

Hansen believes that much of the stimulus for economic progress came from vast capital-using inventions and innovations.⁸¹ Such innovations were the railroad, the automobile, electricity and iron and steel.⁸² Hansen argues, however, that during the present century there is a tendency for merely the introduction of new improved processes and new consumer items.⁸³ These improved processes and consumer items are, of course, new ways of doing things plus the introduction of television, radio, and air conditioning.⁸⁴

⁸¹Higgins, Economic Development, p. 173.

⁸²Ibid.

⁸³Ibid.

⁸⁴Ibid.

These are not bringing forth the tremendous amount of investment in secondary products such as highways, rails, pullmans, oil and gas, structural steel, wire and copper investment to meet the needs created by the innovation and acceptance of automobiles and railroads.⁸⁵ Hansen goes so far as to say explicitly that:

Of first-rate importance is the development of new industries. There is certainly no basis for the assumption that these are a thing of the past. But there is equally no basis for the assumption that we can take for granted the rapid emergence of new industries as rich in investment opportunities as the railroad, or more recently the automobile together with all the related developments, including the construction of public roads, to which it gave rise. Nor is there any basis, either in history or in theory, for the assumption that the rise of new industries proceeds inevitably at a uniform pace. The growth of modern industry has not come in terms of millions of small increments of change giving rise to a smooth and even development.⁸⁶

Hansen further reminds us of the rather forboding fact that:

. . . when a revolutionary new industry . . . having initiated in its youth a powerful upward surge of investment activity, reaches maturity and ceases to grow, as all industries finally must, the whole economy must experience a profound stagnation, unless, indeed, new developments take its place. It is not enough that a mature industry continues its activity at a high level on a horizontal plane. The fact that new railroad mileage continued to be built at about the same rate through the seventies, eighties and nineties was not sufficient. It is the cessation of growth, maturity, and decline of great industries that the Principle of Acceleration operates with peculiar force.⁸⁷

⁸⁵Ibid.

⁸⁶Hansen, Fiscal Policy and Business Cycles, p. 362.

⁸⁷Ibid., p. 363.

Hansen then points out that it may take years for new industries of sufficient size to arise.⁸⁸ He maintains that the absence of new industries and the dearth of state and local governmental projects and financing ability has made necessary the current increase in federal expenditures for the maintenance of investment and employment.⁸⁹

The problem is not, however, solely the introduction of new innovations and their acceptance. The problem is also whether these inventions and innovations are capital-saving or capital-using. If they are capital-saving, this releases capital and brings forth unemployment. As savings in an industrial economy increase, the ratio of capital goods to income must rise.⁹⁰ Any capital-saving tendency weakens economic progress and induces a fall in income as there develops a divergence between the income level of the time period and the sum of consumption and investment--that is, investment falls short of savings.⁹¹ Furthermore, if costs and wages lag to keep real profits high, this produces a larger increase in savings than before even if output remains the same.⁹² In an economy where capital has grown relative

⁸⁸Ibid., p. 364.

⁸⁹Ibid.

⁹⁰Hansen, Full Recovery or Stagnation, p. 44.

⁹¹Higgins, Economic Development, p. 172.

⁹²Ibid.

to labor,⁹³ this capital-savings concept becomes of major significance. If, for example, the frequency of the appearance of innovations drops and a tendency for capital-savings develops, the marginal productivity of capital would fail to bring about the possible cessation of investment.⁹⁴ The problem seems to be in part, the problem of capital-savings.⁹⁵ In the nineteenth century, the industrial revolution was capital-using and very little went to consumer capital.⁹⁶ In the present century, more capital is going to consumer uses which tends to be capital saving.⁹⁷ Furthermore, the significant rise of depreciation as a source of investment funds in producers' equipment industries does nothing to solve the problem of finding suitable outlets for consumer capital.⁹⁸ Also, what might be the result if depreciation-created replacement funds were ceteris paribus, more than sufficient to replace capital goods and machines?⁹⁹ The answer can only be: A drop in the level of income. And this would be especially so if the replacement investment

⁹³Hansen, Fiscal Policy and Business Cycles, p. 355.

⁹⁴Hansen, Full Recovery or Stagnation, p. 28.

⁹⁵Ibid., pp. 308-315.

⁹⁶Ibid., p. 315.

⁹⁷Ibid., p. 308.

⁹⁸Ibid., p. 316.

⁹⁹Higgins, "Concepts and Criteria of Secular Stagnation," p. 102.

releases more capital and if consumer investment might also be capital-saving, which it tends to be. An advanced economy must, therefore, increase at an increasing rate, for investment of one time period generates income, then declines via the accelerator. This necessitates new innovations that must be even more capital-using.¹⁰⁰ Hansen seriously doubts the possibility of such a situation.¹⁰¹

The problem is not actually, however, as simple as thus far implied.¹⁰² The real problem is not merely the invention, but the adoption and installation.¹⁰³ If, for example, the invention is capital-saving, its end result may not be capital-saving, but, rather capital-using. Probably all inventions are, to some degree, of a capital-saving nature.¹⁰⁴ This, in itself, does not mean that they are capital-saving in the end analysis. The test as to whether an invention saves capital is not passed by a judgment concerning the invention per se. The test of capital-saving is passed only when the result of the installation is known. The installation may result in capital-absorption or capital-saving. If the end result of installation and

¹⁰⁰Ibid., p. 101.

¹⁰¹Ibid., p. 102.

¹⁰²Ibid., p. 101.

¹⁰³Ibid.

¹⁰⁴Ibid.

innovation is capital-using, there is more of a chance of investment being sufficient to offset savings and maintain or increase the income level. In other words, it is the question of whether the installation process absorbs or releases capital.

It should be pointed out that capital-saving inventions may be capital-absorbing in toto if there is an expectation of a windfall or monopoly profit, if there is an acceleration of depreciation which absorbs capital, or if the attractiveness of a product increases the overall propensities to consume.¹⁰⁵ If any or all of these conditions are met, a capital-saving invention may be in toto capital-absorbing. It must be remembered, however, that consumer capital has less of a secondary investment influence and may be of an overall capital-saving nature. Also, the absence of a major industry of such a stimulating nature as automobiles, steel, electricity and railroads, coupled with the cessation of population growth and territorial expansion tends to emphasize replacement technology.¹⁰⁶ Replacement investment is characterized by financing through depreciation reserves, which may be more than sufficient to maintain the replacement¹⁰⁷ unless price level increases and inadequate depreciation techniques are prevalent. This discussion of the effects of capital

¹⁰⁵Ibid., p. 102.

¹⁰⁶Hansen, Fiscal Policy and Business Cycles, p. 363.

¹⁰⁷Higgins, "Concepts and Criteria of Secular Stagnation," p. 102.

replacement points up again the need for investment that improves technique and increases per capita output.¹⁰⁸

But here a new problem arises. It involves simply the shelving of patents and other types of oligopolistic hindrances which reduce the possibility of the required type of investment materializing.¹⁰⁹ Under competition a new technique or improvement would immediately be adopted even at the cost of scrapping non-depreciated machinery.¹¹⁰ Under the market structures of monopoly or oligopoly, however, the new machine or technique may not be introduced until the old machines are depreciated or the cost-savings brought forth by the new technique are sufficient to compensate for the undepreciated value of the old machine.¹¹¹ As a result, the progress which would come as a result of competition is slowed and the outlets for new capital formation are put off. This is detrimental to the maintenance of an equilibrium between savings and investment and thus the maintenance of full employment.¹¹² Also, the presence of patent-shelving in

¹⁰⁸Hansen, Fiscal Policy and Business Cycles, p. 363.

¹⁰⁹Ibid.

¹¹⁰Ibid.

¹¹¹Ibid., p. 364.

¹¹²Ibid.

many industries blocks the introduction of any type of new technique which would make old methods obsolete and result in the introduction of new techniques.¹¹³ Thus, the institutional arrangements of oligopolies and monopolies in guarding against the losses caused by obsolescence, result in a decline in the one source of investment which remains after we have lost the potential investment outlets caused by population growth, territorial expansion, and great new industries.¹¹⁴ This major factor, about which only recently have adequate studies been made, is discussed at length later. It is one of the determinants of any increase in savings; and it also is a determinant of the advent of stagnation.

Other Considerations

Other factors may also enter to stimulate or hinder full-employment growth. As has been discussed before, price-wage policies are of importance. If costs (including wages) lag, this creates an increase in real profits and a corresponding shift in income upwards and a possible increase in the average and marginal propensities to save since the upper income classes with lower propensities to consume would be getting a larger share of the income of the economy. If,

¹¹³Ibid., p. 363.

¹¹⁴Ibid.

however, wages increase in relation to prices, real income levels are maintained and there is no shift of real income. If wages shift upwards more than prices, this could impinge upon profits to decrease the marginal efficiency of capital. This would create unemployment as income falls, just as the first possibility would create unemployment because a progressively unequal distribution of income and subsequent underconsumption. This in no way implies that price-wage relationships must remain constant. Indeed, relative upward shift in wages (or income) is both desirable and possible, but it should not exceed reason until, at least, the investment climate is adjusted to a lower profit level. Even the adjustment of investors to a lower profit level, however, is a relative thing, for even the most adventuresome will not adjust to too low a profit level in relation to wage-price relationships. The relationship, however, need not be constant but, instead, should and must remain reasonable.

Fiscal policy may also be a stimulant. Rising government expenditures may be necessary to offset decreasing investment outlets in new resources, new territorial development, surging population growth and great new industries. Fiscal policy can be deflationary, neutral, or inflationary. A deflationary fiscal policy would seem to be against the general purposes of fiscal policy except for periods of time when inflation is considered undesirable. A short-run neutral fiscal policy is probably impossible due to time lags between the

appropriation of funds for projects and their completion, unless one is willing to stop the construction of half-finished dams and highways in an attempt to balance the budget. An inflationary fiscal policy must, however, have limits. Inflation stimulates growth to a certain extent as costs lag behind price increases. Finally, an upward fluctuating price level creates the illusion of higher profits (in contrast to real profits).

If there is a momentary lag in costs and wages, however, this increase in profits may, in fact be, for a time, more real than temporary. A rapidly inflating price level, however, is impractical because of the eventual mistrust of the currency as a store of value and as a standard of deferred payments as a result of its rapid and often unpredictable depreciation in purchasing power. Thus, wage-price policies, inflationary tendencies, and fiscal policies have much also to do with stimulation, but these must change within limits if growth is to be maintained. In a time period when prices, wages, fiscal policy and inflation tend to be administered directly or indirectly, an emphasis and understanding must be placed upon the soundness of policy and its overall economic effect. If not, catastrophe and stagnation may be more the result of bad planning than capital-saving technique changes, population growth declines and the absence of great new industries and territorial frontiers.

Stagnation, despite Hansen and the thirties, is not with us yet. There has been, however, the advent of fiscal policy particularly as a result of war and defense expenditures. This has stimulated war industries and economic development along military lines and has brought about developmental projects with secondary investment effects. Also, public works such as roads and the Tennessee Valley Authority have stimulated industry and brought development to areas where development was not present prior to government spending. Thus, the economy has boomed. The question, however, need only be asked as to what would happen if government spending for defense and "related projects" were stopped either immediately or over time. What investment outlet would arise of sufficient size to maintain the private enterprise system along a level of full-employment growth? In the absence of population booms, new territories, new resources, and the advent of a possible savings increase through institutionalized savings of various forms including capital-saving inventions and monopolistic restrictions on technique change, the answer to the question of possible investment outlets in the private sector seems grim indeed. The reader may remember that it is, in fact, fiscal policy that Keynes as well as Hansen thought necessary to maintain full-employment. The presence of fiscal policy, however, does not destroy the concept of stagnation but, rather, emphasizes a need for an understanding of the forces leading

to stagnation in order that fiscal policy may be most effective in maintaining economic growth along the full-employment level of production.

CHAPTER III

THE CRITICISMS AND THEIR EVALUATION: POPULATION, THE FRONTIER, TECHNOLOGY, AND MARKET STRUCTURE

Introduction

The Stagnation Thesis has had no lack of critics. As may be expected, many persons agree with Hansen while many others attack his general analysis. The purpose of this and the following chapter is to review and evaluate some of the more important critiques of his theory of stagnation. A summary of the critiques, however, should not necessarily be expected to prove or disprove the Stagnation Thesis itself. What will prove or disprove any thesis on any subject is, in the long run, not the depth and genius of the writers but the realities of history itself unless, of course, appropriate warnings are obeyed. It must be realized that a response to the warning signals may, if heeded, bring about other than the predicted end. This, however, does not disprove the thesis, but rather shows its usefulness as a warning of what might have been. A review and analysis of criticisms should, however, provide a deeper understanding (if not appreciation) of the thesis itself. It is the purpose of this and the

subsequent chapter, then, to see what material there is to support or undermine the main columns of the Stagnation edifice. The present chapter is divided into the following sections: population, frontier, technology, and market structure. Savings are considered in Chapter IV.

Population

The rate of change in population is one of the primary parts of the Stagnation Thesis. W. B. Reddaway makes it one of his primary points in the general support of the Thesis.¹ Reddaway is concerned with the effect of the growth of population on the growth of the labor force of the economy.² Specifically, the reduction in the rate of population growth brings about a reduction in the number of new entrants into the labor market which causes a twofold disturbance in the functioning of the economy.³ The economy, for example, must not only adjust to shifts in demand from one industry to another, but also to relative and absolute declines in population.⁴ The inter-industry shift is partly due to the change in the age structure, since in an economy dominated by

¹W. B. Reddaway, The Economics of a Declining Population (London: George Allen and Unwin, Ltd., 1939).

²Ibid., p. 55.

³Ibid.

⁴Ibid., p. 60.

elderly persons the structure of demand differs from that in an economy dominated by younger persons.⁵

Reddaway argues that an inter-industry shift in demand results in a shift of demand to luxury goods which, of course, is related to the changing age structure.⁶ Even after the shift of luxury goods has been accomplished, the problem confronting the economy is not solved. Consumption now may very well be less constant due to the fact that the demand for luxury goods is based on more whimsical and, thus, less constant factors than the purchases of non-luxury goods.⁷ Therefore, consumption could become a more volatile variable which might have grave repercussions on the continuation of economic progress and confidence.

The change in the age-structure also effects one of the assumptions underlying the Classical framework. Labor mobility is hindered due to the fact that the predominant age group is in the later years of life. This simply means that it is more difficult for the worker to change jobs. The more elderly worker, for example, cannot learn new skills as rapidly and, thus, the transmission of new skills is delayed.⁸ Also, the elderly person is more likely to have family and

⁵Reddaway, The Economics of a Declining Population, p. 61.

⁶Ibid.

⁷Ibid.

⁸Ibid.

property ties in the local community and does not desire to move. Accompanying these blocs to labor mobility, there is the problem of union co-operation.⁹

Reddaway maintains that there is a way to avoid the problem of a relatively or absolutely declining population. The solution is to increase the level of real income of the consumers.¹⁰ This then would offset the adverse effect of the population decline on the amount of capital outlay. Such a solution assumes, however, that there is not a saturation level of consumer wants. Still, there may, in fact, be an upper level of consumer demands beyond which there would be little if any increase despite a further increase in real income. This would seem particularly true if psychological and economic motivations for increasing consumption were weakened due to the absence of social class status differentiations and poverty. To say that there has been no upper limit to consumer demand in the past does not necessarily say anything about the future.

Reddaway's analysis yields grim implications as regards the change in the age structure. He does, however, leave the door open for some ray of hope. The increase in income, for example, along with changes in tastes and techniques¹¹ and a lower interest rate may combine to create .

⁹Reddaway, The Economics of a Declining Population, p. 66.

¹⁰Ibid., p. 94.

¹¹Ibid., p. 97f.

a need for less labor relative to capital.¹² Increases in the level of real income increases consumption (assuming the insatiability of consumer wants) and the change in tastes shifts demand which creates investment opportunities. As will be seen later, however, this raises questions about the marginal productivity of capital.

As mentioned above, the presence of a lower rate of interest may offset the effects of a decline in the growth of population. This is due to the fact that a lower rate of interest may both stimulate housing and make possible the adoption of capital-goods in place of the scarce labor factor. Reddaway maintains that since the annual percentage increase in new housing has always been small in relation to total housing, a lower interest rate may have a rather large effect upon total construction.¹³ A lower interest rate may thus speed up and continue the replacement of old housing for new housing as the heating, cooling and functional improvements of homes continue.¹⁴ This may offset the expected decline in housing starts due to the decline in the rate of population growth. Hansen, however, reminds us that smaller families require smaller houses.¹⁵ This, of course, adds to

¹²Ibid., p. 101.

¹³Ibid., p. 100.

¹⁴Ibid.

¹⁵Alvin Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," The Review of Economics and Statistics, Vol. 28 (August, 1946), p. 14.

the economic effect of a declining rate of population growth demanding less new housing and, thus, worsens the situation in terms of total returns to the construction industry. Reddaway however concludes that increases in real incomes and a decrease in the interest rate may offset relative or absolute population declines.

The emphasis on higher real consumption raises the question of the effectiveness of advertising.¹⁶ The question must then be asked as to whether or not families with less children consume more or less than families with more children. Reddaway maintains that the presence of smaller families does not mean greater expenditures per family. Thus the amount of capital outlay may be adversely affected.¹⁷ The answer to Reddaway lies in catering to increasing consumption standards,¹⁸ but he maintains that demand derived from higher consumption standards may be riskier than demand derived from an increasing population.¹⁹ If, indeed, there is an upper limit to consumption, there may not be an effective way of increasing consumption through mere increases in real income.

¹⁶Reddaway, The Economics of a Declining Population, p. 107.

¹⁷Ibid., p. 106.

¹⁸Ibid., p. 107.

¹⁹Ibid.

Reddaway is not alone in his analysis of the effects of a drop in population. D. Hamberg, for example, points out that if there were a drop in the rate of population growth along with an increase in the amount of capital, there would develop the problem of maintaining the marginal productivity of capital.²⁰ If the change in the labor force was offsetting the rise of productivity which was smaller than the growth of capital and output, there would be a decline in the marginal productivity of capital.²¹ Unless capital growth declined, there would develop both an upward wage pressure and excess capacity which, when combined, would worsen the decline in the marginal productivity of capital.²²

George Terborgh, the writer who most completely and violently attacked the Keynes-Hansen Stagnation Thesis, also includes an analysis of population change in his The Bogey of Economic Maturity. Terborgh presents a series of charts correlating the growth of real income or industrial production to the growth of population.²³ From these charts, he concludes that there seems to be no correlation between the growth of population and economic growth in general.²⁴ At first glance

²⁰D. Hamberg, Economic Growth and Instability (New York: W. W. Norton and Company, 1956), p. 136.

²¹Ibid.

²²Ibid.

²³George Terborgh, The Bogey of Economic Maturity (Chicago: Machine and Allied Products Institute, 1945), p. 38f.

²⁴Ibid., p. 40.

Terborgh's analysis seems impressive. However, there appears to be some doubt as to the validity of his analysis and conclusion. His data indiscriminately combine countries operating under different political and economic systems.²⁵ For example, countries in the "underdeveloped" socio-economic classification are presented in the same charts as countries in the "industrial" or "developed" socio-economic classification. Such a procedure, of course, includes the tremendous rise in per capita income of countries in the early stages of growth along with the per capita income changes of the type of economic system the analysis is concerned with. A more accurate correlation may be made if the countries were divided into their various classifications and then examined as regards economic growth relative to population growth. It seems, for example, that Ethiopia may not have an advance in real income or industrial production as a result of population growth as easily as a more "developed" country due to the presence of socio-economic institutions in the more "advanced" country. It must be remembered, however, that much depends upon the definition of "developed" countries which brings out one of the basic problems of statistical measurement.

Terborgh, however, does not rely solely on the above analysis in his conclusions concerning population and economic

²⁵Ibid., p. 229.

growth. He further contends that there is no correlation between population and the growth of per capita production.²⁶ To prove this contention, he presents bar graphs that show such relationships in various countries.²⁷ Time lags, however, are not allowed for in such graphs. Also, it seems that per capita production tests are not valid because this is not what we really want to measure. Since children will not produce much until their late teens or early twenties, there is still the possibility of a growth in total production in response to greater markets without a corresponding growth in per capita output. It may well be that even though total production has increased, a rise in per capita productivity and the standard of living may not appear until after the population increase has begun to level off. Thus, a time lag between cause and long-run effect may be an untested part of the Terborgh analysis.

Other factors may also be important. Any conclusion, for example, about the rise in population and the decline in German per capita production between 1920-1930 must take into account the Treaty of Versailles just as the 1930-1940 rise in German per capita productivity must take into account the ascendancy of Adolf Hitler.²⁸ Also, in analyzing England, the bar graph²⁹ does not mention England's adjustment to a

²⁶Terborgh, The Bogey of Economic Maturity, p. 43.

²⁷Ibid., p. 42.

²⁸Ibid.

²⁹Ibid.

reversal of her former status as an investment center for world funds. More simply stated, the graphs for this time period cannot show us the varying circumstances within these countries due to the extent of the international chaos of the period and are, thus, rather meaningless in showing what might have happened if the times had been more "normal."

Terborgh's statistical references are not adequate to disprove the stimulating effect of a high rate of population growth upon the economy of an "advanced" nation. The decline in the rate of population growth thus may result in declining consumption rates of growth and, thus, investment opportunities. Furthermore, an emphasis upon real income growth to offset the decline in population growth might make consumption more volatile. Also, there may well be an upper limit to the amount of consumption one is willing to do or can be induced to do. Thus, even with a policy of increasing the growth of real income to offset the decline in population growth there may still remain an eventual problem of stagnation.

The Frontier

The absence of the frontier also plays an important role in the Keynes-Hansen concept of stagnation. Hansen believes that with the passing of the frontier one of the traditional outlets for capital in the United States economy

disappeared. George Terborgh, on the other hand, argues that the West was never of great significance. He maintains that the frontier passed only fifty years ago (the date of publication of his book was 1945) and that the economy has not felt a lapse of economic activity yet.³⁰ Terborgh also suggests that we have not invested abroad to any great and prolonged extent since the passing of the frontier,³¹ to offset any fall in domestic investment due to the passing of the frontier. Hansen, however, points out that 1890 was merely the textbook passing of the frontier and that the actual economic development of the frontier lasted for another generation.³²

Terborgh develops his attack upon Hansen further, however, by arguing that the West invested less in development and facilities than did the East. He uses as examples the dominance of the amount of investment in railroads and roads in the West and the investments in housing and consumers capital equipment in the East.³³ The difference is, of course, explainable in terms of the varying stages of socio-economic development of the two areas. Also, price level differences between the West and the East in respect to the cost of

³⁰Terborgh, The Bogey of Economic Maturity, p. 65.

³¹Ibid., p. 66.

³²Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 15.

³³Terborgh, The Bogey of Economic Maturity, p. 68.

housing construction³⁴ must enter into the analysis.

Terborgh maintains that the amount of capital formation per capita was lower in the West than in the East.³⁵ However, the major point is not regional per capita capital formation so much as overall investment outlets. It is not important whether capital formation per capita was greater in the East than in the West. What is important is the effect that the cessation of the economic frontier (if it has completely disappeared) has had or will have upon aggregate investment outlets.

It should be pointed out that Terborgh does recognize the "after-glow" effect--that is, he realizes that the economic frontier and the geographic frontier may not be synonymous terms. The "after-glow" effect may show a period of higher accumulation and investment in the West than in the East after the eighteen-nineties.³⁶ He tests this hypothesis on the rate of capital accumulation by a

³⁴In the West, for example, housing was often constructed from the materials at hand--locally. The cost of such material was often free since the builder merely had to go get his own building material. Also, labor was very inexpensive since quite often the neighbors gave their time to construct the home or out-buildings for the newcomers. If neighbors were not to be had, personal labor had to be substituted which cost, of course, nothing. Thus, building costs were low in the West.

³⁵Terborgh, The Bogey of Economic Maturity, p. 69.

³⁶Ibid., p. 72.

"proximity-to-frontier" mechanism, which tests the rate of growth in areas within a certain mileage distance from the frontier from 1890 to 1922.³⁷ Since Terborgh provides no definition of "frontier states" the comparison of states surrounding the "frontier states" to the more distant eastern states is indeed dubious and overlooks intermediate stages of development. Furthermore, the comparison of the states on a basis of twenty-four to twenty-four,³⁸ suffers from the same statistical weakness as do his previous charts on population, income and productivity--that is, the inclusion in each category of areas of differing socio-economic stages of development.

Moreover, it would seem that one reason for the East having a higher per capita capital formation is because of its earlier start in the financial and industrial sectors. This historical advantage would seem to drain capital and consumer dollars from the West to the East. And, indeed, Hansen attacks Terborgh on this ground. Hansen believes that the West contributed to capital formation in the East and that the West may very well have been at a disadvantage relative to the East with respect to capital formation, primarily because of the East's financial and industrial dominance and the resulting money flow to the coastal

³⁷Ibid., p. 73.

³⁸Ibid., p. 38f.

financial and industrial centers.³⁹ The industrial and financial concentration in the environs of New York certainly would seem to drain funds from the West and thus tend to increase the amount of per capita capital accumulation in the East relative to that in the West. David McCord Wright also discusses this possibility, and states that in his study of the "after-glow" Terborgh forgot that Ohio may have been at a historical disadvantage in relation to New York.⁴⁰ This would explain, then, the absence of a significant increase in capital formation in Ohio after the frontier era had passed.

Thus far the possible passing of the frontier era, and the arguments concerning per capita investment and capital accumulation rates between the East and West have been discussed. After all the controversy about per capita investment between the East and the West is over, however, it appears that the East versus West dispute is not the real issue. The real issue is whether or not the passing of the economic frontier has had a significant effect upon the total outlet for investment funds. In other words, has the passing of the frontier in economic terms brought about a decrease in total investment opportunities? This question was not

³⁹Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 15.

⁴⁰David McCord Wright, "The Great Guessing Game: Terborgh versus Hansen," Review of Economics and Statistics, Vol. 28 (February, 1946), p. 19.

really touched upon by Terborgh and, indeed, the amount of international confusion, national recovery, defense-spending and defense-oriented population shifts have probably obscured the evidence so much that a satisfactory empirical answer will never be formulated.

In order to resolve the dispute it is necessary to find how much capital flowed from East to West during and after the period of the frontier, as well as the capital formation in the East. If, after the passage of the frontier, the flow of eastern funds to the West decreased significantly and eastern capital formation did not rise sufficiently to offset the decline, then the Hansen thesis may tentatively be judged correct. It would seem that due to the industrial and financial dominance of the East, the amount of per capita capital accumulation is still higher in the East. Therefore, the question can be asked: Are these funds finding as large a relative outlet in the West as they did before the passage of the frontier? However, there still may be some doubt whether the frontier has passed away completely or is merely starting into a phase of self-development of the industrial-urban centers of concentration. If the economic frontier has not yet passed, future generations may be able to test the validity of Hansen's concept of the passage of the frontier bringing about a decline in investment outlets.

Technology

The frontier and population factors are not all that Alvin Hansen believes to be sending the economy of the United States into a state of maturity. He also considers technological decline as one of the factors contributing to stagnation. Hansen, as we have seen, believes that the rate of technological advancement has slowed down. This is due to the decrease in the rate of technological advance and to changes in the market structure. We shall, however, deal with these two factors separately since changes in the market structure involve other considerations which go beyond the scope of technology. In a study of the critiques of Hansen's concept of the slowing down of technological advance, one must return again to Terborgh.

In attacking the technological aspects of the Keynes-Hansen Stagnation Thesis, Terborgh argues that there is no apparent let-up in the flow of technology. He attempts to illustrate this point by using the automobile industry as an example. Terborgh contends that in the automobile industry, there has been a marked indication of a continued flow of new innovations⁴¹ and that these innovations have counteracted the "tired" technological impulses of the past.⁴² Terborgh also points out that throughout recent economic history, at

⁴¹Terborgh, The Bogey of Economic Maturity, p. 85.

⁴²Ibid., pp. 23-26.

least, it has been old investment and not new investment that has gotten the largest share of the volume of investment.⁴³

Terborgh, perhaps, could have picked a happier example than the automobile industry. The industry, it must be remembered, competes by style changes and ever-increasing gadgetry. Thus, the flow of technology is related to the preservation of style and gadget competition. This artificial type of technology can only be maintained as long as the public is content to tolerate the wasteful allocation of resources and the expense involved in buying relatively functionless gadgets. It may well be that the introduction of small, economical foreign and domestic automobiles will tend to limit this form of technological "progress" and, thus, end the continued flow of technology in the automobile industry.

It was mentioned above that Terborgh believes (even given a continued flow of technology) that the largest amounts of investment funds in the recent past have gone to old investment instead of to new investment.⁴⁴ (Alvin Hansen, as a matter of fact, accepts Terborgh's contention that only fifteen-percent of total investment has been in new industries or technology of the nature of "innovations.")⁴⁵ This,

⁴³Ibid. See below for a further discussion of this point.

⁴⁴Ibid.

⁴⁵Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 15.

Terborgh implies, would tend to reduce the importance of a continued flow of technology or innovations. It follows, he believes, that since the investment in new technology has been such a low percentage figure, it has not been of the great importance that such economists as Schumpeter and Hansen contend.

After accepting Terborgh's figures of fifteen percent of investment going to the development of innovations of various forms, Hansen points out that his critic forgets about the leverage effect of the multiplier and the accelerator.⁴⁶ The multiplier and the accelerator combine to increase the importance of any amount of new investment by spreading its effect over the entire economic structure. Terborgh, on the other hand, fails to take this into account. The fifteen percent figure may be a small percentage figure, but it generates much more investment in other sectors of the economy through increasing incomes and consumption and brings about a general attitude of optimism on the part of both lenders and borrowers in both new and old industries.

Market Structure

Technology and the market structure are not separate considerations. The concept of the decreasing flow of technology as an inevitable process of running out of new innovations and the possibility that the structure of the

⁴⁶Ibid.

market itself may or may not place institutional blocs in the way of technological change are interrelated. The technological dimensions of the stagnation thesis depend not only upon whether technology inevitably continues, but also on whether its adoption is possible under the prevailing market situation.

An analysis of the market structure as a contributing factor involves a study both of the restrictions to technology and of price-wage rigidities. Although these are interrelated factors, many economists emphasize one or the other. Reddaway, for example, argues that imperfections of the market structure can prevent the adoption of technology. He maintains that, in an imperfect market structure it might be possible for old firms to prevent the introduction of new techniques by refusing to adopt them. Such firms that control the industry could prevent new firms from entering the industrial market by placing financial and other institutional barriers before the potential entrants. However, recent studies indicate that the most significant barrier to the entrance of new firms is product differentiation.⁴⁷ Also, the dominant firms could prevent the introduction of the technique (after they had prevented the entry of other firms) because of the fact that they do not want to destroy present capital values and need not fear the adoption of

⁴⁷See J. S. Bain, Barriers to New Competition (Cambridge: Harvard University Press, 1956); also see his Industrial Organization (New York: John Wiley and Sons, 1959), Chapter 5.

the technique by the other "competitors" who are also interested in maintaining present capital values.⁴⁸ Thus, capital-outlay may be prevented due to institutional factors prevalent in the market structure of the economy. Imperfections in the market structure, therefore, may prevent technological change. It may be remembered that Reddaway is also concerned with the risks of planning for higher consumption levels in an economy with a relatively static population.

Other economists have been concerned with the problems posed by the market structure. Hamberg, for example, also believes the market structure to be an important factor in the functioning of the economy. He maintains that each firm's receipts are in the aggregate a function of the expenditures of other firms.⁴⁹ This implies that a firm cannot increase its receipts unless the expenditures of other firms increase. The increase in the expenditures of other firms depends, of course, upon psychological and institutional factors prevailing in the economy. Hamberg points out, for example, that new and/or small firms may not be able to get the capital necessary for expansion or entrance into the market.⁵⁰ This places the impetus to further investment in the hands of the larger and established firms.

⁴⁸Ibid.

⁴⁹Hamberg, op. cit., p. 106.

⁵⁰Ibid., p. 113.

The existing owners of the larger firms may be unwilling to dilute their control through the sale of securities that would enable them to get the funds necessary for expansion.⁵¹ On the other hand, caution may prevent the existing owners from dipping into the liquid assets of the larger and established firms for investment purposes.⁵² Thus, expansion may be prevented by the unwillingness of ownership either to dilute its control or to use the liquid assets of the firm. Economic growth, therefore, is prevented or, at least, limited.

Involved with the above is, of course, the presence of patents and patent-shelving. These patents may actually prevent competitors from entering the market and inhibit the introduction of technological changes in the productive process.⁵³ The company with the patent may desire not to use the patent productively because by innovating the invention it may destroy its present capital value.⁵⁴ Where inventions do become innovations, it is often, Hamberg believes, in the field of non-competing products or after the full exploitation of old methods has been accomplished.⁵⁵ After

⁵¹Ibid., p. 114.

⁵²Ibid.

⁵³Ibid., p. 122.

⁵⁴Ibid., p. 123.

⁵⁵Ibid.

this form of innovating has taken place, there usually follows a "pause-for-breath" period which places investment back at its previous level.⁵⁶

Hamberg also deals with four other problems that may tend to inhibit the introduction of technology. First of all, there may be a change in the attitudes towards technology and technological change.⁵⁷ Great Britain and France, for example, have both gone through significant periods where technological change was not the modus vivendi of economic thinking.⁵⁸ Second, the presence or growth of various forms of trusts might inhibit investment activity through the creation of the fear of excess capacity and the loss of investment capital.⁵⁹ Investment, therefore, would at least be postponed. Third, the advent of an imperfect market structure brings about large-scale industrial complexes or trust devices which introduce the rise of business bureaucracy.⁶⁰ Business bureaucracy is just as desirous of status quo and job security as are other bureaucratic institutions and, as a result, may cause technological

⁵⁶Ibid., p. 124.

⁵⁷Ibid., p. 127.

⁵⁸Ibid.

⁵⁹Ibid.

⁶⁰Ibid., p. 128.

innovation to be postponed or "watered-down" to a considerable extent. Fourth, any tendency towards absentee ownership could, of course, deprive the area of necessary investment funds.⁶¹

Although Hamberg mentions only briefly the problem of excess capacity in relation to the growth of trusts, J. Steindl, in his Maturity and Stagnation in American Capitalism, makes excess capacity at full-employment the central theme of his analysis. Excess capacity, Steindl maintains, is a phenomenon of imperfect competition and is often present in oligopolistic industries.⁶² In such an industry, the marginal cost for each unit of labor increases as full capacity is reached.⁶³ The excess, however, is a manifestation of fluctuations of a boom-type nature.⁶⁴ Also, the growth of a market is a function of time and, thus, many oligopolies build excess capacity to provide for future increases in the demand for their product.⁶⁵ Thus, some excess capacity is planned. Other excess capacity, however, can be due to unplanned shifts in the demand for the product.⁶⁶

⁶¹Ibid., p. 130.

⁶²J. Steindl, Maturity and Stagnation in American Capitalism (London: Oxford University Institute of Statistics, 1952), p. 5.

⁶³Ibid., p. 7.

⁶⁴Ibid., p. 9.

⁶⁵Ibid., p. 10.

⁶⁶Ibid., p. 11.

The concept of excess capacity throws a peculiar light on the concept of investment. Investment becomes dependent upon endogenous factors instead of exogenous factors.⁶⁷ Any change in investment may be determined by a change in internal accumulation.⁶⁸ If profit margins are inelastic upwards, the restoration of desired excess capacity increases the profit margin, but if the profit margin is inelastic downwards, a reduction in utilization will bring less investment.⁶⁹ If the latter case exists, a given amount of utilization can be restored only by price policy and not a decrease in investment because the latter would lead to greater excess capacity.⁷⁰ In essence, a price cut may be easier than a change in investment with some excess capacity so, as a result, investment may be determined as a function of utilization.⁷¹

A brief analysis of a firm with excess capacity and which is in a dominant position in its industry may provide an example of investment as a function of utilization. A decline in growth reduces the profit margin by cutting

⁶⁷Ibid., p. 134.

⁶⁸Ibid.

⁶⁹Ibid., p. 135.

⁷⁰Ibid.

⁷¹Ibid., p. 127.

utilization of sales per unit of margin.⁷² The consequence implied by this is a slower rate of investment due to the fact that excess capacity will be kept.⁷³ To adjust, the firm will lower prices instead of investment. Investment, thus, becomes a function of utilization⁷⁴ which is correlated with profit.⁷⁵

What reasons are there to believe that undesired excess capacity discourages investment? In the first place this appears to be a natural implication of the idea of planned excess capacity. If entrepreneurs regard a certain amount of excess capacity as desirable, this naturally implies that a greater or smaller excess capacity will not find their approval. It implies, in other words, that they are not indifferent about the degree of utilisation actually realised. Their response, if they desire an adjustment, can be only of two kinds: they can either try to influence the market, e.g. by a price cut, or else they can slow up or accelerate the pace of investment. The first type of response, we know, is often not practicable. The second is always possible (though not necessarily very adequate in the short run). We should expect it to occur at least in those cases where the first type of response must be absent, and quite likely we may expect it generally.⁷⁶

Steindl points out that his theory of excess capacity has certain similarities to the acceleration principle except that the acceleration principle assumes full capacity and that capacity expands "pro rata with demand" whereas his own

⁷²Steindl, Maturity and Stagnation in American Capitalism, p. 122.

⁷³Ibid., p. 127.

⁷⁴Ibid.

⁷⁵Ibid., p. 129.

⁷⁶Ibid., p. 127.

theory "attributes only a partial influence to demand."⁷⁷

Demand is not the sole factor, but will be only a modifying factor "acting via utilization."⁷⁸

Steindl emphasizes the importance of utilization and profit margins. They are, in mature economies, interrelated and have an adverse effect upon investment.

. . . the squeezing of profit margins happens through the competition of entrepreneurs which is essentially a process of squeezing out the weakest competitors. It is obvious that this mechanism worked relatively well in a system where there are plenty of small producers, and plenty of competitors anyway. Thus, no difficulties of this type should appear in early capitalism, and even in fully developed capitalism for quite a time. In a mature capitalism, however, where large-scale production becomes the only possible form in many industries, and where, moreover, the number of competitors is reduced to a very few in a great number of cases, the profit margin becomes inelastic in a downward direction. Thus, a new type of cumulative process becomes possible: any reduction of the rate of capital growth will reduce the degree of utilisation, and this will further reduce the rate of growth of capital. Thus, a given reduction in capital growth will lead to a further decrease in the rate of growth. This cumulative process may again tend to a definite limit, so that the rate of growth will settle down at a lower level, but it is not certain whether it might not continue, theoretically, without limit.

The inelasticity of gross profit margins in an economy dominated by monopoly will thus reinforce any given fall in the rate of growth of capital. But, as pointed out earlier on, the effects of monopoly will not only be to make profit more rigid, it will be to raise them and moreover, entrepreneurs will have a greater fear of excess capacity under a regime of monopoly. For both these reasons there will be a tendency for the rate of growth to fall. Utilisation will be lower than it was before monopoly became dominant, and, moreover, the investment attributable to the influence of any given level of utilisation will be lower owing to the fear of excess capacity.

⁷⁷Ibid.

⁷⁸Ibid.

The difference in the level of investment activity in different stages of the secular development can thus be explained in terms of an endogenous theory, taking account of well-known structural changes such as the development of monopoly. From the above discussion it appears likely that utilisation operates as an adverse influence on investment in the period of economic maturity in contrast to earlier periods, when it did not do so, and quite probably was high enough even to contribute a positive influence on the level of investment.⁷⁹

Thus, we have a theory tying price rigidity, monopoly influences, the accelerator, excess capacity and the degree of utilization into a thesis involving a possible secular decline in investment and growth.

Thus far the discussion has involved the critiques of individual persons. It seems, however, that the next critics can be grouped together since they represent a more or less common viewpoint. These critics are the members of the so-called Chicago School--namely, Frank Knight, David McCord Wright and Henry C. Simons. These economists emphasize the importance of wage-price flexibility. Knight believes that wage-price flexibilities are vastly important in bringing forth investment and investment opportunities.⁸⁰ He believes in an infinitely elastic demand for capital, but realizes that circumstances may hinder the normal process of growth.⁸¹

⁷⁹Ibid., p. 137.

⁸⁰Ernst W. Swanson and Emerson P. Schmidt, Economic Stagnation or Progress (New York: McGraw-Hill Book Company, Inc., 1946), p. 26.

⁸¹Ibid., p. 27.

The main impediment is price-wage rigidity caused by monopoly influences in the market place.⁸² Other possible hindrances could be high interest rates, taxes or tariffs.⁸³ Mainly, however, the emphasis is upon price-wage rigidity as a determinant of stagnation.⁸⁴ As a result of their beliefs, these economists stress a public policy which emphasizes the maintenance of or the return to competition instead of the lessening of savings.⁸⁵

Since monopoly is the main problem that the members of the Chicago School confront, they point out that there seems to be a pricing pattern that is higher than the general level and price rises that are against the general trend.⁸⁶ This is also complicated by the presence of labor-union monopoly which actually results in benefits to only a few workers.⁸⁷ In all, they seem to believe that stagnation is a cost-push concept where unions and enterprise monopolies result in a three-fold process of increasing wages, increasing prices and curtailing output in which cost-price flexibility is lost.⁸⁸ Wherever technology is introduced, it is

⁸²Ibid.

⁸³Ibid., p. 28.

⁸⁴Ibid., p. 29.

⁸⁵Ibid., p. 27.

⁸⁶Ibid., p. 29.

⁸⁷Ibid., p. 30.

⁸⁸Ibid., p. 31.

accompanied by no subsequent decrease in prices or increase in output which does nothing to help the overall picture of economic growth.⁸⁹ Thus, the absence of cost-price flexibility is a factor leading to stagnation but, unfortunately, these men fail to tell us how to get away from what seems to be the inevitable concentration of large-scale, basic industries, such as for example, steel.

One of the members of the Chicago School, Henry C. Simons, maintained in his A Positive Program for Laissez Faire that monopoly is the great enemy to fear. He goes so far as to state explicitly that:

It seems clear, at all events, that there is an intimate connection between freedom of enterprise and freedom of discussion, and that the political liberty can survive only within an effectively competitive economic system. Thus, the great enemy of democracy is monopoly, in all its forms: gigantic corporations, trade associations and other agencies for price control, trade unions--or, in general, organization and concentration of power within functional classes. Effectively organized functional groups possess tremendous power for exploiting the community at large and even for sabotaging the system. The existence of competition within such groups, on the other hand, serves to protect the community as a whole and to give an essential flexibility to the economy. The disappearance of competition would almost assure the wrecking of the system in the economic struggle of organized minorities; on the political side, it would present a hopeless dilemma.⁹⁰

The implication of the above is clearly the "Elimination

⁸⁹Ibid.

⁹⁰Henry C. Simons, A Positive Program for Laissez Faire, Public Policy Pamphlet, No. 15 (Chicago: University of Chicago Press, 1934), p. 4.

of private monopoly in all its forms. . . ."91 This does not, however, involve policy towards the public utilities which Simons believes to have been a failure.⁹² In relation to natural monopolies, he states that:

. . . the state should face the necessity of actually taking over, owning, and managing directly, both the railroads and the utilities, and all other industries in which it is impossible to maintain effectively competitive conditions.⁹³

Furthermore,

Even if the much-advertised economies of gigantic financial combinations were real [the reader should remember here the analysis of Steindl], sound policy would wisely sacrifice these economies to preservation of more economic freedom and equality.⁹⁴

Laissez faire, to repeat, implies a division of tasks between competitive and political controls; and the failure of the system, if it has failed, is properly to be regarded as a result of failure of the state. . . .⁹⁵

Another member of the Chicago School, David McCord Wright, maintains that consumption is parallel to production and that there is a stability in the relationship between the capital stock and the subsequent output of goods.⁹⁶ Thus Wright stipulates that the economy is never saturated and

⁹¹Ibid., p. 11.

⁹²Ibid.

⁹³Ibid., p. 11f.

⁹⁴Ibid., p. 13.

⁹⁵Ibid., p. 15.

⁹⁶David McCord Wright, A Key to Modern Economics (New York: MacMillan and Company, 1954), p. 483.

consumer frontiers can be opened and economic expansion continued.⁹⁷ Wright is quick to point out, however, that this process will take place only if there are no interventions. Essential to such a growth process as postulated by Wright is the concept of competition where new inventions are innovated and where consumer wants are satisfied by new goods coming forth onto the market. In a system of imperfect competition, this would not be the case if entrepreneurs decided to protect the position of corporate ownership; to protect the value of present facilities; to postpone or limit innovation in face of depreciation losses; to allow the fear of dipping into liquid assets to prevent them from investing; or to allow the established business bureaucracy to maintain the status quo. Even if we grant him his assumption that consumption parallels production and the constancy of the ratio between capital stock and output (which we cannot), we may criticize Wright on the grounds that he assumes virtually pure competition and an uninhibited movement of capital, which is no longer present. The realities of the present market structure seem to make the analysis of Wright rather unrealistic, but does point to the possibility that imperfect competition does, in fact, enhance the danger of stagnation. Wright explicitly believes, for

⁹⁷Ibid.

example, that monopoly reduces innovation and that, as a result, intensive growth factors cannot be relied upon.⁹⁸

Wright also, however, argues that a re-distribution of income may also inhibit innovation.⁹⁹ He does admit, however, that Hansen's plan for the increasing of consumption and the decreasing of profits through a process of eliminating instability has its merits and possibilities.¹⁰⁰ Such a plan need not involve a drastic re-distribution of income and, thus, would not inhibit innovation. It seems, however, that monopoly influences would inhibit innovation much more than a more equitable distribution of income and, thus, higher propensities to consume would ever do. It seems, at least, that all the writers that have been discussed are in agreement that an imperfect market structure does present a significant hindrance to continued economic growth along the level of full-employment.

⁹⁸David McCord Wright, "The Great Guessing Game: Terborgh versus Hansen," Review of Economics and Statistics, Vol. 28 (February, 1946), p. 21.

⁹⁹Ibid.

¹⁰⁰Ibid., p. 20.

CHAPTER IV

THE CRITICISMS AND THEIR EVALUATION: SAVINGS, CAPITAL SAVINGS, AND DEPRECIATION RESERVES

The Keynes-Hansen Stagnation Thesis also considers an increase in savings as a cause of stagnation. Savings can increase from three general sources. First, consumers and corporations can save relatively or absolutely more. Second, the trend of technology can release capital through capital-saving innovations. Finally, the economy can witness an increase in the amount of reserves set aside for depreciation. Each of these will be dealt with separately.

Consumer and corporate savings can take the form of personal savings and retained earnings (undistributed profits). Hamberg postulates that the reduction in the rate of population growth may reduce personal savings.¹ At the same time, the reduced need for corporate expansion reserves could decrease the amount of corporate savings.² Both of these would help to mitigate the possibility of stagnation insofar

¹D. Hamberg, Economic Growth and Instability (New York: W. W. Norton and Company, 1956), p. 179.

²Ibid.

as it results from savings.

Hamberg, however, is not thoroughly optimistic. He reminds us that sixty percent of savings are carried on by corporations.³ (It should be noted that this figure of sixty percent includes depreciation reserves.) While Hamberg postulates that corporate investment may use most, if not all of these corporate savings, there still is the need to absorb the personal savings of the economy.⁴ All in all, he is rather inconclusive on this point.

Terborgh, on the other hand, is more definite. He attacks Hansen on the grounds that as the population rate of growth declines, the rate of savings also declines as more and more savings are offset by dissaving.⁵ Saving, according to Terborgh, is for the purpose of purchasing capital goods in the future and is not merely for the accumulation of personal wealth.⁶ Therefore, he concludes that:

. . . since, as we have seen, a substantial portion of saving is not so motivated, but rather incident to the purchase of particular capital goods, the falling off in the component amount of capital formation attributable to population growth results in a partially compensatory reduction in savings. A stationary population may be expected to save less than a growing population of the same size and income. To this extent, the problem of

³Ibid., p. 181.

⁴Ibid.

⁵George Terborgh, The Bogey of Economic Maturity (Chicago: Machine and Allied Products Institute, 1945), p. 51.

⁶Ibid., p. 59.

oversaving in a stable society (if there is such a problem) cures itself.⁷

Terborgh points out that the number of persons over sixty-five has increased substantially from 80/1000 in 1850 to 170/1000 in 1940 and he postulates 310/1000 by 2000.⁸ Thus, the dissavings being carried on by pensioners is substantial and will continue to grow. Therefore, it follows that the possible loss of investment outlets is neutralized, as far as any inherent tendency towards oversaving is concerned, by a reduced amount of funds requiring absorption due to the dissaving of elderly groups.⁹ Savings, therefore, are offset by dissavings. This, however, assumes a pattern of income distribution different from the present pattern. Hansen also points out that there may be a transition stage from a period of a preponderance of children (upon whom money is spent) to the period of a preponderance of elderly persons who dissave.¹⁰ This transition stage would be dominated by a middle-age group that is saving.¹¹

Terborgh next attempts to point out that it was not oversaving that caused the depression of the Thirties, but

⁷Ibid., p. 60.

⁸Ibid., p. 61.

⁹Ibid., p. 62.

¹⁰Alvin Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," The Review of Economics and Statistics, Vol. 28 (August, 1946), p. 16.

¹¹Ibid.

that it was the depression that brought about oversaving and underspending.¹² This may be true to an extent. No doubt the depression did make things worse. It is possible that a mild recession may be a breathing period or a mere psychological reversal, but it seems that such a drastic phenomena as 1929-1939 should be based on something more basic. Terborgh, in effect, is rejecting the concept of the upper turning point by saying that oversaving and underspending corresponded with and did not precede the drop. It could well be that the above point ignores the investment decisions in relation to consumption and savings habits of the time and the accumulation of the yet unrecognizable effects of declining population growth rates and the decline in the rate of internal, frontier development along with the absence of any great new industry to offset these other tendencies.

In his reply to Terborgh, Hansen points out that the volume of capital formation is related to output and that an increase in the volume of output is linked both to the growth of the labor force and to an increase in per capita productivity.¹³ Terborgh admits this, Hansen points out, but discounts it.¹⁴ Hansen is aware that Terborgh realizes that

¹²Terborgh, op. cit., p. 182.

¹³Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 13.

¹⁴Ibid.

one-third of the capital formation has been linked to population growth, but he believes that the latter fails to realize the importance of the decline in population growth because he refused to recognize the occurrence of its effect late enough--in 1914.¹⁵ From the period between 1870 and 1880, the per annum population increase was 2.6 percent and from 1900 to 1910, it was 2.1 percent.¹⁶ During this time, the increase in productivity was 1.5 percent per annum so there was no great problem in the direction of stagnation.¹⁷ The Thirties, however, Hansen concludes, were a result of the effect of 1929 plus a recognition of declining absolute growth and the resultant effects through the principle of the accelerator (which Hansen reminds us is based on absolute increases and not percentage increases).¹⁸ Therefore, the spirit of optimism that dominated earlier periods of time was gone. Population growth and the volume of output are related, but increases in productivity also enter into lend a hand. As population growth declines and productivity increases, there will be a building-up of savings which may not find investment outlets in subsequent time periods. Thus, savings may be a problem. If, however, there was no increase in productivity, this would imply a cessation of investment

¹⁵Ibid., p. 14.

¹⁶Ibid.

¹⁷Ibid.

¹⁸Ibid.

which would mean that there would be no outlet for current savings. Population increases, then, seem necessary for continued investment outlets offsetting the levels of savings. This brings us back to the interrelation of all the factors leading to economic stagnation.

The second form of savings can be discussed in relation to capital-savings. Hansen, Fellner points out, states that even with price-rigidities, the "deepening" of capital would be compatible to economic growth whereas the "widening" of capital would not be compatible to growth. Fellner, however, emphasizes the fact that price-rigidities affect the forthcoming of investment and cannot be overlooked.¹⁹ Also, investment, Fellner contends, depends upon the behavior of the cost structure.²⁰ Keynes holds wages rather unadjustable and Hansen holds prices rather unadjustable.²¹ Both Keynes and Hansen point out, Fellner states, that improvements get weaker as the economy goes beyond the state of extensive growth and becomes advanced.²² This is where Hansen begins to talk about the need for a deepening of capital in the face of a widening of capital in order for economic growth to be

¹⁹William Fellner, "The Technological Argument of the Stagnation Thesis," Quarterly Journal of Economics, Vol. 55 (August, 1941), p. 639.

²⁰Ibid.

²¹Ibid.

²²Ibid., p. 640.

made compatible to price rigidities. Hansen contends, however, that a deepening of capital is not what current technology is bringing about, but that, rather, a widening of capital seems to be manifesting itself which tends to raise capital-input rather proportionately to output.²³

Fellner attempts to test the contention that the current century has seen a widening of capital. He presents tables that show that over the period of the decade of the nineteen-twenties, such a widening of capital may have taken place, but is careful to point out that there were shorter time periods when a deepening of capital may have occurred.²⁴ Nevertheless, he shows that the capital stock per unit of labor employed did, during this period, increase tremendously.²⁵ This, however, needs more emphasis than merely stating that short periods within the decade showed deepening effects along with an increase in the amount of capital per unit of labor employed. If output increased in proportion to capital, but labor decreased relative to capital, might this not lead to eventual stagnation?

After stating that the presence of capital deepening innovations are not found exclusively in the nineteenth century, Fellner points out that they would still be unable to stimulate

²³Ibid., p. 641.

²⁴Ibid., p. 645.

²⁵Ibid., p. 646.

economic growth in the presence of wage-price rigidities.²⁶

Hansen, of course, contends that cost-savings industries do not lower the prices of their products or increase their output.²⁷ This leads Hansen to a preference for a deepening of capital over a widening of capital effect.²⁸ Fellner,

however, contends that all innovations (i.e., capital deepening or capital widening) result in lower costs.²⁹

Since they both lower costs, they both lower money income if the real flow of services does not increase as costs decline (i.e., either/or lower prices and increased output).³⁰

Fellner agrees that the original stimulus may offset the cost-saving and, thus, income decreasing effects of the innovation without a real increase in goods and services, but he maintains that long-run effects will outweigh the short-run stimulus as the innovation effects wear-out.³¹ All capital innovations increase capital stock and, thus, the higher maintenance costs (regardless of deepening or widening effects) must be offset by savings in operating costs if they are to be

²⁶Ibid., p. 647.

²⁷Ibid., p. 648.

²⁸Ibid., p. 649.

²⁹Ibid.

³⁰Ibid.

³¹Ibid.

cost-saving.³² Continual improvements with continued price rigidities, furthermore, have a continued long-run deflationary effect.³³ In each time period, for example, new investment would be required to bring forth new innovations which would, Fellner thinks, maintain the income generated by the production of new equipment.³⁴ However, the money generated by cost-saving industries declines as each time period advances resulting in a decrease in money income as price rigidities remain.³⁵ This is deflationary.³⁶ Thus, Fellner concludes that the statement that innovations are now less stimulating

. . . can only be interpreted to mean that these innovations failed to increase the output of the cost-saving industries to any considerable extent. This can be a consequence of rigid price policies, or a consequence of a small demand-elasticity for the products of those industries in which the technological progress happened to occur. It cannot be the consequence of the alleged but unproven circumstance that the innovations of our generation require less capital per unit of output. An economy in which rigid industries are introducing "deepening" innovations is exposed, after a brief initial period, to exactly the same deflationary pressures as an economy in which rigid industries introduce "non-capital-using" innovations.³⁷

The above point must be well taken. It seems to be a rather devastating attack upon the Keynes-Hansen Stagnation

³²Fellner, "The Technological Argument of the Stagnation Thesis," p. 649.

³³Ibid., p. 650.

³⁴Ibid.

³⁵Ibid.

³⁶Ibid.

³⁷Ibid., p. 651.

Thesis. Actually, however, it is not. It is merely a clarification. It is true that both capital-widening and capital-deepening innovations will have eventual depressive effects upon the economy if rigidities block the increase in the output of real goods and services. However, might not the point be well taken that a capital-deepening innovation would be less deflationary than a capital-widening innovation because the latter does not absorb savings which are increasing relative to population, whereas the former absorbs part of this additional amount of savings? Therefore, the capital-widening innovation in the face of rigidities will be deflationary both because it is cost-saving and because it does not aid in the absorption of increasing amounts of savings whereas a capital-deepening innovation may be deflationary because of its cost-saving nature in the face of rigidities, but less deflationary in the absolute sense because of the fact that it absorbs part of the increase in absolute savings. Thus, we must look at the relative overall effects of these different types of innovations without, at the same time, making capital-deepening innovations, in themselves, the cure-all but, rather, only a part of the prescription.

The Swanson and Schmidt critique of Hansen's thesis is similar to Fellner's. These men emphasize that all improvements lower costs³⁸ and, thus, whether or not an

³⁸Ernst W. Swanson and Emerson P. Schmidt, Economic Stagnation or Progress (New York: McGraw-Hill Book Company, 1946), p. 31.

improvement is capital-widening or capital-deepening is not greatly significant. Since both types of improvements lower costs, it follows that income will also be lowered unless the real flow of services is increased (through lower prices and increased output).³⁹ This implies that price rigidities are deflationary.⁴⁰ In their analysis, improvements lower costs which must be accompanied by an increase in real output which, of course, necessitates an elastic demand curve. From this we can go one step further into the competitive framework and return to the basic concept of an infinitely elastic demand curve for capital.⁴¹ If the product has an inelastic demand curve, net additions to output will only be made when sales are expected to advance.⁴² The solution is to crack the market structure of imperfect competition⁴³--which is often easier said than done.

Swanson and Schmidt are confident of the workability of the competitive model. As a matter of fact, significant interference arises only through government stifling of free enterprise.⁴⁴ Their position, however, seems to be based on a completely unrealistic belief concerning the extent of imperfect

⁴⁰Ibid., p. 32.

⁴¹Ibid., p. 34.

⁴²Ibid.

⁴³Ibid., p. 36.

⁴⁴Ibid., p. 37.

competition in the market, the necessity in some industries of large scale production and the possibility of returning to the competitive framework. The presence of inelastic demand curves is not so easily solved. Also, the adoption of technology in an imperfect market structure of large-scale industry may not occur because of both the market structure and because of the realities of large-scale industry. This is a basic contradiction of the Chicago School.

It should be pointed out that neither the writings of Fellner nor of Swanson and Schmidt contradict Alvin Hansen. Both, after we escape from the competitive framework, emphasize that in the presence of an imperfect market structure, price and output rigidities will have a deflationary effect upon the introduction of either capital-widening or capital-deepening improvements. The main difference, then, between Hansen and his critics is that the latter are, given an imperfect market structure, more pessimistic.

After our study of capital-savings, the last factor in the general area of savings still remains to be discussed. That factor is depreciation. George Terborgh, whose book The Bogey of Economic Maturity was supposed to be the coup de grace to the Stagnation Thesis, deals with depreciation rather extensively. The Stagnation Thesis maintains that depreciation allowances finance the replacement and acquisition of new stocks.⁴⁵

⁴⁵Terborgh, op. cit., p. 99.

Terborgh maintains that as the amount of replacement capital rises, more replacement opportunities would arise.⁴⁶ Terborgh is aware that Dr. Oscar Altman of the Securities Exchange Commission had, before the Temporary National Economic Committee hearings, maintained that from 1923-1929 (a period of boom), seventy-five percent of all fixed capital requirements were internally financed.⁴⁷ This was due to the fact that

. . . depreciation allowances are sufficient not only to maintain the productive capacity of industry but to increase it substantially . . . because the accruals over the life of the machine will typically replace it with a machine of higher capacity, and in consequence, demand for individual savings will appear only when the expansion of total productive capacity is rapid--too rapid to be covered by depreciation allowances.⁴⁸

Terborgh, to counteract Altman's testimony, refers to Alfred Sloan of General Motors and Owen Young of General Electric who maintain that there is a place for private savings in the American economy and that the only thing that keeps private savings from entering into corporate investment is the dominant policy of the government.⁴⁹ Earlier, in reply to the question of the ability of General Motors to completely finance itself internally, Alfred Sloan had admitted that ". . . if things continue in a reasonable way, the way we expect, that is true."⁵⁰ The latter statement by Sloan seems

⁴⁶Ibid.

⁴⁷Ibid., p. 28.

⁴⁸Ibid., p. 29.

⁴⁹Ibid.

⁵⁰Ibid.

to be a mere hedging around the original explicit meaning of his original statement, which admitted General Motors' independence from the external market for funds.

As we have seen, the Stagnationists contend that depreciation allowances finance both replacement and new capital whereas Terborgh, despite the testimony of Sloan, contends differently. The Stagnationists further believe that since replacement is self-financing, an increase in the ratio of consumption to capital formation diminishes the amount needed to finance "new" investment so that savings become excessive whereas Terborgh believes that an increase in the capital-consumption ratio increases the amount of goods to be replaced and that, eventually, the replacement demand would exceed the funds raised for replacement.⁵¹

To prove his contention, Terborgh points out that there is partial replacement and displacement of capital items such as automobiles, locomotives, houses, and so on.⁵² This reselling of production equipment consists of "murder by degrees" as the item loses its function.⁵³ Production machinery and capital items gradually gravitate towards inferior uses over their lifetime and, as age advances, the

⁵¹Ibid., p. 102.

⁵²Ibid., p. 103.

⁵³Ibid.

service which good renders is less and less as functional degradation sets in.⁵⁴ Quite often, a capital good is replaced before it is junked which results in displacement by newer machines followed by complete replacement.⁵⁵ As a matter of simplicity

. . . one half of replacement is spread evenly over the service life, the other half occurring at the time of replacement.⁵⁶

This ". . . raises the ratio of consumption and retirements to capital formation" but also ". . . raises the ratio of replacement to consumption."⁵⁷

The above increase in the ratio of replacement to consumption

. . . is a corollary of the fact that when the production of a capital good has been rising retirements are lower than consumption (depreciation). Being lower, they rise faster as we pass from higher to lower production growth rates, overtaking consumption at a growth rate of zero. Since by our assumption only one half of replacement is timed at the retirement of capital goods, they fall below consumption on a rising production growth trend by less than retirement, but like the latter rise relative to consumption as the growth trend declines.⁵⁸

Terborgh presents a chart of the ratio of capital replacement to the consumption of capital for selected lifes

⁵⁴Terborgh, The Bogey of Economic Maturity, p. 104f.

⁵⁵Ibid.

⁵⁶Ibid., p. 108.

⁵⁷Ibid., p. 110.

⁵⁸Ibid.

of capital goods.⁵⁹ From this chart he concludes that:

(1) The ratio of replacement to consumption rises as we pass from higher to lower rates of growth in capital formation. (2) With a given growth rate, the replacement-consumption ratio is higher the shorter the service life of the capital-goods. We may infer from these observations that economic maturity might conceivably raise replacement relative to consumption (1) by slowing down the growth of capital formation, and (2) by shortening the average useful lives of capital goods.⁶⁰

Terborgh deals with the shortening of the average useful life capital good first. In this, he maintains that:

. . . if the attainment of economic maturity . . . does result in a lower growth rate in aggregate capital formation than obtained while population was increasing, we will have a considerably higher proportion of our capital goods in the upper age brackets. . . . What should be the effect . . . on the life expectancy of these goods? It should tend to shorten them by making the supply of aged units relatively redundant.⁶¹

Furthermore, Terborgh adds that:

A slower growth rate for capital formation, and an age distribution of the stock weighted more heavily in the upper age brackets, do not automatically bring with them an increased demand for low-grade as against high-grade services. Unless the pattern of demand does shift in this direction, however, the increase in the proportion of aged units tends to make them redundant, to lower their market values, and to advance the age of retirement.⁶²

The shortening of service life, therefore, increases the replacement consumption ratio. This, however, does not answer the question of whether or not the demand for investment

⁵⁹Ibid.

⁶⁰Ibid., p. 112.

⁶¹Ibid.

⁶²Ibid., p. 113.

funds will or will not decrease. Under the assumptions of half-displacement and half-replacement investment demand, and the shortening of the useful life of the capital item,

. . . economic maturity would increase replacement opportunities even more than it increased the flow of goods from this source. The proportion of such funds available for financing capital expansion would be less than before.⁶³

Thus, there is no such animal as the "universal and automatic generation of investment funds by the consumption of existing capital goods"⁶⁴ and, thus, new investment funds are still required.

The question arises as to why replacement financing cannot be done internally. The answer is that they can be but are not. They could be

. . . if the capital good is valued at the full future, or realization, value of its unconsumed services. Since these services can be drawn off only over a period of time, and since future values are always discounted, the present worth of remote services is less than their eventual realization value. For this reason, the decline in capital value as a reservoir of unused services is drained and is by no means parallel with the shrinkage in the volume of such services remaining.⁶⁵

On the following page, Terborgh concludes that:

Although it is its content of unconsumed services that gives value to a durable capital asset, capital consumption is not measured by the amount or proportion of such services used up but rather by the exhaustion of capital value.⁶⁶

⁶³Terborgh, The Bogey of Economic Maturity, p. 115.

⁶⁴Ibid.

⁶⁵Ibid., p. 120f.

⁶⁶Ibid., p. 122.

After stating the above, Terborgh goes on to say that depreciation allowances are not as important as they have been made out to be due to the fact that most public bodies and private concerns or consumers do not, in fact, make depreciation allowances.⁶⁷ This, however, does nothing to discount the importance of depreciation allowances that are made by larger companies--like for example, the two hundred corporations that hold about fifty percent of the corporate wealth in the nation.⁶⁸

The entire analysis seems, to break down over the definition and purpose in accounting of depreciation. Terborgh admits that depreciation is taken out of gross income based on an estimate of the service life of the good.⁶⁹ This, however, he relates to services rendered and states that the decline in capital value has no relation to the services rendered.⁷⁰ A car, for example, depreciates rapidly in terms of trade-in, but not in terms of cost-accounting on a straight line life-of-asset basis or on a service rendered basis. This Terborgh relates to machines. From this, he then seems to indicate, the result would be that the owner of the asset would have to spend new investment funds in order to purchase a new machine because of the difference between book-value

⁶⁷Ibid., p. 126.

⁶⁸M. A. Adelman, "The Measurement of Industrial Concentration," Review of Economics and Statistics, Vol. 33 (November, 1951), p. 277.

⁶⁹Ibid., p. 127.

⁷⁰Ibid., p. 121.

and trade-in value. The question arises, however, as to how many persons do in fact trade in machines yearly--or cars for that matter. Indeed it would seem that they would wait until the amount from gross income equaled the cost of the machine. This would especially be true if the market structure were oligopolistic and the replacement stimulants of pure competition were not present. Oligopoly seems to be most realistic in the major industries where depreciation-type accounting is carried on. Thus, Terborgh's analysis breaks down.

Terborgh next attempts to disprove the self-sufficiency of corporations from the external market for funds. This he does while admitting the self-sufficiency of many of our largest corporations.⁷¹ Only a few, however, he contends, are self-sufficient and, therefore, no statement as to the possibility of external investment funds not finding outlets elsewhere can be made. He states that

To select a few of the former [self-sufficient corporations] as representative of the whole is as meaningless as it is misleading.⁷²

The same thing, of course, can be said of the practice of excluding the self-sufficient corporations which are leaders in their respective oligopolistic industries. Thus, they do become important as they grow larger and more inclusive.

⁷¹Ibid., p. 151.

⁷²Ibid.

Terborgh points out that Ford Motor Company has not used external funds, but that its smaller suppliers have.⁷³ This may be true, but the accelerator wears off and the economy is left with the effect of a non-increasing demand for capital-goods. Also, what is to prevent (especially in a rather concentrated market economy) these supplier firms from eventually generating their own self-sufficiency for expansion--an expansion which would be unlikely unless there was a growth of Ford Motor Company which, due to market conditions, seems unlikely on a large scale. Therefore, the writing off of the total effects of internal financing upon the outlets for external investment funds seems to overlook the realities of the overall balance of the market structure.

In reply to Terborgh, Hansen points out that accounting (and depreciation) methods are spreading and that the 1930-1940 period offered no outlet for net savings.⁷⁴ If Hansen is correct in his belief about the spread of accounting and depreciation practices, this may increase the savings of individual enterprises, small businesses and other institutions. This may result in an increase in absolute if not relative savings and may, in time, free many other businesses from the external market for investment funds at a time when personal savings may well be increasing

⁷³Ibid., p. 157.

⁷⁴Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 16.

due to the transition stage of the age-structure shift, higher income levels or the saturation of consumer demand. This, indeed, is not a pleasant thought for those who think in terms of a savings and investment equilibrium and the maintenance of what is hoped to be a full-employment level of income.

In addition to the criticism leveled by Hansen, Terborgh receives a further critique from David McCord Wright who feels that The Bogey of Economic Maturity by Terborgh is a work where

Scholarly discussion is frequently interspersed with outbursts of rather elaborate sarcasm. One frequently feels as if inconclusiveness of evidence were being atoned for by positiveness of assertion.⁷⁵

More specifically, Wright feels that Terborgh contradicts himself when he admits to the presence of internal financing and then proceeds to say that there is no tendency towards self-financing.⁷⁶ Also, Wright holds that any potential replacement boom caused by a change in the grouping of replacement needs would only be temporary.⁷⁷ Thus, the danger of the advent of stagnation due to increases in depreciation reserves seems, after Hansen and Wright, still something that remains with the United States economy.

⁷⁵David McCord Wright, "The Great Guessing Game; Terborgh versus Hansen," Review of Economics and Statistics, Vol. 28 (February, 1946), p. 18.

⁷⁶Ibid., p. 19.

⁷⁷Ibid., p. 20.

Concluding Remarks

Before disposing of the criticisms of Hansen and his Thesis, it is proper to return again to the works of Hansen, himself. Many persons have used the post-World War II period as an indication of the invalidity of the concept of stagnation in the United States economy. Indeed, Hansen, himself, asks the question as to why the post-World War I period was a period of stagnation whereas the post-World War II period is a period of general expansion.⁷⁸ The answer to the challenge that such a question presents can be found within the framework of the Stagnation Thesis.

It must be remembered that, in reply to Terborgh, Hansen stated that stagnation is not the inevitable result of capitalism--merely of laissez faire capitalism.⁷⁹ Furthermore, the period after 1914 found economists bewildered and governments unprepared to assume the responsibility for full-employment.⁸⁰ Still, however, economists thought only in cost-price terms instead of in aggregative terms.⁸¹ Also, the recognition that deflationary policies did not weed out inefficient firms and help, thus, to bring about an equilibrium

⁷⁸Alvin Hansen, The American Economy (New York: McGraw-Hill Book Company, 1957), p. 1.

⁷⁹Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," p. 13.

⁸⁰Hansen, The American Economy, p. 7.

⁸¹Ibid., p. 8.

was not yet obvious to policy makers.⁸² In reality, deflationary adjustment processes used by micro-economists did not, in fact, result in the weeding out of inefficient firms, but did result in an immobilization of labor.⁸³ Thus, the policy considerations of Classical and Neo-Classical economics were not realistic and the economy was faced with an accumulation of changing patterns which were not yet fully recognized or understood. A change, however, was about to take place.

The change that took place was the growth of a public-private economy (a mixed economy) emphasizing social welfare and full-employment.⁸⁴ Also, there was the recognition that such a combination might do much to bring forth the reality of progress without instability.⁸⁵ There was also the recognition that capital formation in a rich society need not come from the mal-distribution of personal income--especially when recent years have seen two-thirds of the capital formation being accomplished through internal financing.⁸⁶ The change that took place, however, was the scrapping of laissez faire for a mixed form of planned

⁸²Ibid., p. 9.

⁸³Ibid.

⁸⁴Ibid., p. 10.

⁸⁵Ibid., p. 11.

⁸⁶Ibid., p. 35.

capitalism. This was the tonic that Hansen had prescribed.

Hansen proceeds to analyze the policies of the economic planners after World War II. First of all, the War and the economic stimulus of the War had brought about adequate aggregate demand--a cornerstone of economic stability.⁸⁷ Also, various readjustment aids were introduced plus the widening and stabilizing of consumption through fiscal measures and fiscal stabilizers.⁸⁸ Many fields of construction were also stimulated through the rather extensive mortgage debt program.⁸⁹ Most important, however, was the declared policy of the federal government in relation to its important place in maintaining adequate aggregate demand.⁹⁰ Even the Eisenhower Administration pledged the federal government to a policy of maintaining full-employment.⁹¹ All in all, the post-World War II reality has, thus, been a period of growth and moderate inflation with a reliance upon fiscal policy as a major tool for the maintenance of full-employment.⁹² In many ways, the moderate inflation has done much to stimulate the economic growth but, on the other hand, may be a by-product

⁸⁷Hansen, The American Economy, p. 26.

⁸⁸Ibid., p. 38.

⁸⁹Ibid., p. 32.

⁹⁰Ibid., p. 39.

⁹¹Ibid., p. 118.

⁹²Ibid., p. 58.

of full-employment.

Hansen, however, is not thoroughly optimistic about the nature of the economic system that we are building. In the first place, long term growth is not a function of capital accumulation but, rather, of research and invention.⁹³ In the second place, there is the presence of the poorest elements yet unreached and whose welfare cannot be completely satisfied in the market place (e.g., the need for educational and recreational facilities).⁹⁴ In the third place, the rising consumer emphasis upon gadgetry may well, in the long run, become a detriment to a truly satisfying level of full-employment.⁹⁵ This introduces the problem of the necessity of considering social ends and social alternatives when we plan economic goals.⁹⁶ On the optimistic side, however, it

⁹³Ibid., p. 134.

⁹⁴Ibid., p. 146.

⁹⁵Ibid., p. 145.

⁹⁶The problem of economic goals and social goals conflicting as to desirability can, I think, be seen by the present mode of living of the United States' family. Possessions and gadgetry have come to be equated with personal success to such an extent that the individual is in a never ending cycle of purchasing new or higher quality goods to keep ahead of the neighbors. This could be at the sacrifice of more important family goals. Also, it could lead to a rise in mass frustration on the part of many which might be disrupting to the society in the long-run as well as making the individual feel himself to be a personal failure in life if his material "standard of living" is not as high as some other person's. Thus, economic full-employment must be considered alongside of social and psychological problems as well. This, however, is the point of departure for a subsequent work.

must be emphasized that Hansen stresses the importance of the growth of monetary and fiscal operational freedom.⁹⁷ Also, he feels that economics must continue to advance towards becoming an operational science through the introduction of the mixed economic system and the welfare and full-employment commitments that are now the "modus vivendi" of economic thinking.⁹⁸

William Fellner, however, criticizes Hansen's study of the post-World War II economy. The criticism is more of a short review of some of the problems that may eventually arise in our economy instead of an attempt to refute Hansen. Fellner, for example, asks what might be the results if inflation should get out of hand when the promulgators of wage-push growth theory try to increase real economic status,⁹⁹ so that the price level increase might exceed the rate of increase in output which Hansen, Fellner contends, admits to be signal of danger.¹⁰⁰ Fellner is not afraid of inflation, per se, but merely points out that inflationary acceleration is inherent in wage-cost inflation.¹⁰¹ If,

⁹⁷Hansen, The American Economy, p. 173.

⁹⁸Ibid., p. 259.

⁹⁹William Fellner, "The American Economy," Journal of Political Economy, Vol. 66 (October, 1958), p. 450.

¹⁰⁰Ibid., p. 449.

¹⁰¹Ibid., p. 450.

indeed, this should be the case, it leads to policy considerations that might allow wage-cost push, but which prevent its acceleration.¹⁰²

Fellner points out also that the welfare state may not necessarily create high pressure demand.¹⁰³ Also, Fellner asks why a positive redistribution of income necessarily can be said to offset the negative effects of taxation on the rate of investment especially if the investment-to-output ratio rises.¹⁰⁴ Also, might even defense spending reduce spending for goods and services elsewhere (let alone spending for transfers) because of taxation.¹⁰⁵

The latter two points seem to be answerable by pointing out that a lower net profit level may be acceptable to investors if instability is not a problem and if the change in net profit levels does not decrease beneath reasonable levels or within too short a time period for

¹⁰²A policy to end the danger of inflationary acceleration might involve some government control of prices and wages in major industries on a more or less planned basis of wage increases. Also, however, Fellner's criticism of Hansen on this point introduces us to the question of whether or not the inflation is a wage-price spiral or a price-wage spiral or a tendency of the two to be part and parcel of the same co-operative movement on the part of labor and management. This, however, should be left for another study.

¹⁰³Fellner, The American Economy, p. 450.

¹⁰⁴Ibid.

¹⁰⁵Ibid.

psychological adjustments to be made. In speaking of offsetting expenditures of one sector (private) by increasing expenditures of services of another part of the same sector (private), it is necessary to analyze the propensities to consume of the various sectors and their subparts. The question as to the necessary creation of high pressure demand is not, however, so easily answerable if the level where the lowest incomes are substantial enough to provide their recipients with a decent level of consumption with what they consider to be an adequate amount of "luxuries." The occurrence of such a phenomena, however, would not refute stagnation, but would merely re-emphasize the growth of savings included within the Stagnation Thesis. In short, the Stagnation Thesis, thus far, seems to pass the test of critics especially when it is realized that the present economy functions under the policies that grew out of or were implicitly or explicitly recommended by the followers of the Keynes-Hansen Stagnation Thesis.

CHAPTER V

FELLNER AND DYNAMIC GROWTH INTRODUCTION

The interjection at this point of the growth thesis of William Fellner temporarily transfers us from the area of dynamic stagnation-type analysis to dynamic growth-type analysis.¹ Fellner believes that the economy will not suffer from stagnation but, instead, will follow an upward course. He begins his analysis of the process of economic growth from an equilibrium level between realized savings and planned investment. He points out that the interaction of the multiplier and the accelerator will bring about a higher level of income in subsequent time periods and, thus, a higher level of realized savings. The higher level of realized savings must be absorbed by a higher level of planned investment. A higher level of investment activity depends upon

¹The word "dynamic" here refers to the fact that both the Keynes-Hansen Stagnation Thesis and the Fellner Growth Thesis involve forces of motion of either an endogenous or exogenous nature that are at work in the capitalistic economic system. These forces tend to bring about another economic stage in the development of the capitalistic system as we know it. Thus, a "dynamic" thesis involves forces setting and maintaining the economy in motion towards a further level (upwards or downwards) or state of development.

the growth of technological offsets to the diminishing returns to capital. He is, thus, interested in the process of smooth, uninterrupted growth and the ability of the economy to carry out its savings and investment plans. He analyzes this process within the framework of a stable price level.² This thesis involves a study of how the economic forces should act if continued and uninterrupted growth is to be maintained.

There are three corollaries which are the pre-conditions of the process of uninterrupted growth. The first of these corollaries is the improvement process which serves as an offset to diminishing returns to capital.³ This process involves both the "quantitative sufficiency and the qualitative adequacy of offsets to diminishing returns."⁴ The second corollary relates to the mobility of resources and structural changes.⁵ The third corollary involves the legal and institutional compatibility of the efforts to regulate credit.⁶

²William Fellner, Trends and Cycles in Economic Activity (New York: Henry Holt and Company, 1956), p. 167.

³Ibid.

⁴Ibid.

⁵Ibid.

⁶Ibid.

The third corollary places counter-cyclical emphasis upon monetary policy. Fiscal policy is, Fellner believes, inappropriate for the maintenance of continued dynamic growth. He points out that deficit spending involves high corporate and individual taxes which may have a lowering effect upon the long-run growth path because they stem from equality-security policies.⁷ Fellner also contends that the so-called built-in-stabilizers do not function to prevent cycles.⁸ This raises the question of whether or not fiscal policy is capable of coping with unemployment. Fiscal policy does not, for example, deal with the underlying causes of massive unemployment.

Fiscal policy, then, has its definite limitations. If, for example, there is unemployment even though at the full-employment level, investment and savings are equal, fiscal policy would be inappropriate. Such unemployment would be caused by an insufficiency of physical capital stock that could be constructed without inflation. This would be the case when the labor supply was growing more rapidly than the supply of capital funds or the labor-saving characteristics of improvements were releasing more workers from jobs than could be re-absorbed given the supply of capital.⁹ This type of unemployment could not be solved

⁷Ibid., p. 318.

⁸Ibid., p. 359.

⁹Ibid., p. 360.

by deficit financing because easy credit and capital formation could be forthcoming.¹⁰ What is actually needed is not deficit spending, but an increase in savings, consumer taxation or wage reductions so that additional capital can be formed without inflation.¹¹

Fiscal policy is also inappropriate in cases of regional and occupational unemployment.¹² This is due to the fact that deficit spending would both block mobility and create inflationary pressures in other sectors of the economy.¹³ On the other hand, if unemployment is caused by insufficient rates of return to capital due to the scarcity of factors cooperating with capital, deficit financing could help by reducing tax payments in relation to total government spending.¹⁴ Even here, however, a guarantee of full employment through fiscal policy would create a pressure for higher wages. The pressure for higher wages could become so great that wage rates might increase faster than output per man-hour.¹⁵ Fiscal policy is, thus, a dangerous tool even though it may be partially effective at first. In the other

¹⁰Fellner, Trends and Cycles in Economic Activity, p. 360.

¹¹Ibid.

¹²Ibid.

¹³Ibid.

¹⁴Ibid.

¹⁵Ibid., p. 361.

types of unemployment discussed above, deficit spending is inappropriate. Also, government investment or spending would inevitably compete with private investment and spending.¹⁶ This, Fellner fears.

Since Fellner both fears fiscal policy and thinks it largely inappropriate, he recommends and states his analysis within the framework of a balanced budget. Long-run growth, then, depends upon private investment. Monetary policy is the most sufficient and the quickest way of dealing with variations in the level of employment.¹⁷ Fellner also assumes that the improvement process has and will continue to adjust to relative resource scarcities in relation to capital.¹⁸ Thus, he provides a model which assumes such adjustability and a balanced budget as well as the non-relevancy of stagnation. Also, Fellner is speaking in real terms with price-wage changes calculated out.

Relation of Fellner's Model to the
Domar-Harrod Model

Fellner provides us a model similar to that of Harrod

¹⁶Ibid., p. 363.

¹⁷Ibid., p. 367.

¹⁸Ibid., p. 387.

and Domar.¹⁹ Both models are within the Keynesian framework and both use the concept of changes in investment generating an increase in income and necessitating a higher level of investment in subsequent time periods.²⁰ Harrod and Domar, unlike Fellner, have rigid price levels and input-output ratios. The Harrod-Domar analysis, Leland Yeager contends,

¹⁹The reader can refer, if he pleases, to specific works on or by Harrod and Domar. Such works include Essays in the Theory of Economic Growth by Evsey D. Domar published in 1957 by the Oxford University Press, New York. Evsey Domar also has an article in the Economic Journal entitled "Depreciation, Replacement and Growth," MacMillan and Company, London, 1959, page 1. Another article may be found in Econometrica, Vol. XIV, April, 1949, entitled "Capital Expansion, Rate of Growth and Employment," pages 137-147. The American Economic Review of March, 1947, Vol. XXXVII has an article by Domar entitled "Expansion and Employment," on pages 34 through 55 while the December, 1948, Vol. XXXVIII, edition has an article entitled "The Problem of Capital Accumulation," on pages 777 to 794. Also, R. F. Harrod's Towards a Dynamic Economics published by the MacMillan Company of London in 1948 is of great interest. Harrod also has articles in the Economic Journal of September, 1938, Vol. XLVIII, on page 405 entitled "Scope and Method of Economics," and the March, 1939, Vol. XLIX, on pages 14 to 33 entitled "An Essay in Dynamic Theory." Book reviews and comments by other economists include: Joan Robinson, "Mr. Harrod's Dynamics," Economic Journal, Vol. 59, p. 68; David McCord Wright, "Economic Growth: Econometric Models in Relation to the Social Setting," American Economic Review Papers and Proceedings (Evanston, Ill.: American Economic Association, May, 1952), p. 496; Louis Dow, "Essays in the Theory of Economic Growth," Southern Economic Review (January, 1948), p. 362; R. G. Hawtrey, "Mr. Harrod's Essay in Dynamic Theory," Economic Journal, Vol. 49 (March, 1939), p. 458.

²⁰It is not quite correct to say that both work within the Keynesian framework. They both use the general conceptual analysis of Keynes and both use his concept of the multiplier. They both, however, add the concept of the accelerator to the concept of the multiplier.

would go so far as to say, for example, that: ". . . a moving full employment equilibrium can endure only if income grows at a definite rate fixed by the propensity to save and the accelerator or capital-output ratio. . . ." ²¹ Domar, himself, states that:

. . . the maintenance of a continuous state of full employment requires that investment and income grow at a constant annual percentage (or compound interest) rate equal to the product of the marginal propensity to save and the average (to put it briefly) productivity of investment. ²²

The Harrod-Domar growth thesis, thus, involves a rigid and mathematically precise model of growth. Yeager criticizes this mathematical preciseness. To the implied Harrod-Domar conclusion that ". . . equilibrium can endure only if income grows at a definite rate fixed by the propensity to save and the accelerator or capital-output ratio, . . ." Yeager replies that this assumes a precise relationship of savings and investment to income. ²³ Yeager believes that savings and investment depend upon other factors besides income and that they are, at least, more unstable than the Harrod-Domar assumptions allow. ²⁴ The

²¹Leland Yeager, "Some Questions about Growth Economics," American Economic Review, Vol. 44 (March, 1954), p. 55.

²²Evsey D. Domar, "Expansion and Employment," American Economic Review, Vol. 37 (March, 1947), p. 41.

²³Yeager, op. cit., p. 57.

²⁴Ibid.

concept of planned investment equaling actual savings is unrealistic. David McCord Wright points out that we know very little about parameter values²⁵ and, also, that such values are valid only so long as the sociological conditions which formed the atmosphere under which the parameter values were formed remain constant.²⁶ Sociological values may change making the concept of rigid capital coefficient and parameter values a questionable method of explaining dynamic growth in the long run.²⁷

Yeager also deals with the Harrod-Domar thesis' claim that any increase in productive capacity raises real income by a definite amount to absorb the new productive capacity.²⁸ Yeager does not deny that real income must increase to absorb productive capacity, but merely attacks the constancy of such output and income increases.

If the above criticisms are relevant, then the Harrod-Domar rigidities become irrelevant for growth study purposes because, in reality, rigidities are not prevalent. What is needed, then, is a growth theory that does not use precise parameter and coefficient values but, rather, one that implicitly or explicitly assumes the non-rigidity of

²⁵David McCord Wright, "Economic Growth: Econometric Models in Relation to the Social Setting," American Economic Review Papers and Proceedings, Vol. 42 (May, 1952), p. 502.

²⁶Ibid., p. 496.

²⁷Ibid., p. 497.

²⁸Yeager, op. cit., p. 57.

such values²⁹ while realizing that the maintenance of full employment depends upon the maintenance of an equilibrium between planned investment and actual savings in subsequent time periods. Also, a growth thesis must include an adequate analysis of the fact that

. . . investment appears on both sides of the equation; that is, it has a dual effect; on the left side it generates income via the multiplier effect; and on the right side it increases productive capacity--the effect.³⁰

Such a theory of dynamic growth is provided by William Fellner.³¹

²⁹It must be realized, however, that any growth theory must still assume a relatively limited range within which the values usually fluctuate. If it were not for these relative limits, the picture would be one of chaos and confusion with no systemitization and general predictive value.

³⁰Domar, op. cit., p. 46. The effect is spoken of in terms of Domar's analysis of the dual nature of the process of investment. For example, in the formula

$\Delta I \frac{1}{\alpha} = 1\sigma$ (where $\frac{1}{\alpha}$ is the multiplier and σ is the supply side or the annual increase in productive capacity), investment generates income through the multiplier, on the left side of the equation whereas on the right side of the equation, investment is generally productive capacity. This generation of productive capacity is the σ effect. Investment, thus appears on both sides of the equation. Domar states, however, that only additions to investment (net investment or the increment to investment) both enlarges productive capacity and, at the same time, increases National Income through the multiplier effect. If investment and income do not grow at a required rate, Domar goes on to say that unused capacity will develop. Therefore, as far as maintaining growth is concerned, it must be remembered that via net investment there is a correlation between the multiplier and the accelerator that need not necessarily lead to continued dynamic upward growth.

³¹The most comprehensive volume of William Fellner's Thesis of dynamic growth is found in his book, Trends and Cycles in Economic Activity (New York: Henry Holt and Company, 1956), p. 212.

The Three Corollaries

It has been seen that Fellner works within the concept of a balanced budget and uses monetary policy as a counter-cyclical tool and as a growth corollary. Also, it must be pointed out that Fellner talks in terms of real wages and real prices, that is price and wage changes are corrected for in the analysis. With these assumptions in mind a close examination may be made of the main parts of Fellner's thesis: Namely, the growth corollaries, the output-increment, the accelerator (and the relationship of the latter two in regard to the consumption function), and the quantitative and qualitative aspects of the first growth corollary.

The three corollaries which are the pre-conditions of smooth, uninterrupted growth are: The improvement process which, as noted before, serves as an offset to diminishing returns to capital and involves a varied combination of natural-resource saving, labor-saving, and capital-saving improvements.³² Fellner analyses the improvement process through the concept of increasing the marginal productivity of the most rapidly increasing factor--capital.³³ He maintains that the improvements must be labor and natural resource-saving relative to the effect on the demand for capital if economic growth is to be continued. This involves

³²Ibid.

³³Ibid.

qualitative considerations as well as quantitative considerations. There may well be, for example, enough new investment to offset savings, but there still may be unemployment due to too great a labor-saving effect of the improvement. We shall return to this in more detail later.

The second corollary is the mobility of resources and structural changes ". . . where the specialized resources change their regional and occupational specialization rather rapidly in response to changes in demand."³⁴ This simply means that there is mobility between occupations in a given area and between sections so that labor resources and capital can move from industry to industry or section to section in response to changes in demand or marginal productivities. Strictly speaking, it is no more than the mobility concept.

The third corollary is the legal and institutional compatibility corollary which ". . . relates to the avoidance of an imbalance between money supply and output by stipulating that neither of these should become scarce or overabundant relative to the other."³⁵ Here Fellner is working within the framework of monetary policy instead of fiscal policy and is, thus, working within the framework of a non-inflationary balanced budget. This is a departure from Hansen.

The improvement process is the most important of all the three corollaries. If offsets to diminishing returns

³⁴Ibid., p. 225.

³⁵Ibid., p. 236.

in the form of improvements are forthcoming, then the economy would grow along the full-employment curve. It is the opinion of the author, however, that a sole emphasis upon the improvement process would confuse the basic issue of economic development. If one assumes that there is an improvement process bringing forth the right kind of and enough new investment to maintain the full employment of the factors and to fill the gap between income and consumption caused by savings, one cannot assume all to be well and good. The corollaries are not independent, but interdependent. Furthermore, the presence of one is not enough to offset the absence of others. The improvement process cannot come into being without mobility of labor, resources and capital. Nor can it come into being without an expansion of the money supply to meet the needs of a growing economy. Investment takes money and the banking system must provide it especially in the absence of fiscal policy and government investment. Therefore, only when all three corollaries are operative at the same time can dynamic upward growth take place. In order for an automobile to take its owner any place, it must have wheels and gas as well as an engine. The same is true for dynamic upward growth.

— - Offsets to Diminishing Returns

In a model of dynamic growth, however, it is not enough to say that new investment must offset savings. In a

static system, it is sufficient to say that investment must absorb savings. In a dynamic system, however, the accelerator and the multiplier are introduced. This means that new investment of period one generates a higher income level in period two which requires a higher level of new investment to match the higher absolute amount of savings. Thus, new investment of one period calls for more new investment in subsequent periods. Consequently, profits of period one investment depend upon the investment of greater amounts of planned investment in period two. The profitability of investment in period two depends upon offsets to diminishing returns quantitatively and qualitatively--the improvement process which is the first corollary. This assumes, of course, mobility and monetary compatibility which will henceforth remain an underlying assumption of subsequent analysis.

Before one undertakes an analysis of the quantitative and qualitative aspects of the offsets to diminishing returns, one must understand the concept of the capital-output increment per unit of investment.³⁶ This simply refers to the incremental output that is derived from additional units of new investment and, thus, the yield on the additional unit of investment. It must be remembered that Fellner is speaking in real terms in which wages and prices are either constant or compensated for by the variables of the model.

³⁶"The Capital output increment per unit of investment," is henceforth referred to as the "output-increment."

The output-increment deals with output and yield. With each additional unit of investment, there is, one may assume, some marginal output or output-increment. Thus, there are more products being produced and offered for sale by the productive process. These products, since they have a price and a market, bring a yield to capital. If the total yield is high in relation to the original increment of investment, the output-increment is said to be high. This means that, relative to the size of the additional increment of investment, the value of the additional goods forthcoming is high or, in other words, the average investment cost for the individual goods forthcoming is low. If the additional increment of goods is of such a magnitude as to be profitable for the firm, industry or economy to invest, the output-increment can be said to be high. If the output-increment is low, the amount of goods forthcoming from any additional increment is correspondingly low and thus unprofitable. Thus, a high output-increment involves a relatively large value of goods forthcoming from a unit of investment and thus a high yield. On the other hand, a low output-increment involves a relatively small value of goods forthcoming from a unit of investment and, thus, a low yield on the investment. In the former case, the stimulation to invest would be higher than in the latter case and, allowing for institutional factors, investment would more than likely be forthcoming in greater quantities.

The output-increment is essential to an understanding of Fellner's growth thesis. A high level of investment is made possible by a high output-increment which makes for a high inducement to invest. Investment, as in the Keynesian analysis, keeps the economy progressing and sets the stage for the next time period. Indeed, present planned investment can be said to determine future consumption and investment (*ceteris paribus*). An analysis of Fellner's consumption function will make this concept clearer and more precise.³⁷

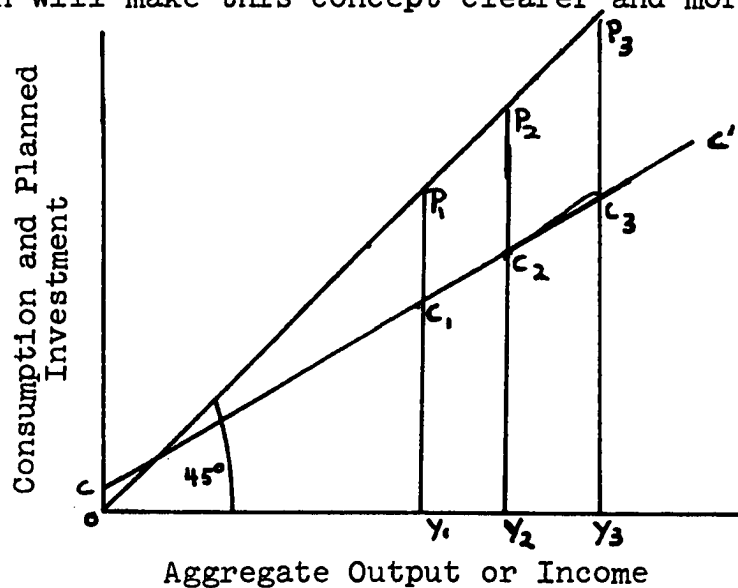


Fig. 1. Relationship between Output and Its Constituents in a Condition of Uninterrupted Growth.

In the above diagram P_1Y_1 is equal to the income level of the first time period which, for convenience, is assumed to be independent of former time periods. The portion

³⁷Fellner, Trends and Cycles in Economic Activity, p. 112.

of the line P_1Y_1 that is shown by the points C_1Y_1 shows the total amount of consumption going on in this time period out of total income. The difference between P_1Y_1 and C_1Y_1 is, of course, P_1C_1 which equals the amounts of savings. The amount of savings forthcoming must be absorbed by an amount of investment equal to savings so that the gap between C_1Y_1 and P_1Y_1 will be filled with the consumption of goods.

In the static concept of the consumption function, the water tank analogy worked quite well. Now, however, this analogy is not satisfactory because Fellner introduces the concept of a growing economy, but it is hard to conceive of a growing tank of water. When the accelerator is introduced (and in Fellnerian analysis, there is a great emphasis on the accelerator), one realizes that a magnification process is being set into motion. This simply refers to the fact that the forthcoming investment stimulates the capital goods industries which further stimulates the economy. This is due to the fact that the accelerator has taken effect.

Fellner defines the accelerator in terms of capital requirements. This definition is really essential to the basic understanding of the basic and intricate analysis which he presents to his readers. Fellner defines or explains his concept of the accelerator in the following manner:

Assuming that Y_1Y_2 is the output increment, we may multiply Y_1Y_2 by the new capital requirement per unit

of output increment and thus obtain C_1P_1 as the justified amount of new investment in period one.¹ The algebraic capital-output requirement (the accelerator) may be defined as the net capital formation per unit of output-increment. If so defined, the accelerator is, of course, the reciprocal of the output-increment per unit of new capital formation.³⁸

The above definition simply means that given an output-increment, there is an additional amount of net capital formation. In the first time period, for example, income stood at P_1Y_1 and consumption at C_1Y_1 . Investment, on the other hand, stood at P_1C_1 which made it equal to savings. Now, in the Keynesian framework, this analysis would be the end of the equilibrium process. Fellner, however, introduces the output-increment and the net capital formation derived from the output-increment. Since there is an accelerator effect taking place, it follows that there is an increase in productive activity and employment. Since there is an increase in productive activity and employment, it further follows that there is an increase in income. Thus, the investment P_1C_1 of the first time period has generated new income and has resulted in time period two.

In time period two, there is an income level of P_2C_2 . The consumption level is C_2Y_2 and the savings-investment level is P_2C_2 . From a definitional standpoint, there are no differences between income time period one and time period two. Diagrammatically, however, there are two important differences. In the first place, P_2C_2 is absolutely larger

³⁸Ibid., p. 140.

than P_1C_1 . In the second place, C_2Y_2 is absolutely larger but relatively smaller than C_1Y_1 .³⁹ This means simply that in the second time period there must be more investment forthcoming to offset the relative decline in consumption. Thus, income level P_2C_2 must call forth a greater amount of investment in order for an equilibrium between savings and investment to be brought about. If the amount of investment should fall short of or exceed P_2C_2 , there would be a decrease in the income level or a more than ordinary increase in the income level, respectively.

From the above, it can readily be seen that profitability in time period one depends upon the amount of investment forthcoming in that time period plus the amount of investment forthcoming in subsequent time periods. If, for example, the realized savings P_2C_2 is greater than planned investment in period Y_2 , the income level will fall to a lower level and the profitability of whatever P_2C_2 happens to be will be decreased along with the profit yield of P_1C_1 --the investment of the preceding time period. Indeed, Fellner states that:

The profitability of investment remains sufficient only if the physical productivity of investment is sufficient in each time period and if a sufficient flow of further investment is generated in subsequent time periods. Where the latter condition is not

³⁹The term "relatively smaller" can be best appreciated by referring again to the diagram on page 142 of this dissertation.

satisfied, the total demand for goods does not balance with the total supply at the initial prices.⁴⁰

It can, thus, be said that ". . . the profitability of investment in any time period hinges on further planned investment in subsequent periods, . . ."⁴¹ which assumes the profitability of investment in subsequent time periods.

It is obvious also that there is a greater chance that savings will be equal to investment if the output-increment per unit of investment is great. This assumes, of course, offsets to diminishing returns.⁴² A large output-increment means that for each unit of investment there is a relatively large increment of output and, thus, a relatively high yield from a relatively small increment of investment. Thus, entrepreneurs will be willing to invest. As can be seen, however, diminishing returns are important. Technological or organizational improvements must be forthcoming at a rapid enough pace to offset the diminishing returns to scale of capital or, in the Fellnerian sense, to shift the marginal productivity schedule of capital upwards and to the right in order to keep the marginal efficiency schedule of new investment unchanged.⁴³

⁴⁰Fellner, Trends and Cycles in Economic Activity, p. 117.

⁴¹Ibid., p. 114.

⁴²Ibid.

⁴³Ibid., p. 205.

If, however, there is a need for ever greater amounts of investment forthcoming in subsequent time periods to make present and future investment profitable, the marginal productivity schedule of capital must shift upwards and to the right by an ever increasing amount.⁴⁴ This places an even heavier burden on offsets to diminishing returns than the static considerations do--and, indeed, the pressure of offsets to diminishing returns is, as higher levels of income are generated, becoming more intense.

It is Fellner's assumption that the marginal productivity schedule of capital and the marginal efficiency schedule will not shift to the left that places him among the anti-stagnationists.⁴⁵ In his anti-stagnationist analysis, Fellner argues that as the investment needs rise from time period to time period and from income level to income level, the marginal productivity of capital will, in fact, shift upwards and to the right by ever greater amounts in order that the marginal productivity schedule of new investment will remain at a more or less constant level (that is to say that new investment in period two will be, more or less, as profitable as the investment in period one). This outward shift in the marginal productivity schedule of capital is made possible by Fellner's first

⁴⁴Ibid.

⁴⁵Ibid., p. 203f.

corollary of dynamic equilibrium--the improvement process. The improvement process keeps the output-increment relatively high in order to keep the marginal efficiency schedule at a relatively constant long-run level.⁴⁶

The above dependence of offsets to diminishing returns to keep the output-increment high also assumes that the height of savings to finance these technological innovations or improvements is relatively more important than absolute consumption. His main worry seems to be that the level of savings may not be sufficient to provide investment funds at a reasonable cost to the borrower. Fellner does point out that savings must not be too great--which he seems to describe in the mal-distribution of income framework where the income and savings are in too few hands to generate economic growth and stability due to underconsumption. Fellner points out that in the United States, the relative amount of savings has increased slightly instead of decreased.⁴⁷ This phenomena, he believes, may be due to the redistribution of income downwards.⁴⁸ The crucial point, however, is that absolute savings rise during the growth process. Therefore, while savings may rise relatively, the increase is slight. The crucial thing again is the absolute

⁴⁶Ibid., p. 196.

⁴⁷Ibid., p. 120.

⁴⁸Ibid.

increase in savings.⁴⁹

. . . the proper functioning of a private enterprise economy depends on its ability to produce a flow of savings which is sufficient to maintain appreciable growth rates, and on its ability to match these savings by a flow of net capital formation.⁵⁰

The question remains to be answered as to how Fellner believes that the improvement process will shift the marginal productivity schedule of capital continuously upwards and to the right in order that the marginal efficiency of new investment will remain constant and the savings necessary for this ever increasing investment need will find outlets in investment opportunities in the formation of capital. Since Fellner attacks the stagnationists, he must answer this question. The remainder of this chapter will, therefore, deal with this improvement process assuming, for convenience only, that his second and third corollaries are met automatically. The reader will remember that his second and third corollaries involved the mobility of resources⁵¹ and the proper regulation of the supply of money and credit.⁵²

Fellner analyses the improvement process qualitatively and quantitatively. Quantitatively, this involves simply the extent and the influence of the improvement upon the whole economy in maintaining continued full-employment and growth.

⁴⁹Fellner, Trends and Cycles in Economic Activity, p. 120.

⁵⁰Ibid., p. 137.

⁵¹Ibid., p. 215.

⁵²Ibid., p. 230.

Qualitatively, this involves the relative changes in the various marginal productivities of the factors of production through labor-saving and natural resource-saving improvements. Improvements may increase the marginal productivity of capital in relation to labor and natural resources or they may increase the marginal productivity of labor in relation to resources and capital or raise the marginal productivity of resources in relation to labor and capital. Any improvement slanted too little towards increasing the marginal productivity of capital in relation to labor and resources will not prevent the yield of capital from falling when capital input is increasing relative to the other factors.⁵³ An improvement which is too labor-saving will create unfavorable wage trends and means that there is not enough capital to absorb labor at existing wages.⁵⁴ This could be cured by decreasing real wages or increasing savings to stimulate the construction of equipment without inflation.⁵⁵ Since Fellner believes that there is an increasing amount of capital input relative to natural resources and labor, the improvement must raise the marginal productivity of capital given the amounts of co-operating natural resources and labor.⁵⁶ Therefore, the type of improvement needed would be

⁵³Ibid., p. 212.

⁵⁴Ibid., p. 213.

⁵⁵Ibid.

⁵⁶Ibid., p. 212.

labor-saving and natural resource-saving relative to the demand for capital.⁵⁷ This emphasis on raising the marginal productivity of capital and the importance of a labor-saving parallel introduces two forms of unemployment--the unemployment caused by the insufficient profitability of new investment necessary to offset savings and unemployment caused by the fact that at the present technological level there does not exist enough capital to make for full-employment.⁵⁸ As is stated above, these two types can be eliminated by more investment and lower wages and/or increased savings so that capital formation can continue without inflation, respectively.

Fellner further maintains that the two types of unemployment can co-exist. This would be the case where unemployment could be eliminated by increased investment without inflation, but where the additional investment forthcoming from the existing stock of capital was insufficient to equip the labor force.⁵⁹ This could happen if improvements (even if labor-saving) were incapable of preventing a fall in the marginal productivity of labor and capital.⁶⁰ More simply stated, this dual type of unemployment is caused by the fewness or the weakness of improvements towards

⁵⁷Ibid., p. 213.

⁵⁸Ibid.

⁵⁹Ibid.

⁶⁰Ibid., p. 214.

maintaining the marginal productivities of labor and capital which is simply the insufficiency of overall cost saving not simply an overslanting towards capital-saving or labor-saving improvements.⁶¹ Such a thing cannot happen, however, if the ". . . average product per unit of factor fails to decline even for the most rapidly growing factor."⁶² More completely, Fellner summarized by stating that:

With the proper slanting of the labor-saving, capital-saving and natural resource-saving character of improvements, it would in this case be possible to ensure that the marginal productivity of no factor should decline. For example, if the average product of the most rapidly rising factor (which implies a rise in the average product of the other factors), and if the elasticities of all average product functions stayed unchanged in the successive equilibrium points, so that the gap between average and marginal product, too, stayed constant for all factors, then the marginal productivity of the most rapidly rising factor would stay unchanged and the marginal productivities of the less rapidly rising factor has not declined over time implies either that the marginal product of no factor has declined or that, with a different "slanting" of the same total cost-saving effect toward the individual factors, none of the marginal products would have declined. It is reasonable to conclude that in this event the overall strength--overall cost-saving effect--of the improvements has been sufficient. Later, we shall see that, in the United States at least, the overall strength of the improvement does seem to have been sufficient in the foregoing sense.⁶³

If the improvements mentioned above are merely quantitative, they may still qualitatively be excessively

⁶¹Fellner, Trends and Cycles in Economic Activity, p. 214.

⁶²Ibid.

⁶³Ibid.

capital- or labor-saving, or both, which would result in non-favorable tendencies in the marginal productivities of one or both of the factors.⁶⁴ Also, this would mean a decline of the elasticity of the average product of capital and/or labor since the increase in the average product of these factors depends upon the constancy or increase in the average product of capital.⁶⁵ The real yield to capital might, then, be falling as real wages were rising or wages falling as the yield of capital was rising as the case may be.⁶⁶ In summation, then, if capital is the most rapidly rising factor, the improvement must increase the marginal productivity of capital and, if there is not enough capital to hire all of the labor, it must also increase the marginal productivity of labor. If the average productivity of the factor input (including the most rapidly increasing factor input) does not change, then the qualitative and quantitative aspects of the improvement are sufficient. Thus, with a correct balancing of quantitative and qualitative aspects of the improvement to offset diminishing returns, the improvement process will bring forth new investment in such a manner as to make for dynamic growth along the full-employment line.

⁶⁴Ibid., p. 215.

⁶⁵Ibid.

⁶⁶Ibid.

When it is said that qualitative and quantitative improvements will maintain dynamic growth along the full-employment line, the implicit assumption is that the economy's improvement process does, in fact, adjust to the changing technological needs of the economy. This is a large and important assumption. Fellner, thus, attempts to prove that the system has generated such technological flexibility as needed to maintain average productivity per factor input. Fellner states that in the United States, labor-saving improvements have not resulted in unemployment,⁶⁷ and that the average product of capital has not significantly declined.⁶⁸ Thus, the improvement process seems to have carried out the necessary conditions for dynamic growth and this has been further pointed out by the studies of Albert Rees and I. B. Kravis to which later reference will be made.⁶⁹ The fact that the Rees study shows a relative decline in per unit output per unit of labor and capital relative to the per unit output per unit of labor and the Kravis study shows a slight increase in the relative amounts going to labor, seems to indicate that the Fellnerian system's non-preciseness is more practical than Harrod-Domar rigidities.

⁶⁷Ibid., p. 217.

⁶⁸Ibid.

⁶⁹I. B. Kravis, "Relative Income Shares in Fact and Theory," American Economic Review, Vol. 49 (December, 1959), p. 917.

The yield of capital has declined but, in the long run, not significantly.⁷⁰ Fellner, then, maintains that since the decline in the yield of investment has not significantly declined to render the inducement to invest a serious blow, the rising trend in real wages improves the workability of the system.⁷¹ Thus, dynamic growth in the economic sense leaves room for social improvement within, of course, limits. This is of particular interest when one considers that capital stock is rising in the United States at a rate of increase twice that of the growth of population and the labor force.⁷² Without such a quantitative and qualitative balance, the rate of return to investors would have declined over the past one to two centuries rather significantly.⁷³ In relation to the Keynes-Hansen Stagnation Thesis, this seems to place the greatest emphasis upon technology and minimizes the importance of frontiers and population growth. Later references, however, will be made concerning this point.

The above may be summarized quite simply. The improvement process must raise the marginal productivity of capital to keep the yield of capital from falling. This implies that labor-saving and natural resource-saving

⁷⁰Fellner, Trends and Cycles in Economic Activity, p. 218.

⁷¹Ibid.

⁷²Ibid., p. 243.

⁷³Ibid., p. 237.

improvements relative to savings must be present. The labor-saving quality, however, must not be too labor-saving or the amounts of new investment to offset the savings of the period will not be sufficient to end labor unemployment. Thus, the proper balance would involve an improvement which increased the marginal productivity of capital (which is the same thing as offsetting diminishing returns to capital) and was, also, labor-savings to only an extent necessary to keep the yield of capital relatively the same. Indeed, large scale technological unemployment might, in the Keynesian sense, bring about a tendency towards under-consumption instead of dynamic upward growth. It is taken for granted that the mobility corollary is operative to re-absorb those who have been technologically unemployed in one industry (due to the labor-saving quality of the improvement) into another industry or in the capital goods industry. This may or may not be the case.

Fellner proceeds to examine the trend in yields in the United States to give some verification to his thesis. He finds that there has been a rise in per capita incomes in the United States for one to two centuries.⁷⁴ This represents a rise in the distributive share going to labor and a decline in the relative shares going to capital.⁷⁵ He

⁷⁴Ibid.

⁷⁵Ibid., p. 238.

points out that this does not imply (necessarily, I believe) that there has been a rise in capital requirements per unit of output.⁷⁶ It indicates, rather, that since capital is the fastest rising factor, improvements have been of such a qualitative nature as to raise the marginal productivity of capital but, at the same time, they have not been labor-saving enough to prevent relative labor scarcity from resulting in a shift of income share from capital yields to labor wages.⁷⁷ There has developed, however, no long-run scarcities of factors nor, of course, an overshooting of the labor-saving improvements.⁷⁸ Thus, Fellner shows that there has been, in reality, a historical tendency of improvements to be of a relatively sufficient qualitative and quantitative nature to offset the diminishing returns to capital--even in the face of a rapid rise in the supply of capital. He admits that the nineteenth century population increase will not repeat itself nor will the growth of the stock of natural resources nor the stimulating influence of colonization.⁷⁹ He contends, however, that the United States has seen decades of declining population growth before and observes that the frontier is not new in passing.⁸⁰ He further observes that,

⁷⁶Fellner, Trends and Cycles in Economic Activity, p. 238.

⁷⁷Ibid.

⁷⁸Ibid.

⁷⁹Ibid., p. 388.

⁸⁰Ibid.

in the past, the improvement mechanism has adjusted to these changes and sees no reason why it cannot again adjust.⁸¹

The past, however, does not prove the future and it must be observed that past population change fluctuations were not long run and, thus, may be irrelevant.

It must also be pointed out that if the present tendency of lower capital yield continues, there may eventually be a point reached where the yield would decline too much. This could usher in either stagnation or institutional change. If this possibility is overlooked, it can be maintained that there has been technological improvements of a sufficient quantitative and qualitative character to offset diminishing returns to capital. Also, it can be said that there has not occurred a significant shift from capital yield to real wages. This is due to the contention that the relative insufficiency of the labor-saving improvement has not caused substantial labor scarcity. So far, no significant downward trend in the yield of capital has occurred. If past history, however, generates overconfidence, it may well be the prelude to disaster in the future.

A Summary of the Research

Other economists have been interested in analyzing the trend in output. Albert Rees, for example, points out

⁸¹Ibid.

that since 1929, real wages have increased more than productivity⁸²--a phenomena explained by the changes in the supply of labor and capital.⁸³ From 1929 to 1957, real wages in terms of 1957 dollars rose from .826 cents per hour at work to 2.24 dollars per hour at work.⁸⁴ This represents a rise of two hundred and seventy-one percent. During the same period, output per man hour in manufacturing rose from the 1929 index of 100 to an index of 213 representing a rise of two hundred and thirteen percent.⁸⁵ Rees points out that productivity increases could have been due to harder work or better skills on the part of the workers, more capital or more non-production workers employed per production worker, or the improved quality of resources.⁸⁶

Rees also points out that prior to 1913, the output per unit of capital declined and man-hour output increased.⁸⁷ After 1919, however, the output per unit of capital rose, but more slowly than the output per man-hour so that the

⁸²Albert Rees, "Patterns of Wages, Prices and Productivity," Wages, Prices, Profits, and Productivity (New York: The American Assembly, Columbia University Press, 1959), p. 11.

⁸³Ibid., p. 12.

⁸⁴Ibid., p. 15.

⁸⁵Ibid.

⁸⁶Ibid., p. 21.

⁸⁷Ibid., p. 28.

output necessary to cover capital costs decreased to enable more to be made available for the augmentation of real wages.⁸⁸ Even though the output per unit of capital has risen, there has been no increase in the returns to capital.⁸⁹ This phenomenon may be due to the fact that the rising average productivity of capital may have been offset by an increase in the stock of capital.⁹⁰ Such an increase in the stock of capital, despite the average productivity of capital increase, would tend to keep the contribution of the marginal unit of capital constant so that the yield would also remain fairly constant.⁹¹

In summation, one might say that since the returns to labor have increased more than proportionately, the returns to capital and non-productive workers may have risen less. Indeed, in 1929, production workers received a wage equal to forty percent of the salary of the non-production worker whereas, in 1957, the former was receiving a wage equal to sixty-four percent the salary of the latter.⁹² Part of this rise may have been due to union pressure or the threat of union pressure.⁹³ Rees points out that the rise in real wages

⁸⁸Ibid., p. 29.

⁸⁹Ibid.

⁹⁰Ibid.

⁹¹Ibid.

⁹²Ibid., p. 31.

⁹³Ibid., p. 33.

from 1936 to 1937 must have been, at least, partly caused by the threat of unions due to the fact that an unemployment total of eight million for that year hardly seems to indicate a rise in real wages because of an undersupply of labor.⁹⁴ However, Rees is careful to point out that real wages began rising long before the advent of the threat or actuality of unionization.

Chart I shows the rise in the output of goods from 1889 to 1957.⁹⁵ Except for a few periods, the trend line is generally upwards. Distinct periods can be noticed. The first period lasts until 1915 and is characterized by a gradual rise in both curves. Immediately after 1915, there is a general, but sporadic, rise in the output per unit of labor and capital and a decline, until 1920, in output per man-hour. After 1920, there is a rapid rise in the output of labor and capital and an even more rapid rise in per man-hour output. This rise lasts until 1929. After 1929, there is a fall in the output per unit of labor and capital until 1933, but a rise in output per man-hour or labor in manufacturing. After 1933, both trend lines travel upwards until 1945 with the exception of the period from 1942 to 1945 during which the output per man-hour in manufacturing stays relatively constant due, probably, to military use of labor

⁹⁴Rees, "Patterns of Wages, Prices and Productivity," p.22.

⁹⁵Ibid., p. 15. Chart I is drawn from the figures in columns six and seven of the Table referred to by this footnote.

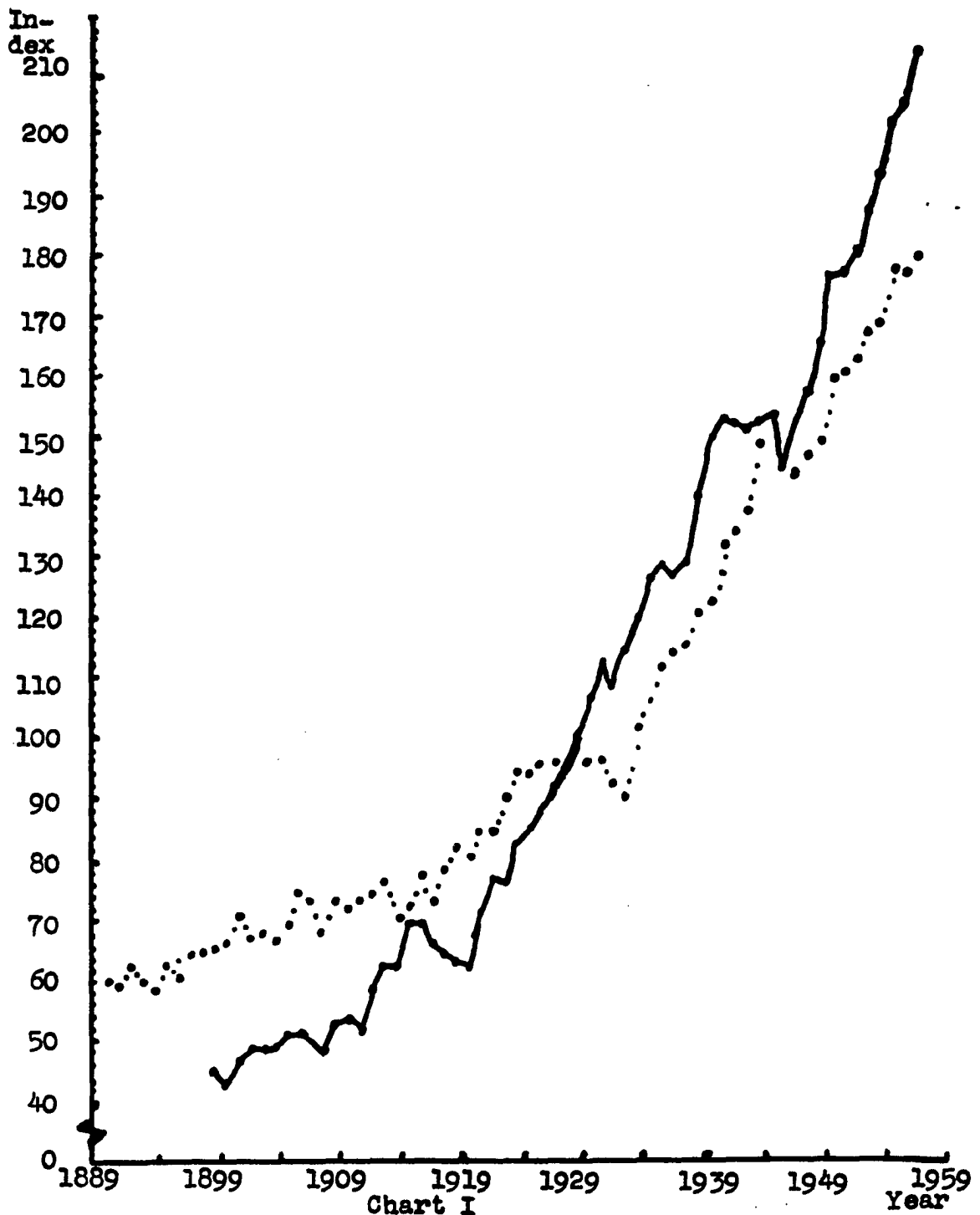


Chart I
Outputs Per Man-hour and Per Unit of Labor and Capital

Output Per Man-hour, Manufacturing

Output Per Unit of Labor and Capital, Private Economy

in the armed services and in industries where the emphasis was upon blunt output rather than productivity. From 1945 until 1947, there is a general decline in both trend lines but, after 1947, both trend lines slope upwards rather steeply as the so-called cold war and foreign demand for United States' goods becomes effective through foreign aid and other international developments. All in all, however, the trend in both the output per unit of labor and capital and the output per man-hour in manufacturing has been upward. In some rather lengthy periods (1933 to 1944 and 1947 to 1957), the upward trend is most striking. It can also be seen that the output per man-hour has increased more rapidly than the output per unit of labor and capital combined. This Rees has pointed out.

From Chart I, one may draw the conclusion that the general trend in productivity is upwards. Capital has accumulated and has been invested in ever greater amounts over the period from 1889 to 1957 and productivity per man-hour has increased to increase real wages.⁹⁶ The return to capital, as Rees has pointed out, has not increased, but this, he believes, may be due to the increased quantity of capital (in relation to the labor force).⁹⁷ Nevertheless, there does seem to be some validity to Fellner's analysis which places the emphasis

⁹⁶Ibid.

⁹⁷Ibid.

for dynamic growth on the proper amount of labor-saving and natural resource-saving innovations, technological changes, or managerial improvements. In the following chapter, however, Chart I will be viewed from a standpoint which does not allow for such an optimistic conclusion concerning the apparent impressive rise in productivity and output.

John W. Kendrick deals, also, with the problem of measuring the general trend of per unit output. He believes it necessary to relate output to some tangible inputs in order to determine net savings in the real costs per unit of output.⁹⁸ Also, he points out that output measurements do not measure increases in quality.⁹⁹ Kendrick states that from 1899 to 1953 average productivity increased at a rate of an average of one and three quarters percent a year.¹⁰⁰ In the thirty-three industries from which he derives his output and productivity figures, there has been no long-run negative changes in productivity.¹⁰¹

Kendrick also is explicitly interested in the relationship between labor and capital during this period. Like Rees, Kendrick concludes that the output of labor per unit has

⁹⁸John W. Kendrick, Productivity Trends: Capital and Labor, Occasional Paper 53 (Washington, D.C.: National Bureau of Economic Research, 1956), p. 2.

⁹⁹Ibid., p. 5.

¹⁰⁰Ibid., p. 8.

¹⁰¹Ibid., p. 9.

had a tendency to rise faster than the output of capital per unit.¹⁰² There has, also, been a tendency over the time period to substitute capital for labor or, in other words, to invest in labor-saving innovations or changes.¹⁰³ The tendency has, however, been mixed since in some industries (tobacco, oil refining and production, and gas utilities), the rate of labor-saving innovations has proceeded at a rate of one percent a year.¹⁰⁴ On the whole, however, no general conclusions can be drawn except that innovations have been both labor-saving and capital-saving.¹⁰⁵ The growth in productivity, then, seems to be rather independent of factor input changes over this period.¹⁰⁶ In some groups of industries where capital has been generally substituted for labor,¹⁰⁷ the growth of capital has not greatly exceeded the output growth.

The summary of Kendrick's study of output trends can be put in his own words:

Despite the greater increase in capital than in labor inputs, output per unit of capital has generally risen over the long period. Innovation has therefore been

¹⁰²Ibid., p. 10.

¹⁰³Ibid.

¹⁰⁴Ibid.

¹⁰⁵Ibid., p. 11.

¹⁰⁶Ibid.

¹⁰⁷Ibid.

capital-saving as well as labor-saving on the whole. In the few groups that are exceptional in this respect, the growth of capital has only slightly exceeded the growth of output. The almost universal gains in productive efficiency may thus be regarded as established irrespective of the weighting system employed in combining the factor inputs in the various industry groups.¹⁰⁸

From this, one may conclude, along with Kendrick, that projections have very little appeal since more might be lost from a refinement of variations in industrial changes, in segment changes, and in the changes in the economy as a whole in regards to output and productivity forecasts.¹⁰⁹

Moses Abramovitz also attempts to study the trends in output in the United States. He asks how large the increase in aggregate output per head has been, whether or not there has been significant retardation or acceleration and, lately, whether or not output fluctuations have been present.¹¹⁰

Abramovitz finds that there has not been any significant trend in the growth of total output per head.¹¹¹ He admits that there may be evidence from the national product estimates that a decline in the rate of growth is taking place--more particularly in total output than for output per head.¹¹² This decline, Abramovitz points out,

¹⁰⁸Ibid., p. 10f.

¹⁰⁹Ibid., p. 23.

¹¹⁰Moses Abramovitz, Resources and Output Trends in the United States Since 1870, Occasional Paper 52 (Washington, D. C.: National Bureau of Economic Research, 1956), p. 2.

¹¹¹Ibid., p. 6.

¹¹²Ibid.

therefore, is not due to the productivity of resources but, rather, to a decline in the rate of growth of labor and capital input per head.¹¹³

Abramovitz also points out that the rate of growth has not been even. The increase in the net national product, for example, has varied and has increased at an average rate of three and a half percent a year.¹¹⁴ At the same time, the net product of capital increased at a rate of nearly two percent per annum.¹¹⁵ Since 1870, the rate of growth has been smaller and, as a matter of fact, the last quarter of the nineteenth century witnessed much faster rates of growth than the second quarter of the twentieth century--a quarter of depression except for wartime spurts.¹¹⁶ In general, the most significant finding is that growth may be slowing because of the use of less resources per head with the exception of a recent rise in the amount of capital used per head.¹¹⁷ Productivity, however, has been rising, Abramovitz believes, at a fairly rapid pace and is, to him, one of the most significant facts about the post-Civil War period of economic development.¹¹⁸

¹¹³Ibid.

¹¹⁴Ibid., p. 7.

¹¹⁵Ibid.

¹¹⁶Ibid., p. 15.

¹¹⁷Ibid., p. 18.

¹¹⁸Ibid.

Summary

From the brief review of Rees, Kendrick and Abramovitz, one can see that there is the possibility that innovations of a significant labor-saving character are taking place and that the trend in output per man-hour is continuing to increase at a significantly rapid pace. Indeed, the Rees data shows a rather rapid rise in the output per man-hour. From the trends which seem to be rather evident from Chart I and the findings of Kendrick and Abramovitz, one might assume that there may well be some historically accurate and continuing trends in the upward increase in productivity and output per man-hour over the period of the last sixty to seventy years. Although these men are careful to indicate that no definite conclusions can be reached, Fellner, at least, implicitly assumes that the economy can depend upon these rises in productivity and labor-saving innovations to maintain the process of dynamic growth. The picture is, at best, a mixed one, and the researchers such as Kendrick and Abramovitz are careful not to project or to make too binding a conclusion as to the rate of the substitution of capital for labor in the form of labor-saving innovations and changes. This in itself may be significant.

A brief review may now be in order to bring Kendrick, Rees, Abramovitz and Fellner into a proper alignment with one another. Fellner, in the first place,

believes that the economy has grown because of the proper amount of labor-saving changes and the proper increase in the use of capital and the accumulation of savings to make possible the more capital intensive economic system.

Furthermore, he believes that present investment will generate a higher level of income to make necessary greater amounts of investment in the future. This investment will be forthcoming in ever greater amounts only if the improvement factor can generate labor-saving devices to enable the marginal efficiency schedule of capital to remain relatively constant--a rather fine balance between too high a labor cost and too much technological unemployment.

Rees points out and shows by his tables and charts that productivity has increased and that, even if per man-hour output has increased faster than the output of labor and capital and that real wages have increased more than proportionately,¹¹⁹ the economy has witnessed a relatively continuous rate of growth. It seems from his figures that the advent of depression relief, unionization and war have lifted somewhat the increase in real wages, but also productivity changes have increased rather rapidly the output per unit of labor and per unit of labor and capital.

Kendrick and Abramovitz both come to no definite conclusion and refuse to project the trends into the future. They do, however, seem to indicate a rise in

¹¹⁹Rees, op. cit., p. 15.

productivity and capital substitution, although Abramovitz sees a possible decline in the rate of growth relative to other periods of the nineteenth century which may be due to an over expansion decade or an over depressive decade in the quarters studied.¹²⁰ Even though the conclusions as to the exact rate of capital for labor substitution are variable and inconclusive, there has been a general tendency for the productivity and labor-saving trends to behave as Fellner believes. From these studies there seems to have been the proper rate of labor-saving technology (although the range limit may be wider than Fellner intimated) and rise in productivity. Fellner's first and primary corollary--the improvement factor--seems, therefore, to hold true. The corollaries as to mobility and the compatibility of credit and money policy and availability shall be assumed relevant (at least in the long run) even though there are certainly institutional factors which must be considered, but which are outside of the scope of this present work. The following chapter, however, will cast some doubt as to whether or not the first corollary of Fellner is, in fact, as verified as the studies of Rees, Kendrick, and Abramovitz might tend to indicate.

¹²⁰Abramovitz, op. cit., p. 14.

CHAPTER VI

CRITICISM OF THE FELLNER GROWTH THESIS

Like any economist or writer who has contributed any amount of original thought, Fellner has critics who attack him from many sides. One may attack Fellner from the standpoint of the flaws in his theoretical analysis or the flaws in the statistical data that have been used to verify his analysis. This chapter will take the opportunity to do both. Before I begin criticising Fellner, however, I should like to state that I think that Fellner's concept of the capital-output increment and the interaction of the accelerator to bring forth a process of dynamic growth is a most useful contribution to economics. My attack is not based on the analysis itself, but, rather, on the corollaries underlying it--the assumption of an almost automatic continuation of the improvement process and the mobility factors. It is my personal conviction that the improvement process and the mobility factor are not as assured as Fellner believes.

Since Fellner attacks the basis of the stagnation concept of diminishing technology (to an important enough

scale to keep the economy at a low level of employment), it is only natural that Alvin Hansen would have much to say concerning Fellner's analysis.¹ Hansen's major point is that Fellner presents us with various problems which cannot be resolved within the framework of his assumptions.

Fellner, for example, talks of the steady growth of technology, but fails to consider as important the post-Napoleonic depression.² It may well be true that the post-Napoleonic depression was caused by the sudden advent of peace in Europe along with the fading away of one stage of economic development prior to the emergence on a sufficiently large scale of the next phase of the industrial revolution.³ This, however, points out that the improvement process is not an assured phenomena and that, between stages, there can be partial stagnation.

The above reference to the post-Napoleonic depression begs another question. The reader might profit by asking himself if the improvement process would have been sufficient to stimulate the amount of growth needed to keep the economy advancing in the post-World War II period. The present writer can think of no single innovation that was of sufficient size to bring about a continuation of dynamic growth at the

¹Alvin Hansen, "Trends and Cycles in Economic Activity," Review of Economics and Statistics, Vol. 39 (May, 1957), p. 105.

²Ibid.

³Ibid.

high level of employment being maintained at that time. Indeed, the question may even be asked as to whether there was, in fact, any technological innovation of importance at that time. Peace-time use of atomic power was talked about, but very little done about it and, even if there had been, the adaptation of nuclear power would have been a slow process of replacement of re-adaptation of existing facilities over a long period of time which probably would not have then (or in the future) brought forth enough new investment to maintain the desired amount of employment and growth. It seems that what stimulated the economy after the Second World War was the fear of war with the Soviet Bloc, the financing of foreign demand for United States' capital and consumer goods to build or rebuild foreign economies destroyed or awakened by the war, and the accumulation of purchasing power throughout the war years on the part of the citizens of the United States. Thus, government spending for defense, foreign aid, and for certain domestic sectors provided the economy with what might seem to be the necessary investment stimulus which probably would have been absent if the economy had been forced to rely on the private sector entirely.

The above reference to government spending quite naturally takes us to the field of fiscal policy. Fellner believes that fiscal policy or deficit spending is the doom

of private enterprise.⁴ This seems to be contrary to fact. As Hansen has pointed out, the prosperity which we are currently in has been relatively long.⁵ It has, also, been largely related to the height of government spending both here and abroad.⁶ Fellner, on the other hand, fears that public spending will replace private investment and, thus, eventually, private enterprise. Fellner fails, however, to realize that public spending may well be in a field where the self-liquidation necessary for private investment is not relevant. In this case, if the public did not invest, investment would not be forthcoming in an area of potential development.⁷ Such things come to mind as highways and other internal improvements that cannot economically be provided by private enterprise, but upon whose existence private enterprise depends. Fellner may be partly right in assuming that in some cases public investment might supplant private investment but, even so, this generates private investment in other fields to serve the public welfare or the section which is benefited thereby. The Tennessee Valley Authority is an example of public investment which resulted in further private investment in industry, tourism,

⁴Ibid., p. 107.

⁵Ibid., p. 114.

⁶Ibid.

⁷Refer to J. K. Galbraith, The Affluent Society, chapters on Social and Investment Balance.

and agriculture--due largely to the stimulation of the public investment.⁸ Also, Fellner forgets that Europe has not seen a decline in private investment outside of certain fields.⁹ Indeed, the profits received from public stimulation may well go for research in private industry to bring forth innovations.¹⁰

Hansen also attacks Fellner for his emphasis on improvement, credit and mobility without any attention being paid to adequate aggregate demand.¹¹ Fellner feels that if the improvement process is sufficient and if the mobility of resources and the adjustability of credit are compatible to growth, adequate aggregate demand will a priori be forthcoming.¹² Hansen, on the other hand, believes that adequate aggregate demand brings forth the investment needed by the improvement process and, also, mobility.¹³ Mobility would seem to be greater when union members are less afraid of permanently losing jobs and when workers' present income is of sufficient size to enable them to move elsewhere to earn a sufficiently greater income depending, of course, upon one's definition of income. The Hansen-Fellner disagreement,

⁸Hansen, "Trends and Cycles in Economic Activity," p. 112.

⁹Ibid., p. 113.

¹⁰Ibid., p. 114.

¹¹Ibid., p. 109.

¹²Ibid., p. 112.

¹³Ibid., p. 109.

therefore, raises a most important question. Does the improvement process generate adequate aggregate demand through investment or does adequate aggregate demand provide the stimulus for investment? In other words, would an economic system of an advanced, private enterprise economy stage of development like that of the United States, invest before demand was adequate or would they rather invest in order to catch up to or channel adequate demand towards their own products? It is a chicken-and-the-egg type controversy. Which comes before the other--demand or investment? Fellner assumes that investment, mobility, and credit generate demand. Hansen believes that adequate aggregate demand is necessary for investment and mobility. It does, in fact, seem unlikely that a private entrepreneur would invest with the hope of stimulating economic growth. It seems more likely that he would invest to catch up with aggregate demand or to lower per unit cost of production in the face of a demand for his product. If the innovation be a new industry (like aluminum at the end of the last century), the same analysis would apply due to the fact that this investment was made not to create adequate aggregate demand (since the economy was at a sufficient height to support metallurgical industry), but, rather, in the hope of shifting the already existent aggregate demand from other metals to aluminum. The steel industry, itself, did not grow because net new investment in steel would create jobs demanding

steel, but because there was adequate aggregate demand for steel. It seems, therefore, that in a developing economy, adequate consumer purchasing power is essential to start and maintain investment.

In speaking of investment, Fellner introduces the capital-output increment. He explicitly states that dynamic growth is best carried forth when the capital-output increment is low.¹⁴ This, it seems to me, makes it impossible for anything but adequate aggregate demand to be present along with a high marginal propensity to consume. Unless we assume that the mere fact of investment creates enough demand to sustain the present as well as the future yield on capital through offsets to diminishing returns to capital, we cannot escape the dangers of inadequate aggregate demand. Unless this adequate aggregate demand is high and the marginal propensity to consume is high, the consumption increase will be relatively small in comparison to a low capital-output ratio. Furthermore, a nation with a relatively decreasing population would put a greater strain on the sufficiency of sustaining profit yields on new investment regardless of the height of the capital-output increment and would, at the same time, place a third burden on offsets to diminishing returns. In the first place, offsets to diminishing returns must keep the yield of capital

¹⁴William Fellner, Trends and Cycles in Economic Activity (New York: Henry Holt and Company, 1957), pp. 114-115.

high when capital is accumulating more rapidly than the population. In the second place, it must keep the yield on capital high in the face of a relatively declining population increase. In the third place, it must offset diminishing returns to bring forth ever greater relative and absolute amounts of investment in subsequent time periods. These burdens are not to be taken as lightly and assumed away as easily as Fellner seems to do.

Albert Rees has provided statistical proof of the increase in per man-hour output of labor and per man-hour output of labor and capital.¹⁵ The indexes have increased very greatly, especially in more recent decades maintained by war or government spending on a large scale. This seems to give credence to Hansen's belief that government spending might foster research and development.¹⁶ Rees shows the great increase in output per man-hour by drawing the curves for the absolute levels of the particular years. This proves that the economy has grown (if we assume that the population has not offset output gains). There is little doubt in most people's minds that the total level of the economy has grown and that the population is better off. Does, however, the increase in aggregate output per man-hour even on a rapid scale prove the existence of dynamic growth

¹⁵Refer to chapters II and IV.

¹⁶Hansen, "Trends and Cycles in Economic Activity," p. 114.

or the absence of stagnation? My personal conviction is that the increase in aggregates is insignificant. We are not interested in how high the lines go but, rather, in how rapidly they are changing from year to year. If the change in output per man-hour is not rapid or consistent enough, the increase in the height of the lines is irrelevant.

In order to determine whether there is sustained growth from year to year and over a long period of time, one must look at what is relevant. That which is relevant as to whether there is truly dynamic growth or stagnation is simply the measurement of the changes from year to year. Even if the long-run trend line is upwards, this does not mean that there has been constant and consistent growth. Indeed, the growth may well be due to factors outside of the area of the private economy.

Charts II and III are drawn from the same data that was given in Chart I on page 162 of Chapter IV. Charts II and III measure the deviations of output per man-hour in manufacturing and the output per unit of labor and capital from year to year. If, for example, a particular year's output per man-hour or per unit of labor and capital level is below, equal to, or above the output per unit level of the preceding year, that particular year will be represented by a minus, zero, or plus position on the graph,

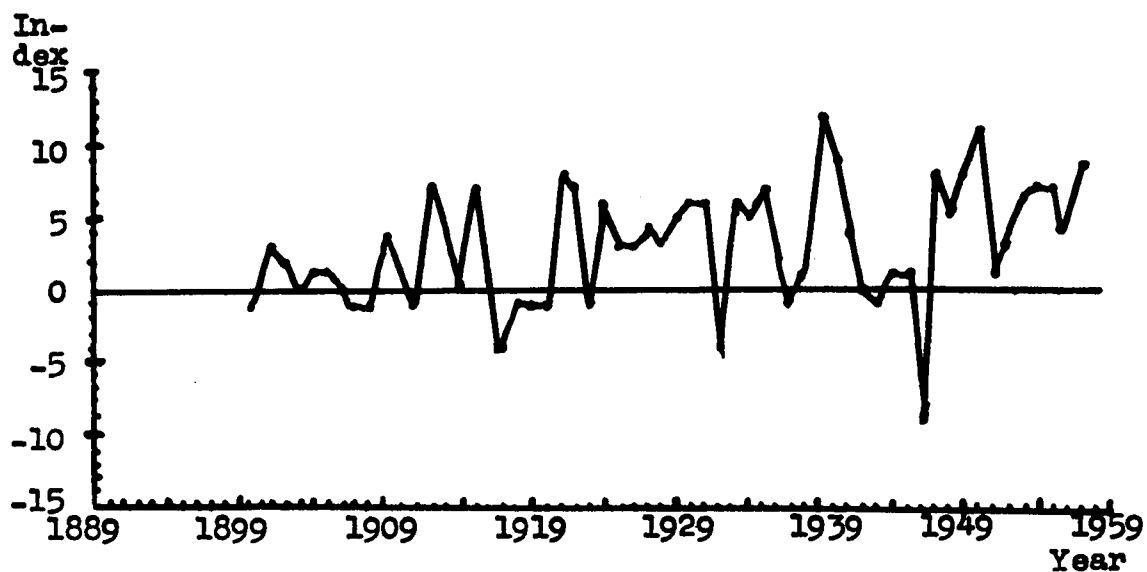


Chart II

Annual Deviations of Index of Output
per Man-hour, Manufacturing

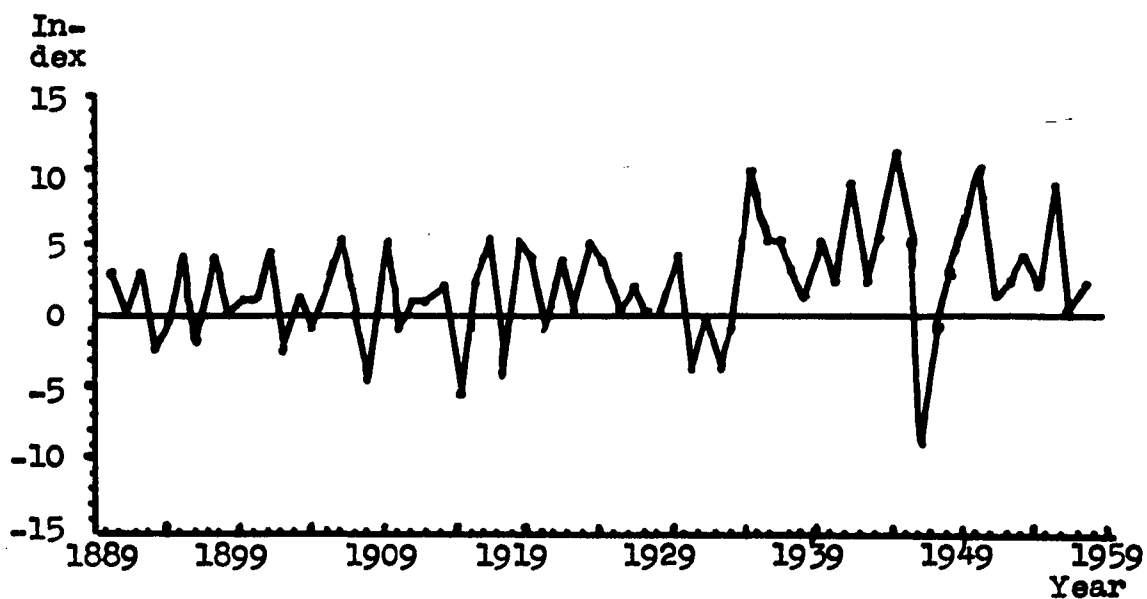


Chart III

Annual Deviations of Index of Output
per Unit of Labor and Capital; Private Economy

respectively.¹⁷ This enables the reader to study the actual distribution and consistency of upward and downward deviations in per unit output levels and changes as well as an opportunity to correlate these levels and changes with economic factors generally known to predominate at any particular time or period of time. One may safely assume that if output per unit deviations are mostly in the plus category, the economy is generally rising over time and that Fellner's principle of present investment yield depending upon subsequent investment is generally being met. If, however, there is a preponderance of zero or minus deviations from year to year, one may come to the conclusion that the general trend is not upward and that present investment is not being made profitable by subsequent investment through period to period shifts of the marginal productivity schedule of capital upward and to the right.

One can see from Charts II and III on page 180 that, indeed, the process of growth has not been constant. It is evident that there has been great deviations in the changes in output levels per unit from year to year. Also it can be seen that there has, in fact, been a rather large

¹⁷If, for example, the level of per unit output on Chart II for the year 1958 were 214 and the level of per unit output for the year 1959 were 216, the deviation would be a plus two and would appear as such on Chart III. If, however, the level of per unit output for 1959 was 210, this would represent a per unit of output fall of four index points and would thus appear as a point below the zero line with the magnitude of minus four for 1959.

number of minus and zero deviations from year to the next year. One can also see that since 1933, there has been a rather steady upward trend in per man-hour output in both indexes. Tables 1 and 2 break the data of Charts II and III down into more manageable periods from which we may draw more definite conclusions.

From Tables 1 and 2, we can see the consistency and the rate of output per unit changes for each year. We immediately notice some rather striking tendencies in the data. Between the years 1889 and 1957, the annual deviation of the index of output per man-hour has been a minus relation to the preceding year thirteen times which, in percentage figures, is equal to twenty-two percent of the years. During this same period, the deviation shows a zero change from the preceding year five times out of fifty-eight. Thus, in eighteen years out of fifty-eight, there has been a fall or no change at all in output per man-hour from one year to another. In percentage figures, this is twenty-nine percent. We can also see that annual deviations of one percent and less have occurred twenty-five times out of fifty-eight for a percentage figure of forty-one percent. This means that in almost fifty percent of the years, the rate of change has been plus one index number or less--mostly less. This hardly seems to indicate dynamic growth or present time period investment being justified by investment and yields in subsequent time periods or an appropriate shift in the marginal

TABLE 1

ANNUAL DEVIATIONS OF INDEX OF OUTPUT PER MAN-HOUR, MANUFACTURING

Years	1889-1957			1889-1932			1933-1957		
Total	58			33			25		
Devia- tion of Index	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions
-1 or More	13	13	22%	10	10	30%	3	3	12%
0	5	18	29%	4	14	43%	1	4	16%
+1	7	25	41%	3	17	51%	4	8	32%
+2	2	27	48%	1	18	54%	1	9	36%
+3 or More	31	58	100%	15	33	100%	16	25	100%

TABLE 2
ANNUAL DEVIATIONS OF INDEX OF OUTPUT PER UNIT OF
LABOR AND CAPITAL, PRIVATE ECONOMY

Years	1889-1957			1889-1932			1933-1957		
Total	58			43			25		
Devia- tion of Index	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions	Number of Devia- tions	Cumu- lative Number of Devia- tions	Percen- tage of Cumu- lative Devia- tions
-1 or More	16	16	23%	13	13	27%	3	3	12%
0	8	24	35%	7	20	46%	1	4	17%
+1	7	31	45%	5	25	58%	2	6	24%
+2	9	40	53%	4	29	67%	5	11	44%
+3 or More	28	68	100%	14	43	100%	14	25	100%

productivity schedule of capital with enough consistency to satisfy the corollaries of dynamic growth in Fellner's growth model.

The picture looks worse when one looks at the time period between 1889 and 1932. In this period, the output per man-hour in manufacturing has a negative relationship ten times out of a possible thirty-three occurrences of annual change. This is a percentage of thirty percent. A zero or less deviation from the preceding year occurred forty-three percent of the time during the span from 1889-1932. Fifty-one percent of the time, there occurred an index of plus one or less--again, mostly less. Therefore, a rate of growth of plus two or more occurred only forty-nine percent of the time. This hardly seems to be the dynamic growth discussed by Fellner.

From the time period 1933-1957, one sees quite another picture, however. In this time period, the general change in yearly deviations is of the plus category. In only three out of twenty-five years, for example, did the level of output per man-hour drop from one year to the next. Only thirty-two percent of the time was the rate of change from one time period to the next a plus one or less. This can be compared with the fifty-one percent figure for the 1889-1932 period. In sixty-eight percent of the years, there was, in fact, a change in the level of output per man-hour of plus two or greater. This does sound like dynamic growth. There

is, however, a point to be made. During the time period from 1933-1957, the Federal Government has, in general, been enacting a policy of fiscal balances or stimulation through social investment, expenditures and defense. During this period, however, there has been no appreciable decline in the scope of activities being carried on by the private sector. We are not now, despite fiscal policy, socialistic.

The Charts have shown that from the years 1889 to 1932, there have occurred deviations from year to year in output per man-hour of plus one or less fifty-one percent of the time with a great preponderance of this percentage figure being represented by minus or zero deviations from the preceding year. This is a sharp contrast to the period of 1933 to 1957 where the number of deviations from year to year of plus two or more are in preponderance. This contradicts Fellner on two points. In the first place, there has not been, prior to 1933, a general or consistent rise in output per man-hour helping to shift the marginal productivity schedule in the appropriate direction. Neither, then, has there been a general tendency for subsequent investment and yields to justify past investment and keep the yield on capital at the same level. In the second place, in the post-1933 period (despite the fiscal policies feared by Fellner), there has not been a marked or even evident decline in the private sector of the economy.

The data in Table 2 presents the Annual Deviations

of the Index of Output per unit of Labor and Capital. These are more convincing. During the period from 1889 to 1957, twenty-three percent of the deviations from one year to the next represent minus changes. Thirty-five percent of the deviations are either minus changes or zero changes. In all, thirty-one changes in the yearly deviations were of the magnitude of plus one index number or less--mostly less. In the period from 1889 to 1932, the evidence is even more striking. Thirty-six percent (that is, twenty out of forty-three deviations) are zero or minus deviations from the preceding year. Fifty-eight percent are of plus one or less whereas only forty-two percent are of plus two or greater magnitude. Certainly, one cannot believe that this almost fifty-fifty split in the direction of deviations from year to year indicates dynamic growth.

From the data from 1933 to 1957, however, a change can be seen. Only seventeen percent of the deviations are of a zero or minus nature. Furthermore, only twenty-four percent are of a plus one and under compared with fifty-eight percent from 1889 to 1932. This is a rather significant change. More importantly, one might say that the change in the percentage representation of the plus two or more category from a 1889-1932 height of forty-two percent to a 1933-1957 height of seventy-six percent is of major significance. Again, it can be pointed out that the 1889-1932 period was a period of more or less "laissez faire" with

unconscious fiscal policy whereas the 1933-1957 period was one of conscious fiscal policy on the part of the government plus a rather high level of spending and taxing.

The data on the per unit output of labor and capital tend to cast doubts upon Fellner's analysis from three points of view. In the first place, the fact that the level of per unit output of labor and capital combined has not risen as fast as the output per man-hour indicates that capital has not had as rapid a rate of growth of yield as has labor. Fellner's position that the improvement process must involve labor-saving and capital-consuming innovations to raise the marginal productivity schedule of capital by ever greater amounts upwards and to the right in order to offset diminishing returns on ever greater investment levels is greatly weakened, but not, of course, destroyed. In the second place, the fact that the 1889-1932 period shows a marked tendency to have a far greater amount of minus, zero, and plus one and less deviations than the 1933-1957 period means that there were greater stagnation tendencies in the former period. This indicates that the process of dynamic growth and ever-advancing movement upward and to the right of productivity schedules have not historically been consistently maintained. Furthermore, in the third place, the better performance of the 1933-1957 period indicates that the advent of fiscal policy during the latter period--even with higher taxes--has maintained a more progressive economic

growth than the former period without the destruction of private enterprise which Fellner believes to be inevitable under an atmosphere of government fiscal policy and planning.¹⁸

Fellner's analysis, therefore, has been shown weak not only on the grounds of the range of necessary productivity schedule shifts but also on two further grounds. First, that there has historically been a rather consistent rise in output per man-hour and per unit of labor and capital, and second, on the grounds that fiscal policy wrecks private enterprise, and initiative due to the absorption of private investment outlets and heavy taxation.

It might also be of benefit to look briefly at the process of labor-saving innovations. The thinking on the matter usually maintains that the labor released by labor-saving devices is absorbed by the concerns making the labor-saving devices. This, however, may not be so. The machines that replaced the laborers have already been made. Labor is fired not in time to make the machine that replaces it but, rather, as new machines are being installed. Also, it takes highly skilled labor in the machine goods industry. Furthermore, the machine goods industry tends to be geographically concentrated and probably draws from a rather tight skilled labor pool in the local area. Therefore, technical skills and the lack of widespread geographic

¹⁸Hansen, "Trends and Cycles in Economic Activity," pp. 111-112.

distribution limit the mobility of the replaced labor. In a rapidly expanding economy such as our own, the problem probably has not arisen because of the rise of new industries and services, which once more contradicts Fellner's belief that fiscal policy and deficit spending destroys private enterprise and initiative. A proper study of where replaced workers tend to go should be made dealing with the present period.

If, however, the labor-saving innovation results in a correspondingly lower price for the goods being produced, this will increase real income which will increase demand. The increase in demand will be an absolute increase, however, and not a relative increase due to the marginal propensity to save. This will mean that demand probably will not rise by the amount needed to offset the unemployment caused by technology. Thus, unemployment will not be ended by the absorption of the replaced laborers due to a possible increase in demand. If, on the other hand, the labor-saving innovations result in higher profits and little or no reduction of prices (which might be the case in a monopoly or an oligopoly market structure), the increase in income will go to upper income classes who have a very small marginal propensity to consume and a high marginal propensity to save or to the corporation's retained earnings account. If the result of the labor-saving device is slanted towards the increase in upper class money incomes or the retained earnings account

instead of the real incomes of the society as a whole, the increase in demand will be very little, if any, and will result in a continuation of a rather large level of technological unemployment. This, then, tends to belittle the typical arguments about the replacement of labor and its absorption due to increased demand for labor by the machine goods industries or by greater demand due to an increase in real income for the society as a whole. Also, it casts serious doubt upon the validity of Fellner's belief that demand should be de-emphasized and that capital accumulation should be emphasized.¹⁹

The reader should also remember the Abramovitz study, where it was found that there is a tendency for productivity increases to mean the use of less capital per head.²⁰ Fellner, however, stresses the growing need for more and more capital accumulation to meet greater and greater investment needs to satisfy the period to period process of dynamic growth. This dynamic growth is intensified by Fellner's accelerator principle of one time period's investment stimulating a greater income level of income needing absolutely and relatively more investment to maintain the resultant income level and process of dynamic growth. The Abramovitz

¹⁹Fellner, Trends and Cycles in Economic Activity, p. 122.

²⁰Moses Abramovitz, Resource and Output Trends in the United States Since 1870, Occasional Paper 52 (Washington, D. C.: National Bureau of Economic Research, 1956), p. 6f.

findings tend to take the emphasis off of an ever increasing amount of capital accumulation and might, in fact, shift the emphasis to more consumption and less savings. This seems to be an important and crucial anti-Fellner finding. It does not, however, mean that anti-stagnationists can use it successfully unless the average and the marginal propensity to consume rise to such a point as to make investment nominal. This seems rather improbable especially when one considers institutionalized savings by individuals and corporations through social security, insurance, and retained earnings.

Another criticism relates to the emergence of the so-called organization man. This creature is not the type of person to shift the marginal productivity schedules further upwards and to the right. Instead, he is the status seeker trying to find and maintain his own niche in the corporation. If he has ideas, he refrains from speaking, but rather he remains diligently carrying out the prescribed orders under the prescribed techniques. The committee to which he belongs often meets simply to be meeting or, at best, reaches no decision as to change in, at least, a conceivable length of time. It is a private report hearing society going over things it already knows and knocking anything new around so much that when it comes out of committee it is so narrowed in its application that it is either unworkable or so unimportant as to be not worth the time of putting it into effect. The

innovating individual would leave such a meeting angry, frustrated, repressed or looked upon as a bad risk for the stability of the company and his fellow workers. The organization man seems to be a threat to the innovating process and, thus, to the fulfillment of Fellner's first and primary corollary.

In conclusion, it might be said that Fellner's analysis is greatly weakened. His emphasis on investment prior to effective demand seems to place the cart before the horse in an industrial economy. His fear of fiscal policy and planning is not justified by the facts. Indeed, if we compare the 1889-1932 record of growth to the 1933-1957 record of growth, his position is refuted. Furthermore, the general and continual rise in output per man-hour and per unit of labor and capital has not, until the advent of fiscal policy, taxation, and deficit spending, been fulfilled. Managerial improvements and labor-saving devices present serious questions as to labor mobility. This is particularly true for an economy that does not have the rapid growth of new industries and services made possible by continued fiscal support of prosperity. Also "organization type" individuals are not the innovators necessary for shifts of the productivity schedules. In all, one can say that although the concept of dynamic growth is useful, the basis of Fellner is greatly undermined. There has not been the historical growth of which he speaks and relies upon, and his emphasis upon

capital accumulation and private investment seems unsupported by the facts. One cannot say that the dynamic growth discussed by Fellner is the general rule. Indeed, the facts seem to indicate that it has not been the general rule prior to government spending, planning and fiscal manipulation. Hansen, then, seems historically and practically more relevant to our economic past and future.

CHAPTER VII

THE BLOCS TO TECHNOLOGICAL PROGRESS

The process of technological invention and innovation seems to be the crucial factor in the maintenance of dynamic growth. William Fellner points out that the economy needs a balance of labor-saving and capital-using innovations in order that dynamic upward growth might continue. He makes this so-called improvement process the primary corollary to his theory of economic development. The absence of a frontier, a decrease in the rate of population increase, and the increase in the importance of depreciation reserves are made insignificant factors if, in fact, the correct balance of capital-using and labor-saving innovations can be maintained. Fellner is confident that such a balance can be maintained providing that there is price flexibility, effective monetary policy, a form of workable competition (which is implicitly assumed, but not explicitly stated), and sufficient mobility of resources.

Fellner is perhaps correct in his optimism concerning the technology in a more or less flexible and competitive economy. He may not be correct, however, in an era where

oligopoly and administered pricing is the general policy of the day. It may very well be true that more rapid obsolescence of capital goods might stimulate investment. For example, Robert Eisner contends that the decrease in longevity from twenty-five to twenty years would increase the demand for replacement in relation to total output.¹ This, however, is true only so long as obsolescence continues to grow shorter. The accelerator would have an adverse effect upon the economy when the decrease in longevity began to be lessened. Thus, Eisner must assume a continued lessening of the life of capital without limit.

Also however we enter into the problem of whether technology is widely shared. If technology becomes a means of forcing competitors out of the market, gains in one area could be offset by bankruptcies elsewhere. In its investigation of patents, the Temporary National Economic Committee found that

Ours has become a machine economy, and the advance of all the sciences has been enlisted in the service of the making of wares. It is today hard to think of a trade whose operation does not rest upon an intricate and dynamic technology. Whatever an industry, a legal right to enter is of little avail unless the adventurer has access to the industrial art.²

¹Robert Eisner, "Technological Change and Aggregate Demand," American Economic Review, Vol. 46 (March, 1956), p. 100.

²Temporary National Economic Committee, Patents and Free Enterprise, Monograph 31 (Washington: U. S. Government Printing Office, 1941), p. 158.

In a society in which knowledge accumulates slowly and inventions are technical events, patents stand out sharply as exceptions to the general rule and leave the fund of accumulated knowledge little disturbed. In a highly dynamic society in which productive process is subject to rapid obsolescence and "improvements" are matters of conscious design, such private claims may blanket the whole of technology.³

All of this leaves its impress upon the pattern of free enterprise. In industry after industry access to the common body of knowledge is not enough. An improvement reduces cost, improves quality, produces a new ware, adds a smart wrinkle--and puts at a competitive disadvantage all who do not have access to it. An industrial art is made the creature of conscious development; before an innovation becomes common property, another follows and the art is kept blocked off. It is beyond the reach of all who are within, or would enter, the trade, save upon terms dictated by a privileged competitor. An exclusive right to a step in a process thus becomes a monopoly of a whole technology.⁴

Thus, even if technology is increasing in an industry, this may not aid the economy, but rather lead to further concentration in the hands of a few at a significant cost to the many.

John Jewkes casts serious doubt upon the usefulness of large-firm research organizations for the development and adoption of technological improvements. He points out that during the nineteenth century most inventions came from persons with little scientific training and simple laboratory apparatus.⁵ Judging from history, Jewkes maintains that

³Ibid., p. 159.

⁴Ibid., p. 161.

⁵John Jewkes, "The Sources of Invention," The Freeman (April, 1958), p. 57.

crucial inventions have no prejudice concerning the time of their arrival and, hence, there is no pattern or cycle of inventions.⁶ Invention, he believes, seems to need duplication, waste and untidiness that would be unthinkable to administrative planners which makes research institutions impractical.⁷ He agrees with Einstein, whom he quotes: "I am a horse for a single harness and not cut out for landau or teamwork."⁸ This fits Jewkes' contention that any organization is as strong as its weakest mind and that the single mind is the most efficient organization.⁹ Indeed, he fears that organizations might even stifle inventive genius. For proof of this, he points to the dearth of inventions coming from teams in both the United States and the Soviet Union. Even where teamwork has developed something of value, it has usually been based on the previous works of a single person (radio, recording, catalytic cracking, titinium and plastic) or of a single firm (continuous hot strip rolling of steel, Terylene and D.D.T.).¹⁰ Large firms have given us such things as Nylon, Freon and Tetraethyl lead.¹¹

In studying the twentieth century Jewkes still

⁶Ibid.

⁷Ibid.

⁸Ibid., p. 54.

⁹Ibid., p. 55.

¹⁰Ibid., p. 49.

¹¹Ibid., p. 46.

maintains the usefulness of individual research as compared to institutionalized research. He finds that out of sixty inventions studied, over one-half were the result of pioneer work carried out by individuals with limited resources.¹² Thus, there seems to be a strong case against institutionalized research for the purpose of bringing forth inventions due to historical lessons and the incompatibility between administrators and inventors. Any further attempt to institutionalize inventions or technological research might conceivably reduce the number of inventions forthcoming. This might reduce the effectiveness of technology as a force in dynamic upward growth and bring about an eventual stagnation of the economy as the burdens of institutional planning and administrative restrictions rob the inventor of his essential characteristics that make him "a horse for a single harness."

Gordon Bloom investigates the problem of technological progress in relation to wage pressure and institutional hindrances inherent in union-management relations and the purpose for which management carries on research. Bloom works within the framework of a multi-product plant and competition based not on price and cost differentials but upon product or quality differentiation. He does this by attempting to find some correlation between union-wage pressure and technological advance.

¹²Ibid., p. 49.

Bloom points out that wage increases may affect the volume of expenditures, influence the nature of research, affect the proportion of exploitable discoveries, or change the average gestation period of inventions.¹³ He points out, however, that expenditures on research have increased since 1920, whereas wage pressures have increased only since the nineteen thirties.¹⁴ Also, his survey of fifty directors of corporations seems to indicate little correlation between wage pressure and expenditures for research or exploitable ideas coming from research.¹⁵ He finds that most research is carried on for the purpose of product differentiation and improvement or for the development of new products instead of for cost-reduction.¹⁶ Thus, it appears doubtful that wage pressure has much influence on expenditures or the amount of profitable suggestions. It also seems to confirm the further proposition (discussed earlier in Chapter III) that the market structure is essentially an oligopolistic one which makes possible the hindrance of technological change. Bloom thinks that research expenditures are allocated on some basis of percentage to sales or by using the budgets of other

¹³Gordon F. Bloom, "Wage Pressure and Technological Change," The American Economic Review, Vol. 41 (September, 1951), p. 604.

¹⁴Ibid., p. 607.

¹⁵Ibid.

¹⁶Ibid.

companies as guideposts for research policies.¹⁷ Apparently, the idea comes first and the allocation of money comes later.¹⁸ It seems that research expenditures are more closely correlated with business cycles pressures than wage pressures.¹⁹

Bloom does admit, however, that in a market structure which competes by product improvement, wage pressures could increase the rapidity of product differentiation.²⁰ This seems to be rather doubtful due to the fact that the demand curve of many basic oligopolies is inelastic which makes research expenditures less effective as a means of maintaining profits than the method of price leadership. Also, when considering an imperfect market structure, it must be remembered that unions themselves have an effect on the amount of labor-saving improvements put into effect. Since labor-saving improvements decrease the number of needed workers, this displaces labor. This the unions do not want and will attempt to stop. Thus, union rules and regulations may be orientated towards blocking the introduction of technological change.²¹

From the above, it may be concluded that there is little correlation between union-wage pressure and cost-saving

¹⁷Ibid., p. 610.

¹⁸Ibid.

¹⁹Ibid., p. 611.

²⁰Ibid., p. 612.

²¹Ibid., p. 617.

research. Also, there seems to be a possibility that there is no direct relationship between wage pressure and product improvement because of the nature of the oligopolistic market structure and the demand curve facing many oligopolists. Finally, the growth of union pressures to maintain employment may tend to block technological improvements and, thus, break down and make ineffective any correlation that might otherwise exist. Thus, due to the nature of the market structure and the present means of competition, the product demand curve and the attitude of unions towards labor-saving technological improvements, labor-wage pressure may have no effect upon research expenditures or the number of profitable improvements. There may, indeed, be an adverse effect due to a combination of the union and oligopolistic market structure realities. Thus, institutional blocs to technological change may develop.

A study of blocs to technology must, however, consider the analysis of Thorstein Veblen. He believed that the course of development of capitalism would lead to a dominance of financiers instead of the owners of industry. This would tend to stagnate the economy because the financiers will not be interested in output but rather in financial matters. Indeed,

. . . as fast as commercial considerations, considerations of investment, come to rule industry, the investors' interest comes also to exercise an inhibitory surveillance over technological efficiency, both by the well-known channel of limiting the output and holding up the price

to what the traffic will bear,--that is what it will bear in the pecuniary sense of yielding the largest net gain to the businessmen in interest--and also by the less notorious reluctance of investors and business concerns to replace obsolete methods and plant with new and more efficient equipment.²²

. . . from the standpoint of the community at large and its material interest, the out-of-date equipment and organisation should profitably be discarded--"junked" as the colloquial phrase has it--and the later contrivances substituted throughout; but it is the discretion of the businessmen that necessarily decides these questions, and the whole proposition has a different value as seen in the light of the competitive pecuniary interests of the businessmen in control.²³

Veblen, thus, places a great deal of emphasis upon the growth of financial dominance over business affairs.

He refers to this concept as the ". . . restraining dead hand of their past achievement. . . ." ²⁴ On the basis of this, he concludes that an advanced industrial country has economic disadvantages in relation to a newly industrialized country. It will also be pointed out below that this concept might well contribute to stagnation. Veblen looks at the United States economy and concludes that:

American business is eminently of a financial character, and the traffic of these financiers runs within the closed circuit of money-market strategy, with any industrial effects of this financial management coming in as incidentals. The controlling incentives are those of the market for securities, not those of the output of goods; and the final decision vests in the investment banker, not in the engineering staff of the manager of

²²Thorstein Veblen, Imperial Germany and the Industrial Revolution (London: MacMillan Company, 1915), p. 30.

²³Ibid., p. 126f.

²⁴Ibid., p. 128.

the works. The discretionary direction of affairs has in effect passed into the hands of these financiering houses, whose ostensible relation to the industrial concerns is that of underwriters only. While these financiers exercise the discretion, they have no responsibility for the conduct of the industries dependent on their discretion.²⁵

It could be argued, however, that many large industries or corporations have, perhaps, escaped the hands of the banker except when they wish to issue new securities. As was found earlier in the testimony of Alfred Sloan, many corporations of great size have depreciation reserves of sufficient size to escape the money-market even for new investment. The spread of depreciation practices may increase this tendency into other industries and even into small business. Thus, for large-scale business, the banker may be divorced from investment decision. This is not due primarily to the fact that business investment decisions are held back by union pressures or by the conservatism of financiers. Indeed, it is because of the very nature of large-scale industrial enterprise itself. Thus, we may be approaching a period of built-in-stagnation.

Marvin Frankel amplifies the economic theory of Veblen concerning ". . . what is now in a degree an obsolete state of the industrial arts. . . ." ²⁶ According to Frankel:

²⁵Ibid., p. 321f.

²⁶Ibid., p. 127.

The relevant hypothesis can be stated as follows: As an industry (or industrial economy) grows and adapts to changing and increasingly complex production methods, interconnections, more or less rigid, develop among its technological components--among machines, plant, transport network and raw material supplies--that make increasingly difficult the introduction into the system of new, cost-saving changes.²⁷

In such a theory, there are three problems. The first is that of undepreciated costs and future outlays. The second problem is that of the interconnections of the production process. The third problem is the pattern of ownership between the various phases of production from raw materials to eventual sales. These can all lead to a hindrance of technology.

The first two problems can be handled together and will be the main ones dealt with. If undepreciated machinery is to be written-off to adopt the new method, the new method will only be adopted if total profit (the excess of total revenue over total cost) is greater than the total revenue less future costs of the old method.²⁸ This is, of course, common sense. The problem is whether or not new methods can meet the test of increasing profits after the loss from the writing-off of undepreciated capital is deducted. This involves a close consideration of the production process in

²⁷Marvin Frankel, "Obsolescence and Technological Change," American Economic Review, Vol. 45 (June, 1955), p. 297.

²⁸Ibid., p. 299.

an advanced industrial economy.

The production process is both interrelated and complex.²⁹ Therefore, a technological improvement must not only prove profitable at one state, but must offset costs of adapting the other stages to the improvement in the one stage. It may well be, for example, that an improvement in one process or step in production may make changes necessary in preceding and subsequent steps--the type of quality of the raw material, labor and management.³⁰ On the other hand, if ownership is fragmented throughout the stages, it may be impossible to consider such a technological improvement that relates to several production stages.³¹ Thus,

Confronted with this situation, the enterprise would compare the new and old methods not on a component or machine basis but on an entire plant basis since only by replacing existing plant in toto could it utilize the new machine. Even if, on the machine basis, profits from the new method exceeded revenue less future cost of the old method, comparison on an entire plant basis probably would find profits from the new method below revenue less future costs of the old method; rarely would the gains resulting from improvements in a single machine suffice to warrant immediate replacement of the entire plant.³²

This would be especially difficult if the obsolescent period

²⁹Ibid., p. 301.

³⁰Ibid., p. 309.

³¹Ibid., p. 310.

³²Ibid., p. 302.

of the various stages differed one from another.³³ The use of an old method, then, would continue until all stages were depreciated. This would involve the round-about process of putting-off the introduction of technology.³⁴ Therefore, development and upward dynamic growth would be stopped due to the complexities of large-scale enterprise.

A concept of stagnation is then contained in the process of growth of large-scale business enterprises and concentration. Research is carried on for product differentiation and can even be limited in its effectiveness by the realities of price leadership. Price leadership helps to make product research that might be otherwise correlated with wage pressure unimportant because of the presence of an inelastic demand curve. Because of the phenomena of inelastic demand, the industry need not spend so much time getting ahead cost-reduction wise. They may simply increase prices. The extent of the lessening of technological change or improvement caused by this phenomena, of course, cannot be known without clairvoyance. On the other hand, union restrictions of technological innovations may lessen growth. On top of this, the restraints manifested in the complex interrelationships of production and obsolescence make the improvement process of Fellner doubtful and seems to indicate a built-in type of stagnation. Essentially, built-in-stagnation involves the

³³Ibid.

³⁴Ibid.

development of what Frankel calls a "profit-gap." This gap is the difference between the profits required when interrelatedness is dominant in industrial enterprises and the required profits when there is no interrelatedness.³⁵ The fact that when interrelations develop, the cost-saving element of the innovation must cover not only the losses incurred in scrapping one machine, but also, the cost of scrapping or adapting machines, raw materials, labor or management in other stages of production. Such a burden may prove too much for any technological innovation. Thus, the hindrances to technological progress and dynamic upward growth are built into the economy because of the size and complexities of modern industry.

The problem of undepreciated machinery and the problem of whether total profit is greater than the total revenue less the future costs of the old method can be seen quite easily. The essential, basic and strategic industries of our economy are interrelated, large-scale industries. Also, they are to a greater or lesser degree oligopolistic market structures. Since they are interrelated, they have various stages in the process of production. Each stage follows the preceding stage and prepares the product for the subsequent stage. The following illustrates such an industry (or firm).

$$A \rightarrow B \rightarrow C \rightarrow D \dots n$$

³⁵Ibid., p. 307.

That is A starts the manufacturing process going and feeds the product to B which in turn changes or adds to the product and sends said product to C. From C the product goes to D and from D it goes down the production line until the process of production is completed and the consumer has the product. This implies, of course, that part of the production process may involve packaging, advertising and distributing of the product as well as its actual manufacture.

Two things need to be borne in mind. First, A feeds B. Thus B is determined by A. Next B feeds C which means that C is determined by B which in turn is determined by A. Therefore, we have

$$B = f(A)$$

$$C = f(A + B)$$

$$D = f(A + B + C)$$

$$n = f(A + B + C + D \dots n - 1)$$

This says that each stage in the process of production is dependent upon the preceding stages of production. Thus, a change in preceding stages of production necessitates a change in all stages of production. Also, a change in a subsequent stage of production necessitates changes in preceding stages of production. This is because of the second problem that must be borne in mind, namely, that any change in any stage of the production process changes the quality of the product or the amount of the product produced in any time period. If this be the case, preceding stages may have

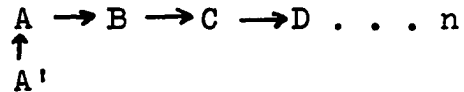
to prepare the product differently or faster and subsequent stages will also have to be changed so as to handle the product differently or faster. The greater and more important the technique change or the change in the step in the process of production, it follows that the greater will be the need for (and cost of) changes elsewhere.

Again, however, the model may be referred to for an analysis of the depreciation problem. The structure of the industry (or firm) is as follows:

$$A \rightarrow B \rightarrow C \rightarrow D \dots n$$

Each of the stages of the process of production (or more exactly the machines involved in each of the stages of production) are being depreciated. Two problems immediately arise. First, the life of the machines vary or are likely to vary. Second, the machines may not have been installed at the same time which means that they probably will not be completely depreciated at the same time. Thus, there is a strong likelihood that the machines will not depreciate at the same time.

The effect of this on innovation can be seen if it is assumed that A is completely depreciated and can be replaced. However, A' enters to represent a new technique or a new type of machine which can replace A and lower the cost of production of that stage in the process of production. Thus, we have



The question arises as to whether A' can be innovated or as to whether A should be replaced with an old type machine--another A which can be symbolized by the expression A_2 . An analysis of depreciation answers this significant question.

A is completely depreciated, at this time. B, C, D, etc., however, may not yet be completely depreciated. B may be more completely depreciated than C, etc., or vice versa. Since the other machines in the subsequent stages of the process of production are not depreciated, A' cannot yet be innovated. A' cannot be innovated because if it were it would change in some way the quality or quantity of the product at this point which would necessitate changes in or replacement of subsequent machines. Since these machines are not yet depreciated, they will not be changed substantially, and will not be replaced by machines of another type. If, however, the innovation came at a point near the end of the production process ($n - 1'$) it might then be innovated since only one subsequent state exists (n). $N - 1'$ would not be innovated however, if it required changes not only in the subsequent stage, but also in preceding stages. The managers would decide (as they did in the case of A') to replace the old, depreciated machine with a similar machine until the other stages of production were not completely depreciated. Since, however, complete

depreciation of the other machines will not coincide with each other (particularly since we have replaced old A with a new A_2) B will depreciate before A_2 is depreciated and also possibly C. Thus, even though B may be now depreciated and C may be more completely depreciated than before, A' will not yet be innovated because A_2 is just beginning to be depreciated. The vicious cycle continues. A' will never be innovated unless the savings compensate for the expense of scrapping the undepreciated machinery from B through n.

Frankel believes that A' will be innovated if it (the new method) brings about a total profit (the excess of total revenue over total cost) that is greater than the total revenue less the future costs of the old method of production.³⁶ This means that the savings caused by the innovation of A' (the lower costs of production at this stage in the process of production) will have to more than compensate for losses required if other stages yet undepreciated are to be scrapped or greatly modified. It seems unlikely that such will be the case. Indeed, it seems likely that the savings in production costs caused by innovation of A' would have to compensate more than just a little for the cost of scrapping or modifying B . . . n. In other words, the total profit from innovations would have to be substantial. This is due to two factors discussed previously.

³⁶Ibid., p. 299.

First, there is the problem of an oligopolistic market structure. Any basic reduction in the cost of production that would have a substantial effect upon the economy as a whole would have to come in a large, basic and strategic industry which is tied in with other industries. The iron and steel industry, for example, more or less sets a basis for not only the price of steel, but also the price of automobiles, trucks, highways, construction of buildings or any other product or products that use steel-including the machinery itself. This industry has a great deal of imperfect competition involved in it and can generally be described as an oligopoly. Price leadership is also obvious in this industry,³⁷ and price increases have been greater than wage increases.³⁸ These factors seem to indicate the presence of oligopoly. Most other large, interrelated and strategic industries also have in them a great deal of imperfect competition. Since they do have a market structure which is non-competitive, there is no reason to believe that these companies will innovate even if the total profit after innovation is greater than total revenue less future costs of the old method. The companies

³⁷"United States Steel Dictates Prices that Are Up-- But Not Running Away," Business Week (August 11, 1956), pp. 24-25. Also refer to "Big Steel Gains in the Field," Business Week (May 3, 1958), p. 34, as well as "Pinning Inflation on Steel," Business Week (November 14, 1959), p. 14.

³⁸Herman Roseman, "The Price of Peace in Steel," The Reporter (February 6, 1960), p. 14.

or the industries would not have to because they can depend on others not doing so. Indeed, with patent-shelving this might be guaranteed. Also, even if they did innovate they might not decrease the price to pass the savings onto the consumers which would result in the reduction of the usual stimulating effects of a new innovation.³⁹ If Steindl's observations are correct, probably the innovation would not come about because of the fear of greater than desired excess capacity in that

The difference in the level of investment activity in different stages of the secular development can thus be explained in terms of an endogeneous theory, taking account of well-known structural changes such as the development of monopoly. From the above discussion it appears likely that utilisation operates as an adverse influence on investment in the period of economic maturity in contrast to earlier periods, when it did not do so. . . .⁴⁰

Second, Hamberg points out that business bureaucracy fears dipping into the liquid assets of the firm and, furthermore, does not escape the tendency to maintain the status quo and the desire for security.⁴¹ Also, patent-shelving is an important tool in inhibiting the innovation of technology.⁴² Reddaway also believes that the market structure

³⁹The reader is referred to Joseph Schumpeter, The Theory of Economic Development.

⁴⁰J. Steindl, Maturity and Stagnation in American Capitalism (Oxford: Basil Blackwell, 1952), p. 137. The reader may also refer to Chapter III of this dissertation.

⁴¹D. Hamberg, Economic Growth and Stability (New York: W. W. Norton and Company, 1956), p. 128. The reader may also refer to Chapter III for a more complete analysis and review of Hamberg.

⁴²Ibid., p. 122.

can inhibit innovation. He states that the dominant firm could prevent the introduction of the technique (after they had prevented the entrance of new firms) because of the fact that they do not want to destroy present capital values and need not fear the adoption of the technique by other "competitors" who are also interested in maintaining present capital values.⁴³ Thus, even if A' meets the total profit test of Frankel, it seems that there still may be blocs to its innovation. Even if A' were innovated, however, there still remains a very basic problem; and this is the problem of internal financing and the accumulation of savings in the upper income groups outside of the corporation.

The innovation of A' could most likely be paid for by internal funds. The "retained earnings," "undistributed profits" and the spread of depreciation charges mean that the large corporations do not have to go to the banking system or to the securities market for investment funds. Dr. Oscar Altman of the Securities Exchange Commission stated before the Temporary National Economic Committee that from 1923-1929 (a period of boom), seventy-five percent of all fixed capital requirements were internally financed.⁴⁴ This is because

⁴³W. B. Reddaway, The Economics of a Declining Population (London: George Allen and Unwin, Ltd., 1939), p. 110. The reader is referred to Chapter III for a more complete analysis or review of Reddaway.

⁴⁴George Terborgh, The Bogey of Economic Maturity (Chicago: Machinery and Allied Products Institute, 1945), p. 28.

. . . depreciation allowances are sufficient not only to maintain the productive capacity of industry but to increase it substantially . . . because the accruals over the life of the machine will typically replace it with a machine of higher capacity and in consequence, demand for individual savings will appear only when the expansion of total productive capacity is rapid--too rapid to be covered by depreciation allowances.⁴⁵

Thus, even if A' is innovated, it will not absorb individual savings or institutional savings which might mean an increase in the relative propensity to save--or would at least increase savings and at the same time destroy the main source of investment demand for private savings--the need to innovate with outside funds. This may be especially true in light of Hansen's observation that accounting and depreciation methods are spreading.⁴⁶ Therefore, even if A' is innovated, the problem of the accumulation of savings still persists. Without the historical demand from investors, this seems to be a tendency leading eventually to stagnation.

Even though the innovation of A' would not solve the problems of savings, it is hardly unlikely that A' will be innovated. The interrelated process of the stages of production present a problem of depreciation. The problem of depreciation makes it necessary for the total profit from the new technique to exceed the total revenue less total costs of the old method. This means that the savings of innovating

⁴⁵Ibid., p. 29.

⁴⁶Alvin Hansen, "Some Notes on Terborgh, The Bogey of Economic Maturity," Review of Economics and Statistics, Vol. 28 (August, 1946), p. 16.

A' must more than cover the losses involved in modifying or scrapping B . . . n. Also, the oligopolistic market structure, the rise of business bureaucracy, patent-shelving, the fear of excess capacity, the desire for the status quo and the lack of the fear of competition all combine to make it very unlikely that A' will be innovated even if it does cover the costs of modifying or scrapping B . . . n. Thus, the adoption of technology and the absorption of savings by any possible adoption of technology are no longer significantly dynamic factors in the American economy. Such a reality leads one directly into the potentiality of economic stagnation. The result is unemployment and possible economic, political and social collapse.

CHAPTER VIII

CONCLUSION

A critical analysis of the growth theories of Alvin H. Hansen and William J. Fellner reveals the presence of a basic split between economists with respect to the secular direction of economic development. Alvin Hansen maintains that a laissez faire capitalistic system would have strong propensities to stagnate. William Fellner, on the other hand, maintains that such an economic system would have an inherent tendency towards dynamic, upward growth. This Fellner maintains is due to the proper, long-run orientation of technology towards a proper balance of labor-saving and capital-using innovations. Fellner maintains this is possible (and has historically been forthcoming) when there is the proper type of monetary policy and the mobility of the various factors of production. Fellner maintains that the monetary policy and mobility corollaries are fulfilled and, thus, it is possible for the technological corollary to be fulfilled. Thus, dynamic, upward growth is possible.

Fellner is of course assuming an economy that approximates the competitive model. Such a model is in theory

sufficiently influenced by monetary policy and also has a relatively large amount of mobility of resources. It has not been the purpose of this dissertation to analyze monetary policy. The dissertation has, however, indirectly analyzed the mobility corollary of Fellner's thesis. If the mobility corollary is not present, dynamic, upward growth would not take place because even with the development of technology of the proper type, there would not be the innovation of this technology. Without the innovation of technology, economic growth and progress cannot be maintained.

The dissertation has used the analysis of several persons in relation to this dual problem of mobility and technology. J. Steindl, for example, analyzed the effect of excess capacity in relation to economic growth. He maintains that:

The inelasticity of gross profit margins in an economy dominated by monopoly will thus reinforce any given fall in the rate of growth of capital. But, as pointed out earlier on, the effects of monopoly will not only be to make profit more rigid, it will be to raise them and moreover, entrepreneurs will have a greater fear of excess capacity under a regime of monopoly. For both of these reasons there will be a tendency for the rate of growth to fall. Utilisation will be lower than it was before monopoly became dominant, and, moreover, the investment attributable to the influence of any given level of utilisation will be lower owing to the fear of excess capacity.¹

Thus, there is a strong reason to believe that mobility

¹J. Steindl, Maturity and Stagnation in American Capitalism (London: Oxford University Institute of Statistics, 1952), p. 137.

may be less relevant than Fellner believes. Hamberg would add to this inhibitory factor the point that business bureaucracy fears dipping into the liquid assets of the firm and does not escape from the bureaucratic tendency of desiring to maintain the status quo.² W. B. Reddaway would maintain that a dominant firm could prevent the adaption of technology (after it had prevented the entrance of new firms) because of the fact that it did not want to destroy present capital values and need not fear the adaption of the technique by other "competitors" who may also be interested in maintaining present capital values.³

It is Marvin Frankel, however, who takes the giant firm itself and analyses the effect of the interrelated process of production.

The relevant hypothesis can be stated as follows: As an industry (or industrial economy) grows and adapts to changing and increasingly complex production methods, interconnections, more or less rigid, develop among its technological components--among machines, plant, transport network, and raw materials supplies--that make increasingly difficult the introduction into the system of new, cost-saving changes.⁴

Confronted with this situation, the enterprise would compare the new and old methods not on a component or a

²D. Hamberg, Economic Growth and Instability (New York: W. W. Norton and Company, 1956), p. 128.

³W. B. Reddaway, The Economics of a Declining Population (London: George Allen and Unwin, Ltd., 1939), p. 110.

⁴Marvin Frankel, "Obsolescence and Technological Change," American Economic Review, Vol. 45 (June, 1955), p. 297.

machine basis but on an entire plant basis since only by replacing existing plant in toto could it utilize the new machine. Even if, on the machine basis, profits from the new method exceeded revenue less future costs of the old method, comparison on an entire plant basis probably would find profits from the new method below revenue less future costs of the old method: rarely would the gains resulting from improvements in a single machine suffice to warrant immediate replacement of the entire plant.⁵

Indeed, if the analysis of Steindl in relation to the inhibitory effects of excess capacity were added to Frankel along with the results of business bureaucracy and the presence of a dominant firm as analyzed by Hamberg and Reddaway respectively, the innovation of technology may seem to be inhibited by several factors. Thus, there are strong doubts as to whether or not technology will be innovated even if it is forthcoming. The effect of any one of the factors discussed above and especially the accumulative effect of such factors could block technology. The blocking of innovation destroys a primary factor leading to secular, dynamic upward growth. If technology is blocked, the amount of capital funds accumulating might not be able to find profitable investment outlets. This introduces once again the probability of the diminishing returns to capital. If technological improvements and the offsets to the diminishing returns to capital were to be blocked or are blocked by these institutional factors, the concept of the secular stagnation of the capitalistic economic system may well be relevant.

⁵Ibid., p. 302.

BIBLIOGRAPHY

Books

- Abramovitz, Moses. Resource and Output Trends in the United States since 1870. Occasional Paper 52. New York: National Bureau of Economic Research, 1956.
- Bell, John Fred. A History of Economic Thought. New York: Ronald Press Company, 1953.
- Billington, Ray Allen. Westward Expansion. New York: MacMillan Company, 1953.
- Burns, Arthur F. Production Trends in the United States. New York: National Bureau of Economic Research, 1950.
- Clemence, Richard. Readings in Economic Analysis. Vol. I. Cambridge, Mass.: Addison-Wesley Press, 1950.
- Domar, Evsey D. Essays in the Theory of Economic Growth. New York: Oxford University Press, 1957.
- Douglas, Paul. Real Wages in the United States, 1890-1926. Boston: Houghton-Mifflin Company, 1930.
- _____. The Theory of Wages. New York: MacMillan Company, 1934.
- Duesenberry, James A. Business Cycles and Economic Growth. New York: McGraw-Hill Book Company, Inc., 1958.
- Ellis, Howard S. (ed.). A Survey of Contemporary Economics. Philadelphia: Blakiston Company, 1949.
- Fabricant, Solomon. Basic Facts on Productivity Change. Occasional Paper 63. New York: National Bureau of Economic Research, 1959.
- Faulkner, Harold Underwood. American Economic History. New York: Harper Brothers, 1954.

- Fellner, William. Monetary Policies and Full Employment. Berkeley: University of California Press, 1947.
- _____. Trends and Cycles in Economic Activity. New York: Henry Holt and Company, 1956.
- Fite, Gilbert C., and Reese, Jim E. An Economic History of the United States. Boston: Houghton-Mifflin Company, 1959.
- Galbraith, John Kenneth. American Capitalism. Boston: Houghton-Mifflin Company, 1952.
- Goldsmith, Raymond. A Study of Saving in the United States. Vol. III. Princeton: Princeton University Press, 1956.
- Haberler, Gottfried von. Prosperity and Depression. Revised Edition. Geneva: League of Nations, 1938.
- Hamberg, D. Economic Growth and Instability. New York: W. W. Norton and Company, 1956.
- Hansen, Alvin H. A Guide to Keynes. New York: McGraw-Hill Book Company, Inc., 1953.
- _____. Economic Policy and Full Employment. New York: McGraw-Hill Book Company, Inc., 1947.
- _____. Economic Stabilization in an Unbalanced World. New York: Harcourt Brace and Company, 1932.
- _____. Fiscal Policy and Business Cycles. New York: W. W. Norton and Company, 1938.
- _____. Full Recovery or Stagnation? New York: W. W. Norton and Company, 1938.
- _____. The American Economy. New York: McGraw-Hill Book Company, Inc., 1957.
- Harris, Seymour E. Postwar Economic Problems. New York: McGraw-Hill Book Company, Inc., 1943.
- _____. The New Economics. New York: A. A. Knopf, 1947.
- Higgins, Benjamin. Economic Development. New York: W. W. Norton and Company, 1959.

- Higgins, Benjamin, et. al. Income, Employment and Public Policy. Essays In Honor of Alvin H. Hansen. New York: W. W. Norton and Company, 1948.
- Heflebower, Richard B., and Stocking, George W. (eds.). Readings in Industrial Organization and Public Policy. Homewood, Ill.: Richard Irwin, 1958.
- Harrod, R. F. Towards a Dynamic Economics. London: MacMillan Company, 1948.
- Kendrick, John. Productivity Trends: Capital and Labor. Occasional Paper 53. New York: National Bureau of Economic Research, 1956.
- Keynes, John Maynard. Essays in Biography. London: MacMillan Company, 1933.
- _____. The General Theory of Employment, Interest and Money. New York: Harcourt, Brace and Company, 1936.
- Kuznetz, Semon. Economic Change. New York: W. W. Norton and Company, 1953.
- Reddaway, W. B. The Economics of a Declining Population. London: George Allen and Urwin, Ltd., 1939.
- Roll, Eric. A History of Economic Thought. Englewood Cliffs, N. J.: Prentice-Hall, 1957.
- Schumpeter, Joseph A. Business Cycles. Vol. I. New York: McGraw-Hill Book Company, Inc., 1939.
- _____. Business Cycles. Vol. II. New York: McGraw-Hill Book Company, Inc., 1939.
- _____. Capitalism, Socialism and Democracy. New York: Harper and Brothers, 1947.
- Simons, Henry C. A Positive Program for Laissez Faire. Chicago: University of Chicago Press, 1934.
- Steindl, J. Maturity and Stagnation in American Capitalism. Oxford: Basil Blackwell, 1952.
- Swanson, Ernst W., and Schmidt, Emerson P. Economic Stagnation or Progress. New York: McGraw-Hill Book Company, Inc., 1946.

Terborgh, George. The Bogey of Economic Maturity. Chicago: Machinery and Allied Products Institute, 1945.

The American Assembly. Wages, Prices, Profits and Productivity. New York: Columbia University Press, 1959.

Turner, Frederick Jackson. The Frontier of American History. New York: Henry Holt and Company, 1947.

Veblen, Thorstein. Imperial Germany and the Industrial Revolution. London: MacMillan and Company, 1915.

Wilson, Thomas. Fluctuations in Income and Employment. New York: Pitman Publishing Corporation, 1949.

Wright, David McCord. A Key to Modern Economics. New York: MacMillan Company, 1954.

_____. Democracy and Progress. New York: MacMillan Company, 1948.

Articles

Adelman, M. H. "The Measurement of Industrial Concentration," Review of Economics and Statistics, Vol. 33 (November, 1951), pp. 269-296.

Ayres, Clarence E. "The Role of Technology in Economic Theory," American Economic Review, Papers and Proceedings, Vol. 43 (May, 1953), pp. 279-287.

Bloom, G. F. "Union Wage Pressure and Technological Discovery," American Economic Review, Vol. 41 (September, 1951), pp. 603-617.

Business Week. "Big Steel Gains in the Field" (March 3, 1958), pp. 34-36.

_____. "Pinning Inflation on Steel" (November 14, 1959), p. 147.

_____. "U. S. Steel Dictates Prices that are Up-- But Not Running Away" (August 11, 1956), pp. 24-26.

Carter, John P. "The Prospects for Economic Growth: Comment," American Economic Review, Vol. 37 (December, 1947), pp. 926-930.

Daves, J. S. "Our Changed Population Outlook," American Economic Review, Vol. 42 (June, 1952), pp. 304-325.

Domar, Evsey D. "Capital Expansion, Rate of Growth and Employment," Econometrica, Vol. 14 (April, 1946), pp. 137-147.

_____. "Depreciation, Replacement and Growth," Economic Journal, Vol. 63 (March, 1953), pp. 1-32.

_____. "Economic Growth: An Econometric Approach," American Economic Review, Papers and Proceedings, Vol. 42 (May, 1952), pp. 479-495.

_____. "Expansion and Employment," American Economic Review, Vol. 37 (March, 1947), pp. 34-55.

_____. "The Problem of Capital Accumulation," American Economic Review, Vol. 38 (December, 1948), pp. 777-794.

Dow, Louis. "Essays in the Theory of Economic Growth," Southern Economic Journal, Vol. 24 (January, 1958), pp. 362-363.

Eisner, Robert. "Depreciation Allowances, Replacement Requirements and Growth," American Economic Review, Vol. 42 (March, 1952), pp. 43-58.

_____. "Technological Change, Obsolescence and Aggregate Demand," American Economic Review, Vol. 46 (March, 1956), pp. 92-105.

Fellner, William. "The American Economy," Journal of Political Economy, Vol. 55 (October, 1958), pp. 449-450.

_____. "The Technological Agreement of the Stagnation Thesis," Quarterly Journal of Economics, Vol. 55 (August, 1941), pp. 638-651.

Frankel, Marvin. "Obsolescence and Technological Change in a Maturing Economy," American Economic Review, Vol. 45 (June, 1955), pp. 296-319.

Gordon, R. A. "Population Growth and the Capital Coefficient," American Economic Review, Vol. 46 (June, 1956), pp. 307-322.

Hagen, E. E. "Population and Economic Growth," American Economic Review, Vol. 49 (June, 1959), pp. 310-327.

_____. "Population and Economic Growth: Reply," American Economic Review, Vol. 50 (June, 1960), pp. 440-441.

- Hamberg, D. "Income Growth in Secular Stagnation and Inflation," Economic Journal, Vol. 63 (September, 1953), pp. 608-626.
- Hansen, Alvin H. "Growth and Stagnation in the American Economy," Review of Economic and Statistics, Vol. 36 (November, 1954), pp. 409-414.
- _____. "Progress and Declining Population Growth," American Economic Review, Vol. 29 (March, 1939), pp. 1-7.
- _____. "Some Notes on Terborgh's The Bogey of Economic Maturity," Review of Economics and Statistics, Vol. 28 (August, 1946), pp. 170-172.
- _____. "Trends and Cycles in Economic Activity," Review of Economics and Statistics, Vol. 39 (May, 1957), pp. 105-115.
- Harrod, R. E. "An Essay in Dynamic Theory," Economic Journal, Vol. 49 (March, 1939), pp. 14-33.
- _____. "Scope and Method of Economics," Economic Journal, Vol. 48 (September, 1938), pp. 383-412.
- Hawtrey, R. G. "Mr. Harrod's Essay in Dynamic Theory," Economic Journal, Vol. 49 (September, 1939), pp. 468-475.
- Hayes, H. G. "Swanson and Schmidt, Economic Stagnation or Progress: Review," American Economic Review, Vol. 37 (June, 1947), pp. 458-459.
- Hogan, W. P. "The Limitations of Capital Coefficients: Comment," American Economic Review, Vol. 49 (March, 1959), pp. 138-150.
- Jewkes, John. "The Sources of Invention," The Freeman (April, 1958), pp. 45-57.
- Kaldor, Nicholas. "Hansen: Full Recovery or Stagnation," Economic Journal, Vol. 49 (March, 1939), pp. 91-94.
- _____. "Stability and Full Employment," Economic Journal, Vol. 48 (December, 1938), pp. 642-657.
- Kravis, I. B. "Relative Income Shares in Fact and Theory," American Economic Review, Vol. 49 (December, 1959), pp. 917-949.

- Meler, G. M. "Growth Economics, Some Questions About: Comment," American Economic Review, Vol. 44 (December, 1954), pp. 931-936.
- Noyes, Reinold. "The Prospects for Economic Growth," American Economic Review, Vol. 37 (March, 1947), pp. 13-33.
- Robinson, Joan. "Mr. Harrod's Dynamics," Economic Journal, Vol. 59 (March, 1949), pp. 68-85.
- Roseman, Herman. "The Price of Peace in Steel," The Reporter (February 4, 1960), pp. 13-15.
- Schiff, Eric. "A Note on Depreciation, Replacement and Growth," Review of Economics and Statistics, Vol. 36 (February, 1954), pp. 47-56.
- Sweezy, A. R. "Population Growth and Investment Opportunity," Quarterly Journal of Economics, Vol. 55 (November, 1940), pp. 64-79.
- Terborgh, George. "Dr. Hansen on The Bogey of Economic Maturity," Review of Economics and Statistics, Vol. 28 (August, 1946), pp. 170-172.
- Villard, Henry H. "Competition, Oligopoly and Research," Journal of Political Economy, Vol. 66 (December, 1958), pp. 483-497..
- _____. "Population and Economic Growth: Comment," American Economic Review, Vol. 50 (June, 1960), pp. 438-440.
- Wright, David McCord. "Economic Growth: Econometric Models in Relation to the Social Setting," American Economic Review, Papers and Proceedings, Vol. 42 (May, 1952), pp. 496-502.
- _____. "The Great Guessing Game: Terborgh Versus Hansen," Review of Economics and Statistics, Vol. 28 (February, 1946), pp. 18-22.
- Yeager, L. B. "Growth Economics, Some Questions About," American Economic Review, Vol. 44 (March, 1954), pp. 53-63.
- _____. "Growth Economics, Some Questions About: Reply," American Economic Review, Vol. 44 (December, 1954), p. 937.

Government Publications

Board of Governors. Federal Reserve Bulletin (December, 1959), p. 1543.

_____. Federal Reserve Bulletin (March, 1960), pp. 296-297.

_____. Federal Reserve Bulletin (April, 1960), p. 428.

Temporary National Economic Committee. "Technology in our Economy," Monograph No. 22, 1941.

_____. "Patents and Free Enterprise," Monograph No. 31, 1941.

_____. "Saving, Investment and National Income," Monograph No. 37, 1941.