THE PAPERS OF JAMES TOBIN

Volume 1 *Essays in Economics: Macroeconomics*, New York: North-Holland, 1971; MIT Press 1987

Volume 2 *Essays in Economics: Consumption and Econometrics*, New York: North-Holland, 1975

Volume 3 *Essays in Economics: Theory and Policy*, Cambridge, MA: MIT Press, 1982

Essays in Economics
Macroeconomics

James Tobin

The MIT Press, Cambridge, Massachusetts, and London, England

First MIT Press Edition 1987

Originally published by North Holland-Publishing Company 1971

Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Tobin, James, 1918–
Essays in economics.

(The Papers of James Tobin ; v. 1)
Reprint. Originally published: Amsterdam ; New York : North-Holland, 1971.
Includes bibliographies and index.
1. Economics 2. Macroeconomics. I. Title
II. Series: Tobin, James, 1918– Essays.
Selections ; v. 1.
HB34.T622 1987 339 86-21157
ISBN 0-262-20062-7

PREFACE

This volume is a collection of professional papers I have written in macroeconomics over the past thirty years. A subsequent volume will include papers on other subjects, principally consumer behavior and econometrics. These collections do not include less scholarly essays on economic policy intended for a popular audience. I have previously published a collection of such papers in *National Economic Policy* (Yale University Press, 1966).

The essays in this volume are arranged by topic; within each topic they are generally in chronological sequence except when a different order seems to provide a more logical exposition of the subject matter. The papers are not reprinted here exactly as they were originally published. To the best of my ability I have corrected typographical errors and other slips. More important, I have deleted material that would be repetitive of other chapters; and in some cases I have deleted material that today appears to me irrelevant or wrong. I have also provided new footnotes to help the reader see the connection between one chapter and another and in some instances to point out changes in my views or to make other comments. The introductions to the topical sections attempt to provide some perspective and structure for the essays that follow.

In spite of these efforts at updating and integration, the volume remains a collection of separate papers written at different times rather than a coherent statement of macroeconomics as I might expound it today. Whatever unity it has derives from the quest it represents. I have been trying over these years to piece together for myself a reasonably systematic understanding of the related phenomena of short-run economic fluctuation and long-run growth.

Koen Suryatmodjo faithfully and skillfully read the articles to spot errors and repetitions, and to suggest editorial changes appropriate for this collection. Stephen Webb also gave able assistance in preparing the articles for republication. I am grateful to both of them. For help in this project, as in so many other of my endeavors, I am deeply indebted to Mrs. Laura Harrison, my secretary.

Some of the papers in this volume were written with collaborators. I would like to thank William Brainard, F.T. Dolbear, Jr., H.S. Houthakker, Robert M. Solow, Harold W. Watts, Christian von Weizsäcker, and Menahem

Yaari for graciously consenting to the inclusion here of articles of which they were joint authors, and Mrs. Challis Hall for permitting me to republish here a series of three papers written jointly with her late husband, my friend and colleague.

Finally, I acknowledge with gratitude the permission of the original publishers of the articles:

American Economic Review
Econometrica
Economia International
Richard D. Irwin, Inc.
Journal of Money, Credit, and Banking
Journal of Political Economy
Alfred Knopf, Inc.
Prentice-Hall, Inc.
Quarterly Journal of Economics
Review of Economic Studies
Review of Economics and Statistics

INTRODUCTION

MACROECONOMICS

Macroeconomics concerns the determinants of the performance of entire economies: nations, groups of nations, the whole world. The theoretical concepts and statistical measures involved are generally economy-wide aggregates or averages, such as national income, total employment, or a national cost-of-living index. The objective is to explain ups and downs of these magnitudes and their interrelations. The basic assumption is that this can be done without much attention to the constituents of the aggregates, that is, to the behavior and fortunes of particular households, business firms, industries, or regions. As usual in economics, the strategy is to build models that lay bare the essentials of the phenomena under study; the art is to find those simplifying abstractions that clarify and do not distort. Macroeconomics is based on the faith that economies are subject to laws of motion which are largely independent of the details of their internal structure.

This faith, in turn, rests on a fact of common observation centuries old. Economies – at least the decentralized, market economies of the western world – are subject to pervasive tides of prosperity and depression, inflation and deflation, that dominate the experiences of their members. These waves give a strong component of common and shared experience even to individuals, firms, regions, and nations whose skills, resources, and luck are otherwise very different. Times were hard for virtually everybody during the Great Depression. In contrast, the climate of steady overall prosperity and rapid growth in western industrial countries since World War II has advanced the fortunes of almost everyone. It is much more plausible to attribute the differences in individual experiences before and after the war to differences in the overall climate, which individuals had no control over, than to attribute the economy-wide contrast between the two periods to a massive coincidence of individual failures or successes.

Reprinted from *Economics*, Nancy D. Ruggles, ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970) pp. 44–54.

Since it is concerned with tides and trends in general business activity, macroeconomics has a strong and direct orientation to public policy. Ever since the Great Depression, overall economic performance has been an acknowledged governmental responsibility in all industrialized market economies. The party in power is blamed if unemployment is too high, or price inflation too rapid, or the balance of payments too unfavorable. Macroeconomics contributed some of the intellectual justification for this historic expansion of the span of government responsibility; the political and moral steam came from a general resolution that the Great Depression never be allowed to happen again. In any event, one preoccupation of macroeconomics has been to show how the fiscal and monetary tools of the central government can be used to stabilize the economy. Macroeconomics has been heavily involved in public policy, both at the level of popular and parliamentary debate of the great issues of fiscal and monetary policy and at the more technical levels of operations of the government agencies charged with economic stabilization.

This policy orientation is one reason that the nation has been the customary unit of analysis. The instruments of policy are in the hands of national governments. Of course, foreign trade and other international transactions are an essential part of the analysis of most national economies. From a broader standpoint, a true international macroeconomics must treat simultaneously several national economies and the transactions among them. As at the national level, analysis is developing parallel with the development of policy-making institutions, in this case intergovernmental collaborations. The European Economic Community is the main example of such machinery, but consultation in the interests of "harmonizing" national policies occurs also in wider and looser groupings of countries. (The Organization of Economic Cooperation and Development, the International Monetary Fund, and the Group of Ten major monetary powers are examples.)

Although macroeconomic models do not pay explicit attention to the internal composition of the aggregates, the relationships among aggregate variables that make up the models are intended to be consistent with theoretical and empirical knowledge of the behavior of individual economic units and particular markets. Aggregate consumption spending is the sum of the consumption outlays of 60 million households, and the explanation of total consumption in terms of national income and other variables in an aggregative model should conform with what is known about the behavior of individual households. Similarly, an important relationship in aggregative models is a production function linking national output to the economy-wide inputs of labor and other resources. This relationship should be consistent with what is known of input-output technology in the units – plants, firms, industries – where production occurs.

Unfortunately it is seldom true that an exact relationship among aggregate variables, independent of their composition, can be built up from the basic microeconomic relationships. The usual procedure is simple analogy, but it is not clear that this is always the best approximation. Although there is a theory of aggregation, so far it gives little guide to the optimal specification of aggregate variables and relationships. Fortunately this logical gap does not seem to be of decisive practical importance. Economists have long known that there is no best way of averaging individual price changes; for example, to construct a price index. But the insolubility of the "index number problem" has not prevented useful index numbers from being constructed.

There are two persistent grand themes in macroeconomics. One is the explanation of short-run fluctuations – some would call them cycles – in business activity, the year-to-year or month-to-month changes that add up to prosperity or recession, inflation or deflation. The other is the explanation of long-run economic trends, the rate of progress of an economy over the decades.

The difference between the two themes is not completely captured by the difference in time horizon. By and large, the short-run fluctuations are not changes in the productive capacity of an economy but in the degree of utilization of capacity, due in turn to changes in aggregate *demand* for goods and services. But long-run trends – the Great Depression excepted – are generally dominated by changes in productive capacity, somehow, in the long-run demand adapts so that over the decades changes in the degree of utilization of resources are small relative to changes in the supply and productivity of the resources. The theory of long-run growth is essentially a theory of aggregate *supply*.

In one sense it is true to say that both these branches of macroeconomics have a long history. Most of the great names of the history of economic thought have been concerned with one or both of these problems: Hume, Ricardo, Malthus, Marx, Fisher, Wicksell, Schumpeter. But in another and more important sense, macroeconomics is a new field. In its modern form, it is a development of the last forty years. The continuity that links modern microeconomic theory – the theories of value, general equilibrium, and welfare – to its pioneers in the nineteenth century does not exist in macroeconomics.

Four distinct but related developments established the foundations of modern macroeconomics:

1. In the 1920s and 1930s Simon Kuznets, the National Bureau of Economic Research, and the U.S. Department of Commerce laid the conceptual and statistical groundwork of national income accounts. National income and its components and related measures are the basic theoretically meaningful variables of macroeconomics. They provide comprehensive summary measures of the results and uses of economic activity in a nation. They provide, for example, estimates of saving, investment, and consumption and make it possible to study the processes of capital accumulation that play so central a role in both short-run and long-run macroeconomics. Similar national accounts have been estimated for virtually all developed and many undeveloped countries.

Moreover, in the United States and elsewhere, auxiliary statistical information has been improved and expanded: employment and unemployment data, price indexes, wages and hours data, financial and monetary data, national balance sheets and flows of funds, international trade and balance of payments figures, and so on. Although the statistical base is still by no means adequate, current empirical macroeconomics would have been inconceivable without the national income accounts and the other statistical innovations and improvements of the past forty years.

2. Keynes' *General Theory* (1936) was the theoretical *magna charta* for macroeconomics (just as, according to Schumpeter, Walras' work was the magna charta for general equilibrium theory). Keynes set out to build a model to explain the persistence of general involuntary unemployment in the Great Depression, a fact that existing modes of thought in economics had great difficulty in accommodating. One of Keynes' objectives, and eventual triumphs, was to liberate economists and statesmen from misplaced inhibitions on pragmatic measures to relieve unemployment, inhibitions supported by orthodox modes of economic analysis.

But for our present purpose, the specific content of Keynes' message is less important than the fact that he effectively inaugurated explicit macroeconomic model-building. He showed, at least by example, how the equilibrium of the economy as a whole could be described as the solution of a system of equations, and how "comparative statics" results (like the famous "multiplier") could be derived by examining the effects on the solution of varying the parameters of the system. The techniques were not novel. That their application to this subject was relatively novel, however, is indicated by the fact that Keynes had to reconstruct imaginatively the "classical" macroeconomic models he was opposing. At any rate Keynes' example, and the more elegant mathematization of his theory by Hicks and others, unleashed a vast quantity of latent model-building energy. This is the medium in which

macroeconomics has been discussed, debated, taught, and advanced ever since.

3. The national income accounting revolution in statistical data and the Keynesian revolution in theory combined to stimulate econometric testing and estimation of economy-wide models. Keynesian and post-Keynesian theory dealt in variables for which national income accounting and related statistical developments provided good numerical counterparts.

Fortunately a considerable development in the power and sophistication of statistical and econometric technique occurred in the 1940s. This development concerned particularly the estimation of systems of simultaneous equations from time series. Subsequently the computer revolution has made it possible to apply techniques and tests previously beyond the limits of practical application.

4. Finally, macroeconomics has shared the benefits of accelerated application of mathematical techniques to economic theory. The use of difference and differential equations in business cycle models was beginning before Keynes, but the substantive economic content of such models was improved by the Keynesian discussion. Subsequently both short-run and long-run macroeconomics have undergone extensive mathematical development. The static equilibrium models of Keynes have given way to dynamic sequential models of both growth and fluctuations. Large-scale computers have made it possible to handle theoretical or empirical models that are too complex for explicit analysis.

The achievements of this combination of developments have been considerable. At the simplest level intellectually, but possibly the most important practically, general understanding of macroeconomic mechanisms has greatly increased. It is inconceivable that policymakers today, aided by their theoretical understanding of the mechanisms and by the statistical information at their disposal, would begin to make the serious errors committed by governments in 1929–32. Nor is this change just a one-shot result of the Keynesian revolution. As Chapter 9 indicates, the intelligence and skill of stabilization policy have improved steadily since World War II.

One reason is that short-run economic forecasting has improved. There are several sources of this improvement. One is the availability of better and more timely data, of which a notable example is the useful surveys of anticipated investment expenditures. Another is the use of more sophisticated and theoretically better-grounded forecasting models. Purely statistical techniques – looking for barometric indicators of future fluctuations of business activity without worrying about the causal mechanisms involved – have largely given way to fully specified models. These may be highly aggregative and simple, susceptible of manipulation and solution by pencil or desk calculation. Or

they may be very complex, involving many equations and requiring large-scale computation. Finally, the improvement of forecasting is due to the accumulation of experience and data from the postwar economy, interpreted with the help of modern techniques of statistical and econometric inference.

One advantage of the use of fully specified consistent models of causal mechanisms in forecasting is that the same models can be used in policy-making. The models foretell not only the probable course of the economy but how the course would be altered by changes in policy, such as changes in taxes, government spending, or federal reserve actions.

Empirical estimation of multiequation aggregative models of the United States economy began with Tinbergen (1932) and was given a major new impetus by Klein (1950). The postwar development of models of this kind has culminated in the Brookings model, involving nearly five hundred variables and over three hundred equations. This is the result of collaborative effort by a large team of economists. It is too early to appraise its success and usefulness. It seems clear, however, that computerized models of this kind will play an increasing role in economic research, forecasting, and policy-making.

The monetary side of macroeconomics deserves a special word. Before the Great Depression and Keynes, monetary economics was about the only aggregative economics there was. Monetary policy was similarly the only tool of economic stabilization that was considered and used. The depression led to considerable skepticism regarding the effectiveness and utility of monetary policy, and Keynesian theory provided an intellectual basis for believing that there were times when monetary and financial events had little importance in shaping the course of economic activity. Since World War II, both monetary policy and monetary economics have enjoyed a renaissance. Economists and practical men now agree that "money matters," and this has stimulated a substantial amount of theoretical and empirical research.

Monetary and financial data, so far as they are based on institutional balance sheets and prices in organized markets, are abundant. Modern machines have made it possible to improve, refine, and expand the compilation of these data, and also to seek empirical regularities in financial behavior in the multitude of individual observations. On the aggregative level, the Federal Reserve Board has developed a financial accounting framework, the "flow of funds," for systematic and consistent organization of the data, classified both by sector of the economy (households, nonfinancial business, governments, financial institutions, and so on) and by type of asset or debt (currency, deposits, bonds, mortgages, and so on). Although many people hope that this organization of data will prove to be as powerful an aid to economic understanding as the national income accounts, this hope has not yet been fulfilled. Perhaps the deficiency is conceptual and theoretical; as some have said, the Keynes of "flow of funds" has yet to appear.

One important strand of current monetary economics emphasizes very strongly the central importance of the commercial banking system and the central bank's control of the quantity of commercial bank deposits. The approach is similar in emphasis and spirit to predepression monetary and aggregative economics. That is, the quantity of money – the stock of bank deposits plus currency outside banks – is regarded as the most important determinant of aggregate money income. However, the modern "quantity theory" is supported by more sophisticated theoretical analysis and more extensive empirical research. In any event, the equality of supply and demand for money is considered the basic equation of aggregative economics, and the focus of research is on the functions describing the two sides of this equality. The policy conclusions of this approach – that the rate of change of the quantity of money is the fundamental determinant (although with a long and variable lag) of the course of money national income, that fiscal policy is of negligible significance in this regard, that the best stabilization policy is a steady rate of growth in the quantity of money without reference to the current or projected state of the economy – have attracted widespread support, interest, and controversy.

Other strands of postwar monetary economics are more diverse, eclectic, and uncertain in their conclusions and policy recommendations. They are generally characterized by one or more of the following features:

(a) Emphasis on a general multiequation equilibrium of the entire spectrum of assets and debts; all financial markets, and all financial institutions replace the narrower traditional concentration on the quantity of money and the commercial banking system. No one equation – not even equality of demand and supply of money – is regarded as the determining equation for macroeconomics.

(b) Mechanistic views of the workings of the banking and monetary system and of other financial intermediaries give way to a more behavioristic approach to the functions of the institutions and markets involved. On the conceptual plane, considerable use is made of advances in the theory of decision-making under uncertainty and in inventory theory. The key questions are the linkages of financial variables to real investment and to other spending on goods and services. This is at the same time the area of greatest practical importance for monetary policy, the area of greatest ignorance, and the focus of an increasing amount of empirical research. In recent attempts to estimate econometric models of the economy, notably the model designed

and estimated by economists at the Federal Reserve Board and at the Massachusetts Institute of Technology, the financial-real links are formulated in a more explicit and sophisticated manner, and their estimation is regarded as the central task.

CONTENTS

PART I

MACROECONOMIC THEORY

Part I contains several theoretical articles on the determination of aggregate employment, income, and prices in the short run. The first two articles concern the effects on employment of a general change in money wage rates, an issue at the center of the debate between Keynes and the classical economists. The question was whether unemployment could persist in equilibrium. The orthodox answer, typified by Pigou, was negative: excess supply of any commodity, including labor, causes its price to fall until the excess supply is eliminated. Keynes attempted to explain why, in the case of labor, the money wage need not fall in the face of unemployment and why a money wage decline, even if it did occur, might not affect the volume of employment. While I accepted, in these articles, the realism of Keynes' observation that money wages are sticky, I pointed out that the very same features of individual and institutional behavior were likely to make employment responsive to any changes in money wages that could be contrived.

In retrospect I think that Pigou and Leontief were theoretically right in denying that unemployment could exist in a competitive equilibrium. Keynes was unsuccessful in providing an *equilibrium* theory of involuntary unemployment. Pragmatically he was right, however, in urging policies other than wage cuts to remedy the mass unemployment of the thirties. Many of his orthodox predecessors and contemporaries were guilty of "misplaced concreteness" in applying equilibrium theory to short-run movements of wages and employment.

My two articles suffer in not distinguishing clearly among the reasons why a proportionate change in all current money wages and prices may affect real behavior. One reason would be "money illusion" proper. But it is hard to believe in indefinite persistence of irrationality that would lead people to behave differently after what amounts merely to a change of monetary unit, as from old francs to new francs. In the absence of true "money illusion," a uniform change in all *current* prices has real consequences when other determining variables denominated in the monetary unit do not change in the

same proportion. These other variables include assets, debts, and expected future prices. In general it will take some time for these variables to adjust to a change in current prices, and meanwhile there is nothing irrational or "illusory" in changes in labor supply, consumption, and other real behavior.

Chapter 3 is at least as timely now as in 1947. Clark Warburton was a "monetarist" before his time; the quantity theory of money, which he espoused, has lately enjoyed a new vogue under the persuasive leadership of Milton Friedman. Surprisingly and unfortunately, current discussions of monetary and fiscal policies still exhibit widespread misunderstanding of the theoretical conditions under which either policy or both policies can affect national income. It is as true now as in 1947 that the interest-elasticity of the demand for money is a crucial factor. It is as true now as in 1947 that the statistical evidence is against the zero elasticity on which the monetarist position depends. These issues are further discussed in Chapters 23 and 24.

Chapter 4 is an analysis of the short-run macroeconomic effects of income taxation, but its interest lies as much in its methodology and in its general exposition of Keynesian, classical, and neoclassical theory as in its specific conclusions. In this essay I had the benefit and pleasure of collaborating with my long-time friend and colleague Challis Hall, whose untimely death in 1968 deprived the profession of a leading scholar of public finance.

A recurring question in postwar economic theory, and particularly in this volume, is the role of the size and composition of wealth in the determination of economic activity. The fifth essay of Part I is a critical and, I hope, clarifying examination of various propositions on this subject.

One feature of this article is its skepticism as to the inclusion of interest-bearing deadweight public debt in private wealth, on the now familiar ground that the future taxes to pay the interest are an offsetting private liability. Over the years I have vacillated on this point. Today I believe that the calculus of total wealth is less important than the change in the composition of private balance sheets that the government engineers by borrowing from the public – forcing on taxpayers a long-term debt of some uncertainty while providing bond-holders highly liquid and safe assets. Since no one else can perform the same intermediation, the government's debt issues probably do, within limits, augment private wealth. Another way to make the point is to observe that future tax liabilities are likely to be capitalized at a higher discount rate than claims against the government.

In every period of inflation, proposals are made to provide tax incentives for saving and to make saving compulsory. The weaknesses of these proposals are discussed in Chapter 6, which also explains how to design an effective anti-inflationary saving scheme.

Chapter 7 is an irreverent spoof of a distribution theory advanced by Nicholas Kaldor and others. Perhaps it belongs in Part II, because it is a footnote to the running controversy between neoclassical growth theory and its opponents. Neoclassical theory would have the division of full employment output between investment and consumption depend on the society's propensity to save. If property owners and wage earners differ in their saving behavior, the distribution of income between them would help to determine the share of investment in national output. The income distribution, in turn, depends, in neoclassical theory, on the marginal productivities of capital and labor. Kaldor rejected marginal productivity theory and needed an explanation of factor shares in its place. He regarded the investment share of total output as independently determined by technology and entrepreneurship – something to which the national saving propensity must adapt, rather than vice versa. This is the background for the theory described and attacked in my short note. I would like to record here my judgment, which the reading lists of my courses confirm, that Mr. Kaldor has made many outstanding contributions to economic theory. He should be excused this aberration.

CHAPTER 1

A NOTE ON THE MONEY WAGE PROBLEM

Is the money wage rate an independent determinant of the volume of employment, or does a general change in the money wage alter the level of employment only if it happens to affect some other variable in the system, such as the rate of interest? According to Keynesian theory, the money wage is not an independent determinant of employment; abstracting from effects due to the specific situation, which general theory cannot predict, a change in the money wage will not by itself affect the level of employment. By influencing the demand for money balances for transactions purposes, a rise or fall in the money wage may raise or lower the rate of interest; and a change in the interest rate may induce more or less investment, and accordingly change the volume of employment. But this shaky line of causation is the only channel through which general wage policy can influence the volume of employment. This note will examine some assumptions which underlie the Keynesian theory of the effects on employment of a change in the money wage rate, and their relations to the assumptions of Keynes' general theory, of which this wage theory is supposed to be a part. It will be shown (1) that Keynes' conclusions concerning wages and the employment of labor depend upon the assumption of behavior on the part of those supplying other factors of production exactly contrary to the behavior which Keynes assumes for the factor labor, and (2) that Keynes' conclusions concerning wages and employment depend upon the assumption that individuals as consumers react towards money values in a way which is exactly contrary to their assumed behavior as wage earners.

I

The exposition of money wage doctrine in the *General Theory* [1] and the Pigou–Kaldor discussion of the problem in the *Economic Journal* [2] were

Reprinted from *Quarterly Journal of Economics* (May 1941), 508-16.

carried on within the framework of a model which assumed, among other things, that labor is the sole prime factor. This model rules out the possibility of substitution between other factors and labor as a result of the change in the money wage rate. This fact has led some economists to dismiss the Keynesian money wage doctrine on the ground that it is incompatible with the theory of substitution between factors, with marginal productivity analysis. [3] As Lerner has shown, [4] however, recognition of the possibility of substitution does not alter the Keynesian conclusions, provided that one assumption is added to the usual Keynesian assumptions for the problem. This additional assumption is the crucial thing: it is that all factors other than labor are fully employed and their prices completely flexible. In order to demonstrate how crucial this assumption is, it will be well to rehearse the process by which a change in the wage rate is absorbed into the system. In this section we shall accept all the Keynesian assumptions, including the "crucial" one we have just listed; the Keynesian results will follow smoothly. This account will incidentally show that, given the necessary assumptions, Keynesian money wage doctrine is perfectly reconcilable with marginal productivity theory. In section II we shall show that the Keynesian doctrine breaks down if the "crucial" assumption is removed, and we shall consider the validity of the assumption. And in section III we shall examine the crucial nature and the validity of another of the Keynesian assumptions.

From the standpoint of theory it makes no difference whether the argument is expounded in terms of a money wage rise or a money wage cut The two cases are symmetrical, and translation from one to the other is easy Each case, moreover, has practical importance, since each is frequently proposed as a remedy for unemployment. Out of deference to the tradition in discussion of this problem, the argument here presented is in terms of a money wage cut; but it is equally applicable to a money wage rise.

Consider, then, the case of a general cut in the money wage rate. Consider it first solely from the point of view of marginal productivity theory, which takes no account of reactions on the demand side. Faced with reduced labor costs and unchanged demand curves, businessmen will naturally expand output. This will be one reason for an increase in the employment of labor. Further, marginal productivity theory tells us that the impulse of entrepreneurs who find that wages have been lowered will be to hire more labor relatively to other factors whose prices are unchanged. None of these other factors will in fact be dismissed, since by assumption the prices of these factors are perfectly flexible and will be lowered sufficiently to keep them fully employed. This process will continue until these prices are so low that there is no longer any inducement to try to substitute labor for other factors.

This point will occur when the ratio of the price to the marginal product for each of these other factors is once again equal to the corresponding ratio for labor. This will not restore the prices of the various factors to their former relation to each other; for the hiring of labor, the expansion of output, have altered the relation of their marginal products. In the new equilibrium there will be expanded output, increased employment of labor, and the same employment of other factors.

This is the story which marginal productivity analysis tells us, but it is not the whole story. For we cannot continue to assume unchanged demand curves. With more labor employed than before and with no less of other factors, the real income of the community must be greater. According to Keynes' psychological law of consumption, with a larger real income the community will try to save more. [5] Let us assume investment to be constant, in real terms, at some level k. If the system was formerly in equilibrium, then the rate of saving at the former level of real income must have been k. Now, however, real income has been increased; therefore, saving must be greater than k. This excess of saving over investment will continue so long as consumers' real income is not exactly as large as it was before. For so long entrepreneurs will be receiving less than they pay out as costs, they will be forced to contract output until they are producing the same amount as before. This amount they cannot produce except by restoring the previous level of employment of labor, because the prices of other factors are always adjusted so that these factors are fully employed. [6]

This result is not at all inconsistent with marginal productivity theory. As the demand for their products diminishes, entrepreneurs will attempt to dismiss both laborers and other factors. Since the tendency to dismiss other factors will result in a lowering of their prices, while the wage rate remains constant, they will dismiss labor. The rise in the marginal product of labor relative to that of other factors during this process must be just offset by the fall in the prices of other factors. Otherwise it would be profitable, at each level of demand, to substitute labor for other factors or other factors for labor. This means that when the former total output and total employment are reached, the price of labor must be in the same proportion to the prices of other factors as before the original wage cut. The net result is that all prices are reduced in proportion to the wage cut, and employment and output are the same in the new equilibrium as in the old. (In order to isolate the effects of wage policy, we neglect the possible effect on the rate of interest of this reduction in prices, and assume that the supply of money is perfectly elastic.)

The same argument applies, *mutatis mutandis,* to a rise in the money wage rate. It will step up all prices proportionally, and leave employment and output unchanged.

II

It is easy to see the crucial nature of the assumption that all factors other than labor are fully employed and that their prices are perfectly flexible. If the persons who supply these factors acted differently, they would not always adjust their money rates of remuneration so that they are fully employed. If entrepreneurs' demand for them fell off, their prices would not fall sufficiently to keep some of these factors from becoming unemployed and being replaced by labor. This would be the result in case of a cut in the wage rate. Consequently, even granting that the original level of output is restored, it would be produced more by labor and less by other factors. There would be in the new equilibrium more employment of labor than before. Conversely, a wage rise would under these circumstances result in decreased employment of labor. For if other factors were not fully employed to begin with, it would be possible for entrepreneurs to obtain more of them, at the same rate or at a higher rate if necessary. They would be substituted for labor, and in the end the same output would be produced less by labor and more by other factors.

It is clear, therefore, that this assumption is crucial to the Keynesian money wage doctrine. But this assumption means that the persons who supply these other factors are expected to behave differently from the persons who supply the factor labor. Wage earners, according to Keynes, are interested in the money wage, and they will supply more labor at a given real wage the higher is the money wage. The consequence of this attitude of wage earners is that the money wage is likely to be rigid. The persons who supply the other factors in the Keynesian society act quite differently. They are not at all interested in their money rate of remuneration, and always adjust it so that the factors they supply are fully employed.

Professor Leontief has shown that Keynes' propositions in regard to the supply of labor amount to a denial, for the supply of labor, of what Leontief calls the "homogeneity postulate," namely, that all supply and demand functions, with prices taken as independent variables, are homogeneous functions of the zero degree. [7] Keynes, however, does not deny the homogeneity postulate in regard to the supply of any other factor. The retention of the postulate for these other factors is one of the reasons that Keynes is able to come to the special conclusions he reaches concerning the one factor for which he denies the postulate. Certainly Keynes could not reach the same conclusions for any other factor, e.g. executive personnel, as he does for labor; for one of his data would be that the money wage rate is fixed, not perfectly flexible.

Keynes presents no reasons for this all-important distinction of treatment between labor and other factors. Lerner, however, asserts that it "is plausible and in conformity with the assumption of rationality of entrepreneurs and capital-owners who would rather get something for the use of their property than let it be idle, while labor has non-rational money-wage demands." [8] It seems doubtful, however, that "nonrational" money price demands are confined to labor. Executive and professional personnel may well have "nonrational" money salary demands; salaried classes probably do not look upon a halving of the price level as equivalent to a doubling of money income. And they may often be financially more able than labor to afford the luxury of such "nonrationality." Nor is this attitude completely irrational, as a matter of fact; their taxes, their debts and interest obligations, their insurance premiums, remain constant in money terms. These same considerations apply, though perhaps with less force, to the behavior of landlords. Moreover, raw materials and intermediate products belong on the list of "other factors." And the entrepreneurs who control their supply very often pursue, sometimes with the aid of government, policies designed to stabilize money prices. Here is a case of money price demands on the part of entrepreneurs analogous in effect to the "nonrational" money wage demands of labor. (Whether these price and wage policies are in fact rational or not need not be discussed here.) The conclusion is that the money prices, salaries, and rents of "other factors" are likely to be rigid, just like the money wages of labor. There is a possibility of fluctuation in the use of these other factors, just as there is a possibility of less than full employment of labor. If the existence of price rigidity in all sectors of the economy is recognized, if the denial of the homogeneity postulate is generalized, the Keynesian money wage doctrine cannot be maintained. The money wage rate becomes once again an independent determinant of the volume of employment.

III

So far it has been shown that Keynes' failure to generalize his denial of the homogeneity postulate to the supply of factors other than labor is responsible for his peculiar doctrine on money wages. We now must note that there is an even more important place where he failed to generalize his denial of the homogeneity postulate, with even more serious results. For Keynes assumes that, given the broad forces which mold consumption habits, consumption is a function of the size and distribution of real income alone, to the exclusion of money income. In other words, at any level of money income the same amount of goods will be consumed – and the same amount saved – out of a

given real income. This assumption Keynes adopts by defining income, consumption, and saving in terms of wage units and asserting that consumption so defined is uniquely determined by income. [9] Whereas Keynes' wage earners are concerned with their money wages and are not at all conscious of the price level, Keynes' consumers keep an eagle eye on the price level and are solely concerned with their real incomes. But wage earners, after all, form a large part of the consuming public; if it is realistic to believe that they have "nonrational money-wage demands," surely it is just as realistic to believe that they are equally nonrational in their consumption decisions. (The same holds for non-wage-earners if, as we have contended, their attitude towards money values is likely to be the same as that of wage earners.) At any rate, no reasons have been presented in support of the proposition that their personalities are split.

It is easy to see that this assumption, too, is essential for the process described in section I above. For let us assume instead that, given the distribution of income, a greater sum will be saved from a given real income the higher the money income, and a greater sum from a given money income the higher the real income. This would be the natural behavior of members of a money dominated economy; they would consider themselves worse off simply because of a decline in money income, and would save less accordingly. Then it is clear that if money incomes were to fall enough following a wage cut so that the former levels of real income and employment were restored, saving would be not equal to but less than investment. Saving, in real terms, would be less than before the wage cut. Saving would be equal to investment at some higher money income and real income, and employment would be greater in the new equilibrium than in the old. Likewise, a wage rise would regain its independent power of causing a decrease in employment.

By denying the homogeneity postulate in regard to the supply of labor, Keynes introduces the possibility of involuntary unemployment of labor at a given money wage; that is, more laborers could and would go to work at this wage if the price level were raised. Then he proceeds to show that this involuntary unemployment cannot be remedied by reducing the money wage. This demonstration succeeds only because Keynes assumes that to the supply of all other factors and to the supply of saving the homogeneity postulate does apply. In short, Keynes carries his denial of the homogeneity postulate, his recognition of monetary realities, far enough and just far enough so that he can (1) prove the existence of involuntary unemployment of labor and (2) prove that altering the wage rate does not affect employment.

Thus the Keynesian doctrine that the money wage is not an independent determinant of the volume of employment rests on two assumptions which

are both shaky in factual basis and inconsistent with other parts of the Keynesian schema. One is that the persons supplying factors other than labor behave so that these factors are always fully employed and their prices perfectly flexible. The other is that consumers behave so that saving is a function of real income to the exclusion of money income. By dropping the former, we find that a wage cut can increase employment (or a wage rise reduce it) by causing substitution, even if it does not alter the level of real income. By dropping the latter, we find that a wage cut will increase employment and real income (or a wage rise reduce them), substitution or no substitution. When the two effects are superimposed, the rise (or drop) in employment becomes all the greater. The removal of these two assumptions – or of either one of them alone – reinstates the money wage rate as an independent determinant of the volume of employment.

Notes

[1] Keynes, *General Theory of Employment, Interest and Money* (New York: Harcourt, Brace and World, 1936), Chapter 19.

[2] *Economic Journal*, September 1937, 405; December 1937, 745; March 1938, 134.

[3] It might be thought that since Keynesian doctrine concerns the short run, and marginal productivity theory principally the long run, their compatibility was of no consequence. It is true that the ultimate adjustments described by marginal productivity theory – adjustments of the employment of labor relative to the employment of capital – are long-run results. With these results Keynesian theory, which concerns the short run when the amount of capital equipment is fixed, need not be reconciled. But marginal productivity analysis applies also to the short run, just as truly as the profit motive operates in the short run. For business firms, even with a fixed plant, must choose between various possible combinations of prime factors. Marginal productivity theory describes this short-run choice; hence it is important to reconcile Keynesian money wage doctrine with this analysis.

[4] A.P. Lerner, "Mr. Keynes' General Theory of Employment, Interest, and Money," *International Labor Review*, October 1936, 435; "The Relation of Wage Policies and Price Policies," *American Economic Review*, March 1939, Supplement, 158.

[5] I recognize, of course, that the rate of saving is influenced by the distribution of income, as well as by its aggregate amount. But it is unlikely that, aside from government policy, a change in distribution will occur which in direction and extent will counteract the expected relation of saving to the amount of real income. The greatest part of saving is done by non-wage-earners and by business firms, and there is no doubt that their income moves in the same direction as aggregate income. In the present case business faces wage costs which are lower in relation to demand curves than before. The incomes of business firms and of non-wage-earners will surely be greater than before, no matter what has happened to their relative shares. Accordingly, they will save more than before. The change in this portion of total saving is reenforced by what happens to the saving of

wage earners. Some wage earners, it is true, have suffered small decreases in real income, and they will tend to save slightly less. But other wage earners have become newly employed; their real incomes have risen greatly. They will probably save on a larger scale or cease to dissave, more than counteracting the decrease in saving by workmen previously employed. For these reasons, the possibility that the influence on saving of the distribution of income will offset the effect of the aggregate amount of income can be safely disregarded.

[6] In any complete analysis of this process, the possibility of a change in investment due to the wage cut cannot be ruled out. But the purpose of this paper is to focus attention on the significance of the two assumptions to be discussed; hence the assumption of constancy of investment, which is usually made by writers on this subject, is also made here. In defense of this assumption it may be argued that a wage cut can stimulate an increase in investment greater than the increase in saving it induces only if the system is unstable. If the system is stable, the increase in saving will be the greater; the result will be the same as if investment were constant. But this question cannot be discussed here. (Cf. Lerner, "Relation of Wage Policies and Price Policies," p. 161.)

[7] W. Leontief, "The Fundamental Assumption of Mr. Keynes' Monetary Theory of Unemployment," *Quarterly Journal of Economics*, November 1936, 192.

[8] "The Relation of Wage Policies and Price Policies," *American Economic Review*, March 1939 Supplement, 163.

[9] *General Theory*, pp. 91–92.

CHAPTER 2

MONEY WAGE RATES AND EMPLOYMENT

What is the effect of a general change in money wage rates on aggregate employment and output? [1] To this question, crucial both for theory and for policy, the answers of economists are as unsatisfactory as they are divergent. A decade of Keynesian economics has not solved the problem, but it has made clearer the assumptions concerning economic behavior on which the answer depends. In this field, perhaps even more than in other aspects of the *General Theory,* Keynes' contribution lies in clarifying the theoretical issues at stake rather than in providing an ultimate solution.

1. Pre-Keynesian Solutions to the Money Wage Problem

How considerable this contribution is can be appreciated from a brief review of pre-Keynesian attempts to solve the problem. [2] These solutions rested on one of the following assumptions: (a) that the price level is unchanged. [3] (b) that aggregate money demand (MV) is unchanged, [4] or (c) that some component of aggregate money demand, e.g., non-wage-earners' expenditure, is unchanged. [5] Naturally, if money demand is assumed to be maintained in any of these ways, the conclusion follows easily that a money wage cut will increase, and a money wage rise diminish, total employment and output. These assumptions, or any variant of them, beg the central question raised by the fact that money wage-rate changes are double-edged. They change money costs, but they change at the same time money incomes and hence money expenditures. Even the money expenditures of non-wage-earners cannot be assumed unchanged, for their incomes depend in part on the expenditures of wage earners.

2. The Role of the Consumption Function in Keynes' Solution

Keynes replaced these assumptions with a proposition which, whatever its shortcomings, is certainly a more plausible description of actual economic behavior. This proposition is his consumption function: that *real* consumption expenditure is a unique function of *real* income, with the marginal propensity to consume positive but less than unity. So far as consumption expenditure alone is concerned, therefore, Keynes concluded that a change in money wage rates could not affect the volume of employment and output. Because the marginal propensity to consume is less than unity, any increase in output and real income would fail to generate enough of an increase in real consumption expenditure to purchase the additional output. Any decrease in output and real income would cause, for the same reason, an excess of aggregate real demand over supply. The result of a change in money wage rates would be, still considering only reactions via consumption expenditure, a proportionate change in prices and money incomes and no change in employment, output, real incomes, or real wage rates.

These are the implications of Keynes' systematic theory. In the course of remarks which are, from the standpoint of his systematic theory, *obiter dicta,* Keynes considered two possible effects of a money wage cut on the propensity to consume: "redistribution of real income (a) from wage earners to other factors entering into marginal prime cost whose remuneration has not been reduced, and (b) from entrepreneurs to rentiers to whom a certain income fixed in terms of money has been guaranteed." [6] The effects on consumption of the second type of transfer, (b), Keynes thought doubtful and apparently unimportant. The first type of transfer, (a), from wage earners to other prime factors, would, if it occurred, be likely to diminish the propensity to consume; it would, therefore, be unfavorable to employment. However, Keynes overestimated the likelihood of such a redistribution of income. Maintenance of the prices of other variable factors in the face of a wage cut would encourage substitution of labor for these factors; such substitution would not only be directly favorable to employment of labor but would also diminish or reverse the transfer of income from labor to non-wage-earners. On the other hand, if the owners of other variable factors sought to avoid such substitution, they would, as Lerner has shown, reduce their prices in the same proportion as the wage rate and consequently would not gain income at the expense of labor. [7]

3. Effects of Money-Wage Rate Changes on Investment

The possibility remains that a change in money wage rates may induce a change in the other component of Keynes' effective demand, real investment. So far as real investment is itself dependent on the level of real income or the volume of real consumption expenditure, there is clearly no reason for such a change. Likewise, the marginal efficiency of capital, so far as it is objectively determined by the amount of additional output which can result from an increment of capital, is not altered by a change in money wage rates. Three types of reactions on the rate of real investment are left:

1. Conceivably, a change in money wage rates may affect that delicate phenomenon, the state of business confidence. However, the direction of this influence cannot be predicted in a general theory. [8] Individual businessmen making investment decisions may be impressed chiefly by the fact that a money wage cut reduces their costs. On the other hand, a fall in wages and prices embarrasses entrepreneurs by increasing the real burden of their debt. Without underrating the importance of these types of reactions, therefore, Keynes had to exclude them from his theoretical structure. [9]

2. In an open economy, a change in the general wage rate and price level will affect the balance of trade. A reduction of money wage rates and prices will stimulate demand for exports and shift domestic demand to home goods in preference to imports. Such a change in the balance of trade is equivalent to an increase in real investment and has a multiplied effect on home real income and employment. This effect may be strengthened by a worsening of the terms of trade, which increases the employment necessary to obtain the equilibrium level of real income and real saving. A rise in money wage rates would have the opposite effects. On this score there is little dispute. These effects may be nullified, however, by similar wage adjustments in other countries or by changes in exchange rates.

3. A change in the level of money wage rates, prices, and money incomes alters in the same direction the demand for cash balances for transactions purposes. With an unchanged quantity of money, a reduction of money wage rates leaves a larger supply of money to satisfy the demand for cash balances from precautionary and speculative motives. The result is a reduction in the real investment. It was only by this circuitous route that Keynes found any generally valid theoretical reason for expecting in a closed economy a relationship between money wage rates and employment.

4. The Central Thesis of the General Theory

Such is the Keynesian solution to the money wage problem. It is important to view it in the broad setting of the *General Theory*. Keynes set himself the goal of establishing, first, that there may be involuntary unemployment of labor and, second, that there may be no method open to labor to remove such unemployment by making new money wage bargains. There may be involuntary unemployment because additional labor would be offered at the going money wage rate at the same or lower real wage rates. [10] Labor, beset by a "money illusion," will permit its real wage to be reduced by price rises without leaving the market, even when it will not accede to the same reduction in its real wage by a money wage cut. At the same time, labor is powerless to take advantage of the potential demand for its services at lower real wage rates, because a reduction in the money wage may not lead to a reduction in the real wage.

The linkage between money wage rates and employment via the rate of interest appears to destroy the second half of this central thesis. For, if money wage rates were flexible, they could presumably fall enough to lower the rate of interest to a level which would induce the volume of investment necessary to maintain full employment. This linkage is, however, extremely tenuous. It can be broken at either of the following points: (a) The interest elasticity of the demand for cash balances may be infinite; (b) the interest elasticity of the demand for investment may be zero. [11] Condition (a) is likely to be approximated at low interest rates, and condition (b) is supported by the evidence that interest calculations play an insignificant part in business investment decisions. The Keynesian thesis that labor cannot erase unemployment by revising its money wage bargains is, therefore, not seriously damaged by admitting the effect of money wage rates on the demand for cash balances.

5. Assumptions of Keynesian Money Wage Theory

It is damaged, however, by removal of certain of the restrictive assumptions of the Keynesian model; and their removal is logically necessary because they clash with other basic assumptions. To demonstrate this, the main assumptions of Keynesian money wage theory will be examined. They are: (1) that real wages are a decreasing function of the volume of employment, (2) that labor is the only variable factor of production, (3) that pure competition exists throughout the economy or that the degree of monopoly

is constant, (4) that "money illusion" affects the supply function for labor, and (5) that "money illusion" does not occur in other supply and demand functions.

5.1. *Diminishing Marginal Productivity*

Adopting the traditional postulate of diminishing marginal productivity, Keynes assumed that real wage rates and employment are inversely related. Consequently, an increase in employment at the same money wage can occur only if there is a rise in prices sufficient to compensate business firms for the increase in marginal costs associated with an expansion of output. For this reason, the question whether labor will accept increased employment at a reduced real wage brought about by such a price rise becomes Keynes' criterion for the existence of involuntary unemployment. Keynes ventured the guess that real wages and money wages would usually be found to move in opposite directions, since money wages usually rise in periods of increasing employment and fall when employment is decreasing. [12] This conjecture provoked several statistical investigations designed to check the traditional postulate. [13] Statistically these investigations were inconclusive; [14] in any case the issue, though of great interest in itself, is not crucial for Keynes' central thesis. Equilibrium with decreasing marginal costs throughout most of the economy is conceivable in a world of monopolies. In such an economy, the involuntary nature of unemployment at a given money wage would be even clearer than on Keynes' definition. Increased employment would not be purchased at the expense of a higher cost of living but would yield higher real wages. The question raised by the second proposition of Keynes' central thesis – can unemployment be removed by a money wage cut? – remains the same whether increasing or decreasing marginal productivity prevails.

5.2. *No Variable Factors Other than Labor*

The assumption that labor is the only variable factor is more serious. By this simplification, Keynes rules out the possibility of substitution as a result of money wage rate changes. If the possibility of substitution between labor and other factors is admitted, the Keynesian solution of the money wage problem can be saved only by introducing another assumption. Paradoxically, this postulate is that all factors other than labor are fully employed and that their prices are completely flexible. Then their prices will always change in the same direction and proportion as the money wage rate. [15] If the money wage rate increases, business firms will attempt to economize on labor by substituting other factors. But since these other factors are already fully employed, attempted substitution can only result in bidding their prices up until the incentive to substitute vanishes. Likewise, if there is a cut in the money wage rate, business firms will attempt to substitute labor and reduce the employment of other factors. But since the prices of these factors are perfectly flexible, this substitution will be prevented by a lowering of the prices of these factors to keep them fully employed. If the price of any other factor were rigid, a change in the money wage rate would cause substitution between labor and that factor. A money wage cut would increase the employment of labor and a money wage rise reduce it.

5.3. *Pure Competition or Constant Degree of Monopoly*

Under conditions of pure competition, prices would be free to move up or down in the same ratio as the money wage rate, as Keynesian theory requires. Under monopolistic conditions, these proportionate price movements can occur only if the degree of monopoly – the ratio of the difference between price and marginal cost to price – remains the same. Monopolistic conditions lead to price rigidity and stickiness. Consequently a cut in the money wage rate will increase the degree of monopoly. Disregarding other results of the money wage cut, the increase in the degree of monopoly will increase the relative share of the national income going to non-wage-earners. Since non-wage-earners may be assumed to have a lower marginal propensity to consume than wage earners, this redistribution of income reduces the real demand for consumption goods. In this respect, a money wage cut is detrimental to employment and output. A money wage rise has the opposite effect. This is presumably the *rationale* of the arguments of proponents of raising wages as an antidepression policy. [16]

Rigidities in the prices of other factors of production, including unfinished goods and services, also lead to the substitution effects discussed in the previous section. The substitution effects of a money wage cut not only tend to increase employment directly, but also limit or prevent entirely the adverse effects on consumption expenditure from redistribution of income. Even though the degree of monopoly is increased, the increase in employment due to substitution tends to maintain labor's relative share. Monopolists in the finished and near-finished goods markets gain, possibly at the expense of labor but certainly at the expense of the sellers of factors with rigid prices, including the monopolists of unfinished products. Between the marginal propensities to consume of these two groups of non-wage-earners – monopolists in the final stages of production and monopolists in the early stages plus landlords and other property owners – there is little to choose. Taking substitution effects into account weakens the argument that because of price rigidities a money wage cut redistributes income adversely to consumption

expenditure. Indeed, if the elasticity of substitution is high enough, the redistribution of income may be favorable to consumption.

5.4. *"Money Illusion" in the Supply of Labor*

Economic theory is usually predicated on the premise that, given their schedules of preferences for goods and services and leisure, individuals behave consistently and "rationally." A consumer is not supposed to alter his expenditure pattern when his income doubles, if the prices of the things he buys all double at the same time. Nor is a business firm expected to change its output, if the price of its product and the prices of all factors it employs change in the same proportion. Generalized, this premise is what Leontief calls the "homogeneity postulate," namely, that all supply and demand functions, with prices taken as independent variables, are homogeneous functions of the zero degree. [17] Applied to the supply of labor, this postulate means that a proportionate change in the money wage and in all current prices will leave the supply of labor unchanged. Considering the real wage rate as the ratio between the money wage rate and the current price level of goods consumed by wage earners, the postulate means that a given real wage rate will bring forth the same amount of labor whatever the level of the money wage rate – that labor will react in the same way towards a 10 percent cut in its real wage whether this cut is accomplished by a reduction of its money wage rate or by a rise in current prices. Any other behavior seems inconsistent and "nonrational," based on a "money illusion" attributing importance to dollars per se rather than on an understanding of their real value.

Clearly one of Keynes' basic assumptions – Leontief calls it *the* fundamental assumption – is that "money illusion" occurs in the labor supply function. [18] Labor does attach importance to the money wage rate per se, and more labor will be supplied at the same real wage the higher the money wage. This assertion concerning the behavior of wage earners is indispensable to Keynes in establishing the existence of involuntary unemployment.

What are the reasons for such "nonrational" behavior on the part of labor? First, high money wage rates are a concrete and immediate accomplishment of the leadership of individual unions. The object of individual labor groups in wage bargaining is to protect and if possible to advance their wages relative to other groups. Each union will resist a cut in money wages in order to avoid a relative reduction in real wages. The cost of living is a remote phenomenon, apparently beyond the control of organized labor, certainly beyond the control of any single bargaining unit. Money wage bargains must be made for periods during which the cost of living may frequently change. Second, wage earners have obligations fixed in terms of money: debts, taxes, contractual

payments such as insurance premiums. These obligations are a greater burden when money wage rates are cut, even though all current prices may fall proportionately. Third, labor may have inelastic price expectations; a certain "normal" price level, or range of price levels, may be expected to prevail in the future, regardless of the level of current prices. [19] With such price expectations, it is clearly to the advantage of wage earners to have, with the same current real income, the highest possible current money income. For the higher their money incomes the greater will be their money savings and, therefore, their expected command over future goods. Wage earners with inelastic price expectations will resist money wage cuts even when prices are falling, not only because they fear that wages will not rise again when prices rise but also because the expected price rise would reduce the real value of their current saving. Fourth, labor may be genuinely ignorant of the course of prices or naively deceived by the "money illusion." Judged by labor's consciousness of the cost of living in the United States in 1946, this explanation, if it ever was important, is not now significant. Altogether, the support for Keynes' assumption in regard to the supply of labor is convincing; his denial of the "homogeneity postulate" for the labor supply function constitutes a belated theoretical recognition of the facts of economic life.

5.5. *Absence of "Money Illusion" Elsewhere in the Economy*

Wage earners are the only inhabitants of the Keynesian economy who are so foolish or so smart as the case may be, as to act under the spell of the "money illusion." They are under its spell only in their capacity as suppliers of labor. The "homogeneity postulate" is denied for the labor supply function; for all other demand and supply functions it is retained. Without the retention of the "homogeneity postulate" for all supply and demand functions except the labor supply function, the Keynesian money wage doctrine cannot be maintained. The dependence of the doctrine on this procedure and the justification for the procedure will be considered for (a) the supply functions of other factors, and (b) the consumption function.

5.5.1. Supply of Other Factors

When the existence of variable factors other than labor is admitted, Keynesian theory requires that these factors be fully employed and that their prices be perfectly flexible. [20] This is where the "homogeneity postulate" – the assumption of "rational" behavior – enters with respect to the supply functions of these factors. If the sellers of these factors were, like the sellers of labor, influenced by the "money illusion," their prices would be rigid like wages and there could be unemployment of these factors. A change in the