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## The Economics of Productivity Changes and Their Effects on Wage Determination Under Collective Bargaining

Thomas Joseph Sheahan  
*Loyola University Chicago*

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THE ECONOMICS OF PRODUCTIVITY CHANGES AND  
THEIR EFFECTS ON WAGE DETERMINATION  
UNDER COLLECTIVE BARGAINING

by

Thomas Joseph Sheahan

A Thesis Submitted to the Faculty of the Institute  
of Social and Industrial Relations of Loyola  
University in Partial Fulfillment of  
the Requirements for the Degree of  
Master of Science  
of Industrial  
Relations

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## LIFE

Thomas Joseph Sheahan was born in Chicago, Illinois, June 9, 1930.

He was graduated from Fenwick High School, Oak Park, Illinois, June, 1948, and from Loyola University, Chicago, Illinois, in June, 1951 with the degree of Bachelor of Science in Social Science, cum laude.

Immediately after graduation he began his graduate studies in the Institute of Social and Industrial Relations of Loyola University.

From June, 1951 until February, 1953 the author was employed by Western Electric Company at their Hawthorne Works. Beginning in the Wage Incentives Division he was soon transferred to the Wage Practices Division as an industrial engineer. In February, 1953, Mr. Sheahan became a staff engineer with George Fry and Associates, Consulting Management Engineers.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION . . . . .	1
Complexity of wage determination--Productivity as a central strand in economic growth--Early opportunity for study--Difficulties of definition and measurement--Productivity not a cure-all--Immediacy of productivity study--Statement of hypothesis.	
II. DEFINITION OF TERMS . . . . .	6
Variety of definition possible--Need for definition of terms--General definition of productivity--Use of term "labor productivity"--Production and productivity distinguished--Wages defined.	
III. THE MEANING OF THE PRODUCTIVITY RATIO . . . . .	15
Measurement of joint inputs and outputs--Analysis of labor time input--Defects of physical measures of output--Changes in process integration--Meaning of productivity increment.	
IV. THE INPUTS THAT AFFECT PRODUCTIVITY CHANGES . . . . .	24
Relative contribution of inputs not shown by productivity statistics--Industry stage of development--Management's responsibility for productivity--Investment input--Effects of competition--Volume of business--General business activity--Research.	
V. THE GENERAL MOTORS AGREEMENT . . . . .	33
Main contract provisions--Reasons for improvement factor introduction--GM's sense in the use of a long term contract--Union recognition of productivity gains--Statistics	



used--Imitation of GM contract--Extent of imitation.

VI.	GOVERNMENT ATTITUDES ON THE PRODUCTIVITY FACTOR . . . . .	45
	Pre-1951 approach--Wage Stabilization Board practice-- Lack of formal government approval.	
VII.	MANAGEMENT AND UNION ATTITUDES ON PRODUCTIVITY FACTOR . .	52
	Ability-to-pay criteria--Management distrust of unions and government--Union formal acceptance of factor.	
VIII.	UNDERSTANDING UNION AND WORKER ATTITUDES . . . . .	61
	Workers' resistance to change--Union acceptance of tech- nological advances--Socio-political character of union-- Union institutional survival--Possibility of more ex- pediency in union productivity claims.	
IX.	THE RATE OF PRODUCTIVITY CHANGES . . . . .	73
	Impossibility of precise answers--No official index-- Defects of statistics--Indices used--Estimates of pro- ductivity changes--Short term and future estimates-- Projection of trends--Long term estimates.	
X.	REJOINDERS ON THE USE OF PRODUCTIVITY STATISTICS . . . . .	90
	Indices based on estimated data--Distribution of em- ployees--Quality changes--Need for study--Possibility of informed estimates.	
XI.	THE BUSINESS CYCLE AND PRODUCTIVITY . . . . .	98
	Cyclical variations--Valid time comparisons--Historical patterns--Consumption.	
XII.	PRODUCTIVITY AND REAL WAGES . . . . .	102
	Money earnings and cost of living comparisons--Dispos- able earnings--Increased consumption trends--Productivity and employment.	
XIII.	PRODUCTIVITY AND THE ECONOMICS OF THE WAGE STRUCTURE . . .	108
	Analysis of low price policy--Timing of productivity wage increases--Firm improvement factor.	

XIV. PRODUCTIVITY--PRICE--WAGE RELATIONSHIPS . . . . .	112
Productivity-wage relationship in particular industries-- Promotion of wage inequalities--Non-wage gains from pro- ductivity--Levels of living and hourly wages compared-- Short run divergence between productivity and wages.	
XV. FURTHER RELATIONSHIPS . . . . .	118
Real wages based on productivity--Division of national income--Redistribution of income unnecessary--Arguments for higher income policy.	
XVI. CONCLUSIONS . . . . .	125
Prospect of future productivity increases--Impracticality of inflexible plan--Use of productivity pattern--Pre- vision unnecessary--Long run harmonies--Statement of basic bargaining danger.	
XVII. RESTATEMENT OF HYPOTHESIS AND FINAL SUMMARY . . . . .	132
Validity of productivity changes as wage criteria-- Utility of criteria--Supplementary hypothesis--Inflexible improvement factor.	
BIBLIOGRAPHY . . . . .	134

## LIST OF TABLES

Table	Page
I. COMPARISON OF PRODUCTIVITY AND WAGE CHANGES BY DECADES . .	87
II. COMPARISON OF PRODUCTIVITY AND WAGE CHANGES BY FIVE YEAR PERIODS . . . . .	87
III. GROSS NATIONAL PRODUCT INCREMENTS ATTRIBUTABLE TO ADVANCED MAN HOUR OUTPUT . . . . .	100
IV. AVERAGE ANNUAL DISPOSABLE MARGINS . . . . .	104
V. CHANGES IN CONSUMPTION EXPENDITURES . . . . .	105
VI. ALLOCATION OF PRODUCTIVITY INCREMENTS TO RAISE CONSUMPTION LEVELS . . . . .	106
VII. YEAR TO YEAR PERCENTAGE CHANGES IN MAN HOUR OUTPUT AND IN AVERAGE HOURLY EARNINGS FOR MANUFACTURING INDUSTRIES IN THE UNITED STATES . . . . .	117

## CHAPTER I

### INTRODUCTION

Wage determination is not a simple thing nor is it an exact thing. Probably it will never become simple or exact. But it is not a subject about which we can leave everything to chance, pressures, or emotional appeals.

Since the advent of legally protected collective bargaining, the factors to be considered in establishing an equitable, or at least a satisfactory wage scale, have of necessity received increasing attention. Under collective bargaining many wage determination factors though inexact in measurement, interrelated, and often overlapping have become accepted as valid criteria in setting wages. Unionised workers have set wage standards and patterns that are felt in all wage determinations whether under collective bargaining or not. This paper will attempt to explore one of the factors frequently used in wage determination, i.e., productivity, not only as it is applied in specific situations but also the overall economic implications of the concept.

Productivity is but one of the strands in the subtle and challenging processes of economic growth. The productivity factor cannot be separated from other strands, nor may the consequences of changes in productivity be clearly isolated for study. It is true, however, that this strand is a central one, for growth is perhaps best defined as an increase in the effective-

ness with which available resources are utilized.

The existence of economic growth in our nation is the keystone upon which our prosperity is based. Productivity is such an important factor because it is intrinsically tied up with our gross national product and its distribution. The production and distribution of goods lie at the very core of economics and quite naturally affect social questions of basic importance.

In exploring the field of productivity as a factor of wage determination we are afforded one asset not often enjoyed in labor relations study: that is, we can examine this bargaining problem in its embryo state before the establishment of a series of precedents which often confuse rather than clarify the economic issues. With only the General Motors-United Auto Workers contract being used as the prime pattern contract we have the rare opportunity to analyse the productivity factor before neither management or labor have formalized and definitely determined the explicit stands they are to take in regard to productivity.

On the other hand, we find a field that has no generally recognized definitions, tools of measurement, or accepted authorities. This paper will make no attempt to cover all the problems concerned with the productivity factor. Our purpose is, rather, to bring together the many strands of the problem and weave a general overview from which the reader may become aware of the complexity of the question and the considerations necessary before negotiation is begun over the productivity factor. Since we do not attempt to prove a case for either management's or labor's viewpoint on the productivity factor there will be little conscious effort to develop a step by step presentation of a hypothesis defending or condemning a case for a recognized pro-

ductivity factor.

We will strive to treat the subject with a minimum of statistical data since it tends to confuse rather than clarify. And yet certain statistical data will be given just to show comparison and some long range trends. By the very multiplicity of statistical analysis possible it becomes evident how inadequate the untutored negotiator would be in discussing productivity pay increases.

Increased productivity has vast importance in all broad economic assessments of our nation's present and future potential. To understand and evaluate the field of wage determination properly it must be related to the whole framework of national economies in which productivity is so important. Yet too often we find representatives of management and labor as well as of economic planning agencies unduly intrigued with productivity growth. It is possible to over-stress increased productivity by assuming increases which average several per cent a year and mount rapidly when compounded annually. As Walter Sonnenberg has said:

Assigning increased production the role of rescuing the economy from the present dilemma has become the popular indoor sport. It is surprising how easily some of the situation assessors, swayed by the speed feature of the system, muff essentials, disregard fundamental deficiencies and depend upon the capacity of increased production to overcome all shortcomings.<sup>1</sup>

The ability of America to outstrip the rest of the world in producing the sinews of war and the highest of standards of living in peace has long

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1 Walter Sonnenberg, "Increased Productivity Alone Will Not Solve Economic Problems," The Commercial and Financial Chronicle, CLXXIV, October 25, 1951, 18.

been a favorite topic for after-dinner speakers from the ranks of management. As such, productivity, like concepts of virtue and motherhood, won constant admiration, though certainly without the benefit of precise definition or critical analysis.

Increased production and productivity are in themselves no more important than the distribution of these increases. Some of the central problems of our time have to do with the distribution of productivity gains. What Robert Warren<sup>2</sup> has termed the fight for the technological margin is a central phase of competition in an expanding economy. Providers of materials, owners of business enterprises, wage and salaried workers, consumers, and, indeed, government are seeking shares of the increments made possible by advances in productive efficiency. The almost unbroken flow of productivity increments in American industry has thus not only generated expectations of steadily rising consumption levels; it has placed a distinctive impress upon the characters of competition.

Since wage determination through collective bargaining is so basically a competitive operation as well as part of the total fabric of economic competition we are faced with a variety of economic, social, psychological, and institutional drives which converge, often from opposing angles, on this subject of productivity and production increases. Any tendency to consider the subject of increased productivity as just another talking point in collective bargaining negotiations would greatly underestimate the real significance of the struggle that naturally arises in the quest for a greater share in the

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2 Robert Warren, The Search for Financial Security, New York, 1940, 34.

economic "pie."

If we are aware of the many facets of the problem of productivity changes we are better prepared to reasonably evaluate the diverse areas which any change in productivity is liable to affect. We must realize that although current discussion and, of course, this paper are concerned mostly with the wage area, productivity study and its effects are in no ways confined to the wage question.

It must also be stressed in this introduction that production and productivity are very different and not interchangeable concepts. Moreover it is important to remember that when we refer to "productivity changes" we do not infer higher productivity and reference to "productivity increases" infers nothing about the desirability of the total situation. "Increased production" in itself is not necessarily a good. The kind of production, the way it fits into the modern industrial set-up, the relationship to natural demand as distinguished from artificially created wants, the way it is financed, are some of the factors determining desirability.

Having noted some of the basic considerations we will clearly state the hypothesis upon which this paper is based. We will present our study to show that productivity changes are a valid and useful criteria in wage determination.



## CHAPTER II

### DEFINITION OF TERMS

Definition of terms is a requisite to any scientific study. This especially applies to a productivity study since there is no general agreement on definitions.

When the productivity factor and associated discussion of productivity changes first entered into the field of collective bargaining, a rather unique situation developed. A theoretical concept, that had been casually discussed by most economists and specifically studied by a relative few, entered into the very practical determination of how much labor should be paid. The difficult problem that soon manifested itself was that too few economists had actually given productivity sufficient study to reach any general agreement on terminology or techniques. And yet quite suddenly productivity as a theoretical concept left the meditative offices of economists, who sought long term trends and economic implications, and entered a vastly different area. Where before the immediacy of productivity investigation was prompted only by the economist's interest, time, and financial backing, now productivity has been forced to make its debut in the national limelight before the economists had prepared the field for practical applications. And when considering productivity as it is treated in negotiations we are dealing with a very practical application of the term. We are also dealing with people who are using the concept to

achieve their very practical ends.

In general both industry and labor were as unprepared for serious productivity discussion as were economists. Industry feels uncertain when dealing with unions over productivity as a factor of wage determination because even on the definition of the word there is no unison of concept nor any surety of techniques of measurement. Management's fear of becoming enmeshed in complex and controversial bargaining over productivity is not matched by labor. Naturally less conservative in their approach union leaders are finding productivity a field of bargaining to exploit. They are not as concerned usually over the long run economic consequences of the problem or other theoretic considerations but they do recognize an effective tool to push the "higher and higher" wage policy of Gompers.

Without an accepted definition of terms, negotiations become hopelessly confused over measures of productivity and their significance. If the terms can be defined and both parties in negotiation abide by an acceptance to utilize the same definitions at least the statistical evidence presented by the two parties can be judged against some norm.

The desperate need for a solid and acceptable definition of the term "productivity" was critically underscored by the results of a recent "productivity" survey by Fisher, Rudge & Neblett Co., a New York management consulting firm. Their questionnaire, designed to highlight management viewpoints on productivity, was answered by some 156 companies with over a million and a half employees. Eighty-eight per cent of the total replies were from companies with union contracts.

In a research monograph prepared by Fisher and Rudge they state that:

Over 60% of the total replies indicated that the issue had already come up for policy discussion in the company. Moreover, 43% of those who had union contracts reported that the union had already raised the question, formally or informally. A solid one-half of the unionized firms expect the matter to figure in their next negotiations.<sup>1</sup>

Precisely because "productivity" is a term of general and comprehensive coverage, it has been used to indicate many different comparisons of input and output, defined in various ways and measured by any one or a combination of the many variables determining production at a given time. At their best the measures of such ratios are crude statistical devices. They may express the ratio of output of horsepower, capital equipment, or labor; of physical output or value output per man-hour; of net physical output or gross physical output per man-hour; and so on. "The most generally utilized measure has been physical or value output per man-hour."<sup>2</sup>

Many definitions have crept into usage in various ways. Some people, for example, think of productivity as a measure of individual worker output which increases or decreases with his efficiency. This is the basic theory behind wage incentive systems.

Productivity measurement in contrast to work standards is a newcomer to the industrial relations field. This fact is probably largely explained by the development of industrial relations out of supervisor-employee relation-

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1 Austin M. Fisher and Fred Rudge, Productivity As a Factor in Wage Determination, Unpublished Research Monograph, Fisher, Rudge, & Neblett, Inc., Management Consultants, New York, 1952, 20.

2 Benjamin M. and Sylvia M. Selekman, "Productivity and Labor Relations," Harvard Business Review, XXVII, May, 1949, 374. Also see Dale Yoder, Manpower Economics and Labor Relations, New York, 1950, 197.

ships within a factory or other establishment. Consequently it has been only since wages and related collective bargaining issues have become industry and even nation-wide in scope that productivity measurement has received attention in the industrial relations field.

According to Webster, productivity is "the quality or state of being productive,"<sup>3</sup> or the "having or using of the power to create," and is generally applied to the results of operation of a productive unit, such as a plant, a company, an industry, or even the entire nation. The term is used to express the combined effort of all the factors which contribute to industrial production, whether they be capital investment, management, labor, or influences outside the productive unit entirely such as general business conditions, competition, the size of the market, or weather conditions. It is something over and above the sum of, or the growth of, individuals' productiveness.

Since the use of creative or productive power can be measured only by its results, it follows that such use cannot be measured separately for two or more subjects or factors that cooperate in production. If the results are joint, they can measure only the productive power of the joint undertaking. It is possible therefore to use output in accurately judging the productivity of a coal mine or the coal industry, but not that of the labor, capital, or other inputs employed in such production.

In its generalized meaning, therefore, productivity may be defined as the ratio of output to input, and labor productivity is the ratio of output to labor input. It is a cold, mathematical calculation that implies no

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3 A Merriam Webster, Websters Collegiate Dictionary, Springfield, Mass., 1942, 792.

blame or credit to labor as the terms "labor effort" or "labor efficiency" frequently may. Actually, this is not so much a definition as a statement of one way of measuring productivity with output as the numerator and input as the denominator of the ratio.

Because one element in increasing productivity (labor) happens also to be the only convenient common denominator for increasing all of the elements comprising productivity, confusion has been promoted. In other words, the predominance of the use of labor input in the measurement of productivity has given rise to the widespread belief that productivity is synonymous with "labor productivity." The implication is that labor is the one most important element in increasing productivity. While most of those who are discussing productivity realize that labor is only one factor in increasing productivity, it must constantly be stressed that we cannot measure labor productivity as such because we just don't have the tools.

And yet the term "labor productivity" is a useful one if we realize its meaning and limitations. It is useful because it is easier to measure the amount of labor time expended than it is to measure capital or machinery investment, horsepower or physical energy, the fruits of technological advance, managerial ability, or labor cooperation. To reduce the chances of misunderstanding of "labor productivity" Fabricant and other economists believe it may be wiser to refer to the concept by calling it "physical output per man-hour."<sup>4</sup> This latter term is more descriptive of the current indices and indicates that labor is only one of the interrelated factors that determine productivity.

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1940, 24. <sup>4</sup> Solomon Fabricant, Output of Manufacturing Industries, New York,

The definition of productivity simply as "output per unit of labor time expended" has not removed confusion either from analysis or interpretation. This mathematical definition is as applicable to the saving of other inputs, such as mechanical energy, as it is to the saving of labor time; and the meaning of the ratio is not fixed. Unless qualified, it can denote, overtime, changes in such diverse factors as character of output, rate of operation, or quality of management, as well as changes in technology and worker application. In fact, the ratio of output to labor time expended, whether for a job or for a nation, is a reflector of all of these changes unless its ambiguity has been reduced by so calculating the ratio that the influence of one or more of the factors has been removed.

Since our tools of measurement are as yet inadequate, only the crudest estimates of the relative importance of the various factors can be made. Careful substantiation of any claim of a ratio of the relative importance of the component factors can rightfully be demanded, however, as yet no one has brought forward a ratio that is considered even reasonably valid.

A further distinction must be made so that we can understand the difference between production and productivity. Production may be defined as the results of whatever process we are measuring or it may mean the act of producing itself. Therefore it may be seen that this is quite different than productivity as we have defined it.

A farm, mine, or factory is not regarded necessarily as having a higher productivity than another simply because it happens to be larger. Rather the critical fact is the relation between the finished product and the power exercised. Whether the comparison "higher" or "lower" is applied depends on

whether there is evidence that the results were more or less in one case than in another for the productive power used. In other words, common application of the term "productivity" involves a notion of the rate or degree with which the power to create or make is utilized. Instead of "quality or state" the suffix "-ity" has come to mean degree when added to productive.

In the light of this conceptual review, the meaning of productivity in the economic field may be stated as the degree to which the power to make or provide goods or services (usually having exchange value) is utilized as measured by the output obtained for the resources expended. As pointed out earlier, so far as the resources or inputs are concerned, their output is joint if more than one input is involved to any significant extent, and consequently their productive power must also be regarded as joint. In other words, there is no exact way from output and input data to determine the productivity of any particular class of input such as labor.

Another term that will be used frequently in this study is "wages." What is meant by wages? Do we mean annual income, weekly earnings, average hourly earning, or basic wage rates? Do we include as wage payments those supplementary benefits of cost to the employer, such as contributions for social insurance, for private pension and welfare plans, and for work injuries? Do we include changes in wages which may occur with no change in wage rates as a result of inter-industry shifts in employment, or even as a result of intra-industry variations in the administration of wage contracts---through upgrading, change in emphasis on night shifts, or a fluctuating volume of overtime. These are not insignificant problems according to Davis and Hitch because:

For each of the past few years, supplements to wages and salaries

have aggregated over \$5 billion. Except in periods of very stable employment, annual wage incomes, weekly earnings, average hourly earnings, and basic wage rates may register quite divergent movements.<sup>5</sup>

The war period disclosed the marked effect on labor incomes arising from such sources as shifts in employment to higher-wage industries, increases in premium pay, and upgrading.

Without elaborating the reasons, it seems that "wages" as used in the proposition should refer to average weekly earnings; that the proper measure of "productivity" should eliminate the effects of inter-industry shifts in employment; and that in periods of great economic changes, when hours are abnormal or when wage administration is changing, the proposition is not applicable in any case.

It will be clear in reading this study that many of those economists and others who have written about productivity and wages have not always used the same definitions of terms and therefore their statistics do not lend themselves to ready comparison. Again and again we will have to stress the importance of defining terms used and in bargaining, agreeing on one set of meanings to use.

#### Summary

There is no general agreement on the definitions of productivity, wages, or other concepts involved in a productivity study.

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<sup>5</sup> John C. Davis and Thomas K. Hitch, "Wages and Productivity," The Review of Economics and Statistics, XXXI, November, 1949, 294.



Productivity is the ratio of output to input, and labor productivity is the ratio of output to labor input. Labor productivity is better defined as output per man-hour. Common application of the term productivity involves a notion of the rate or degree with which the power to create or make is utilized.

Wages should be specifically defined to avoid confusion over average hourly earning, straight time hourly earnings, real earnings, and other concepts which do not have equivalent meanings. Average weekly earnings and average weekly real earnings are two of the most useful and meaningful terms in discussing productivity.

Terms must be defined and agreed upon before discussion or negotiation can reasonably take place.

## CHAPTER III

### THE MEANING OF THE PRODUCTIVITY RATIO

Our study thus far has shown that productivity is the ratio of output to input expressing the degree of utilization of the power to make or produce. This chapter will show that the productivity ratio is subject to considerable limitation which must be recognized.

It is now time to consider what light this exploration into the meaning of productivity may have cast on its measurement. The first impression may well be that of increased complexity rather than clarity. If the thing being measured is that of the degree to which productive power is being utilized, and if that is represented by the output obtained for the resources expended, the problem is immediately raised as how resources are to be measured. They obviously consist of such different things as labor time, managerial direction and planning, and various kinds of capital goods--yet these inputs cannot be immediately added together because they are expressed in diverse physical units. Nor is the measurement of output any easier if products of different kinds are involved.

The measurement of a change in a composite group of diverse items like the inputs used in production can be accomplished in at least two different ways: (1) some common basis can be found for aggregating all the items, or

(2) changes in one of the items can be taken to represent those in the total. It is the latter method which has been most widely employed in productivity analysis--the use of labor time expended to represent all input, according to Hiran S. Davis.<sup>1</sup>

It is true that many other methods of measurement have been devised.

All of them use output (expressed either in terms of physical units or money values) as the numerator of the ratio. A variety of denominators are used, thus relating output to a variety of factors, such as: the number of employees in a plant; the electrical energy consumed; dollars of capital invested. The most common ratio, however, relates units of output to man hours worked.<sup>2</sup>

This ratio is usually converted into an index, the fluctuations of which are expressed as percentage changes in productivity from year to year.

Since the productivity of a factory or any organized effort can only be gauged by the relation of joint results obtained for joint resources used, it follows that there are a number of equally valid ways of measuring both results and resources used. What measures are used for the output numerator and for the resource denominator depend entirely upon the question one is asking about productivity.

The measures that are used in bargaining discussions can be of prime importance and it is necessary to ascertain what one is seeking or attempting to prove before the ways of measurement can be selected and evaluated. When one party in a collective bargaining relationship proposes certain data to be

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1 L. Reed Tripp, ed., Industrial Productivity, Madison, Wisconsin, 1951, 4.

2 Fisher, Productivity, supra, 25.

considered incontestable it would seem wise to have a clear understanding of how the parties define their terms, how were the data arrived at, and what therefore should they mean.

Since labor productivity has received so much more attention than productivity resulting from other factors or measured with other denominators, it merits considerable analysis. For labor time to be taken as fully representative of total resources expended in a productive undertaking, one or two conditions must prevail--either labor time expended must be so large in relation to the other resources that the total is changed appreciably only by changes in the labor item, or changes in the other resources inputs must move in the same direction and at the same rate as labor. The first condition is only reasonably well met in the case of certain services such as a law office, but here the important consideration is not so much time expended per se as the quality of the work performed during the time, as represented by the different skills of the persons providing it.

Although the second condition probably seldom exists, the ratio of output to labor time has widely been used to gauge industry productivity, almost regardless of the relative labor time expended or the direction in which other outputs are moving. Such use seems to be predicated on the assumption that to a considerable extent some saving in other inputs, although not necessarily of the same degree, go hand-in-hand with those in labor, and that even when other inputs have to be increased to save labor, the saving on labor will more than offset any additional inputs of other items.

Even in instances where such assumptions can be justified, the result is, at best a rough approximation of whatever productivity change occurred. At

any rate, those who use the ratio of output to labor time to measure the productivity of an industry or establishment certainly have an obligation to show what facts in a given situation warrant their making this use of the ratio.

The use of labor time to represent the input of all resources stands on a somewhat different footing at the national than at the industry level. For a nation it is possible to give some representation of what would be material, fuel, and service inputs at the industry level by including all labor time expended in the nation and relating it only to the total output of final goods and services--that is, omitting on the output side the production of goods which during the year or time period used are consumed in the production of still other goods or services. This procedure is now commonly employed in measuring national productivity according to Hiran S. Davis.<sup>3</sup>

The total output of final goods and services is expressed in constant dollars and called "gross national product" because it includes not only the production of consumption goods and services but also the production of durable goods without any deduction for durable capital goods consumed during the year.<sup>4</sup>

Even at the national level, however, it can be questioned whether labor time is sufficiently representative of all the productive resources used to give a fully adequate measure of national productivity. In view of our vast and complicated physical facilities in industry, one can hardly regard real capital input as insignificant in the United States. Over a short period of years at least such input could vary in rate and direction as compared with labor time. Circumstances might lead, for example, to a widespread wave

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3 Tripp, Industrial Productivity, supra, 6.

4 Ibid.

throughout the country of investment in new equipment and plants that emphasized labor-saving, with the result that the real capital input would immediately increase substantially while labor time expended might even decline until new opportunities opened up for the saved labor. The result of this situation would be that the ratio of gross national product to man-hours expended would overstate national productivity by neglecting the increased real capital input, although it would give a reliable and valuable indicator of the national trend of labor requirements.

Warnings concerning the measures of productivity, need to be emphasized in the present discussion. The difficulties in the way of accurate measurement of productivity change tend to be slighted. Even when derived from census and other extensive bodies of the most accurate and comprehensive data, measures of physical output per man-hour are only approximate.

Ordinarily it is recognized that national output per man-hour is a rough measure of national productivity and should, at best, be regarded as a measure of a long-term trend. Difficulties of measuring output probably contribute more of this recognition than the inadequacy of labor time as a measure of resource use, and there is good reason that they should, since familiarity with the almost continual changes in the composition and character of production will quickly remind one of the problem of measuring national output.

There are several ways in which an ordinary physical measure of output may be inadequate for productivity purposes even if only one product is involved. First, the output of a plant, company, or industry is commonly thought of as the volume of completed product. But this approach neglects work in process which is just as much a "result" of input application as is

the completed product.

A second and related defect of customary volume measures of production is that they do not reflect changes in degree of process integration although such changes will be immediately reflected in volume of output. With increasing use of large industrial organizations under one corporation which produce and assemble goods from the raw material to the finished product stages, a significant but immeasurable change is taking place.

A third problem that arises in using customary output data is that they fail to show changes in the product which may have required marked changes in input.

Still another difficulty with ordinary data on volume produced is that they fail to reflect the output of associated services which may have little bearing on current production. This would include the expenses of research and long range planning.

For the purposes of formulating a general wage policy for the nation, obviously the only valid concept of productivity is one that relates to the total economy. The primary difficulty is that of measuring national productivity. There are two possible techniques of measurement, but neither is wholly satisfactory. The first method would be to calculate the productivity changes in each segment of the economy and then to average them. But such a method suffers from the three basic weaknesses, i.e., (1) productivity in some segments is not truly measurable (e.g., government), (2) such an average could not reflect an important source of distributable gain (saving on non-labor factors, such as materials), and (3) such an average would reflect several forms of "undistributable" gains--such as those productivity increases which are at

least in part offset by the expense of achieving them and those that stem from the transfer of work (e.g., power production) from one industry to another.

The other method, which on balance is preferable, is to calculate the ratio of total man-hours of work paid for in the economy to total output measured in constant dollars. The accuracy of such a measure, of course, hinges on the accuracy of its various components--employment data, hours data, production data (measured in dollars), and price data (with which to remove the influence of changing prices from the measure). According to Davis and Hitch

these data are today inadequate for more than an informed estimate of economy-wide productivity changes that have taken place in the past, but they are good enough for that purpose. Further improvement only awaits a governmental recognition of their importance.<sup>5</sup>

As the size of bargaining units grows and the establishment of bargaining benchmarks tends to be placed in a relatively small group of companies and unions, general wage policy on a national level becomes increasingly more apparent. Since there is no formal national wage policy yet the federal government has not provided as detailed statistical data as it may in future years.

Productivity changes may be expressed in relative or absolute terms. The familiar index of output per man-hour is derived from the ratio of physical output to work input. The measure of work input may be restricted to direct labor, or it may be comprehensive enough to cover all work entering into the productive process, including all the indirect labor entailed in administration, the provision of power, etc., and the labor equivalent of the equipment used up

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5 Davis, "Wages and Productivity," supra, 296.



in the productive process. It is convenient to speak of an index of this type as a productivity ratio. Such a measure is an index of unit effectiveness, defining changes in output per unit of work input, within a plant, an industry, or the whole economy. It gives no information on the number of units of labor input entering into production, nor on the absolute magnitude of the change in output resulting from the change in unit efficiency. The productivity ratio may rise during a period of widespread unemployment and declining aggregate output; it may fall during a period of expanding employment and output.

Even if a comparatively simple and valid productivity ratio could be arrived at, it is still to be expected that considerable analysis would be required to ascertain the exact relationship between the index and other economic conditions.

A measure of changes in output per man-hour is useful but incomplete. What have the changes in unit efficiency meant in absolute amounts of goods produced? To answer this question we must seek to define a productivity increment. This is a measure in absolute terms of the amount by which the aggregate output of a given period exceeds that which would have been produced by the actual work input of that period, operating with the unit efficiency of a specified earlier period. Its size in a given period will depend upon the absolute magnitudes of output and man-hours of work input in the two periods compared. This is the "technological margin," the concrete resultant of the technical and other changes that contribute to productivity gains, the substance for which producing and consuming groups compete.

Before continuing the study of the measures of productivity and productivity's effects on wages and other economic conditions, we will inter-

ject an examination in the next chapter of some of the reasons why we have productivity changes and specifically productivity increases. In summary of this chapter on the productivity ratio, we have attempted merely to point out some of the many limitations of the ratio and especially limitations on the use of labor productivity. This does not mean to infer that a labor productivity ratio or any other productivity ratio is useless or invalid. We want to stress rather that a ratio based on many doubtful assumptions, partially true generalizations, and considerably estimated statistics has a limited and questionable significance.

#### Summary

The productivity ratio is limited in its use. It combines inputs and outputs that are expressed in different terms. Since the results of production are from joint inputs, the effects of individual inputs cannot accurately be measured. One input sometimes is taken as representative of others. The use of labor time to represent other inputs may be allowed on a national basis but even here there are serious doubts.

Figures used in the productivity ratio are crude estimates. This use of the productivity ratio infers no ease or surety in the measurement of productivity.

## CHAPTER IV

### THE INPUTS THAT AFFECT PRODUCTIVITY CHANGES

Our study thus far has shown that (1) productivity is the degree of the utilization of the power to create or make and; (2) the productivity ratio is subject to serious limitations. This chapter will show that a large variety of inputs affects productivity.

Thus far we have explored the meaning and the general methods of measurement of productivity. Lest one feel that productivity changes are a completely spontaneous or natural phenomena it is well to consider briefly some of the factors which might cause a change in productivity. The tangible and intangible inputs into that total process we call national production are subtle strands indeed, of a complexity and interrelationship that we can hardly comprehend.

Again we must point out that in the study of productivity figures the data do not measure the specific contributions of any single factor in production, be it labor, capital equipment, management, or any other component in the whole process; they register instead the combines of all the distinct but interrelated influences that determine output per man-hour. Yet patently the long-term gains in efficiency stem mainly from the advance of science and technology and its application to production. Predominant have been the con-

tributions of manufactured power; of varied improvements in equipment ranging from the steady accumulation of small changes to the introduction of highly specialized and semi-automatic or automatic machines; of parallel improvements in the organization of the production process, from more efficient layout to assembly-line production; and so on. Other factors which, have possibly had less potent influences upon productivity within the long range pattern, but which have nonetheless played their continuing part at any given time include the scale of operations, the level of plant efficiency, the location of the shop, the quality and flow of materials, the skill and attitude of the work force, and so on.

One of the factors that seems to stand out in the study of productivity in particular industries is the pattern of rapid increases and then gradually declining increases in productivity in the historical development of new industries. Output per man-hour grows most rapidly in new industries, partly because there is more opportunity for technological discoveries in new industries, and partly because the expansion of the market enables enterprises to organize their work more effectively and to achieve the gains of mass production. J. J. Jaklitsch, Jr. writing in Mechanical Engineering believes that "after 20 or 30 years, however, the output per man-hour in the new industry is likely to increase at a sharply falling rate."<sup>1</sup> The longer the period of comparison, therefore, the less are likely to be the differences among industries in the rise in output per man-hour.

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1 J. J. Jaklitsch, Jr., "Five Year Labor Agreement," Mechanical Engineering, LXXIII, April, 1951, 331.

Most economists only estimate productivity trends for long periods of time. Therefore the normal influence of new industries is generally negligible. However, extraordinary changes in large industries can make significant differences in national data. The introduction of industries utilizing large scale production in the 1920's is a prime example. Synthetic fabrics, detergents, and television have been industries showing remarkable progress and yet they are such a small part of the total national production that their influence is insignificant. The next really large increases in productivity may be expected with the widespread peacetime use of atomic power and the general use of automatic computers which may produce a clerical revolution as great in scope as the industrial revolution.

Even a cursory review of the factors thus entering into productivity establishes with particular emphasis two conclusions of direct significance for labor relations. In the first place, it suggests clearly how much of the responsibility for what actually takes place resides in management. Management determines concretely where new plants shall be located, what equipment shall be used in any particular plant, how production shall be laid out and organized when improvements shall be introduced, the scale of operations. Management to some extent at least even determines labor's attitude through the handling of its labor relations problems and the level of plant morale that is maintained.

Surprisingly enough, even most labor leaders seem to accept the notion that the specific responsibility for increasing productivity resides in management. In a later chapter dealing with labor and management attitudes this will be further explained.

Management then will have the responsibility for assuring that any

productivity wage increase factor will be related to increased man-hour production realized in their own plants. What do management men who will carry the day to day responsibility for increased productivity feel is the way to show a record of improvement. It is interesting to note that these reasons were mentioned by recipients of the Fisher, Rudge and Neblitt survey mentioned earlier as the primary reason for the productivity improvement in their own company. The actual breakdown was as follows:

	<u>Ranked First By:</u>
1. Investment in new plant and equipment:	46%
2. Improved managerial techniques:	23%
3. Increased utilization of existing facilities:	13%
4. Research and invention:	18% <sup>2</sup>

The U. S. Department of Commerce substantially agrees with the management personnel when they say in their 1951 National Income that not only labor but many other factors influence productivity.

Foremost of these, undoubtedly, have been the technological improvement and increased amounts of capital equipment utilized by the nation's industries. Better organization and development of productive operations have also contributed, as have advancements in the training, education and health of the population.<sup>3</sup>

The importance of investment in our industrial economy is stressed by the Selekman who provide the following information:

Today the average worker has available about \$9,750 worth of material, equipment, and plant to assist him in his work. This

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2 Fisher, Productivity, supra, 33.

3 U.S. Department of Commerce, National Income Supplement, Washington, 1951, 3.

is the value, in 1949 prices, of all the equipment, inventories, and real estate improvements per worker--on the basis of original cost less depreciation. It represents not only privately-owned capital, but public capital such as roads and public buildings.

As our economy grows more complex and more highly developed we find an increasing need for greater public capital expense to provide the transportation, regulation, and administration necessary to distribute the goods of our production. Capital investment whether it be public or private is undoubtedly one of the major factors in productivity changes and yet we have no index to measure this vital input. But we do have some reliable estimates on the investment behind every manufacturing work.

The significant thing here, relative to productivity and real wages is that capital per worker has increased about 37 per cent from the \$7,140 level of 1900, when changes in price level are taken into account. This increase, and the consequent advances in technology, would not have been possible if the community had not reinvested about a tenth of its net national product for expanding plant, equipment, and materials.<sup>4</sup>

according to the Selekman's study.

Moreover it is necessary not only for producers to buy new equipment but for makers of capital goods to develop better equipment and tools continually. It would seem that capital goods producers confronted with very active competition have made the greatest strides in increasing the output of their machines. The force of competition in many fields cannot be overlooked as a real stimulant to the development and introduction of devices and processes which may result in substantial productivity increases.

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4 Selekman, "Productivity and Labor Relations," supra, 373.

5 Ibid.

Productivity is also affected by the volume of business on hand, although the influence varies in different industries. Heavy demand permitting long runs with less lost time for setup obviously aids productivity. Executives in some continuous-operations industries find that productivity is higher as a larger percentage of capacity is utilized. For example, "some steel producers ascribe increased efficiency to the high rate of operations."<sup>6</sup> On the other hand, high demand in some companies may necessitate the use of comparatively obsolete equipment with the result that over-all productivity suffers. It may also require the addition of an extra shift resulting in a dilution of average plant skill and efficiency. When business subsequently declines productivity may increase.

Volume of industrial activity is another of those factors which certainly affects productivity but as yet our analysis and tools of measurement cannot tell us with any certitude what is the optimum level either nationally or by industry at which productivity is greatest. As with all the other input factors that affect productivity this factor must be analyzed merely as part of a total economic fabric.

The pressure of competition among managements to anticipate and satisfy demands for new products and services has generated a phenomenal expansion of organized research. The implications for the future can be seen in the fact that "expenditures on technological research, nine times as large in 1940

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6 Henry E. Hansen, "Productivity on the Increase," The Conference Board Business Record, V, June, 1948, 244.



and 1949."<sup>7</sup>

The vast sums of private capital being expended in research is backed by increasing government recognition and support of research in almost every field. The fruits of this research are not always found immediately but over the long run considerable influences can be expected on productivity trends.

Another intangible and difficult to measure input factor is the status and skill level of the American worker. It is undeniable that the American worker is healthier, more experienced and better trained than his counterpart in 1900. The shorter work week, with its reduction of fatigue, has added to man-hour output. The steadily-rising proportion of skilled and semi-skilled persons in the labor force has also been important. To cite a few figures Mr. Patterson of the Committee for Economic Development states that the:

number of unskilled laborers dropped from 36 per cent of the labor force in 1910 to less than 26 per cent in 1940. In the same period the numbers of professional persons increased from 4.4 per cent to 6.5 per cent and clerical workers from 10.2 per cent to 17.2 per cent.

In an attempt to increase productivity management has in recent years come to realize the importance of managerial techniques in human relations and planning that are necessary.

Employees who have an active interest in their work can make important contributions to improvement in production methods. More-

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<sup>7</sup> William A. Patterson, "Real Wages: A Yardstick of Progress," Advanced Management, XV, November, 1950, 9.

<sup>8</sup> Ibid.

over, employees themselves need the opportunity to be interested in their work to make their lives more meaningful and satisfying.<sup>9</sup>

The intensive study of human relations in industry has brought forth a clearer understanding of the position of incentives and security in the feeling of the workers. Considerable effort has been made to better incentives and communication. By reducing seasonal unemployment greater utilization of productive equipment is achieved at the same time as greater worker security and satisfaction is engendered.

As we gain greater economic maturity there is hope that the effects of business cycles can be reduced and thereby eliminate many of their unsettling relations on productivity changes. Although we can never hope to know, control, or measure all the variables that are included in the input which affect productivity, we can at least be aware of the number and variety of things that are included in productivity besides labor expended.

It is also pertinent to note that the original agreement providing for an automatic productivity factor sought to achieve a very important element in higher productivity--General Motors sought a five year period with the absence of industrial conflict.

### Summary

Productivity figures do not measure the specific contribution of any single factor in production. Plant, machinery and other capital investment,

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<sup>9</sup> Solomon Barkin, "How to Raise Real Wages," Labor and Nation, Summer, 1950, 7.

calibre of management, labor effort, ability, and cooperation, research, technological discoveries, power consumed, scale of operation, and other factors all contribute to production.

Management is primarily responsible for combining the factors of production and increasing productivity. Investment is one of the most important inputs.

## CHAPTER V

### THE GENERAL MOTORS AGREEMENT

Having introduced the reader to the general concept of productivity and its measurement, we can now begin our study of what has become known as the "productivity factor" or the "annual improvement factor" in the process of determining wages. The productivity factor as such first came on the national scene in 1948 when an automatic "productivity" wage increase was included in the General Motors-United Auto Workers contract.

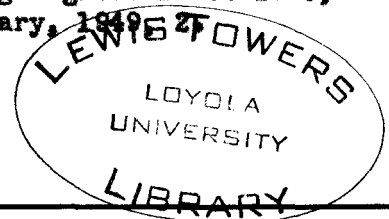
In the total wage settlement in 1948 there were three main provisions according to Ross.<sup>1</sup> (1) The first granted an immediate increase of eleven cents per hour to all employees in the bargaining unit. Eight cents out of the eleven was to offset the increased cost of living since 1940 and thereby to restore 1940 levels of real wage rates. The other three cents was "to provide for improvement in the standard of living of employees."

(2) The second major factor called for interim wage adjustments at quarterly intervals during the two year period of the contract. These were to be made on the basis of movements in the cost of living.

(3) Regardless of the magnitude and direction of cost of living

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1 Arthur M. Ross, "The General Motors Wage Agreement of 1948," The Review of Economics and Statistics, XXII, February, 1949, 25.



changes, an additional three cents per hour was added to all base rates on May 29, 1949. Three cents per hour was equal to approximately two per cent of the average hourly earnings in May, 1948. This additional adjustment (together with three cents incorporated in the initial wage increase) has been called the improvement factor.

Thus far the "improvement factor" has received relatively little attention perhaps because no one gets excited about three cents an hour these days and because it was an integral part of an average third round wage increase. However, it may eventually have greater significance than the escalator clause.

The General Motors Contract, for almost the entire first two years of its existence, was unique; there was no other like it. In April, 1950, the Allis Chalmers Co. copied it. Then in May, 1950, the General Motors contract was renewed by the company and the union for a term of five years, with no reopening on wages.

The productivity factor was raised from three to four cents. The contract was still almost unique. But then came Korea! And within a few weeks there was a dramatic change in the situation. Companies and unions, at first by dozens and later by hundreds joined the procession by copying the General Motors contract or signing one almost like it. The rush became a flood, and by the close of the year 1950 the Bureau of Labor Statistics estimates that "possibly two million workers in the United States were either covered by such contracts or about to sign them."<sup>3</sup>

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2 Ewan Clague, "Snags Ahead in Wage Contracts Tied to Price Index," The Commercial and Financial Chronicle, January 25, 1951, 36.

3 Clague, "Snags Ahead in Wage Contracts Tied to Price Index," supra, 36.

The importance of the General Motors contract lies in the fact that it took a well established economic concept, productivity, and gave it standing in a collective bargaining agreement that naturally is studied as a pattern by many other companies. While productivity changes had been studied by economists for many years, a productivity factor, as such, had received almost no investigation.

General Motors' introduction of a precise cost of living escalator clause in the contract tended to overshadow the existence of the improvement factor in the discussion that immediately arose over the agreement. Upon serious analysis though it seems that the improvement factor economically speaking was, in all likelihood, more important than the escalator clause.

Some of the philosophy underlying the agreement and also the answers to probable questions concerning it were outlined by Harry Anderson of the General Motors Corporation, Detroit, Michigan, at a Management Division Session during the 1950 A.S.M.E. Annual Meeting.

According to Mr. Anderson,<sup>4</sup> Mechanical Engineering reports, the corporation had considered employing some form of cost of living adjustment in its labor contracts since 1940. The chief bar to such a plan, however, was that the cost of living agreement alone only kept the worker even with living costs and did not give him the opportunity to share in the advancing technological progress of the country.

"Charles Wilson, GM's president, while confined to a Detroit hospital

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<sup>4</sup> Jaklitsch, "Five Year Labor Agreement," Mechanical Engineering, LXX, April, 1951, 330.

for several months, conceived the idea of "adding the improvement factor increase to the cost-of-living adjustment arrangement,"<sup>5</sup> said Mr. Anderson. As usual Mr. Wilson's shrewd business sense put General Motors ahead in the economic as well as the labor relations field.

For a five year period GM has agreed to raise wages four cents per hour, or approximately 2.5 per cent, a year. This figure, in the view of GM's president, approximates the average of what the country can do, when judged by the long run record in the last fifty years; it is not, however, an estimate of what GM can expect to achieve. Considering the new improvements being made in the GM plants and the enormous sums reinvested in the business in recent years, it would be reasonable for the corporation to expect that its annual improvement in productivity would greatly exceed the average for the country. Thus the corporation is pretty safe in guaranteeing its employees this annual wage increase in return for the assurance that there will be no strikes or interruptions in production for five years, particularly when it also knows that unions will exert continuous cost raising pressures on its competitors.

The language of the contract is worth quoting:

The annual improvement factor provided herein recognizes that a continuing improvement in the standard of living of employees depends upon technological progress, better tools, methods, processes and equipment, and a cooperative attitude on the part of all parties in such progress. It further recognizes the principle that

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5 Jaklitsch, "Five Year Labor Agreement," supra, 330.

Also see Charles E. Wilson, "Progress-Sharing," Reader's Digest, September, 1952, 26-30.

Also see Benjamin L. Masse, "GM Shows the Way," America, June 3, 1950, 264.

to produce more with the same amount of human effort is a sound social and economic objective.<sup>6</sup>

Laudable as the social objective of improving living standards is, the primary economic objectives of the corporation were not overlooked. The economic well-being of any company depends on its ability to make profits. The economic concessions to workers must be consistent with this objective. In this respect GM has been strikingly successful.

Frederick H. Harbison writing in The Journal of Political Economy states that:

Its (General Motors') postwar profits have been tremendous. In 1949 its net income was over \$656 million, which established an all time record for an American corporation. Its net income as a percentage of sales in the same year was 11.5, as compared with 6.3 for Chrysler, 7.2 for Nash-Kelvinator, 5.6 for Studebaker, and less than 4 per cent for both Hudson and Packard. In the three-year period from 1947 through 1949 alone, GM reinvested over \$664 million as compared with a total of only \$448 million for the entire fourteen previous years from 1935 through 1946. (Taken from Moody's Industrials, 1950, 2852.) No reasonable person could claim, therefore, that GM jeopardized its economic welfare by paying too much for labor.

The success of General Motors in introducing this new concept of a formal improvement factor into collective bargaining was enhanced and made possible because of the United Auto Workers wholehearted agreement in the principle involved. Harbison summarizes the feelings of United Auto Workers officials who have commented on the factor by saying:

The UAW has always favored the annual-improvement factor.

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6 "The Treaty of Detroit," Fortune, XLII, July, 1950, 53.

7 Frederick H. Harbison, "The General Motor-United Auto Workers Agreement of 1950," The Journal of Political Economy, LVIII, October, 1950, 400.



This was the one feature that the GM formula accepted in 1948 without reservation. In 1950 it wanted a five cent improvement factor and felt somewhat cheated by having to settle for four cents. But the union had consistently emphasized the importance of increases in real wages and in sharing the greater production made possible through technological progress. The union has always insisted, moreover, that progress is primarily the result of improvements in technology and is not dependent upon greater effort and speedups on the part of workers. Here the corporation and the union are in accord.<sup>8</sup>

The mutual acceptability of the contract is easy to understand when we realize that, as Mr. Harbison has said:

The UAW has secured for GM workers a guarantee of increases in real wages for a five year period which greatly exceeds the actual increases in the mass-production industries during the last five years, when the average hourly earnings in the auto industry were increased by 50 cents, but real earnings advanced only 8 cents. On a comparable basis, employees in the steel industry increased their real earnings by only 11 per cent. (Computed from Bureau of Labor Statistics data in Monthly Labor Review. Real-earnings increases are expressed in 1935-39 dollars.) The gains were comparable in most other mass-production industries. This guarantee exceeds the increases in real wages during World War II. Consequently a guarantee of a 20 cent real increase for the next five years undoubtedly represents the greatest economic gain secured by any union in the mass-production industries in the past decade. In other words, the GM wage package, even when coupled with a five year contract freeze, is a deal which no intelligent trade unionist could turn down.<sup>9</sup>

The extent of these guaranteed gains is quite astounding, when it is considered that the historic rate of increase in U.S. manufacturing productivity--shared by workers, investors, and consumers--is commonly estimated at no more than two to three percent a year. General Motors now guarantees its employees alone a productivity increase of about 2.5 per cent a year. Any gain beyond that figure--GM apparently believes it can be substantial--is available

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8 Harbison, "GM-UAW Agreement," LVIII, 405.

9 Ibid.

to the company for additional capital expansion, for increased dividends, or for price reductions.

Mr. Reuther himself points out according to Fortune magazine that:

in the last five years, at the cost of one prolonged strike and more or less continuous wrangling, the union lifted wages by 45.6 cents, of which all but 6 cents were cancelled out by increased living costs. In the next five years the union is assured a permanent gain of 20 cents in real wages, in addition to pensions and other welfare benefits, and it doesn't have to strike for its money.<sup>10</sup>

On the part of management this also deserves comment. The concept of production has negative as well as positive principles. Fisher and Rudge state that:

If, during the previous ten years, General Motors' output had been diminished by as little as  $\frac{1}{3}$  of 1% through strikes, the avoidance of this waste through the device of an annual improvement factor would represent a productivity gain.<sup>11</sup>

The absence of industrial warfare can therefore be regarded as an affirmative step toward higher productivity.

The recognition by the union that productivity increases are the primary responsibility of management gave General Motors the assurance that at least in this area they obtained an affirmative stand by the union on a subject close to management's heart. This assurance plus the guarantee of a five year no strike clause had an inestimable value to the corporation.

Although this paper does not propose to investigate the problems arising out of the use of the escalator clause, it is interesting to note that the terms of the agreement were developed exclusively by General Motors with only insignificant revisions made by the union. Ewan Clague of the Bureau of

<sup>10</sup> "Treaty of Detroit," supra, 54.

<sup>11</sup> Fisher, Productivity, supra, 91.

Labor Statistics was surprised by the agreement which bases its escalator on the Consumer's Price Index. He has said:

I must emphasize that this agreement to use the index was reached without any prior consultation by either party with the Bureau; we first learned about it from the newspapers. . . . This new type of contract put a strain on the index far greater than it had ever before endured--at least in peacetime.<sup>12</sup>

The idea of tying wages to the Consumers Price Index in a collective bargaining agreement was not at all new. Over many years, the Bureau of Labor Statistics has received for its files and analyzed contracts containing clauses on the Consumers Price Index. What was new and revolutionary in the General Motors contract was (1) the sharp and precise relationship of wages and prices (one cent in wages for each 1.14 points in the index); (2) the frequency of adjustment (every three months); and (3) the annual improvement factor.

This development has created many problems. For one thing it seriously complicated the Bureau's program for the interim adjustment of the Consumer's Price Index. It was no longer a case of a couple of large experienced companies and unions being affected to some extent by the revision program. A hundred or more firms (and unions) became involved after 1950. Furthermore, these newcomers in the field often had little understanding of the index, according to Clague.<sup>13</sup>

According to Mr. Clague:

Some of them (companies that imitated the GM-UAW contract) for example, got themselves mixed up with the rent correction, although that has no logical connection with contracts signed in the Autumn of 1950. Others seemed not to know that the Bureau has a revision

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<sup>12</sup> Clague, "Snags Ahead in Wage Contracts Tied to Price Index," supra, 35.

program underway, so they failed to insert a clause in the contract specifying what should be done to adjust when the Bureau's revision is made. A group of West Coast employers and unions signed up for three years without any escape clause for revision. Yet both the interim and the final revision may be completed during the life of that contract.<sup>14</sup>

When we see how easily confusion arose over the escalator clause it becomes even more apparent how difficult the problem of the productivity factor may become in actual bargaining.

As was mentioned earlier a flood of agreements imitating the General Motors agreement appeared in 1950. In general these agreements were in the automobile industry where the UAW-CIO is the major bargaining representative.

The repercussions of the UAW-GM contract, however, may be felt beyond the confines of the automobile, automotive parts, and farm implement industries where the UAW strength is concentrated. GM has signed a comparable agreement with the International Union of Electrical Workers (CIO), covering employees in its electrical-manufacturing and refrigeration divisions.<sup>15</sup> Thus the same economic benchmarks are established in another important mass-production field. Harbison remarks that in

July, 1950 the UAW negotiated a five year pact with Allis-Chalmers which provides for a pension program, a cost-of-living escalator agreement, and a three cent improvement factor. However, the latter two provisions are "purely experimental," and either party may reopen on wages in two years, thus terminating the experiment. The success of this arrangement, it is also indicated, will

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14 Ibid., 36.

15 National Industrial Conference Board, The Conference Board Management Record, X, September, 1948, 445.

depend on the outcome of the efforts of the parties to clear up internal wage inequities which have been troublesome for years.<sup>16</sup>

Slightly more than five million workers--about a third of all those estimated to be under labor-management agreements are covered by 188 significant agreements in a special listing by the Bureau of Labor Statistics (as of April 10, 1951). Each of the agreements covers at least five thousand workers.

About 25 per cent of the five million workers are covered by contracts scheduled to expire in 1951, 29 per cent in 1952, 26 per cent in 1953, 5 per cent in 1954, and the remaining 15 per cent in 1955:

Year of expiration	Number of agreements	Workers covered
Total	188	5,096,000
1951	69	1,278,000
1952	76	1,496,000
1953	17	1,316,000
1954	9	266,000
1955	17	740,000

Automatic wage increases (usually four cents an hour, effective on the anniversary date or dates of the agreement) are provided in contracts covering 15 per cent of the workers.

Adjustment of wages according to changes in the Bureau of Labor Statistics Consumer's Price Index is specified in contracts involving 40 per cent of the workers.<sup>17</sup>

The article lists the following companies as having specified automatic productivity increases: Dow-Chemical Co., General Motors, Ford, Chrysler, Hudson, Studebaker, Kaiser-Fraser, Packard, Nash-Kelvinator, Briggs Manufacturing Co., Automotive Tool and Die Manufacturers Association, International

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16 Harbison, "GM-UAW Agreement," supra, 409.

17 Bureau of Labor Statistics, Division of Industrial Relations, "Agreement Expirations and Wage Adjustment Provisions," Monthly Labor Review, LXXII, June, 1951, 681.

Harvester, Deere and Co., Allis-Chalmers Manufacturing Co., Minneapolis Moline Co., Pennsylvania Power & Light Co., Niagara Mohawk Power Corp. and Niagara Falls Power Co.

It is evident, therefore, that at least at the present time the use of the improvement factor is in sufficient use to consider it as a recognized factor in wage determination. As in the past, the UAW-CIO is likely to make a lot of settlements for less than the "key bargain" with small companies, marginal enterprises, and firms in miscellaneous industries where it has contracts.

But the important thing is that a factor once established as a benchmark tends to retain its existence although its relative importance may vary with other circumstances.

Because a productivity factor in one form or another is almost certainly going to achieve a permanent place in wage determination greater study is needed in this problem. The fact that the GM management and the UAW-CIO have agreed that "living costs" and worker productivity are both relevant factors in determining the wage scale is a hopeful sign that mutually acceptable wage standards are being developed. This should facilitate the course of future wage negotiations.

#### Summary

The General Motors-UAW-CIO agreement has provided for a cost of living escalator clause and a guaranteed annual improvement factor of approximately 2 to 2.5 per cent per year. This was the first agreement to include a formal and automatic productivity factor.

The purpose of the improvement factor is to guarantee raising living

standards to employees from the fruits of technological and other progress. It is not based on greater labor effort.

General Motors has been very successful in running its business profitably. The prevention of serious industrial strife during the contract period enhances the corporation's economic position.

Walter Reuther and the CIO were agreeable to the principles involved in the agreement because it provided significant increases in real wages.

The Bureau of Labor Statistics was not consulted before the contract was signed and the Consumer's Price Index was not designed for such specific use.

As a model and a benchmark the contract is very important and is being used quite widely. Although all agreements using the GM model may not use the same percentage, the GM contract is the "key bargain."

## CHAPTER VI

### GOVERNMENT ATTITUDES ON PRODUCTIVITY FACTOR

Before entering a more detailed study of the reception the productivity factor received by different groups and their approach to the subject, we will briefly describe some of the background information needed to supplement information concerning the General Motors agreement. This chapter will rely heavily on the excellent historical sketch in the Fisher and Rudge<sup>1</sup> monograph.

Productivity at no time became a serious concern of the National War Labor Board during and after World War II. The main reason, therefore, probably was the fact that productivity statistics, themselves in the process of gradual development for over twenty years prior to Pearl Harbor, ceased to be available during the war. The Bureau of Labor Statistics suspended its "all-manufacturing" series because of the "absence of suitable data." And so did the National Bureau of Economic Research.

Actually, the question did not arise as a matter of public policy until the Wage Stabilization Board was established during the Korean War. The problem was extensive enough to warrant Wage Stabilization Board attention in the spring of 1951 when the bulk of the automobile industry increases were to

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1 Fisher, Productivity, supra.



fall due. Brief hearings were held and, in June, the Board issued Resolutions 22<sup>2</sup> and 23<sup>3</sup> which gave approval to certain "so-called" annual improvement factor clauses of the General Motors type, if they had been bargained prior to the freeze date of January 25, 1951. Top limits of four cents, or 2 per cent, (whichever was greater) were imposed and the companies were required to sign a warranty that such wage adjustments would not be used for an increase in prices. The Board, in effect, sanctioned annual improvement factor increases largely because they were incorporated in pre-stabilization agreements.

Subsequently, in Resolution 43,<sup>4</sup> the Board set forth a policy of approving all deferred increases agreed to before the said freeze date, provided that they were not unstabilizing in effect and were contained in a long-term contract of 18 months or better.

Meanwhile, labor pressure on the Board to adopt a general "productivity" formula had developed. The United Labor Policy Committee, on January 11, 1951, said:

Failure to allow such wage adjustments, (productivity wage increases) whether provided in existing contracts or negotiated in the future, would represent intervention by this Board in the distribution of the shares of the national income, to the detriment of the workers'

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2 "WSB Resolution 22: 'Productivity' Wage Increases," Labor Relations Reporter, June 2, 1952, 100: 835.

3 "WSB Resolution 23: Warranty in 1951 Productivity Cases," Labor Relations Reporter, June 2, 1952, 100: 835.

4 "WSB Resolution 43: Deferred Wage Increases," Labor Relations Reporter, October 13, 1952, 100: 801.

share and for the benefit of business and management income.<sup>5</sup>

The Chairman of the Council of Economic Advisors said in January, 1952:

. . .the Council has maintained the position since the commencement of the defense emergency that productivity allowances should be included within the framework of a well-rounded wage stabilization program. . .we have urged that these increases should be held to the likely increases for the economy as a whole. . . .<sup>6</sup>

Economic Stabilization Administrator Eric Johnston stated that wage increases should be allowed if productivity increased in his policy letter of February 27, 1951, approving General Wage Regulation #6,<sup>7</sup> although he suggested that such increases could be withheld until after the conclusion of the Stabilization program. Resolutions were introduced by the labor members of the Board requesting approval of wage increases "which result from more efficient production." Discussions continued to mount without any definite conclusions.

At this point, the Wage Stabilization Board began to issue recommendations in dispute cases which, without actually advising a productivity formula, nevertheless provided Labor with a good deal of encouragement.

For example, in the Curtiss-Wright-UAW (CIO)<sup>8</sup> case, the disputes panel had recommended adoption of a three cent productivity factor. The Board, however, while approving the raise, preferred to bottom it upon the fact that

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5 Fisher, Productivity, supra, 41.

6 Ibid., 42.

7 "General Regulation No. 6," Labor Relations Reporter, December 10, 1951, 100: 455.

8 "WSB Panels Report in Aircraft Dispute," Labor Relations Reporter, February 18, 1952, WH 1066 and "WSB Recommendation in Aircraft Wage Dispute," Labor Relations Reporter, March 24, 1952, WH 1172.

the increase would not raise Wright above the level of its competitors.

Similarly, in the Basic Steel decision,<sup>9</sup> a full-dress argument on productivity had taken place before the disputes panel. The panel made no recommendations on any aspect of the case, but the Board recommended a three step general wage increase in its ultimate decision. The majority opinion said:

While not requesting an annual improvement factor adjustment, the Union argues that the rise in man-hour productivity in steel production is further justification for the general increase requested. The parties differ in their estimates of the rate of productivity growth, but agree that it has been substantial. The Board has considered the Union's claim based on productivity in arriving at the amount of the recommended increase.<sup>10</sup>

The Board, on March 28, 1952, issued Resolution 90,<sup>11</sup> governing further productivity increases. Here the Board ruled that petitions for annual improvement factor increases, even though negotiated after the freeze date, would be approved under the following conditions:

1. If filed prior to March 27, 1952 and payments are to be effective before January 1, 1952;
2. If a tandem relationship with a unit which has had an improvement factor approved is shown;
3. If the General Motors pattern of four cents or two per cent is followed, and the increase is in a long-term contract, and,

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<sup>9</sup> "Steelworkers and Basic Steel Industry," Labor Relations Reporter, March 31, 1952, 100: 919.

<sup>10</sup> Ibid.

<sup>11</sup> "WSB Resolution 90: Productivity Petitions," Labor Relations Reporter, June 2, 1952, 100: 836.

4. If a warranty against price increases is filed.

The press release which set forth this Resolution succinctly stated the Board's situation with regard to productivity increases, as follows:

Today's resolution, the Board pointed out, does not apply to any future case, regardless of how closely such cases may be related to previously approved 'General Motors' type contracts.

Neither does this resolution constitute any general policy on the matter of improvement factor or productivity increases. The Board has this matter under active consideration, pursuant to Resolution 47.<sup>12</sup>

The Board further warned that no one "should construe this resolution as indicating the nature of any future policy the Board may develop on the subject."<sup>13</sup>

The Board, on May 5, 1952, issued Resolution 94,<sup>14</sup> which reapproved the annual improvement factor increases which were due in 1952, and then, apparently, decided to have one more try at a productivity formula.

In the meanwhile the first storm clouds for the Steel Case were beginning to gather. The Board then began to retreat. First, it overturned the panel recommendations in the Brass Company cases for a four cent annual improvement factor on the grounds that there was no present warrant in Board policy for such an approval. At one time, it was expected that a policy of granting four cents or two per cent annual productivity allowance would be placed in effect over the dissent of the industry members by the middle of June, 1952.

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12 Fisher, Productivity, supra, 15.

13 Ibid.

14 "WSB Resolution 94: 1952 Productivity Increases, Warranty Form," Labor Relations Reporter, June 2, 1952, 100:836.

But in the meantime, the Defense Production Act was due to expire on June 30, 1952. Considerable Congressional opposition had developed to the renewal of those sections which provided for wage and price controls, because of the reverberations of the basic steel decision.

The feeling that the Board was unable, or unwilling, to resist any union pressure at all finally erupted in the oil industry dispute, when those companies who were invited to appear before a hearing panel flatly refused to show up. This resulted in spontaneous efforts either to abolish (a) Wage and Price controls altogether, (b) the Board, or (c) at the very minimum its disputes-settlement function.

An outraged Congress, the proponents of the productivity formula realized, would regard its passage as the straw that broke the camel's back. The debate was broken off, and the Board decided to await more propitious circumstances.

Such circumstances were further put off when Congress inserted a section in the amended Act which not only reconstituted the Board as of August 1, 1952, but forbade it to issue any new policies in the interim period or to handle any dispute cases, whether productivity was involved or not.

Whereas labor has had the executive branch of the government in its corner, Congress has been sympathetic to management. The net result has been a political tangle of the most advanced variety. At the time of this writing it appears that all wage controls will be dropped either before or soon after the new administration takes office in January, 1953.

Therefore we see that although productivity as an established factor never received official government sanction, the action of the Wage Stabiliza-

tion Board certainly protected the factor in its infancy and made the climate suitable for its extension.

### Summary

Productivity statistics were not used in wage determination during or shortly after World War II because the data were just being developed or no longer available.

In 1951 the Wage Stabilization Board started discussing productivity as a factor in wage determination. On a temporary basis, prior agreements including productivity factors were allowed to stand. Pressures were brought to bear by labor for an official recognition of the factor. But the feeling that the Board was unable to resist union pressure drew the antagonism of Congress upon the Board.

Before the Board was ever able to formulate a definite policy on the productivity factor it was stripped of its disputes settlement function and now wage controls appear to be soon removed.

## CHAPTER VII

### MANAGEMENT AND UNION ATTITUDES ON THE PRODUCTIVITY FACTOR

This chapter will show that with certain notable exceptions such as General Motors management generally feels that the productivity factor is just a new name used in pushing for higher wages and unions usually indorse the principle formally.

"It is obvious that collective bargaining will not long command the respect of thinking men if it continues to be a mere attempt of the parties to rationalize positions which are taken without regard to the effect upon the community."<sup>1</sup> wrote Sumner H. Slichter recently. To be aware of the attitudes of management and labor when they approach the subject of an improvement factor in determining wages enables us to better evaluate their stands. Since the use, misuse, or failure to use the productivity factor is going to be determined at the bargaining table rather than in the economic journals, these opinions obviously are important.

To many managers of industry, labor seems simply to assume that the technological progress of the past will inevitably continue into the future, to

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<sup>1</sup> Sumner H. Slichter, "Raising the Price of Labor as a Method of Increasing Employment," The Review of Economics and Statistics, XXXI, November, 1949, 287.

view rising productivity as a natural force, rather than a man-made achievement or--if man-made--as a sort of "miracle drug" for meeting the "staggering" union demands of each year. Aware that it is still they who must combine the various factors determining efficiency at the work level into the concrete daily operations which maintain and increase the flow of goods and services, yet feeling themselves harassed by "interferences" with the exercise of the operational functions that underlie effective discharge of that responsibility, these managers have left no doubt of their fears regarding the "attitudes" of their now largely unionized workers. "Will labor go along in the steps that must be taken if productivity is to advance?"

As we have already mentioned, labor does not essentially disagree with management as to the source of increased productivity being primarily resident in management hands. Management, by the same token, does not really dissent from the proposition that increased wages have resulted from increased productivity. What management basically says, therefore, is that while it wants labor to get its share of increased productivity, it is not at all happy about being forced to submit to its application solely on the basis of a nation-wide formula.

American management men are traditionally conservative and hard-headed. They are also inclined to be expedient--a characteristic that sometimes gets them into trouble. Having themselves opened the door to annual improvement factors, industry is now taking a long, searching look at productivity to see what it really means. Not many like what they see.

Fisher and Rudge state that:

Most executives are cynical about the true nature of productivity



wage adjustments. They see in them nothing more than the old "ability to pay" theory resurrected, dusted off and reclothed to look like a new idea. They are also convinced that the unions want a uniform national wage formula, in order to move closer to industry-wide bargaining, and thereby gain increasing power over industry.<sup>2</sup> Hence, managements are taking an increasingly negative position.

Management's failure to carefully study and evaluate productivity pay increases may reflect the deep-rooted conviction of many management leaders that such increases are unnecessary and unjustified in our economy. It is likely that many businessmen, holding classical economic concepts, believe that a free market system always has and always will automatically guarantee constantly increasing productivity as well as the most equitable distribution of its fruits to all segments of our economy.

Managements attitude of distrust towards the productivity factor was accentuated when it became subject to tacit Wage Stabilization Board support. Rightly or wrongly many management leaders are convinced that anything that develops in Washington in regard to the productivity wage policy will harm them.

Management knows that labor leaders seek a formula to break wage stabilization ceilings. Labor toward this end has fastened upon an "increased share of productivity" as a plausible device to win government and public support. However, to management, this "new approach" is nothing more nor less than the old ability-to-pay theory under a new name. Why, then, management asks, dignify union attempts to reinstate a time-worn and impractical theory by arguing that a new issue exists?

Management thinks that no stabilization agency should adopt any formula that turns so squarely on "ability to pay." While it is recognized that

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2 Fisher, Productivity, supra, 11.

"ability to pay" has often cropped up at the bargaining table in one form or another, it is equally true that official adoption of the annual improvement factor concept would make ability to pay a focal point of future collective bargaining.

Management recognizes that many social trends of the past half century look to productivity for their future support and expansion.

Management believes that the cost of added fringe benefits, shorter hours and the like, are rarely taken into account by the proponents of productivity wage increases. Nevertheless, these and all other wage supplements, must be regarded as a form of wage payment. If they are to be expanded, their costs drain from the increments of productivity funds identical to those paid out in the form of direct wage payments.

Management also questions whether the costs of national defense, mutual aid programs, and other international and domestic programs, plus increases for workers and the other factors of production can all be realized from increased productivity. Obviously, we cannot achieve all of our national and international economic objectives out of the largesse of our productivity increment each year.

As in all fields we find partisans of both labor and management who take more extreme attitudes than many of their calmer cohorts. The two following quotations illustrate how far apart opponents may be who have to enter into bargaining over an improvement factor. One businessman claims that:

Production, saddled with the handicap of uneconomically high wages, near confiscatory taxes, and swollen social welfare charges cannot function as it should. It can only come into its own if its fruits are rightly divided between worker pay, employer profits and

for the public lower prices. In short, production performs in accordance with the way it is handled. Unaccompanied by purchasing power and prices that will take the product continuously off the market, without recourse to Wars or Deals, big production discounts other advantages.

Some folks hold the comfortable idea that the so called law of supply and demand will conveniently take care of price levels. Not so long as subsidy-minded farmers, industrialists given to milking the situation cow while the milking's good, and workers resolved to get their share of the spoils, hold the reins, with Uncle Sam standing by to pick up the pieces.<sup>3</sup>

On the other hand, Solomon Barkin, the Chief of Research for TWUA-CIO, states that:

American industrialists, even the so-called broad gauged ones, have not given up their conviction that their continued dominance of the industrial and collective bargaining scenes is essential to higher productivity. They are not ready to make place for trade unions.<sup>4</sup>

While it is difficult to judge, it seems probable that while Sonnenberg and Barkin represent the thinking of many management and union men, their views may not represent the views of a group of progressive key leaders.

The interest of labor in the use of productivity as a wage policy is by no means new.

As early as 1925, the American Federation of Labor adopted the following resolutions:

'Social inequality, industrial instability and injustice must increase

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<sup>3</sup> Sonnenberg, "Increased Production Alone Will Not Solve Economic Problems," supra, 18.

<sup>4</sup> Solomon Barkin, "How to Raise Real Wages," Labor and Nation, VI, Summer, 1950, 51.

unless the workers' real wages, coupled with a continuing reduction in the number of hours making up the working day, are progressed in proportion to man's increasing power of production.'

The concept expressed by this resolution, according to union spokesmen, has been one of the cornerstones of union wage policies in the past quarter-century.<sup>5</sup>

Frequently it has gone under different names; more often it has been effectively present at an increasing number of bargaining tables without the benefit of any label. Labor's approach to wage increases has been more pragmatic than principles, more concerned with results than with formalized programs.

The estimates of labor's contribution to growth depends upon the estimator. Union spokesmen, naturally, make substantial claims. On the other hand, the Fisher, Rudge, and Neblett survey specifically asked management to estimate labor's contribution to their company's growth. "Not one of the 156 replies conceded any influence at all. Moreover, some of them even said that labor effort has so decreased that the contribution of other factors was necessary to offset the loss of productive effort."<sup>6</sup>

Now that Walter Reuther has become president of the CIO since the death of Phillip Murray, we may assume that he speaks for a considerable portion of the CIO and not merely the Auto Workers. How, then, does the 1950 settlement square with the long range economic and political goals of the Reuther forces. Reuther's basic contentions have been fourfold. Harbison concisely outlined the UAW statement of May 23, 1950 and Reuther's "International Post War Problems II," (April, 1945) and we will use his summary rather than

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5 Fisher, Productivity, supra, 6.

6 Ibid., 35.

the original statements. Reuther's contentions are:

(1) that wage increases should be granted without price increases so that labor can increase its standard of living with the community and not at the expense of the community; (2) that economic stability and security must be based on increases in real wages to keep pace with increasing productivity of the nations farms, factories, and mines; (3) that the wage-price-profit relationship has been out of balance and must be corrected to avoid a repetition of the 1929-1932 disaster; and (4) that private enterprise, as the price for its survival must serve the public by being efficient, competing in a free market, investing its profits in expansion of plants, and passing on the benefits of technological progress to consumers and labor.<sup>7</sup>

Writing in Labor and Nation, Walter Reuther has said:

We said (to General Motors) that we wanted the American labor movement to rise above the status of an economic pressure group which attempts to solve its problems at the expense of society. We said we wanted to gear our demands to the welfare of the nation, because that is the only way this problem can be solved right. Labor can make progress in the world only to the extent that it advances and fights for the realization of practical programs that are geared to the welfare of the whole community.<sup>8</sup>

As the CIO sees it, the increase in national productivity is the product of the contribution of all the workers, and so all of them have earned the right to share in a rising out-put per man-hour. In general, the AFL has backed the CIO position. As previously noted, for a quarter-century the Federation has been on record as recommending productivity wage adjustments. While hesitant about endorsing a formula, the Federation recently changed its emphasis slightly and called for a national productivity wage policy.

The Fisher-Rudge<sup>9</sup> research monograph states that the AFL policy calls

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7 Harbison, "GM-UAW Agreement of 1950," supra, 406.

8 Walter P. Reuther, "Our Social Setup Lags Behind our Technological Progress," Labor and Nation, III, January and February, 1947, 9.

9 Fisher, Productivity, supra, 45.

for the national increase in productivity to become the minimum. AFL would permit particular industries and companies to develop their own applicable indices through collective bargaining. The resolution introduced by AFL's Wage Stabilization Board Member, Elmer Walker, would merely make productivity wage adjustments premissive.

We can see therefore that any of the considerations of the productivity factor must be tempered by the realization that although the factor has far reaching economic implications, the practical situation is involved in a struggle between management and labor. This bargaining struggle far overshadows all else when the decision is actually made on the use or non-use of the productivity factor.

Only by having an understanding of the attitudes of interested parties can we expect to realistically introduce productivity as a criterion of wage determination under collective bargaining.

#### Summary

Management generally fears that automatic productivity increases in wages are merely another way of expressing the old ability-to-pay concept. Management does not like the use of a national formula and they fear anything that has been approved in Washington for the last several administrations will be used to hurt them. Management feels that non-wage payments must be considered in the distribution of any productivity increases and that unions are just taking advantage of the present situation to press for higher wages under any name.

Unions have long adhered to the general principle that workers should

benefit from increasing productivity. The CIO has taken the lead in promoting the improvement factor while the AFL has followed the CIO's lead.

## CHAPTER VIII

### UNDERSTANDING UNION AND WORKER ATTITUDES

In the analysis of labor's viewpoint toward productivity and an automatic factor reflecting productivity increases, we must take into consideration the social and institutional drives that affect both formal union policy and the individual and group reactions of workers.

In the first place, in so far as the statistical record goes, no correlations can be established between the presence of unions and the pattern of productivity. Thus in trade and service occupations, where unions have as yet made only slight inroads, productivity has so far registered only slight advances; in railroad transportation and mining, where unions have long been established, large gains in productivity have occurred over the years; and in manufacturing the checkered experience indicates slight correlation either over time or within any given time with the advance of unionism.

Despite long standing and general identification of labor restrictions upon output with union policy or practice, day-to-day observations in earlier inquiries as well as later systematic studies reveal that behavioral reactions crystallizing as restrictions do not flow primarily from union organization and collective bargaining. They represent, rather, basic human responses appearing among all workers, nonunion as well as union. It is important to



realize, however, that unionization does introduce its special influences. If the patterns of restrictive behavior exist among workers before their entry into a union, labor organization gives this behavior institutional expression and thereby multiplies the workers' resources of defense against the dangers they fear.

Close scrutiny of the evidence uncovers, indeed, significant differences between employee responses and formal union policy. It is the pervasive, persisting resistance at the work level that emerges as characteristic human behavior--sometimes formalized, sometimes not. But restrictive union rules are found with striking repetitiveness over the years only in the same narrow group of unions. Most unions, in their formal policy, reveal a variety and change that contrasts sharply with the constancy of resistance at the bench.

The truth is that union policy expresses a significant dualism: the fundamental human impulse of the workers to suspect and resist new machines and new methods; and, simultaneously, an organized, institutional effort, so to speak, to adapt to their manifold consequences. The first side of the union shield had full exposure to public attention. That difficult problems inhere in this aspect of union function none would deny; after all, they remain rooted in the sentiments of the workers on the job. That is why the second side of the union shield--the guarded adaptation to essential production innovations--needs now the exploration it has as yet not received. For such adaptation may progressively modify or control spontaneous human reactions to efficiency innovations at the work level.

To be practical and realistic, the exploration must recognize that the basic dualism of union policy will no doubt continue, implemented, as it is,

by two very potent pressures, operating from opposite quarters and toward immediately diverse goals: (1) Members press both for defensive safeguards against innovations and also for gains from them. Union programs to meet these pressures become issues of internal union politics, factionalism, tests of union "discipline," and also of union democracy; they thereby attain an articulation and visibility that make them appear the pivotal motors of union functioning in this area of industrial concern. (2) But actually, at the same time, company executives are pressing for conditions and safeguards essential to the vitality and effective conduct of the enterprise. The characteristic procedures of collective bargaining then come into play to achieve the continuous balancing: negotiation, grievance adjustment, administration, consultation, conciliation, compromise, arbitration. The rough equilibrium attained through these procedures spells out the adaptive changes in general union policy.

By the same token, the procedures of collective dealings may offer institutional instruments for coping with, as well as for expressing, the underlying human responses to the technical organization of industry that become restrictive practices. As unions mature and gain a comparatively settled acceptance in a collective bargaining relationship, they may express leadership to de-emphasize the workers' spontaneous distrust of technological advances.

In the newer CIO unions, which account for the bulk of recent union expansion into basic industry, acceptance of technical improvements is firmly grounded. In these sectors of the economy, of course, mechanization had already reached a high stage of development before the unions entered. But whatever fears this spread of unionization may have evoked in management, the unions at least have not attempted any obstructive resistances against contin-

uing mechanization which is precisely the factor, as we have seen, that emerges as so significant for the long-term advance of American productivity. Instead, in these crucial areas of manufacturing also, union policy stands forth as one of unquestioning acceptance of technical change implemented by proper protection for members, so far as may be possible, from potentially adverse consequences.

Phillip Murray, according to the Selekman, detailed it for the steel workers as follows:

This means that technological improvements should be installed at such times and under such conditions as not to displace workers, bankrupt communities, close up complete mills, and otherwise disrupt the social fabric of industrial districts.<sup>1</sup>

The miners union's approach toward mechanization remains for Mr. Lewis a subject of proud affirmation. He claims in fact credit for the superior man hour output of American mining as compared with the British, and calls upon the critics of his bargaining policies to look with him upon its natural fruits. The Selekman believe his address to the 1948 miners' convention merely reiterated a deeply held conviction. Lewis then said:

The only thing that has modernized the coal industry in this country, built up its productive capacity, lowered its unit costs, and increased its per man per day output has been the policies of the United Mine Workers during these last 50 years, constantly pressing for better standards, safer conditions, shorter hours, and a higher wage, which, in turn, has compelled the industry to adopt modern techniques to lower unit costs of production. Had it not been for that pressure from the United Mine Workers the American coal operators would have done the same as the British coal operators, not put our money back for modernization, not adopt modern techniques, and as a result the man production would have been low, perhaps nearly as low as it now exists in Great Britain, where they are only producing a little over

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1 Selekman, "Productivity and Labor Relations," supra, 385.

one ton per man employed as against our national daily average of six tons plus.<sup>2</sup>

To move from systems of wage payment to problems revolving around technological change is to meet at once a striking contrast: there are far fewer cases of actual disputes over these issues as such. Apparently the historic resistance to the machine, and all that it implies, is by this time pretty well dissipated, especially in basic industry. As we have mentioned earlier, majority union policy today accepts technological advance, provided there are proper protections for the interests of affected workers.

Mr. and Mrs. Selekman report in their study of productivity that:

A sampling of cases published in four volumes of the Labor Relations Reporter for the period January, 1947 to September, 1948 shows only eight cases out of a total of 940 disputes that dealt explicitly with issues arising from new productive equipment or processes, and only one of these involved more than a single producing unit. Further confirming the authors' own observation, the issues embodied not opposition to the innovation or change as a matter of union policy but tangential resistance in the form of demands for rate increases, protests over crew composition, allegations of increased work-loads, or stoppage. Such resistance could be scrutinized and settled by the procedures established under union agreements, and the fact that it was so handled in all eight cases attests again to the value of these procedures in maintaining and increasing productivity.<sup>3</sup>

The whole process of collective bargaining from the original approval of a contract to the final step of the grievance procedure provides a device by which union policy and practice develop. These varieties in adaptation, as might be expected, have evolved piecemeal through ad hoc decisions on concrete problems as and where they arose—a humdrum, undramatic yet wide reaching area

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2 Selekman, "Productivity and Labor Relations," supra, 385.

3 Benjamin M. and Sylvia K. Selekman, "Productivity and Collective Bargaining," Harvard Business Review, XXVIII, March, 1950, 133.

of adjustment in industrial relations.

Since collective bargaining is so dependent upon the institutions through which it operates we must be aware especially of the nature of unions as organizations. The trade union is a political institution which participates in the establishment of wage rates. To conceive of the union as a seller of labor attempting to maximize some measurable object (such as the wage bill) is a highly misleading formulation. It is also misleading to conceive of a union attempting to consciously evaluate its position in the national economic structure.

The formal rationale of the union is to augment the economic welfare of its members; but a more vital institutional objective--survival and growth of the organization--will take precedence whenever it comes into conflict with the formal purpose.

A theory of trade union wage policy, therefore, must address itself to the essential character of the union as a decision-making institution and achieve a more intimate perspective than is ordinarily provided by formal economic analysis. At the level of normative judgment, there is no point in exhorting unions to behave in a manner incompatible with their survival and growth; if we want unions to follow a certain course of action, it must be consistent with their institutional objectives. We must make a choice, or at least strike a balance, between the ideal that unions be operated in an entirely democratic manner and the desire that its leaders conform with the canons of business or economic morality. Businessmen and economists do not have to function under the limitations of an organization that is basically political in structure. Often a union leader is not able to act "responsibly" or in a

manner others may feel is the best way in the long run for either the union members or the whole economy. The union leader must consider the current feelings of the members, even though these feelings may be unjustified or emotionally colored, since the union official must face elections. Remembering unions institutional objective of survival and growth we must give up the notion that unions can be made more responsible by making them less secure.

In a system of democratic unionism, the leaders must be constantly aware that any action they take or recommend to be taken must, in the long run, not counter the union members' feelings. Some of the things that a union leader might like to promote are impossible for the present merely because the workers in general have not as yet become sufficiently prepared for a change.

Comparisons are important to the worker. They establish the dividing line between a square deal and a raw deal. He knows that he cannot earn what he would like to have, but he wants what is coming to him. In a highly competitive society, it is an affront to his dignity and a threat to his prestige when he receives less than another worker with whom he can legitimately be compared. At times he is not sure what makes a legitimate comparison, and needs guidance on the point; this is one source of moral authority enjoyed by the union leader. The intelligent leader realizes what Whitehead,<sup>4</sup> Roethlisberger,<sup>5</sup> and other students of industrial psychology have often pointed out: that the worker's attitude toward the rate of pay is more significant, for many

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4 Thomas N. Whitehead, The Industrial Worker, Cambridge, Mass, 1938.

5 F. J. Roethlisberger and William J. Dickson, Management and the Worker, Cambridge, Mass., 1939.

purposes, than the real income it provides, and that attitudes can be manipulated.

Although a skillful union leader can often divert worker attitudes, the permanent establishment of a productivity factor as a prime basis for wage determination introduces serious institutional problems for the union. Since the annual improvement factor as we know it has been used only as a joint device with escalator clauses the security of the union as an organization is threatened.

Very seldom will or can a trade union agree to an agreement whereby wage structures fluctuate during the course of the cycle in accordance with some standard such as prices or employment over any extended period of time. The basic opposition to these proposals is not so much that there may be some tendency to freeze "real" wage rates over periods longer than the duration of the contract but rather that sliding scales are a substitute for collective bargaining. The union could not take credit for wage adjustments that were essentially automatic in character. The possibility of achieving cyclical wage flexibility by such a device neglects the political realities of collective bargaining. Such automatic adjustments are a basic threat to the union's institutional objective of growth and survival.

If there were a unified "Labor Movement" in the U.S., and if the union leaders felt that their hold on the membership did not depend upon continually wringing gains from a reluctant management, perhaps an agreed-upon pattern of secular wage increases with a productivity factor could be adhered to. But in the present state of affairs, with union leaders competing to get the "best contract," it is unlikely that union leaders can take the position

that management has granted, in advance of negotiations, all that can properly be demanded.

Although a company and union may agree for a contract period that to concede a regular, if small, annual increase in hourly wage rates recognizes that part of the gains of technical progress are to pass on in the form of higher wages, this alone does not eliminate other problems. Insofar as this forestalls an annual strike to achieve these gains, it is all to the good. But it may very well be that once workers, or their leaders, come to expect a certain annual increase in wage rates, they will take it "for granted" and demand more.

Consequently, to make annual wage increments automatic may serve simply to increase the minimum wage demands that union leaders feel able to accept without losing "face" with their members. Wise policy by management requires a certain degree of cooperation with the union, but the optimum degree may well be less than the maximum. A too large productivity factor could cause serious economic dislocations.

The difficulty faced by management is that General Motors began the use of a factor which may make economic sense if used discreetly but which under collective bargaining may degenerate into a discussion point having little or no relationship to productivity. Harry Chester of the UAW-CIO Research Department voiced the feeling of the union and statements like this are what frighten management and economists alike concerning the future of the productivity factor. Chester stated:

It is possible that the critics underestimate the fact that the GM agreement acknowledges improvement in technological efficiency



as one of the factors which ought to determine wages, because the adjustment for this factor is set at only 2%. We would readily understand it if such criticism as the following had been made: "We feel the acceptance of the principle is one step in the right direction but the application is all wrong." The UAW certainly would not quarrel about it. The UAW press release stated: "General Motors offered an annual increase of 2% or three cents an hour as a gesture toward keeping the worker's purchasing power abreast of the increased output resulting from technological advances in the national economy. This figure itself short-changes the principle involved." Add: "The assumption that workers can expect no more than to remain on the economic treadmill, inching up 3 cents an hour per year. . . is unsound and unwise."<sup>6</sup>

Chester further points out that a UAW press release, said soon after the 1948 agreement that "the actual size of the wage increase was a compromise and certainly does not represent all the GM workers are entitled to."<sup>7</sup>

In an interview entitled "What Labor Is After" Albert J. Hayes, President of the International Association of Machinists formally announced what many fear may be labor's general attitude toward the productivity factor. He said that:

In my opinion those provisions in the General Motors agreement--the escalator clause and the production-factor-increase proviso--are temporary expedients and that one day the Auto Workers will negotiate out of their contracts. . . . Nevertheless, because we have no other choice, we negotiate health and welfare plans, we negotiate pension plans, we negotiate escalator clauses, we negotiate production-factor increases as a temporary stopgap.<sup>8</sup>

Herein lies a consideration of the most essential nature. Although

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6 Harry Chester, "GM-UAW Wage Settlement: Certain Labor Criticisms Answered," Labor and Nation, IV, July and August, 1948, 13.

7 Ibid., 13.

8 Albert J. Hayes, "What Labor is After," U.S. News and World Report, XXXIII, October 24, 1952, 432.

unions announce their agreement with the policy of productivity wage increases, have unions actually accepted the economics of an annual improvement factor, or have they merely acted expediently in pushing for higher wages wherever they are available, temporarily using the productivity concept as a means to that end?

### Summary

No known correlation can be established between the presence of unions and the pattern of productivity. There is a significant difference between employee responses and formal union policy. Workers naturally suspect new methods and machines but union policy has generally always approved technological improvements. Since unions are socio-political institutions, the leaders must retain discipline and yet promote worker satisfaction with the union. Union leaders can mold certain worker attitudes concerning the introduction of technological improvements as long as the improvements don't cause serious unemployment or other disturbances.

Problems of technological change can normally be handled through the collective bargaining procedure.

The introduction of an annual automatic productivity factor as a permanent basis of wage determination causes serious institutional problems for the union. A productivity factor and escalator clause type of long term contract virtually eliminates the need for a union as far as the union members are concerned. Since there is no unified "Labor Movement" as such, a union leader cannot do things which will jeopardize the institutional existence of the union.

Some union representatives have stated that the productivity factor

is just a starting point which should be pushed ever higher. These attitudes, if operative, would destroy the economic practicality of the improvement factor.

## CHAPTER IX

### THE RATE OF PRODUCTIVITY CHANGES

Having acquainted the reader with the meaning, measurement, and history of the concepts of productivity and the annual improvement factor, we now enter the most crucial analysis of the problem. Before entering into negotiations the following questions must be answered in this and following chapters.

- (1) What has been the annual improvement in productivity in the past?
- (2) What will be the annual improvement in productivity in the future?
- (3) How have changes in productivity affected earnings, real wages, employment, total production, and other factors related to economic activity?
- (4) Why should productivity gains be distributed?
- (5) How should productivity gains be distributed?

Faced with these questions and confronted with the variety of confusing, conflicting, and uncomfortable data and analysis, the casual investigator of the productivity factor may give up in sheer desperation.

It would simplify matters if one could tell the reader "This is the average increase in productivity." It would seem nice to present a clear line graph showing the fluctuations in productivity over the years. It would seem desirable and expedient to give specific as well as correct answers to the other questions.

Unfortunately at the present time we just don't have accurate answers. We have estimates; we have opinions; but we don't have the facts needed precisely to answer important questions.

This study will quote some of the estimates of productivity trends and increments over specified periods and attempt to ascertain the most generally accepted and realistic estimates by considering the data the estimators rely upon and their approach to the subject. In this chapter information concerning the history and future of Bureau of Labor Statistics work on productivity statistics is based on the Fisher-Rudge<sup>1</sup> monograph.

It is a misuse of terminology to say that there actually is, today, an official government productivity index. Certainly there is none in existence that has been universally accepted as an accurate measure of productivity changes. "The Kendrick index usually quoted by labor is privately prepared. The Bureau of Labor Statistics postwar indices are only on an industry-by-industry basis. No other index has any official sanction, even that put out by the Council of Economic Advisors."<sup>2</sup> John Kendricks<sup>3</sup> prepares his index for the Office of Business Economics of the Department of Commerce.

As we mentioned in an earlier chapter prevailing methods of measuring productivity almost without exception use labor time as the yardstick against

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1 Fisher, Productivity, supra, 28.

2 Ibid., 66.

3 Harry J. Greenspan, "Appraisal of Productivity Measures at Washington Conference," Monthly Labor Review, LXXII, March, 1951, 314.

which to gauge output. While the early studies by Solomon Fabricant<sup>4</sup> of productivity in various industries used number of employees as the basic denominator, Dr. Fabricant later developed man-hours worked as the basis of his well-known studies. John Kendrick's national productivity indices use hours worked. The Bureau of Labor Statistics uses the same symbol of measurement.

From 1919 through 1939 the Bureau of Labor Statistics of the Department of Labor published an index of man-hours output for all manufacturing. It was not until the 1930's that these statistics were actually given intensive study to increase their validity and reliability. These early studies were relatively crude and necessarily utilized data which, though of doubtful validity, were often the only source available.

The arrival of World War II so disrupted the national economy that further broad studies were unfeasible. The Bureau resumed its work in 1946 where it had left off, but solely on an industry-by-industry basis. It now published indices of physical output per man-hour for thirty industries which are available through the Productivity Branch of the Bureau.

Additional understanding of the problems involved in productivity study may be afforded through current efforts of BLS. The new indices are based on the direct-report system as a precise record of the output of specific products by representative firms in industry, related to the man-hours expended in the process. In this way, productivity trends for the individual products

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4 Solomon Fabricant, Capital Consumption and Adjustment, New York, 1938 and The Output of Manufacturing Industries 1899-1937, New York, 1940.

as well as for entire industries can be charted. The program now covers some twenty industries, totalling 2,600 companies, manufacturing over 300 different products, and is steadily expanding.

The essential difference between the old and the new index is that the older form made measurements for an industry as a whole; the new form will, more specifically, show shifts in production from one company to another. The new index is the more useful for the employer since it breaks down the trends to show direct and indirect labor time expended in the production of any given item measured. Moreover, further breakdowns as to size of plant, type of product and the like are possible.

On a much more theoretical level are the indices of productivity developed by John Kendrick of the Department of Commerce, and John Davis of the Council of Economic Advisors. These are national indices, and certainly at present do not lend themselves to analysis of any individual industry or company. Both indices are based on the prevailing interpretation of productivity as a relationship between the value of output to the cost of input.<sup>5</sup>

Such indices are more useful for the student of broad economic trends than for practical application by the employer to measure output of any given production unit in his company.

These indices (reported periodically in the Department of Commerce's Survey of Current Business), then, utilize the total annual value of gross national product as the numerator of the productivity ratio, instead of physical volume. In order to offset for inflation, the aggregate value is "deflated" by dividing it by the BLS Consumer's Price Index in order to give a meas-

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5 Fisher, Productivity, supra, 30.

urement in "constant dollars." This net result then becomes the final numerator and is divided by total annual man-hours worked to produce an index figure.

What then have the indices and the estimators found? "The Bureau of Labor Statistics data for the year 1919 to 1939 show output per man-hour rising at the rate of about 3 per cent."<sup>6</sup>

"The Committee on Economic Development assumes an annual rate of increase in productivity of 2.5 per cent, whereas one of its own economists, Sumner H. Slichter, has indicated that the rate can be closer to 4 per cent per annum."<sup>7</sup>

"Fabricant stressing the statistical uncertainties suggests that perhaps a range of 1.6-2.2 per cent would be safer."<sup>8</sup>

Frederick C. Mills accepts a figure that seems to approximate a conservative and reasonable estimate in comparison with all the data that is available. He states that:

For the economy at large, the gain in output per man-hour of work input over the half century is measured by an index of 299 in 1950, on a base of 100 in 1899. Output per man-hour has been multiplied by three since the turn of the century. This represents a cumulative rate of increase of 2.2 per cent a year--a doubling every generation of the physical volume of goods produced by a man-hour of work. There have been variations in the rate of gain, but on

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6 Tripp, Industrial Productivity, supra, 15.

7 Barkin, "How to Raise Real Wages," supra, 51.

8 Peter O. Steiner, "The Productivity Ratios: Some Analytical Limitations on Its Use," The Review of Economics and Statistics, XXXII, November, 1950, 322.



the whole the record is one of cumulative advance in good times and bad.<sup>9</sup>

According to Leonard A. Lecht writing in Labor and Nation:

The increase in output per hour of work has averaged 18 per cent for each ten year period since 1850. In more recent decades the increase in man-hour output in manufacturing and mining has averaged 3 per cent per year.<sup>10</sup>

Peter O. Steiner writing in the Review of Economics and Statistics also concurs with the approximate 2 per cent estimate that was used by General Motors and sanctioned as the proper long term figure by, we believe, a majority of economists. He writes:

The existing productivity statistics show a clear and unmistakable upward movement of output per man-hour over time. From 1919 to the present, productivity has more than doubled, and there is widespread acceptance of an average annual rate of increase of about 2 per cent since the turn of the century.

Between 1940 and 1950, the annual rate of increase was one fourth faster than between 1910 and 1940 - large enough to double output per man-hour in thirty years.<sup>11</sup>

He also states that:

Output per man-hour is growing more than three times as fast today as a hundred years ago. The increase in the rate of growth has been fairly steady. Between 1850 and 1880, output per man-hour increased 28 per cent; between 1880 and 1910, about 74 per cent, between 1910 and 1940, about 83 per cent.<sup>12</sup>

Recent and short term estimates are still more difficult to arrive

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9 Frederick C. Mills, "Living Cost, Prices, and Productivity," The Review of Economics and Statistics, XXX, February, 1948, 546.

10 Slichter, "Productivity Still Going Up," supra, 64.

11 Ibid.

12 Ibid.

at. The Council of Economic Advisors Annual Economic Review<sup>13</sup> January, 1950, contains estimates of output per man-hour for the decade 1939 - 1949 which seem to require some interpretation.

"Output per man-hour is shown in Chart 15 on page 76 of the report (Annual Economic Review) as having an almost straight line upward trend, increasing about 2.5 per cent a year from 1890 right through 1949."<sup>14</sup> But the general rise charted is based on fragmentary data shown thereafter. Man-hour output increased nearly every year since 1943, according to this source, so that the gain in the last ten years is indicated to be about 30 per cent.

Hiram S. Davis feels "From 1939 through the first half of 1951, output per man-hour for the economy as a whole appears to have averaged an increase of about  $2\frac{1}{2}$  per cent compounded annually."<sup>15</sup>

In estimates of recent and short term trends in productivity changes we find some estimators instead of predicting vast gains are predicting serious decreases in the traditional rate of productivity increase. For example, Solomon Fabricant, in an interview published in Business Week ventured the opinion that the rate of productivity increase in manufacturing since 1940 has fallen very sharply, perhaps to no more than 1 per cent per annum."<sup>16</sup>

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13 The Council of Economic Advisors, The Annual Economic Review, January, 1950, Washington, 1950.

14 Gertrude Deutsch, "It's Not Always Productivity," The Conference Board Business Record, VII, March, 1950, 114.

15 Tripp, Industrial Productivity, supra, 14.

16 Ibid., 16.

It is not surprising that we find such diversity of opinion when the tools of productivity measurement are so undeveloped. The more study is expended and the more estimates that are considered the more we see long run and overall estimates being mutually agreed upon. Much as estimators disagree on the short run prospect it is important to realize as Dr. Mills has said that:

Historically productivity gains have been a factor of long-term rather than short term significance. A gain of three per cent a year in output per man-hour in manufacturing has been realized under favorable circumstances - a notable gain, indeed, but not one that would materially affect short-term developments in the economy at large.<sup>17</sup>

The productivity increases during recent years are of considerable interest since unions are taking the attitude that wages can and should be geared to more recent changes in productivity. At the present time it seems natural for unions to stress recent data because they believe that recent data will uphold their bargaining claims. When they read productivity analyses, it is expected that they will attempt to utilize whatever data best supports the union requests.

Mr. Chester of the CIO brings out this point when he says:

During the first years after World War I, productivity in manufacturing rose at an annual rate of more than 10 per cent. In 1947 capital investment in manufacturing (in constant dollars) was roughly 75 per cent higher than in 1920, and according to present estimates the capital investment in 1948 will roughly equal the amount spent in 1947. On the basis of these data it is much more probable that the improvement in technological efficiency during the next years will be like the post World War I pattern than it will be like the percentage assumed by the GM agreement.<sup>18</sup>

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17 Mills, "Living Costs," supra, 6.

18 Chester, "GM-UAW Wage Settlement," supra, 13.

On the other hand Dr. Mills believes that while the 1919 - 1922 output per man-hour increase was at the rate of 10 per cent per year and while we now stand in a position somewhat similar to that of 1919, "the overall productivity gains of the recent past have been meager."<sup>19</sup> His analysis of:

Presently available evidence indicates that from 1939 to 1947 the net gain in man-hour output in manufacturing was at a rate not much above one per cent a year - far short of that to be expected on the basis of war-won advances in knowledge and techniques.<sup>20</sup>

John C. Davis agrees that the 1939 - 1947 gain has only been about one per cent annually. And yet he does not claim that this figure is very meaningful. He feels that:

Because of the marked shift in product mix and in quality during the war years and during the reconversion period, and because of the difficulty of securing comparable data particularly with respect to employment, there is no certainty that this figure is actually representative of productivity changes from 1939 to 1947. Since the Census of Manufacturers data pertain only to the years 1939 and 1947, they do not, in any case, enable us to calculate the year-to-year changes within the period.<sup>21</sup>

As for the actual percentage figures, the CIO is partial to the index developed by John Kendrick, according to Fisher and Rudge.<sup>22</sup> The Kendrick index reflects national gains for the past fifty years at the rate of 1.6 per cent and 2.2 per cent, compounded annually (higher for manufacturing alone, which goes from 2 - 2.5 per cent). This index shows that productivity has risen, on the average, at a rate of 4 per cent, compounded annually, from

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19 Mills, "Living Costs," supra, 7.

20 Ibid.

21 Davis, "Wages and Productivity," supra, 307.

22 Fisher, Productivity, supra, 66.

1933 - 1945. "Similarly, the increases for the most recent post-war period, 1948 - 1951, show an average rise of 4 per cent."<sup>23</sup>

The AFL stresses even shorter periods.

"The national formula, AFL says, shows a 5.9 per cent increase in 1950, and 5.4 per cent in 1951."<sup>24</sup> Allowing for any possible overstatement, the AFL believes that national policy should permit productivity wage adjustments of 11 per cent. This is to enable all workers to "catch up" with their share of productivity gains in the past two years.

The Fisher-Rudge<sup>25</sup> monograph claims that the inclusion of the 1946 - 1947 period of declining productivity would, admittedly, bring the overall 1933-51 average compounded annual increase down to about 3 1/8 per cent, but that the CIO holds that periods of recession and postwar dislocation ought not to be included because their unrepresentative character which tends to understate the true rise in national productivity. Moreover, the CIO believes the only true measure of productivity-based wage increases is found in contemporary history which more accurately reflects the living economy, and that the recent rise in the rate of new capital investment insures the continuance of the 4 per cent annual increase figure, which may even represent an understatement.

Yet labor claims that the 1947-51 trends are typical. This technique has aptly been called the "lost-years" technique. It consists of ignoring unfavorable facts on the ground that they "understate" the situation.

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23 Fisher, Productivity, supra, 43.

24 Ibid., 45.

25 Ibid., 43.

According to Fisher,<sup>26</sup> management feels that labor seeks to achieve its objectives by segregating the favorable from the unfavorable. In management's view, productivity changes in the future will probably follow along the general long-run trend lines and the abnormal increases of the past few years are only a restoration of our economy's "productivity" to its normal trend. Such unusual increases were inevitable, in this view, in order to offset the productivity decreases that occurred in the early post-war period, and do not indicate a new trend.

Similarly John W. Kendrick quoted by Fisher and Rudge<sup>27</sup> says, in warning of the pitfalls that beset those who prophesy the future:

Projection of a past rate of growth in productivity would be based on the implicit assumption that intangible investment per unit of factor input and the rate of incorporation of new technology into productive capacity would proceed at past rates.

John C. Davis of the Council of Economic Advisors doubts the unions' great claims, and seems to reach a middleground in the game of projecting future productivity. He says:

Assuming the continuation of a defense economy similar to that presently in effect, it seems doubtful, from developments now foreseeable, that output per man-hour for the economy as a whole will increase during the next few years at a rate much faster than the approximately 2 per cent average annual increase in the past. When there is considerable evidence to substantiate the belief that productivity in manufacturing made rapid advances in 1949 and 1950, there are already indications that the rate of increase since defense mobilization got under way has slowed down. Even if manufacturing showed larger increases in the immediate future than during the past, the effect on the average for the whole economy would not be great. In view of the

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26 Fisher, Productivity, supra, 76.

27 Ibid.

heavy investment in capital equipment by manufacturing concerns, there is, however, every reason to believe that the long-run future increase in factory productivity will be at least as great as was true in the past.

Whether trade, service, government, and similar activities will keep step, productivity-wise with manufacturing and agriculture is conjectural. There are too many unknowns to warrant drawing any definite conclusions. Nothing now foreseeable suggests any phenomenal developments in productivity in these areas.<sup>28</sup>

The vast variations in "productivity" changes between industries are significant. Even more significant is the total lack of relationship between such increases and wage increases in any industry whatsoever. The reasons for these wide variations are readily apparent; the synthesis of the various factors which condition increased productivity, produce a different mix for each industry.

Other problems are involved in this measurement - the failure of the measure of total constant dollar output to include free goods and services that are paid for in the purchase of other articles (e.g., entertainment paid for by advertisers and most distribution services); the influence on constant dollar gross national product of intra- and inter-industry shifts in employment between jobs of widely varying value-added characteristics (with compensating wage changes occurring by the shift); and the difficulty of measuring "output" of such large groups of employees as government civilian employees.

It is significant as Fisher and Rudge say that:

management notes that none of the commonly used indices attempts to measure growth changes in terms of capital investment, or improved technology. That being the case, they argue that these indices are in

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28 Tripp, Industrial Productivity, supra, 20.

actuality merely measures of labor requirements.<sup>29</sup>

While economists speak humbly of long term estimates and unions choose to speak positively on any data that seems favorable to their position, management has too often taken a reactionary stand. Management men often try to either deny the whole productivity pay principle or at least to attack the union figures used. (It is interesting to note how General Motors took a positive approach by introducing the principle and the increase factor they felt justified).

Without prejudice it is possible to see that both labor's, management's and economist's attitudes can help us to achieve a better understanding of the use and limitations of a productivity factor. Fisher and Rudge state that management fears the commonly estimated productivity increases of 2 per cent per year as an overstate of the actual rate of national productivity growth. One manner in which this can be done, they feel is to ignore the temporary effect of capital investment on long-term productivity trends.

Quoting Fisher and Rudge again we are told that:

The Department of Commerce estimates that these shifts cause our productivity increases to be overstated by as much as  $\frac{1}{2}$  of 1 per cent per year, thus decreasing the average overall rate from an average 2.1 per cent to 1.6 per cent.

The effects of this shift are especially apparent in the wartime years. It may not be too much to say that overall productivity increases in the private (non-governmental, non-agricultural) sector of the economy during World War II are almost entirely due to the shift into production of materials for the armed forces. Productivity in the sector of the economy producing only civilian goods declined.

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29 Fisher, Productivity, supra, 61.



Much of the same pattern appears to be repeating itself on a smaller scale since the outbreak of the Korean War.<sup>30</sup>

Historically, there has been a parallel relationship between productivity index changes and the trend in real wages over a long period of time. Such a period would have to be roughly 50 years in length to show any truly meaningful relationship. And, even over the long period, the only real parallelism that seems to appear is in the general upward trend displayed by both wages and "productivity."

Thus, over the period 1900 to 1950, output per man-hour has "quadrupled," according to the Council of Economic Advisers, on the basis of national figures. Actually, the index figures stand at 100 for 1890, and 451.8 in 1950--a 351 per cent increase in that sixty-year period. Average hourly earnings during the same period have gone from 17.8¢ to \$1.465, an increase of 723 per cent.

A similar comparison shows that output per man-hour in manufacturing alone rose by 259 per cent between 1899 and 1949, while average hourly earnings rose by 687 per cent.

Productivity in manufacturing rose by some 209 per cent from 1920 to 1949, while average hourly earnings rose by 149 per cent. From 1930 to 1949, productivity increased by 118 per cent, while hourly earnings advanced by 154 per cent. From 1939 to 1949, productivity rose by 50 per cent, while average hourly earnings increased 121 per cent.<sup>31</sup>

Even in these comparisons, there is no really close relationship between changes in productivity and changes in wages (or average hourly earnings). When, however, we compare the increases in both factors over shorter periods, even less of a relationship can be discerned. The following table will compare productivity and wage changes by decades:

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30 Fisher, Productivity, supra, 69.

31 Ibid., 71.

TABLE I

COMPARISON OF PRODUCTIVITY AND WAGE CHANGES BY DECADES

<u>Decade</u>	<u>Output per Man-Hour</u>	<u>Average Hourly Earnings</u>
1899 - 1909	8.0	20.2
1909 - 1919	14.4	109.8
1919 - 1929	72.6	26.1
1929 - 1939	32.6	11.8
1939 - 1949	16.2	121.3

Sources: Jules Backman and M. R. Gainsbrugh, Behavior of Wages, New York, 1948, 7.

Similarly, the comparison over five-year periods shows even less of a relationship:

TABLE II

COMPARISON OF PRODUCTIVITY AND WAGE CHANGES BY  
FIVE YEAR PERIODS

<u>Five Year Period</u>	<u>Output per Man-Hour</u>	<u>Average Hourly Earnings</u>
1899 - 1903	10.0	12.4
1903 - 1909	7.3	7.0
1909 - 1914	16.1	14.0
1914 - 1919	1.5	84.0
1919 - 1924	40.0	21.8
1924 - 1929	23.3	3.5
1929 - 1934	13.7	6.0
1934 - 1939	16.6	19.0
1939 - 1946	6.5	77.6
		(1939-1944, 61.0)
1946 - 1949	9.1	29.0

Source: Jules Backman and M. R. Gainsbrugh, Behavior of Wages, New York, 1948, 7.

These tables show that changes in productivity and earnings are rarely comparable over even such relatively long periods as a decade. In the ten-year summary, only the 1899 - 1909 decade shows even a close relationship. In the five-year summary, only the three periods ending with 1914 disclose any basis of comparability.<sup>32</sup>

The main difficulty in statistics such as these are that they may be quoted and yet have next to no meaning for several reasons. The above data give no idea of where the data were obtained, what base periods and price adjustments are used in computing the index, and what the meanings of terms involve. We quote these data merely to show the reader that impressive figures and statements are allowed in places like newspaper articles but in bargaining it is futile to try to obtain an understanding of the real situation through such garbled data. From a general review of most of the estimates of productivity, it seems that productivity over the last fifty years has increased at the rate of approximately 2 - 2.5 per cent a year compounded annually. The most prominent thing noticed from the statistics though is that the changes in productivity are very irregular. We also must be aware of the extreme variation possible and present in projections of what our very recent and near future productivity will be.

The extreme doubt involved in the whole question of the validity of the productivity-pay relationship is stressed by Backman and Gainsbrugh writing for the Conference Board. They claim that:

An examination of long-term changes in the wage structure shows conclusively that diversity rather than uniformity has been its outstanding characteristic. This is true whether the measure used is basic wage rates or hourly, weekly, or annual earnings. It is true whether the period examined is peacetime, wartime, or postwar to date.

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32 Fisher, Productivity, supra, 71.

It is true no matter which phase of the business cycle is examined. On no basis and for no period is there revealed anything even remotely resembling a uniform pattern of change.<sup>33</sup>

### Summary

There is no official productivity index. Efforts of the Bureau of Labor Statistics and other agencies to collect more reliable data and establish more valid and meaningful indices of productivity have not as yet been realized in satisfactory measures. Long term estimates of productivity increases indicate that the rise has been about 2 - 3 per cent over the last fifty years. Estimates for the period after 1940 show great divergence and the lack of reliable data and the abnormal condition of the economy in recent years places extreme doubt concerning trends during the last twelve years. Projection of past trends on future short run periods is not considered of much meaning by most economists.

Productivity statistics are useful data on which to make economic assumption and predictions only insofar as we realize their limitations. Many estimates of productivity can be made but as yet no positive figure can be reached which will surely and adequately tell us the exact change in productivity.

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<sup>33</sup> Jules Backman and M. R. Gainbrugh, Behavior of Wages, New York, 1948, 7.

## CHAPTER I

### REJOINDERS ON THE USE OF PRODUCTIVITY STATISTICS

In analysis productivity statistics and especially recent figures there are several considerations of which we must be aware. Consider the apparently accepted measure of long-run average increase in national real output per man-hour, 2 to 2.5 per cent per year, the basis of the GM-UAW (CIO) settlement. Such a figure can be derived only from deflated national income data which are only rough estimates prior to about 1929; rough estimates of employment that are based on incomplete payroll statistics with gaps filled in from the Censuses of Occupations adjusted for unemployment; and very crude estimates of change in the length of the work week. No one familiar with the basic data and their limitations would call the final estimate precise. One would normally prefer to speak of a range. But putting the trend that way does not provide a simple standard by which to direct or adjust other economic variables. Such a range does not seem to fit well with collective bargaining where both sides may yield ten cents from their original position and yet allow a strike to occur because of a disagreement over a half of one per cent raise.

Although our present measures of productivity changes allow us only crude estimates which seem most suitably expressed by a range, continued effort is being utilized to develop more adequate measures. As yet though we still find our indices characterized by serious defects which may only be overlooked

if we are aware of the defects we are ignoring.

Efforts are sometimes made to calculate an all-manufacturing index<sup>1</sup> by relating the Federal Reserve Board index of manufacturing production to the employment and hours data of the Bureau of Labor Statistics or the Bureau of the Census. Such calculations are suspect, not only because of possible errors in the production, employment, and hours data, which are not accurate enough to measure small percentage changes, but also because about 40 per cent of the Federal Reserve Board index of production is not based on records of physical output, but rather is an estimate of production based on Bureau of Labor Statistics employment data with a productivity factor assumed. Calculating output per man-hour from these data reveals only the Federal Reserve Board productivity assumptions. However, as quarterly, semi-annual, or annual production data are acquired, these series are revised on a physical production basis.

To eliminate the circular aspects of the above problems, output per man-hour calculations are sometimes made by using only that part of the index of manufacturing production that is based on physical product data. Thus about 60 per cent of the industries covered by the index would be utilized. To consider a 60 per cent sample as completely representative of all manufacturing (and sometimes even of total national productivity) is making an assumption

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1 Both Kerr and Fabricant utilize indices of this sort. For a discussion of problems in developing data on man-hour output see National Research Project, Production, Employment, and Productivity: Purposes, Methods, and Summary of Findings, Works Progress Administration, 1939, Chapter 2; Solomon Fabricant, Employment in Manufacturing, 1899-1939, National Bureau of Economic Research, 1942; Clark Kerr, "The Short-Run Behavior of Physical Productivity and Average Hourly Earnings" and Solomon Fabricant, "Of Productivity Statistics: An Admonition" both appearing in The Review of Economics and Statistics, XXXI, November, 1949.

that seems justified only if we are making very broad economic analysis. The uncertainties surrounding productivity indices for individual industries may be illustrated by reference to the indices for manufacturing, usually taken to be more accurate than the indices for other industries. There are problems connected even with the employment data provided in the Census of Manufactures. Change in schedules and concepts between several recent censuses led to discontinuities that in effect had to be bridged by assumption. "The data on hours, especially prior to 1932, are quite sparse and approximate"<sup>2</sup> according to Fabricant. All the estimates of productivity are subject to a considerable margin of error. The accuracy of the index depends upon the validity of the data with respect to its various components - employment, hours, production, and price level data. Most of the data used are collected on a sample basis and come from different sources. There are variations in coverage that may be important in the effect on the final results. Often revisions in these components, because of availability of more complete information, are considerable. As indicators of a trend over a considerable span of years, they are more reliable than when used to measure year-to-year changes.

There are questions on the index of output. Note, first, that an index of output may be "unadjusted," that is, based simply on those products of an industry for which quantity statistics are provided in the Census of Manufactures, or "adjusted" in some way to cover all the products of the industry.

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<sup>2</sup> Solomon Fabricant, "Of Productivity Statistics: An Admonition," The Review of Economics and Statistics, XXXI, November, 1949, 310.

The two indices are usually different, sometimes very substantially different.

There are also the usual choices to be made of weight-base and formula. These choices, which may influence the results, need merely be mentioned. The treatment of shifts in the degree of fabrication of purchased components and materials, however, warrants special attention. If, for example, the development of subcontracting has led to the displacement of crude materials (on which considerable work has to be done) by subassemblies (on which little work has to be done), is the resulting increase in output per man-hour a productivity increase that ought to be given weight in wage negotiations? If not, how much does it contribute to the change in output per man-hour?

Statements about productivity trends since 1939 which are based on national product are especially hazardous, since the reported changes may reflect no increase whatsoever in industrial efficiency. Gross national product measures the market value of the finished goods and services produced by the economy. It thus may be regarded as the sum of the net production (before depreciation) of the several industries or branches of the economy. The combination varies substantially from industry to industry both in total and on a per worker basis.

Over the years these differences among industries can affect the value of the gross national product per worker for the economy as a whole. This can occur when there is a substantial change in the distribution of employment among the industries, even though physical output per man-hour, the average work week, total employment, and prices were the same at both dates. For instance, this may occur when a larger proportion of the work force is employed in industries with high profit margins. This situation may cause in-



dices to show an increase in the dollar value of the product per worker computed on a national average while there has been little or no change in the actual physical output.

In other words, a shift in the pattern of production can substantially change the national product/labor input figure without any change in physical output per man-hour having occurred in any industry.

Gertrude Deutsch, writing in the Conference Board Business Record points out that "during the war period, the pattern of production in the United States did change radically. It shifted toward industries in which value added per worker was high."<sup>3</sup> This shift partially explains the rise in gross national product per man-hour during 1939 - 1945. Even for the postwar years, when the industrial composition of production was more nearly comparable with pre-war patterns, it is difficult to determine what part of the increase in national product per man-hour is attributable to gains in productivity, to shifts in production, or to other factors.

Quality changes need to be taken into account. By working with detailed classes of products and using appropriate value weights, some shifts in the relative importance of different qualities are made to affect the measure of output and therefore of productivity. But many quality changes are ignored in measuring output. The resulting bias is usually downward, though not in every industry or every period. Failure to take quality changes fully into account has been a main source of controversy in interpreting not only measures

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3 Deutsch, "It's Not Always Productivity," supra, 115.

of output and productivity but also of price.

So much for census indices and other "benchmark" adjusted series, available (if at all) only some considerable time after the period to which they relate. Current measures of productivity suffer from all the blemishes marring census indices, and even more intensely. Current data are less comprehensive and reliable than census data. Compare, for example, the Bureau of Labor Statistics indices of output per man-hour for the period since 1939, as they were published in the December 1946 Monthly Labor Review,<sup>4</sup> with the revised indices issued in the fall of 1948.<sup>5</sup> The differences, arising largely from uncorrected biases in the employment series originally used by the BLS, are very considerable in some cases, and of some substance in most cases.

When it comes to forecasting productivity changes, even one year ahead, we are up against still other difficulties. What experience leads us to believe that productivity will move upward from one year to another with approximate smoothness?

In view of the deficiencies even of the best indices, it is difficult to understand the confidence with which conclusions are sometimes drawn from the historical record. It seems to be becoming rather widely accepted that trends in wage rates in individual industries and corresponding trends in productivity are substantially correlated, that is, wage rates have usually risen more rapidly in industries in which productivity rises have been above-average,

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4 Celia Star Gody and Allan D. Searle, "Productivity Changes Since 1939," Monthly Labor Review, LXIII, December, 1946, 893.

5 Bureau of Labor Statistics, "Output per Man-Hour Trends for 1947 Begin Upward Climb in Selected Industries," release dated September 3, 1948.

less rapidly in industries with below-average rises in productivity. But if the basic data are subject to error, this correlation may be spurious. For example, the measures of change in man-hours, used to compute change both in output per man-hour and in average hourly earnings, may be too high or too low in particular industries.

We see therefore that the statistics we have quoted in earlier chapters are relevant only in so far as we are aware of the data on which the estimates are based, the limitations following therefrom and the factors which may seriously affect the data.

Productivity estimates though are a useful tool because the reasons for which we use them are normally only to evaluate long term past performance or future prospects. Although indices of national growth in the past have been derisively called "guesstimates" we must remember that all long term economic data are subject to considerable question over factual accuracy and economic implications.

Actually, the problem of determining national productivity is not strictly one of measurement, but rather the closely related one of forecasting - for a wage policy to apply in the coming year must be based upon productivity changes that are expected during the coming year. While forecasting economic changes is hazardous at best, this particular forecast would have the advantages (1) of never being very far from the mark since national productivity changes are not great from year to year (except in periods of economic flux when the general wage proposition would not be applicable in any case) and (2) of being correctable the next year to allow for errors, with no serious harm done if the error were not great.

We can, therefore, conclude that while extensive statistical work on the measurement of national productivity is urgently needed and careful attention to forecasting future changes is necessary, it is nonetheless possible to make an informed estimate as to future changes. The probable range of error in the estimate is not serious for purposes of this principle.

As long as we hold productivity figures merely as informed estimates it is unlikely that we will abuse their valid applications.

### Summary

Productivity statistics are, to large extent, estimates based on combinations of other estimates and do not measure precise changes. Productivity statistics are based on limited and not entirely representative samples. All these estimates are subject to a considerable margin of error.

A shift in the pattern of production can affect productivity. Quality changes cannot usually be measured. Indices of productivity are validly used only if we account for their crude nature.

## CHAPTER XI

### THE BUSINESS CYCLE AND PRODUCTIVITY

In this chapter we will mention some of the analysis of the meaning of business productivity statistics that Dr. Frederick C. Mills<sup>1</sup> indicated in a recent paper before the American Economic Association. We have seen in previous chapters that the rate of change in productivity over the last fifty years has not been constant. There is evidence according to Mills of cyclical variation in productivity, with man-hour output increasing more rapidly in phases of cyclical expansion than in phases of contraction. Averages based upon annual data for ten peacetime cycles (war periods are omitted) indicate that in expansions output per man-hour has grown at about three times the rate prevailing in contractions. Dr. Mills feels the economy as a whole seems to operate more effectively during periods of rising employment, advancing output, and increasing use of productive capacity. His careful study and scholarly approach do much to again point up the fact that productivity is a variable that cannot be projected on recent or short term trends. Productivity is also a subject about which a casual student cannot expect to get pat answers to all questions. There is such a variety of analysis possible on productivity sta-

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1 Mills, "Role of Productivity," supra, 547.

tistics that we must at least view the question from more than one approach.

Dr. Mills feels that:

The evidence of cyclical variation in productivity is, I think, consistent enough to warrant some confidence in it, but because of the crudeness of the annual unit and of limitations attaching to global estimates of productivity it cannot be considered conclusive. In particular, I should note that more refined measurements of productivity changes during business cycles would undoubtedly show variations in effectiveness as expansions and recessions develop. The measures here cited are averages for complete cyclical phases.

Beyond the indications of cyclical movements there is evidence of more sustained variations in the rate of productivity change in the United States. Provisionally, I have identified two major periods of acceleration, marked by advances in man-hour output at rates well above the historical average, and two periods of retardation. These four are: acceleration, 1914 to 1924; retardation, 1924 to 1932; acceleration, 1932 to 1941; and retardation, 1941 to 1943.<sup>2</sup>

From 1918 to 1924 output per man-hour advanced at a rate approaching 4 per cent per year - almost double the average rate for the half century. From 1932 to 1941 a rate in excess of 3 per cent a year was attained. The first of these periods followed the ending of a world war and spanned a period of brief but severe recession. On the whole, it was a period of high employment. The second period of acceleration began with extensive unemployment in 1932, which was slowly reduced during the recovery that followed.

In the era of retardation from 1924 to 1932, the net gain in productivity averaged less than 1 per cent a year. There appear to have been actual declines in man-hour productivity from 1930 to 1932 and from 1941 to 1943. According to Mills it should be emphasized that estimates of output, and hence of productivity, covering the transition from peace to war and from war to

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2 Mills, "The Role of Productivity," supra, 548.

peace are less reliable than those uncomplicated by such shifts in regimen.

Evidence of variation in productivity gains is also yielded by decade measurements of productivity increments. Following are estimates of aggregate decade increments to gross national product attributable to advances in man-hour output over the levels of preceding decades:

TABLE III

GROSS NATIONAL PRODUCT INCREMENTS  
ATTRIBUTABLE TO ADVANCED MAN HOUR OUTPUT

<u>Ten Year Period</u>	<u>Billions of 1929 Dollars</u>
1901 - 1910	84
1911 - 1920	97
1921 - 1930	215
1931 - 1940	134
1941 - 1950	256

Source: Frederick C. Mills, "The Role of Productivity in Economic Growth," American Economic Review, XLII, May, 1952, 548.

If estimates of productivity increments are to be reasonably realistic, a comparison should not cover too long a time. Estimates relating to successive decades are, Mills thinks, restrictive enough in time to be useful.

Such estimates indicate that over the last fifty years increments to output, by decades, attributable to productivity advances over levels prevailing during previous decades, have averaged about 157 billions of dollars, of 1929 purchasing power, as compared with 83 billions attributable to increases in labor input. These are, of course, estimates of aggregate gains over ten year intervals. On an annual basis, but still with reference to changes over ten year periods, the average increment was about 15.7 billion dollars, or \$133 per capita of the population.<sup>3</sup>

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3 Mills, "The Role of Productivity," supra, 547.

The intangible forces operating in the business cycle undoubtedly have some effect on productivity. Yet we are not as yet and probably never will be able to isolate these variable factors. Insofar as collective bargaining is concerned though, it is usually only necessary to be aware that cyclical variations are present.

#### Summary

The economy seems to operate better in periods of rising employment, advancing output, and increasing use of productive capacity. Cyclical variation is evident in the study of productivity statistics. These cyclical variations are very important.



## CHAPTER XII

### PRODUCTIVITY AND REAL WAGES

The effects of productivity changes are of basic importance in the evaluation of the movement of real wages. It is apparent that real wages are closely associated in the long run with productivity increases. Comparing present productivity and real wages with those of 1900, the Committee for Economic Development found that while the two tended to rise a similar portion, productivity and real wages did not increase at the same rate. CED<sup>1</sup> found that output per man-hour had increased 3.6 times, whereas real wages had increased approximately 3.1 times. The total possible gain in the fruits of production was not distributed in the form of higher real wages. This may be reasonable in the light of CED figures since the Committee believes that:

Part of the difference may be charged to the fact that reliable statistics on output include all workers, self-employed as well as employees, but the principal cause of the disparity is the great increase in business taxes.

In 1949, about 24.7 cents of the \$1.83 in output per man-hour went to the government in the form of corporate income taxes and indirect business taxes. In 1900 business tax payments to government were about 1.2 cents of the worker's output of 51 cents an hour. Business taxes, in other words, took only 2.4 per cent of the output dollar in 1900 as against 12.4 per cent 50 years later. If the in-

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1 William A. Patterson, "Real Wages: A Yardstick of Progress," Advanced Management, IV, November, 1950, 8.

crease in this proportion is taken into account, the rate of increase in man-hour output is comparable to the rate of increase in real wages.<sup>2</sup>

Mills<sup>3</sup> assumes that the per capita consumption levels achieved during a stated period - say a decade - tend to persist, and that demands upon such levels have in some sense a first claim upon the output of a later period. Only that portion of the subsequent product that is left after these first claims have been met is the disposable margin that is available for the rising of consumption levels, for investment in capital equipment, or for use in war or national defense. Such first claims are of course relinquished in periods of national emergency, but Mills states "there is justification for the view that consumption levels are persistent, that they change slowly, and that gains in such levels, once realized are defended with tenacity."<sup>4</sup>

Mills holds that:

On the average, for each of the years from 1915 to 1950, \$415 would have supported each member of the population at \$795 per capita of the population. The difference, \$380, is the disposable margin per head. I may interpret this margin in these terms. As a result, primarily of changes in labor input and man-hour productivity, each of us in this generation has had available for use above the pre 1914 level of consumption needs a sum averaging about \$380 a year. The largest portion of this margin, \$205, has been used to raise consumption levels, \$115 has been used to maintain and expand our capital plant, while \$60 has been used for national defense.<sup>5</sup>

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2 Patterson, "Real Wages," supra, 8.

3 Mills, "The Role of Productivity," supra, 550.

4 Ibid., 552.

5 Ibid.

This mode of reckoning takes account only of actual labor input measured by the number of hours worked. The very substantial gains in living standards through reduction of working hours are not included. If these were included, this particular income amount would show a still heavier allocation of benefits to increased consumption and living standards. (Mills<sup>6</sup> noted that the average working year for members of the employed labor force was 800 hours shorter in 1950 than it was in 1900.)

Following are the average annual disposable margins expressed per capita of the population and in dollars of 1929 purchasing power:

TABLE IV

AVERAGE ANNUAL DISPOSABLE MARGINS

<u>Ten Year Period</u>	<u>Average Annual Disposable Margin per capita</u>
	(a)
1901 - 1910	\$221
1911 - 1920	182
1921 - 1930	267
1931 - 1940	85
1941 - 1950	490

(a) Dollars of 1929 purchasing power

Source: Frederick C. Mills, "The Role of Productivity in Economic Growth," American Economic Review, XLII, May, 1952, 552.

Here we can see that the rise has not been constant or regular but it has been considerable. Only in the thirties was there a serious decrease in disposable income. This decrease occurred in the same decade when man-hour productivity was increasing while through much of the period social and economic welfare

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6 Mills, "The Role of Productivity," supra, 552.

were certainly not being placed in a favorable position.

What productivity gains were actually realized in consumption? This perhaps, is the ultimate question if one is tracing changes in economic welfare. Mills provides the following data:

TABLE V  
CHANGES IN CONSUMPTION EXPENDITURES

<u>Per Capita Consumption Expenditures</u>		<u>Change from Preceding Decade</u>	
		<u>Absolute</u>	<u>Relative</u>
1891 - 1900	\$316		
1901 - 1910	417	\$101	32%
1911 - 1920	454	37	9
1921 - 1930	574	120	26
1931 - 1940	567	- 7	- 1
1941 - 1950	769	202	36

Sources: Frederick C. Mills, "The Role of Productivity in Economic Growth," American Economic Review, XLII, May, 1952, 554.

The cumulative and almost unbroken advance in consumption levels that more than doubled per capita consumption in fifty years is the most impressive feature of this table. But it was a markedly irregular advance.

On a national basis there is no conscious allocation of portions of the productivity increment, for any period, to consumption or other uses. Yet it is suggestive retrospectively, to compare these magnitudes. Leaving out the intangible benefits of shortened hours and increased leisure--a major component of the advance of living standards--and taking account only of the output of goods and services, we have the following comparative figures. Here decade aggregates are used in 1929 dollars.

TABLE VI

ALLOCATION OF PRODUCTIVITY  
INCREMENT TO RAISE CONSUMPTION LEVELS

<u>Period</u>	<u>Productivity Increment (billions)</u>	<u>Aggregate Amount Used to Raise Consumption Levels (billions)</u>
1901 - 1910	\$ 84	\$ 88
1911 - 1920	97	37
1921 - 1930	218	140
1931 - 1940	134	- 10
1941 - 1950	256	286
1941 - 1945	73	93
1946 - 1950	183	193

Sources: Frederick C. Mills, "The Role of Productivity in Economic Growth," American Economic Review, XLII, May, 1952, 554.

Over the five decades expenditures to advance consumption, therefore, have equaled about 68 per cent of the productivity increment.

Over the last fifty years therefore productivity advances have been the dominant factor in the enrichment of consumption in the United States. It is clear that over extended periods productivity increments have been great enough to account for all consumption gains, had they been deliberately put to this use.

An increase of 2-3 per cent in real hourly earnings per year may seem small, but 3 per cent per year compounded for twenty years is nearly 81 per cent. Whether 3 per cent seems large or small, however, it is necessary that all groups in the community realize that real wages rely on productivity and that collective bargaining cannot raise real wages for any prolonged period faster than output per man-hour. By raising money wages too fast it can either create unemployment or force up the price level. Recognition of these basic facts could do much to bring the discussion of wages down from the clouds and

to make collective bargaining an informed and sober discussion of economic realities.

### Summary

Real wages and productivity have increased at approximately the same rate. Existing differences can be attributed to statistical defects, non-productive government expenses, and other normal variations such as shorter hours and better working conditions. The rise in the consumption level and in the money available for consumptive purposes has not been regular. Gains in productivity have allowed our gains in consumption over the last fifty years.

Productivity increases alone will not guarantee economic well-being of a nation.

## CHAPTER XIII

### PRODUCTIVITY AND THE ECONOMICS OF THE WAGE STRUCTURE

The introduction of a formalized improvement factor interjects a new influence into the consideration of general wage-economic theory. The use of productivity data as such in wage negotiation discussion is on quite a different footing than a uniform and constant guaranteed wage increase.

The principles of granting an automatic annual increase in wage rates has many important economic implications. If widely adopted, it means that the benefits of technical progress are to be distributed, in part at least, in the form of higher wages rather than lower prices. This, of course, diminishes (in the short run) the share of "fixed income" groups in the fruits of economic development.

The "low price" policy advocated by E. G. Nourse<sup>1</sup> and others has as its objective the distribution of technical advance through lower prices. If the principle problem of monetary-fiscal policy in a given period happen to be that of providing sufficient private investment to maintain full employment, then a "low price" policy might be highly objectionable in that a continuously falling price level would generate expectations of further declines which would

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1 Edwin G. Nourse, Price Making in a Democracy, Brookings Institution, Washington, 1944.

be subversive of such investment. Under such circumstances, the trouble is not with "low prices", but with "falling prices." However, if the principle problem confronting the authorities is not the maintenance of full employment, but checking inflation, then the discouragement the "low price" policy offers to private investment may not be undesirable.

It is doubtful that all other influences affecting wages aside from productivity could be eliminated, except in a centrally administered wage structure. Even if the other influences could be eliminated, another question would remain. The rate of progress varies greatly among industries. Clearly it would not be feasible or desirable to have commensurate variations in wage movements, for this would produce an impossibly distorted wage structure. But should wages move up together in all industries, regardless of differences in the growth of productivity?

It is sometimes suggested that although flexibility in the wage structure should be maintained, the overall increase in the money wage bill should be held down to the increase in the productivity of the economic system. This answer is formally adequate, but how is the objective to be attained? How can thousands of separate wage settlements be coordinated? Under our present system, this is impossible.

The simple fact appears to be that the wage structure over a period of time tends to adjust to changes in productivity in such fashion that wage rates increase most where productivity and employment have increased fastest, and wages increase less than average where productivity and employment have increased less rapidly.

It is reasonable to expect that the highly progressive industries,



while raising wages perhaps a little more than the average overall increase in productivity in the economy as a whole, should pass on the exceptional gains of technical progress to consumers in lower prices. On the other hand, the industries which prove incapable of increasing productivity will be compelled to raise wages more or less in line with the average gains in productivity in society as a whole. In this manner there is a gradual increase in wages in a way that seems less likely to promote economic disturbances in other areas. While the application of productivity geared pay increases among different industries is of great importance, we must also consider the proper time of wage increases.

Should money wages be raised a little bit every year or should the increase be bunched in the years when business is expanding? The answer to this question depends upon how good a job the country does in avoiding even moderate ups and downs in business. Even a mild recession, such as the recent one (1949), however, calls for lower prices. Hence the conclusion seems to be that increases in money wages should be bunched in years when the public is willing to buy the entire output of industry at prevailing or at rising prices. This would not mean, however, that increases in real wages occurred only in some years. If business did a good job of fighting mild recessions by price cuts, real wages would rise a bit every year.

Arthur Ross feels that without economic stability "real wages would fluctuate as they have in the past, and the "improvement factor" would merely amount to re-labelling of part of the total wage adjustment."<sup>2</sup> Since it is

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2 Ross, "GM Agreement," supra, 4.

not conceivable that cyclical fluctuations can ever be completely eliminated, it seems that real wages will always be subject to some cyclical variation.

The public interest in such agreements derives (in part) from the fact that, if widespread, they become crucial in determining (1) the value of the currency (i.e., the price level) and (2) the value of (real) national income and employment. Thus the monetary and fiscal authorities (i.e., the Treasury and the Board of Governors of the Federal Reserve System) in setting their policies would have to take into account the terms of these agreements.

The added influence of a fixed improvement factor has such far-reaching importance on national economic life and policy that it deserves serious thought. It seems to this author that specifically in the "productivity factor-real wage" relationship, the whole concept of the improvement factor as such fails. It seems unrealistic to believe that by controlling one aspect of our economic life we can eliminate or effectively minimize all other business cycle influences.

### Summary

A characteristic of the wage structure is its flexibility. Distribution of the fruits of increased productivity through lower prices could only occur in a centrally administered wage and price structure. The use of an annual productivity wage increase in specific industries or at a particular time can affect the business cycle and the wage structure. It does not seem possible that other economic variables could be kept constant enough to eliminate the possibility of the productivity factor disturbing stabilizing economic adjustments.

## CHAPTER XIV

### PRODUCTIVITY -- PRICE -- WAGE RELATIONSHIPS

To properly evaluate productivity and its relationships to wages, it must be remembered that a wage adjustment requiring a compensating price increase can no longer be labeled as based on "productivity." It is merely a wage increase, whatever the appellation.

It is also important to remember that if workers supply more skill and effort, they should be paid more. Such an advance in wages does not represent a rise in the price of labor; it simply represents larger payments in return for greater effort and greater skill, which may usually be rewarded through some incentive system. Productivity as we speak of it is quite divorced from individual incentives.

"While there has been a close relationship over time between increases in real wages and increases in productivity for all manufacturing industries, there is no conclusive evidence that any such relationship has prevailed for particular industries."<sup>1</sup> Although the reasons for this fact are only speculated about, it is interesting to consider the application of the productivity factor to specific companies or industries.

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<sup>1</sup> Jules Backman and M. R. Gainsbrugh, Behavior of Wages, New York, 1948, 60.

The introduction of the annual improvement factor in the General Motors agreement established benchmarks throughout the automobile and related industries. To the extent that these benchmarks are effective as ceilings, they may stabilize wage movements at or below the GM standard throughout large sections of the basic industries for five years. It is probable that wage increases in the less efficient firms will be less than 2.5 per cent a year, provided that the labor market is not extremely tight. In the more efficient companies, however, there are not likely to be corresponding increases above 2.5 per cent. Thus there is a fair chance that consumers could reap in lower commodity prices some of the benefits of increased productivity in the more efficient firms including GM. Such firms, however, may be in a position marketwise to keep prices up and thereby expand their profits, which would provide an added incentive for unions to press for big new economic packages near the end of the five-year contract period.

If the gains of technical progress were to be distributed primarily in the form of higher wage rates, it would be well (from the point of view both of equity and inflation prevention) for the annual wage increments to be distributed on some basis other than what particular unions can compel particular employers to grant. For if each union forces the employers with which it deals to grant wage increases roughly proportional to increases in man-hour productivity of its employees, then workers in relatively "un-progressive" industries or occupations (government, service, and professional employees) will share relatively little in the gains of technical progress.

In addition to the inequities involved, this would, in the long run, tend to create a shift in the labor force toward those firms, industries or

occupations whose wages rise most rapidly. The rate of technological progress varies greatly among industries. If wages were increased in these various industries in proportion to the rise in productivity, the wage structure would soon have little relationship to the skill and responsibility required of the workers or to the relative attractiveness or unattractiveness of working conditions.

Slichter feels that.

the inequalities in the wage structure would prevent industry as a whole from producing the largest possible product, because the rise of wages in the industries where labor productivity was increasing most rapidly would tend to prevent these industries from reducing their prices to consumers, and thus from expanding output and employment. Thus the growth of employment would be impeded at the very points where labor was gaining most rapidly in productivity.<sup>2</sup>

One of the apparent assumptions underlying the annual improvements factors is that labor participates in productivity improvements only through steady increments in wage rates. Actually, higher wage rates constitute only one of many avenues in labor participation in productivity advances. Other forms include lower prices, product improvement, paid holidays, paid vacations, rest periods, shorter hours without income loss, welfare plans, and retirement programs. The cost of providing for national security must also come out of increased man-hour production.

To the extent that labor gains take these other forms, an increase in average wage rates for the nation must necessarily be less than the 2.5 per cent assumed from an examination of long term gains in productivity. The main

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<sup>2</sup> Sumner H. Slichter, Basic Criteria Used in Wage Negotiations, Chicago, 1947, 23.

emphasis must be upon changes in living levels, not upon wage rates. Improvements in welfare provisions mean higher levels of living and, in some cases, they release part of the prevailing wages for other types of expenditure.

Given the present methods of collective bargaining, it would seem likely that the technically more progressive firms will give way to union pressure for higher wages and will, to a corresponding extent, fail to lower prices. Thus other workers must either acquiesce in getting only a negligible (if any) share in the fruits of technical advance or, by forcing up their wage rates in excess of the increase of their productivity, cause an increase in the prices of what they produce, thereby creating a secular rise in the price level (as other prices will not, ex hypothesi, fall). As it is in practice relatively more difficult for unions of workers in technically unprogressive firms or industries to obtain wage rate increases, their wage rate increases will probably lag (secularly) behind those of workers in more progressive centers.

Productivity and wage rates, thought by many economists to be a highly desirable match, do not appear to possess those characteristics of compatibility upon which the perfect marriage depends. Disconcertingly, in the short-run, they display a clear tendency to move either in opposite directions, or, if in the same direction, at quite different rates.

It is frequently suggested that they should move in close harmony over some period of time, since, if they did, price stability would be facilitated. Lord Keynes<sup>3</sup> was particularly influential in popularizing this view.

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<sup>3</sup> J. M. Keynes, The General Theory of Employment, Interest and Money, New York, 1936, 271.

Sir William Beveridge<sup>4</sup> and Professors Hansen<sup>5</sup> and Slichter,<sup>6</sup> among others, have added the weight of their support. These normative proposals of economists have been elevated to the level of a national policy by the Council of Economic Advisers which advocates "wage increases which are in line with productivity trends."<sup>7</sup>

Over relatively long periods --- the three quarters of a century before World War I and the quarter of a century after it --- manhour output and real wages increased by approximately the same amount. The short-run movements of the two variables, however, are also important and have an effect on the operation of the economic system --- on costs, profits, and real wages. The two variables almost inevitably act diversely in the short-run.

Clark Kerr provides the following analysis of the relative changes in productivity and wages over short term periods. The comparative movements, in each case the percentage changes from the first year of each sub-period to the last year taking the first year as the base, were as follows:

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4 William H. Beveridge, Full Employment in a Free Society, New York, 1945, 200.

5 Alvin Harvey Hansen, Monetary Theory and Fiscal Policy, New York, 1948, ch. 8.

6 Sumner H. Slichter, The Challenge of Industrial Relations, Ithaca, N. Y., 1947, 89.

7 The Council of Economic Advisers, The Annual Economic Review, January, 1949, Washington, 1949, 45.

TABLE VII

YEAR TO YEAR PERCENTAGE CHANGES IN MAN-HOUR OUTPUT  
AND IN AVERAGE HOURLY EARNINGS FOR MANUFACTURING INDUSTRIES  
IN THE UNITED STATES

1920-48

Year	Man-Hour Output	Average Hourly Earnings	Year	Man-Hour Output	Average Hourly Earnings
1920	6.0	8.6	1935	5.7	3.4
1921	15.0	-2.3	1936	0.2	1.1
1922	9.6	-6.7	1937	-1.1	12.2
1923	-1.7	10.6	1938	1.8	0.5
1924	6.6	4.8	1939	9.2	1.0
1925	6.6	0.0	1940	2.2	4.4
1926	2.8	0.2	1941	2.2	10.3
1927	2.3	0.4	1942	2.4	17.0
1928	5.3	2.2	1943	1.1	12.7
1929	4.0	0.7	1944	0.6	6.0
1930	2.4	-2.5	1945	0.6	0.4
1931	4.4	-6.7	1946	-5.8	6.0
1932	-6.8	-13.4	1947	-4.0	12.6
1933	5.3	-0.9	1948	4.7	7.4
1934	4.9	20.4			

Source: Clark Kerr, "The Short Run Behavior of Physical Productivity and Average Hourly Earnings," The Review of Economics and Statistics, XXXI, November, 1949, 301.

Not a single one of these years evidenced a closely articulated movement of productivity and wages. Yet if the statistics for the quarter century, 1919-45, are taken, they would seem to indicate, surprisingly, that all really was quite ordered and proper. Both man-hour output and average hourly earnings approximately doubled. Productivity and money wages did, apparently, keep pace with each other. All the diverse movements between 1919 and 1945 are not disclosed.



Summary

Wage adjustments must not require price increases to be properly labeled as productivity raises.

Although there has been a close relationship over time between increases in real wages and increases in productivity in the total economy, no such close relationship has prevailed in particular industries. The G.M. contract established a benchmark which is being used in other companies and industries.

The effects of raises in particular industries tend to cause wage inequities and disturbances in the wage structure.

The effects of productivity gains are also realized in improved fringe benefits, better working conditions, reduced hours of work without reduction in the take home wage and other non-wage payments. Price changes have not shown a consistent relationship to real earnings nor do rises in the level of living occur simultaneously with rises in hourly wages. In the short-run productivity and wage rates have not moved in the same direction. Productivity and wage rates did keep pace with each other over the long term.

## CHAPTER XV

### FURTHER RELATIONSHIPS

The proposition that money wages should move in relation to changes in labor productivity is frequently advanced. This proposition implies that, over the long run as productivity increases, a rising level of money income with a stable price level is preferable to a stable level of money income with a falling price level. It implies that certain economic benefits will flow from the maintenance of a proximate relationship between productivity changes and general wage changes. It implies that, if the relationship is one of proportionality, not only wages but salaries, profits, entrepreneurial income, and the return to the other factors of production could also move in proportion to productivity changes.

We have already stressed that "the general level of real wages cannot advance very far unless there is an increase in productivity, because nearly all of the national product goes either to employees or to the self-employed."<sup>1</sup> Hence, there is always a close relationship over the long term between the general level of productivity and the general level of wages.

Patterson gives us the information that the "national income divides roughly into three parts, slightly less than two-thirds of

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1 Slichter, "Raising the Price of Labor," supra, 286.

it going to wage and salary earners, about a sixth to the self-employed and a little more than a sixth to owners of property in the form of corporate profits, interest, or indebtedness and rental income."<sup>2</sup>

How then should the national product be distributed among the various factors of production and sectors of our economy? Should wages be related to productivity change in the ratio of 1 to 1, 1 to 2, 2 to 1, or in some other ratio? If the purpose were to achieve by wage changes a redistribution of income in favor of wage earners, then nearly a 2 to 1 relationship may be in order --- for compensation of employees in the economy amounts to not much more than one half of total gross national product. In this event, a 3 per cent increase in the ratio of total output to total man-hours would permit nearly a 6 per cent average wage increase, thereby leaving the remuneration of the non-labor factors of production unchanged in absolute amount and decreased relative to employee compensation. But since we are not discussing a wage policy designed to redistribute income the relationship that should obtain is that of 1 to 1. If wages generally rise at the same rate as productivity, then the average remuneration of the other factors can rise at that same rate. A 3 per cent increase in man-hour gross national product would permit not only a 3 per cent average increase in wages, but also a 3 per cent average increase in the other components of the gross national product --- including salaries, profits, and entrepreneurial income.

The manner in which increased productivity is to be passed on to the

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2 Patterson, "Real Wages," supra, 9.

economy as a whole has been the subject of considerable discussion and we have already examined Nourse's "lower price" policy in the preceding chapter. The proposition that productivity increases should be shared through price decreases is an appealing one because, obviously, under this method the gains are more widely distributed. It is appealing, too, because income recipients outside the category of wage earners, e.g., fixed income groups, also benefit through price decreases.

Yet after studying the proposals of Nourse, we are inclined to find the approach of John C. Davis, Sumner H. Slichter and other Keynesian economists as more realistic and desirable. They believe that wage and salary increases offer the best hope for increasing real consumer purchasing power as the economy increases its productivity.

The following arguments which have been gleaned from Davis<sup>3</sup> in favor of sharing such gains through increasing incomes:

(1) Rising incomes and stable price levels are more stimulating to business activity than are stable incomes and falling price levels.

(2) There is no assurance, particularly in the short run, that prices in an administered price economy will, in fact, be lowered as the result of productivity increases. On the other hand, labor organizations constitute a practical device for raising the money wages of their own members and thereby raising wages and salary rates generally over the long run.

(3) With relatively stable rates of exchange between various curren-

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<sup>3</sup> Davis, "Wages and Productivity," supra, 292.

cies of the world, international trade equilibrium would be aided by a wage-price policy which maintained fairly stable prices in this country, rather than a falling price level.

(4) Rising incomes with stable prices reduce the burden of debt, thereby affecting the distribution of income in favor of non-debt owners.

(5) There is the possible adverse effect of falling price levels on saving-investment relations. A price level that fell several percentage points a year would serve to undermine the planned investment outlets for savings to meet depreciation. Depreciation allowances that are calculated on the basis of original costs would be excessive as the prices of plant and equipment fell. Even though this situation might result in greater than planned capital expenditures, it would nonetheless tend to cause capital expenditures for replacement purposes to fail to match the volume of accumulated depreciation reserves.

(6) It must be recognized that unless increased productivity results in higher money wages, employees will be generally dissatisfied. While American labor has come in the course of the last few years to look at the real value of wages in a more sophisticated manner than before, advancement is still measured largely in terms of money wages. For wage rates to remain unchanged over a period of years, even though prices were falling and real wages were therefore increasing, would not be an acceptable development to labor in general and to labor leaders in particular. When labor produces more, it expects to be paid more dollars, not to be paid in the form of lower prices. To close this road of obvious and evident advancement might be to invite dissatisfied labor to try other roads to self-satisfaction.

It seems therefore that productivity gains can best be shared through

rising incomes rather than through falling prices. The general proposition that wages should move in relation to productivity changes consequently seems to rest on a reasonably satisfactory foundation. A careful examination will nevertheless disclose certain limitations; namely, (1) that such a wage policy would not guarantee economic stability; (2) that at times factors other than productivity should be the determinants of wage changes; and (3) that the conceptual and practical problems involved in deriving a wage policy from the general proposition are great. In spite of these limitations, such a wage policy could, it appears, play an important though not controlling part in maintaining a more stable economy.

We must stress again that we maintain only that this proposition seems reasonably adequate with all its limitations. We do not attempt to minimize the limitations or claim that any precise formula can be advanced which will clearly solve the problems of distributing productivity gains.

The contribution that wage changes could, by themselves, make to either full employment or economic stability is essentially negative in character, which is to say that the wrong wage policy can be unstabilizing but that the right wage policy does not guarantee stability.

If wages are increased to such an extent as to raise unit labor costs generally, the result is likely to be either inflation or a decrease in employment -- depending upon the state of the market. If wages generally lag behind productivity so that unit labor costs are falling, the result is likely to be either a falling price level with its depressing effects on business, or growing concentration of income in entrepreneurial hands with the ultimate destruction of the mass consumer market upon which productivity must be founded.<sup>4</sup>

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4 Davis, "Wages and Productivity," supra, 294.

In illustrating how productivity gains are possibly distributed we can set up models other than the productivity-wage relationship. We present the following analysis to show how certain other models do not seem to meet the necessary requirement for a sound wage policy.

An increase in productivity may work out its direct effects mostly on profits. This is apparently what happened, in large part, during the second half of the 1920's. Productivity went up substantially, while prices and wages held relatively stable, and profits rose considerably. It is possible to create a model of the economy in which the only immediate impact is on profits; wages and prices do not adjust until later, if at all. The chain of reactions then might go something like this: Productivity rises, profits rise, employment rises, and wages follow with a lag. Two links in this chain need examination. The increase in employment may be only a moderate one and take place after some substantial delay. Further, at levels of less than full employment, the supply curve of labor may be substantially horizontal, so that rising employment does not pull wages up very greatly. Under these conditions, which may not miss reality too widely, the effect of changes in productivity on wages is a delayed and dampened one.

Changes in productivity might also be effectively transmitted through the productivity-price-wage chain. Rising productivity will tend to reduce prices; and if a substantial increase in man-hour output accompanies a downturn in economic activity the effect may be particularly noticeable. Falling productivity will tend to raise the cost of living; and if a decline in man-hour output comes at a time of full employment, the impact on prices will be

especially great.

To the extent that changes in prices and man-hour output tend to have an inverse relationship to each other, so also will wages and man-hour output. For changes in wage rates, in the short run, conform much more positively to changes in the cost of living than to changes in productivity or profits.

### Summary

Money wages should be increased as a means of distributing productivity gains rather than by decreasing prices. Increased productivity makes it possible for all factors of production to achieve higher standards and it eliminates most of the need for important redistributing of the national income.

A policy of rising incomes tends to promote better economic stability than a low price policy. Increased productivity could work its effects through higher business profits or price changes but there appears to be more danger of ill effects when using these methods than when increasing wages.



## CHAPTER XVI

### CONCLUSIONS

Productivity is a sound and durable method of increasing our national output.

The question is how productivity gains should be shared since there is no way to determine the extent to which each factor of production has contributed to the gains. The major question with respect to sharing productivity gains is: shall gains be distributed primarily through an increase in monetary incomes, or shall they be shared mainly through lowering prices?

We feel that it may be taken for granted that the people of the United States are content to let the results of technical progress continue to be distributed mainly in the form of higher money wages than in the form of lower prices to consumers.

This is what has happened during the last century or more and it has evoked no serious protest. The chance to raise wages by encroaching upon the income of property is small, even if it were in the interest of employees to attempt to raise wages by the use of this method. "Even in 1948 all of the income of all property-dividends, undivided corporate profits, interest, and rent ---was only one sixth as large as the compensation of employees and the income

of the self-employed."<sup>1</sup> And as John C. Davis believes "standing alone, wage advances that are designed to encroach on profits are more likely to encroach on employment or to raise prices."<sup>2</sup>

Unions generally do not claim to want to radically change the distribution of national income but merely to make it possible for workers to maintain at par their current share of that income. Otherwise labor argues, the national income would be redistributed in favor of business. Labor further argues that failure to sustain adequate purchasing power to permit a mass market for American production will only result in depression, unemployment and attendant misery.

Probably one of the main reasons that unions do not now stress the need for basic redistribution of national income is because of the possibility of making such substantial gains in real wages through productivity gains alone. They can agree with business and economists in feeling that the prospect is good that productivity can substantially increase because each of the principle influences (competition, improved management, technological advances) that have made productivity rise faster and faster will continue to be strong. The great reason for believing that America can raise output per man-hour at an increasing rate for at least a few more decades is the prospect that industrial research will continue to grow rapidly for some time to come.

The specific manner of distributing productivity gains has been dis-

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1 Slichter, "Raising the Price of Labor," supra, 287.

2 Davis, "Wages and Productivity," supra, 294.

cussed in some detail in earlier chapters and after considering many facets of the problem we believe that productivity gains should be shared with workers through income rises equivalent to the annual long term increase for the total economy.

The general proposition we are recommending would not be a rigid formula which would enable the two parties to a particular bargaining negotiation to determine precisely what wage settlement was indicated for them. It would not be a standard three per cent wage increase for all employees, nor would it set a rigid national three per cent wage "pattern." It would not, moreover, specify that wages should rise in relation to the productivity of the individual workers, or to the average productivity of groups of workers in individual firms or industries---for such a close relation between wages and productivity would disregard the other important functions that wages perform and would not in any case, as we have already pointed out, result in the aggregate wage changes desired.

In other words, such a general wage principle as is here discussed would not be precise, but precision would not be necessary for it to serve its purpose. It is thought, however, that it could --- given a moderate degree of cooperation from business and labor --- be adapted to the specific wage negotiations of the country in such a way as to achieve approximately the average wage change that would match the change in the productivity of the entire economy.

The national wage structure and changes in it do and must serve more purposes than cost and price stability, important as they are. They must gain

consent. Some structures and some changes make more of a contribution to law and order than others. The demands of both power and distributive justice must be acknowledged to an acceptable degree. Labor market and product market forces need to find some expression outside the confines of a wage policy based inflexibly on average long-run gains in productivity.

The importance of a flexible policy of wage increases which gains consent from both labor, management, and government cannot be over-stressed. A precise automatic improvement factor though does not seem to be practical in our present economy.

In the absence of continued full employment, price stability and coordinated control, the impracticality of an annual improvement factor which is applied automatically and inflexibly follows from a variety of reasons. Precise changes in income based on changes in productivity lack four qualifications which make a wage influencing consideration significant: factual certainty, general applicability, equitable acceptability, and generation of strong pressures, on one or both parties, which have not other adequate outlets.

Given the business cycle and our present collective bargaining institutions and practices, the short-run gearing of wages to productivity in the future is unlikely to be achieved with any great precision. The distinct impact of the business cycle on productivity and on wages, and the realities of the wage setting process make implementation of the policy more difficult than commonly supposed.

Even if scheduled wage rates could be tied inflexibly to over-all gains in productivity, average hourly earnings might still fluctuate substan-

tially and upset the stability of per unit labor costs. Moreover, if changes in average hourly earnings could be linked to the average long-run gain in productivity of three per cent per year, how could man-hour output be brought to leash? "Between 1919 and 1948 it dropped as much as seven per cent in one year and rose as much as fifteen per cent in another,"<sup>3</sup> according to Clark Kerr. Since both average hourly earnings and man-hour output fluctuate considerably, it would seem almost equally desirable to influence the latter as the former. Per unit labor cost can hardly be stabilized if only one of the variables is controlled; and the blame for instability in the relationship cannot in good conscience be assessed only against wages when the historical record is viewed.

There are obviously other limitations involved in such a proposition. At times, factors other than productivity should be the determination of wage changes. In periods of intense inflation or deflation, or when there are maladjustments in wage-price-profit relationships that need correction, factors other than productivity may be more important.

Some suggest that it would be necessary for those firms that are experiencing larger gains than the average for the whole economy to lower the price of their product, as well as raise the payments to the factors participating in the enterprise, as an offset to the price rises on the part of firms that raise income shares commensurate with the overall national productivity gains but whose rate of productivity increase is less than the average.

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<sup>3</sup> Clark Kerr, "The Short-Run Behavior of Physical Productivity and Average Hourly Earnings," The Review of Economics and Statistics, XXXI, November, 1949, 307.

Given our present system of wage determination, though it is difficult to envisage how this principle would be applied to individual wage decisions. How can the employer or the union be expected to ignore the many other factors affecting wages, some of which are more persuasive, such as changes in the cost of living, the tightness or looseness of labor markets, expansion and contraction of employment, rival unionism and leadership, prices for the products, the degree and stage of union organization, and ability to pay (which is, of course, affected by productivity).

While sharing productivity gains as outlined would not necessarily provide a stable economy, the adoption of such a policy would largely eliminate one of the unstable elements created when wages and salaries (by far the largest component in personal incomes) either lag behind or run too far ahead of productivity developments for the economy as a whole.

We believe that productivity increases must, in part, be voluntarily passed on in the shape of lower prices, (by companies with greater than average productivity increases) fringe benefits, and in the form of improved quality of goods and services. But they should primarily be passed on to the worker in the form of increased wages. Productivity increases must provide the means of further capital investment, and they may afford more leisure time to employees. And, as at present, they may help the nation to absorb in part, the tremendous costs of insuring national security.

A policy of voluntary wages increases that are generally and flexibly related to long-run increases in national productivity could provide for the adaptability that our economy, based on many complex and interrelated factors,

needs. The primary fear which discounts all economic analysis of productivity and the productivity factor lies in the fact that we cannot know as yet whether unions are going to be permanently interested in productivity. If Albert Hayes of the AFL reflects the underlying feelings of most union leaders when he speaks on the productivity factor, then economic analysis loses its practical immediacy. Hayes was asked: "You don't think, then, that that idea is going to take hold?" "I think it is a temporary expedient, because we actually don't have much of a choice," he replied.<sup>4</sup>

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4 Hayes, What Labor Is After, *supra*, 430.

## CHAPTER XVII

### RESTATEMENT OF HYPOTHESIS AND FINAL SUMMARY

In our introduction we proposed to show that productivity changes are a valid and useful criteria of wage determination.

After considering the meaning and measurement of productivity we concluded that greater emphasis was needed in defining terms and developing more adequate measures. We also feel that the long term increase in productivity has been approximately 2-3 per cent a year while recent trends are probably closer to 3 per cent than 2 per cent. Although available statistics are admittedly crude they may be used in long term estimates.

The General Motors-UAW (CIO) agreement established productivity as a mutually acceptable criterion in wage determination. As a model its influence has been considerable.

Productivity changes are a valid criterion of wage determination because in the long run wages and productivity have and must increase together. Both labor and management agree that the workers should share in productivity gains. Management feels that this can best be done through lower prices and other long term gains while labor maintains that if it does not get its share immediately through wage increases management will benefit more than its share through excessive profits.



The best means of distributing productivity gains we believe is through higher wages. These can best be applied as the situation warrants in harmony with a general wage policy of increasing real wages approximately 2-3 per cent a year over the long term. Flexibility of application is necessary for the productivity wage policy to be workable and non-disturbing in its economic consequences.

As a supplement to our primary hypothesis we have developed the hypothesis that a uniform automatic annual improvement factor applied generally is not a desirable device to use in wage determination. We hold to this hypothesis because the structure of unions and the expressed attitudes of union leaders indicate that such a factor would be unsuitable in present collective bargaining. A precise factor generally applied could cause serious dislocations in the national wage structure and in other economic variables.

We began our study by saying that wage determination is not simple nor is it exact. We conclude with the thought that productivity wage changes alone require a great deal more study. We have only studied one small factor in the total problem of wage determination. It is hoped through continued study wage determination can at least be made the subject of less industrial relations conflict.

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