

**WAGE-PRICE CONTROLS AND
LABOR MARKET DISTORTIONS**

By
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&
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FOREWORD

The Institute of Industrial Relations is pleased to present *Wage-Price Controls and Labor Market Distortions* as the sixteenth volume in its Monograph Series. The authors are Daniel J.B. Mitchell, Associate Professor of Industrial Relations in the Graduate School of Management, UCLA, who was recently appointed Associate Director of the Institute, and Ross E. Azevedo, Assistant Professor in the Industrial Relations Center, University of Minnesota. Professor Mitchell, who is the author of an earlier monograph in this series, *Essays on Labor and International Trade*, also was Chief Economist for the U.S. Pay Board; he is coauthor, with Arnold Weber, of a forthcoming volume on the impact of the Pay Board.

The Institute expresses its appreciation to Professors Walter A. Fogel, Neil H. Jacoby, and J. Fred Weston, who served on the reading committee for this monograph. Felicitas Hinman was the editor. The cover was designed by Marna McCormick, and the manuscript was typed by Nancy Arnold and Bonnie Hernandez.

The viewpoint expressed is that of the authors and is not necessarily that of the Institute of Industrial Relations or of the University of California.

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CONTENTS

1. INTRODUCTION.	1
2. CONTROLS AND DISTORTIONS.	15
3. SHORTAGES IN THE LABOR & PRODUCT MARKETS.	32
4. SOME EMPIRICAL FINDINGS	63
5. THE IMPACT OF CONTROLS ON PRODUCTIVITY-INCENTIVE PLANS	95
6. THE IMPACT OF WAGE CONTROLS ON INDUSTRIAL RELATIONS116
7. LESSONS FOR FUTURE CONTROLLERS.145

PREFACE

Much of the analysis of wage/price controls, especially of the 1971-1974 American experiment, has concentrated on the impact of controls on inflation. Controls are obviously intended to have an anti-inflationary effect, so this concentration by researchers is understandable. On the other hand, some aspects of controls have been generally neglected. The impact on inflation can be viewed as an exploration of the "benefits" of controls, but few studies have adequately explored the "costs." Usually, the costs have been analyzed only in terms of the administrative expenditures for controls (civil servants, costs of hiring accountants to fill out required forms, etc.), with some casual references to "distortions."

Undoubtedly, some distortions are inevitable in any controls program, no matter how they may be defined. However, there are reasons to believe that certain types of actions of controllers can make a program more distortion-prone. In addition, it is important to distinguish between the price and wage side of a controls effort in considering the likely incidence of a distortion. Controls in the United States and in other countries have emphasized the labor side, with price controls thrown in as something of an after-thought. But, as will be described in the chapters that follow, despite the labor emphasis it is the product market--not the labor market--that seems most subject to distortion.

This study concentrates mainly on those labor-market distortions that can be identified during the 1971-1974 controls period. It does not directly take up the question of the impact on inflation of controls, an area which has already received the bulk of attention. The authors believe that a growing degree of government "intervention" in the wage/price process is inevitable. Hopefully, this report will be a contribution toward the minimizing of adverse effects of such intervention.

Chapter 1 is a brief introduction to controls, particularly the 1971-1974 American program. The foreign experience is touched on briefly. Alternative concepts of distortions, together with problems of empirical analysis, are discussed in Chapter 2. Chapter 3 provides theoretical models of labor and product market "shortages," a key form of distortion. A test of these models is made in Chapter 4. Also included in Chapter 4 is an empirical discussion of labor "surpluses"--transitory unemployment--which can be induced by controls.

Chapter 5 analyzes the impact of controls on productivity-incentive plans. The issue of productivity has been a long-standing concern of labor economists, personnel specialists, and labor leaders. But recently concern has intensified, symbolized by the creation of a federal government commission to stimulate productivity improvements in 1970. Legislation underlying the 1971-1974 controls program provided for special treatment of productivity-incentive agreements, in recognition of this concern.

Economists tend to concentrate on tangible costs in their evaluations of public programs. However, wage/price controls may have an impact on the amorphous industrial relations system. Distortions in the industrial relations system--the subject of Chapter 6--should not be neglected. Although not without its faults, the U.S. system has provided an orderly procedure for settling industrial disputes since the 1930s. A severe dislocation in industrial relations practices could threaten this stability.

Finally, Chapter 7 summarizes the findings of the earlier chapters, and draws lessons for the future.

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Needless to say, none of the blame for any errors in judgment or conclusions that the authors may have made falls on any of these individuals.

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CHAPTER 1

INTRODUCTION

Theories of inflation run the gamut from the orthodox excess-demand approach to various cost-push explanations, and even to socio-political explanations revolving around the struggle over income distribution. Whatever the cause of inflation, the western world has not met with substantial success in dealing with the problem. The target of stable prices has proved as elusive to postwar governments as full employment seemed to have been in the 1930s.

Among the remedies which have been suggested for the problem are various forms of wage/price controls, "incomes policies" as they are called in Europe. A broad range of actual programs are encompassed by the term "controls." In technical terms, controls can be defined as "any device or devices by which the government attempts to prevent the actors in the economic system from setting their wages and prices as high as they normally would, given the actors' utility functions and the values of the variables influencing their decisions."¹ Translated into simple English, this means that government undertakes to place direct constraints on wage and price setting, rather than just trying to induce desired behavior by changing the economic climate.

Some controls consist of simple urgings of "restraint." The urgings may be general or specific, as when particular guidelines or formulas for wage and price increases are suggested. Controls can be voluntary, with no legislative authorization, and may have only the (not inconsiderable) "moral suasion" of the government behind them. Or they can be part of a legislative program which includes penalties for violators. Controls may involve attempts to invite the participation of interest groups

(chiefly organized labor and management), or they may be operated by the government on its own. Sometimes controls programs are extensive, directing their attention at all or a large number of the wage and price decision-makers in the economy. Or they may be selective, concentrating mainly on "problem" areas, or pattern-setting situations. Controls may be administered through existing government agencies, relying on the standard official wage and price indexes to monitor the degree of compliance achieved. Or, alternatively, special government agencies may be established to monitor detailed reports required of wage and price setters, and to make decisions concerning pending adjustments.

I. Some American Examples

In the United States, modern controls systems were first established during World War II, and then during the Korean War. Although there have been controls efforts as far back as the American Revolution, the more recent wartime efforts are a good starting point because both dealt with an economy which in broad outlines was similar to what we know today.^{2/} Many leaders today in government, business, and labor had their initial exposure to controls during these wartime programs. Both programs were characterized by mandatory legal requirements for compliance and reporting. Both were extensive in nature, covering much of the economy. During both programs, new government agencies were established to administer the regulations. Labor participation was sought during both programs--not always successfully. Unlike more recent programs which were aimed chiefly at controlling inflation, the wartime controls programs were part of a larger apparatus designed to ensure that the war effort was supplied with sufficient material and manpower. The controls involved explicit rationing systems for certain products, and direct controls over production allocation. Generally, such devices are not included in controls programs aimed mainly at controlling inflation.^{3/}

Two major efforts at controls followed the Korean War program. When the Kennedy Administration came into power in the early 1960s, it was committed to stimulating the economy and promoting growth. It was feared, however, that as the economy moved toward full employment inflationary pressures might develop. The dollar had become the centerpiece of the international monetary system, so that inflation had foreign as well as domestic consequences. Inflation could weaken the balance of payments, and therefore undermine the dollar's standing as a key currency.

A direct attempt to restrain the inflationary process was made through a series of suggestions for wage and price behavior which began to appear in the annual *Economic Report of the President*.^{4/} The report first suggested that wage increases should be geared to the national average productivity increase. Prices should fall in industries where productivity was rising faster than the national average, but could rise in industries where productivity grew more slowly than average.

The linkage of wages to productivity, defined as the ratio of national output to labor input, was not original with the Kennedy Administration. It has sprung up in various guises in controls programs around the world. The President's Council of Economic Advisors was simply noting that real wages (wages "deflated" by a price index) tend to rise with national productivity in the long run. Thus, the CEA was simply noting that if money wages were kept in line with the trend in real wages, price stability would be achieved.^{5/}

Later versions of the CEA's position became more explicit. The *Economic Report of the President* for 1964 noted that the trend rate of productivity growth was 3.2 percent. Thus, a specific numerical guideline became the central element of the effort to restrain inflation through direct intervention. By the mid-1960s,

however, demand pressures associated with the Vietnam military buildup and the domestic push for a "Great Society" began forcing up prices. Wage settlements began to exceed the guideposts, including some very noticeable pattern-setters which discredited the program. The CEA retreated to a general call for restraint in the face of inflation, and the guidepost notion faded from public view.

Unlike the previous wartime programs, the guidepost episode did not involve the creation of a new government bureaucracy or the passage of any legislation. Although cooperation was sought from labor and business, participation from these groups in planning and administration was not sought. Indeed, the prevailing view seemed to be that economic policy was best left to the technicians.^{6/} Interest-group participation risked turning the making of sound policy into a bargaining session.

When the Nixon Administration came into power in 1969, it was ideologically opposed to the use of controls--even of the voluntary guidepost variety. However, the administration did need some method of dealing with the inflation it inherited. It was decided that traditional demand-restraint policies would be used, but that these policies would be applied gradually so that the impact on unemployment would not be severe. Rather than an actual recession, the administration hoped to provoke a period of subnormal growth.

The impact of the so-called "game plan" turned out to be more severe--and less fruitful--than expected. The unemployment rate reached a peak of 6.1 percent in August 1971. Consumer prices rose by 4.4 percent during the year ending in that month. This was slower than the previous year's rate of 5.6 percent, but not as slow as had been hoped. And there were ominous signs that inflation might actually speed up. Wholesale prices had not slowed; they were up 4.0 percent in the year ending August 1971, compared with 3.4 percent over the previous 12-month period. Wage negotiations in

union construction had gotten so far out of line (17.6 percent in 1970 for First-year adjustments) that controls in that sector were imposed in March 1971. Other major wage settlements had been recently concluded in autos, steel, and telephones, all providing substantial wage increases. Contracts were pending on the West Coast docks (where the first strike in years was taking place), on the East Coast docks (where strikes had occurred regularly with each new negotiation), on the railroads (where government involvement in disputes is almost unavoidable because of the widespread impact of railroad strikes and the peculiarities of the Railway Labor Act), and in the soft coal mines (where the corrupt administration of the United Mine Workers was fighting for political survival). In short, there were many indications that inflation might worsen and the nation would proceed into 1972 with a soggy economy. (It need hardly be mentioned that 1972 was a Presidential election year.)

Aside from the internal economic problems, the international position of the dollar was rapidly becoming unstuck in the summer of 1971. Foreign central banks and the Federal Reserve had to buy up excess dollars repeatedly to maintain the official exchange rate. The United States increased its liquid liabilities to foreign official agencies by almost \$11 billion during the third quarter of 1971. It became apparent that a change in international economic policy would have to take place; this made the announcement of a new internal policy especially inviting.

On August 15, 1971, the President announced a freeze on most wages and prices. The freeze--Phase I--lasted 90 days, administered by a newly created Cost of Living Council. Unlike the earlier guidepost experience, the rules implementing the freeze and the subsequent phases had the force of law. The Economic Stabilization Act of 1970 granted the President virtually a blank check regarding direct controls. Ironically, the law was originally passed by a

Democratic Congress which hoped to embarrass a Republican administration then opposed to controls. It was not thought likely at the time of passage that the authority would be used.⁷

Phase II, which ran from November 14, 1971 to January 11, 1973, provided for a Pay Board to administer the wage side of the program, and a Price Commission to handle the price aspects.⁸ These two agencies were in turn subject to oversight supervision by the Cost of Living Council. The Pay Board announced a 5.5 percent wage guideline for new adjustments. Price controls were based on markups over and pass-throughs of cost increases. Interest-group participation was provided through a "tripartite" arrangement at the Pay Board. The Board's membership was composed of five (organized) labor representatives, five business representatives, and five public representatives. After four of the five labor representatives resigned over a dispute nominally centering over a longshore wage cutback, the Pay Board was reconstituted as an "all-public" agency with the five original public members, the remaining labor member, and one of the original business members.

While Phase II emphasized widespread coverage and administrative procedures, Phase III featured narrowed reporting requirements, *de facto* concentration on "major" wage and price situations, and general liberalization of the rules. Except for a few sectors maintained under Phase II-type controls, decision-makers were told to "self-administer" the rules, with the threat of rollbacks (prospective only) in cases of gross violations. The Pay Board and Price Commission were abolished, leaving the Cost of Living Council as the major stabilization agency. Estimated governmental man-year requirements of Phase III were only 2,800, compared with 4,039 under Phase II.⁹

Rapid price inflation during the early part of 1973, particularly in food, forced the scrapping of Phase III. First, meat price ceilings were imposed on March 29, 1973.

On June 13, 1973, a freeze on prices (but not wages) was invoked. When the freeze ended, a new Phase IV was put into effect. Phase IV was a mixture of Phase II-type price rules (somewhat tightened) and Phase III wage rules. During Phase IV, the Cost of Living Council gradually exempted one industry after another, after receiving pledges of good price behavior from the major firms affected. The plan was to reduce the Cost of Living Council largely to a monitoring status. However, Congress refused to grant even that limited authority and controls expired on April 30, 1973. The Cost of Living Council was absorbed into the Treasury Department to clean up old business and phase itself out.

II. Foreign Experience

A number of books and studies have been written comparing incomes policies in Europe and other western countries.¹⁰ While it would not be suitable to attempt to summarize these studies, a few examples are in order. The French made an attempt to establish an incomes policy during the 1960s, as part of their overall planning apparatus.¹¹ Since World War II, France has had a Planning Commission which sets quantitative targets for outputs of various sectors. Firms cannot be forced to adhere to the plan, but tax policies and government controls of major financial institutions can provide incentives to go along with the general goals. Incomes policy was added to the plans so that they would have a nominal as well as a real side. The French government held various conferences to attract labor participation, but support from the major labor federations was never forthcoming. (The largest labor federation in France is the Communist CGT.) Nevertheless, pressure was put on wages particularly in the government-owned sector. In 1968, a general strike paralyzed the country. Although various causes can be cited, the incomes policy may have played some role in building worker discontent. After 1968, incomes policy was dropped from French planning.

Controls of varying types have been tried periodically in Britain. In the late 1940s, the Labour government experimented with a voluntary wage freeze. During the early 1960s, the Conservative government first issued guidelines similar to the American guideposts, and then attempted to launch a more elaborate program. A National Incomes Commission was created, but organized labor refused to cooperate and the program was scrapped by the incoming Labour government in 1964. The new government launched an incomes policy of its own, with the initial pledge of cooperation of both labor and management. A National Board for Prices and Incomes was set up to hear wage and price cases "referred" to it by the government. Guidelines were issued for the Board to administer. In 1966, however, continued problems with inflation and the exchange rate for the British pound led to a wage/price freeze. Greater flexibility was restored during the following year, but the program began to erode. The Labour government permitted a number of wage adjustments far beyond its own guidelines. Few cases were referred to the Board and it began to languish. In 1970, the incoming Conservative government permitted the entire mechanism to lapse, on the same ideological grounds that characterized the early Nixon Administration.

Following the Nixon Administration's lead, ideological opposition to controls was dropped in 1972. A new incomes policy was begun modeled on the U.S. experiment. Stage I consisted of a freeze. Stage II saw a more flexible program administered by a Pay Board and a Price Commission(!). Greater provision for exceptions was made in Stage III. However, the experiment was interrupted by the coming to power of a minority Labour government in 1974. The new government announced it would scrap the existing mechanism, and negotiate a new social contract with labor.

Immediately after World War II, Holland began a series of wage/price controls which, it was hoped, would aid the recovery from wartime. In Holland, labor

negotiations are conducted on a highly centralized basis--similar to the pattern adopted in Scandinavian countries. A mechanism was created whereby the division of national income was to be made more consistent with available national product. Although steps were taken to make the wage control machinery less rigid, by the early 1960s severe labor shortages developed. A black market in labor finally erupted into an open "wage explosion" in 1963. Since that time, formation of a new program has proved elusive.

Varying degrees of control have been exercised in other countries, too. Australia has long featured a system of compulsory arbitration through labor courts to settle disputes over wages. This system was originally designed to avoid strikes; not to control inflation. Nevertheless, in modern times the judges who make the pattern-setting national awards have looked at economic variables along with others in making their determinations. More recently, Australia has created a price control mechanism. New Zealand implemented a wage/price freeze in 1972. Norway and Sweden have centralized collective bargaining mechanisms and Labour Parties which are intertwined with organized labor. Even though formal incomes policies do not exist in these two countries, there is an automatic official involvement in the outcome of negotiations. In addition, the parties are aware that when one bargains for an entire nation, one is often bargaining about the rate of inflation.

As the reader can gather, attempts to impose wage/price controls have tended to be episodic, and are often sensitive to political developments. This has been the case both at home and abroad. Of course, there is something to be said for experimentation and innovation. On the other hand, few would argue that monetary policy would be improved if the banking system and the central banking authorities were totally revamped every time a new party comes to power. Like monetary policy, controls can be operated with varying degrees of intensity. The question for the 1970s, however, is not whether controls in varying intensities will persist. Continued inability

Although Keynesian models are more receptive to the notion of exogenous cost pressures, they do not provide any explanation of how such pressures might develop. Referenes are often made to "administered" wages and prices and to downward price and wage rigidity. Inflation, in these explanations, seems to be tied into a lack of market competitiveness. Unfortunately, the empirical basis for these approaches in the product market is ambiguous. There may be important differences between markets where prices change, and markets where prices are changed. But the issue is not settled, empirically or theoretically.

On the labor side, the picture is even more foggy. Collective bargaining directly affects about thirty percent of the private, nonfarm workforce. Nonunion workers are indirectly affected by developments in the union sector. Employers with unionized blue-collar production workers often provide comparable wage increases to their nonunion white-collar employees. Nonunion employers often attempt to match union wages to avoid the nonwage costs of unionization involving management discretion, work rules, etc. The labor market is a mysterious place; the weak spot in modern macro theory. We have yet to understand why during the greatest economic decline in modern American history, 1929-1933, real wages in manufacturing rose. Should not a rise in unemployment to 25 percent have caused a fall in real wages, particularly in a period of weak unions? True, nominal wages fell by 22 percent over that period, but the picture is one of a reluctant, resistant, and hesitant decline, not of an effortless readjustment. It is unlikely that in recent years, the process of wage determination has become more flexible than it was in the early 1930s.

Collective bargaining adds an element to wage determination for which there are currently no satisfactory models.^{12/} Unions are political institutions attempting to satisfy the needs of a group of individuals. There is no simple target to maximize,

to deal with inflation will settle that question with an affirmative answer. In the 1970s, the key question will be whether controls mechanisms acquire stable institutional structures.

III. Controls and Inflation: Available Theory

If the rate of inflation were closely tied to the growth of the money supply, it would be hard to make any justification for direct wage/price controls. However, even the most devoted monetarists admit to lags and slippages in the monetary mechanism. In the textbooks, and the desired money supply is determined by public tastes, and the nominal money supply is brought into line with public desires by upward or downward movements in the overall price level. The dynamic element by which these tastes might themselves be a function of the adjustment process is often not considered. In the textbooks, the issue of defining "money" does not arise, since unchanging public tastes force all versions of the money supply to move more or less proportionately. But in actuality, there are currently in vogue various versions of the money supply. This uncomfortable fact is often dismissed simply as an "empirical" question, when it is really a symptom of a theory gap.

In some respects, the theory of inflation in Keynesian models is quite similar to the monetarist position. Both rely largely on excess demand to generate inflationary pressure. However, the Keynesian models tend to play down the linkage between the absolute price level and the money supply, generally by ignoring the "real balance" effect. Once the price level is unhinged from the money supply, the possibility of cost-push inflation occurs. If wages and prices are exogenously pushed up, they will tend to stay up. If there is exogenous continuous pressure on them, they will continue to rise. Monetary policy still could restrain inflation, but need not be the cause.

nothing like the profit target for a firm. Goals are heavily influenced by patterns set in other settlements, a feature which seems to leave the union sector hanging by its own bootstraps. Notions of equity seem to play a large part in the process, with equity largely a function of past relationships between the wages of different groups of workers. Union wages are generally higher than nonunion wages, but their rate of growth does not always keep up. During periods of unexpected inflation, union wages may lag in terms of percentage wage adjustments. Thus, just as macro policy is being swung in the direction of restraint, catch-up wage pressure may begin to arise in the union sector.

Expectations seem to play an important role both in the labor and product markets, but particularly in the former. Wage contracts often run three years in duration. If it is believed the next three years will be characterized by high inflation, the contractual arrangements will reflect this assumption. In turn, these arrangements may help to realize the expectations. Since expectations are to some extent self-realizing, this gives momentum to inflation. The strict monetary theory would predict that a steady monetary policy would quickly correct the situation. Keynesian theory suggests the momentum might roll along indefinitely. Most economists probably operate with a "mixed" theory which suggests that inflation, once begun, is resistant to restraint, and cools off slowly.

If there is a role for controls, it comes mainly from three areas. First, the looseness of the linkage between monetary policy and wage and price determination. Second, the role of expectations in the inflation process. Third, the process of wage determination, especially in the union sector. Although some Europeans see inflation as a symptom of a struggle over income distribution (and incomes policy as a way of making the distribution struggle more orderly), this approach has not been the key factor behind American experiments with controls. The consensus view in the United States is that inflation

does not spring by itself from social and economic conflicts. Rather, because of the three factors cited above, inflation is perpetuated *once* started. More often than not, however, the initial spark is from excessive demand.

IV. The Wage Emphasis of Controls

In terms of public attention, the labor side of a controls program seems to get the massive share. Technicians analyzing accounting data to determine whether a price increase is justified simply do not make good headlines. By contrast, labor walkouts, strike threats, and the like, are sure-fire publicity gatherers. But the fact that the labor side gets the headlines does not prove that wages are necessarily the heart of a controls program.

Proof of the wage emphasis can be seen in the institutional structure of controls, however.^{13/} Price controls in American programs have been based on cost pass-throughs and markups. Prices can be raised when they can be cost-justified. One firm's cost is often another firm's price. Thus, basing allowable price increases on costs does not halt inflation. It simply institutionalizes what tends to happen *on average*, even in the absence of controls. Wages, on the other hand, are the major element of cost which is not some other firm's price. Wage controls are usually based on some sort of guideline. By restraining wages, costs are automatically restrained. And if firms simply mark up over costs, prices will rise on average at the rate of wage change minus the rate of productivity increase.^{14/}

It is generally not politically feasible for government officials to acknowledge the wage emphasis of controls. In the U.S. experience, the purpose of controls has not been to retard real wages; only nominal wages have been the target. However, it would be difficult to explain the distinction to the public,

particularly in the context of a specific wage case. Moreover, for purposes of this study the emphasis of controls on the labor market is of incidental importance. The subject of the discussion to follow is the effect of controls on manpower allocation. In order to bring the issue into focus, however, contrasts will be made to the product-market experience. Obviously, the two effects are interrelated.

CONTROLS AND DISTORTIONS

Wage/price controls are instituted as anti-inflation devices. They are not intended to interfere with the flow of goods and services. Yet, economists have been concerned that both the labor and product markets are subject to just such interferences when controls are operated. This study is aimed at developing a framework for analyzing the distortion issue. It should be noted, however, that the presence of distortions does not prove that controls should not be used. As in any other public policy there must be a weighing of costs (which include distortions) against benefits. If anti-inflation benefits are thought to be slight, then even minor distortions weight the case against establishing controls. On the other hand, if the benefits are thought to be large, then policy-makers may be willing to pay the price of moderate distortions.

I. The Concept of Distortion

There are essentially two ways in which a distortion may be defined. One possibility is to measure the state of the economy (or a particular sector) against a hypothetical optimum state. For example, we might compare the economy under controls with the way the economy would look if it were characterized by perfect competition (with optimum taxes and subsidies handling any difficulties arising from externalities). Such a standard obviously poses an empirical problem since the optimum state of the economy--so defined--is not known. Moreover, if value judgments about income distribution are applied, the perfect-competition standard may not prove optimal unless there is also present some sort of income redistribution mechanism.

It would be possible to pretend that perfect competition prevailed prior to controls. We could

assume that pre-control prices and production patterns were optimum, and then judge the impact of controls in causing deviations from the pre-control state. In fact, most cost-benefit analyses are conducted in this fashion. For example, when a cost-benefit analysis is applied to a public works project, it is usually assumed that the prices of materials and labor which will be used have been properly set by the market. More commonly, taxes or subsidies to particular industries are often considered to be artificial interferences, despite the fact that the economy is riddled with imperfections. For example, a subsidy to the steel industry might improve "welfare" if coal (an input to steel) is monopolistically priced. Such a subsidy would probably be criticized, although we could not be certain that it might not be overcoming some other imperfection elsewhere in the economy.^{1/}

An alternative standard of measuring controls distortions is simply to examine the pre-and post-controls situation without attempting to make "welfare" judgments. Distortion could be defined simply as "deviation." This approach also has its drawbacks. Deviations could be catalogued and listed. But it would not be possible to render any opinion as to whether controls had made things better or worse. It would not even be possible to say that a large deviation was worse than a small deviation. On the other hand, the deviation approach is likely to be more tractable empirically. It requires only a before-after comparison, combined with some technique of isolating the controls influence from the influence of other factors.

Neither alternative definition--carried to its logical extreme--is satisfactory. The empirical considerations require the making of pre-and post-control comparisons. In general, it will be assumed that large deviations represent significant costs, although no attempt will be made to come up with some sort of aggregate total cost of controls.

Given the rough nature of economic data, minor deviations will probably be buried and undetectable amidst the general noise which characterizes most statistical series.

Despite the pragmatic justification for identifying large deviations with distortions, there may be raised reasonable objections to this identification. From the labor-market perspective, it turns out not to be a major problem, since few large deviations are found in the empirical investigations. In the product market--where greater deviations from normal do seem to have occurred under controls--the conceptual problem remains. However, it is shown in Chapter 3 that even when textbook assumptions are made, the scope of improving performance through product-market controls is more narrow than simple models suggest.

II. Labor Markets Versus Product Markets

Buyer-Seller Linkages

Discussions of controls distortions often fail to make distinctions between the labor and product markets. Obviously, there are similarities between the two. Prices of products in short supply tend to rise, just as do wages of occupations in short supply. But there are differences, too. It will be argued below that labor markets are less prone to controls-induced distortions than product markets. A characteristic of most labor markets is the linkage between the buyer (employer) and the seller (employee). The degree of this linkage varies. Traditionally, the distinction has been made between situations where the linkage is primarily between the individual employer and his employees, where the linkage is between the employing industry and its employees, and where the linkage is very loose and the employee is not tied to either particular employers or industries.^{2/} To the extent that there

are ties between employer and employee, it is less likely that controls will have a disrupting effect on employment and hiring patterns.

Although the question of linkage will be explored in later chapters, it is worth providing a few examples at this point. In many situations, employees acquire a special interest in remaining on their jobs due to benefit programs such as pensions. Typically, in a pension program, a worker must remain with his employer during some stated period of time before he acquires a right to the funds set aside in his name. In most programs, his right becomes "vested" after a specified number of years. Prior to legislation in 1974, there sometimes was no vesting; an employee who left his employer also left his pension.^{3/}

Seniority systems also give the worker a special interest in his job. As the worker accumulates seniority (by remaining with his employer) he acquires certain rights. In the event of slack business, workers are often laid off in reverse seniority. Thus, a worker accumulates job security by remaining with one employer. He may also enjoy privileges of being able to pick particular work assignments, overtime hours, etc. Although workers may not literally "own" their jobs, seniority provides certain ownership-like characteristics, especially in unionized situations.^{4/}

Employers, too, have incentives to retain workers and hold down turnover. There is a variety of routine costs involved in new hires. These include screening and testing new applicants, establishing personnel records, and perhaps payment of fees to employment services. In addition, firms often provide training to new workers. Some of this training may involve formal teaching, classrooms, etc. Often, however, informal on-the-job training methods are used. Either method can involve considerable expenditures.

Economists make a distinction between general training received by workers and specific training.^{5/} General training provides a skill which is easily marketable elsewhere, such as shorthand. It is assumed that the employee in effect pays the employer for such training through accepting wages somewhat below his marginal product during the training period. Sometimes such payments are formalized through apprenticeship and trainee programs during which workers are paid something less than the going rate. Specific training provides the worker with skills which are usable only by his employer. Such skills are not marketable elsewhere, and therefore the employer assumes the burden of such training.

In fact, it is quite difficult to distinguish between general and specific training in many cases.^{6/} Specific training may involve particular mechanical or intellectual skills closely related to the employer's activity. But it may also involve learning to get along in the social situation that happens to exist in the employer's establishment. Some of these "getting along" skills may be general to some extent. That is, a worker's demonstrated ability to deal satisfactorily with a previous work situation is often taken as an indicator that he will similarly succeed in a new job.^{7/}

Despite the difficulty of making the distinction between general and specific training, it is clear that employers do believe they have a certain investment locked up in their employees. To prevent unduly high turnover from depreciating this investment, employers will take steps to retain workers. This may involve paying employees somewhat more than they could earn elsewhere, in order to make quitting less attractive.^{8/} Or it may involve benefits which give the employee an incentive to stay, such as the pension plans already mentioned. Working conditions and opportunities for promotion and advancement may also be used.

The implication for controls of the two-way linkage between employer and employee is that the

potential for distortion is reduced. Workers are not likely to leave an employer to whom they are linked simply because in a particular year their wage increase is retarded. Employers will take measures other than wage increases to retain workers, if they are constrained by controls from granting desired increases. Obviously, there are limits even in the fact of tight linkages; some level of constraint could induce abnormal turnover. But the linkage helps reduce the probability of this occurring.

In the product market, linkages between buyer and seller are likely to be weaker than in the labor market. To be sure, there are some linkages. Business relationships between firms are sometimes formed. Buyers and sellers who habitually do business are more likely to trust one another, and this can provide economies of transaction costs. At the level of final goods, the public may be linked to a particular brand name, or to particular retailers who are convenient or friendly. However, as a general rule it is easier to take one's business elsewhere than to change employers.

Incentive Plans

The labor market also poses certain problems of incentives which are less prevalent in the product market. Textbook models put forth the image of the employer hiring until the marginal revenue product of labor is equal to the going wage rate. It is tacitly assumed that the wage is paid for some unit of labor time, say, an hour, and that the marginal revenue product of labor is unambiguous. In fact, the value of a man-hour to the employer--even in cases where physical output is easily measured--varies with worker effort. And there is no guarantee that an employer will obtain the desired level of effort, unless he takes steps to ensure that he does.^{9/}

One possibility is to pay on a time basis, but use supervisors to monitor worker effort and ensure that

standards are maintained. Substandard workers, identified by supervisors, could be penalized or dismissed. However, supervisors cost money, and may themselves be substandard. Thus, alternative arrangements are sometimes made through the use of specially designed pay systems.

Some pay systems are geared specifically to physical output. Workers may be paid "piece rates," so that compensation rises or falls with the amount produced. Such systems can be designed for individual workers or for groups of workers where the output of an individual is hard to measure. Special bonus plans may be arranged geared to some measure of productivity. In some cases, it is felt desirable to have workers identify their interests with that of the firm. Profit sharing and stock distribution plans may be used for this purpose.

Each of these types of plans has its defects. Payment by the piece can lead to skimping on quality per piece. Workers may jointly hold back production to prevent management from becoming too optimistic in setting the payment per piece, or the standards for earning a bonus. Disputes may arise when new equipment, with higher inherent levels of productivity, is brought on line. Arrangements have to be made for compensating workers when production falls for reasons beyond their controls, i.e., when machinery breaks down. Profit-sharing arrangements may loosely reflect employee effort. But they will be heavily affected by the demand for the firm's product and the general state of the economy--factors not within worker control.

Once designed, pay incentive plans tend to become embedded in the operating procedures of a firm, particularly if a union is on the scene to formalize the system. There are many examples of peculiar work rules which linger beyond their original intent. Railroad engineers receive overtime based on mileage standards set when trains covered less distance in a day than they currently do. Railroad maintenance

workers receive premiums for carrying walkie-talkies which were established in the pre-transistor days when two-way radios were quite heavy. In short, when pay incentive programs are installed, management has to consider the inadvertent preverse incentives that may be created and the impact such plans may have in the future.

Despite these difficulties, specially designed pay plans are used to provide labor incentives. Their use extends to all levels of employees including top management. Presumably, these plans exist because they appear to be more efficient than alternative arrangements. But because of the need for care in design, pay incentive plans are put in place with care and after study. A new plan or a change in an existing plan is not a management decision which can be taken lightly.

Since pay-incentive plans are designed to improve efficiency, it may be assumed that interference with their operation by a controls program could impose costs on the economy in terms of lost potential output. Such interference might arise in two ways: First, the controls regulations might inadvertently create loopholes which artificially encouraged particular types of incentive programs. Pay plans might be used to evade the controls program constraints.^{10/} Second, the controls might consciously or unconsciously discourage the use of special pay plans which might have had a beneficial effect on economic efficiency. To avoid creating avenues of evasion, the controls authority might seek to standardize the means of compensation.

Even the casual discussion so far suggests that the first type of problem--creation of loopholes--is unlikely to be a serious one in a short-term program. The fixed costs of establishing a new program--and its long-range implications for the firm--make it unlikely that such plans would be quickly established in response

to a controls-program incentive. As to the second point, controls authorities are reluctant to change existing practices, so that interference is mostly likely to be felt in the creation of new pay incentive plans. Existing plans are less likely to be impeded.

Industrial Relations

Industrial relations practices vary widely between countries, but all western nations find it necessary to establish mechanisms to deal with worker-employer conflict. In the United States a system of regulation of the procedures for obtaining employee bargaining representatives, and for the bargaining that follows, was established in law during the 1930s. Unions and collective bargaining existed prior to the 1930s, of course. But the institution tended to be confined to skilled workers in particular industries. Union membership as a proportion of the private nonfarm labor force peaked in 1954, but has continued to grow in terms of absolute numbers. Unionization in the public sector has become a growth area in recent years as traditional unions gain membership and "professional associations" convert into union-like organizations. Currently, combined union and professional association members represent about 26 percent of the employed civilian labor force.^{11/}

Although organized employees are a distinct minority of the labor force, the influence of collective bargaining is more widespread than the numbers suggest. Wage increases negotiated in major settlements become pattern-setters for other settlements and even nonunion wages. Nonunion employers often seek to keep their wage structures in line with unionized employers in order to avoid unionization. Moreover, union workers tend to be found in "key" industries. Strikes are not the general rule in collective bargaining, but strikes in certain industries have widespread repercussions. In industries such as longshoring and railroads, the impact of strikes is likely to be considered as extremely

serious by the government and intervention is common. In others such as autos or steel, intervention is less likely, but an interruption of production will still have a significant effect on activity in other industries.

Apart from the measurable and tangible question of strike, disruption of the ongoing industrial relations system can have longer-range consequences. Many economists are quick to consider labor unions as one more example of a monopolistic influence. They tend to lose sight of the social aspect of unionization and collective bargaining.¹² The process of collective bargaining represents an institutionalization of conflict. Without orderly rules and procedures, this conflict could have serious consequences for a democratic society. If controls weaken the industrial relations systems, an orderly channel of conflict is removed. New channels of a socially destabilizing type could arise. Informal worker organizations at the local level might spring up, tending to replace the original traditional leadership at the center. American industrial relations might slide into something more akin to the British system, with its wildcat strikes and shop steward movement.

In short, the human side of the labor market creates features not found in the product market. To be sure, within the product market there are elements of conflict and dispute-settling between buyers and sellers. Sales contract disputes are sometimes settled by arbitration, as is often the case in labor disputes. But basically, the labor and product markets are distinctly different in terms of the social consequences of their institutions for resolving conflicting interests.

III. The Measurement and Detection of Distortions

The discussion in the previous section suggests three basic types of distortions that might be induced by controls. One type is a product of labor shortage or surplus. If a wage or price is held below "market"

levels, the result could be difficulty in retaining or attracting employees in the labor market, or difficulty in obtaining particular items in the product market. Paradoxically, the result of a shortage in the product market could be a surplus in the labor market. It is possible that a shortage of material inputs to production could idle groups of workers. For example, meatcutters were laid off during the beef shortage in the summer of 1973. More indirectly, the gasoline shortage during the winter of 1974 caused layoffs in the auto and recreational vehicle industry.

A second type of distortion is a controls-induced change in the way in which transactions are conducted. In the labor market, as already indicated, this is most likely to involve changes in the methods of pay used to provide incentives to employees. The controls authorities would ideally like such programs to remain unaltered in format. Thus, a production worker on a piece rate would remain on a piece-rate system, and the controls regulations would apply to the rate per piece. Unfortunately, the rates for piece work are normally changed as new technology is introduced. At each such juncture, some sort of regulation must be applied to prevent these normal procedures from being used to evade the intent of the controls program. In turn, the rules might either discourage or encourage the use of particular types of programs inadvertently.

A third type of disruption is an alteration of the industrial relations system. A controls program is bound to have some effect in this area, since it represents an intervention in the essential element of collective bargaining. If restraints on wages are tight, strikes might erupt against the controls program rather than the employer. On the other hand, if the authority of the controllers is accepted by union bargainers, strikes might be reduced because of a narrowing between the employer and the union wage target. As still another alternative, the union target might not decline at all, but the employer might become more willing to make concessions in the hope that

the wage controls program will eventually lead to a cutback in the wage he must pay. Whatever the outcome, it is clear that the normal process of bargaining may tend to erode under wage controls.

Shortage and Surplus Measurement

Labor-market shortages might affect a number of indicators. However, there is no index which is specifically designed to measure shortages. For example, if employers are having trouble retaining labor, presumably this should show up in higher-than-normal quit rates. Quit-rate data have been maintained by the Bureau of Labor Statistics on a monthly basis for two-digit Standard Industrial Classification (SIC) industries since 1958. Earlier data are available for total manufacturing, without an industry breakdown.

During 1969-1973, the BLS also collected data on vacancies in manufacturing on a monthly basis, with some industry breakdown. Presumably, in periods of labor shortage, the number of unfilled vacancies would tend to rise as employers found it more difficult to obtain new workers. In addition, higher quits would tend to open more vacancies. Vacancy data as measured by the BLS cover such a short period that it would be difficult to sort out controls-induced from other effects which might affect the series. About half of the period covered by the series occurred during controls.^{13/}

A related series which is available over a longer period of time is the index of help-wanted advertising compiled by the Conference Board for 52 cities. This index is available on a monthly basis beginning in 1971.^{14/} There is, unfortunately, no breakdown by industry possible from this series. Moreover, the index reflects only conditions in the cities covered, and is biased toward those types of jobs which are commonly advertised in newspapers.

It is conceivable that controls could cause shortages in some areas and surpluses (due to supply disruptions) in others. Labor surplus problems might show up in the general unemployment indicators, or in layoffs (gathered for manufacturing only). Simultaneous occurrence of both shortages and surpluses would be equivalent to a decrease in the efficiency of the labor market--a structural problem induced by controls. It has been hypothesized that the labor and product markets differ institutionally so that the latter is more susceptible to shortages. There are some indexes which relate to shortages in the product market, and which could therefore be useful in exploring the hypothesis. For example, apartment vacancies might be expected to fall below normal during a housing shortage. (However, it might be noted that rent controls applied only in Phases I and II of the recent four-phase program.)

In the manufacturing sector, indexes are available for unfilled order backlogs, and for the inventory-to-sales ratios at the two-digit SIC level. The inventory-to-sales ratio, it might be noted, can serve as a proxy for delivery reliability, since firms are in a better position to meet peaks in orders when they have large inventories.^{15/}

Transactions Distortions

In the product market, there are no convenient statistical series that would permit an evaluation of whether controls influenced the methods of transaction. There are, of course, reports and rumors of tie-in sales (no gas without a car wash) and falsified invoices. Some data are available for the labor market concerning the incidence of particular types of pay plans and fringe benefit programs. However, any attempt to assess the impact of controls must be put together from a variety of information sources, not all of them quantifiable. In particular, it is useful to explore the types of plans actually in use to see

what can be inferred from their structure about their distortion susceptibility.

Industrial Relations Distortions

A number of data series can be used to monitor the impact of the industrial relations system of controls. The Bureau of Labor Statistics maintains monthly data on the incidence of, and time lost because of, labor disputes. An annual tabulation is available on the major issues in strikes.^{16/} The National Labor Relations Board provides monthly data on the outcome of union representation elections. It might be hypothesized that controls discourage unionization, because workers may feel that the gains from selecting a union will be slight in the face of a lid on wages. Alternatively, if unions appear to be obtaining larger increases from the controls authority, the propensity to unionize might be heightened. In either case, worker attitudes toward unions should be reflected by the success rate unions experience in representation elections.^{17/}

Since a major feature of American industrial relations is the development of fixed-term contracts of multi-year duration, it is important to look for changes in this practice. A multi-year contract provides a guarantee of a period of labor peace in exchange for a schedule of wage and other benefit improvements. If controls create uncertainty and contracts are shortened as a result, there will be an increase in the number of contracts expiring each year. This could tend to push up the number of strikes. The Bureau of Labor Statistics tabulates data on duration of major labor agreements (those affecting 1,000 or more workers). In addition, the Bureau of National Affairs, a private research service, provides a survey of contract durations covering both large and small agreements.^{18/}

Isolating the Effect of Controls

Most studies of economic policy face the problem

of distinguishing between the effect of the policy and the effect of other factors. Causal relations can never be proved absolutely, particularly when other factors can be reasonably adduced as explanations. As it happens, the period of Phases I through IV was generally characterized by economic expansion until late in Phase IV. During business cycle expansions, a variety of adjustment problems occur, some of which are similar to the effects often attributed to controls. In particular, as the economy expands, supplies tend to tighten of both labor and materials. Vacancy rates rise, quits go up, unfilled order backlogs lengthen, inventories tend to be drawn down. All these developments might be taken as symptoms of shortages.

For data series that are available for long periods of time, it is possible to estimate normal cyclical patterns based on historical experience. For example, through regression analysis, an estimate can be made of the effects of the business cycle on a particular variable. The variable can be regressed against one or more cyclical measures, easily developed from such standard indexes as the GNP or industrial production. Performance of the variable apart from the cyclical factor can then be assessed.^{19/}

Even with a cyclical standardization, it is possible that other factors developed during the controls period which represent the true causal influence. Thus, it is necessary to consider any such special factors which may have occurred. The question of causality becomes even more difficult when the variable under consideration is not available for a long enough period of time to permit cyclical standardization. As already noted, for example, the BLS series on vacancies appeared only from 1969 to 1973. This was hardly enough time to determine its cyclical performance characteristics. Obviously, in such cases the best that can be done is to examine the series in the context of other related measures. Hard conclusions cannot be drawn.

The Value of Identifying Distortions

Identification of situations where distortions have been created by controls--or which are particularly prone to distortion--can have important policy implications. Although precise cost-benefit analyses are not feasible, it is possible to weight the importance of a particular sector to the controls effort against the chance that distortions will arise. Sectors which are distortion prone, and which contribute little to the controls program, are obvious candidates for some sort of exemption or special treatment. The sector could be removed entirely from coverage, or it could be placed under less stringent rules and reporting requirements. For example, during the Economic Stabilization Program there was pressure to exempt smaller firms and employee units on the grounds that they contributed little to inflation.^{20/} There are also reasons to expect that smaller competitive units might be more prone to distortion--to be discussed in the next chapter. Thus, exemption of smaller units might be considered a rational policy decision, although the question of where the line should be drawn is not easily determined.

Of course, the decision of which sectors to include or exclude from a controls program is not likely to be divorced from considerations of appearances. Some sectors may be left under controls because the authorities do not want to appear to be neglecting prices in a sector much in the public eye. The special attention given the health care industry in Phase III and IV seems to fall into this category. Concern over the costs of medical services is widespread because of the heavy expenses that can be incurred in the event of major illness. But health did not appear to be a high-pressure area during the Economic Stabilization Program.

Although the intangible influence of appearances and public relations affect actual decisions of coverage, it is still useful to explore the basic

economic issues as thoroughly as the evidence permits. Policy makers have to make their own judgments concerning the relative weighting of the factors involved. But they are better off starting with a knowledge of which sectors are likely to produce distortions under controls. Even from the point of view of public appearance, distortions are unlikely to enhance the image of either the controls program or those who operate it.

SHORTAGES IN THE LABOR AND PRODUCT MARKETS

The concept of "shortage" is often assumed to imply that there is not enough to "go around." Some buyers arrive at the market place and discover that the product they are seeking is not available, even though they are willing to pay the official price. This simplified view can be seen using the diagram on Figure 1, which shows the classic demand and supply analysis. On Figure 1--which can be either a product market or labor market--the demand curve D intersects supply curve S at price (wage) P_1 . P_1 is thus the "market price" since at P_1 the quantity (employment) demanded (Q_1) is equal to the quantity (employment) offered for sale. In the economist's language, the market "clears" at P_1 .

Suppose a controls program sets an official price (wage) ceiling at P_2 . P_2 does not permit the market to clear because the quantity (employment) demanded, OQ_3 , is greater than the quantity (employment) supplied, OQ_2 . There is a shortage or shortfall in the marketplace of O_2Q_3 . Some buyers (employers) go home without being able to make a transaction, or at least with less of the product (amount of labor) than they would have wished to purchase at P_2 . If, however, the price (wage) ceiling had been set at P_3 , there would have been no shortage. At P_3 , there would have been an excess of supply, and the actual price would have remained at the market clearing level, P_1 . The model of Figure 1 indicates that whenever a price (wage) is set below its equilibrium level, somebody leaves the market empty-handed.

In fact, both labor and product markets have quasi-automatic ways of allocation which operate even when the price mechanism is not free to make the adjustment. Basically, these mechanisms involve inflicting costs on the buyer, apart from the actual price, which discourage his consumption. In the sections that follow, these

alternative means of adjustment are analyzed, and limited empirical data are presented. A statistical review of evidence of shortages during the Phase I-IV period is presented in the next chapter.

I. The Labor Market

A Model of the Wage-Turnover Trade-off

During the 1960s, a considerable literature developed which attempted to explain differences in labor turnover rates between industries, or to explain the cyclical movements in turnover.^{2/} Turnover is costly to employers for two basic reasons. First, finding and processing replacements involves expense. Second, training must be provided to new employees. In theory, the employee pays for general (marketable) training he receives through a lower than marginal product wage during the training period. But he does not pay for specific (nonmarketable) training which is useful only at his employer's establishment. Since the provision of specific training is costly, employers will find it worthwhile to take some steps to reduce this expense by reducing turnover.

Apart from the turnover question, simple analyses of the type represented by Figure 1 fail to take explicit account of the personal differences between employees, which may be considerable. Some are lazy; others are industrious. Some are reliable; others are dishonest. Some are fearful; others take risks. The importance of these characteristics will vary from job to job. But since they all have a bearing on the productivity of an employee, any model which assumes a homogenous grade of labor ignores an important aspect of the labor market.

An alternative presentation--from the point of view of a firm producing some predetermined output--is shown in Figures 2-6. Figure 2 considers the payroll or wage cost C_w resulting from alternative employer wage policies. The wage rate variable w can be assumed to include the value of fringe benefits. It can be viewed either as

an absolute wage cost variable, measured in dollars, or as an index of the firm's wage policy. As an index, w represents the firm's decision concerning whether it will pay at, above, or below the average wage in the market. Thus, when $w = 100$ percent, this can be interpreted as an employer decision to pay the average going wage for the particular type of labor in question. A value of $w = 90$ percent implies a firm's policy to pay 10 percent below the market average; a value of 115 percent implies a decision to pay 15 percent above the average.

Suppose a firm always hired the same quality of worker--where quality is measured by a worker's efficiency units in production. In that case, C_w would simply be proportionate to the firm's wage policy variable. If the firm stepped up wages by 5 percent, it would raise C_w by 5 percent. The relation between C_w and w could be represented by rays through the origin such as R_0 , R_1 , R_2 , or R_3 shown in Figure 2. Higher rays such as R_0 correspond to low-quality workers who contain fewer efficiency units of labor. The firm would have to hire more low-quality workers at any given w to produce the same output that would be produced by fewer high-quality workers. Thus, at a given wage, low-quality workers are more expensive per unit of output than high-quality workers.

In fact, as firms raise their wage policy variable w , they attract a better quality of potential recruits, and thus can upgrade their labor force. This means that as the firm shown in Figure 2 raises its w , it moves to successively higher quality rays, i.e., from R_0 to R_1 to R_2 to R_3 . Thus, its wage-cost relation will not rise as steeply as any of the rays, until the firm obtains the highest quality of workers only as represented by ray R_3 . The wage-cost relation will presumably be U-shaped. Wage costs per unit of output may actually drop if the firm moves from a very low quality of labor to a higher quality, despite the requisite increase in w . This effect, however, can be expected to exhibit diminishing returns. As w is successively raised, wage costs begin to rise. But they rise less than proportionately to w ,

so long as successively higher quality workers can be attracted to the firm. Once the highest available quality has been reached, the firm's wage costs rise proportionately with w .^{3/} The wage cost function appears in Figure 2 as the U-shaped curve abcde.

Figure 2 indicates that at point c, the firm follows a policy of paying a wage equal to the market average ($w = 100$). The policy attracts a quality of worker corresponding to ray R₂. It should be noted that the market average need not occur at the lowest point on the cost curve abcde. The firm may choose a policy with w less than or greater than 100. However, it will generally pick a policy where w is greater than the minimum point on the C_w curve. This rightward tendency occurs due to the addition of turnover cost to the analysis.

Whatever their quality, workers remaining with the firm find it more attractive at higher wages. A higher wage policy will tend to provide a lower rate of absences from employment than a lower wage policy. Absences from work stem from two causes: quits by workers who do not intend to return to the firm, and temporary absences by workers who do intend to return. Both quits and absenteeism can be expected to be associated, i.e., low-wage firms tend to experience both phenomena. Some of these latter absences will be unavoidable, such as those due to illness. Others will be voluntary, and will reflect a preference to do something else that particular day. The functional relationship between absence rates A, expressed in absolute numbers of absences, and firm wage policy is shown on Figure 3. The curve has a downward slope, indicating that higher wages lead to lower absence rates, and a convex shape, indicating that there are diminishing returns when a firm tries to lower absences through wage policy.^{4/} Finally, absences are assumed to fall to an irreducible minimum (Q_{a1}) at a high wage policy, represented by $w = w_0$.

In principle, absences from any cause (quits or temporary absences) have an effect on new hires, H.

If 5 percent of the workforce is chronically absent, the firm will have to have an extra 5 percent of the workers it actually needs on hand to act as replacements. Whatever its need for new hires to keep its workforce at a given level, the firm will have to have an extra 5 percent of new hires to keep its upward-adjusted employment level. In addition, some portion of A will be due to actual quits, which require replacements.

To maintain the workforce, the firm will have to maintain a hiring rate equal to its quit rate. As w is decreased, the firm's quit rate will rise. In addition, its temporary absence rate will rise, necessitating a slightly larger employment total and therefore a slightly larger hiring rate. These two effects give the H curve, in Figure 4, an upward slope with respect to A. They also imply that the relationship between H and A will be slightly more than proportionate, because of the effect of temporary absences.^{5/}

Figure 5 shows the relationship between new hires and hiring costs per unit of output C_h . It is assumed that there is an invariant average cost per hire so that marginal and average costs of hiring are equal. This is expressed in the linear relation between H and C_h in Figure 5. Increases in employee turnover lead to proportionate increases in hiring costs, which include such matters as payments to employment agencies, screening expenses, and training costs.^{6/}

The sections of the model developed in steps in Figures 2-5 can now be added together to show the relationship between labor costs and wage policies. In Figure 6, each of the relations is included in a quadrant. The relation between wage policies and wage costs C_w , originally developed in Figure 2, appears in Quadrant I of Figure 6. Similarly, Figure 3's relation between wage policies and absenteeism appears in Quadrant II. Quadrant III is the same function previously shown in Figure 4. And Quadrant IV contains the relation originally developed in Figure 5.

The firm's total costs at different wage policies is the sum of the direct relation between C_w and w , and the indirect effect of w on C_h . Figure 6 derives the indirect effect by considering a series of alternative wage policies varying from a high-wage policy at w_0 to a low-wage policy at w_4 . Vertical lines (L_0, L_1, L_2, L_3, L_4) have been drawn in Quadrants I and II representing these different policies. The extension of the lines into Quadrant II permits the determination of the rates of absenteeism associated with each policy. For example, wage policy w_2 brings about a direct wage cost to the firm of c_2 . But it is also associated with an absenteeism rate of a_2 .

In Quadrant III, the absenteeism rates associated with the different wage policies are shown to be related to different hiring rates. Thus, absenteeism rate a_2 (the result of wage policy w_2) causes a hiring rate of h_2 . Quadrant IV connects the hiring rates to hiring costs per unit of output. It can be seen that a hiring rate of h_2 (the indirect result of wage policy w_2) leads to a level of h in hiring costs. The intersections of the horizontal lines through the varying hiring cost rates (c_0, c_1, c_2, c_3, c_4) with their respective vertical wage policy lines tract out the hiring cost function $C_h = C'_h(w)$ with points g, k, f, m, y . If the C_h relation is added vertically to the C_w relation, the total labor cost per unit of output relationship $C = C(w)$ can be derived (points x, w, v, u, t). Since a relation with a negative slope ($C_h = C'_h(w)$) is being added to a U-shaped relation ($C_w = C_w(w)$, points m, p, q, s, z), the final result is also a U-shaped curve.⁷ However, the minimum point of the C_w curve will be somewhat to the left of the minimum of the C curve.

Figure 6 shows that the firm can minimize its labor costs per unit of output with a wage policy of w_2 . Lower wage policies such as w_3 or w_4 save money on direct labor expenses. But the resulting decline in labor quality and the heightened level of labor turnover more than offset the direct cost reduction. Similarly, at

higher wage policies such as w_1 or w_0 , the resulting improvement in labor quality and the reduction in turnover is more than offset by the increase in direct labor costs.

The exact location of the various functions on the diagrams that have been derived vary with the level of technology and capital intensity of the firm. For example, if the firm should switch to a more capital-intensive technique, a different occupational group of workers would be required. These workers might well have different responses to wage policy. Their hiring costs also would probably be different, and the average market wage around which the firm must establish its policy would be different. Likewise, a new type of technology would also require different workers with different functional relationships. Thus, Quadrant I of Figure 6 can be considered to show the position of the firm only in the short run; that is, the firm would choose to operate with wage policy w_2 since this minimizes labor costs.⁸

Of course, the firm might not be free to choose its wage policy. Suppose that union bargaining forced a higher wage policy such as w_1 . Labor costs would be raised for the firm. However, there would be some offsetting of direct labor expenses by the indirect effect on labor force quality turnover. The imposition of a higher wage policy will have increased costs, but less than proportionately to the percentage increase in wages.

The implications of the analysis for wage controls can be seen by considering two types of firms: one with a wage policy being held above the level it would prefer by collective bargaining, the other following its own preferences. The latter firm is either a nonunion firm with no fear of being organized, or a unionized firm with a union too weak to influence management policy.

In the case of a unionized firm with a union effect on wage policy, wage controls could lower labor costs if they prevented the union from exercising its full power.

Figure 7 reproduces the total cost relation $C = C(w)$ of Quadrant I, Figure 6. Suppose the union impact is to keep wage policy at w_1 . Labor costs per unit of output will be C_u . If wage controls forced a lower wage policy, cost reductions to the firm could result so long as the wage policy was not forced below w_1 . Thus, w_3 and w_2 would both represent improvements from management's viewpoint (with w_2 the best that the firm could hope for). But, w_4 would not be beneficial to the firm since reduced labor force quality and high turnover would more than offset the lower wages represented by that policy. Wage policies below w_1 would be resisted by both the union and management. Wage policies above w_1 but below w_1 would be resisted only by the union.

The nonunion firm with no fear of unionization would operate at w_2 in the absence of controls. Any lowering of its wage policy would increase its costs. Thus, management would resist *any* wage ceiling below w_2 . As might be expected, the effect of controls on a competitive situation is more severe than for a noncompetitive situation. Wage controls might increase "economic efficiency" in the latter case, but not in the former.^{9/}

Whether the situation is or is not competitive, Figure 6 indicates that controls will have a tendency to increase labor turnover. A leftward movement on the w axis provokes a leftward movement on the H axis. Thus, during periods of controls, an "abnormal" increase in quit rates may be expected. Such an increase could be defined as a "shortage." But if controls focus mainly on the union sector, and if they are not "too" rigid, the increase in turnover will represent increased economic efficiency. Thus, in an empirical investigation, it may be desirable to consider only "large" deviations from normal in quit rates as indications of true shortages. Small deviations in the union sector may simply reflect a total or partial removal of bargaining power; in effect, the removal of a previously-existing "surplus."

Some qualifications must be added to the conclusions drawn from the preceding analysis. If controls were enforced uniformly across the labor market, their impact on quits

Figure 1

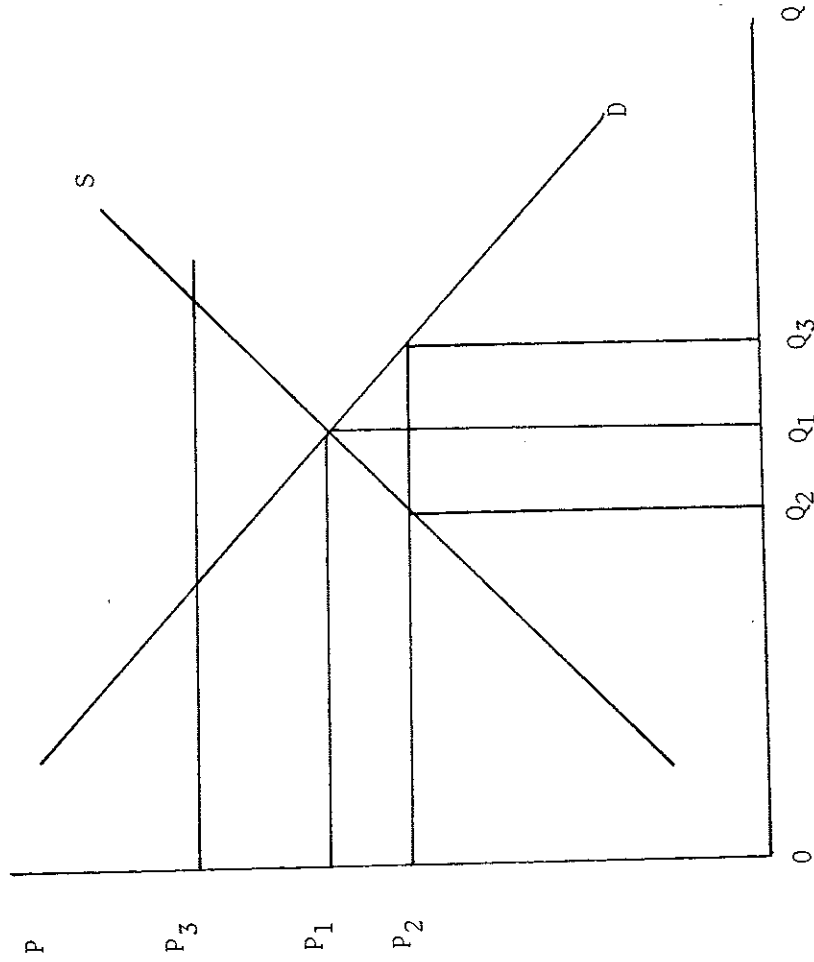
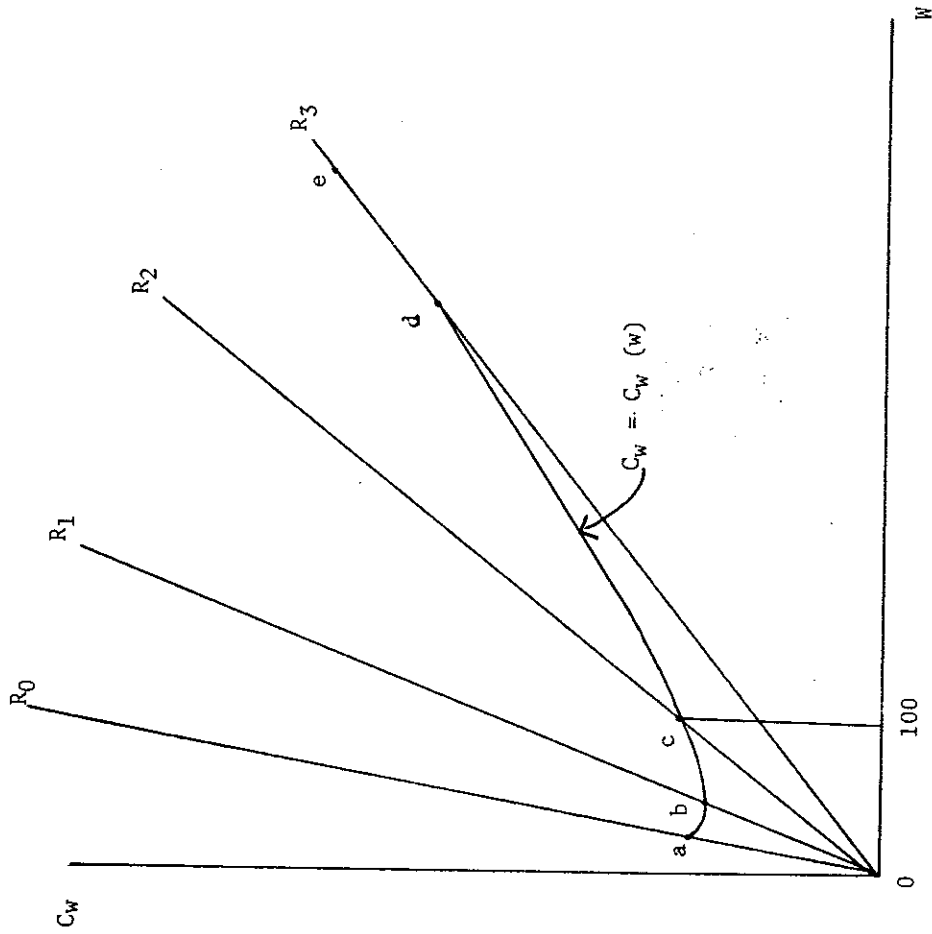


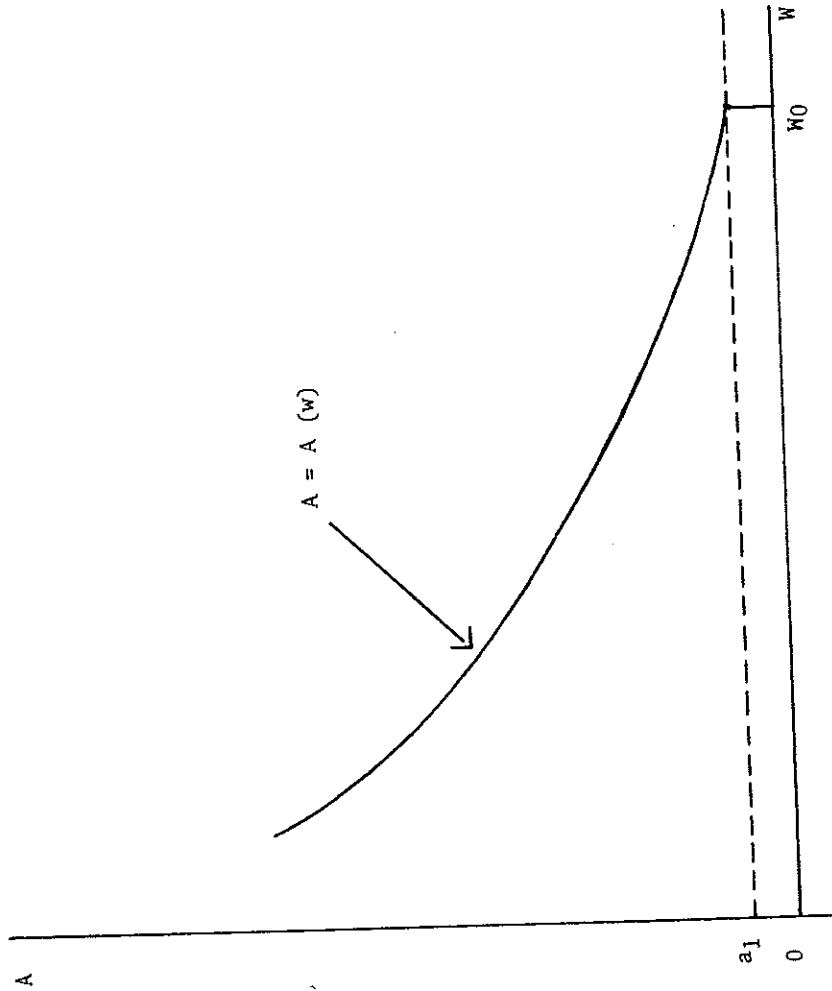
Figure 2



Assumptions: $\frac{dC_w}{dw} > 0$ (relevant range)

$$\frac{d^2C_w}{dw^2} > 0$$

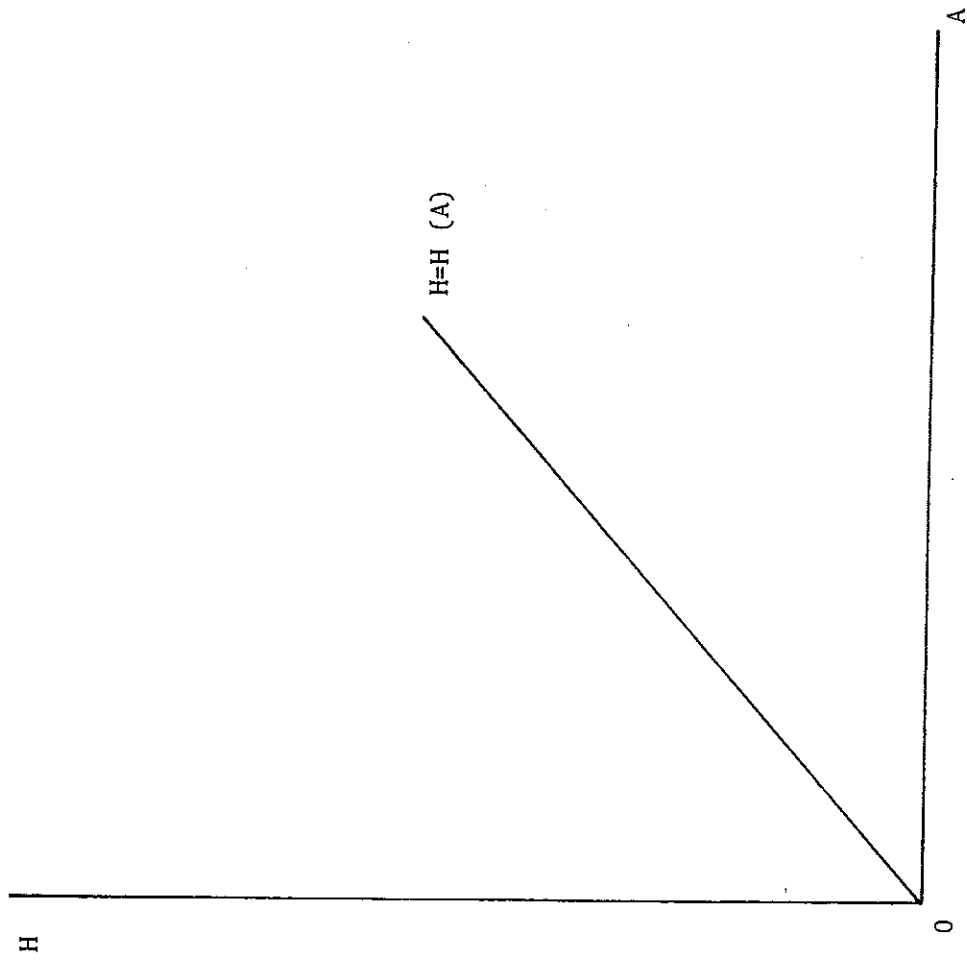
Figure 3



Assumptions: $\frac{dA}{dw} < 0$ for $w < w_0$

$$\frac{d^2A}{dw^2} > 0 \text{ for } w < w_0$$

Figure 4

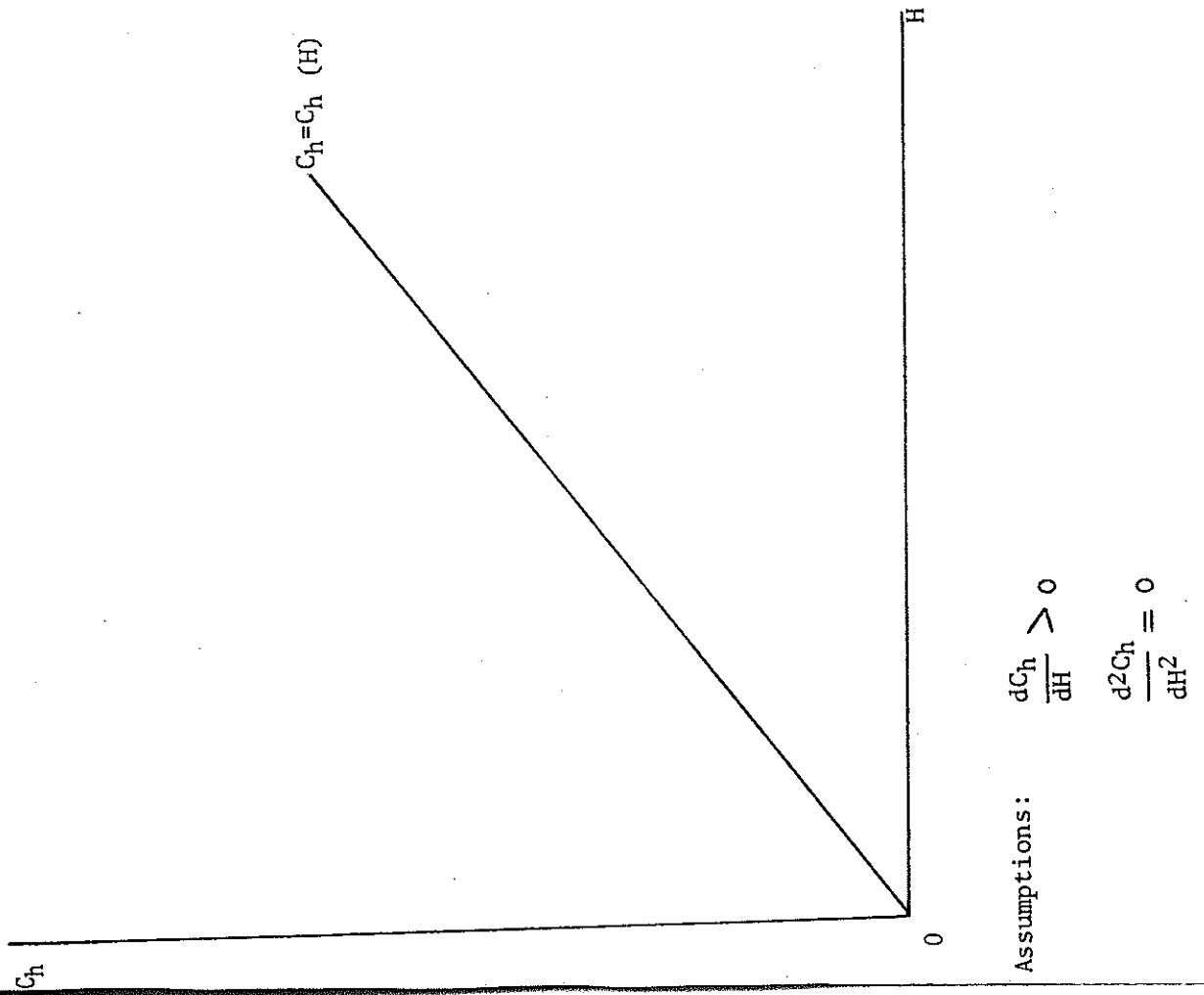


Assumptions:

$$\frac{dH}{dA} > 0$$

$$\frac{d^2H}{dA^2} > 0$$

Figure 5



Assumptions:

$$\frac{dC_h}{dH} > 0$$

$$\frac{d^2C_h}{dH^2} = 0$$

Figure 7

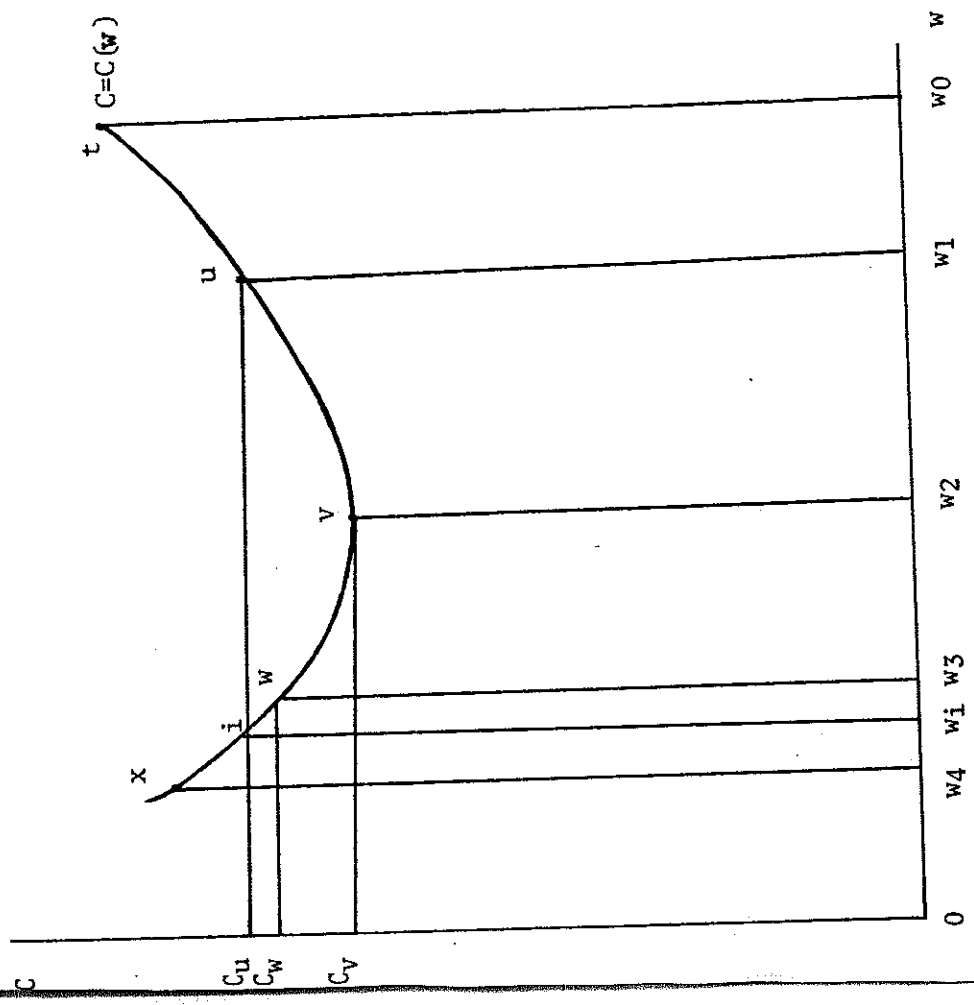
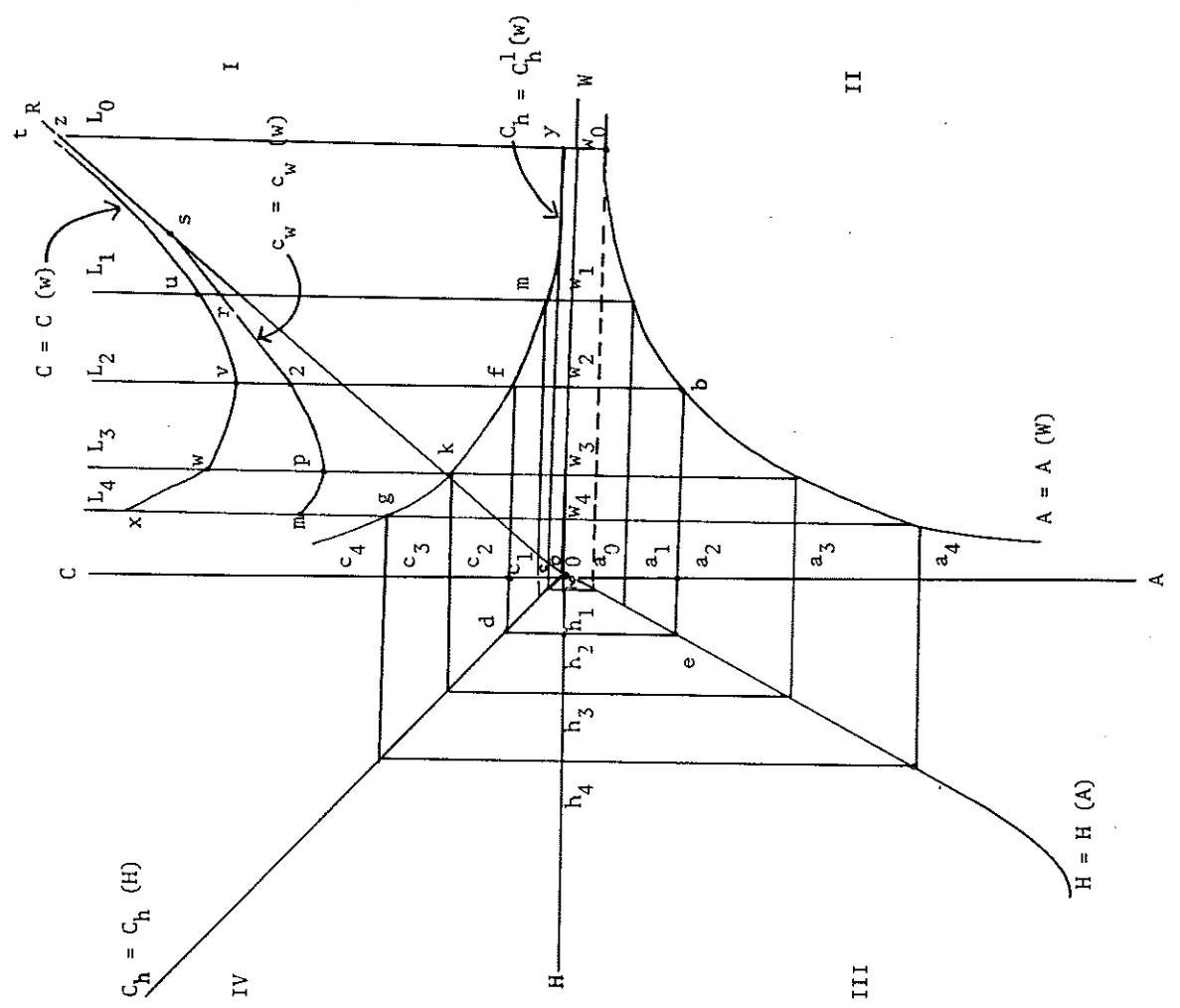


Figure 6



would be less than if they were enforced more strenuously on particular firms or sectors. That is, the analysis of Figures 2-7 assumes that firm wage policy is defined in relation to some market average wage. If controls pull down the entire market average, then no individual employer's relative position would change, and quits would be unaffected. Indeed, this really defines the "ideal" controls program. Such a program would restrain only the nominal wage and price levels, leaving real wages, relative wages, and relative prices unchanged.

In reality, however, controls are unlikely to be enforced with such perfection. Some employers will feel the brunt of controls more than others, because of accidents of timing and rigidities in regulations. Others will find that their normal, self-interested wage policies are within the guidelines set by controls, and will be unaffected. The economy as a whole will in theory exhibit abnormally high quit behavior to the extent that a selective Program in fact produced such an effect on quits is explored in Chapter 4.

Empirical Evidence

There are scattered empirical data relevant to the wage-turnover tradeoff model presented above. First, it is known that there is, in fact, a scatter of wage rates in a labor market for a particular occupation. That is, there are factors which make employers follow different wage policies. For example, Table 1 presents evidence from the New York City labor market concerning three occupations: watchmen, laborers (material handling), and drivers of lightweight trucks, all in the manufacturing sector. Each of the three occupations shows a considerable spread of wage rates. The existence of these spreads is not new; John Dunlop noted them in his classic exposition of wage contours.^{10/}

Table 1
PERCENT DISTRIBUTION OF MALE WORKERS BY AVERAGE
STRAIGHT-TIME HOURLY EARNINGS, NEW YORK, N.Y.
APRIL 1973
(SELECTED OCCUPATIONS IN MANUFACTURING)

Occupation	EARNINGS (\$)						Total
	Less than 2.00	2.00-2.99	3.00-3.99	4.00-4.99	5.00-5.99	6.00 and above	
Watchmen	8.3	16.1	52.3	6.0	17.4	0	100%
Laborers, Material Handling	1.4	18.7	28.1	15.8	28.3	7.7	100%
Truckdrivers, light (under 1.5 tons)	0	13.6	44.4	18.6	5.1	18.3	100%

Note: Details need not sum to totals due to rounding.

Source: U.S. Bureau of Labor Statistics, Area Wage Survey, New York, New York, Metropolitan Area, April 1973, Bulletin 1775-94 (Washington: Government Printing Office, 1973), pp. 28-29.

Unfortunately, the Bureau of Labor Statistics' wage surveys of the type represented in Table 1 do not provide any information concerning the particular firms which pay selected wage rates. There is no information about their relative turnover rates, or the quality of their workforces. It is known that higher paying industries tend to have lower turnover rates. This tendency is illustrated in Table 2 with data for 1970, the last full year before wage/price controls. Although the correlation is not exact, Table 2 does show that quit rates in higher-paying industries tend to be low, as do vacancy rates.^{11/}

Table 2

MANUFACTURING EARNINGS, QUIT RATES, AND VACANCY ROLLES, 1970

	Average hourly earnings excluding overtime	Quit Rate	Vacancy Rate
Petroleum + Coal Products	\$4.09	1.1%	*
Transportation Equipment	3.91	1.3	.5
Primary Metals	3.79	1.4	.5
Printing + Publishing	3.78	2.0	.6
Machinery Except Electric	3.63	1.3	.7
Chemicals	3.56	1.2	.7
Ordnance	3.52	1.1	*
Fabricated Metal Products	3.39	2.1	*
Paper + Allied Products	3.26	2.0	*
Instruments	3.25	1.5	1.0
Stone, Clay, Glass	3.23	2.3	*
Electrical Equipment	3.19	1.7	.7
Rubber + Plastics Products	3.07	2.6	*
Food + Kindred Products	3.01	3.2	*
Tobacco Products	2.85	2.0	*
Lumber + Wood Products	2.84	3.3	*
Miscellaneous Manufactures	2.75	2.9	*
Leather + Leather Products	2.43	3.5	*
Textile Mill Products	2.35	3.5	.9
Apparel + Other Textile Products	2.35	2.9	1.4

*Not published separately.

Source: Bureau of Labor Statistics, Handbook of Labor Statistics 1973 (Washington: Government Printing Office, 1973), pp. 234-235, 122, 127, 130.

Interindustry data, however, are clouded by a variety of factors which vary with average earnings. Industry concentration, size of plant or firm, unionization, and average skill level, are all correlated with average hourly earnings.

A number of studies have stressed one or another of these factors, based on statistical evidence. However, it appears that all these factors are interwoven.^{12/} Unionization tends to raise wages and leads to an upgrading of the labor force. Skilled workers are more stable and easier to unionize. Large firms use capital-intensive techniques which require skilled workers. Concentrated industries provide greater "ability to pay" which may foster unionization. Larger plants have more bureaucratic management and therefore require stable, self-managing workers.^{13/} To obtain such workers, employers will pay a premium so that higher-quality workers will be attracted. Employers using skilled workers must expect significant expenses for both specific and general training. Higher-wage employers tend to have characteristics which put them into "primary" labor market where a premium is paid to workers with reliable work habits. Lower-wage employers fall into the less stable "secondary" market.^{14/} In turn, the wage policies of these firms tend to reinforce the statistical division between industries with high pay and those with low pay.

Unfortunately, there are no regular surveys of turnover costs or training costs. Table 3 shows a sample of estimates of such costs for the mid-1960s, while Table 4 provides a breakdown of turnover costs from 280 Los Angeles firms. As might be expected, such costs tend to be higher for more skilled occupations. Surveys of executive training costs suggest that such expenses can run substantially higher than those reported in Tables 3 and 4.^{15/} Employers seem to feel they have a greater investment in white-collar employees than in production workers. They are more willing to pay for such items as employment agency fees, moving expenses, and initial living expenses for the former group.^{16/}

Although it is difficult to document with precision, it may be reasonably supposed that the U.S. labor market has steadily taken on more and more primary characteristics. For example, a secular downward drift

Table 3

ESTIMATES OF HIRING AND TRAINING COSTS

	Average Hiring Costs	Average Training Costs	Average Hiring and Training Costs
All Occupations	(1) \$ 65.00 ^a	\$ 74.00 ^b	n.a.
	(1) 118.00 ^c	71.00 ^d	n.a.
	(1) 145.00 ^d	79.00 ^d	n.a.
	(2) n.a.	369.00 ^e	n.a.
	(3) n.a.	n.a.	\$200.00 ^g
	(4) 22.66	n.a.	208.20 ^f
	(5) 43.27	n.a.	245.69 ^h
Professional, Managerial & technical	(1) 168.00 ^a	119.00 ^b	n.a.
	(1) 837.00 ^c	268.00 ^d	n.a.
	(1) 907.00 ^c	116.00 ^d	n.a.
	(6) 990.00 ^g	n.a.	n.a.
	(6) 149.00 ^g	n.a.	n.a.
	(6) 117.00 ^g	n.a.	n.a.
	(6) 172.00 ^g	n.a.	n.a.
	(6) 145.00 ^g	n.a.	n.a.
	(1) 36.00 ^a	66.00 ^b	n.a.
	(1) 55.00 ^c	59.00 ^d	n.a.
	(1) 49.00 ^c	43.00 ^d	n.a.

(1) John G. Meyers, "Hiring Costs: Some Survey Findings" The Conference Board Record, January 1967, p. 34. Data are for June 1965, and February 1966.

(2) Edwin F. Estle, "The Extent of Private Industrial Training in New England" New England Business Review, February 1964.

(3) Charles C. Holt, et. al., Planning Production, Inventories, and Work Force (1960), cited in Meyers, "Hiring Costs," as adjusted to 1965 prices.

(4) Walter Y. Oi, "Labor as a Quasi-Fixed Factor," Journal of Political Economy, December 1962, cited in Meyers "Hiring Costs," as adjusted to 1965 prices.

(5) Merchants and Manufacturers Association (of Los Angeles), Labor Turnover: Causes, Costs, and Methods of Control (1959) cited in Meyers, "Hiring Costs," adjusted to 1965 prices.

(6) Bureau of National Affairs, Survey No. 86 "Recruiting Practices," Personnel Policies Forum, March 1969.

^a Average of 16 employers.

^e Average of 210 employers.

^b Average of 15 employers.

^f Single employer data.

^c Average of 14 employers.

^g Sample size unknown.

^d Average of 13 employers.

^h Average of 24 employers

Source: Reproduced from Peter B. Doeninger and Michael J. Piore, Internal Labor Markets and Manpower Analysis (Lexington, Mass.: Heath Lexington Books, 1971), p. 116.

Table 4

REPRESENTATIVE AVERAGE COSTS

M & M SURVEY - 1970¹

	Production & Maintenance	Office & Technical	Salaried Exempt
I. SEPARATION COSTS			
A. Lost production between decision to terminate & effective date	\$ 70.00	\$ 65.00	\$212.00
B. Exit interview costs	11.00	11.00	11.00
C. Paperwork processing costs	14.00	14.00	15.00
D. Severance Pay (if applicable)	118.00	197.00	397.00
Sub-Total	\$213.00	\$287.00	\$635.00
II. REPLACEMENT COSTS			
A. Advertising (all media)	\$126.00	\$130.00	\$273.00
B. Recruitment (travel expenses--recruiters and/or applicants)	81.00	233.00	525.00
C. Administrative Costs (Interviewing--reference checks--paperwork--testing)	46.00	43.00	95.00
D. Medical examination	25.00	14.00	11.00
E. Induction procedures	22.00	21.00	75.00
F. Break-in costs (sub-standard production of new employee)	340.00	247.00	700.00
G. Breaking-in costs (time spent by supervisors or fellow workers performing on-the-job training)	119.00	164.00	353.00
Sub-Total	\$759.00	\$852.00	\$2,032.00
Total	\$1,072.00	\$1,139.00	\$2,667.00

¹ Survey taken by mail questionnaire to 2,000 firms. 336 responded and 280 produced usable data.

Source: Reproduced from Merchants and Manufacturers Association, Labor Turnover Handbook (Los Angeles: M + M, 1970), Appendix, p. 2.

in turnover has long been noted.^{17/} Eye-witness accounts of labor conditions at the turn of the century suggest a much more fluid labor market than exists today.^{18/} On the other hand, there tends to be an historical "stickiness" of primary characteristics as measured by the wage structure. The higher paying industries of today tend to be the higher paying industries of the past.^{19/}

In any case, the notion of a trade-off between alternative wage policies and resulting turnover is an important one. Evaluation of alleged shortages in the labor market cannot be made without reference to such an analytical framework. In Section II, it is shown that a related model can be developed for the product market.

II. The Product Market

A Model of the Price-Reliability Trade-off

In highly competitive product markets, the basic supply and demand model represented in Figure 1 is probably sufficient to analyze the effects of controls. Delivery reliability is not a concept which can be easily applied to a world of perfect competition in which "spot" sales are delivered immediately to the customer. However, it is known that in less-than-perfect markets, waiting times and unfilled orders often characterize transactions.^{20/} The reliability of delivery which a firm provides represents a "service" to its customers, and a form of "non-price" competition.

In the labor market, taking account of the turnover effect seemed to moderate the impact of controls on costs. A wage ceiling could lessen the cost impact of an above-market wage. But the cost reduction would be at least partially offset by increased turnover costs and a reduction in labor force quality. In the product market, delivery reliability has a similar effect. If it is considered, the impact of a price ceiling on customer costs is lessened by an offsetting of deterioration of delivery reliability.

Figure 8 represents a monopoly firm as it appears in standard textbook expositions. No account of delivery reliability is taken. The firm maximizes its profits at price P_1 and output Q_1 , where marginal revenue (MR) = marginal cost (MC). An official price ceiling of $P_2 < P_1$ does not lead to a shortage. The demand curve (D) is transformed into a kinked function, abge, with segment ab representing the prohibition against charging more than P_2 . This modified demand function has its own marginal revenue function, abcd, with a discontinuity at bc created by the kink in demand. The firm's optimum price, given demand curve abge, is P_2 with corresponding output Q_2 . At this point, the MC function passes through the MR discontinuity. Consumer welfare is improved, no buyer goes home empty-handed, and there is no apparent distortion. The reader can easily determine that an official price as low as P_3 would not create excess demand, but a lower price--such as P_4 --produces a situation similar to that discussed for the competitive case.^{21/} In short, the simple textbook model lends some support to those who argue that there is a "range" in which controls can be effective, and that controls should be confined to noncompetitive situations.^{22/}

Buyers of labor (employers), as noted in Section I, can follow wage policies which ensure that labor is always on hand when they need it. Some employers find it worthwhile to pay the necessary premiums to obtain labor services reliably. The seller of labor (worker) does not have a "delivery reliability" policy toward his employer. He simply reacts to the wage policy. But in the product market, sellers can have a conscious policy on delivery reliability. To the extent they provide the service of reliability, they will be able to charge premiums for their merchandise, just as the reliable workforce commands a premium.

The advantages of reliability to customers are obvious. Customers do not have to deal with uncertain or sporadic arrivals of merchandise. They do not have to hold large inventories of their own to handle the gap between when they want something and when they receive it. But the

Figure 8

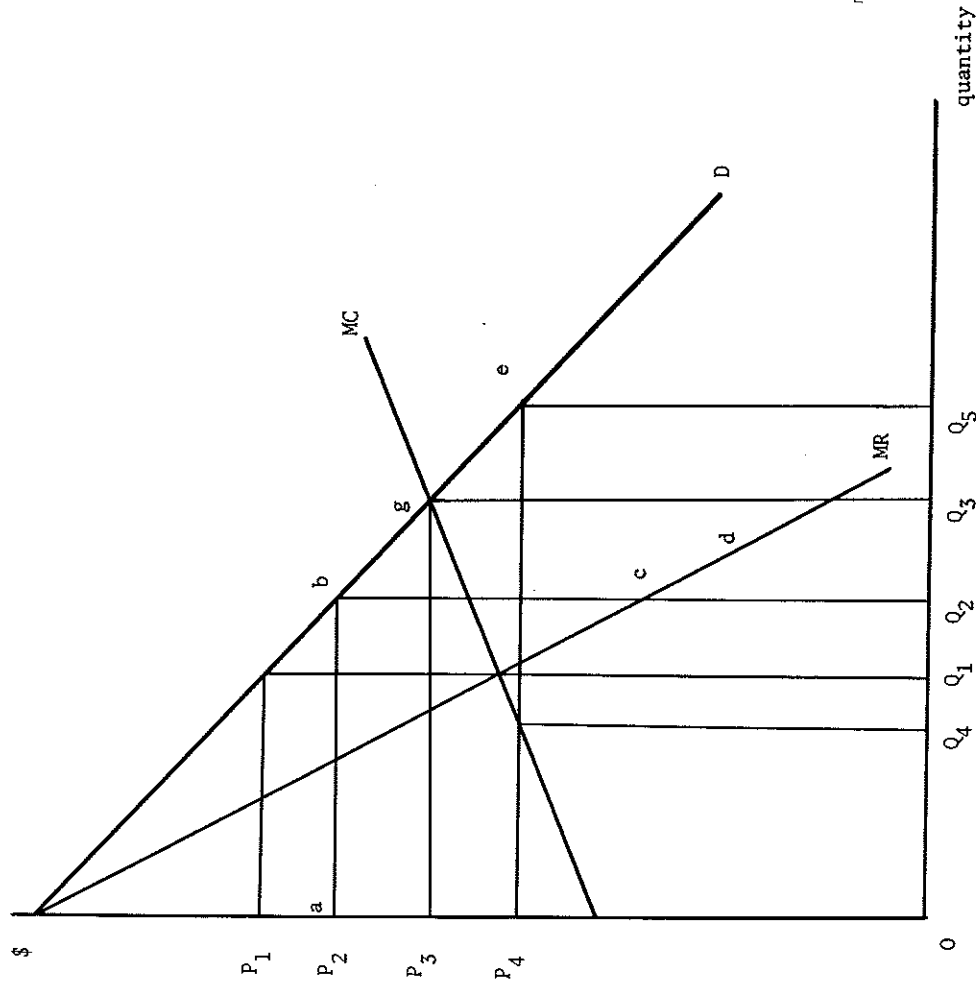
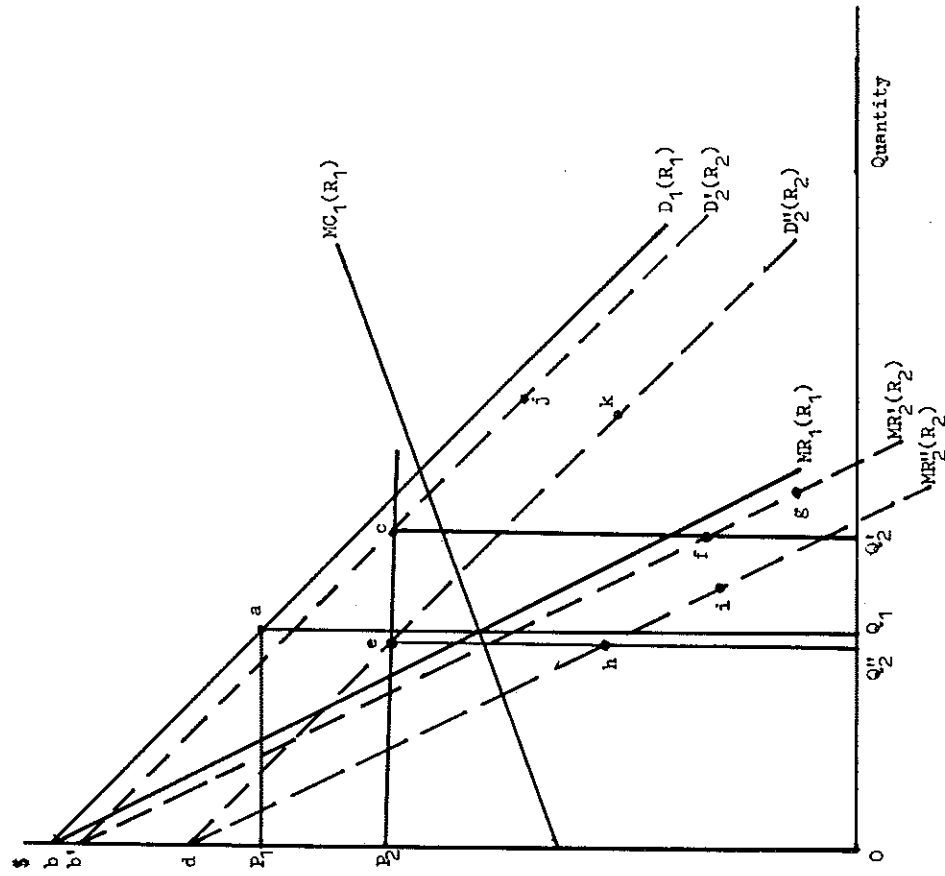


Figure 9



costs of following a high-reliability policy are also obvious. The seller must keep a large inventory of his own, with the resultant costs of warehouse space, insurance, loss from theft, etc. Thus, sellers must make a trade-off between the premiums that can be commanded for reliability and the resultant costs. Just as certain buyers of labor (employers) find reliability of labor especially worth having, so certain groups of customers will find reliability of product delivery attractive. The needs for reliability will vary from industry to industry in the product market, as they do in the labor market.^{23/}

Consider the noncompetitive firm shown in Figure 9. The firm faces a variable demand curve (D_1) which shifts upward and downward during a given "period." Hence, the line D_1 in Figure 9 must be understood as an expected value, as must its corresponding marginal revenue function MR_1 . On the other hand, the firm's marginal cost function MC_1 is known with certainty. If the firm wishes to charge a constant price throughout the period, and wishes to maximize expected profits, it would charge price P_1 and produce output Q_1 . At that price-output combination, expected marginal revenue=marginal cost.^{24/}

In Figure 9, the demand, marginal revenue and marginal cost relations are all shown as a function of R_1 , the inventory-to-output ratio which the firm finds optimal.^{25/} Demand is a function of the inventory-to-output ratio because the ratio is a proxy for the firm's delivery reliability. If the firm maintains a high ratio, it will be able to meet most fluctuations in demand, and will enjoy a reputation of high reliability. A high ratio would produce a reputation of high reliability. A low ratio would produce a reputation of unreliability. Since reliability is something which buyers value, demand is a positive function of the inventory-to-output ratio. Obviously, the marginal revenue relation is also a positive function of the ratio, since marginal revenue is simply derived from demand.

In equilibrium, the firm sets output = expected sales. By doing so, the inflow into inventory is equal to the

outflow from inventory, and the firm maintains its optimum R_1 . Marginal cost is a positive function of the inventory-to-output ratio since inventories involve various carrying costs. At a given ratio, each incremental unit of output requires a proportional increase in inventory holdings. Hence, higher values of the ratio imply higher incremental costs of output since higher incremental inventory costs are entailed.

If the firm of Figure 9 is subject to a price ceiling of P_2 --below the level it would normally charge--it may decide to shift some of its inventory costs to its customers by lowering its standard of delivery reliability.^{26/} The firm would switch to a policy of maintaining an inventory-to-output ratio $R_2 < R_1$. This change would shift the marginal cost relation downward by an amount reflecting the incremental inventory cost saving. It would also lower the demand curve (and corresponding marginal revenue curve) of the firm's customers. Two possibilities are shown in Figure 9. A mild reaction of customers--presumably reflecting a mild disutility resulting from the firm's decision--is represented by new demand curve D'_1 , which is only "slightly" below the old demand curve D_1 . The degree of disutility that customers would feel depends on the cost burden which is imposed on them by the degrading of delivery reliability.

The effective demand curve which faces the firm in the mild-reaction case is P_2c_j , with corresponding effective marginal revenue curve P_2c_{fg} . In this case, the "intersection" of marginal cost (not shown) and expected marginal revenue occurs at the discontinuity in the effective marginal revenue relation, i.e., in the range cf. Output rises from Q_1 to Q'_1 , and it appears that consumer welfare is improved from Figure 2. Consumer surplus triangle bP_2c is larger than the original triangle bP_1a .^{27/} The price reduction effect outweighs the cost to the buyer of decreased reliability of delivery.

In the strong-reaction case, however, the welfare of consumers appears to deteriorate under controls. The effective demand curve facing the firm drops to P_{2ek} , with corresponding effective marginal revenue relation P_{2ehi} . Marginal cost (not shown) and expected marginal revenue "intersect" in the discontinuity range eh . Output falls from Q_1 to Q_2 . The new consumer surplus triangle dP_{2e} is smaller than the original triangle bP_{1a} .

The two-dimensional diagrammatical analysis of Figure 9 is not a complete analytical solution. It does not indicate how the optimum inventory-to-output ratio is determined, either before or after controls are implemented. But the analysis is useful despite its partial nature. It indicates that although controls need not cause an absolute shortage (expected demand output), they *may* reduce welfare (the strong-reaction case) by decreasing delivery reliability. This conclusion stands in contrast to the earlier case of Figure 8, where it appeared that controls limited to the range where no shortage occurs definitely improve consumer welfare.

Most industries operate somewhere in the range lying between perfect competition and the monopolistic market pictured in Figure 9. Price theory generally becomes vague in these cases and indeterminate. The model described here is no exception. It is well known that real world firms often maintain order backlogs, inventories to meet fluctuations in sales, and prices which do not vary over given periods despite fluctuations in demand. The model of Figure 2 suggests that where such behavior occurs, the effect of controls should be to reduce inventories and delivery reliability below "normal" levels.

Of course, the same qualification must be made here that was noted after the exposition of the labor-market turnover model. An "ideal" set of controls restrains everything, wages and prices, uniformly. Relative wages and prices are therefore not affected, and in

principle distortions should not result. (Some purists would add that monetary policy would have to reinforce this effect, so that the real money supply would not be increased). But in actual fact, controls are likely to have differential effects on particular price and wage units. And it is really these differential effects that lead to distortions.

Empirical Evidence

As in the case of the labor market, empirical support for the model presented above is scattered. A specific test of the impact of the Economic Stabilization Program begun in 1971 will be presented in the next chapter. However, the literature concerning the way in which firms view the tradeoffs involved in inventory holding and delivery reliability is sparse. Data from the Commerce Department do indicate significant variations in inventory policies between industries. Table 5 shows that manufacturers, wholesalers, and retailers of durable goods systematically hold higher inventory-to-sales ratios than their counterparts in the nondurables sector.^{28/} Presumably, this behavior reflects different inventory costs and customer preferences.

Table 5

INVENTORY-TO-SALES RATIOS, 1970 AND 1960

	1970	1960
Manufacturing		
Durables industries	2.31	2.07
Nondurables industries	1.39	1.42
Merchant Wholesalers		
Durables establishments	2.16	2.02
Nondurables establishments	1.17	1.18
Retail Trade		
Durables stores	1.61	1.69
Nondurables stores	.92	.89

Source: Bureau of Economic Analysis, U.S. Department of Commerce, Business Statistics 1973 (Washington: Government Printing Office, 1973), p. 25.

$\frac{\partial I}{\partial R}$ is equal to Q, based on the definition $R = I/Q$. And, $\frac{\partial Q}{\partial R} > 0$, based on the demand relation.

It may be reasonably assumed that $\frac{\partial C}{\partial Q}$ is either a function of Q or a constant, since the expression involves only the costs of the actual production of the good, not the storage costs connected with the inventory. It is also reasonable to assume that $\frac{\partial C}{\partial I}$ is only a function of I, since the level of Q should not affect the incremental cost of storing a unit of inventory.

Application of partial differentiation to equation (c)

yields:

$$(e) \quad \frac{\partial \bar{P}}{\partial Q} = \frac{\partial^2 C}{\partial Q^2} + \left(\frac{\partial Q}{\partial R} \frac{\partial C}{\partial I} - \frac{\partial C}{\partial I} Q \frac{\partial^2 Q}{\partial R^2} \right) / \left(\frac{\partial Q}{\partial R} \right)^2$$

+ or - + + + - +

$$(f) \quad \frac{\partial \bar{P}}{\partial I} = \left(Q / \frac{\partial Q}{\partial R} \right) \frac{\partial^2 C}{\partial I^2}$$

+ + + or -

$$(g) \quad \frac{\partial \bar{P}}{\partial R} = - \left(\frac{\partial C}{\partial I} Q \right) \left(\frac{\partial Q}{\partial R} \right)^{-2} \left(\frac{\partial^2 Q}{\partial R^2} \right)$$

The assumed signs of the various components are listed below equations (e), (f), and (g). Note in particular that $\frac{\partial^2 Q}{\partial R^2} < 0$ simply implies diminishing utility to the buyer of delivery reliability.

It is clear that $d\bar{P}/dR$ (and therefore $dR/d\bar{P}$) will be positive if there are constant or rising marginal costs of output and inventory storage. Only strong marginal economies of scale to output and/or to inventory could make $d\bar{P}/dR$ negative. And a range of decreasing marginal (as opposed to average) costs is highly unlikely.

Appendix A

Relation Between Price Ceiling and the Inventory-to-Output Ratio

The expression for the firm's profits can be written:

$$(1) \quad Z = \bar{P}Q - C$$

where \bar{P} is the ceiling price and C is costs. Assuming operation in the range where a true shortage does not occur, the controlled firm will adjust Q and R to maximize profits. Given \bar{P} , once R is adjusted, Q is automatically determined. Hence, the maximization process can be considered in terms of R alone. Differentiation of Z with respect to R yields:

$$(b) \quad \frac{\partial Z}{\partial R} = \bar{P} \frac{\partial Q}{\partial R} - \left(\frac{\partial C}{\partial Q} \frac{\partial Q}{\partial R} + \frac{\partial C}{\partial I} \frac{\partial I}{\partial R} \right)$$

Setting the right-hand expression of equation (b) equal to zero, rearranging and simplifying terms yields:

$$(c) \quad \bar{P} = \frac{\partial C}{\partial Q} + \left(\frac{\partial C}{\partial I} Q \right) / \frac{\partial Q}{\partial R}$$

The sign of $d\bar{P}/dR$ will depend on the signs of the components of equation (d) below.

$$(d) \quad \frac{d\bar{P}}{dR} = \frac{\partial \bar{P}}{\partial Q} \frac{\partial Q}{\partial R} + \frac{\partial \bar{P}}{\partial I} \frac{\partial I}{\partial R} + \frac{\partial \bar{P}}{\partial R}$$

Two of the components $\frac{\partial Q}{\partial R}$ and $\frac{\partial I}{\partial R}$ are known to be positive.

CHAPTER 4

SOME EMPIRICAL FINDINGS

In the preceding chapter, a theoretical approach to the measurement of "shortages" in both labor and product markets was developed. In both cases, the welfare effect of such shortages was unclear. As noted in Chapter 2, it is theoretically possible to define a distortion as a deviation from some idealized situation such as perfect competition. But the real world is filled with pre-existing distortions and when controls are imposed, these might be compounded or alleviated relative to some ideal. Empirically, the best that can be hoped for is a technique that can pick up deviations from "normal."

Chapter 3 suggested that if wages were held below what would normally occur by controls, the result would be above-normal turnover and absenteeism. Absenteeism data are not readily available. However, indexes relating to turnover--quit rates and vacancy rates--can be obtained. Section I of this chapter examines these labor-market series during the Phase I-IV period. In the product market, Chapter 3 suggested that inventory behavior could be altered by (effective) price ceilings. Producer inventories were viewed as a "service" provided to customers since they permit the supplier to respond to erratic movements of demand. By bearing the costs of inventory holding, the producer spares his customers the need of holding their own costly inventories. Section II of this chapter examines inventory behavior under controls.

In the final section, the question of controls-induced surpluses of labor is developed. Although surpluses of labor--unemployment--are not normally associated with controls, disruptions in the product market can lead to short-run labor-market imbalances.

Since this problem arose in at least two instances during controls, it is worth examining.

I. Turnover Behavior in the Labor Market

Table 1 presents three data series closely related to the slackness or tension of the labor market. As can be seen from the table, the three measures--quit rates, vacancy rates, and volume of help-wanted advertising--all indicated a significant "tightening" of market conditions during Phase I-IV controls. For example, the manufacturing quit rate was 1.8 percent per month during 1970. During Phase I and II (August 1971-December 1972), it rose to 2.2 percent. Finally during Phases III and IV (up until the oil embargo) it rose to 2.9 percent. In short, workers seemed more willing to quit their jobs and management was less able to dissuade them from doing so during the controls program.

Table 1
LABOR MARKET INDICATORS

	Manufacturing Quit Rates	Manufacturing Vacancy Rates	Help-Wanted* Advertising 1967 = 100
1971	1.8%	.5%	82
1972	2.2	.7	100
1973	2.7	.9	122
Aug. 71 - Dec. 72	2.2	.6	96
Jan. 73 - Oct. 73	2.9	1.0	123

* /Seasonally adjusted.

Source: Monthly Labor Review, Survey of Current Business, various issues.

The key question concerning the tightening in the labor market concerns causation. Specifically, did controls cause the various indicators of Table 1 to move upward, or was there some other factor involved? Since the period of controls generally coincided with an economic expansion, there is reason to suspect a cyclical explanation. In some way, the cyclical impact must be removed before the data can be analyzed.

One of the series in Table 1--the manufacturing vacancy rate--cannot be effectively disengaged from its cyclical component. This series was collected by the Bureau of Labor Statistics only for the period 1969-1973, not long enough for its cyclical behavior to be determined.^{1/} The other series, however, have a longer history.

Quits

Quit rate data were available monthly, broken down on a two-digit Standard Industrial Classification basis beginning in 1958.^{2/} In order to capture the cyclical effect, as well as any long-term changes which might be under way, the following equation was estimated on a monthly basis for the period up to controls, i.e., through July 1971:

$$Q_i = F(\text{DFRB}_i, \text{RFRB}_i, \text{TIME})$$

where DFRB_i is the percentage three-month change in the Federal Reserve Board index of industrial production (1967 = 100) for industry i ; RFRB_i is the ratio of the index of industrial production to its exponential trend in industry; TIME is the time series beginning at 1 in February 1958; and Q_i is the quit rate in industry i .^{3/} In general, it would be expected that the regression coefficients of DFRB_i and RFRB_i is positive if a cyclical effect is captured. Since it was possible that the manufacturing labor market might be heavily affected by overall economic trends, a broader cyclical variable was substituted for RFRB_i in some experiments with total manufacturing. The substitute

variable was RRPI, the ratio of real (deflated) personal income to its exponential trend.^{4/} Aggregate equations are shown in Table 2.

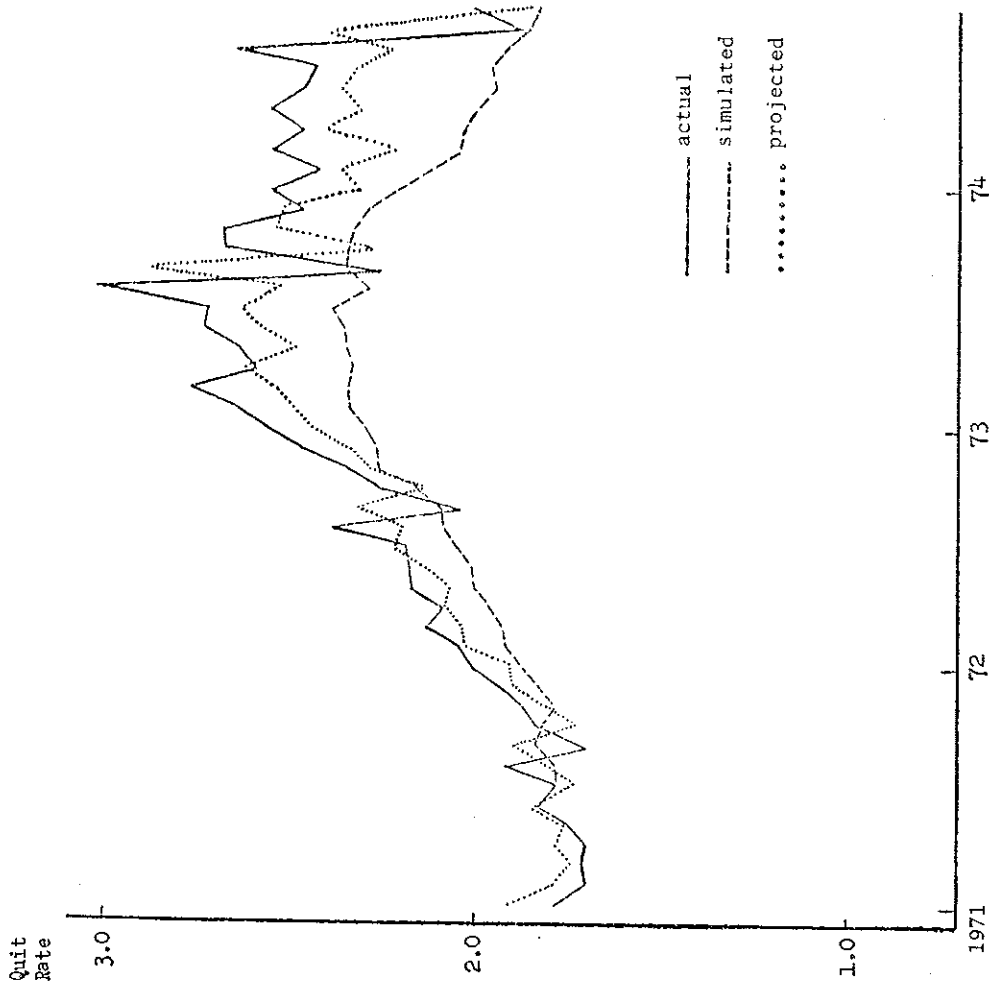
Table 2
QUIT RATE EQUATION SUMMARY^{*/}

	Total Manufacturing		Durables Manu- facturing	Nondurables Manu- facturing
Constant	-3.794 (-6.68)	-5.600 (-7.29)	-13.079 (-2.61)	-61.706 (-5.89)
TIME	.007 (6.98)	.006 (2.82)	.056 (3.25)	.086 (9.01)
DFRB _i	-.015 (-2.95)	-.004 (-.091)	-.082 (-2.30)	-.378 (-4.11)
RFRB _i	4.409 (7.64)	-- (5.75)	23.479 (4.87)	74.707 (7.06)
RRPI	--	6.300 (4.09)	--	--
RHO	.843	.954	.919	.838
S.E.	.088	.090	.870	.928
D.W.	2.573	2.521	2.308	2.687
R ²	.973	.972	.971	.975

^{*/} Dependent variable is seasonally-adjusted quit rate.

Note: Figures in parentheses are T-statistics. Period of observation is February 1958-July 1971.

Figure 1



The estimated equations exhibited a substantial degree of serial correlation. In order to improve the efficiency of the estimated coefficients, an autocorrelation correction was made.^{5/} Results from the equations were then used to "forecast" into the controls period (August 1971-April 1974) using two alternative techniques. The first was simply to use appropriate data from the controls period to make a projection utilizing the pre-controls regression coefficients. The second was a simulation technique, in which each month's forecast value of Q_i was used to forecast the next month's Q_{i+1} .

Residuals from the equations, i.e., the actual value of Q_i minus the forecast values, were examined for evidence of a controls impact. If controls had an effect above and beyond the "normal" cyclical pressure, it should appear as a significant tendency toward positive residuals. That is, it would be expected that controls would cause quit rates to be higher than their normal values if controls hinder employer ability to retain labor.

Table 3 summarizes the mean residual observed during three time periods under controls: August 1971-December 1972 (Phases I and II), January 1973-October 1973 (Phases III and IV up to the oil embargo), and August 1971-April 1974 (the entire Phase I-IV controls program). There does appear to be a tendency for positive residuals to occur, as can be seen in Figure 1 for total manufacturing. As could be expected, the simulations show a somewhat more pronounced tendency for deviations from normality to occur than do the projections. The magnitudes of the residuals tended to be higher in 1973 (prior to the oil embargo), the period when the labor market was tightest.

Table 3
MEAN RESIDUAL (ACTUAL MINUS PREDICTED)

RFRB ₁ a/ to Aug. '71	PROJECTED		SIMULATED	
	Aug. '71 to Dec. '71	Jan. '73 to Oct. '73	Aug. '71 to Dec. '72	Jan. '73 to Apr. '74
MFG-1 ^b ***	.09	.03	.12	.35
MFG-2 ^b ***	.03	.04	.10	.32
MFG-3 ^b ***	.01	.04	.03	.32
DUR ***	.01	.04	.03	.31
NDR ***	.01	.07	.00	.35
20	.04	.01	.10	.15
21	-.07	-.02	-.26	.30
22	.09	.13	.33	.50
23	.06	.15	.40	.50
24	.07	.02	.32	.51
25	.03	.03	.10	.07
26	-.01	-.01	-.23	.17
27	.01	.03	-.03	.07
28	-.06	.03	.14	.14
29	-.06	-.02	-.13	.05
30	.05	-.06	-.28	-.28*
31	.02	.03	.16	.44
32	.02	.08	.09	.44
33	-.06	.02	-.05	.11
34	.03	.06	-.43**	-.34*
35	.03	.04	.23	.48
36	.02	.03	.10	.15
37	.05	.10	.07	.11
38	.05	.10	.07	.13
39	.01	.03	.12	-.05

* Significantly different from zero at 5 percent level.
 ** Significantly different from zero at 1 percent level.
 *** Coefficient of RFRB₁ (or RRP1) positive and significant at 5 percent level.
 a/ RFRB₁ is ratio of industrial production to its trend in the industry.
 b/ Equation contains DFRB₁, RFRB₁, TIME.
 c/ Equation contains DFRB₁, RRP1, TIME.
 d/ Equation contains DFRB₁, RFRB₁, TIME.

The tendency toward positive residuals in most equations is not surprising, in view of the theory developed in Chapter 3. However, this tendency is not very strong.⁷ In thirteen of the two-digit equations, the coefficient of $RFRB_i$ indicates that a cyclical effect is being captured. But in four of these, the residual is negative. When tests were made for statistical significance of the residuals, only in a few instances did positive residuals appear to be statistically different from zero. In none of the more aggregate forecasts, involving total manufacturing--durables, and nondurables--were statistically significant results uncovered. It appears, therefore, that while controls may have had a tendency to induce shortages in the labor market, the tendency was exceedingly mild if quit rates can be taken as a proxy for shortages.⁸

Help-Wanted Advertising

Quit rates measure the propensity of workers to leave their jobs. In contrast, vacancy rates measure the inability of employers to fill new job openings. Unfortunately, as noted earlier, vacancy rates were not collected for a long enough period to permit cyclical correction. However, the volume of help-wanted advertising can be used to generate a vacancy proxy. Help-wanted advertising cannot be broken down by industry, however, so disaggregated results of the type presented in Table 2 are not possible.⁹

Two measures using help-wanted advertising were developed for analysis. The first was simply the ratio of the index of help-wanted advertising volume to its exponential trend (RHW). The second was the detrended ratio of the index to the unemployment rate (RHWU). This latter variable can be taken as a proxy for "structural" problems in the labor market. In both cases, the dependent variables were regressed on monthly observations

or the ratio of real (deflated) personal income to its exponential trend (RRPI), and the three-month percentage change in real personal income (DRPI). TIME was not included since the dependent variables were already detrended. The periods of estimation and forecast were the same as those used previously in the quit-rate analysis.¹⁰

As can be seen in Table 4, the regression analysis produces coefficients similar to those resulting from the quit-rate equations. Mean residuals for RHW during controls (actual minus predicted values) show a tendency to be positive. The structural variable RHWU generally produces negative residuals when the simulation technique is used, and slightly positive residuals when the simple projection technique is used. Certainly, the results obtained on the basis of the help-wanted variables are more ambiguous than those from the quit-rate analysis. It appears that if distortions occurred in the labor market, they escape detection of analysis based on help-wanted advertising.¹¹

Table 4

HELP-WANTED REGRESSIONS AND RESIDUALS

	Independent Variable	
	RHW	RHWU
Constant	-2.194 (-3.33)	-5.662 (-4.03)
DRPI	-.013 (-2.72)	-.025 (-2.57)
RRPI	3.237 (4.91)	6.803 (4.84)
RHO	.975	.980
S.E.	.027	.058
D.W.	1.791	1.736
R ²	.976	.980
Projected Mean Residuals		
August 1971-December 1972	+.004	-.002
January 1973-October 1973	+.000	+.004
August 1971-April 1974	+.003	+.002
Simulated Mean Residuals		
August 1971-December 1972	-.005	-.066*
January 1973-October 1973	+.071*	-.004
August 1971-April 1974	+.003	-.038

*Significant at 5 percent level.

Analysis of the Labor-Market Results

The theory developed in Chapter 3 suggested that controls might create abnormally high turnover in the labor market. If this occurred during Phases I-IV, quits and help-wanted advertising ought to have reflected such behavior. In fact, the results were mixed; certainly no dramatic evidence of a controls impact was uncovered. The statistical evidence is in keeping with the impressions gathered by the controls authorities. There never were any substantial numbers of complaints received by stabilization officials of labor shortages attributable to controls.^{12/}

Part of the explanation of these results is probably due to the structure and timing of the controls program. It was noted in Chapter 1 that the emphasis of controls tends to be on the wage side, especially in the union sector. This emphasis is based on a notion that cost-push inflation is more likely to emerge from the union sector than the nonunion sector.

While the emphasis was definitely on labor in the early stages of the controls program--Phases I and II--the authorities were basically concerned about permitting a catch-up bargaining round to complete itself in an orderly fashion. Pent-up wage demands, which had built up during the inflation of the late 1960s, were allowed to work themselves through. However, they were isolated as "exceptions" to the rules so that units not needing catch up could not use catch-up increases as models for emulation. The emphasis was on restoring "normality" to the labor market, not on bringing about "subnormal" wage increases. Thus, if the strategy worked, it would not be expected that extraordinarily high turnover should occur. At most a mild impact would be expected in the union sector.

During the later stages of controls, new pressures on wages developed. The run-up in agricultural and commodity prices pushed the authorities into attempting

to resist demand pressures in product markets. This unfortunate shift in policy, which coincided with Phase III, was accompanied by an unspoken easing off in the labor market. The authorities nominally maintained the same guidelines in Phases III and IV that existed in Phase II. But as inflation made those guidelines unrealistic, the authorities permitted above-guidance increases to occur through "hidden" channels. Cost-of-living escalator clauses, especially, were used "creatively" to permit large increases behind the scenes while moderate-sounding adjustments were announced to the public. However, the tendency for the forecast residuals to become larger during 1973 suggests that the informal easing of wage policy was insufficient to prevent a noticeable turnover increase.

The shift in wage policy coincided with increased union bargaining activity. Even if the controls of Phases I and II had been extremely constraining, these phases occurred during relative light periods on the bargaining calendar. In 1972, for example, only 26 percent of the "major" union labor force in the private sector (agreements involving 1,000 or more workers) were engaged in new negotiations. In 1973 and 1974, the proportions rose to 47 percent and 50 percent, respectively. Wage policy in 1973 may have become more constraining, simply because more workers were involved in bargaining.

To the extent that wage distortions were confined to the union sector--especially in 1973--it is understandable why complaints of labor shortages were infrequent. If such complaints had arisen, they would probably have come from the employer side of the labor market. Unions would be more likely to voice their complaints in terms of "frozen wages" rather than increased turnover. But, as Chapter 3 points out, unionized employers will tend to experience turnover rates below the optimal level from their viewpoint. A necessary condition for this suboptimal turnover is an ability of unions to raise wages above what would otherwise be paid.

Under such circumstances, employers would prefer to trade somewhat lower wages for somewhat higher turnover.

There is certainly evidence pointing to an ability of unions to obtain above-market wages. As an illustration, consider the following regression equation estimated across 49 industries appearing in the 1970 *Census of Population*:

$$RW = -.599 + .012 \text{HOURS} + .008 \text{WHITE} + .026 \text{SCHOOL} + .003 \text{UNION} \quad R^2 = .42$$

$$(-1.44) (2.88) \quad (2.04) \quad (2.31) \quad (3.61)$$

where RW is the ratio of actual male mean earnings to projected mean earnings predicted on the basis of occupational average wages; HOURS = average weekly hours worked by employed males; WHITE = white males as a proportion of male employment; SCHOOL = median years of school completed by males; and UNION = workers in union agreements covering 1,000 or more workers as a proportion of industry employment.¹³ The equation suggests that after standardizing for occupation, hours worked, race, and education, each percentage point of major unionization raises wages by three-tenths of one percent. That is, an industry with a major unionization rate of 50 percent would be expected to pay wages 15 percent higher than the standardized average.

The hypothesis that whatever distortions occurred were concentrated in the union sector is supported by the comparison of results from the quit-rate and help-wanted regressions. Help-wanted advertising covers the entire economy while quit-rate data apply only to manufacturing. Unionization rates in manufacturing are higher than those in the overall economy. So quit-rates would be more likely to pick up the effect of increased turnover.

II. Inventory Behavior in the Product Market

Under optimal circumstances, the product-market model set forth in Chapter 3 would be tested by looking at the effects of the imposition of price controls on inventory

policy of individual firms. The analysis would first center on the way in which changes in the level of business activity affected the relationship between a firm's sales and holdings of inventories. Then it would be possible to examine periods of government-imposed restrictions on pricing behavior to determine if firms diverge from customary business practices with regard to inventories. Unfortunately, it is not practical to attempt to obtain sufficient data of the type required on a firm-by-firm basis, and an approximation employing industry data must be used. This does not create serious difficulties since all firms in an industry might be expected to adjust inventories in the same direction.

The model tested was designed to isolate those variables which are significant in the determination of inventory policy in the case of an industry, and to identify what distortions occurred as a result of the imposition of the controls program begun in 1971. Trend and cyclical variables were employed as explanatory variables of inventory behavior. The actual statistical model, tested with monthly data from individual two-digit manufacturing industries, and aggregations of industries, was of the general form $R = f(\text{DFRB}_i, \text{RFRB}_i, \text{TIME})$, where the variables are defined as:

R = inventory-to-sales ratio

DFRB_i = quarterly change in industry or sector production

RFRB_i = ratio of industrial production to its exponential trend

TIME = time trend^{14/}

The calculation of R , the inventory-to-sales ratio, took on two different forms for this study. In the basic case, which was tested for the manufacturing sector, durable and nondurable goods, and for 14 two-digit

manufacturing industries, the estimation of R was made using the ratio of total value of inventories to total value of shipments on a monthly basis for the period January 1953 to October 1975.^{15/} For seven industries, data were also available concerning the ratio of finished goods inventories to shipments.^{16/} Monthly data on the ratio of unfilled orders to shipments (U) for five industries were also employed in part of the analysis.^{17/} U was substituted for R in some equations estimated for these industries. The data used appear regularly in the *Survey of Current Business* section on "General Business Indicators." For lumber products, inventory and sales data were not available on a comparable basis with the other industries, and certain of the data series utilized had to be estimated from alternative sources.^{18/}

Results of two types of empirical tests of the model appear in Table 5. The equations shown were estimated for all manufacturing, durable goods and nondurable goods, for the two periods February 1953 to October 1973 and February 1953 to July 1971. The 1953 starting date was chosen for reasons of data availability. July 1971 was the last month prior to the recent controls programs. October 1973 was the last month of controls before the Mideast oil embargo began to affect the manufacturing sector. ^{19/} All regressions were adjusted for autocorrelation.

Table 5
EQUATION SUMMARY

	All Manufacturing (1)	Durable Goods Manufacturing (2)	Nondurable Goods Manufacturing (3)
Constant	2.82 (12.87)	3.32 (12.16)	2.15 (12.02)
RFRB _i	-1.16 (-6.08)	-1.55 (-7.78)	-.58 (-3.29)
DFRB _i	-.005 (-3.40)	-.004 (-2.99)	-.0006 (-.42)
TIME	.0004 (.75)	(.001) (1.45)	-.0008 (-4.83)
RHO	.91 (45.83)	.95 (47.16)	.89 (30.09)
\bar{R}^2	.919	.931	.945
D.W.	2.58	2.56	2.45
S.W.	.021	.041	.016

Notes: t statistics shown in parentheses.

⁻²R is adjusted for degrees of freedom.

Dependent Variable: Ratio of inventories to shipments in manufacturing, (R) defined as = $INV_t / SHIP_t$

Period of Observation: February 1953-
July 1971.

The results presented in Table 5 correspond to a priori expectations, based on the model of Chapter 3 and known cyclical behavior patterns of inventories. The RFRB_i acts in the anticipated negative fashion, indicating the limits placed on delivery reliability by capacity constraints. DFRB_i, reflecting lags in the adjustment of inventories to swings in activity, is also negative (although not significantly so in the case of nondurable manufacturing). While there was a small but significant downward trend in the dependent variable in nondurable goods industries, no such trend appears in the durable goods sector.

The object of the tests is to determine what changes or distortions in inventory-holding behavior can be attributed to the imposition of controls, rather than to examine in detail the inventory behavior of the manufacturing sector. Such distortions should appear as structural changes in the relationships estimated on the basis of business cycle factors. These changes do seem to have occurred, as illustrated in Figure 2. The bottom solid line of Figure 2 represents the actual path traced by the inventory-to-sales ratio for all manufacturing during the period January 1971 to October 1973. The dotted line represents projected values from equation 1 of Table 5, taking account of the lagged values of the dependent variable. Since lagged values are a major explanatory variable in a monthly equation, the drop in the ratio below "normal" during controls tends to be hidden. Even so, projected values generally exceed actual values during controls. Lagged values forecast by the equation can be used instead of actual values to generate simulated estimates (dashed line). The simulated overprediction for the period August 1971 to October 1973 is pronounced.

Inventory to
sales ratio

Figure 2

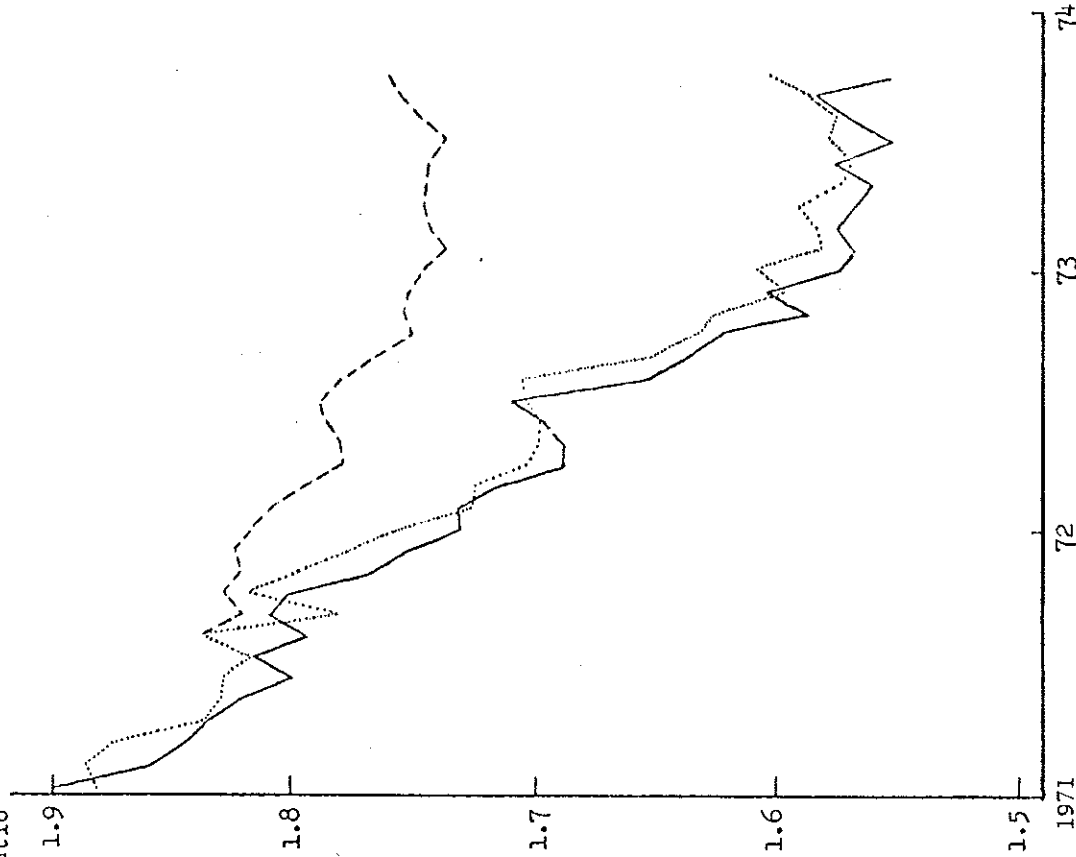


Table 6 examines the industry-level residuals. Results using three dependent variables--the inventory-to-sales ratio, the finished goods inventory-to-sales ratio, and the unfilled orders-to-sales ratio--are shown. In each case, the estimating equation for the February 1953 to July 1971 period was used to compute the mean residual during the controls period August 1971 to October 1973. In the left column, which represents those cases most biased against overprediction because of the use of the actual lagged dependent variable, the average residuals are negative in every case except one, and nearly all are significantly different from zero.^{20/} The exception, instruments (SIC-38), has an average residual which is significant, but in a positive direction.^{21/} In the right column, which shows the results of the simulations estimated using the predicted lagged value of the dependent variable, the pattern of negative residuals is accentuated. Thus, the industry-level experiments tend to confirm the results obtained at more aggregate levels.^{22/}

Examination of the upper section of Table 6 reveals that included among those industries with significantly negative residuals are several which posed well-publicized problems during one or more phases of the Economic Stabilization Program. The food industry, including the processing portion, experienced supply problems during 1973. Lumber was tightly constrained by controls during the latter half of 1972 and early 1973, only to be freed from the program with the beginning of Phase IV. Cement, a portion of the stone, clay, and glass industry, experienced considerable supply difficulties for many months prior to its release from economic controls in November 1973. The controls program apparently had a significant impact on the paper industry in 1973, inducing it to adjust both product mix and delivery reliability. Notable gasoline supply problems surfaced in the summer of 1973.^{23/}

As the model in Chapter 3 indicated, the effects of the controls program on reliability of delivery would be

Table 6

MEAN RESIDUALS FROM INDUSTRY EQUATIONS
(August 1971-October 1973)

Dependent Variable	Industry Classification	Mean Projected Residuals	Mean Projected Residuals	
Inventory to Sales Ratio	All Manufacturing	-.014**	-.123**	
	Durables	-.011	-.185**	
	Nondurables	-.012**	-.064**	
	Food Products	-.017**	-.065**	
	Tobacco Manufacturers	-.001	-.023	
	Textiles	-.012	-.049**	
	Lumber Products	-.054*	-.318**	
	Paper Products	-.020**	-.094**	
	Chemicals	-.018**	-.144**	
	Petroleum Refining	-.020**	-.093**	
	Rubber Products	-.079	-.036**	
	Stone, Clay & Glass	-.052**	-.248**	
	Primary Metals	-.030	-.059	
	Fabricated Metal Products	-.026*	-.119**	
	Machinery, except Electrical	-.025**	-.212**	
	Electrical Machinery	-.018	-.237**	
	Transportation Equipment	-.032	-.353**	
	Instruments	.029*	.125**	
	Finished Goods to Sales Ratio	Chemicals	-.013**	-.087**
		Petroleum Refining	-.008**	-.036**
		Rubber Products	-.001	-.004
		Stone, Clay, & Glass	-.018**	-.134**
		Primary Metals	-.006	-.001
Machinery ^a		-.005*	-.047**	
Transportation Equipment		-.007**	-.045**	
Unfilled Orders to Sales Ratio	Primary Metals	.091**	.714**	
	Fabricated Metals	-.013	-.287**	
	Machinery, except Electrical	.021	.082**	
	Electrical Machinery	.000	-.152**	
Transportation	-.017	-.272**		

*Significantly different from zero at the 5 percent level.

**Significantly different from zero at the 1 percent level.

^aElectric and nonelectric.

expected to impinge most directly on the finished-goods inventories of the industries affected. It is the stock of finished-goods inventory from which direct sales to customers are made. The impact of controls on the holdings of finished-goods inventories by seven industries is examined in the middle section of Table 6. Again, the significantly negative residuals are evident for both types of tests conducted. The largest residuals are shown for chemicals and stone, clay, and glass. Those industries exhibiting the smallest finished-goods inventory residuals were rubber products and primary metals. But, the residuals are negative for every manufacturing industry for which finished-goods inventory data are available.

The lower section of Table 6 shows the results of tests performed on the ratio of the value of unfilled orders to the value of shipments in five manufacturing industries. Unfilled orders are an alternative indicator of delivery reliability. An abnormal increase (positive residual) in the ratio of unfilled orders to shipments in response to controls would be supportive of the previous indications of delivery reliability degradation. However, the results of this portion of the analysis are mixed. The average residual is positive for primary metals and nonelectrical machinery, and negative for fabricated metals and transportation equipment. The mean residual for the electrical machinery industry is positive--although marginally so--or negative, depending on the test employed.

The indeterminateness of the analysis of unfilled orders is not necessarily indicative of successful attempts to keep up with incoming orders by those industries with negative average residuals. It is possible that those ordering from these manufacturers, finding that delivery reliability was a problem, adjusted their orders downward because of revised expectations concerning what was going to be available. A model combining simultaneous behavior functions of buyers and sellers would be needed to pursue further studies in this area.

III. Labor Surpluses

As noted in the introduction, controls are usually associated with shortages, not surpluses. However, under some circumstances surpluses of factors of production such as labor may arise. Three cases may be usefully considered in the labor market:

- Case A. A price ceiling inhibits the supply of a product. The reduced supply is reflected in a reduced-derived demand for labor.
- Case B. A price ceiling inhibits the supply of a product. This inhibits the consumption of complementary products which in turn reduces the derived demand for labor inputs into the complementary products.
- Case C. A price ceiling of an intermediate product inhibits its supply. Users find that labor is complementary in production to the intermediate product.

All of these cases may have a disruptive effect. In that sense they may be compared to other disruptions which affect the labor market such as natural disasters, changes in consumer tastes or productive techniques, etc. Disruptions can cause unemployment, but the degree to which they do so depends on a variety of factors. These include the suddenness of impact, worker and employer perceptions, the types of employees involved, and the state of the outside labor market. A sudden disruption provides little time for advance planning. In a slowly dying industry, for example, workers are aware of limited future opportunities. In such cases, attrition, job changing, and similar measures can provide a relatively smooth transition. An unexpected natural disaster, in contrast, does not permit a gradual transition.

Employer perceptions of the permanent or transitory nature of a change in economic conditions influence attitudes toward employee retention. As noted in Chapter 3, employers will normally be willing to undergo some costs to avoid turnover. A transitory slackening in production might not induce a proportionate layoff. The employer might consider it cheaper to "ride out" the disturbance with a normal work force. Similarly, even if a layoff does occur, employees are less likely to make a determined search for new employment if they believe they will be recalled shortly.

The type of employees involved in the disruption is also an important factor. For example, it is well-known that older workers are less mobile than younger workers. Workers with characteristics which suggest difficulty in mobility are more likely to experience significant unemployment after a layoff than those who can easily find jobs. Of course, even mobility is a relative concept; it is not determined solely by employee characteristics, but also by the availability of outside job opportunities. In a recession, even relatively mobile workers may experience long spells of unemployment. And in a tight labor market, even the relatively hard to re-employ may be sucked back into employment.

The Beef Shortage of 1973

An illustration of Case A disruption occurred when controls were applied to beef and veal prices in 1973. As can be seen in Table 7, in early 1973 beef prices began to rise rapidly. This rise appeared to generate expectation of a still-greater increase in beef prices. As a result, beef production and slaughtering fell and inventories rose. Pressure to take "action" led to the announcement of a system of ceiling prices on beef on March 29, 1973. The ceilings were based on a retailer's sales during the previous 30 days. They

Table 7
SELECTED DATA ON BEEF PRODUCTION, 1973

Beef & Veal Production (millions of pounds) (1)	Inven-tory-to- Produc-tion Ratio ² / (2)	Beef Price per Pound ³ / (¢) (3)	Farm Prices for Feed Grains ⁴ / Jan.=100 (4)	Ratio ⁵ / (3)/(4) Jan.=100 (5)	Cattle Slaughtered (1000s) (6)
Jan.	1802	20.1%	64.5	100	2807
Feb.	1552	24.7	69.0	110	2422
Mar.	1645	22.4	71.2	113	2618
Apr.	1363	27.4	71.9	113	2167
May	1696	20.6	71.0	101	2692
Jun.	1624	20.5	72.8	90	2560
Jul.	1566	19.7	74.9	90	2441
Aug.	1482	17.8	n.a.	163	2363
Sep.	1515	16.7	71.3	146	2360
Oct.	1850	17.7	67.1	148	2863
Nov.	1740	23.0	64.8	148	2685
Dec.	1651	27.8	67.0	157	2517

¹/ Inspected slaughter.

²/ Inventories are stocks, excluding lard, in cold storage at end of month.

³/ Wholesale beef, fresh, steer carcasses, choice 600-700 lbs., east coast.

⁴/ Feed grains and hay.

⁵/ Based on unrounded data.

Source: *Survey of Current Business*

Table 8

SELECTED DATA ON EMPLOYMENT IN MEAT PACKING, 1973¹/

	Employment of Production Workers (1000s)	Layoff Rate (%)	Average Weekly Overtime (hours)
January	144.3	3.5	3.7
February	142.1	2.9	3.4
March	141.9	4.3	3.6
April	133.4	4.9	3.6
May	138.4	2.1	4.4
June	141.5	2.8	4.0
July	138.3	5.2	4.5
August	128.4	5.7	5.0
September	131.2	2.5	4.9
October	135.7	1.7	5.2
November	137.3	1.8	5.5
December	138.8	2.5	6.2

¹/ Data based on SIC 2011.

Source: *Employment and Earnings*.

excluded temporary "specials" and were set at a level below which 90 percent of sales had been made. These controls applied to all but the tiniest "ma and pa" operations.

Apparently, the controls on beef were intended to be largely cosmetic. It was thought that prices had crested, and that there would be no cost pressure on farmers. As Table 7 shows, feed grain prices had remained stable during the first few months of the year. Beef prices actually dropped below ceiling prices in the period immediately after the special controls were announced. The presence of controls may have persuaded farmers and others in the industry that prices would remain level; production and slaughtering rose after the announcement of controls, and inventories began to decline.

Unfortunately, the rapid increase in grain prices quickly led to a revision of inflationary expectations. Of course, there is no automatic reason to assume that because costs rise, output prices will immediately follow suit. But in this instance, producers were apparently making that assumption. The normal reaction of the market would have been an increase in cattle prices, high enough to induce farmers and inventory to release enough stock to meet demand. With the ceilings in effect, however, this reaction did not occur. Instead, supermarkets were unwilling to pay wholesale prices which they could not recover.

Ironically, the farmers and inventory holders were wrong in their expectations. Ceilings on beef were lifted on September 10, 1973, as part of the general transition to Phase IV. Beef prices fell as the stock which had been withheld during the summer hit the market. The beef glut turned out to be more than transitory; beef producers remained in a squeeze between low market prices for beef and high feed grain costs. Governmental controls on exports of soybeans and related items did not have a

sufficient impact to either end the squeeze or reverse the inflationary psychology which developed during the summer.

The impact of the ceiling was to reduce production and slaughter of beef. Inventories declined in the manner suggested in Chapter 3. Reports of plant closings began to appear in the newspapers during July. By mid-August, the Agriculture Department estimated that 11,000 workers in the meat packing industry were laid off.²⁴ There may have been some layoffs in the meat departments of supermarkets as well. Such layoffs fall under Case C since meat and meatcutters are complementary inputs into supermarket "production." Table 8 tends to confirm the layoff estimates. Employment of production workers in the meat packing industry fell from 141,500 in June to 128,400 in August. Of this drop, about 2,000 may be attributed to a strike against Iowa Beef Packers, Inc., which began in July and continued until early 1974.²⁵ Curiously, overtime hours increased during the summer. This increase suggests that shortages were erratic, affecting some plants but not others. Those which continued to operate apparently provided a full work week, while others shut down completely.

It may be asked whether it was controls per se that lead to the indirect labor market disruption, or whether it was maladministration of controls. In this particular case, it appears difficult to distinguish between the two. The market for beef at the farm level is sufficiently competitive so that any effective price ceiling, no matter how "well" administered, would have caused a shortage. Use of controls in 1973 to deal with the escalation of beef prices was simply inappropriate.

The Oil Shortage of 1973-74

The petroleum shortages of 1973 and early 1974 seemed to have their impact mainly through Cases B and C. As shown in Table 9, petroleum prices began to rise rapidly during the first half of 1973. Those increases

were "administered" by the Organization of Petroleum Exporting Countries (OPEC) even before the outbreak of war in the Middle East and the oil embargo. The retarding effect of controls on domestic prices provoked mild "spot" shortages during the summer of 1973. Some gasoline stations limited the amount of consumer purchases. Gasoline station owners chafed at Cost of Living Council regulations and threatened protest closings in the late summer.

Table 9

U.S. CRUDE PETROLEUM IMPORTS, 1973-74

	Quantity of Imports (million barrels)		Unit Value of Imports (\$/barrel)	
	1973	1974	1973	1974
January	96.6	89.5	\$2.74	\$ 6.64
February	90.9	80.8	2.73	8.94
March	103.6	81.0	2.83	10.87
April	93.1	108.9	2.82	11.67
May	114.6	120.0	2.91	11.74
June	109.8	110.5	3.04	11.64
July	91.5	135.1	3.10	12.01
August	136.6	144.2	3.24	11.90
September	115.4	119.7	3.34	11.64
October	125.8	130.1	3.52	11.57
November	123.9	115.4	3.80	11.57
December	93.8	132.1	5.08	11.62

Source: *U.S. Bureau of the Census, FT900-7412 Supplement*
January 27, 1975.

With the oil embargo (October 1973-March 1974) by the OPEC countries, the situation became considerably more critical. First, the embargo hindered the delivery of imported oil to the United States. Second, the price of imported oil rose dramatically. By the spring of 1973, crude petroleum prices were over four times higher than the level prevailing in early 1973. The Middle East war apparently galvanized the OPEC group into concerted action which they had not been able to achieve previously.

The embargo and fantastic price increase make the analysis of the impact of controls difficult. An embargo and quadrupling of oil prices would have led to disruptions in the labor market even if there had been no controls. The high price of gasoline would have arrived more suddenly if controls had not existed. But a shocked public might well have cut back driving, given up going to ski resorts, and cut back on purchases of mobile homes, anyway.

It does appear, however, that controls exacerbated what would have been a difficult situation in any case. European countries, which did not impose controls, did not experience shortages anywhere near the magnitude which occurred in the United States. If controls had not existed in the United States, the likely outcome would have been a sharp surge in prices of gasoline and other petroleum products. However, the short-run elasticity of demand for such products is low, so that consumption levels would not have fallen off markedly. There would certainly have been a shift in demand to smaller cars, and less interest in gasoline-hungry recreation vehicles. But the experience later in 1974, when controls permitted the price increases to work through, suggests that the adjustments would have required fewer layoffs and readjustments than actually took place.

The controls tended to exacerbate the shortage by providing an incentive to hoard, especially of gasoline. It was evident that prices would eventually rise to

levels approximating the world price. Inventories of petroleum products became high-yielding investments. In the case of gasoline, price rises were allowed only once per month. This encouraged the withholding of "this month's" gasoline for next month's price. As the availability of gasoline declined, motorists were forced to cut all pleasure driving--even if they were willing to pay for gasoline. Uncertainty over availability, wasted time on gasoline lines, etc., act as harsh rationing devices. With availability being the key issue, and limited quantities available even when gas could be obtained, new car buyers simply abandoned the large automobile and the recreational vehicle (Case B).

Automobile and recreational vehicle production appear to have been the hardest hit industries. However, there was also some "conventional" Case C disruption. Shortages of petroleum products led to layoffs in industries such as plastics, fuel retailing, and air transportation. The Bureau of Labor Statistics estimated that in the three months after November 1973, 125,000 to 200,000 nonfarm jobs were lost due to the "energy crisis."^{26/} However, no really reliable estimates of the loss were ever produced. A Labor Department task force set up to monitor the energy situation put itself out of business in May 1974 with the confession that it had been unable to come up with ^{27/}any satisfactory measurement of the problem. ^{28/} Part of the measurement difficulty stemmed from the fact that the U.S. economy was already moving into a recession in late 1973. It became difficult to untangle the effect of the energy situation from the general impact of recession. The matter was even more complicated since the recession itself was intensified by the drain of purchasing power and the domestic disruption caused by the embargo, oil price increase, and controls.

Even if the direct effects of such episodes as the beef and oil shortages could be quantified, the

analysis would be incomplete. To some extent, shortages of products create increased demand for substitutes. When beef was hard to obtain, poultry, eggs, and cheese consumption provided an alternative source of protein. When gasoline became scarce, public transportation was given a boost. A complete analysis should, in principle, net employment loss against employment gain. Perhaps even the employment-generating effects which controls have on accountants, lawyers, and civil servants should be counted. However, the labor market effect of controls may sometimes be like a spontaneous increase in structural unemployment. Surpluses and shortages may occur simultaneously.

IV. Conclusions

It has long been argued that controls tend to create distortions in a market economy. As Chapter 2 points out, an empirical test of this proposition depends on the definition of distortion. If distortion is defined as a deviation from some idealized model such as perfect competition, then the real world is full of distortions even in the absence of controls. Controls in an imperfect world might actually decrease the degree of distortion by some definitions. As a practical matter, however, distortion can simply be defined as a deviation from "normality." Such a definition makes possible the use of statistical techniques of detection.

During the controls operated during Phases I-IV, some evidence of economic distortion using the latter definition was found. Manufacturing quit rates seemed to be a bit higher than normal. However, analysis of help-wanted advertising, a proxy for vacancies, produced ambiguous results. The impact on the product market certainly seemed greater. Inventory-to-sales ratios in manufacturing, a proxy for delivery reliability, were abnormally low under controls. And the deviation tended to be statistically significant. The most evident distortions on the labor-market side,

labor surpluses, were due indirectly to product-market controls.

Despite the fact that the rationale for controls usually revolves around the labor market, these statistical findings are not surprising. In some ways, the labor market is less flexible than the product market. Wage changes come generally at regular intervals, often a year apart. Wages and wage differentials are affected by a variety of traditional policies and equity considerations which are less likely to influence prices. Controls can influence the labor market, but the same factors which make wage determination somewhat lethargic under normal circumstances lessen the likelihood of severe distortion.

As noted in Chapter 2, there is a greater tie between buyers and sellers in the labor market than in the product market. Employment relations are likely to endure for some time, and temporary divergences from expected wages engendered by controls may not induce substantial increases in quits. For that matter, even new hires are more likely to be influenced by long-term prospects--especially in the more skilled areas--than by the exact magnitude of the current wage offer.

The analysis of this chapter concentrated on the 1971-1974 experience with controls. It is possible that the finding of greater proneness to distortions in product markets relative to labor markets was a characteristic unique to Phases I-IV. Conceivably, under some other type of controls program, different results would be found. Nevertheless, it seems likely that the conclusions drawn from the Phase I-IV experience can be generalized to probable efforts at controls in the future. Economic distortions are likely to occur under any program, and the impact on the product market is likely to be greater than on the labor market.

THE IMPACT OF CONTROLS ON PRODUCTIVITY-INCENTIVE PLANS

I. Introduction

The imposition of wage-price controls can be expected to have some effect on the individuals making decisions in labor and product markets. These effects may be subtle, as is argued elsewhere in this volume, or they may be quite direct, as people take overt actions which attempt to avoid or evade the rules. In this chapter, labor-market behavior with regard to productivity-incentive plans is examined.

While the stated objective of any stabilization program is to slow the rate of growth of prices, this goal is usually accomplished through restrictions on the rate of growth of wages. As has been argued elsewhere,¹ the basis for most controls programs is that the economy has been experiencing cost-push or wage-push inflation. One possible way to relieve this problem is to control the rate of money-wage increase and ease the pressure on prices. For equity considerations, price controls are imposed to ensure that excessive price increases do not occur at a time when wages are held down.

Wage and price controllers must recognize that there is a complex interrelationship between unit labor costs (labor cost per unit of output) and prices in an enterprise or other economic entity. It is feasible for above-guideline wage increases to occur if an acceptable set of arrangements can be worked out whereby productivity can be specially increased. Presumably, this increase must be at a faster rate than would otherwise occur through the ordinary processes of improvement in plant, machinery, and worker skills. Such arrangements normally will require the cooperation of labor and management in the design of a strategy which is mutually beneficial.

The 1971-1974 wage price controls made provision for labor and management to cooperate in granting certain earnings increases achieved through productivity-incentive plans. While the Economic Stabilization Act of 1970 made no such provision originally, the *Percy Amendment* of 1971 provided (Section 203f3) that "the authority conferred . . . shall not be exercised to preclude the payment of any increase in wages--paid in conjunction with existing or newly established employee incentive programs which are designed to reflect indirectly increases in employee productivity." This provision provided the basis for the Pay Board's establishment of a set of regulations for the treatment of productivity-incentive plans.

Pay Board regulations varied according to the type of plan. There were rules for established plans, for changes in established plans, or for adoption of new plans. Plans which were in existence prior to Phase II (November 14, 1971) were allowed to operate according to their terms. Units establishing new plans, or revising preexisting plans, were required to file reports with the Board in order to receive approval. Conditions for implementation of these plans included (1) an expectation of earnings levels above some basic amount which varied in relationship to changes in productivity; (2) an earnings opportunity sufficient to motivate the participants; (3) the setting of standards of performance and adequate provision for their revision; and (4) a guarantee of wage or earnings for contingencies beyond the control of the participants.

II. Plans Available from the Cost of Living Council

During the Economic Stabilization Program, approximately 234 productivity-incentive plans were filed with the Pay Board and its successor agencies.^{2/} Of these, some 94 were accepted as valid under Board regulations. The authors were able to obtain copies of these plans--with company names blanked out--for analysis. However, examination of the plans revealed that there were several

cases of multiple submissions in the nonunion sector, where the identical plan was filed for two or more units. Removing such duplications reduced the number of identifiably different plans to 55. Of these, 15 were union and 40 were nonunion.

Because the number of plans submitted was small, it is difficult to generalize with certainty about productivity-incentive plans. Yet the plans available do provide some insight into the way in which the wage determination process adjusted during a period of economic controls. Whether or not this behavior was totally due to the presence of the Stabilization Program cannot be verified with absolute certainty. But a subjective judgment is possible.

III. Factors Affecting the Submission of Productivity-Incentive Plans

As already noted, the Economic Stabilization Act of 1970 was subsequently amended to provide an inducement to relate earnings to improvements in productivity. Earnings could exceed the 5.5 percent standard through such systems. Aside from the regulations, there is another factor which provided an inducement to use the productivity route: the complex reporting procedures established for the Phase II Stabilization Program. Units of 5,000 or more employees had to prenotify, and receive approval from, the Pay Board for any wage increase. Units of between 1,000 and 4,999 employees had to notify the Board and receive prior approval if they wished to increase wages in excess of the 5.5 percent standard. Units of less than 1,000 employees had to notify the local office of the Internal Revenue Service if they wished an exception to the guideline. In most cases the Internal Revenue Service had very limited authority to approve exception requests. Thus, the smaller units had to face a lengthy appeals process to the full Pay Board.^{3/}

The situation facing the small employee unit was clearly administratively unpleasant during Phase II. Larger units, those with 1,000 or more employees, could file for an exception with the Pay Board directly. This process averaged 43 days. In contrast, the appeals process through the Internal Revenue Service took over 200 days on average, or nearly five times as long.^{4/} The choice facing those with wage determination responsibilities in small units was either waiting for the appeals procedure to work itself out, or finding another direct channel for reaching the Pay Board. The one readily available route was through the submission of a productivity-incentive plan. Such submissions went directly to Washington, thereby bypassing the Internal Revenue Service machinery.^{5/}

It is difficult to determine the exact influence of the Phase II Pay Board regulations with regard to reporting procedures. However, some insight can be gained from Table 1, which details the main reasons listed for establishment of the plans filed. The Table, which shows both union and non-union plans, reveals that there were distinctly different patterns of reported causes for plan establishment. Of the 15 union plans, 9 reported--with surprising frankness--that the primary reason for establishing the plans was the creation of the controls program. The impression gained from reading the submission letters was that these statements refer to the motivation for *creating* the plan. Obviously, the motive for filing a report was the controls regulations. Only 5 of the 40 nonunion plans indicated that this factor was basic to their establishment.

Table 1
 NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED DURING THE ECONOMIC STABILIZATION PROGRAM
 (By Union/Non-Union Status and by Reason for Establishment)

Employee Unit Status	Reason Established			Union	Non-Union	Total
	To Increase Productivity	Because of Economic Controls	To Revise an Unsatisfactory Plan			
	9	1	3	15	40	55
	2	18	20	15	40	55
	2	18	20	15	40	55

Source: Case filings submitted to the Pay Board and Cost of Living Council under Section 201.61 of Pay Board Regulations.

Eighteen of the 40 nonunion plans submitted indicated that they were established primarily to increase productivity. But, only 2 of the 15 union-sector plans made this statement. If those plans which were being revised because they proved unsatisfactory are excluded (which meant that their formats did not provide sufficient motivation to yield anticipated productivity increases), the contrast between the union and the nonunion sectors still remains.

These differences reflect a number of factors. In those cases in which the incentive plans were submitted as a result of a collective bargaining agreement, there was probably union pressure to obtain wage increases which exceeded the 5.5 percent guideline. This pressure did not exist in nonunion situations in general. In such cases the employer was probably requesting larger increases because these were seen as needed responses to improve the firm's performance. The extent to which these employer needs reflected direct labor market pressure is probably slight. The national unemployment rate averaged 5.6 percent during Phase II. It is not suggested here that shortages occurred during that period. And, in addition, none of the plans indicated that a labor-supply problem was involved.

IV. Plan Characteristics

Revised Plans

Of interest are those plans which were said to be revised to improve productivity. One plan in particular revealed some of the problems involved in trying to establish effective incentive programs. The company, which was nonunion, had a highly automated production process, necessitating little in the way of employee control. The incentive aspect of the wage system was originally applied, therefore, to the speed with which the workers corrected problems when the machinery malfunctioned. The unforeseen aspect of this program was that it provided no inducement to the workers to

see that the machinery operated without breakdown. Maintenance suffered, the cost of repairs increased, and earnings rose with no productivity payoff. The company, therefore, filed to revise its plan in order to tie rewards more directly to output. Incentives were to be tied to the continuity of production.

Payment Systems

The variation in the design of productivity-incentive plans is revealed in the payment systems utilized. Table II illustrates the diversity of payment schemes that were employed. The most common method of payment was a per unit or percent payment system which paid dividends after a worker or a group of workers achieved a specified level of output. This system was used in 16 of the 55 plans summarized in Table 2.

Table 2
 NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED
 DURING THE ECONOMIC STABILIZATION PROGRAM
 (By Union/Non-Union Status and by Payment
 System Employed)

Payment System	Employee Unit Status		Total
	Union	Non-Union	
Single Payment if Output Target Reached	1	0	1
Fixed Percent of Performance	2	6	8
Split With Reserve	3	3	6
Per Unit (or Percent) Payment Above a Minimum	5	11	16
Non-Linear	0	3	3
Cap	3	4	7
Standard Hour Savings Pool	1	6	7
Cost Saving Pool	1	1	2
Standard Hour Output Bonus	1	3	4
Bonus for Suggestions	0	2	2
Lump Sum Bonus Payments	0	2	2
Other	1	5	6

Note: Totals add to more than 15, 40, and 55, because individual plans had multiple provisions to their payment systems.

Source: See Table 1

Six of the plans employed the "split-with-reserve" system. Here, bonus earnings are divided between the company and the workers. A portion is held back to provide an annual or semi-annual distribution. Eight plans employed the fixed percent of performance scheme. Seven used the standard hour savings pool. In the first of these systems, payments were related to all levels of output (no minimum) with base earnings guaranteed. In the second, payment was tied to relationship between hours deemed necessary to produce the output and the hours "saved" in the production process.^{6/}

Employers evidently are concerned about the uncertain effects of incentive plans on earnings. This concern is reflected in two of the schemes reported. The first is the nonlinear scheme where earnings were not tied proportionately to effort. Rather, earnings represented a decreasing proportion of output gains as production increased. While none of the union plans had these arrangements, three of the nonunion plans did. Three of the union plans and four of the nonunion plans had "caps," or ceilings. These caps meant that the payment systems had built-in maximum earnings potential. Above those limits, additional output did not generate increased earnings.

The reasons for imposing such earnings restrictions are varied. In the nonunion case the employer has the ability to insert such a provision at will. An employer is naturally anxious that an incentive plan does not lead to earnings in excess of levels needed to provide motivation. Hopefully, a well-designed plan prevents such excesses. But the nonunion employer is free to impose a cap as "insurance."

In the union case the situation is different. A union would obviously prefer no limitation on earnings, but some union plans do have caps. Such clauses are probably the result of a lack of experience in designing the plans on the part of both parties involved. The employer has a natural fear of excessive labor cost. The union may be fearful of

excessive production efforts (rate busting) required of its members. The union may also fear that the plan will lead workers to feel their earnings are more dependent upon pleasing management than upon the union's bargaining power. Moreover, a union may regard the earnings cap as simply another topic for collective bargaining. It could always be raised in subsequent negotiations.

Penalty Provisions

Penalty provisions are included in productivity-incentive plans to reduce the amount of bonus earnings received if production falls below a specified standard. The penalty provisions do not reduce earnings below the basic hourly wage rate; they reduce only bonus earnings. The reduction is sometimes accomplished through the lowering of future bonuses. It may also be accomplished by reducing pooled earnings from earlier bonuses when the plan establishes a reserve for payment at the end of some specified period.

Table 3

NUMBER OF PRODUCTIVITY-INCENTIVE PLANS FILED
DURING THE ECONOMIC STABILIZATION PROGRAM
(By Union/Non-Union Status and by Inclusion of
Penalty Provision)

Employee Unit Status	Penalty Provision	
	Included	None Provided
Union	2	13
Non- Union	11	29
Total	13	42

Source: See Table 1

As might be expected, Table 3 shows that the incidence of penalty provisions was much greater in nonunion plans than in union ones. It is easy to understand why nonunion employers might include such provisions. In the two union plans in which such provisions were included, the explanation may be that the union expected the controls program to be short-lived. A short-lived controls program would permit modification of the plan to be negotiated in the near future. Also, the fact that the economy was expanding rapidly during Phase II promised increased production with little likelihood of production slumps. In such a climate, penalties were unlikely to be invoked.

Record-Keeping and Payoff Frequency

Most productivity-incentive plans specify periods for which records are to be kept and during which payments are to be made. Table 4 summarizes the record-keeping arrangements for the 55 plans. A similar tabulation is shown on Table 5 for payoff periods. Eighty percent of the plans required that plans be kept at least monthly. Table 5 shows that payoff frequency was also skewed toward monthly or even more frequent periods. Sixteen of the 55 plans did not specify a payoff frequency. However, it may be assumed that payoff frequency and record-keeping frequency were closely related.

NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED
DURING THE ECONOMIC STABILIZATION PROGRAM
(By Union/Non-Union Status and by Record Keeping Frequency)

Table 4

Employee Unit Status	Record Keeping Frequency						
	Daily	Weekly	Bi-Weekly	Monthly	Quarterly	Annually	In Response to Suggestion Specified
Union	3	5	0	4	1	0	2
Non-Union	15	7	2	8	2	1	3
Total	18	12	2	12	3	1	5

Source: See Table 1

NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED
DURING THE ECONOMIC STABILIZATION PROGRAM
(By Union/Non-Union Status and Payoff Frequency)

Table 5

Employee Unit Status	Payoff Frequency						
	Daily	Weekly	Bi-Weekly	Monthly	Quarterly	Annually	In Response to Suggestion Specified
Union	1	1	0	5	1	0	7
Non-Union	0	9	4	11	2	3	9
Total	1	10	4	16	3	3	16

Source: See Table 1

The logic of frequent record-keeping and payoff is quite simple. The more often workers are informed of performance levels, the more likely they are to respond with increased effort. A day or a week in which production falls short is much more likely to be followed by increased output when workers learn about the shortfall quickly. It would be tempting to draw significance from the difference in patterns of frequency distributions between union and nonunion plans. However, the sample of plans is too small to permit such distinctions. Given the newness of the plans, it may be assumed that the frequencies were not chosen with scientific precision. Probably, they reflect traditional payroll and accounting practices in the firms.

Occupational Composition

Table 6 shows the distribution of the types of employees covered by the plans. As might be expected, the union plans tends to cover production and maintenance employees. Only two union plans cover all employees. In contrast, of the 40 nonunion plans, 9 cover supervisory workers exclusively and 4 cover all employees including supervisors. Plans covering supervisors often have relatively long payoff and record-keeping periods since it is difficult to define supervisor output in the short run.

Table 6

NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED DURING THE ECONOMIC STABILIZATION PROGRAM
(By Union/Non-Union Status and by Type of Employees Covered)

Employee Unit Status	Employee Classifications Covered		
	Production and/or Maintenance Employees	Supervisory Employees	All Employees
Union	13	0	2
Non-Union	27	9	4
Total	40	9	6

Source: See Table 1

Revision Process

Productivity-incentive plans often include some procedure for revision. Revision might be necessary, for example, if new machinery could change the standards for productivity norms. Table 7 shows that it was common in nonunion plans for the company unilaterally to determine the need for revisions. This was less likely to be the case in the union sector where it is normal for collective bargaining to have an impact on all wage determination procedures. About half of the union plans did not provide for explicit revision machinery. This probably indicates that the productivity-incentive plan was considered to be part of the overall union-management agreement. In effect, those agreements were reopened for revision at each new negotiation.

Table 7

NUMBER OF PRODUCTIVITY INCENTIVE PLANS FILED DURING THE ECONOMIC STABILIZATION PROGRAM
(by Union/Non-Union Status and by Revision Provided)

Employee Unit Status	Revision Process				
	Company Only	Union Partici- pation	Worker Partici- pation	Unclear	None Pro- vided Total
Union	2	3	0	2	8
Non-Union	24	0	1	3	40
Total	26	3	1	5	55

Source: See Table 1

Table 8

DISTRIBUTION OF UNION AND NON-UNION
PRODUCTIVITY INCENTIVE PLANS FILED DURING THE
ECONOMIC STABILIZATION PROGRAM
(By Industry Represented)

Industry	Union	Non-Union
Fabricated Metal Products	4	5
Warehouse Operations	2	3
Furniture Manufacturing	2	2
Mobile/Modular Homes	1	3
Food Processing	1	2
Container Manufacturing	0	3
Steel Manufacturing	0	3
Glassware Products	1	1
Heavy Equipment Manufacturing	1	1
Building Materials	0	2
Plastic Pipe Manufacturing	0	2
Agriculture	0	1
Auto Parts Distributor	1	0
Mining	0	1
Restaurant	0	1
Services	0	1
Miscellaneous Manufacturing	0	9
Industry not stated	2	0

Source: See Table 1

It is also possible that the absence of revision procedures indicates a tendency toward hastily constructed plans in the union sector. If the plans were quickly designed to respond to controls regulations, there would be little concern for the exact nature of the plans. Union bargainers may have felt that the controls would be of short duration. Once controls were terminated, revision of the plan would not be necessary; instead the plan could be terminated as well.

Table 8 provides a breakdown by industry of the 55 plans. It is noteworthy that 12 of the 15 union plans occurred in industries where nonunion plans were also found. A possible conclusion from this relationship is that both the union and the nonunion sectors responded to industry needs in establishing plans. An alternative interpretation, however, is also possible: certain industries are more amenable to productivity-incentive plans than others. An important precondition for a plan is the presence of an easily measured output. If there was union pressure to establish incentive programs, management would be most likely to accede in industries where such plans were easily constructed.

Plan Complexity

An important difference between the union and the nonunion plans is the degree of comprehensiveness or complexity. This difference is best illustrated by using plan length as an index of complexity. Union plans averaged 8.8 pages in length, with a range from 2 to 45 pages. Nonunion plans had an average length of 17.3 pages, with a range from 2 to 227 pages.^{8/} The greater length of the nonunion plans may be indicative of greater care in their preparation. In general, the nonunion plans had many more provisions, spelling out the measurement process and the circumstances under which payments would be made. In the union sector, by comparison, plans were described in broader terms, with little in the way of detailed refinements or special provisions. This suggests that the union plans may have been aimed mainly at avoiding the effect of wage controls.

The difference in comprehensiveness could be the result of factors other than controls, of course. Nonunion employers would naturally be concerned with constructing their incentive programs carefully. But it is also true that great comprehensiveness creates an aura of scientific precision. Employees are thereby discouraged from challenging the plan's structure. But, this view may be overly cynical. The submissions requesting approval for modifications of nonunion plans appear to be carefully drawn. They suggest that nonunion employers were generally trying to achieve a precise relationship between individual output and rewards.

In short, the simplicity of the union plans may well disclose a short-run, controls-oriented motivation. If a plan was established primarily in response to controls, neither party would desire to establish a complex arrangement. The union, in particular, would want to be certain the program was simple and direct, which would permit the plan to be accepted without extensive delay by the union's membership. Simplicity

would also be critical to speedy implementation. And, simplicity would be helpful in resolving disagreements about subsequent plan operations.

Even if the union plans were artificially induced by economic controls, should they be regarded as distortions? In a simple sense, they were distortions, since such plans would not have occurred in the absence of controls. But the key question is whether the plans induced real productivity improvements. It is possible that controls pushed labor and management toward thinking about real revisions in incentives in a creative manner. There is no way of knowing whether such creative thinking occurred. It seems unlikely, however, that real reform of incentives could arise from artificially induced plans since the parties would not have started with that objective.

Productivity Bargaining

"Productivity bargaining" is often defined as collective bargaining negotiation in which management "buys out" restrictive work rules.^{9/} The union trades off its work rules for higher wages. Productivity bargaining and productivity-incentive plans are not the same concept but they can be related. A reduction in restrictive work rules could be part of a proposed productivity-incentive arrangement. However, only one of the 15 union plans contained evidence of productivity bargaining. That plan involved the warehousing operation of a large supermarket chain in the eastern United States.

The productivity bargaining issue was submitted for discussion to the full Pay Board. One of the earliest cases considered by the Board involved the railroads and the United Transportation Union. The Board was told that large savings could be achieved through a productivity agreement recently signed by the parties. Amounts as high as \$180 million per annum were suggested at a public hearing. On that basis the Board granted an above-guideline wage increase. Months later,

the Board demanded an accounting of the cost savings which were supposed to have occurred. As it turned out, cost savings had occurred. But, the savings amounted to roughly \$1 million.

In another case, the Pay Board reviewed a productivity agreement in the longshoring industry on the West Coast. This agreement had been concluded during the 1960s. The union argued that it had not received full compensation for its past trade-off of work rules. In its decision the Pay Board did grant an above-guideline wage increase, but not as much as the union desired. Regardless of the merits of the Board's decision, it is clear that the Stabilization Program did not induce the parties to conclude the productivity agreement. It had been reached many years before.

The Pay Board remained reluctant to grant increases based on a productivity exception. It insisted on a case-by-case method of decision. In part, the Board's reluctance may be explained by the British experience with wage-price controls in the 1960s. In the British program, productivity bargaining was encouraged as a means of achieving above-standard wage increases. It appears that many of the agreements reached under the British program did not provide the cost savings that were promised. Many of the agreements appear to have been motivated simply to avoid the effects of economic controls.^{10/}

V. Conclusions

It seems reasonable to conclude that distortions in bargaining practices did occur under the Stabilization Program. Some unions apparently recognized that the productivity-incentive plan regulations provided a loophole in the wage control program. In 7 out of the 15 union plans, the union involved was identifiable from the case records. In 3 of the 7 plans the union was the International Brotherhood of Teamsters. It is difficult to generalize

from a sample of only 7 plans. But it is not surprising that the Teamsters appeared in the records. The Teamsters did not walk off the Pay Board in March 1972 when the other four labor members departed. Because of their presence on the Pay Board, the Teamsters' national office was more familiar with the operations of the rules and case-handling procedures; it was well aware of the delays in case handling and of the opportunities for extra earnings from productivity-incentive plans. It can certainly be said that the Teamsters' national office was in a position to advise local unions on the advisability of seeking to install productivity-incentive plans.

It is important, however, to keep the issue of productivity-incentive plans in perspective. Only a handful of new plans were submitted to the Pay Board or to successor agencies. There are probably some 85,000 union agreements in existence. The proportion which installed productivity-incentive agreements during the controls program was totally insignificant. Thus, although distortions probably occurred, their economic impact was negligible.

There is one question which Cost of Living Council records cannot answer. The Pay Board's rules specified that existing productivity-incentive plans could continue to operate according to their terms, but revisions in such plans had to be approved by the Board. It is conceivable that under controls some plans had to be approved by the Board. It is conceivable that under controls some plans which needed revision were not revised. The parties concerned may have wished not to involve the Pay Board in their internal affairs. They may have felt it was worthwhile waiting for the termination of controls to reform their programs. Presumably, such decisions would have lowered productivity potential in those enterprises. It is unlikely that the magnitude of this effect was significant. A unit really had nothing to lose by submitting revisions of an existing plan to the Pay Board. At worst the revisions would not have been approved. In that case the existing plan would continue until acceptable revisions were established.

CHAPTER 6

THE IMPACT OF WAGE CONTROLS ON INDUSTRIAL RELATIONS

While the impact of wage controls is expected to be concentrated in the movement of wage rates, much more can occur, particularly in the union sector. Collective bargaining, which is the process by which unions and management determine wage rates and other conditions of employment, is not likely to go unaffected. After all, the bargaining process does not focus solely on the price which will be paid labor over a specified period of time. Labor and management face a smorgasbord of options during negotiations, with the negotiable issues possible including wages, overtime, shift scheduling, holidays, vacations, work rules, and the duration of contract--to mention but a few. If economic controls restrict bargaining over wages, there should be evidence of a shift to bargaining over other issues. Evidence available from the recent stabilization program indicates a complicated relationship between controls and industrial relations activity.

The existence of a controls program is likely to increase uncertainty. Workers, whether unionized or not, will be uncertain as to the exact magnitude of any wage boosts they can expect to receive under changing regulations. Employers will be unsure what wage increases they will be allowed to pay. Both parties may be afraid that negotiating under the controls program will lock them into an arrangement that limits their flexibility to act in their self-interest. These uncertainties were evident during the recent American experience with controls.

The wage stabilization efforts of the Nixon Administration were multi-faceted. The first set of controls was established in the construction industry in March 1971. President Nixon created the Construction Industry Stabilization Committee (CISC) to deal with

the problem of rapidly increasing wages in the building trades. CISC did not define a wage "standard," but elected to review proposed wage increases on a case-by-case basis. Thus, bargainers in the construction industry had no guidelines with which to operate. They were forced to negotiate what they deemed to be an appropriate settlement and await its approval or rejection by the review boards which were established under the program. The only guidance available came from observation of the treatment of other negotiations in relatively close proximity.^{1/}

The controls effort of the Pay Board, established in November 1971, also contributed to the confusion of negotiators. While the Board met prior to Phase II and established a 5.5 percent standard for wage and salary adjustments, there was considerable uncertainty as to exactly what the standard meant. Questions arose as to whether it included fringe benefits and, if so, which ones. And how tough would the Board really be on exceptions?

The basic operations of the Pay Board during the early stages of Phase II added to the confusion. The Board, which was tripartite, was primarily involved in the process of establishing policy during the early months of its existence. The only major decisions it made--in bituminous coal, aerospace, and the railroads--were for adjustments far in excess of the 5.5 percent standard. Moreover, the staff at that time was a revolving group of "detailees" from other agencies, providing nothing in the way of a coherent structure which could help resolve the public image of what was occurring in Washington. And the Board, with its problems of trying to resolve internal differences between the labor and management representatives, could do little worrying about the staffing situation.

It was only after January, 1972, when the Executive Director was appointed, that a permanent staff began to take shape. These new appointees, who were relatively

young and inexperienced, were willing to work long hours in a crisis atmosphere at an agency with an uncertain life expectancy. Surprisingly, the level of competency of most of this professional staff was high. It was this staff, after months of intensive work with the Board, that formed the basic operational structure of the wage stabilization effort. The General Counsel's Office translated the Board's program into the legal language necessary for regulations. The economic analysis unit prepared studies of the aggregate impact of the program. The case processing division worked out procedures by which incoming cases were to be handled. And the operations unit devised a computerized tracking system to monitor the progress of cases through the agency. But, it was not until March, 1972, that the Pay Board's regulations were finally completed and published in the *Federal Register*, and several months after that before a "steady state" level of operations was reached. To the public, this delay from the creation of the Pay Board to full operating capacity did nothing to relieve the uncertainty as to what ultimately would be the structure of the wage stabilization program.

I. Awareness of Controls

In an effort to obtain a broad assessment of the impact of the Pay Board and its regulations on the collective bargaining process, the Board's staff made two telephone surveys of the Federal Mediation and Conciliation Service (FMCS) in June and August, 1972.^{2/} The first of these surveys, conducted just three months after the Board's regulations were issued, revealed a substantial amount of confusion about Board policies on the part of both unions and management.

Both sides of the bargaining table recognized the existence of the Pay Board. Management--as might be expected--generally welcomed the Board as a stabilizing influence. Union leadership, on the other hand, faced a more difficult situation. While many union business

agents accepted the need for wage controls as a counter-inflationary measure (often on an off-the-record basis), they were not in sympathy with controls as they applied to their own particular situations. Such feelings obviously modified the parties' behavior in response to the controls program.

The 5.5 percent general wage standard was familiar to both parties. However, while aware of the figure, they did not always understand exactly what it meant. Management often argued that it was a ceiling to settlements while the unions sometimes countered that it was a floor. Moreover, there was general confusion as to what was the appropriate *base* to be used in calculating the 5.5 percent increase and which items were to be *included* and which to be *excluded* from the arithmetic. Management sometimes argued that the 5.5 percent should be multiplied by wages alone, while the unions (correctly) contended that it was based on wages plus fringe benefits. Similarly, there was less than complete understanding as to the treatment of qualified fringes. In the early days, the parties showed remarkably little perception of the fact that there was a potential for a 0.7 percent (or more) qualified benefit increase above and beyond the 5.5 percent adjustment allowed.

Union negotiators had difficulty explaining the 5.5 percent figure to their members. The rank and file had seen other workers receive large increases in the period prior to November 14, 1971, and were well aware of newspaper accounts of subsequent Pay Board approvals far in excess of the standard. Union members argued that they should also be allowed more than 5.5 percent, and complained when their negotiating teams returned settlements far short of those reported in the news media. Their confusion and frustration were not easily resolved.

By the time the second survey of the FMCS was conducted in late August, 1972, the situation had changed somewhat. The unions had passively accepted controls; they appeared to be resigned to them. Management, for the most part, was still praising the Pay Board. However, there now was employer criticism that the 5.5 percent standard was serving as a "floor" for negotiations.

By August, there was substantially less confusion over the appropriate base to be used in calculating the 5.5 percent adjustment. The parties also were usually aware of the special provisions for qualified fringe benefits. In large part, this elimination of confusion was attributable to the efforts of the international unions and the Internal Revenue Service to provide more information on the rules of the stabilization program. But confusion did remain over application of exceptions to particular units.

Not only had more of the union leaders become familiar with the specifics of the 5.5 percent standard, in many cases the rank and file had gained significant awareness of the standard and of its implications. Union members, however, were not as willing to accept the guidelines tacitly as was the leadership. To placate this restlessness, union leaders placed greater emphasis on non-wage items, such as seniority clauses, work assignments, and issues which otherwise might have been ignored during the course of negotiations.

It must be noted that in spite of the improved "average" knowledge of Pay Board regulations and policies in August 1972, sophistication varied widely. Awareness of Board regulations was directly related to the size of the bargaining unit: large units were very aware of the strategies to use in working within--and around--the system, while small units had to do the best they could with more limited resources. This meant that the handling of Board matters both by and for the smaller units was often excessively time-consuming and generally more confusing for them.

The pattern of familiarity with Board policies and regulations was the natural result of the manner in which the federal government "marketed" its stabilization program. The methods employed to publicize information about regulations and policies included notices in the *Federal Register*, speeches by members of the senior staff, notices in the Bureau of National Affairs' *Daily Labor Report* and conferences and training sessions in major cities such as

New York, Washington, Atlanta, Chicago, San Francisco, Los Angeles, and Dallas. These strategies were supplemented by training workshops organized and operated by the national staff of the Internal Revenue Service.

But throughout, the results of these efforts were most pronounced for the representatives--both union and management--of larger employee units, which could afford the trips to major metropolitan areas to attend conferences and workshops. Larger units were more likely to subscribe to the labor information services. They could hire attorneys to process their cases and present them before the appropriate body. The smaller employers as well as union locals could not afford the luxury of attending conferences and hiring attorneys. Moreover, their primary source of information, the local IRS office, often was inadequately staffed and/or informed to provide the answers they needed.^{3/} These differences in access to information doubtless contributed to the changes in industrial relations practices which were experienced during the stabilization program.

II. Controls and Union Elections

The effects of the controls program may be measurable on any of several aspects of the collective bargaining relationship. There may be an impact on the initial efforts of a union to organize a bargaining unit or on the negotiation process itself, and ultimately on the potential occurrence of industrial conflict. Each of these aspects will be considered below.

There are two, different arguments which can be made with regard to union organizing success during a period of wage controls. On the one hand, workers may have been reluctant to join unions because the guidelines would limit the ability of unions to attain substantial wage settlements. On the other, the available evidence reveals that union increases approved by the authorities were larger than those granted non-union units. This differential could have provided a positive incentive to organize.

Evidence on union elections during the Economic Stabilization Program, however, does not show a substantial increase or decrease in successful union organizing. Table I, which details the percentage of private sector union elections victories and the percentage of workers voting for a union, reveals no significant divergence from past patterns during Phases II, III or IV. Union successes appear to have neither increased nor decreased during this period, although there was some reduction in successes in 1974, after the termination of the stabilization program. Basically, a downward trend in union victories which began prior to the program continued during controls.

This aggregate information should not be construed, however, to imply that there was absolutely no impact on representation elections caused by wage controls. During Phase II, complaints reached the Pay Board claiming that one party or the other used the existence of the controls system to influence an election. Similarly, throughout the course of the controls program--and even in 1974--charges were filed with the NLRB alleging that either the union or the employer had taken advantage of or misinterpreted the regulations in order to affect a representation election.^{4/} It appears that instances of lack of knowledge about the structure of the controls program contributed to the effectiveness of such tactics.

Thus, it is possible to argue that, while the existence of the Economic Stabilization Program did not produce a significant aggregate impact on union representation elections, it did influence the election process in particular cases. There were individual instances where the existence of the program facilitated the efforts of either a union or management. The outcome of the election remained in force, of course, even after controls expired.

III. Controls and Bargaining Issues

It is difficult to assess the impact of controls on the bargaining process itself. No comprehensive survey of the collective bargaining activities exists which would

Table 1

OUTCOMES OF SECRET-BALLOT VOTING BY EMPLOYEES IN NLRB-CONDUCTED REPRESENTATION ELECTIONS * / AS OFFICIALLY CERTIFIED FOLLOWING RESOLUTION OF POST ELECTION OBJECTIONS AND/OR CHALLENGES

1960-1973

Year	Number Of Elections	Percent Of Elections Won By Unions	Total Employees Eligible To Vote (000's)	Percent Of Total Employees Eligible To Vote In Units Won By Unions
1973	9,369	51	541	43
1972	8,923	54	592	50
1971	8,362	53	586	47
1970	8,074	55	609	52
1969	7,993	55	593	51
1968	7,857	57	566	52
1967	8,116	59	624	57
1966	8,324	61	593	57
1965	7,824	60	545	61
1964	7,309	58	552	54
1963	7,096	58	503	54
1962	7,355	59	555	57
1961	6,595	55	469	51
1960	6,617	58	501	50

* / Does not include decertification elections.

NOTE: Figures include election contests between unions.

facilitate an examination of the strategic changes caused by the existence of the stabilization program. As a result, the analysis must focus on the limited types of information which are available, and which provide some insight into the ways in which negotiators responded to the wage controls program.

One measure of the ease or difficulty with which the process of collective bargaining was conducted under controls is available from the annual reports of the Federal Mediation and Conciliation Service (FMCS). The FMCS is charged under the Taft-Hartley Act with the task of facilitating agreement between unions and management; it enters into the collective bargaining process "to assist parties to labor disputes in industries affecting commerce to settle such disputes through conciliation and mediation."^{5/} The Service may act when troubles develop during bargaining and the parties request its intervention, or it may offer to assist negotiations on its own initiative when it believes that such a service would be of value to the parties.

Regardless of the type of intervention in a given bargaining situation, the mediator can be expected to deal with any of a variety of issues--ranging from arbitration procedures to settling disputes over wages and working conditions. The issues involved in any particular negotiations will depend upon variables including the history of bargaining--if any--between the parties, the general economic health of the industry, to name a few. Obviously, the existence of a wage-controls program would be expected to have an additional impact because it influences the economic climate surrounding negotiations.

By establishing a wage standard of 5.5 percent, the Pay Board limited the scope of wage and fringe bargaining.^{6/} While settlements could be both above and below the guideline, the existence of the guideline could not be ignored. Overstepping the guideline, at the very least, entailed waiting for consideration of a request for an exception.

Table 2 provides, for matters negotiated in "joint" mediation cases,^{7/} a percentage breakdown by wage and wage-related issues (which corresponds to the items costed by the Pay Board), non-wage issues, and contract duration.^{8/} There appears to have been some change in the mix of issues beginning with fiscal 1972 and 1973. Wage issues dropped from a trend value near 48 percent to below 47 percent in 1972 to almost 45 percent in 1973. The proportion of non-wage issues in joint sessions rose above 35 percent in fiscal 1972 and fiscal 1973, a level not reached previously. Contract duration, about which more will be said later, increased as an issue in 12.6 percent of all joint sessions in fiscal 1971 to over 13 percent of cases during fiscal 1972 and fiscal 1973.

Obviously, the changes noted in the relative proportions of issues negotiated during joint mediation cases are marginal ones. While in the case of non-wage issues and contract duration the levels reached are greater than those reached in any previous year, these movements do not represent deviations from the trend of substantial magnitude. But based on information obtained from FMCS personnel, it does appear that some of the shift was due to the existence of controls.

IV. The Wage-Fringe Mix

Although the Economic Stabilization Act of 1970 originally made no provisions for preferential treatment of fringe benefits, amendments passed late in 1971 provided distinctive treatment for so-called "qualified" fringe benefits: pension plans, health and welfare programs, life insurance, and savings schemes. The Pay Board, in response to the amendments, provided an 0.7 percent basic standard for qualified benefits on top of the 5.5 percent already given, effectively raising the standard to 6.2 percent for new adjustments.^{9/}

The special policy for qualified fringe benefits might have been expected to induce bargainers to shift their agreements in this direction. (A Pay Board staff study

Table 2

ISSUES NEGOTIATED IN JOINT MEDIATION CASES ENTERED BY THE FEDERAL MEDIATION AND CONCILIATION SERVICE, FISCAL 1961 - FISCAL 1973

Fiscal Year	Number Of Cases	Number Of Issues	Type Of Issue, (By Percent)		
			Wage Issues ¹	Non-Wage Issues ¹	Contract Duration ²
1961	6,211	21,653	50.6%	28.4%	12.8%
1962	7,313	27,447	48.6	31.1	12.6
1963	7,013	28,047	47.9	32.8	12.7
1964	7,221	29,228	48.0	33.0	12.7
1965	7,445	32,221	48.6	32.8	12.8
1966	7,836	35,129	48.4	32.7	13.0
1967	7,193	33,943	47.2	33.9	12.7
1968	7,485	34,247	48.4	34.1	12.6
1969	8,028	38,391	48.3	34.1	12.6
1970	7,509	36,264	47.7	34.3	12.7
1971	7,991	38,410	48.3	34.5	12.6
1972	7,215	35,021	46.6	35.7	13.2
1973	7,238	35,408	44.9	36.3	13.5

¹Wage issues include wages, vacations and holidays, and pensions, insurance and welfare; non-wage issues include hours and overtime, job classification, seniority, working conditions, guarantees, arbitration, and managerial prerogatives.

²Includes union security and other issues

Source: Federal Mediation and Conciliation Service, Annual Report, Various Years.

reported a trend toward larger fringe packages a few months after the new rules were adopted. However, the change did not appear to be "statistically significant."^{10/}

Aggregate data for 1972 and 1973 do not support any general movement toward larger fringe benefit payments. In the private sector, wage and salary expenditures per employee rose 6.2 percent between 1971 and 1972 and 5.8 percent between 1972 and 1973, while employer contributions to private pension and welfare funds per employee rose 14.0 and 12.2 percent, respectively, in these two-year periods.^{11/} By contrast, from 1970 to 1971, the comparable figures are 6.0 percent and 14.0 percent. These figures reflect the more rapid long-term growth of fringes relative to wages, a trend which seems to have *decelerated* during the two-year period in question.

The relative deceleration in 1972 is probably explained in part by the mix between new and deferred adjustments. In 1972, there was a relatively large incidence of workers experiencing deferred adjustments (63.5 percent) in major union situations. But 1973 was not a light bargaining year; the relative share of deferred adjustments dropped to 48.0 percent.^{12/} Since most fringe-benefit adjustments normally occur in the first year of new contracts, the expectation would be for a narrowing of the relative growth gap in wages and salaries as compared with fringe benefit payments during 1972, but a widening in 1973.

To sort out the new/deferred mix effect, it is possible to look only at new settlements. Bureau of Labor Statistics data on the coverage of adjustments in major new collective bargaining settlements show a drop in the frequency of fringe benefit changes during 1972, and a partial reversion in 1973 to earlier patterns. Table 3 shows the changes in pensions as well as health and welfare plans both by percent of workers and percent of agreements for the 1967-1973 period. Some of the 1972 dip may be explained by the relatively high proportion of major contract expirations in 1972 that involved the construction industry. The Construction Industry Stabilization Committee

had no provisions for the preferential treatment of qualified fringe benefits. Part of the explanation also may lie in the fact that 49 percent of the workers covered by 1972 negotiations were working under contracts negotiated in 1969, which, as Table 3 indicates, was also a year in which there was a reduced incidence of fringe-benefit adjustments. The industrial composition of contracts and the propensity of certain units to emphasize fringes almost certainly play a role in this changing pattern of benefit adjustments.^{13/}

Certainly, the evidence on benefit changes in manufacturing presented in Table 3 supports the slowdown of fringes during 1972; the 1972 levels are lower than those of any preceding year with the exception of 1969. This result seems to support the contention that the industry composition of bargaining--even within manufacturing--is an important factor in the composition of the wage/fringe mix.

Major agreement data for 1973 of the Bureau of Labor Statistics show an upward movement in the proportion of both workers and agreements receiving adjustments in pension plans. In the case of health and welfare program adjustments, the percentage of workers involved in changes increased while the percentage of agreements dropped. There is no reason to believe that the shift to Phases III and IV would account for these divergent movements.

BLS data, unfortunately, cover only larger contracts, but the Bureau of National Affairs, Inc., collects data on contracts of all sizes. BNA data, also presented in Table 3, reveal an increase in the percentage of agreements outside the construction industry in which changes were made in pension provisions during 1971 through 1973, although the proportion of agreements with health and welfare adjustments fluctuated with a decrease in 1972 and an increase in 1973. These results, which are somewhat ambiguous, and the fact that the BNA sample is not limited to "major" collective bargaining situations, suggest the possibility that there may have been a larger proportion of changes in fringes in "smaller" contracts than took place in the population surveyed by the Bureau of Labor Statistics.^{14/}

Table 3
PENSTON AND HEALTH AND WELFARE ADJUSTMENTS IN NEW UNION AGREEMENTS
1967-73

Year	Pension Adjustments			Percentage of Workers Involved All Industries ^a (BLS)	Percentage of Workers, Manufacturing ^a in Non-construction ^b (BNA)
	Percentage of Workers Involved All Industries ^a (BLS)	Percentage of Workers, Manufacturing ^a (BLS)	Percentage of Agreements in Non-construction ^b (BNA)		
1967	59.5	52.5	67.6	34	
1968	65.9	59.4	74.5	39	
1969	50.5	50.1	46.0	40	
1970	61.9	51.6	80.2	44	
1971	70.6	61.9	82.2	51	
1972	52.1	48.2	66.7	53	
1973	66.3	51.3	68.1	54	
Health and Welfare Adjustments					
1967	69.5	69.2	79.8	60	
1968	83.4	73.4	85.0	68	
1969	62.0	63.8	60.3	69	
1970	78.7	63.6	84.9	67	
1971	77.9	69.5	87.7	71	
1972	62.5	55.7	69.9	68	
1973	68.4	53.1	72.0	70	

^a Agreements involving one thousand or more workers.

^b Agreements of all sizes reported to BNA.

Source: Current Wage Developments, Vol. 20 (May 1968), p. 18; Vol. 21 (June 1969), p. 51; Vol. 22 (May 1970), p. 37; Vol. 23 (July 1971), p. 58; Vol. 24 (June 1972), p. 48; Vol. 26 (June 1974), p. 53; Bureau of National Affairs, Collective Bargaining Negotiations and Contracts (Washington, D.C., 1973), pp. 18:915-18:945.

While separate data on adjustments of fringe benefits in the nonunion sector--where about three-fourths of the nonfarm work force is employed^{15/}--are not available, it is difficult to imagine that the nonunion pattern was significantly different from that reported in the national income accounts. Certainly, the nonunion sector would not have been expected to be characterized by a strong push for fringes, especially in 1972. The labor market was not sufficiently tight to create an incentive for nonunion employers to grant large fringe adjustments in order to relieve labor shortages.

The available evidence suggests that there was no upsurge in fringe benefits during the stabilization program, in spite of the Pay Board's incentives. This lack of movement toward fringes may reflect initial uncertainty over what was permitted by Pay Board regulations, as well as the industrial mix of units negotiating during Phases II and III. It may also have been a function of the "catch-up" pressure felt by workers, particularly in 1972. The bulk of those involved in negotiations during this period had seen their real wages unexpectedly squeezed by the inflation of 1969-1971. Workers probably wanted their new settlements to concentrate on cash in the pay envelope rather than on contributions to pension and welfare funds. This factor may have outweighed the Pay Board's preferential treatment of fringe benefits in 1972. By 1973, however, catch-up pressures had dissipated and the failure of a fringe upsurge to occur is more difficult to explain. It may simply reflect an inertia in collective bargaining.

V. Controls and Contract Duration

Perhaps the most dramatic impact of the controls program was on the duration of newly negotiated collective bargaining contracts. The American version of collective bargaining has often been praised for its ability to establish long-term agreements between labor and management. As bargaining matured in the postwar period, contracts of more than one year's duration became commonplace.

The controls program had an immediate effect on contract duration. This reversal started first in the construction industry--the Construction Industry Stabilization Committee had been established in March 1971--and spread to other industries after more extensive controls were established. A summary of data of the Bureau of National Affairs on contract duration appears in Table 4.

In 1970, the average duration of newly negotiated agreements both within and outside the construction industry was almost two and one-half years. One-year contracts climbed from 7 percent of total construction agreements negotiated in 1970 to 63 percent in 1971 and to 84 percent in 1972. The trend then began to reverse. In the nonconstruction sector, which was covered by wage controls four months after construction, one-year contracts rose from 6 percent of new contracts in 1971 to 15 percent in 1972.

Table 4 indicates that the termination of most controls in 1974 led to a return to contracts of greater length. This movement seems to have begun in the Phase III-IV period. The shortening of contracts was clearly a response to the initial uncertainty, and the extending of contractual terms can be viewed as a measure of the reduction of uncertainty as familiarity with the program grew.

In certain instances where the parties did not negotiate shorter contracts, other strategies were attempted to circumvent the restrictions imposed by the controls program. During Phase II, one tactic was to include a wage reopener in the contract allowing for additional negotiations in subsequent years. Reopeners were sometimes conditioned on the termination of controls. Generally, these conditional provisions were voided by Cost of Living Council regulations during Phase III. But when controls expired completely in 1974, there was no barrier to the operation of such clauses.

Another strategy was to allow the original contract, as it read prior to a Pay Board or COLC reduction, to stand as written. Then, when direct controls were terminated, the

Table 4

PERCENTAGE DISTRIBUTION OF NEWLY NEGOTIATED
COLLECTIVE BARGAINING CONTRACTS, 1969-1974

Percentage of Contracts With Stated Duration

Year		1 Year	2 Years	3 Years	4 Years	5 Years	Average Duration (In Years)
1969	All Industries	7%	32%	52%	1%	--	2.31
1970	Construction	7%	43%	48%	2%	--	2.45
	Nonconstruction	8%	38%	53%	1%	(*)	2.47
1971	Construction	63%	24%	13%	--	--	1.50
	Nonconstruction	6%	35%	58%	1%	--	2.54
1972	Construction	84%	12%	4%	--	--	1.20
	Nonconstruction	15%	34%	51%	--	--	2.36
1973	Construction	78%	18%	4%	--	--	1.26
	Nonconstruction	10%	36%	54%	--	---	2.44
1974	Construction	70%	14%	16%	--	--	1.46
	Nonconstruction	7%	28%	65%	(*)	--	2.60

* Less than 0.5 percent

Source: Bureau of National Affairs, Inc. Data are based on a sample of contracts collected by BNA.

old wage rates would automatically "spring back" to the original pre-cut levels. The COLC reacted by writing regulations designed to prevent these spring-backs from occurring when smaller units were effectively decontrolled by Phase III. But, as in the case of reopeners, spring-backs were not limited when controls completely terminated.

In sum, the parties followed a variety of courses with regard to contract duration during economic controls. The uncertainty caused by the program motivated them to seek ways to ensure that they would not be locked into a controls-influenced settlement in the post-controls environment. Shorter contracts, the insertion of wage reopeners, and planned spring-backs were the chief devices used.

VI. Controls and Industrial Disputes

Hopefully, the collective bargaining process will normally bring about a peaceful accord between labor and management, but sometimes industrial strife cannot be avoided. The strike is a part of collective bargaining which is employed when other negotiating strategies fail. A wage controls program with a mandated standard might limit the scope of disagreement over wages, which in turn could limit the incidence of industrial disputes. Alternatively, it could provoke strikes aimed at the authorities, although such stoppages were extremely rare during Phases I-IV.

The evidence on the impact of controls on strike activity is somewhat ambiguous. Table 5 presents data on the number of stoppages, the number of workers involved in stoppages, and man-days idle as a percentage of estimated available working time. On the one hand, the absolute number of strikes did not drop dramatically during the controls period--there was a slight decrease in 1972 and a slight increase in 1973. And strike incidence remained high by the standards of the early 1960s. On the other, the number of workers involved in strikes fell dramatically, from levels of over three million in 1970 and 1971 to 1.7 million in 1972, and to 2.3 million in 1973. Perhaps more

Table 5
STRIKE ACTIVITY, 1960-1973

Year	Stoppages		Man-Days Idle As Percentage Of Estimated Working Time (In Percentages)		
	Number Of Stoppages	Workers Involved (In Thousands)	All Industries	Non-Construction	Construction
1960	3333	1320	.17	.16	.63
1961	3367	1450	.12	.10	.50
1962	3614	1230	.16	.13	.60
1963	3362	941	.13	.12	.25
1964	3655	1640	.18	.17	.35
1965	3963	1550	.18	.15	.57
1966	4405	1960	.18	.15	.73
1967	4595	2870	.30	.28	.62
1968	5045	2649	.32	.28	1.05
1969	5700	2481	.32	.20	1.19
1970	5716	3305	.37	.30	1.79
1971	5138	3280	.26	.23	.83
1972	5010	1714	.15	.11	.88
1973	5353	2251	.14	.13	.40

SOURCE: U.S. Bureau of Labor Statistics *Handbook of Labor Statistics, 1974* (Washington, D.C.: G.P.O., 1974), pp. 383-386, and U.S. Bureau of Labor Statistics, *Work Stoppages in 1973* (Washington, D.C.: G.P.O., January 1975), p. 5.

Table 6

PERCENTAGE OF STRIKES, WORKERS INVOLVED,
AND MAN-DAYS IDLE IN COLLECTIVE BARGAINING
UNITS OF LESS THAN 1,000 WORKERS, 1959-1973

Year	Ratio Of Small Stoppages To Total Stoppages	Ratio Of Workers Involved In Small Stoppages To Total Workers Involved In Stoppages	Man-Days Idle In Small Stoppages As Percentage Of Total Man-Days Idle In Stoppages
1959	93.4%	26.4%	11.7%
1960	93.3	31.9	30.6
1961	94.2	29.0	37.7
1962	94.2	35.7	36.7
1963	94.7	45.6	37.8
1964	93.3	27.9	29.3
1965	93.2	35.4	35.1
1966	92.7	33.7	37.0
1967	91.8	23.9	25.7
1968	92.3	30.0	27.5
1969	92.8	36.5	31.4
1970	93.4	25.4	20.5
1971	94.2	23.3	25.3
1972	94.9	43.1	38.1
1973	94.0	37.8	41.8

SOURCE: Bureau of Labor Statistics, *Handbook of Labor Statistics, 1974*, pp. 369-370, and *Analysis of Work Stoppages, 1973*, p. 7.

dramatic are the reductions in man-days idle as a percentage of estimated working time during the stabilization program. Man-days idle fell approximately one-half between 1971 and 1972, with this reduction coming in the nonconstruction sector, although the reduction does not appear to have been significant in the regression tests reported below. Man-days idle actually increased in the building trades. Relative idleness due to stoppages had decreased in the construction industry in 1971, perhaps in initial response to the creation of the Construction Industry Stabilization Committee in March. It increased slightly in 1972 and then fell sharply in 1973.

The fact that the number of strikes was relatively unchanged during these years while the number of workers involved and man-days idle both fell implies that there must have been basic changes in the nature of strike activity in the 1972-1973 period. Table 6 isolates the proportion of strike activity taking place in groups of 1,000 workers or more.^{16/} It is apparent that smaller units accounted for a slightly larger proportion of strikes during the stabilization program. But the number of strikes in any given year is always dominated by strikes in smaller units. On the other hand, the proportion of workers involved in strikes in smaller units rose during 1972 and fell back in 1973. A similar result occurred for the proportion of man-days idle in small-unit strikes. These structural shifts partially reflect the tendency for relatively few larger units to experience contract expirations in 1972, a tendency which diminished in 1973.

It might be expected that, under controls, there would be changes in the causes of strikes. The evidence already presented in Table 2 from FMCS records reinforces this expectation. Table 7 provides a percentage breakdown on the number of stoppages, workers involved, and man-days idle, in which the major issues related to wages.^{17/} The table includes situations in which unions and management were negotiating either a new (i.e., first-time) agreement or a renewal or reopener of an existing agreement.^{18/} Insofar as strikes are concerned, it is

apparent that there was a moderate decline in the relative importance of wage issues in 1972. But wage issues rose again in significance during 1973. Nevertheless, the proportion of strikes over work rules and security issues doubled in 1972 and 1973 when compared to the previous three years, peaking in 1972. In short, there is evidence that negotiators emphasized nonwage issues under controls--especially under Phase II--more than might have been expected otherwise. Apparently the wage guideline suggested that it would be more fruitful to concentrate on items not subject to controls.

VII. Regression Results on Strike Incidence

In order to obtain further statistical evidence on the relative impact of the wage stabilization program on work stoppages, a number of strike regression equations were estimated for the 1961-1974 period. These equations are summarized in Table 8.

Annual changes in the absolute number of work stoppages, the number of workers involved, number of man-days idle, and man-days idle as a percentage of working time, were regressed against the ratio to trend of real gross national product (RGNP), the annual percent change in real GNP (PGNP), the annual change in the number of workers under expiring major collective bargaining agreements (DE), and dummy variables for 1972 and 1973 (DUM72 and DUM73). The GNP variables were used to capture business-cycle effects on strike propensities. The change in the number of workers under expiring agreements provides an approximation to the likelihood of disputes over contract renewal since such strikes are more likely to occur in years with heavy collective bargaining calendars. The dummies effectively represent Phase II and Phases III-IV of the Economic Stabilization Program.

The results for the regressions using the change in the absolute number of stoppages indicate no significant changes during the controls program. Neither of the dummies yield a statistically significant coefficient.

Table 7

PERCENTAGE DISTRIBUTION OF STOPPAGES, BY TYPE OF ISSUES IN DISPUTES OVER NEW AGREEMENTS OR RENEGOTIATION OF EXISTING AGREEMENTS, 1961-1973

Year	Type of Issues			
	Wages ¹	Security/Work Rules ²	Union Security	Miscellaneous ³
1961	68.5%	6.5%	22.1%	2.9%
1962	70.4%	6.0%	21.0%	2.5%
1963	68.2%	7.0%	21.4%	3.3%
1964	67.4%	7.7%	21.0%	4.0%
1965	68.7%	6.7%	20.3%	4.2%
1966	73.1%	5.0%	19.2%	2.6%
1967	73.8%	5.7%	18.2%	2.2%
1968	78.1%	4.4%	13.9%	3.5%
1969	79.4%	2.9%	14.9%	2.9%
1970	78.7%	3.0%	14.7%	3.6%
1971	79.5%	3.8%	13.3%	3.5%
1972	72.4%	7.8%	16.3%	3.5%
1973	76.9%	7.4%	12.3%	3.4%

1. Wage Issues including General Wage Changes, Supplementary Benefits, and Adjustments.
2. Security/Work Rules Issues include Job Security, Plant Administration, and Other Working Conditions.
3. Miscellaneous Issues include Hours Of Work, Interunion Or Intraunion Matters, Other Contractual Matters, and Not Reported.

Note: Items may not add to 100 percent due to rounding.

Source: U.S. Bureau Of Labor Statistics, Analysis Of Work Stoppages, Various Issues.

Table 8
REGRESSION RESULTS CONCERNING WORK STOPPAGES

Dependent Variable	Annual Change in						
	Number of Stoppages	Thousands of Workers Involved in Stoppages	Millions of Mandays Lost in Stoppages	Mandays Lost as Percent of Working Time	1961-1973	1961-1973	
Constant	-8134.1 (-2.16)	-8270.9 (-2.43)	-8539.8 (-2.55)	-270.2 (-2.75)	-228.8 (-2.18)	-1.56 (-2.72)	-1.31 (-2.09)
RGNP	8235.4 (2.16)	8369.8 (2.42)	9086.0 (2.68)	280.8 (2.83)	240.2 (2.26)	1.62 (2.78)	1.36 (2.15)
PGNP	8.9 (.19)	10.7 (.26)	-82.9 (-2.02)	-1.7 (-1.42)	-2.2 (-1.76)	-.01 (-1.26)	-.01 (-1.61)
DE	7.9 (.08)	15.9 (.21)	300.3 (4.11)	7.8 (3.09)	5.3 (2.35)	.05 (3.19)	.03 (2.36)
DUM72	-240.6 (-.69)	-237.0 (-.73)	-1095.1 (-3.33)	-7.8 (-.85)	-8.9 (-.88)	-.03 (-.60)	-.04 (-.65)
DUM73	56.3 (.14)	-	-284.2 (-.77)	-17.0 (-1.67)	-	-.11 (-1.77)	-
R ²	.537	.536	.883	.763	.668	.749	.637
D-W	1.99	1.95	1.91	2.33	2.09	2.38	2.09
Std. error	295.8	277.1	272.3	7.7	8.5	.05	.05
Period of Observation	1961-1973	1961-1973	1961-1973	1961-1973	1961-1973	1961-1973	1961-1973

RGNP = ratio to trend of real GNP estimated 1961-1974
 PGNP = annual percent change in real GNP (percentage points)
 DE = annual change in number of workers in expiring contracts in millions estimated as 10,600,000 minus number of workers under deferred situations

DUM72 = 1 in 1972; zero otherwise
 DUM73 = 1 in 1973; zero otherwise

However, their signs are negative, perhaps indicating a marginal tendency toward a reduction in the number of strikes during controls. The expiration variable is also not significant. This is probably because the dependent variable is measured in different units (stoppages rather than workers), and because it indicates all stoppages rather than just major ones.

Regressions for the change in the number of workers involved in stoppages produce a significant DE coefficient. The dummy for 1972 is significant and negative in both equations shown; the 1973 dummy is negative but not significant, suggesting that the 1972 effect continued into 1973.^{19/} Both equations indicate that the number of workers involved in stoppages during 1972 was about 1.1 million less than would have been expected as the result of aggregate economic variables. A possible hypothesis is that controls had an effect on the larger new contract situations, but had little effect on the grievance, workrule, and wildcat strikes which generally involve small numbers of workers in existing contracts.

The sets of regressions which were run on the two different types of idleness statistics produced significant DE coefficients since workers involved and time lost are closely related. Dummies for 1972 and 1973 are both negative, but not significant. Hence, any impact that controls might have had in reducing worker involvement was partially offset by greater strike intensity (days lost per worker involved).

In sum, only in the "workers involved" equations did the effect of controls appear to be a "significant" reduction in industrial unrest. The other indexes of strike activity suggest only a marginal reduction. This result reinforces the hypothesis that although controls reduced strikes on wage issues, some of the suppressed unrest spilled over into disputes involving other issues. It is important to note that there is no evidence that controls *increased* strike propensities. Hence, it seems clear that distortions of industrial relations in the form of strikes need not accompany wage controls.

that investors believed controls would be anti-labor since they evidently thought labor-intensive firms would profit more than others.

There are, however, some questions that can be raised concerning the S&B conclusions. A second freeze was announced in early 1973, which permits a retesting of their methodology. The second freeze covered prices--not wages--and therefore the S&B test should indicate that labor-intensive firms were expected to be hurt. But the results--while pointing in that direction--do not appear to be significant.^{22/} Thus, it appears that there may have been other factors surrounding the announcement of Phase I that may have influenced investor beliefs.

The Phase I announcement was, in fact, accompanied by the announcement of measures other than controls designed to stimulate the economy. This alone could have been expected to boost the stock market. Moreover, there is reason to expect that labor-intensive firms, particularly those which were unionized, might have experienced an extra boost from the stimulation part of the announcement. The union sector of the labor market had built up a backlog of catch-up wage pressure owing to the existence of long-term contracts and unexpected inflation in the late 1960s. As new contracts were negotiated, labor-intensive firms could have been expected to be especially hurt by the depressed economic conditions which then prevailed, since pass-through of the wage costs to the consumer was difficult. Hence, any announcement of economic revival would be favorable to these firms, even without controls. As it turns out, unionization also seems to have been associated with the stock market reaction, giving some support to this alternative hypothesis.^{23/}

Thus, it would be difficult to conclude from the S&B evidence that the U.S. industrial relations system suffered a permanent injury due to perceptions of bias in controls. There is no simple index available for measuring public perceptions although the S&B tests certainly raise important questions. Public opinion polls were taken on controls from time to time. However, the

VIII. Stress on the Social Fabric

The successful operation of controls depends on an elusive sense of fairness on the part of labor and the public generally. One element of fairness is the avoidance of the appearance of an anti-wage earner bias. Controls are supposed to be neutral with regard to income distribution. They should restrain the growth of nominal wages and prices below the rates that otherwise would prevail. But they should not attempt to alter real incomes.

There have been numerous after-the-fact studies of the economic impact of the 1971-1974 controls program on wage and price inflation. In the course of these studies, the question has arisen as to whether prices or wages felt the greater restraint, i.e., whether controls transferred real income to profits and other nonlabor income, or whether labor benefitted at the expense of nonwage income. The results of these efforts, as might be expected, have been ambiguous. Some researchers find a pro-labor bias; others find the opposite or no effect at all.^{20/}

After-the-fact studies suffer from a common defect. They tell us what happened, not what people believed was happening at the time controls were in effect. From a social viewpoint, appearances may well be more important than reality. Only one recent study by Sol Shalit and Uri Ben-Zion has dealt with the issue of appearances directly.^{21/} Shalit and Ben-Zion (S&B) looked at the stock market reaction to the announcement of Phase I, and concluded that investors *believed* that controls would be anti-labor.

The heart of the S&B analysis consisted of a cross-sectional regression analysis of changes in stock price movements surrounding the announcement of firms listed on the *Fortune Double 500*. Included among the explanatory variables was a measure of the importance of labor costs to these firms, the employment-to-sales ratio. This turned out to be positively associated with the stock price increases experienced after controls were announced. S&B interpreted this result as an indication

issue of a controls bias was never raised directly. In general, "manual workers" responding to the Gallup Poll seemed to favor less strict controls during Phases I-IV slightly more than the public in general.^{24/} During Freeze 2, when asked if the economy should be returned to the strict controls of Phase I, 47 percent of labor union families favored such a step as opposed to 54 percent of nonunion families. Since "Phase I" meant a wage freeze along with a price freeze, while Freeze 2 meant only a price freeze, this divergence in attitude is understandable.

It is possible that controls did lead to social stresses. But when combined with the evidence on overt behavior, i.e., strikes, it appears that the overall effect on the long-term health of the industrial relations system cannot have been very great. Although union workers were less favorably impressed with controls than the public as a whole, they cannot be described as alienated if the public opinion surveys can be believed.

IX. Summary and Conclusions

Controls had some effect on the collective bargaining mechanism. A number of indexes suggest that the peak controls effect came in 1972, i.e., Phase II. It is known that during the early part of Phase II, information on the precise nature of the controls regulations was unevenly distributed. Perhaps the uncertainty which developed due to lack of information played a role in the 1972 impact. This hypothesis would be difficult to test, however, because controls were changed early in 1973 with the announcement of Phase III. In many respects, Phase III and IV wage controls were less rigid than those of Phase II, so a movement toward normality in bargaining might have been expected.

The primary impact of controls appears to have been a shift toward nonwage issues and to shorter contract durations. By some measures, strike propensities were reduced under controls, but the evidence is ambiguous. It can certainly be said that controls did not induce a significant increase in strike activity. The wage/fringe mix did not

seem to be much altered under controls, despite the more favorable treatment granted to certain types of fringe benefits contained in the regulations. Union success rates in NLRB representation elections also do not appear to have been affected.

Controls might have caused substantial distortions in industrial relations. But they did not do so. This suggests that future wage-control programs need not be expected to disrupt industrial relations practices, especially if the controls are not billed as permanent.

CHAPTER 7

LESSONS FOR FUTURE CONTROLLERS

This study reviews the 1971-1974 American experiment with wage and price controls from an unusual perspective. Its purpose was not to examine the direct impact of the stabilization effort on the movement of wages and prices. Rather, it sought to analyze whatever "distortions" effects of controls were observable from the available data. Certainly, any future decision to implement controls programs should include consideration of such effects.

Standard economic theory suggests that controls will cause "shortages" in the labor and product markets. The discussion in the previous chapters has expanded that analysis to show that controls-related distortions are more complicated than the simple shortfall of supply relative to demand, which is usually emphasized in the literature. However, the theoretical analysis presented here does not purport to capture all of the subtle reactions to controls that may take place. There are undoubtedly many such reactions which are reflected only indirectly in the conventional data sources.

The empirical analysis in Chapters 4 to 6 highlights the effects which were most easily subject to measurement during the 1971-1974 controls program. Evidence was presented which indicated that controlled firms in the manufacturing sector passed on at least some portion of their costs in terms of decreased delivery reliability. They may have also passed forward--or backward--other parts of these costs in other ways which went undetected. And similar reactions undoubtedly occurred outside manufacturing. In contrast, the available evidence on labor-market distortions suggests that there was little material change in the level of voluntary labor turnover which can be attributed to controls. Quit rates and help-wanted advertising moved

upwards during the controls period, but the change appeared to be due to the economic expansion. Of course, these findings concerning turnover do not rule out other forms of distortions in the labor market, or even spot shortages in particular situations.

The data presented on productivity-incentive plans suggested the ability of individual wage-setting units to adjust payment practices in response to controls regulations. This ability to adapt to a controls environment is also illustrated by the shortening of labor-management contract durations and the increased importance of non-wage issues in negotiations. Even so, the evidence suggests no dramatic impact on the labor market. Controls-related distortions seem to fall mainly in the product market. That is the major lesson of the 1971-1974 Economic Stabilization Program.^{1/} Naturally, if wage controls operated in an inflexible manner for many years--as has sometimes happened abroad--labor-market distortions on a large scale could arise. But this is not likely to be the American experience.

The interrelationship between labor and product markets precludes distortion of one without some impact on the other. The beef shortage of 1973 was a primary example. Price ceilings on red meats caused farmers to reduce shipments to market, thereby reducing the demand for employees in meat-processing plants and supermarkets. The price-control effect spilled over into the labor market, causing the temporary unemployment. In late 1973 and early 1974, the gasoline shortage provided a similar example.

The 1971-1974 Economic Stabilization Program provides some "administrative" lessons for future controllers. On both the wage and price sides, the style of administration tended to generate uncertainty. Indeed, some of the distortions pointed up in this study were the result of responses to uncertainty over the direction of the controls program, rather than to the actual regulations. The program was initially set up in haste--during a 90-day

freeze--and progressed in an awkward fashion. Changes in policy often reflected ideological tensions within the Nixon Administration and political pressures from Congress.^{2/}

Any stabilization program will minimize distortions to the extent that it is well-planned and properly structured to meet the desired goals. In retrospect, the ideological--and later Watergate-related--tensions in the Nixon Administration, and the well-publicized feuding of the tripartite Pay Board did not project an image of orderly planning. The aversion of economic policy makers to an iterative, pragmatic approach, and the seeming appeal of dramatic shifts and reversals of policy were unfortunate.

The difficulties of the tripartite Pay Board suggest a different type of dilemma. Labor has a difficult time sitting on a Board which cuts back wage increases. The experience of Phases III and IV indicate that it would be preferable to use labor and management representatives in advisory capacities rather than have them involved in day-to-day operations. Clearly, this is an important lesson for future controls planners. Uncertainty, and its attendant distortions, can be reduced if the agencies responsible for controls can handle rule-making, case-processing, staffing, and planning without unnecessary internal dissension.

The coverage of a stabilization program can also have an impact on distortions. In the labor market, the collective bargaining sector is centered in the larger units. Since it is that sector which is of greatest concern to the controllers, one option to controllers is to exempt the smaller competitive units. This saves administrative effort, and tends to focus on the wage leaders. However, there is not perfect correlation between size and wage leadership. In some industries, such as construction, small units may set the norms. Thus, blanket exemptions by size, with no allowance for industry characteristics, may well be counterproductive. But, placing units which are not likely to create inflationary problems under controls simply increases the likelihood of distortions.

An extensive program must either have a large bureaucracy or rely on across-the-board rules such as the Pay Board's 5.5 percent guideline. The across-the-board approach helps to generate certainty about what is permitted, although, as noted in Chapter 6, it may take some time for the rules to be disseminated. On the other hand, the across-the-board approach invites adaptation and evasion, since blanket rules have trouble dealing with artful avoidance. The alternative is to follow the Construction Industry Stabilization Committee (CISC) model and look at "everything" on a case-by-case basis in selected industries. This approach became official policy in 1973, when the Chairman of CISC became the Director of the Cost of Living Council. But if contract durations are a guide, more uncertainty was created in construction than in any other sector by the "no-rules" approach. The lesson of the 1971-1974 experience is that there is as yet no model available which can determine the "optimum" degree of extensiveness versus selectivity, or of guidelines versus case-by-case decisions. Pragmatism and iterative adjustments are again the preferable approach.

Since this study has looked only at costs, and not the benefits, of controls, a conclusion about the usefulness of controls would be inappropriate. Moreover, there is no escaping the fact that economic policy is more an art than a science. No effort has been made here to put a dollar price tag on the costs of controls. An attempt to do so would have been wholly artificial. So the decision to impose controls or rely solely on traditional monetary and fiscal policies cannot be resolved through a simple cost-benefit analysis. Policy makers still must rely on their judgment, as imperfect as it may be. It is important, however, to consider both the costs and the benefits, even if they cannot be weighed precisely. Hopefully, this study has made a modest contribution to cost evaluation in the labor market.

FOOTNOTES TO CHAPTER I

- 1 Daniel J. B. Mitchell, "A Simplified Approach to Incomes Policy," *Industrial and Labor Relations Review*, Vol. 22 (July 1969), p. 512.
- 2 Jonathan Grossman, "Wage and Price Controls during the American Revolution," *Monthly Labor Review*, Vol. 96 (September 1973), pp. 3-10.
- 3 For a discussion of wartime controls, see Milton Derber, "The Wage Stabilization Program in Historical Perspective," *Labor Law Journal*, Vol. 23 (August 1972), pp. 453-462.
- 4 See John Sheahan, *The Wage-Price Guideposts* (Washington: Brookings Institution, 1967).
- 5 See Mitchell, *op. cit.*, pp. 523-524, especially footnote 44.
- 6 The view is expressed by Robert M. Solow, "The Case Against the Case Against the Guideposts," in George P. Shultz and Robert Z. Aliber, *Guidelines: Informal Controls and the Market Place* (Chicago: University of Chicago Press, 1966), pp. 52-54.
- 7 For a discussion of Phase I, see Arnold R. Weber, *In Pursuit of Price Stability: The Wage-Price Freeze of 1971* (Washington: Brookings Institution, 1973).
- 8 On Phase II, see Daniel J. B. Mitchell, "Phase II Wage Controls," *Industrial and Labor Relations Review*, Vol. 27 (April 1974), pp. 351-375; Daniel J. B. Mitchell and Arnold R. Weber, "Wages and the Pay Board," *American Economic Review*, Vol. LXIV (May 1974), pp. 88-92; Robert F. Lanzillotti and Blaine Roberts, "The Legacy of Phase II Price Controls," *American Economic Review*, Vol. LXIV (May 1974), pp. 82-87.

- 9 John T. Dunlop, *Statement of Dr. John T. Dunlop, Director, Cost of Living Council Before the Subcommittee on Production and Stabilization of the Senate Committee on Banking, Housing and Urban Affairs* (Washington: Government Printing Office, 1974), Appendix O.
- 10 For example, Lloyd Ulman and Robert J. Flanagan, *Wage Restraint: A Study of Incomes Policies in Western Europe* (Berkeley: University of California Press, 1971); Walter Galenson, ed., *Incomes Policy: What Can We Learn from Europe* (Ithaca, N.Y.: New York State School of Industrial and Labor Relations, 1973).
- 11 Daniel J. B. Mitchell, "Incomes Policy and the Labor Market in France," *Industrial and Labor Relations Review*, Vol. 25 (April 1972), pp. 315-335.
- 12 Daniel J. B. Mitchell, "Union Wage Policies: The Ross-Dunlop Debate Reopened," *Industrial Relations*, Vol. 11 (February 1972), pp. 46-61.
- 13 Daniel J. B. Mitchell, "The Future of American Wage Controls: Some Lessons from the Recent Past," *California Management Review*, Vol. XVII (Fall 1974).
- 14 There can be short-run squeezing of profit margins, although the effects of such a squeeze are likely to vanish as soon as controls are lifted. One author, for example, estimates that profit margins were 2-1/2% below normal during Phase IV. See Robert J. Gordon, "The Response of Wages and Prices to the First Two Years of Controls," *Brookings Papers on Economic Activity*, number 3 (1975), pp. 765-768.

FOOTNOTES TO CHAPTER 2

- 1 It has been pointed out that the direct impact of controls might be to improve economic efficiency if an industry tended to have monopolistic elements. See Jerry E. Pohlman, *Economics of Wage and Price Controls* (Columbus, Ohio: Grid, 1972), p. 142. But the text also points to the type of indirect effect where one seeming imperfection tends to cancel out another one. Examples of this type have been most developed in the theory of international trade in connection with tariff policy. See J. E. Meade, *Trade and Welfare* (London: Oxford University Press, 1955), Part II.
- 2 See Clark Kerr, "The Balkanization of the Labor Market" in E. Wright Bakke et al, *Labor Mobility and Economic Opportunity* (Cambridge, Mass.: MIT Press, 1954). A more recent empirical study using this kind of typology can be found in Arthur J. Alexander, "Income, Experience, and Internal Labor Markets," *Quarterly Journal of Economics*, Vol. LXXXVIII (February 1974), pp. 63-85.
- 3 A recent survey of pension plans revealed that 23% of the workers covered had no vesting provisions, 56% had less than full vesting after 10 years of service, and 21% had full vesting after 10 years or less. See U.S. Senate Committee on Finance, *Private Pension Plan Reform* (Washington: Government Printing Office, 1973), p. 21.
- 4 Information on seniority provision of major union contracts can be found in U.S. Bureau of Labor Statistics, *Administration of Seniority*, Bulletin 1425-14 (Washington: U.S. Government Printing Office, 1972).
- 5 Gary Becker, *Human Capital* (New York: Columbia University Press, 1964), Chapter II.

- 6 Michael J. Piore, "The Importance of Human Capital Theory to Labor Economics--A Dissenting View," *Proceedings of the Industrial Relations Research Association*, December 28-29, 1973, p. 256, expresses the view that the difficulty in making the distinction is an indication that employers do not utilize the concept.
- 7 Thus, teenagers made up 28% of the total number of unemployed persons in 1973. Of the teenage unemployed, 41.5% had never held a job before. See U.S. President, *Marpower Report of the President 1974* (Washington: Government Printing Office, 1974), p. 279.
- 8 Walter Y. Oi, "Labor as a Quasi-Fixed Factor," *Journal of Political Economy*, Vol. LXX (December 1962), pp. 538-555.
- 9 For a conceptual approach to "metering" performance and related problems, see Armen A. Alchian and Harold Demsetz, "Production, Information Costs, and Economic Organization," *American Economic Review*, Vol. LXII (December 1972), pp. 777-795.
- 10 For example, see Lar Aavig, "Wage Drift in Norway," *British Journal of Industrial Relations*, Vol. II (July 1964), pp. 182-183.
- 11 Data taken from U.S. Bureau of Labor Statistics, *Handbook of Labor Statistics 1973* (Washington: Government Printing Office, 1973), p. 345; and U.S. Bureau of Labor Statistics, press release USDL: 73-390, August 22, 1973.
- 12 There are exceptions. Kenneth E. Boulding, agreed that unions give the workers a sense of identification with society. See his comments in David McCord Wright, ed., *The Impact of the Union* (New York: Harcourt, Brace and Co., 1951), pp. 245, 345.
- 13 Monthly data on turnover and vacancies can be found in *Employment and Earnings*.

14 Monthly data on the index of help-wanted advertising can be found in the *Survey of Current Business*.

15 Monthly data on inventories, sales, and unfilled orders appear in the *Survey of Current Business*.

16 These data appear in the *Handbook of Labor Statistics*.

17 Monthly election result data appear in National Labor Relations Board, *N.L.R.B. Election Report*.

18 BLS data on major contracts appear periodically in *Current Wage Developments*. BNA figures appear in the *Daily Labor Report*.

19 For example, this technique was applied to an analysis of the impact of civil rights legislation on labor-market patterns in Richard B. Freeman, "Changes in the Labor Market for Black Americans, 1948-72," *Brookings Papers on Economics Activity*, Number 1 (1973), pp. 67-120.

20 There were calls for confining the scope of controls to major firms and employee units during Phase I. See, for example, the testimony by Otto Eckstein and Charles Shultz in U.S. Joint Economic Committee, *The President's New Economic Program* (Washington: Government Printing Office, 1971), Part I, pp. 24, 49. However, a major reduction was not made in coverage until several months into Phase II when an exemption for most employers with 60 or less employees was adopted. Phase III tended to concentrate on the larger units by relaxing reporting requirements.

FOOTNOTES TO CHAPTER 3

1 In some cases, ceilings above the market price could have a price-raising effect. For example, firms may feel that it would be advantageous to establish transactions at the maximum price so that they would not be caught with a lower price in a subsequent freeze. This sort of behavior could occur if the firm believed that in the future, a higher price would be advantageous.

2 References will be cited in Chapter 4.

3 In algebraic terms, $dC_w/dw > 0$ in the relevant range, $d^2C_w/dw^2 > 0$ until the highest quality of worker is reached and equal to zero thereafter.

4 $dA/dw > 0$ for $w < w_0$; $d^2A/dw^2 > 0$ for $w < w_0$. For $w > w_0$, $dA/dw = d^2A/dw^2 = 0$.

5 $dH/dA > 0$; $d^2H/dA^2 > 0$.

6 $dC_h/dH > 0$; $(dC_h/dH)(H/C_h) = 1$; $d^2C_h/dH^2 = 0$.

7 The vertical addition can be seen in Figure 6. Line segment w_3 , for example, is equal to $pw_3 = kw_3$.

Based on the assumptions previously made, the slope of $C_h = C'_h(w)$ must be negative since

$$\frac{dC_h}{dw} = \frac{dC_h}{dH} \frac{dH}{dA} \frac{dA}{dw}$$

where the signs of the right-hand side terms are shown underneath. The convexity of $C_h = C'_h(w)$ is determined by the expression:

$$(1) \quad \frac{d^2C_h}{dw^2} = \frac{dC_h}{dh} \frac{d^2H}{dw^2} + \frac{dH}{dw} \frac{d^2C_h}{dH^2}$$

The final term of this expression is equal to zero since $d^2C_h/dH^2 = 0$ by assumption. Thus, expression (1) becomes:

$$(2) \quad \frac{d^2C_h}{dw^2} = \frac{dC_h}{dH} \left(\frac{dH}{dA} + \frac{d^2A}{dw^2} + \frac{dA}{dw} \frac{d^2H}{dA^2} \right)$$

The term d^2H/dA^2 will be only slightly different from zero (and positive) because of the temporary absenteeism effect on new hires. So expression (2) will have a strong tendency to be positive as shown in Figure 6, Quadrant I. Even a reversal of convexity would not necessarily prevent $C = C(w)$ from being U-shaped. Indeed, with an extreme reversal - a theoretical possibility - $C = C(w)$ would have a minimum point at a positive wage policy.

8 Implicit in this statement is that other variable cost items (materials) do not create any scale effect. In other words, short-run marginal costs are constant.

9 Firms in some cases might have monopsony power in the labor market. More likely, in certain occupations, e.g., nurses, employers together can conspire as oligopsonists to depress the market wage. The framework summarized in Figure 6 does not take explicit account of this situation. In the monopsonist case, it is possible to imagine the curves drawn in Figure 6 face the single employer. (w in this case must be viewed as an absolute wage in dollars rather than an index around an average wage, since the employer always pays the average wage by definition, as a monopsonist). The optimum wage policy is still a minimum point such as w_2 in figure 6. If the industry was oligopsonistic, some arrangement would have to be made to hold all employers to w_2 . To the individual employer, point

v would not appear to be optimum if the others in the oligopsonistic cartel held to the old wage. The cheating employer could pull in all top quality labor he wanted and enjoy low turnover. But widespread cheating would cause collapse of the cartel.

Where employer monopsony or oligopsony operates, wage controls could cause a further deviation from economic efficiency if they imposed any ceiling below what the monopsonist or cartel wanted to pay. Thus, monopsony or oligopsony is similar to the competitive case as far as their impact of controls is concerned. Any effective ceiling inflicts economic damage.

Discussion of the impact of oligopsony and monopsony on a turnover related measure (vacancies) can be found in John G. Myers, *Job Vacancies in the Firm and the Labor Market*, study prepared by the National Industrial Conference Board for the Office of Manpower Policy, Evaluation, and Research of the Manpower Administration (September 1968), pp. 22-23.

10 John T. Dunlop, "The Task of Contemporary Wage Theory," in John T. Dunlop, ed., *The Theory of Wage Determination* (New York: St. Martin's Press, 1964), pp. 3-27, especially p. 21.

11 Unions tend to be found in higher-paying industries, and the inverse relation between unionism and turnover has been noted in the literature since the 1940s. See H.G. Lewis, *Unionism and Relative Wages in the United States* (Chicago: University of Chicago Press, 1963), pp. 53-54.

12 For studies relating to this issue, see William R. Bailey and Albert E. Schwenk, "Wage Differences Among Manufacturing Establishments," *Monthly Labor Review*, Vol. 94 (May 1971), pp. 16-19; S.H. Masters, "An Inter-industry Analysis of Wages and Plant Size," *Review of Economics and Statistics*, Vol. LI (August 1969), pp. 341-345; Leonard Weiss, "Concentration and Labor Earnings," *American Economic Review*, Vol. LVI (March 1966), pp. 96-117; Lewis, *op. cit.*

- 13 Masters, *op. cit.*, p. 342.
- 14 The terms "primary" and "secondary" follow the definitions used in the dual labor market literature. See Peter B. Doeringer and Michael J. Piore, *Internal Labor Markets and Manpower Analysis* (Lexington, Mass.: Heath Lexington Books, 1971). It might be noted that in later writings Piore plays down the conceptual difference between specific and general training, although specific training could be used as a partial explanation for the characteristics of the primary market. See Michael J. Piore, "The Importance of Human Capital Theory to Labor Economics-- A Dissenting View," *Proceedings of the Twenty-Sixth Annual Winter Meeting, Industrial Relations Research Association*, December 28-29, 1973, pp. 251-258.
- 15 See Bureau of National Affairs, Inc., *Finding and Training Potential Executives*, Survey Number 58, Personnel Policies Forum (Washington: BNA, 1960), p. 11; Bureau of National Affairs, Inc., *Management Trainee Programs*, Survey Number 72, Personnel Policies Forum (Washington: BNA, 1963), p. 11. As might be expected, the training of first-line supervisors tends to be less costly than executive training. See Bureau of National Affairs, Inc., *Training First-Line Supervisors*, Survey Number 78, Personnel Policies Forum (Washington: BNA, 1966), p. 9.
- 16 National Industrial Conference Board, *Personnel Practices in Factory and Office: Manufacturing Personnel Policy Study Number 194* (New York: NICB, 1964), pp. 80-81.
- 17 Arthur M. Ross, "Do We Have a New Industrial Feudalism", *American Economic Review*, Vol. XLVIII (December 1958), pp. 903-920.
- 18 See the introduction by Daniel J.B. Mitchell to Bessie Van Vorst, *The Woman Who Toils* (Los Angeles: Institute of Industrial Relations, UCLA, 1975).

- 19 Donald E. Cullen, "Interindustry Wage Structure," *American Economic Review*, Vol. XLVI (June 1956), pp. 353-369.
- 20 See F.M. Scherer, *Industrial Market Structure and Economic Performance* (Chicago: Rand McNally & Co., 1970), pp. 149-157; Victor Zarnowitz, "Unfilled Orders, Price Changes, and Business Fluctuations," *Review of Economics and Statistics*, Vol. 44 (November 1962), pp. 367-394.
- 21 Excess demand in Figure 8 is represented by the gap between Q₄ and Q₅.
- 22 Usually, those who argue that controls should be placed on "large" or noncompetitive units base their argument on an alleged tendency of such units to make inflationary wage or price decisions. In contrast, Figure 8 seems to imply that non-competitive firms would be less likely to exhibit shortages if controls were placed on their sales than competitive firms. Thus, the argument in the text concerns feasibility, not effectiveness, in dealing with inflation. Debate about whether non-competitive firms are inflationary and the concept of a "range" for wage/price controls can be found in the readings by Milton Friedman and Robert M. Solow in George P. Shultz and Robert Z. Aliber, eds., *Guidelines: Informal Controls and the Market Place* (Chicago: University of Chicago Press, 1966), pp. 31,45. For a recent empirical study with reference to earlier literature, see J. Fred Weston, Steven Lustgarten, and Nancy Grottko, "The Administered-Price Thesis Denied: Note," *American Economic Review*, LXIV (March 1974), pp. 232-234.
- 23 In a market with few sellers and many buyers, the costs of evening out fluctuations in demand through inventory adjustments is likely to be less for sellers than for buyers. The "law of large numbers" will apply to sellers' inventories since buyer fluctuations will tend to net out against each other.
- 24 The assumption of expected profit maximization as opposed to some form of risk aversion would have little impact on the analysis. In effect, the firm's tastes toward risk would enter into its decision on delivery reliability.

A risk-adverse firm might decide to keep a longer backlog of orders on hand--in order to keep a steady stream of income flowing--than an expected profit maximizer. It would sacrifice some expected profits for a steadier income flow.

25 If the firm sets a policy of maintaining a given inventory-to-output ratio, in equilibrium it will have to keep inflows into inventory equal to outflows. Thus, in the analysis of Figure 9, the inventory-to-output and inventory-to expected-sales ratios are identical.

26 Although this tendency seems reasonable, Figure 9 does not prove that it occurs. Rather, Figure 9 is drawn on the *assumption* that such an adjustment takes place. Appendix A shows that normally the inventory-to-output ratio would be expected to fall as the controls price is lowered. Only peculiar cost functions seem capable of altering this tendency.

27 With linear demand curves and linear shifts in those curves, there is a clear-cut relationship between the effect of controls on output and consumer welfare. If output rises, i.e., if the consumer surplus triangle enlarges, welfare increases. If output falls, welfare falls. If shifts in inventory policy affect the shape of the curve as well as its location then this relationship does not necessarily hold. For example, suppose the effect of going from R_1 to R_2 was to create a new demand curve which coincided with D_2' along c_j , but bent below it above c : a sufficiently steep bend could make the consumer surplus area below the new demand curve smaller than had prevailed under the old, even though output had risen from Q_1 to Q_2' .

28 Table 5 provides data for 1960 and 1970, the latter being the last full year prior to wage/price controls. The stability of the relative ranking of inventory-to-sales ratios over a decade indicates that the ranks result from systematic forces which transcend momentary cyclical and other effects.

FOOTNOTES TO CHAPTER 4

- 1 An attempt was made to apply an ARIMA technique to the vacancy rate in order to develop a forecast for the controls period. ARIMA techniques (autoregressive integrated moving average) use the past history of a data series to make future projections. No interactive model is specified. As might be expected, the results from this experiment were inconclusive, since not enough data were available to establish any cyclical patterns. For application of an ARIMA technique to another aspect of controls, see Edgar L. Feige and Douglas K. Pearce, "The Wage-Price Control Experiment--Did it Work?" *Challenge*, Vol. XVI (July/August 1973), pp. 40-44.
- 2 The quit-rate data for total manufacturing extend back further than the disaggregated data. Experiments were tried using data beginning in February 1951 to gain more cyclical experience. Substantially the same results were found. Residuals during controls tended to be positive, but were not "significant" for the period as a whole. Only one of the sub-periods, January 1973-October 1973, produced a significant positive residual.
- 3 All variables (except TIME) were seasonally adjusted. Exponential trends were estimated over the period February 1958-October 1974.
- 4 The deflator used was the Consumer Price Index. Real personal income was less adversely affected by the 1971 recession than industrial production, and it recovered more fully.
- 5 The correction involves the estimation of the value of RHO in the equation $Y = RHO * Y_{-1} + F(X) - RHO * F(X_{-1})$, where Y is the dependent variable, X is a vector of independent variables, $F()$ is the linear operator relating X to Y . The computer program used finds the value of RHO which maximizes the R^2 through an iterative process.

- 6 As can be seen from footnote 5, if RHO is close to unity, Q_i will be heavily affected by its value in the previous month. If the actual value of Q_{i-1} is used for making a forecast, there is a heavy element of "contamination" in the process since Q_{i-1} was itself influenced by controls after August 1971. To avoid such contamination, the simulation technique uses predicted values of Q_{i-1} rather than actual values for all projections after August 1971.
- 7 Moreover, the residuals observed did not immediately disappear after controls expired in April 1974. They tended to remain positive in the aggregate equations until fall, 1974, after which the impact of the severe recession seems to pull them back to zero. This suggests that there may have been factors other than controls which were active in the controls period and for some time thereafter which explained the positive residuals. On the other hand, especially in some union situations, it may have been that the parties were reluctant to revise their contracts when controls expired, and so the controls impact lingered until scheduled contract termination.
- 8 The significance tests were based on the mean value of the forecast residual and its standard deviation. The test asked whether the mean could be statistically distinguished from zero. Computation of the t-statistic provides an answer if each residual can be assumed to be an independent "draw." In the case of the projections using contaminated data, the test is unbiased, despite the use of an autoregressive model. But in the case of the contaminated simulations, the test is biased toward a finding of significance because the residuals are not serially independent. These conclusions can be understood by a simple analysis of the autoregressive model used. The autoregressive model says that

$$(a) \text{ actual} = RHO * \text{actual}_{-1} + Z + e$$

where Z is the estimated contribution of the independent variable and e is a random error. The contaminated projections define the predicted value as

$$(b) \text{ predicted} = RHO * \text{actual}_{-1} + Z$$

Therefore, the residual is equal to e which is serially independent. But in the uncontaminated simulations, the predicted value is defined as

$$(c) \text{ predicted} = RHO * \text{predicted}_{-1} + Z$$

Thus, the residual is defined as

$$(d) \text{ residual} = RHO * \text{residual}_{-1} + e$$

If RHO is relatively large, as it tends to be in the monthly estimates, these residuals cannot be taken to be serially unrelated. This means that strings of positive and negative residuals will tend to occur. The fact that most of the quit-rate mean residuals from the simulations do not appear significant even with a test biased toward significance series emphasizes the points raised in the text.

- 9 The help-wanted advertising series is gathered by the Conference Board from newspapers in 52 major labor-market areas. For details, see National Industrial Conference Board, *Help Wanted Index*, technical paper number 21, New York, 1970.
- 10 All variables were based on seasonally adjusted data.
- 11 See footnote 8 for discussion of the statistical significance test applied on Table 4.
- 12 During Phase II, the staff of the Pay Board made an effort to find evidence of shortages in the labor market and was unable to detect any significant

pressure. There were, of course, some units which claimed that there was a labor shortage in order to advance their cases before the Board. In some of these instances, there was reason to doubt the validity of the claim. In others, some relief was allowed by the Board. The employers involved in most cases were small.

13 Data on industry earnings, hours, racial characteristics, and educational attainment were taken from U.S. Bureau of the Census, *Census of Population 1970*, "Occupation by Industry, Final Report PC(2)-7C (Washington: Government Printing Office, 1973), Tables 1, 4, and 5. Major union membership was taken from the Bureau of Labor Statistics "Wage Calendar" for 1970. In a few cases where industry classifications in the Wage Calendar did not match the industry codes in the *Census*, adjustments were made using data on individual situations appearing in Wage Calendars from 1969-1973. Employment estimates needed to compute unionization rates were taken from *Employment and Earnings* and apply to 1969.

14 The variables follow the same general definitions used in the labor-market model. TIME = 1 in January 1953.

15 The industries analyzed include SIC-20, Food Products; SIC-21, Tobacco Products; SIC-22, Textile Mill Products; SIC-26, Paper and Allied Products; SIC-28, Chemicals and Allied Products; SIC-29, Petroleum Refining; SIC-30, Rubber Products; SIC-32, Stone, Clay, and Glass; SIC-33; Primary Metals; SIC-34, Fabricated Metals; SIC-35, Machinery, except electrical; SIC-36, Electrical Machinery; SIC-37, Transportation Equipment; and SIC-38, Instruments. Data were obtained from the Bureau of the Census, U.S. Department of Commerce, Series M3-1.

The shipments and inventory data for these industries are in value terms, which means they are affected by changes in price. This implies that the inventory-to-sales ratios will vary because of price adjustments and inventory valuation procedures. While there is no method available to adjust for these effects, it appears that any error introduced is likely to be small.

16 These are SIC-28, SIC-29, SIC-30, SIC-32, SIC-33, SIC-37, and a combined industry which is the sum of SIC-35 and SIC-36. The availability of the series in this group varies. Those for SIC-28, SIC-32, SIC-33, SIC-37, and SIC-35+36, cover the period January 1953 through October 1973. For SIC-29 and SIC-30 availability is limited to the January 1960-October 1973 period.

17 Data on unfilled orders are available for SIC-33, SIC-34, SIC-35, SIC-36, and SIC-37, over the January 1953-October 1973 period. While the ratio of unfilled orders to sales as a measure of reliability does not have precisely the same implications as does the inventory-to-sales ratio, it is sufficiently similar to warrant its inclusion in this analysis. However, the ratio of unfilled orders to shipments should *rise* in response to controls as businessmen allow orders to back up because of reduction in their inventories.

18 Data series on lumber production, stocks, and shipments were obtained from the Office of Industry and Commerce, U.S. Department of Commerce. Original data are supplied by the National Forest Products Association.

These data were not available in seasonally adjusted form. To make this adjustment, each series was regressed against time and eleven seasonal dummies. Additionally, the natural log of each series was regressed against time alone. The two equations resulting from these estimations were solved and

the ratio of the estimated seasonal pattern to the estimated time trend was used as a seasonal adjustment factor to correct the original series. The seasonally adjusted series were employed for the analysis of reliability in the same fashion as were those for the other industries examined.

- 19 See Footnote 5 *infra*.
- 20 Because the statistical procedure employed in this study did not involve the use of a dummy variable technique, the test for divergence of behavior could not be performed by testing the significance of the coefficient of the dummy. Instead, the test used focused on the extent to which actual values diverge from the predicted values of the equation. While the average expected value of the residuals of the equation is zero, for nearly all of the industries analyzed, the divergence in inventory-to-sales ratio caused the average residual to be negative.
- 21 The causes behind the "atypical" behavior exhibited by the inventory-to-sales ratio of Instruments are doubtless varied. One possibility is that the bulk of the activity in this industry is at a later stage in the production process than is true of the other industries considered. Instruments may have suffered from the reliability deterioration of one or more of the other industries studied and increased inventories as a response.

One bit of evidence supporting this is the inventory structure of the industry. Work-in-progress inventory for all manufacturing constituted 34.5% of all inventories in 1967. In Instruments, this proportion was 43.1%. See Chapter 4, Table 1, U.S. Bureau of the Census, *Census of Manufactures, 1967*, Vol. 1, Summary and Subject Statistics (U.S. Government Printing Office, Washington, D.C., 1971).

It is also possible that the results for industries with negative average residuals are biased in a

positive direction because of this phenomenon. If these industries expanded raw materials inventories in an effort to adjust to the reliability deterioration of their suppliers, the reduction in finished goods inventories would be offset in the total. Obviously, any mix of inventory adjustments is hidden within the figures for total inventories and it is impossible to determine the extent of offsets if they have occurred.

- 22 But see Footnote 8 *infra*.
- 23 The Cost of Living Council recognized the problems of these industries and took action in response to them on several occasions. For a recent summary of Cost of Living Council policy with respect to these industries, see the *Statement of Dr. John T. Dunlop, Director, Cost of Living Council before the Subcommittee on Production and Stabilization of the Senate Committee on Banking, Housing and Urban Affairs, February 6, 1974* (Washington: Government Printing Office, 1974), especially Appendices D and Q.
- 24 'Cost of Feeding Family of 4 Here Increases 3.9% in Just One Week,' *New York Times*, August 16, 1973, pp. 1, 43.
- 25 *Daily Labor Report*, January 14, 1974.
- 26 See Department of Labor Press Release, USDL-74-106, March 8, 1974.
- 27 'Labor Department Disbands its Program to Deal with Impact of Energy Crisis,' *Daily Labor Report*, May 3, 1974, pp. A-9, E-1.

FOOTNOTES TO CHAPTER 5

- 1 See Daniel J.B. Mitchell, "The Future of American Wage Controls," *California Management Review*, Vol. 17, (Fall 1974), pp. 49-51.
- 2 Copies of the productivity-incentive plans filed with the agencies of the Economic Stabilization Program were obtained through a Freedom of Information Act request (5 U.S.C., Section 502). Because such plans were considered proprietary, names and other identifying characteristics were removed. This lack of identification has limited the opportunity to perform a complete analysis of certain aspects of the plans. However, the descriptive material provided was adequate to form the basis for the analysis performed here.
- 3 It is worth noting that there were some difficulties in assembling these plans. The computerized case tracking system originated for the Pay Board went through several modifications to improve efficiency. These improvements, designed to facilitate case processing, had the shortcoming of occasionally changing case classifications. This may mean that certain submissions were omitted because of the failure of the computer retrieval system to identify them. However, conversations with those responsible for the adjudication of these cases lead the authors to believe that the number is very small.
- 4 These reporting requirements were reduced during Phases III and IV of the stabilization program. In spite of this, some employee units did file productivity-incentive plans although the number of such filings decreased sharply.
- 5 These averages, calculated from a random sample of cases in Pay Board files, doubtless conceal as much as they reveal. Cases which were submitted

- early in the program took much longer to process than those which were filed later, when the case processing machinery was running efficiently. It is possible that, if the program had continued for a longer period of time, the appeals procedure for small units could have been developed to the point where it would not have been necessary to bypass the normal channels through the filing of a productivity-incentive plan.
- 5 See 6 Code of Federal Regulations (6CFR), with Pay Board Recodification, effective November 14, 1972, especially Section 201.61 (b) (1).
- 6 Such standard hours are normally determined by time study and similar measurement techniques.
- 7 As far as was determinable, these were the parties' first experiences with productivity-incentive plans.
- 8 On a mechanical basis, the page length means are not statistically different. The assessment in the text is based on a subjective judgment regarding plan content.
- 9 For a discussion of the general issue of productivity bargaining, see Robert B. McKersie, "The Significance of Productivity Bargaining in Great Britain," in B. C. Roberts (ed), *Industrial Relations: Contemporary Issues* (London: MacMillan and Co., 1968), and K.J.W. Alexander, *Productivity Bargaining and the Reform of Industrial Relations* (London: Industrial and Commercial Techniques, Ltd., 1969). For a discussion of the organizational aspects of productivity bargaining, see Archie Kleingartner and Ross E. Azevedo, "Productivity Bargaining and Organization Behavior," prepared for *Collective Bargaining and Productivity*, research volume of the Industrial Relations Research Association, 1975.
- 10 Laurence C. Hunter, "Some Lessons from the Failure of British Incomes Policies" in Walter Galenson (ed), *Incomes Policy: What Can We Learn from Europe?* (Ithaca, N.Y.: New York State School of Industrial and Labor Relations, 1973), pp. 21-26.

FOOTNOTES TO CHAPTER 6

- 1 For a discussion of the wage controls program in construction, see D. Quinn Mills, "Construction Wage Stabilization: A Historic Perspective," *Industrial Relations*, Vol. 11, (October 1972), pp. 350-365.
- 2 Pay Board staff papers, EAD-47, July 6, 1972, and EAD-77, September 20, 1972.
- 3 Virtually nothing is known about the awareness of the wage controls program by nonunion employers. While they had access to the same information sources as did the union employers, there is no agency similar to the FMCS which can give insight into their wage-setting process.
- 4 Based on telephone conversations with NLRB field examiners.
- 5 Section 203(a) National Labor Relations Act, as amended.
- 6 Wages, pensions, health and welfare funds, insurance plans vacations, and holidays were "costed" by the Pay Board on the reporting forms. Other contractual language was not generally reported to the stabilization agency.
- 7 A "joint mediation case" is defined as one in which the FMCS held joint meetings with the parties.
- 8 The FMCS reports statistics on a fiscal year basis. Therefore, only 1973 in Table 2 covers a period entirely within the Economic Stabilization Program.
- 9 This change raised the standard for deferred adjustments from 7 percent to 7.7 percent.

- 10 Pay Board staff paper EAD-72, September 6, 1972.
- 11 *Survey of Current Business*, Vol. 54, (July 1974), Tables 1:10 and 6:4, pp. 16 and 37. The figures were derived by dividing expenditures on wages and benefits by employment. The employment figures used were full-time equivalents.
- 12 Michael E. Sparrough and Lena W. Bolton, "Calendar of Wage Increases and Negotiations for 1972," *Monthly Labor Review*, Vol. 95, pp. 3-14 (January 1972), and David Larson and Lena W. Bolton, "Calendar of Wage Increases and Negotiations for 1973," *Monthly Labor Review*, Vol. 96, No. 1 (January 1973), pp. 3-16.
- 13 Each January, the *Monthly Labor Review* publishes summary information on collective bargaining negotiations for current and future years. In January 1970, the BLS reported that 1,132,000 workers were known to be scheduled for contract expirations in 1972. This figure reflected the coverage of most of the major 1969 contracts and amounts to 43 percent of all employees covered by major contract negotiations in 1972, as reported in January 1972.
- 14 It is usually assumed that so-called "major" collective bargaining agreements--those covering 1,000 or more workers--and "minor" contracts behave in similar fashions with respect to timing of negotiations, contract duration, and other characteristics. The evidence presented in Table 3 suggests that this may not be the case.
- 15 In 1972, union membership constituted 21.8 percent of the total labor force and 26.7 percent of the employees in nonagricultural establishments. See Bureau of Labor Statistics, *Handbook of Labor Statistics*, 1974 (Washington: Government Printing Office, 1974), p. 366.

- 16 This dividing line corresponds roughly to the Category III classification established by the Pay Board.
- 17 Wage issues include general wage changes, supplementary benefits, and wage adjustments.
- 18 The use of new negotiations and negotiations concerning expiring agreements is warranted because aggregate data include disputes arising out of contract interpretation. Such disputes would probably be little affected by controls.
- 19 The 1973 dummy coefficient can be interpreted to mean that strike propensities were not *further* lowered by a significant margin after 1972. That is, a significant 1972 dummy, followed by a nonsignificant 1973 dummy, means that the 1972 effect continued in 1973. This interpretation follows from the first-difference format of the equations estimated.
- 20 For more discussion of this literature, see Daniel J. B. Mitchell, "Econometric Research and Incomes Policy: Uses and Abuses," *Proceedings of the Industrial Relations Research Association*, December 1974, pp. 269-277.
- 21 S. Shalit and U. Ben-Zion, "The Expected Impact of the Wage-Price Freeze on Relative Shares," *American Economic Review*, Vol. 64 (December 1974), pp. 904-914.
- 22 The basic S&B equation was estimated for Phase I using a one-fifth sample (essentially every fifth firm) from the *Fortune 500*. After ascertaining that the sample-based equation was basically in line with the S&B results, the same equation was re-estimated for the period June 13-14, 1973, the dates surrounding the announcement of Freeze 2. The 1971 equation was
- $$(a) Y_{71} = -.14 + .03X_1 + .03X_2 + .01X_3 \quad R^2 = .21$$

where Y_{71} = log of ratio of August 16, 1971 stock price to August 13, 1971 stock price

X_1 = log of employment to sales ratio

X_3 = log of index of risk ranging from 0-7 based on Standard & Poor rating

X_4 = log of firm sales.

All variables were significant except X_4 . The same test for Freeze 2 produced no significant variables.

23 Because firms on the *Fortune 500* list are large, they tend to have large employee units and are likely to appear on the Bureau of Labor Statistics' *Wage Calendar* if they are unionized. Since few contracts run more than three years, three consecutive issues of the BLS calendars were searched for employee units which could be associated with the firms in the sample. This list was supplemented by Pay Board computer records of union units in Categories I and II. From these two sources it was possible to compute the unionization rate in the included firms, i.e., the ratio of union workers to total workers. The resulting equation for 1971 was:

$$(b) Y_{71} = -.08 + .03X_1 + .03X_2 + .10X_4 \quad R^2 = .50$$

where X_4 = log of one plus the unionization rate. All variables were significant in equation (b). (X_3 has been omitted because of lack of significance in the original equation (a)).

24 Poll results were reported in various issues of the *Gallup Opinion Index* during 1971-1974.

FOOTNOTES TO CHAPTER 7

- 1 This conclusion is of some importance to the operators of manpower programs. In principle, such programs train individuals for occupations which have good long-run prospects. Controls distortions, either shortages or surpluses, could give false signals to manpower planners. The text conclusion suggests that such occurrences are not likely to be a widespread phenomena.
- 2 See Henry H. Perritt, Jr. and Robert C. Dresser, "Policy Planning" and T. Wendell Butler and Frederic W. Allen, "Congress and Controls" in *Historical Working Papers on the Economic Stabilization Program, August 15, 1971 to April 30, 1974* (Washington: Government Printing Office, 1974), Part I.

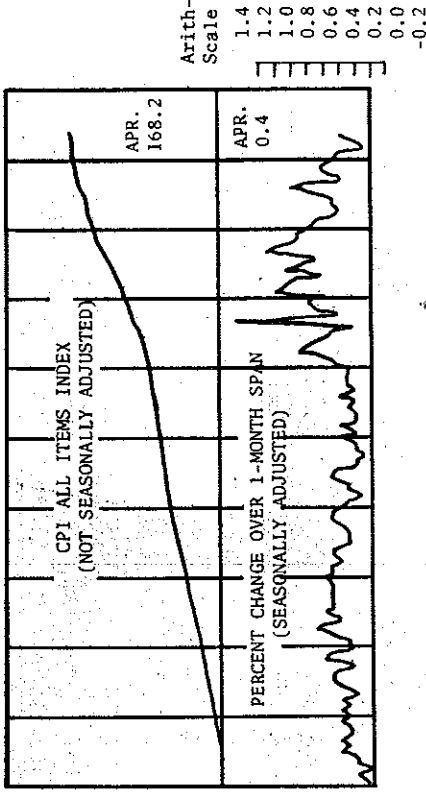
WAGE-PRICE CONTROLS
AND LABOR MARKET DISTORTIONS

Cover by Maria McCormick

PRICE-PRICE CONTROLS



CHART 1. ALL ITEMS INDEX AND ITS RATE OF CHANGE 1967 - 76
(1967 = 100)



LABOR MARKET DISTORTIONS

By Daniel J. B. Mitchell
& Ross E. Azevedo

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