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ABSTRACT
        There is growing recognition that the control of
aggregate demand is limited in its ability to control both
unemployment and inflation, and that structural changes in the
economy will be required to achieve continuing full employment and
price stability. This report indicates how manpower policies can
contribute to stabilization of the economy. It is a preliminary
effort to formulate an active program and to assess its costs and
benefits. Shifting the trade-off between inflation and unemployment
so that both are reduced can be accomplished in several ways: (1)
reduction in the labor turnover rate, (2) increase in job search
efficiency, (3) reduction in the responsiveness of wages and prices
to the vacancy-unemployment ratio, (4) control of exogenous pressures
toward inflation, and (5) reduction in imbalances between
compartments. Recommendations to improve the trade-off cover four
areas: (1) job matching, (2) vocational counseling and employment
opportunities for youth, (3) training and job restructuring, and (4)
geographic mobility assistance. (BH)

MANPOWER PROGRAMS TO REDUCE INFLATION AND UNEMPLOYMENT:
Manpower Lyrics for Macro Music

Charles C. Holt
C. Duncan MacRae
Stuart O. Schweitzer
Ralph E. Smith

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FOREWORD

This study tries, on the basis of present knowledge, to indicate to policy makers how manpower policies can help resolve the inflation-unemployment dilemma. This is especially important in light of the inability to achieve this goal through the use of monetary and fiscal policies alone.

The recommendations made here are a preliminary effort to formulate an action program and to assess its costs and benefits. We hope that other researchers and program specialists will join with us to improve this program mix and our estimates of its performance.

Lack of adequate data, theory, and empirical knowledge about the potential national impacts of manpower policy severely limits our ability to assess many effects as precisely as would be desired. It also is clear that the designs, institutions, and resources of present manpower programs do not have the scale, effectiveness, or direction to correct the inflation and unemployment situation along the lines we indicate. However, we must guard against the facile conclusion that what hasn't been done can't be done.

Many of the general points that we make in recommending manpower policies have been made by the Council of Economic Advisers and other groups and individuals. Some manpower recommendations have been incorporated in long lists of structural changes awaiting future action. But in our opinion the urgency of the inflation-unemployment problem makes these changes essential as soon as they can be effectively implemented.

In evaluating our recommendations a key point is the potential impact of new programs. This cannot be accurately inferred from the performance of existing programs that are directed at different targets. We have, nevertheless, tried as best we could in limited time to estimate both what needs to be

accomplished and what resources would be needed.

If other economists and manpower specialists confirm our view that manpower policies have a unique potential for realizing macroeconomic objectives, then policy makers should begin actively to weigh this alternative against others, and prepare for its implementation in action programs. Because of the long time this requires, and because of the present critical situation, it is reasonable for policy makers to seek the kind of provisional judgment that we are attempting here despite the risks inherent in making recommendations before the research is completed.

President Nixon's wage-price freeze and the Phase II program of guidelines and controls will undoubtedly dampen inflationary expectations and may succeed in restraining firms and unions from fully exercising their market power. However, atomistic market forces that contribute to inflation and unemployment are likely to be little affected, and it would be wise in addition to pursue needed structural reform measures that cannot be implemented quickly. Unfortunately, in the urgent quest for measures that may work quickly, fundamental structural measures so far have been neglected.

ACKNOWLEDGEMENT

Part A

THE ANALYSIS AND ITS IMPLICATIONS IN BRIEF

There is growing recognition that the control of aggregate
demand is limited in its ability to regulate both unemployment and
inflation, and hence that structural chang s in the economy must be
sought if full employment and price stabil ; are to be obtained on
a continuing basis. Our work at Th   han fn itute supports this
conclusion and has convinced us thf   nanges in the
labor market are essential to resol   on-unemployment
dilemma.[1]

Unfortunately a wide gap exists between present knowledge of
the processes that account for inflation and unemployment, and
knowledge of the impact of various programs on these processes.
We present the following exploratory policy analysis in the hope
that if the need for certain types of programs is adequately esta-
blished, then the attendant problems of implementation can be
gradually solved through an evolutionary process of legislation,
design, experimentation, and evaluation.

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[1]For an overview of the problem and analysis see C.C. Holt,
C.D. MacRae, S.O. Schweitzer, and R.E. Smith, The Unemployment-
Inflation Dilemma: A Manpower Solution, (The Urban Institute,
Washington, D.C., 1971).

For a summary of our analysis and programmatic recommendations
see C.C. Holt, C.D. MacRae, S.O. Schweitzer, and R.E. Smith,
"Manpower Proposals for Phase III," Brookings Papers on Economic
Activity (3-1971), Brookings Institution, Washington, D.C.

This Part consists of a brief overview of the analysis, recommendations, and conclusions contained in the balance of the report. We first consider the long-run inflation-unemployment relation, and the labor market relationships that lie behind it. Next, we summarize the programmatic recommendations that follow from this analysis and present estimates of their costs and potential benefits.

The balance of the paper and the Appendix develop the analysis and the programmatic proposals more fully. Part B develops the specific program and policy recommendations and evaluates their costs and benefits. Part C considers issues of implementation: design, evaluation, qualifications, and budget. The Appendix presents more technical analyses of the labor market and econometric estimates that are used in predicting program impacts.

I. Summary of the Analysis

In this chapter a summary of the theoretical analysis of the model is presented. Much of the work, of course, builds upon previous studies.[1]

There is abundant evidence that the abilities and tastes of workers are complex and varied, and that the requirements and inducements of jobs are similarly complex and differentiated. Consequently, a time-consuming search process for both worker and employer is required to attain employment matches that will be both satisfying and productive. Unfortunately the process is often impeded by such barriers as prejudice, union membership, and hiring policies not geared to productivity. Geographic distance further segments the labor market. Also, once employment relationships are established, they are often soon ended by quits or layoffs, so employers and workers must resume searching the labor markets.

In the American economy roughly one man in twenty is searching for a job which lasts, on the average, only two years. Between three and five million workers and a corresponding number of vacancies are continually involved in this search process and the annual flow through the labor market is roughly half the size of the labor force. Unemployment is a costly and wearing experience typically lasting weeks or months, and for many workers it is suffered recurrently.

In general, high turnover rates and long search times account for high base levels of both unemployment and vacancies. Some particular

[1] See The Unemployment-Inflation Dilemma: A Manpower Solution, op. cit., for an extensive bibliography.

groups of workers have relatively high turnover rates and take somewhat longer to find jobs. This results in longer and more frequent bouts of unemployment and hence in higher unemployment rates for these groups. Since job tenure is short the vacancies must be filled often, and hence there always is a stock of vacancies waiting for workers to be found. Of course, the ratio of vacancies to unemployed workers varies over the business cycle.

Money wages tend to change when the number of vacancies gets out of balance with the number of eligible workers in the market. When the ratio of vacancies to unemployment is high, wage increases are offered by employers in order to recruit new workers, and employers raise the wages of their present employees more quickly in order to hold them. However, wages can be stable with either high unemployment and high vacancy rates, or with low unemployment rates and low vacancy rates. High unemployment rates in themselves do not indicate deflationary pressures on wages. They may simply reflect high turnover.

With increases in aggregate demand, employers increase the number of vacancies as they seek more employees in order to increase production. With more vacancies to choose from the unemployed find jobs more quickly and unemployment rates decline. There is a strong tendency, resulting from the complementarity of labor, for all types of vacancies to increase or decrease in roughly the same proportion when aggregate demand changes, and similarly for the unemployment of all types of workers to change by the same proportion, but in the opposite direction. Thus, fairly stable and persistent equilibrium patterns tend to occur relating the different unemployment and vacancy rates of various groups, cities, occupations, etc.

As the result of these relationships, increases in aggregate demand tend to make the ratios of vacancies to unemployment move together in all labor markets and this tends to put a general inflationary pressure on all

markets so that the money wages in all sectors tend to rise together. Thus uniformity of wage movements is not inconsistent with quite different unemployment rates in various market sectors.

But when aggregate demand changes, its regional and industrial composition usually changes as well, so the equilibria just discussed are constantly being disturbed and the various sectors of the labor market must absorb temporary and permanent changes in the pattern of demand. Decisions to locate new plants and spontaneous shifts of population also introduce disturbances.

Hence, superimposed on the equilibrium between unemployment, vacancies and wage change that we have just described, are imbalances in the demand and supply of labor occurring in various segments of the labor market, so that shortages and gluts of labor can and do appear in particular regions, industries, and occupations. On net, these imbalances between segments contribute to inflation because wages are more responsive to the excess of vacancies relative to unemployment in the tight segments than they are restrained by the excess of unemployed workers relative to, vacancies in the slack segments. A graphical analysis of this point and empirical estimates of the extent to which these imbalances contribute to inflation are made in the Appendix.

Of course, when labor shortages drive up wages in a particular sector, new workers are drawn by the existence of vacancies at attractive wages and after a time the inflation producing shortage diminishes. In the meantime, however, wages on net are increased.

When demand falls, employers resist laying off highly skilled workers so that the cutback in employment falls most heavily on unskilled low-paid workers and their earnings are further depressed relative to those of

skilled workers.

The growth of population supplies a steady inflow of young people irto the labor market; hence an extra stock of vacancies and continual growth of employment are needed. Thus the unemployment rate particularly for young people will tend to be high when the rate of flow of new entrants into the labor market is high.

Now consider what happens as aggregate demand is increased through monetary and fiscal policy. Starting from a slack economy the growth of vacancies increases employment opportunities, relieves any deflationary pressure on money wages, and attracts increased participation in the labor force. Such a stimulating policy raises output, picks up the slack in labor utilization so that labor productivity rises, stimulates investment in capital and in training, speeds the introduction of capital and labor-saving technology, and speeds up the process of promotion and job up-grading.

When rising aggregate demand increases the number of jobs, the stock of vacancies rises, unemployment declines, and inactive workers are drawn into active job search. The high vacancy, low unemployment market is an environment in which training programs can be very effective in placing their trainees. The inability of employers to fill the high level of vacancies stimulates them to restructure jobs, and to train and reassign their work forces. Employers tend to compete for new workers by increasing wage offers and lowering worker requirements. On-the-job wage increases are used by employers to try to inhibit quits. Some vacancies are so difficult to fill that the employers cease searching.

Because of geographic, occupational, racial, and sexual segmentation of the labor market, it is quite possible for some segments of the market to remain tight while others are loose. Hence it is possible, temporarily, for some workers to experience high vacancies, upgrading opportunities, and inflationary wage increases while, at the same time, others are experiencing high unemployment and stagnation.

With further increases in demand, the ratios of vacancies to unemployment rise in most labor markets and the upward pressure on wages is pervasive. However, imbalances occur between market segments leading in some of them to skilled labor shortages[1] which accentuate the upward pressure on wages. The increased wages are passed on as increased prices, which in turn stimulate demands for compensating wage increases in all industries and lead to expectations of receiving these increases.[2] However, frictions and resistances to changes in wages and prices are sufficient, after a lag, to produce an equilibrium rate[3] of wage and price change. The immediate impact of any wage or price increase on workers, employers and consumers is a change in real wages and prices with attendant consequences for standard of living, profit rates, etc., and hence is not viewed casually as just a nominal change in the value of money due to inflation. Hence, the pressures for wage and price changes and the resistances to them typically involve conflict and the expenditure of resources.

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[1] Shortages of less skilled workers can be eliminated if more skilled workers are available.

[2] In concentrating on wage increases we are implicitly using a simple cost markup theory of pricing. However, to explore the effects of structural changes in product markets or of income policies a more fully developed theory of wage-price interaction and expectations would be needed.

[3] There is controversy on this point. Some economists argue that the frictions resisting wage and price change are so small that wages will accelerate.

Very high inflation rates could trigger institutional changes that reduce the resistance to wage and price changes, and this would increase the inflationary response.

Since the above tight labor market situation tends to be inflationary, the governmental response is likely to be to reduce demand by monetary and fiscal policy and as a consequence to reduce the job stock. This lowers the vacancy rate, raises unemployment (particularly of the less skilled workers), and discourages unemployed workers into dropping out of the labor force. Because of the abundance of unemployed workers, employers have less incentive to restructure jobs, train and reassign their work forces, or hire the graduates of governmental training programs. Because of the decreased pressure for output, employers slow technological innovation, and workers hold back production.

The critical dilemma for economic policy in the United States arises because inflationary pressures on money wages occur if full employment is sustained. That is to say, turnover, search time, market segmentation, and imbalances in the labor market prevent unemployment from reaching acceptable levels unless the level of vacancies is raised so high that inflation results. We are referring here to the long-run sustainable relations, not to temporary ones that reflect delayed responses.

The regulation of aggregate demand alone cannot resolve the dilemma. It can only pursue the least bad compromise and avoid whip-sawing the economy by reacting alternately to acute inflation or to unemployment, thus bringing

on the opposite problem. By taking advantage of the lagged response of
wages and prices, it is possible to have low unemployment and low inflation --
but only _temporarily_. The opposite case of temporarily high levels of both
inflation and unemployment then follows as recent experience amply illustrates.
Structural changes are indicated, and the question is how best to achieve them.

Concentration of corporate and union power certainly can affect wages,
prices, and profits, so additional measures may well be needed to fully resolve
our inflation and unemployment problem. However, the structural frictions that
occur in the labor market are sufficient to account for our inflation-unemploy-
ment dilemma, without reaching for additional explanations. A reduction of
these frictions would yield a better unemployment-inflation trade-off.

We conclude that there is a clear need for governmental intervention in
the labor market on the micro level with new kinds of manpower policies and
programs on sufficient scale to have important impacts on inflation and unemploy-
ment. The objectives of these programs should be to: 1) speed the adjustment
cf the labor market to disturbances in order to minimize disequilibria that
contribute to inflation and unemployment, 2) attain better equilibria by off-
setting the effects of externalities, 3) secure the economies of scale and
expertise in collecting, processing, searching, analyzing and transmitting
market information about jobs, workers and services, and 4) reducing barriers
to adjustments. Accordingly this paper proposes programs and policies that
stress efficiency, growth and reduction of inflation. The objectives are
distinct from those of existing manpower programs that are aimed primarily
at the reduction of poverty and should continue to be.

This chapter has provided a nontechnical overview of our analysis,

sufficient to indicate the basis for the subsequent policy recommendations.

Readers who seek a more rigorous presentation of the analysis are referred

to the Theoretical and Empirical Appendix.[1]

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[1]Section D includes an algebraic derivation of the Phillips curve
whose parameters relate directly to the proposed manpower programs. The
graphical analysis and discussion of market segmentation are stressed in
"Manpower Policies to Reduce Inflation and Unemployment," forthcoming in
The Interaction of Manpower and General Economic Policies, Lloyd Ulman, editor.

For additional work in a similar vein and references to the literature,
see Microeconomic Foundations of Employment and Inflation Theory, E.S. Phelps,
editor, W.W. Norton, 1970.

II. Policy Implications of the Analysis and Summary of Program
     Recommendations

The analysis summarized in the preceding chapter provides the

basis for identifying policies and programs that could shift the inflation-

unemployment trade-off. From this analysis we can see that the inflation-

unemployment trade-off, known as the Phillips curve, would be moved downward,

corresponding to lower inflation for any given unemployment rate, if: 1) the

turnover rate were reduced, 2) the search efficiency were increased, 3) the

responsiveness of wages and prices to the vacancy-unemployment ratio were

reduced, 4) exogenous pressures toward inflation were reduced, and, finally,

5) imbalances between compartments were reduced.

Reducing turnover would result from increasing the quality of the

individual worker-job matches. Increasing search efficiency is a matter of

speeding placements. The issues of speed and quality of placements point

toward improvements in the employment service function. The reduction of wage

and price responsiveness and the reduction of exogenous pressures toward

inflation might be approached by incomes, antitrust, and union policies. The dis-

persion of unemployment between compartments is interpreted as reflecting a

mismatch between the distribution of worker capabilities and preferences on

one hand, and the distribution of job requirements and rewards on the other.

Reduction of dispersion would require occupational and geographic movements of

people and restructuring of jobs. Thus improved training, mobility, and

industrial engineering would be indicated.

From our estimates of the amount of unemployment dispersion that exists in the

economy we can make rough estimates of the costs involved in reducing it.

Then, by estimating the parameter that indicates the inflation response to dispersion, we can estimate the benefits of reducing dispersion. The benefits can be expressed in terms of reducing inflation or reducing unemployment. Similar direct estimates can be made for other programs.

Our recommendations cover four broad program areas: job matching services to speed placements and reduce turnover; vocational counseling and employment opportunities for youth to reduce their high turnover and increase subsequent productivity; training and job restructuring to reduce inflationary shortages of skilled workers; and geographic mobility assistance to reduce inflationary labor shortages and pockets of high unemployment. In addition, research and experimentation are proposed to determine the most effective techniques for implementing these proposals and for reducing institutional barriers in the labor market. The recommendations in brief follow:

A. Matching Workers, Jobs, and Manpower Services

There is a great potential for improvement in the employment service function of bringing together workers, employers, and employment-related services. We recommend[1] (IV-a.) that the Federal-State Employment Services be restructured so that each office will assign some staff counselors and interviewers specifically to serve the needs of workers, and some similarly committed to employers. To help motivate and guide the Employment Service staff in making the matches that will best reduce inflation and unemployment while giving special consideration to workers and employers with problems,

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[1]Each recommendation is keyed to the corresponding chapter and recommendation in Parts B and C.

we recommend (IV-b.) the use of incentive formulas that are suggested
by labor-market theory. In particular, quality of placement, measured in
terms of job tenure, should be stressed to reduce turnover.

To improve the functioning of private employment agencies, we recommend
(IV-c.) that fee-splitting, standards, etc., be established so that the public
and private agencies can cooperate in achieving a flexible nation-wide
placement system.

Since some of the Employment Service functions are amenable to auto-
mation and others are not, we recommend (IV-d.) the urgent development and
installation of a nation-wide, computerized, man-machine system for matching
workers, jobs, and services. The computer-matching system would incorporate
behavioral relationships to help predict, for human follow-up, which of the
astronomic number of possible matches hold the greatest promise of being
both satisfying for the worker and productive for the employer.

To improve substantially the quality of the Employment Service, we
recommend (IV-e.) upgrading and expanding the staff and establishing salary
levels to attract and retain well-qualified professionals.

We recommend (IV-f.) that the Federal Government take the lead in
organizing, funding, and coordinating the nation's public-private employment
service system, roughly tripling its present capacity.

B. Reducing the High Unemployment of Young People

Certain groups, including youth, blacks, women and the disadvantaged,
suffer relatively high unemployment rates. Reducing the unemployment problems
of youth contributes to solving the labor-market problems of the other groups,

and getting youth off to good vocational starts can produce lifetime benefits. For both teenagers and blacks, more emphasis needs to be placed on preparation for jobs that will last and be worth keeping, and less on simply producing short-term placements. Their high unemployment is largely due to high turnover rates, not to prolonged job search.

We recommend (V-a.) that existing vocational education and manpower programs serving youth, such as the Neighborhood Youth Corps and MDTA training, be redirected toward preparation for employment that will be more stable as measured by reduced turnover rates.

High school programs for students, even in vocational schools, are weak in vocational counseling. There is less than one counselor per school, and counselors frequently lack suitable training. We recommend (V-b.) more cooperation between schools and the Employment Service, doubling the number of counselors and improving their training.

To improve the transition from school to work, we recommend (V-c.) that school work-study programs begin for younger students and that employers be subsidized so that they can afford to offer students valid work experience. About one million new work-study and subsidized after-school and vacation job opportunities would be developed.

C. Reducing Critical Skill Vacancies

When the occupational composition of the work force does not match the distribution of skill requirements, wages go up in the shortage occupations, and those increases spread through the economy. Therefore we urge recruitment of labor from less tight occupations along with necessary job training to fill the critical skill shortages.

To do this we recommend (VI-a.) a data and analysis effort to anticipate or, at least, quickly identify the occupations that are in short supply.

To respond to these scarcities we recommend (VI-b.) a major expansion of training that is closely tied to anticipated needs for skilled workers. Only about 70,000 unemployed workers who are not disadvantaged now receive training annually in government-sponsored programs. We estimate that these should be increased by 1.1 million trainees -- both on-the-job and institutional -- and oriented toward skilled-labor shortages.

Many skilled-worker shortages can be avoided by restructuring jobs so that they can be filled by available workers. We recommend (VI-c.) that the Employment Service add 4,000 industrial engineers and psychologists (an average of two per office to the current staff of 35,000) to assist employers in solving their problems with shortages of skilled workers.

Many skilled women or women capable of readily learning skills are unable to work because of the lack of adequate child care facilities. We recommend subsidizing day-care centers (VI-d.) to enable these mothers to become skilled workers and to help ease the skill shortage.

D. Reducing Geographic Imbalance

The large distances between job markets cause able workers and good jobs to go begging simultaneously. Self-adjustments of the market are inhibited. The travel hurdle poses particular problems to the poor and disadvantaged. We recommend (VII-a.) a new mobility assistance program for regional labor shortages and the disadvantaged. About 200,000 workers and

their households (about 10 percent of the migration flow) might be aided annually.

To implement this program, we recommend (VII-b.) an employment service that will function nationally to help workers move and supply financial assistance to aid their moves (VII-c.)

B. Reducing Institutional Barriers

Institutional barriers in the labor market based on discrimination, licensing, union membership, and so forth, inhibit the response of labor to production requirements and thereby increase unemployment and skill shortages, the latter in turn contributing to inflation. We recommend (VIII-a.) that a presidential commission focus on developing active and effective governmental policies for dissolving artificial barriers to employment. An across-the-board manpower program aimed at general upgrading and increasing the investment in human capital, and a corresponding commitment to maintaining a high level of employment nationally might well be essential political and economic ingredients for the success of policies to reduce institutional barriers.

F. Research, Design, Experimentation, Evaluation, and Demonstration

Knowledge to implement fully effective programs of the type we recommend is still inadequate. Hence we recommend (IX-a. and IX-b.) a carefully designed, integrated and expanded program of basic and applied research, including large-scale field experimentation and evaluation. Behavioral research for computer-matching, training and motivation is especially important, as is the prediction of the macro impacts of various programs. Increased emphasis needs to be given to the practical problems of applying research findings quickly and effectively.

III. Estimates of Costs and Benefits

In this chapter we indicate in brief the scale of new activities that would be needed to carry out the proposals, complementing existing manpower programs. The activities are priced out by reference to the costs of existing programs[1], and their impacts on unemployment, production, and inflation are predicted. Some limitations of these rough estimates are discussed and finally implications for the federal budget are noted.

In estimating the impacts of these programs on unemployment, we make judgmental estimates of the extent to which the Employment Service and the youth program speed placements, reduce turnover, and increase the employment opportunities of teenagers. We try to determine the impacts of the skill and mobility programs by estimating the existing contribution of occupational and regional imbalances to inflation, using the dispersion measure described below.[2] Assuming that this component of inflation would be largely eliminated by the proposed programs to reduce imbalances, we determine how much unemployment could be reduced by increases in aggregate demand before the inflation rate would be restored to its original level.

Next we estimate the likely rise in real gross national product that would result from the above unemployment reductions, making allowance for the fact that more people would choose to work as employment opportunities increased.

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[1] In most cases it was assumed that the unit cost of our proposal would be much higher than the nearest comparable existing program. For example, the average cost of relocating workers in the Labor Department's demonstration projects was about $900. We tripled this factor to take into account the greater distances and increased services that might be required. Similarly in estimating the cost of the training programs for skill shortages, we used a cost factor of $5,000 per trainee and assumed that two persons would need training for each vacancy to be filled since it might not be possible to directly retrain persons in loose markets to fill jobs in tight ones.

[2] See the Appendix, Section D for the measurement of unemployment and dispersion.

Since the details of these estimates are presented in Part B, only

a brief summary is given here. The "ball park" estimates of the costs and

benefits of the proposals and their totals are presented in Table 1.[1]

The total estimated social cost of the recommended programs is

approximately $14 billion. These programs could, we estimate, decrease

unemployment by roughly two percent with an increase of real GNP of about

$30 billion. Alternatively, this unemployment decrease could be converted,

by aggregate demand measures, to a reduction of the inflation rate by about

one and one-half percent per year with a substantially smaller increase in

real GNP.[2]

For a perspective on the cost of this manpower approach, we should

keep in mind the financial and other costs of continuing to fight inflation

and unemployment with only fiscal and monetary measures. By using these

policies, national production losses recently have been experienced that

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[1]All figures are based on estimates of steady-state impacts and hence do
not reflect either the costs or benefits expected during the first years of the
programs. If a decision were made to implement the proposed program, considerable
time would be required, first to develop and test it and then to institute a
gradual buildup to full operation.

Some program impacts reduce unemployment by certain fractions, other things
being equal; other program impacts are estimated to reduce the inflation rate,
other things being equal. When we consider the full impact of all programs operating
simultaneously instead of one at a time, the unemployment impacts of the first category
combine multiplicatively and inflation impacts of the second category combine add-
itively. However, the logarithmic inflation-unemployment relation indicates that
when the additive inflation impacts are converted to unemployment terms, they also
interact multiplicatively. Hence in estimating the total impact of all programs
their multiplicative combination is used.

In common sense terms, this means that with inflation held constant, the unemploy-
ment reduction obtained by the first program lowers the residual unemployment that
can be reduced by the second program and so on. (We are indebted to Robert Hall
for clarifying this program interaction.)

[2]Estimated by moving along the new Phillips curve back to the original 4.5
unemployment rate.

TABLE 1

SUMMARY OF ESTIMATED INCREMENTAL ANNUAL SOCIAL COSTS AND BENEFITS

	Social Cost (billions of dollars)	Percentage Decrease in Unemployment	Decrease in Unemployment at 4.5 percent	Increase in GNP (billions of dollars)
Upgrading and Expansion of the Employment Service	$ 2.4	10%	0.5%	$ 6.7
Vocational Counseling in Schools (Benefit in lifetime earnings)	0.5	15	0.7	7.0
Youth Work Study and Employment Subsidy	1.0			
Identifying and Training for Skill Shortages	5.5	25	1.1	16.5
Industrial Services Aimed at Skill Shortages	0.2			
Child Care	3.5			
Geographic Mobility	0.6	7	0.3	4.5
Total	$14.	47%	2.1%	$30. *

* Combined multiplicatively.

are estimated at approximately $65 billion per year.[1]

It may not be necessary or desirable for the government to incur all of the costs of these programs. Individuals or firms that benefit directly could be called on to share some of the cost. In addition, to the extent that GNP was increased, the government would recapture some of its costs through increased revenues. For both reasons, the government's cost may be less than the total $14 billion estimated here. For example, if private individuals and firms paid one-third of the total cost and if the government's tax take increased by one-fifth of the $30 billion projected increase in GNP, the net cost to the federal budget would be about $3 billion.

If, from Table 1, we calculate the societal benefit-cost ratios of the various categories of program recommendations, as measured in terms of the increase in GNP per dollar of cost, we obtain the following ranking: mobility 7.5, youth 4.7, Employment Service 2.8 and skill shortage 1.8. Little weight should be put on this ranking, because of the limitations cited earlier. We are inclined to urge an attack on a broad manpower front rather than at this stage to pinpoint individual targets too precisely. While we have considerable confidence that some actions are needed in each of the areas urged, the exact program allocation might well be improved. No effort has yet been made to equalize the marginal costs and benefits.

Our estimates of the costs and impacts of these recommendations should

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[1]This is the average over the last five quarters of the gap between potential and actual GNP estimated by the Bureau of the Census in Business Conditions Digest Oct. 1971, Table E1, and converted to current prices using the GNP deflator.

be treated with caution for several reasons that are spelled out in Chapter X.

Ideally, occupational and geographic compartmentalization would be considered jointly. A worker who didn't find a job in his compartment could escape either by training or by travel. Unfortunately the data are insufficient for such an analysis and, consequently, the various components of dispersion were analyzed independently. Hence we were unable to evaluate the extent to which the overlapping of the proposed programs produce an unnecessary and inefficient overkill of dispersion, or, conversely, the extent to which, by being complementary, the individual proposed programs are more effective than their independent estimates of impact would indicate.

Other questions concern the dispersion of unemployment as a measure of segmented imbalance that contributes to inflation and unemployment. We know that if the money wage rate in a compartment responds only to the unemployment rate of that compartment, and all wage response parameters are identical, then the national inflation rate is minimized by equalizing all unemployment rates. But we don't know how adequate are the approximations used in the compartmentalized model of the labor market. Clearly more theoretical and empirical work is needed to increase the accuracy of such cost and benefit estimates.

The analysis on which the proposals are based has concentrated on the macroeconomic response of changes in the operations of labor markets. Questions can be raised about the effectiveness of programs in achieving the desired impacts on labor markets. To improve program impacts we recommend work on design, experimentation and evaluation, and a gradual buildup of programs.

Although the proposed programs are designed primarily to increase pro-

ductivity, they also should improve the distribution of earned income by stimulating upgrading and increasing aggregate demand. Unfortunately, the effectiveness of existing manpower programs is severely limited by the fact that they operate in slack sectors of the labor market which cannot be eradicated by aggregate demand measures without bringing on inflation.

Although the basic idea of manpower programs is not new, the scale and thrust of the proposed programs to achieve a basic improvement in the Phillips curve trade-off[1] between inflation and unemployment would mark a new departure in policy for the United States.

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[1] For an analysis of this trade-off for the U.S., see C.C. Holt, C.D. MacRae, S.O. Schweitzer, and R.E. Smith, The Unemployment-Inflation Dilemma: A Manpower Solution, The Urban Institute, 1971. For an international comparison of trade-offs that shows the adverse relation for the U.S. see Erich Spitaller, "Prices and Unemployment in Selected Industrial Countries," International Monetary Fund Staff Papers, November 1971.

Part B

PROGRAM RECOMMENDATIONS

This Part provides the background for each of the
proposals discussed above, as well as a fuller description
of the recommendations and the procedures by which we
estimated their expected costs and impacts.

Each of the five Chapters in this Part discusses
one of the program areas within which we have grouped our
proposals: matching workers, jobs, and manpower services;
reducing the high unemployment of young people; reducing
critical skill vacancies; reducing geographical imbalances;
and reducing institutional barriers.

IV. Matching Workers, Jobs, and Services

A good deal is known about how workers search for jobs.[1] To an amazing degree they ask their brothers-in-law and their next-door neighbors. Workers are referred to training programs by the Employment Service all too often because they happen to be unemployed when the courses have open slots, rather than for any interest in the work for which they would be prepared. There is still a largely unmet need for public and private institutions to aid the millions of decisions on employment and employment-related services that workers and employers are constantly making.

As we have pointed out above, the important national issues of inflation and unemployment are significantly affected by the speed and quality of these individual decisions. Governments the world over have recognized the need and have responded by establishing public employment services and backing them up with various work-related service programs such as training, health, mobility, etc.

In this section we consider what could be done in the United States to improve the process of matching workers, jobs, and services. The services themselves are considered in subsequent sections, but their effectiveness depends to a critical degree on getting the right man in the right slot. Hence the employment service function is of critical importance.

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[1] For example, see H.L. Sheppard and A.H. Belitsky, Job Hunt, Baltimore: Johns Hopkins University Press, 1966.

A. Background and Problems of the U.S. Employment Service

Our federal-state employment service system[1] was established during the depression of the thirties to help unemployed workers find jobs. During the search process the parallel support of unemployment compensation was supplied by a sister agency. Both programs were financed with federal taxes levied against employers but collected by the state governments. Public employment offices in the U.S. and Europe have long struggled under the onus of being the unemployment offices. The USES has tended to handle low skill jobs, to focus on "placements" (often in very short duration jobs), and to have low paid staffs.

In 1965 an Employment Service Task Force chaired by George Schultz made a thorough review and recommended extensive changes, many of which are yet to be implemented.[2] In recent years efforts have been made to

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[1] For relevant background and international comparisons see:
O.E.C.D., Inflation, The Present Problem, Report of the Secretary General, Paris, Dec. 1970.
O.E.C.D., Manpower Policy in the United Kingdom, Paris, 1970.
Daniel Kruger, The Role of the United States Employment Services in the Changing Economy, Upjohn Institute, 1964.
Webber, Cassell, and Ginsburg, Editors, Public-Private Manpower Policies, Industrial Relations Research Association, 1969.
Louis Levine, The Public Employment Service in Social and Economic Policy, O.E.C.D., Paris, 1969.
Arnold L. Nemore and Garth L. Mangum, Reorienting the Federal-State Employment Service, Institute of Labor and Industrial Relations and the National Manpower Policy Task Force, Washington, 1968.
Stanley H. Ruttenberg and Jocelyn Gutchess, The Federal-State Employment Service, A Critique, Baltimore, Johns Hopkins Press, 1970.
The National Labor Market Board (Sweden), Labor Market Policy, AMS' Budget Proposal for the Fiscal Year, 1970-71, Stockholm, 1969.

[2] Efforts to implement some of their recommendations through legislation ultimately encountered opposition from the association of private employment agencies and the AFL-CIO while the Interstate Conference of the public Employment Services gave only lukewarm support. See Nemore and Mangum, op. cit., pp. 20-26.
We hope that the present urgency of the national inflation and unemployment problem will put parochial vested interests in perspective, and that national concerns will come first.

make the Employment Service independent of Unemployment Compensation.
New strategies for serving the disadvantaged and for using computer
technology are under active development and testing. The computer
listing of jobs is operational in over seventy cities. Extending
broadened services to workers, employers, unions, communities, and
training programs have been attempted but financial support for the
Employment Service has not kept pace with the responsibilities added by
the manpower legislation of the sixties.

The Employment Service makes 15 percent or less of the placements,[1]
but of these roughly one-third are for jobs lasting three days or less.
Of the placements made, roughly 97 percent were unemployed workers and
only a few were employed workers seeking better jobs -- they receive
minimal service. In order to render maximum service to workers who need
it most, three levels of service have recently been introduced. The
most highly skilled workers would simply receive a listing of job re-
ferrals which are controlled through the JOB BANK system.

The overall evaluation of the 2000-office, 35,000-man, 54-state,
$600 million budget Employment Service is that, somehow, its present
performance falls substantially short of its objectives.[2]

The private employment agencies have organized the National Employ-
ment Association with 2,400 members, but it estimates that there are

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[1]See L.P. Adams, The Public Employment Service in Transition, 1933-
1968, 1969.
    Some more recent evidence indicates that placements in recent years
have fallen presumably as the result of greater concentration on the needs
of the disadvantaged.

[2]See Nemore and Mangum, op. cit., pp. 63-67.

9,000 agencies in the U.S. A survey made in 1969 with responses from
414 agencies indicated an average size of ten "desks" per agency, making
total placements of 225,000 for the year.

In addition to the public and private employment agencies, many
unions, colleges, and professional societies maintain placement activities.

The picture that emerges is one of a highly fragmented market with
perhaps 40 million workers placed in a year of whom only a relatively
small fraction receive aid from public and private employment agencies.

To be sure, many people may not want or need any information or help,
but there is evidence that searching for a job is a trying emotional and
financial experience for many, if not most, people. Although some people
change jobs without losing any work-time, most experience unemployment
lasting on average about a month of search, but depending cyclically on
the number of vacancies at the time. Something like 5 percent of those
entering unemployment are still out of work six months later, and this
makes no allowance for those who stop searching out of discouragement.
Most dramatically, one could cite the correlation between suicides and
unemployment.

The proper commitment of the Employment Service to the interests of
employers and workers has been troublesome. During the thirties, when
jobs were scarce, the Employment Service catered to the needs of the
employer as the price for getting job listings. In recent years efforts
have been made to stress the needs of the disadvantaged and unemployed.
Perhaps as a result, job listings and placements have declined. Employers
may avoid the Employment Service, if they associate its referrals with
personnel problems later.

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The government has important responsibilities for the efficient
functioning of the matching process because of: 1) important economies
of scale in information processing and searching, 2) the unequal incidence
of unemployment with its important <u>external</u> and equity aspects and 3) the
uneven impacts of inflation and inflation control with their external
and equity aspects.

This background is important in understanding why the proposal
to achieve new macro economic objectives through structural changes in
the labor market will necessitate substantial broadening and redirecting
of the Employment Service.

B.   <u>Broadened Objectives</u>

The role of matching workers, jobs, and services is of pivotal
importance in the operation of a manpower system. Since people and jobs
are both complex and heterogeneous, a great deal of information is
relevant. Consequently, the search process is costly and difficult.
Complex individual differences in jobs and workers must be carefully
weighed. Noting the additional requirement of speed in placements, we
see that the matching function becomes the focal point of information
processing and communication in the labor market between workers, employers,
and work related services. The Employment Services should be responsive
to the needs of their clients, not autocratically direct them or favor
either employers or workers. Workers and employers should be helped to
attain their diverse <u>individual</u> objectives. If the public Employment
Service does not meet these needs, it will not be used, and hence will be in
effective in contributing to national economic goals.

No single bureaucracy is likely to be sufficiently responsive to meet
these highly variegated needs, so a system of competing but coordinated

public and private agencies is proposed. If the needs of a worker,
employer, or manpower service agency are not met in the system by one
approach, others should be available. Yet duplication of effort and
fragmentation of the communication system decrease efficiency and should
be minimized.

Thus we should seek to build a loose, but coordinated, nationwide,
comprehensive system to serve all occupations. This matching system
should be directed toward the following broad objectives:

1) Bring pairs of workers and employers into contact in such
   combinations that the mean search time to employment is low,
   but the quality of the placement is high measured in terms of
   job tenure. This rests in turn on high job satisfaction and,
   hence, low quit rates; high productivity and hence, low layoff
   rates; and good employment planning and hence, long job duration.

2) Aid workers to find the particular training, health, mobility
   allowances and other services that will contribute to their growth
   in income, productivity, and job satisfaction.

3) Aid employers to find the services that will enable them to
   reduce labor costs, increase productivity, and reduce turnover.

In meeting these objectives great weight should be put on flexibility,
responsiveness to _individual_ needs, and multiple alternatives for workers
and employers. Priorities should be given both to placing the disadvan-
taged and to relieving inflationary labor shortages.

C. Functional Specifications for the Matching System

In moving ahead toward the design of a system to meet these

objectives,[1] it is helpful to consider the functional requirements for the system as seen by its various participants:

Workers would benefit from a system with points of multiple access where they could: enter information on their capabilities and job preferences (including employment location any place in the country), receive counseling on search strategies, and have job vacancies searched for them using the dual criterion of satisfaction and productivity, with referrals for interviews arranged for the perhaps half a dozen most promising job opportunities.

In the event that a worker encountered difficulty in obtaining employment, the system would exert extra search effort or counseling, or, alternatively, would supply information about and referrals to services that would help him qualify for work.

The worker interested in upgrading might seek the training services or mobility aids. Workers would not need to be unemployed to receive full service.

Employers would benefit from a system with points of multiple access at their options where they could: enter information on their job requirements and inducements, receive information about the manpower supply, have files of worker candidates searched (locally, regionally, or nationally) using the dual criterion of productivity and satisfaction with

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[1]For a conceptual model and other research, see: C.C. Holt, and G.P. Huber, "A Computer Aided Approach to Employment Service Placement and Counseling," Management Science, 15, July 1969, pp. 573-94.

interviews arranged for the perhaps half-a-dozen most promising candidates.

In the event that a vacancy proved hard to fill, the system would exert extra search effort or counseling, or would supply information or referrals to services that would help the employer to restructure his jobs, reduce the turnover of his present work force, substitute machinery for labor or otherwise meet his production needs, preferably without raising his unit costs, prices, or wages.

<u>Private Employment Agencies</u> representing workers or employers would have access to files of workers and vacancies in the public employment service including those of other private agencies with suitable fee splitting arrangements so that the advantages of both competition and cooperation would be obtained, and the market would not be fragmented.

<u>Employment Related Service Programs</u> would collect information on worker and employer needs, would establish the standards for the services that they are prepared to render, and would set criteria for selecting the workers and employers who would receive the services. Not only would this require close coordination with public and private agencies in local communities that organize such services, but governments at city, county, and state levels would need to coordinate plans for transportation, housing, economic development, health, and welfare programs that interact strongly with manpower plans.

<u>Schools</u> would be able to obtain labor market information for current and long range planning, and placement services for their work-study and vocational programs. Vocational counseling in the school setting would be provided by the system, and easy access to the adult placement services would be provided for school dropouts and graduates. Similar linkages would be provided for colleges.

Unions would operate their placement and apprentice programs in coordination with parallel Employment Service activities.

The Penal System, if its "graduates" are to be rehabilitated and employable, should be supplied with vocational counseling, training, work experience, and placement tailored to the needs of each individual inmate. A logical extension of the matching system could coordinate such services.

The Federal Government might set national policy targets relating to discrimination, poverty, restraint of inflation, diverting unemployment into training, etc., that would involve the coordination of and cooperation with local employment services and private agencies. Local considerations also should be taken into account in administering these priorities.

Clearly these functional specifications are a far cry from those actually achieved by our present institutions. The value in spelling them out is to dramatize the gap between what we need and should aspire to, and the indifferent service that workers and employers often report receiving from the Employment Service: "It wasn't very helpful," "They just showed me a computer listing of jobs," or "The workers that they referred weren't qualified." The Employment Service staffs, on their side, complain of too much record keeping and the lack of adequate time to spend on the problems of individual workers or employers.

All is not roses in the private sector either. Complaints are made that private employment agencies are not very helpful. However, they sometimes seem to have control of recruiting for certain jobs, and workers who want the jobs have little choice but to pay fees often equal

to one month's salary to get them.

The key problem is how to design an organizational system that will be functionally coherent and start a process of evolutionary improvement that, as soon as possible, will be responsive, efficient, and fast in performing immensely subtle and difficult tasks for millions of workers and employers.

One summary point bears stressing. It is not very useful to workers or employers to shower them with large quantities of information that they must struggle through in order to find the few potential worker or job matches that will be of serious mutual interest. To be helpful, the knowledge dissemination needs to be highly selective and fully take into account the specific needs of worker and employer.

D. **What Needs to Be Done**

These recommendations attempt to resolve key problems in the system so that a base would be laid for its gradual development guided by the functional specifications that are outlined above.

Since the Employment Service necessarily works closely with the other manpower service agencies, we touch on various employment related services that will be considered in later chapters. For ease of reference, the specific recommendations are numbered.

(Rec. IV-a) **Organizational Structure of the Employment Service**

In order to make the organization responsive to the needs of workers and employers, and to promote cooperation with private and other employment agencies, the Employment Service should be organized in three distinct divisions that carry down to the local offices.

1) Occupational Guidance and Placement Service

(Service to workers: counseling, information, testing, place-
ment, short term training, and referral to employment-related
services, training, etc.)

2) The Manpower and Productivity Service

(Service to employers: counseling, information, recruitment,
trouble shooting recruitment problems, and referral to indus-
trial services, training, etc.)

3) Labor Market Information Service

(Computer matching, data collection, and analysis)

The Occupational Guidance and Placement Service and the Manpower and
Productivity Service would each be expected to develop close relation-
ships with their worker and employer clients respectively in order to be
sensitive to and represent their respective interests. Placement referrals
would involve the joint approval of counselors from both Services. This
involves a certain unwieldiness, but assures that both worker and employer
interests are taken into account in referrals. The divisions of the em-
ployment service cannot function without working together so they would
learn to do so. But each service would always know who it was working
for.[1]

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[1]This should help to resolve the question of whether the Employment
Service is oriented toward the employer or the worker. It cannot succeed
without serving both. Efforts to arrange marriages are not likely to be
very successful if the marriage needs of only the men are considered, to
cite an obvious parallel.

The present emphasis of the Employment Service on the disadvantaged
has yet to be fully successful in serving their needs, but if it does
become worker oriented, the listing of vacancies by employers will be
endangered and placements of the disadvantaged may decline. This effect is
quite aside from the extra difficulties that may be involved in placing
disadvantaged workers.

Some Community Action Agencies will act in the Guidance and Placement
role in reaching particular groups of workers, just as some private employment
agencies will.

Some flexible short-term training, motivation and informational programs would merge well with the job search process and probably should be readily available within the Employment Service. This would offer constructive fill-in activities of very short duration when vacancies suitable for referral are absent.

How many of the training, industrial, and other services were folded into the Employment Service Divisions would depend on decisions made by the agency that coordinates the manpower programs in the community.

The Labor Market Information Service would develop and operate a balanced computer matching system for identifying the potential employment matches that would be both satisfying for the worker and productive for the employer. This rests much more critically on industrial psychology and industrial engineering than on computing technology. Hence, this function should stress primarily the solution of manpower problems and only secondarily technical efficiency in utilizing data processing machinery. Although the costs of information processing may appear high, shortening the relatively inefficient human search process should more than justify them.[1]

Because various services for moving workers occupationally or geographically or restructuring jobs may be the efficient way to achieve good matches, the computerized system should be integrated with the allocation of such services to workers and employers.

(Rec. IV-b.) Design Performance Incentives for Staff

In order to crystalize the objectives to be pursued by the Employment

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[1]For example, see Samuel H. Cliff and Robert Hecht, "Job/Man Matching in the '70s," Datamation, February 1, 1971, pp. 22-7.

Service and to reward performance in meeting these objectives, salaries, promotions, and office evaluations should be geared to practical measurements that reflect national economic objectives.

The staff of the Occupational Guidance and Placement Service should be rewarded for making placements quickly but credit should be weighted by the duration of employment tenure that followed. Additional credit should be given for service to disadvantaged groups, individual workers with already long duration unemployment, and for upgrading the incomes of low-income workers.

Referrals to employment related services also should be rewarded as they contribute to these same objectives. Taking time to solve a health, motivation, or skill problem may be the quick way to make an _enduring_ and _productive_ placement.

Since placements would be weighted by employment tenure, the counselor could afford to take more time to find the right long-term job for a worker and not simply be concerned with making fast placements. Since tenure could be shortened by employer dissatisfaction, the counselor should also pay attention to employer needs as well as those of workers.

The Manpower and Productivity Service should be rewarded basically for filling _vacancies_ quickly, but weighted by the duration of the employment tenure that followed. Additional credit should be given for service in filling long duration vacancies and for finding workers who would be productive in the jobs. The employer's concern is, of course, with labor costs, not wage rates _per se_.

Referrals of employers to services should be rewarded in terms of the contributions to the same objectives. Restructuring jobs or

changing skill requirements might be the quickest way to fill critical vacancies.

Since jobs can be terminated by quits, the counselors should also be concerned with worker satisfaction as well as the employer interest.

Since these performance measures would be influenced by general economic conditions and the qualities of the particular workers and vacancies that are involved, suitable adjustments derived from labor market theory and empirical tests, would have to be made in administering the incentive system -- the point being that it is better to get rough measures of the relevant variables than to measure the wrong ones because they are easy. The individual counselor would have to be accorded a great deal of flexibility if he is to meet successfully the individual needs of workers and employers.

The purpose of the incentive system would be to reward the counselor for doing the kind of job that needed to be done. By proper rewards his efforts to improve his performance would contribute to the effectiveness of the system. But to make this approach work, the relevant variables must be reflected in the performance index.

The duration of search necessarily depends in large part on the aspirations of workers and employers. Hence, client evaluations should play an important role in the reward structure and in this way contribute to the responsiveness of the organization.

The performance of the Labor Market Information Service should appear in the effectiveness of the two operating services and could be rewarded in terms of their performance measures. However, rewarding on the basis of direct measures of services rendered may be more effective.

(Rec. IV-c.) <u>Interfacing with Private Employment Agencies</u>

Since the Employment Service bureaucracy has a great deal of inertia
and may not easily respond to the enlarged responsibility that is pro-
posed, the flexibility and stimulus of private competition is important.
Also in this way the Employment Service will get access to types of
vacancies and workers that probably could be reached in no other way,
thereby helping to reduce market segmentation. Compliance with profes-
sional and ethical standards and data requirements should be made the
basis for licensing private employment agencies who would then be eligible
for free services. They would be required to enter their vacancies and
their worker descriptions in the files of the Labor Information Service
and they would have full access to its computer matching and research
services.

Workers and employers who wanted extra, or highly specialized,
services and were willing to pay for them, could approach private employ-
ment agencies without losing access to comprehensive listings of vacancies
and workers. Alternatively, employers and workers could get free services
directly from the Employment Service.

As before, referrals would require the joint agreement of two
counselors serving worker and employer respectively, but one or both
could not be from private placement agencies. Any fees collected by the
private agencies would be split equitably when two agencies were involved
in a placement.[1] The private fee schedules and services would probably

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[1]The parallels in the private real estate market of the use of multi-
list cooperation between agents should be noted. Evidently profit-
motivated real estate agents have found that the broader market that comes
with the multiple listing system more than makes up in volume what it loses
in splitting commissions.

not need to be regulated, provided their services and fee schedules were
adequately publicized. However, the establishment of standard fee
schedules would have to be considered in the event of collusive abuses
in the private setting of fees. In any case, the availability of the
free public service would be an effective check on any tendancy toward
excessive fees.

The costs of interfacing private systems, especially computerized
ones, with the public systems should be borne by the government as an
inducement to maximum national coverage. We would hope that the private
agencies would see it in their interests to interface with the public
system. In the event that they did not, the importance of reducing the
present fragmentation of the labor market would probably justify requiring
it by suitable legislation.

    (Rec. IV-d.)   **Design and Implement a Computer Matching System**
                            Incorporating Behavioral Relationships

The employment service function is a mix of complex information
processing which can be efficiently mechanized, and of personal counseling
which cannot. The computer has a unique role to play in building the
efficient man-machine system that is needed, but it must be designed to
serve the human organization.

Unfortunately the **manpower** dimension of making the computer useful
in this area has not been addressed by the Employment Service. Rather
it has been largely treated as a computer problem.

Great effort has gone into implementing with great speed the Job
Bank computerized vacancy-listing system. However, the developmental
matching systems in four test states have been underfinanced and the
development of behaviorial relationships has been largely neglected.

In contrast, the Department of Defense, with more generous funding, of course, has made a heavy investment over a five-year period in behavioral research relating to the assignment of personnel to training programs and field slots. They have successful operational computerized systems for making "optimal" assignments.[1]

Also, some private computerized matching systems are operational that have incorporated the results of some limited behavioral research.[2]

We recommend a crash program of design, research and field testing to develop a worker-job matching system incorporating variables and relations to predict job satisfaction, productivity, job tenure, etc. However, without a base of behavioral knowledge, computer specialists will have little effective guidance in how to manipulate the masses of relevant data and hence the resulting system can hardly be effective in

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[1] The four services of the Department of Defense have computerized personnel assignmen models for training and job assignments. The assignment of 2500 men to 150 jobs, which used to take 14 hours on a card sorter, is now done on a significantly higher quality level by computer in one minute. The decision criteria in the systems include the distances to be traveled by the assigned men, their job preferences, and the probability of the men's success. In the behavioral relationship between personal characteristics and likely success in training, 40 to 50 percent of the variation in training success is accounted for.

[2] For example see Cleff and Hecht, op. cit. The Cleff Job Matching System was developed using initially 29 cooperating employers, 57 job categories and 150 chronically unemployed workers. Sixteen dimensions of work were identified which have been found to have statistical reliability in predicting the success of man-job matches. Subsequent tests were made with different companies and worker populations, some of them spanning two and a half years. The reported results, though preliminary, are encouraging.

meeting the needs of employers and workers. This effort needs the support of behavioral research (see Chapter IX), and should stress manpower problems and their relation to employment related services rather than computing per se.

(Rec. IV-e.) Upgrading Staff, Training and Salaries

The public Employment Service now accounts for roughly 15 percent of placements and private agencies perhaps for a comparable number. Hence it is likely that most people and employers receive no aid in their job hunting and recruitment problems. If the quality of service is to be improved and services are to be offered to almost all of the market participants, then a substantial increase in resources will be required. Increase of computing power can do part of the job, but most of it must come from increases in staff.

Even when unemployment is low, we have over one hundred people unemployed (and presumably searching the market) for every person in the Employment Service available to help. Hence it is virtually impossible for the Employment Service to be helpful to most of the unemployed. It is not surprising that many people regard the Employment Service as "not helpful."

Not only are much larger staffs needed, but professional qualifications in terms of counseling, industrial psychology, industrial engineering, etc., are sorely needed.[1] The needed expansion of staff offers the opportunity to upgrade and balance the service. To do so, salaries will need to be substantially increased. Finally, extensive staff training programs will be needed to upgrade staff capabilities and to absorb and apply the findings of the research and experimental programs. Indeed,

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[1]See Nemore and Mangum, op. cit., for a discussion of the present qualifications of most interviewers and counselors.

some of the training should be oriented specifically toward participation in research programs and laying a basis for receptivity to new ideas and approaches.

(Rec. IV-f.) <u>Operation and Funding of a National Employment Service System</u>

We recommend that the federal government institute a national employment service and supply the funds needed to raise salary and professional levels, to expand coverage with the cooperation of private employment agencies to all skill levels, and to increase services to workers and employers. The objectives of reducing inflation, unemployment, and poverty would be stressed.

The key objective is, of course, to achieve a coherent system that <u>functions</u> nationwide. The administrative details are secondary except as they relate to this objective. However, we have had long experience with an almost fully decentralized system at the state level and we know without further experimentation that it is not doing anything like the job that our present inflation and unemployment require. Perhaps an infusion of federal money and a nationally integrated computer system would produce major improvements, but the present decentralized bureaucracy has the capability and perhaps the inclination to block very rapid changes that are inherently threatening. Indeed, it is primarily because of the need for speed, rather than from a conviction that the states can't do the job eventually, which leads us to favor the national approach.

We think this can be made compatible with a decentralized and locally coordinated system of manpower <u>services</u> which is advocated by the Nixon Administration. Indeed a centrally administered, nationwide

Employment Service may provide an essential ingredient in achieving an

effective decentralized and decategorized manpower system that can achieve

both local and national goals.

However, since the issue of federal versus state is touchy, we will

try to justify the recommendation of a national service as the better

course without arguing that other approaches are not workable.

What is missing in the Employment Service picture in particular,

and manpower programs in general, are: imaginative leadership in con-

ceiving how we can accomplish the jobs that need to be done **and** resources

to pay for them. Some of the state Employment Services are very effective

organizations that have pioneered innovations. Full advantage should

be taken of this capability and of the possibilities of experimentation

at the state level. However, the nation simply does not have the supply

of talent to learn similar lessons fifty times over. Hence there is

little alternative but to look to the federal government for coherent

leadership in building and coordinating an efficient nationwide system.

Furthermore, given the existing strong states' rights and states-

versus federal feelings and traditions in the Employment Service, there

is probably no alternative but to inject substantial federal support if

the Service is to be quickly upgraded and expanded, with minimum functional

standards established for an effective national system. The upgrading

and expansion should smooth the acceptance of the needed changes, but

strong leadership would also be essential.

There is a great deal for all to do on every level of government.

The federal government should take the lead in program and system design[1]

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[1]This general point is recognized by the retention by the Department
of Labor of the Job Bank System in the proposed Manpower Revenue Sharing
legislation.

and in setting national objectives, and state and local governments

should concentrate on applying them locally taking account of local needs.

The American people have long shown by their high geographic mobility

that _they_ have chosen to live in a _national_ labor market. Hence, frag-

mentation on state lines in the _functioning_ of the Employment Service can

only contribute to the barriers that segment the market and contribute

to our inflation and unemployment dilemma. Indeed, an employment service

that serves only certain employees, skill levels, or kinds of jobs as is

now largely the case can actually increase market segmentation. The

experiences of experimental geographic mobility programs indicates that

this has, in fact, occurred (see Chapter VII). After a nationally

functioning system is attained, the return later to increased decentrali-

zation might be considered.

E. _Costs_

Leaving until later the question of phasing the changes in level of

activity, it seems reasonable to estimate desired expansion as follows.

Probably less than 30 percent of placements are now aided by public and

private employment services and other institutions. Thus, if aid and

information are to be available for the remaining placements, capacities

would need to be roughly _tripled_.[1] We assume that with more and better

services to offer, private employment services would expand by the same

proportion as the public service. Taking into account the desire to

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[1]Although many people now use no institutional placement aids, that
is partly due to the limited service now available. Presumably use would
increase substantially with the improvement in quality of service.

raise quality levels, this probably would give an underestimate of the
needed expansion but is a reasonable interim planning target.

O.E.C.D. data for expenditures by various countries on their employ-
ment services expressed as a percent of GNP are the following:

United States	.06%
Japan	.20
Sweden	.15
Germany	.14
Belgium	.09
Norway	.08
Canada	.06
United Kingdom	.06

Since employment service operations are relatively labor-intensive
compared to other activities in the American economy and American wages
are high relative to other factor inputs, it seems quite likely that our
public expenditures on employment services are even lower relatively than
these figures suggest. Clearly employment service activities in the U.S.
could be substantially expanded before we catch up with the services
offered in other countries or the need for them is saturated.

Using the Ruttenberg and Gutchess data on Employment Service salaries
of counselors and interviewers in 1968-69, it appears that their salaries
would need to be raised by roughly 24 and 16 percent respectively to be
comparable to other workers in public and private agencies doing com-
parable work in the United States.

Thus we would get a rough estimate of the cost of expanding the
employment service to more nearly cover the whole market and raise its
quality. Estimated fiscal 1972 expenditures for the United States
Employment Service are about $600 million. Triple this, add twenty-five
percent to bring salaries into line and increase the professional level,

and finally, add 5 percent to provide ten days of training and staff development per year. This amounts to approximately $2.4 billion per year, or an increase of $1.8 billion per year. Additional private funds would go into the support of the increased activities of the private agencies. The revenue of private employment agencies currently amounts to about $.3 billion, so tripling services would require another $.6 billion. The tripling of private employment agency services in the last ten years gives support to forecasting the usefulness of still further expansion.

A program of research, experimentation, and demonstration[1] including computer matching at the level of $25 million per year for five years should substantially establish the knowledge base that is needed. The subsequent expenditure level could then be reduced. Much of the needed computing capacity is already planned in connection with the Job Bank program but more would be needed. We have not tried to estimate these costs.

Thus, in total, we estimate that the increase in annual real social costs required to achieve full operation of the proposed public and private employment services would be approximately $2.4 billion. Because of the fees paid directly to the private agencies not all of these costs would be reflected in governmental budgets. However, this is the relevant cost in terms of resource requirements.

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[1]Field demonstrations are extremely expensive but produce useful services quite aside from the knowledge gained.

F. Benefits

Almost all of the evaluation studies of manpower programs fail to take into account their indirect effects or adequately account for the effects of market tightness. For example, we have estimates of unemployment and of the wages of workers who went through training programs but we don't know whether the wages and unemployment of the workers not in the programs were affected by vacuum or displacement effects. Similar studies of turnover rates and job tenures sometimes show dramatic improvements in response to changes made by particular employers, but we don't know what happened to other employers who may have been adversely affected by the transfer of their better workers.

On thin evidence we would expect to reduce mean search time, i.e., unemployment duration by 5 percent. Similarly we would expect to reduce average turnover rates by 5 percent[1] through increasing the quality of placements.[2] These should reduce unemployment by approximately 10 percent which on a 4.5 percent unemployment rate would amount to a reduction of unemployment by about half a percent. According to Okun's rule the effect on real GNP should be at least triple that as a result of increased

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[1] We recognize that not everyone will be helped by the availability of improved placement services. But those who are will probably have their unemployment duration and turnover reduced by greater amounts than estimated here.

[2] These estimates are intended to be conservative, but relevant evidence is sparse. Some measurements of turnover reduction through improved matches are on the order of 25 percent. For example, see Cleff and Hecht, op. cit. But basically we are trying to estimate the impact of a system that has never existed.

productivity and labor participation.[1] However, Okun's law doesn't apply

directly because the effect on GNP of a reduction in   employment may be

quite different when it results from a shift in the vacancy-unemployment

relation, rather than from an increase in the ratio of vacancies to

unemployment in response to increased demand. A more conservative esti-

mate, which we use here and subsequently, is that a one percent decrease

in the unemployment rate would increase real product by only one and one-

half percent as the result of increase productivity, participation, and

employment. On a trillion dollar GNP base that would amount to roughly

a $7 billion increase in real national production.

Through reduction of imbalances in the labor market the inflation

rate should be reduced somewhat, but we do not try to estimate this

effect of improving the employment service function.

G. Timing

Such an expansion of activities would, of course, take several years

to plan and execute, with quality coming before quantity. The planning,

research, experimentation and any enabling legislation should be started

first. The extended program of experimentation and the gradual organi-

zational conversion and buildup could proceed in parallel. The :affing,

training, and expanding of operations should take place gradually.

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[1] Okun's rule relates a one percent decrease in the unemployment rate
brought about by an expansion in aggregate demand to a one percent average
in total productivity and a one percent increase in labor participation
and, thus, a three percent increase in real national product. See A. Okun,
"The Gap Between Actual and Potential Output," in 1962 Proceedings of the
Business and Economic Section. Washington, D.C.: American Statistical
Association, 1963.

H. Qualifications

The lack of adequate research on the dynamics of the labor market, the inflation process, and the indirect impact of employment service activities necessarily must qualify the above recommendations.

The tendency of easier placements to cause increased labor turnover should be noted. That is why it is _essential_ to increase the _quality_ of placements at the same time.[1] Improving _both_ the speed of placements and extending job tenure should be consistent with the improvements in organization, mechanization, resources, professional level, and behavioral inputs that are proposed.

On net, even though the estimates are rough, the benefits appear to compare very favorably with the costs.

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[1]This point should be kept in mind in current evaluations of Job Bank operations.

V. Reducing High Unemployment

   A. High Unemployment and the Problem of Turnover

Certain groups in the labor force consistently have unemployment rates well above the aggregate rate. In December 1970 when aggregate unemployment stood at 6 percent of the civilian labor force, the rate among teenagers was 17.5 percent and among blacks it was 9.3 percent. Teenagers alone accounted for one-fourth of all unemployed persons (1,129,000 of 4,646,000); one out of six unemployed persons was black. Although both groups are disproportionately benefited by high levels of aggregate demand, even then their rates of unemployment remain quite high.[1]

Programs that focus on labor market barriers confronting teenagers and blacks may have very high payoffs in reducing aggregate unemployment without putting inflationary pressure on the labor market. Moreover, programs for youth are more likely to have additional long-term payoffs through increased productivity resulting from early investments in human capital.

Current federal manpower programs for unemployed blacks have emphasized the provision of the minimum skills needed for job placements. Youth manpower programs have been primarily income maintenance programs, intended to enable their participants to stay in school. Of the approximately $400 million spent on training teenagers by the Department of Labor, about one-half is for Neighborhood Youth Corps in-school and summer activities, which are primarily oriented toward motivating and enabling dropout-prone students to stay in school.

For both groups, the search for first jobs and frequent job changing, rather than long duration of unemployment are the main problems. Over 70 percent of

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[1]Chapter VI contains recommendations pertinent to a third major group with special labor market needs, adult women.

unemployed youth are new entrants or reentrants into the labor force. How-
ever, the high unemployment of youth is symptomatic of a more serious
problem -- the lack of inexpensive and reliable means for new labor force
entrants to acquire information about occupations and jobs. This increases
the probability of job mismatches and early failures. Much of this unem-
ployment may be considered as "normal" job search and job information
gathering activity during a period when they are still being supported by
their families and can therefore afford it. Youth do not know very much
about what jobs are available, what these jobs are like, or what they would
like to do. The question is whether there are cheaper and more effective
ways of getting this information and improving its quality. This question
has become even more critical in recent years as the relative unemployment
condition of teenagers has worsened.

Neither blacks nor teenagers seem to have extraordinary difficulties
in finding jobs once they become unemployed -- the duration of an average
spell of unemployment for blacks is about equal to that of whites and the
typical duration of teenage unemployment is actually shorter. However, the
jobs they find usually don't last as long, thus throwing them back into the
job market much more frequently than white adults. This indicates, in part,
the need to improve the quality of the placement process.[1]

B.   What Needs to be Done

This section will set forth some proposals for meeting the labor market
needs of these groups. Most of the recommendations which follow will be
specifically addressed to the teenage unemployment problem. Solving that

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[1]For an analysis of the labor market mechanism generating the persis-
tently higher black unemployment rate, see Ralph E. Smith and Charles C. Holt,
"A Job Search-Turnover Analysis of the Black-White Unemployment Ratio,"
Proceedings of the Twenty-third Annual Meeting of the Industrial Relations
Association, (1971), pp. 76-86.

problem would go a long way toward solving the black unemployment problem as well, since about one-third of all unemployed blacks are teenagers and since much of their adult unemployment problem could be attacked most effectively in the earlier years. While many of the actions proposed here have been suggested by others or are already being done on a small scale, they are repeated because our analysis of the labor market gives them additional support.

1. Redirection of Existing Programs

For both teenagers and blacks, programs are needed that will increase their job tenure. More emphasis needs to be placed on preparation for jobs that will last and be worth keeping, and less in simply providing short-term placements.

(Rec. V-a.) Redirect Training and Vocational Education Toward Programs that Prepare Workers for More Stable Employment

Government vocational education and training programs in which youth are enrolled, such as the Neighborhood Youth Corps and MDTA, have not adequately served the special needs of youth. They have, instead, emphasized income maintenance or provision of sufficient training to get a first job, whereas what is needed is more intensive career preparation.

2. Vocational Guidance

A new set of programs is needed for reducing turnover, easing the initial transition into the labor force and increasing productivity. These programs would work directly on the process by which students and other unemployed persons acquire labor market information. This has been a badly neglected area, particularly with respect to providing youth with information and guidance in selecting course curriculum, training programs, occupations, and first jobs.

Currently over three-fourths of youths who dropped out of school and two-fifths of the graduates have received no job guidance from their school or Employment Service! Only five percent of the dropouts and 18 percent of the graduates used the Employment Service.[1]

The state of vocational guidance in the schools i poor, both in quantity and quality. Almost half of the school counselors do not devote full time to guidance, and that guidance generally must include nonvocational assistance as well. Most states require that a school counselor have both a counseling and a teaching certificate, with from one to five years of teaching experience. Hence persons entering the field usually come with an education background. There are only 40,000 school counselors throughout the country, of whom only about 25,000 are full-time -- less than one per high school.

Much of the labor force activity of teenagers may be viewed as an expensive information-gathering process. Youth whose families are not well connected suffer most from the lack of cheaper ways of searching the market.

Federal support to provide better and more accessible employment information to teenagers while still in school and to assist the job searching activities of school dropouts should be undertaken.

Federal support rather than private or local funding is called for in each of the actions recommended here because of both the externalities of the impacts of the program and inability of either the individuals directly involved or even many of the state and local governments to pay for them. The high turnover and unemployment of teenagers and their subsequent lower productivity adversely affects the nation as a whole.

[1]Edward Kalachek, The Youth Labor Market (National Manpower Policy Task Force, 1969), p. 85.

(Rec. V-b.) Expand and Upgrade Youth Vocational Counseling

The number and quality of vocational guidance counselors available to teenagers should be significantly increased. The following specific actions would help improve this counseling:

a.   Place U.S. Employment Service counselors in city high schools for a portion of each school week to provide continuous vocational guidance, testing, job development, and part-time, summer, and full-time placement activities, particularly for non-college-bound students. Currently many local Employment Service offices have voluntary cooperative programs with high schools in their communities in which E.S. staff present assembly programs to the seniors and follow this with either group or individual job counseling and testing. However, the only specific federal support for youth counseling, the funding of Youth Opportunity Centers, has been phased out. Local offices have not had the staff or the funds to provide the type and level of continuous activity required to adequately do the job. Putting E.S. counselors into the schools would not only make vocational guidance more available to the students but might also help provide a connecting link between the schools and the working community.

b.   Provide summer internships for school counselors to work in Employment Service offices, private placement services, and personnel departments of public and private employers in order to gain a better understanding of the labor market. If administratively feasible, this program could be combined with the out-stationing of Employment Service counselors by providing an exchange program between E.S. and school counselors. This should be a first step toward improving the quality of vocational counseling in the schools. Clearly more better-trained, better-paid counselors will also

be needed if the education system is to play a significant role in helping its students make the transition to work.

c. Provide funds for a program for contacting school dropouts to encourage them to use the Employment Service facilities, to enroll in training programs if necessary, and to return to school if feasible and desirable.

Each year almost three-quarters of a million students drop out of school. Some states and cities have programs in which high schools provide lists of dropouts to either the Employment Service, the Mayor's office, or the Governor's office. These offices then send letters to the dropouts, encouraging them to contact the Employment Service.

d. Counseling activities should not end when a person finds a job. Many young people and disadvantaged workers need supportive services during the first few months of a new job. Blacks, in particular, have often had an extremely difficult adjustment problem, resulting in excessive absenteeism and subsequent dismissal. The counselors who helped place the worker should follow this with calls and visits to help smooth the transition as well. Several unions and firms have already established similar programs in which fellow workers provide this function.[1]

3. Work Experience

One reason for the high teenage unemployment rate is that frequent job-hopping is being used to find out what these jobs are all about. Unfortunately, many of the youth for whom this experience would be most useful are not successful in finding jobs or at least jobs that provide useful

[1]For example, the AFL-CIO's Human Resources Development Institute has trained 500 "Buddies" in 125 plants throughout the country on how to help disadvantaged new workers relate to fellow workers, understand work rules, and overcome the problems associated with entering a different environment. See Julius Rothman's Discussion in Proceedings of the 22nd Annual Winter Meeting of the IRRA (December 1969).

experience. Blacks and other disadvantaged youth often do not have the family contacts needed to find and secure decent work experience.

(Rec. V-c.) <u>Provide Earlier and Year-Round Work-Study Programs and Subsidized Work Experience</u>

To reduce teenage unemployment and increase the likelihood of better career choices with higher lifetime productivity and earnings by enabling students to learn about the world of work while still in school, we recommend the following projects:

a. Initiate work-study programs for general and vocational curriculum students in school grades 9 through 11 and expand the grade 12 programs. Current work-study programs are mainly for vocational education students in their senior year, <u>after</u> they have made their career selection and received specific training in that occupation.[1] Beginning the program earlier and making it available to students in the general curriculum would help the student make career choices more knowledgeably, would give him valuable work experience that would make him more acceptable to employers when he enters the full-time job market, and would probably reduce the school dropout problem by making school more relevant to the non-college-bound student.

b. Furthermore, work-study programs should be placed on a year-round basis, rather than only for the school year. Besides providing valuable work experience, this might also serve as a vehicle for graduating students year-round, thereby alleviating the pressure on the job market in June and enabling vocational students to complete their studies in less than four years. Education experts, of course, have advocated year-round education for other reasons, such as more effective use of physical plant.

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[1]Neighborhood Youth Corps in-school and summer programs include younger students but the primary emphasis of these programs is on keeping the youth in school, not preparing them for career.

c.   Employers should be subsidized to hire high school students for brief periods of job exposure, including summer internships. About half of the teenage unemployment rate reflects students looking for after-school and summer jobs. Often employers are reluctant to hire youth because of turnover costs. Providing a subsidy for firms to hire students would reduce this reluctance. Typically these jobs don't pay much, by adult standards, but they are an important means by which teenagers gather information about the world of work and should be encouraged.[1]

d.   If these programs were adopted, many persons who leave school, particularly those leaving before graduation, would still need additional help in getting started. The out-of-school component of the Neighborhood Youth Corps, MDTA, the skill training programs recommended in Chapter VI, and other manpower programs that stress improvement of the enrollees' employability may provide this help. These programs should give a high priority to new members of the labor force. It is at this point in their lives that it is easiest to start them on careers that both will be rewarding to themselves and will help reduce further labor market imbalances as well. This may require an expansion of manpower programs beyond that already recommended here.

C.   Implementation

This section has set forth several recommendations for reducing unemployment and increasing the lifetime productivity of major high-unemployment groups.

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[1]Others have recommended as a means of reducing youth unemployment that youth be subject to a lower minimum wage than adults or that employers be subsidized for hiring them. If employers are being deterred from hiring youth because of their lower productivity or higher turnover, then these recommended actions should reduce youth unemployment. However, this might also increase unemployment among adults and decrease wage rates generally. These questions remain in doubt despite considerable study.

The first step in implementation of the specific recommendations should be to establish carefully designed demonstration projects together with reporting and evaluation systems that will permit determination of their cost and effectiveness. For each of the specific proposals we expect the benefits, in terms of less job instability and higher earnings and productivity, to exceed its costs. However, this must be demonstrated before being fully implemented on a large scale. The Departments of Labor and HEW, working with the state Education Departments and the Employment Services, are the logical agencies to operate these projects. In addition, the Office of Management and Budget's human resource and evaluation divisions should be heavily involved in designing the experiments and evaluating the results.

The following indicate our estimates of the costs and effectiveness of the actions recommended here:

1) The recommendation to redirect programs to deal with youth turnover would not require spending more money for existing programs, but would call for making these programs more effective. Fewer persons would be trained, but they would be trained more intensively with the same level of resources. Greater impact on unemployment and productivity would be achieved than with the current program mix, but we will not attempt to estimate how large this impact would be.

2) The recommendations to put Employment Service counselors into the schools and upgrade the regular school counselors should be considered as part of a broad expansion in the availability of vocational guidance services for youth, requiring a large net increase in the school counselor staffs. An average of two full-time counselors per school (double the existing number) is a minimal level of activity. This increase would cost about $400 million at present salary levels. These salaries are probably too low to

attract the level of professional talent required. Higher salaries are certainly one of the most necessary requirements for attracting and retaining higher quality staff. Therefore, perhaps another $100 million would be needed in order to increase all counselors' salaries by ten percent.

Assume each counselor helped 50 students a year enter a slightly better occupation, leading to more satisfactory job matches with resulting lower turnover and higher productivity throughout their careers. If their earnings over the subsequent ten years were increased by five percent, this would result in $800 million per year in additional output for each class aided. Discounting the increase over ten years with a ten percent discount rate, this corresponds to an over $5 billion increase in the earnings of each class, at a cost of $500 million.

3) The work-study and employer-study proposals would likely cost about $1,000 per position annually. As many as a million students could benefit from some sort of a school-coordinated work experience program, such as recommended in V-c, above, at a cost of roughly $1 billion. This would reduce in-school unemployment to 100,000 (the annual average was about 600,000 in 1970)[1] and provide job knowledge and experience that could lower their turnover rate from about 6 percent per month to 5 percent, thereby reducing their subsequent unemployment by a fifth of the current o. .....s. unemployment level (i.e , 100,000 of 500,000 such teenagers unempl..., ...). This would reduce unemployment by a total of 600,000 young people, which is a .7 percentage point reduction in the aggregate unemployment rate.

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[1]To fill one million new vacancies may require offering employer incentives for more than that number of jobs, since some new vacancies may not be filled. The estimate of the impact on in-school unemployment was made by assuming that creating one million n-w jobs will generate a large increase in the participation rate of the oup, such that only half of the jobs will be taken by persons who otherwise would be unemployed.

Assuming $3,000 earnings per teenage worker, national producti   be

increased $1.8 billion annually. In addition, the supervised work experi-

ence of youth should result in more satisfactory job matches in their adult

careers as well, adding at least another $200 million in benefits. Benefits

of each year's work-study and employer-subsidy activities then would be

$2 billion, at a cost of $1 billion.

In sum, we are proposing new counseling, work-study, ar.' subsidy pro-

grams that would cost about $1.5 billion and would decrease aggregate

unemployment by .7 percentage points and increase GNP by over $7 billion.

VI. Reducing Critical Skill Vacancies

A. The Role of Critical Skill Vacancies in the Inflation Process

According to the analysis summarized[1] in Chapter I, wage inflation is increased by imbalance in tightness among labor market segments. Segments with particularly high ratios of job vacancies to unemployment generate rapid wage increases which contribute to inflation directly and lead to similar wage movements in other segments due to price increases or pressure on the wage structure. The programmatic response to the problem consists of two parts. The first is the development of an information system which will permit the anticipation of critical skill shortages and a fast response to anticipated shortages. The second part consists of a series of measures which will alleviate those occupational imbalances in unemployment that do occur before upward wage movements are generated.

B. Anticipation of Skill Shortages and Fast Detection of Unanticipated Shortages

The labor market is in a continual state of flux generated by the ever-changing composition of demand and by spontaneous population movements. Ideally, occupational and geographic labor supplies and demands ought to be monitored continuously. Knowledge of current conditions should be augmented by projections into the immediate future. This information guides efforts toward eliminating inflation-causing bottlenecks. The response of wages to labor market tightness appears to be very fast[2], which emphasizes the need for an "early warning" predictive capacity. Some skill shortages could be filled

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[1] The Appendix contains the full analysis.

[2] MacRae, Schweitzer, and Holt, "Job Search, Labor Turnover and the Phillips Curve: An International Comparison," American Statistical Association, 1970 Proceedings of the Business and Economics Section, pp. 560-64.

promptly with assistance from both the public Employment Service and
private employment agencies. When recent experience made it apparent
to the Service that a vacancy would be difficult to fill, specialized
assistance would be given the employer to enable him either to fill
the vacancy from within, through on-the-job training, or to alter the
job to permit its being filled by other available people. An indicator
of this difficulty would be the excessive time required for recruitment in
the foreseeable future, given local labor market conditions and those of
other areas from which suitable workers might be expected to come. Where
shortages remained, and were projected to persist, relevant agencies should
be alerted to begin training programs to increase the future supply of such
workers. Constant monitoring of current vacancy, unemployment, and trainee
data by locale and occupation would be necessary for feed-back into the
"alert" system to prevent over-shooting of desired labor supply targets.

Local offices of the Employment Service presently collect data on
numbers of vacancies by occupation and durations of these vacancies. The
data were formerly published in Job Opportunities at the Employment Service.
This information plus that from private employment agencies should be com-
bined with similar data on unemployed registrants to identify specific occu-
pations in short supply in the local labor market. The definition of short
supply will be based upon a high ratio either of numbers of vacancies to
unemployment or of duration of vacancies to duration of unemployment.[1] For
occupations whose numbers of vacancy listings are too small at the local

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[1] Because both unemployment and vacancies are influenced by turnover,
unemployment alone is an inadequate index for market tightness in a compartment.

level (and this probably is the case for many skilled, professional, or paraprofessional occupations) analysis would need to be made at the state, regional, and national levels. The establishment survey of job vacancies collected by the Bureau of Labor Statistics under the JOLTS program is a useful input to the data assembly effort at the national level because the scope of the survey is greater than that of employment agency-based data. On an ex post basis, direct measures of wage movements from the B.L.S. Annual Salary Survey will help to identify those occupations which have been in relatively short supply.

(Rec. VI-a.) <u>Collection and Monitoring of Data on Job Vacancies and Unemployment</u>

We recommend that the listing of local occupational shortages compiled from public and private employment agency records and survey data should be combined with B.L.S. projections of occupational demand and supply (such as those published in the <u>Occupational Outlook Handbook</u>) and circulated to all local employment service offices, public and private, both within the state and nationally in a way in which professional jobs now are filled by the Employment Service.

The listing of local and state-wide shortage and surplus occupations, both current and projected, should be coordinated with each state's Comprehensive Manpower Plan through the respective manpower planning agencies. Additionally, appropriate offices within the Manpower Administration, the Office of Education, larger employers, and private employment agencies should coordinate their activities with reference to the occupation shortage list, particularly training and mobility.

C. <u>Filling Critical Skill Vacancies</u>

The process of filling critical vacancies is, of course, a dynamic one

so every effort must be made by the Manpower Administration and Office of Education and their state and local counterparts to continuously monitor the number of vacancies, the number of workers being trained, and the number of vacancies being filled. Demand is extremely difficult to control, even on the aggregate level, so that the adaptation of the supply side of the market is essential if shortages are to be alleviated promptly without their effects reverberating throughout the system.

To estimate the magnitude of the training effort we calculate the number of unemployed workers who would have to be moved out of occupations with higher than average unemployment rates into those with below average rates so as to equalize the rates among occupations. The similarity in approach between reducing occupational and geographic dispersion is apparent.

Using the crude ten-category B.L.S. occupational groups, we calculate that a minimum of roughly 550,000 workers will have to be trained for new jobs to equalize unemployment rates among occupations. Unemployment dispersion between the occupational categories would then be eliminated, although dispersion within the groups might still remain. Many of the occupational shifts called for above may be unreasonable, however. More in keeping with the upgrading process we will halve the "distance" of the average move by doubling the total number of moves to 1.1 million.[1]

We assume that the dispersion elimination lasts for but one year before it is once again re-established. Therefore the training need presented above becomes an annual program. In general, however, the stability of hard-to-fill

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[1] A more sophisticated version of this technique is used by Robert Hall, in "The Prospects for Shifting the Phillips Curve Through Manpower Policy," Brookings Papers on Economic Activity, 3, 1971. Hall arranges the occupations in a hierarchy to insure that no move exceeds the distance of two adjacent occupational categories.

job vacancies by occupation is quite high,[1] implying that it is feasible to train for occupational shortages without the training targets changing before trainees can be placed. Additional research is needed, however, to identify the stability of growth rates of employment by occupations.

Another method of estimating the training effort necessary to eliminate unemployment dispersion by occupation is to determine the number of critical skill vacancies[2] defined as the number of vacancies in shortage occupations, i.e., their mean durations are excessive. Available data on job vacancies does not tell us this directly. We know the number of Employment Service vacancies remaining unfilled after one month by occupation, but not all of these can be considered critical because every occupation has _some_ vacancies of long duration purely as the result of chance. We estimate critical vacancies as the total number of vacancies in those occupations whose mean vacancy duration exceeds, say, twice the median of mean vacancy durations of all occupations. We do this by assuming that the probability of filling vacancies remains constant over time by occupation and calculate a mean duration of vacancy for each occupation by using Employment Service data on the occupational vacancies unfilled after one month. A cumulative distribution of vacancy mean durations is constructed and the median

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[1]The correlation between the proportion of job vacancies unfilled after one month by occupation from one year to the next is very high with the R^2 being 0.77. The data is for 142 detailed occupations of all skill levels, whose job openings were reported in U.S. Department of Labor, Manpower Administration, Job Opportunities at the Employment Service, November 1968. The proportion of each occupation's vacancies unfilled longer than one month in June 1967 and June 1968 had the correlation indicated above.

[2]Though we use the duration of a vacancy as a measure of "criticalness," another dimension of the critical skill vacancy is the "necessity" of the job. Some critical jobs, if unfilled, create unemployment of complementary factors. These vacancies, if improperly filled, create inefficiency and higher production costs which contribute to inflation. Though the concept is elusive, employment agencies could attempt to ascertain the employers' relative priorities for the job openings that they list. Aside from guiding efforts to serve the individual employer, this data might be used in statistical analyses to help identify critical occupational shortages.

duration for all occupations is determined. Doubling this median duration gives us a cutting line for identifying the occupations with excessive mean vacancy duration.

During recent periods when the unemployment rate was in the neighborhood of 4 percent, the total stock of job vacancies listed with the Employment Service was approximately 200,000 and the median duration in 142 occupations was approximately 0.8 months. Approximately one fourth of the vacancies were classed as "critical" because they were in occupations whose duration of vacancy exceeded 1.6 months. Adopting this measure, on average 50,000 critical skill vacancies are listed at the Employment Service. This figure, however, must be a justed to reflect the entire labor market, not just that portion served by the E ployment Service. Boschan[1] estimates that the U.S.E.S. reports one-third of all job vacancies in manufacturing, where its services are concentrated. Other estimates, however, place the penetration ratio closer to 15 percent, for all oc cupations and skill levels.[2] It is to be expected that the penetration ratio fo hard-to-fill jobs may even be quite a bit lower still, however, because of the declining penetration of the U.S.E.S. into skilled areas. According to Myers and Creamer,[3] the Employment Service reports a relatively high proportion of clerica: and craftsmen vacancies, but all other occupational groups are substantially underreported.

But if we assume, for the present, a ratio of 15 percent, the total number of critical skill vacancies becomes 330,000. One might well argue

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[1]C. Beschan, Fluctuations in Job Vacancies - An Analysis of Available Measures, National Bureau of Economic Research Report (New York: 1969).

[2]See L.P. Adams, The Public Employment Service in Transition, 1933-1968, New York School of Industrial Relations (Ithaca, New York: 1969).

[3]John G. Myers and Daniel Creamer, Measuring Job Vacancies, National Industrial Conference Board (New York: 1967), pp. 103-4.

that these 330,000 vacancies cannot realistically be filled by existing unemployed workers, and an indirect upgrading approach will be required. Assuming, as before, that the actual number of trainees is double the number of vacancies to be filled, then the training requirements on an annual basis are 660,000 trainees per year. This figure, based upon long duration vacancies, is not necessarily inconsistent with the earlier esti-mate of 1.1 million trainees needed to largely eliminate unemployment dispersion.

(Rec. VI-b.) Making Training Programs Responsive to Skill Shortages

An expansion of the MDTA training programs from the present level of 200,000 trainees per year (130,000 of whom are disadvantaged) by 1.1 million would, according to our analysis, largely eliminate the occupational dispersion of unemployment, if the entire increase is devoted to skill-shortage training.

The magnitude of the effort appears large, but in relation to the size of the labor force (87 million workers) the program is rather small. The interconnection with the youth-oriented programs in the preceding Chapter is clear from this analysis, too. It is obvious that the costs of training a new labor force entrant for the "right" occupation are no greater than the costs for the "wrong" occupation -- one which may soon require retraining. Thus, the importance of forecasting efforts, and attempts at providing skills of a multi-use nature become evident.

(Rec. VI-c.) Expand Industrial Services Aimed at Skill Shortage Jobs

To support and complement this training effort, an expanded employer

services effort should help employers[1] either upgrade existing workers into critical vacancies or restructure hard-to-fill vacancies into ones which will be more easily filled with available workers. One way in which this could be accomplished would be for the Employment Service offices to be staffed with experienced industrial engineers and psychologists. Four thousand such experts would represent, on the average, two specialists for each of the two thousand Employment Service offices. Alternatively, this function could be done by the private sector by contracting with commercial consulting firms. Priorities for the specialist-employer consultations should be based upon the list of local labor shortage occupations, discussed above.

(Rec. VI-d.) <u>Support for Child-Care Facilities</u>

Many women currently not in the labor force are equipped with skills in short supply -- nurses and technicians, for instance. Others are capable of being retrained into skill shortage areas. A major impediment to the entry or re-entry of women into the labor force, however, is a lack of adequate child-care facilities. The shortage of these programs would be greatly alleviated if the costs of day-care centers were supported at the federal level. Presently there is minimal federal support to cover these costs of day-care centers. In addition, new efforts should be made to inform parents, communities, and employers of what government support and assistance is available to start the centers. The present view of child-care facilities as an adjunct to our welfare and poverty programs is

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[1]See Functional Specifications in Chapter IV.

For behavior research relevant to such services see: Robert N. Ford, <u>Motivation Through the Work Itself</u>, American Management Association, 1969, and Rensis Likert, <u>The Human Organization: Its Management and Value</u>, New York: McGraw-Hill, 1967.

excessively narrow. In 1969 approximately 640,000 children attended licensed day-care centers while 11.6 million mothers with children under age 18 were in the labor force. It has been estimated that several million children need the services of a day-care center.[1] As a specific example of the potential labor force impact of adequate child-care facilities, we observe that nearly half of the 340,000 registered nurses aged 25-34 are out of the labor force.

If half of the 1.1 million skill upgrading slots referred to in (VI-b.) were made accessible to women, 550,000 women per year could undergo training or be enabled to enter or re-enter the labor force. A rigid sex quota is not implied, of course, but the system of training probably should provide this capacity for equity reasons.

Some of these women have no dependent children, or are currently employed, and have made some arragements for the day-care of their children so that not all 550,000 would require such facilities. On the other hand, many women are already skilled and would want to work if such facilities were made available. Precise estimates of the skill composition of women who need child-care facilities are not available, so crude estimates must be made. If we assume that the number of new trainees who do not need child-care facilities, either because they have no dependent children or because they have been other arrangements, is roughly equal to the number of previously skilled labor force re-entrants who do need child-care facilities, then new child-care services will be required for 275,000 women every six months, the assumed duration of training. On the basis of 2 children under

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[1]U.S. Department of Labor, Women's Bureau, "Day Care Facts," May 1970.

12 per woman, observed in a 1964 sample of working mothers,[1] this creates

a demand for 550,000 new child-care positions every six months.

To increase the effectiveness of the day-care program, it is desirable

to continue the provision of day-care services for two working years beyond com-

pletion of the six months training period. Thus, in steady-state, the number

of children being cared for will be 2.75 million.

This approach toward encouraging the filling of skill vacancies can be

viewed, of course, as a partial substitute for increasing the geographic

mobility of skilled workers, such as is presented in Chapter VII below.

Subsidies for child-care costs should be given on an occupationally selec-

tive basis, and this subsidy structure altered over time as labor market

conditions change and occupational priorities are altered. When a job no

longer qualifies as a skill shortage, the allowance would be removed, to

be shifted to another child whose mother entered a new shortage job or

a qualifying training program. To facilitate the provision of day-care to

women with critical skills or in training for critical skills the centers

should be located for maximum convenience. Centers located in hospitals,

training centers, and universities, for instance, should be particularly

useful.

D. Evaluation

None of the preceding recommendations, above, is designed to fill

all the critical job vacancies. The vacancies arise for different reasons,

and, hence, must be acted upon with different methods. Acting in concert,

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[1] Ibid.

it is thought that the problem of skill bottlenecks could, however, be largely eliminated with the proposed programs.

The first recommendation entails additional data collection and analysis by the Bureau of Labor Statistics and the Employment Service. The effort is not large, however, so that the additional cost would be no more than 5 percent of each agency's budget, or $30 million per year.

The creation of 550,000 training slots serving 1 million people per year, funded at a cost of $5,000 per person trained, will raise training expenditures by $5.5 billion. The present co   of training programs, lasting on average six months, is   he higher costs suggested here come about in part because of h   c: training costs attributable to the higher skill level being pr   de, but even more importantly, because training stipends necessary to cover the opportunity cost of the training will need to be higher for the upgrading enrollees.

Adding the cost of 4000 industrial engineers and psychologists to the Employment rvice is estimated to cost $200 million per year.

Day-care programs for 2.75 million children will cost in the neighborhood of $3.5 billion each year, on the basis of HEW estimates of $1,300 per child per year. This average cost is low by HEW estimates,[1] but two factors enter the argument. First, our program is designed to serve the needs of the trainee, so that any day-care costs above the minimum would be associated with benefits to child development -- which is beyond the scope of this discussion. Furthermore, the HEW cost estimates apply to full-time day-care for 3 to 5 year olds, whereas many of the children

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[1]Department of Health, Education, and Welfare, Office of Child Development, "Standards and Costs for Day Care."

served by this program will require only part-day, after-school care, except for summers.

A rough measure of the potential benefits of the occupational skill shortage recommendations presented above can be determined analytically. Our study[1] of the effect of dispersion of unemployment rates among occupations indicates that the aggregate Phillips curve is, indeed, adversely affected by the dispersion of unemployment. We use a model of a compartmentalized labor market, with each occupational compartment having its own Phillips curve. For simplicity we assume that all occupations have curves of the same shape[2]. The aggregate rate of wage change is simply the weighted average of the individual rates of wage change, or alternatively, a function of the weighted average of the individual unemployment rates. It appears that the elimination of the dispersion of unemployment across occupations could lower the aggregate Phillips curve by as much as 1.4 percentage points of wage inflation per year. This shift in the inflation-unemployment trade-off can, alternatively, reduce unemployment by approximately 25 percent. From an initial unemployment rate of four and one-half percent, the reduction would be approximately 1.1 percentage points. By using a version of Okun's rule, described earlier in Chapter IV, the resulting increase in GNP would be about $16.5 billion.

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[1]See the Appendix, Section D.

[2]However, their vertical positions may differ.

VII. Reducing Geographic Imbalances

As described in Chapter I imbalances in the labor market are a source
of the unemployment-inflation dilemma. This is true whether the imbalances
are demographic, geographic, industrial, or occupational. In this Chapter
we consider mobility programs as a means of reducing geographic imbalances.
These manpower programs work on the supply side of the market and complement
federal procurement and area redevelopment programs on the demand side.

We begin by looking at the background of mobility programs. How the
mobility system should work and what would need to be done are then des-
cribed. We conclude with a discussion of costs and benefits.

A. Background

The geographical distribution of workers and jobs plays an important
role in the determination of the tradeoff between inflation and unemployment.
Mobility programs, therefore, have a potential for improving the tradeoff.

1. Geographic Mobility and the Phillips Curve

Because labor mobility is high within local markets but low between
markets, we assume as a first approximation the occurrence of local Phillips
curves relating local inflation and unemployment. The national wage inflation
rate is a weighted average of local inflation rates, where the weights are
the proportions of national earnings in the local labor markets. For sim-
plicity, employment weights are used as a proxy for earnings weights in this
paper. The national unemployment rate is, of course, a weighted average of
the local unemployment rates, where the weights are the proportions of national
work force in the local areas. The national trade-off between inflation and
unemployment depends on the Phillips curves in local markets and on the geo-
graphic distribution of employment, work force, and, hence, unemployment.

Although the United States is a relatively mobile country, large distances and economic and social barriers to movement plus the lack of detailed information about the existing remote working and living conditions have the result that the existing distributions of employment and work force do not necessarily minimize the national unemployment rate for a given rate of national inflation. For example, it is estimated that during the 1960's the dispersion in the unemployment rates of the 50 states and the District of Columbia increased the national rate of inflation by three-tenths of a percent.[1] Hence, there is a role for an active manpower policy to improve the national Phillips curve by reducing geographic imbalances.

The geographic dispersion of unemployment can be reduced by moving workers both from areas of labor surplus and to areas of labor shortage. However, workers from surplus areas need not be moved to shortage areas. Similarly, the workers moved to shortage areas need not come from surplus areas. Areas with unemployment rates equal to the national average could both receive workers from areas with above average unemployment rates and send them to areas with below average unemployment rates. In this way the economic and, in particular, the social costs of eliminating the geographical dispersion of unemployment by the relocation of workers and their families would be minimized. This point must be kept in mind when considering existing and proposed mobility programs.

2. Worker Relocation Assistance Programs

Government aids to geographic mobility are used in Canada, Japan, and Western Europe. There have also been a number of demonstration projects in the United States. We briefly review this experience.

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[1] See the Appendix, Section D.

a. Foreign Use of Relocation Allowances[1]

There are varying forms of assistance. Interregional clearance systems match job vacancies with employed workers first at the local level and then at the national level. Travel assistance is provided for both job search and family relocation. Commuting assistance is also provided in lieu of relocation. Starting assistance to cover initial living expenses is granted in a number of countries. Lodging and maintenance assistance for single persons is given to special groups such as youth and adult trainees. Governmental aid for the construction of hostels also provides temporary housing for single persons. Family allowances and travel expenses to visit family are common. Moving assistance is also widespread. Finally, housing allowances are provided either as part of a special program or as part of a national housing program.

There are a variety of eligibility criteria for relocation assistance. Geographical, industrial, and occupational factors play a role in the determination of eligibility. Age limits, family status, and income limits are also important. Receiving areas are usually restricted to areas of labor shortage or "growth centers." Particular emphasis is put on moving key employed workers and unemployed disadvantaged workers to these areas. Sending areas are designated "depressed areas" or areas of high unemployment. However, assisted relocation need not be only from distressed areas to growth centers. Thus the foreign relocation programs have the potential for eliminating the dispersion of unemployment and, thereby, improving the unemployment-inflation trade-off at a minimal economic and social cost.

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[1]O.E.C.D. Social Affairs Division, Government Financial Aids to Geographic Mobility in O.E.C.D. Countries. Paris: Organization for Economic Cooperation and Development, 1967.

M. Schnitzer, Regional Unemployment and the Relocation of Workers. New York: Praeger, 1970.

b. U.S. Demonstration Projects[1]

The United States does not now have an operating geographic mobility program. The Department of Labor, however, has conducted a number of labor mobility demonstration projects under authorization from the 1963 amendments to the Manpower Development and Training Act of 1962. From 1965 through 1969 thirty-five public and private agencies in 28 states spent $13 million in 61 projects to move over 14,000 workers, in experiments designed to evaluate the effectiveness of such programs.

The primary emphasis of the projects was on moving the unemployed, in particular the disadvantaged, from rural or nonmetropolitan areas to nearby metropolitan areas or regional growth centers. There were no projects to relocate key employed workers to areas of labor shortage. Thus, the demonstration projects had limited potential for reducing inflation and unemployment.

In the mobility projects assistance was limited to individuals who were involuntarily unemployed without local prospects for suitable employment, or who were members of farm families with incomes less than $1200. In addition, before the individual could receive the allowance he had to have a bona fide job offer in the destination area.

Financial assistance for travel and moving expenses was given to most participants in the projects. A one week starting allowance also was given. Loans were provided to assist in the purchase of housing or local transportation. In contrast to foreign programs, few received travel expenses for job search activities. Nonfinancial assistance in the form of job placement and counseling was given to all participants. This was particularly important for the disadvantaged

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[1] C.K. Fairchild, "Worker Relocation: U.S. Department of Labor Mobility Projects." Washington, D.C., E.F. Shelley, Inc., 1970.
    A. Freedman, "Labor Mobility Projects for the Unemployed," Monthly Labor Review, June 1968, 91, 56-62.

An Interarea Clearance System exists but works so poorly because of lack of communication between local Employment Service offices that agencies in the experiment by-passed it and established their own informal contacts.

A geographic mobility program is presently being considered for the United States. In fact there was a provision for relocation allowances in the Manpower Training Act submitted by the Nixon Administration. Although no specific guidelines were set forth in this proposed legislation, the Department of Labor seems to be thinking of a program to promote movement of the unemployed out of depressed areas to growth centers, as yet undefined, with continued emphasis on the disadvantaged.

B. **What Needs to be Done**

(Rec. VII-a)   <u>Institute a mobility program to relocate disadvantaged workers from areas of labor surplus and to areas of labor shortages.</u>

Based upon both the theoretical analysis of the relation between wage inflation and the dispersion of unemployment and the empirical evidence from foreign programs and domestic projects we can now make the following recommendations.

Critical vacancies contribute disproportionately to inflation and disadvantaged workers contribute disproportionately to unemployment. Therefore, the program would concentrate on disadvantaged workers and critical vacancies. Both households with high unemployment experience or low incomes, and firms with critical skill vacancies, as described in Chapter VI, would be eligible for assistance. The critical vacancies, however, need not be matched with the disadvantaged workers. Employers in shortage areas with designated critical vacancies could apply for assistance in filling these vacancies, but these vacancies could be filled with employed workers, from any area. Similarly,

households with disadvantaged workers in slack areas could apply for assistance and could fill vacancies that were not critical in any area. In this way the mobility program could concentrate on the two groups which contribute much to the unemployment-inflation dilemma.

(Rec. VII-b.) <u>Provide information on working and living conditions</u>.

The most important form of nonfinancial assistance is the generation and dissemination of information regarding job vacancies and unemployed workers. This function would be carried out by a nationally integrated Employment Service, as described in Chapter IV. In particular, a nation-wide computer matching system would replace the present State-Federal Interarea Clearance System.

Equally important is the provision of information on the availability of housing, schools, recreation, and cultural activities. The location decision of a household is a function not only of labor market conditions but also of the quality of life.

(Rec. VII-c) <u>Provide mobility allowances</u>.

Financial assistance would be provided in the form of search, moving, family, starting, and housing allowances. Search allowances would cover the expenses of obtaining the initial interview. Moving allowances would include the cost of moving the household, travel, telephone, hotel, etc. Family allowances would compensate for the temporary maintenance of <u>two</u> households. Starting allowances would temporarily cover living costs. Housing allowances would provide for the additional expense of buying or renting housing in the new area. These financial aids could be used individually or together.

C. <u>Evaluation</u>

To evaluate a geographic mobility program we must compare the benefits and costs of the program. The primary economic benefit is the increase in real

product associated with the decrease in the unemployment rate for a given
rate of inflation. The primary economic cost is the expense of relocating
workers and their families. In addition there are psychological and socio-
logical benefits and costs, which are important although they are difficult
to quantify.[1] They involve an evaluation of the impact of a mobility program
not only on the family but also on the community and the nation, which we
will not attempt here.

1. Benefits

Although the increase in real product associated with a geographic
mobility program cannot be directly observed, it can be estimated. Assuming
that the national Phillips curve is approximated by a weighted average of
the local Phillips curves, where the weights are the local proportions of
national employment and work force, the impact of a chance in the distribu-
tion of work force can be calculated if we know the distribution of employment
and the local Phillips curves. The local Phillips curves can be estimated
using local wage and unemployment rates over time. The impact on the national
Phillips curve can then be translated into an increase in real product through
a modified Okun's rule described in Chapter IV, which related a one percent
decrease in the unemployment rate to a one and one-half percent increase in
real product.

We estimate that an elimination of the dispersion in State unemployment
rates without an increase in aggregate demand would decrease the national rate
of wage inflation three-tenths of a percent so that the national unemployment

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[1]R.A. Jenness, "Manpower Mobility Programs," in G.G. Somers and W.D.
Woods, eds., Cost-Benefit Analysis of Manpower Policies. Kingston, Ontario:
Industrial Relations Centre, Queens University, 1969.

rate could be decreased, through an expansion in aggregate demand, from the 4.5 percent level projected for 1972 to 4.2 percent without increasing the rate of inflation.[1] According to the modified Okun's rule this reduction in unemployment would increase real product $4.5 billion.

2. Costs

The economic benefits, however, need to be compared with the economic costs of a mobility program. Travel, moving, and additional housing expenses involve an expenditure of real resources. Similarly, the operation and administration of the mobility program utilizes scarce resources.

In the U.S. Demonstration Projects the average cost of relocating a worker was about $900. If we assume that the effect of a mobility program on the national distribution of employment and work force lasts for only a year, then to eliminate the dispersion in the state unemployment rates by moving work force from states with above average rates to states with below average rates until the rates are equal, 200 thousand workers and their households would have to be relocated each year at a cost of $.2 billion. However, the experience of the demonstration projects, which concentrated on moves from nonmetropolitan to nearby metropolitan areas, is not necessarily representative of an operating program so that a more conservative estimate of costs is $.6 billion.

Nevertheless, it is likely that the economic benefits of a geographic mobility program exceed the costs. Moreover, the program would divert less than 10 percent of the present annual migration flow between states so that the net psychological and sociological costs of such a program should not be excessive.

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[1]See the Appendix for the equation used to derive the estimates.

VIII. Reducing Institutional Barriers that Segment the Labor Market

A. The Role of Mobility in Inflation and Unemployment

The theoretical development of the effect of market segmentation and compartmentalization on the Phillips Curve has been considered above, particularly in Chapter I and later in the Appendix. This development shows that the greater the degree of segmentation in the labor market the lower the placement speed and quality of match and the greater will be the degree of dispersion in labor market tightness among the segments. These effects influence the inflation-unemployment trade-off unfavorably. It is important, therefore, that an active manpower program, whose goals are to improve the inflation-unemployment trade-off include measures designed to reduce the extent of market segmentation.

One cause of segmentation is a lack of information from distant markets which keeps the unemployed and the employer ignorant of one another's availability. A function of the Employment Service, of course, is to overcome this information gap -- on whatever geographic basis is warranted -- local, state, or national.

This Chapter, on the other hand, suggests the need for removing barriers erected artificially to protect the job security of the currently employed. Some factors causing segmentation of this type are those created by or for worker groups to limit artificially the supply of labor to an occupation in order to raise incomes. Union entry quotas come to mind in this regard, but worker associations, state licensing agencies, and various other state regulatory offices often impose work rules and worker standards which may not be justified on performance grounds.

For many occupations, barriers to entry are maintained through adherance to restrictive, rigidly-defined apprenticeship programs and job promotion ladders. In some cases, health professionals, for example, the job definitions and upgrading potentials are maintained by state licensing boards. For other occupations, such as the building trades, locally-enforced building codes and trade unions reinforce one another.

The effect of administrative and political control of worker requirements and job tasks is to raise the cost of labor directly and to restrict the supply of labor flowing into occupations. Not only can the numbers of trainees and workers be explicitly limited, but also the costs of training can be artifically raised by requiring an unnecessarily high amount of training over an unnecessarily long time before full job rights are achieved. This further restricts the supply of labor and facilitates implicit discrimination against minorities and youth.

Efficiency objectives would be advanced by lowering barriers in order to increase the labor supply to inflation-causing occupational sectors. This also should aid in achieving the equity objectives of reducing discrimination based on race, sex, and age, which often hide behind other, more respectable barriers.

(Rec. VIII-a.) <u>Remove Barriers to Employment</u>

Institutional barriers to entry exist in so many occupations and are maintained in such a variety of ways that a study of this problem with policy recommendations for dealing with them by a high level Presidential Commission with a professional staff would be a useful step in starting an across-the-board effort to remove artificially-maintained barriers to entry. The potentials for on-the-job training and upgrading beyond the scope of current job ladders ought to be

considered by this Commission with the force of selective government

procurement applied where it is deemed appropriate.[1]

Turning the staff of this task force into a permanent office for

implementing recommended institutional changes might well be warranted.

Both the knowledge and institutions in this area are deficient. Instead

of government establishing and supporting such barriers as is often now the

case, a new _active_ policy of dissolving unjustifiable barriers should be

undertaken by the federal, state and local governments.

The success of these efforts are strongly contingent on our ability to

provide for job security through stabilization of aggregate demand at a full

employment level and for promotion to full worker potential through upgrading

programs.

The skilled-worker upgrading programs presented in Chapter VI are an

essential complement to the reduction of barriers to the entry of less

skilled workers. But the reverse is also true. Helping already skilled workers

to be promoted is relevant compensation for getting them to share their present

privileges. Thus upgrading, viewed as an efficiency program originally, becomes

the keystone of equity programs for reducing poverty and discrimination.

Unions will continue to represent the collective interests of employees

in dealing with employers, but the advancement of individuals increasingly

should be substituted for advancement of the group. Individuals should be

free to flow in at the bottom of a skill level and, depending on their abilities,

training, and experience, flow up to the next skill level rather than spending

their working lives frozen at a static level.

"Defenses" against entry erected by a higher skill group inevitably

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[1]The Commission on Productivity might consider undertaking this function.

constitute barriers to "advancement" by lower groups. If advancement is cut off above, then defenses below can be justified. If channels of advancement are opened, defenses are less necessary. The decision to relax barriers should be joint, cutting across all groups simultaneously. However, the removal of artificial barriers to advancement is empty unless the worker is enabled to surmount the real barriers to promotion through necessary training, etc.

Civil rights, women's rights, and equal employment opportunity legislation with their enforcement agencies are essential tools for lowering artifical barriers, but to be fully effective it is clear that they need to be supported by manpower programs and a high level of aggregate demand. To achieve the latter the control of inflation is essential.

Since many of the barriers were carefully constructed to protect the economic interests of various employer and worker groups, it is naive to suppose that their dissolution will be easy. Minimum wage legislation and union seniority are particularly significant areas that merit particular attention. Broadly the Commission should investigate the extent to which an across-the-board manpower program aimed at general upgrading and inflation is an essential political and economic ingredient for reducing barriers, and vice versa.

Part C

IMPLEMENTATION

In this study we have recommended a large number of new and costly programs to reduce unemployment and inflation in specific ways. These include programs to improve the job-worker matching process and to reduce the high unemployment of young people, critical skill vacancies, geographic imbalances, and institutional barriers that segment the labor market. We have tried to make the best estimates of the magnitude of the programs that will be required to do the job and the benefits and costs associated with that effort. However, many questions remain to be answered about how they could be implemented, and what their impacts would be.

This Part recommends program design and experimentation that would take into account the interactions between the programs, and proposes a gradual buildup of the programs to their recommended steady state levels. Then qualifications and limitations of this analysis are pointed out, and the implications for the federal budget are considered including cost sharing with employers and workers, and increases in tax revenues. The impacts of the proposed programs on the distribution of income are examined, and finally the new departures in the programs are highlighted.

IX. Research, Program Design, Experimentation, Evaluation, and Demonstration and Phasing

If we are correct in assessing the importance of manpower programs as a solution to the national inflation-unemployment problem, and if the needs for restructuring the Employment Service and other manpower programs are as serious as we judge them to be, then for large expenditures to be effectively spent, a great deal of work needs to be done in learning how to do these jobs. There will not be time for the usual approach of throwing together operating programs and organizations only to learn years later that on evaluation they proved not to be adequate or effective.

(Rec. IX-a.) What is needed is a carefully designed and integrated program of basic and applied research, design, and experimentation that will generate the knowledge and test it thoroughly on a small scale, and then introduce it into practice.

Only in this way can we move fast and effectively. Existing efforts in these areas are simply not on an adequate scale, and are addressed more at particular target groups, than at improving the whole structure of the labor market.

We particularly recommend research on the following topics:

1) Research is badly needed on the predictive variables and behavioral relationships that will enable the Employment Service to predict the likely productivity and satisfaction that would occur if a particular worker-job pair were matched. Where the prognosis is poor from either the worker or employer point of view, there is little point in recommending an interview. The same type of behavioral diagnosis and prediction is needed for recommending employment related services. Judgmental methods may work in a strictly manual system, but the computer is not capable of such subtlety and must be told how to process each piece of information. Without this research input the contribution of the computer may continue to be at its present limited level, a mechanized file and flexible high-speed printer.

2) In this study we have focused on the macroeconomic impacts of manpower programs. Yet the programs with which we've had experience have been so small that their effects are extremely difficult to detect by direct measurements on the national economy. Traditional direct measurements of cost and benefits are almost useless because of the externalities involved, especially those involving the impacts of inflation and unemployment.

For this reason theoretical analysis must be developed and tested for predicting the interrelationships between the micro phenomena of the labor market and the macro phenomena of the national economy. Then experimentation on a small scale which yields useful information concerning micro parameters can be used in predicting the macro responses of full scale programs.

An extremely limited example of the kind of analysis that needs to be done is the evaluation of geographic mobility programs in Chapter VII. Using an empirical model which relates the microeconomic dispersion of unemployment to macroeconomic national wage inflation, information gained from experimental mobility projects is applied to the estimation of the benefits and costs of a national mobility program. This kind of analysis can and should be extended to deal with programs which have an impact on the demographic, industrial and occupational composition of unemployment, and, hence, on the Phillips curve.

3) Because of the importance of interactions between programs of matching, counseling, training, mobility, barrier reduction, health, day-care, etc., a great deal has to be learned about the design and coordination of comprehensive programs. Large scale experiments should

contribute importantly to the development and testing of effective

programs prior to their mass implementation.

(Rec. IX-b.) <u>An Improved Evaluation System</u>

Establish an evaluation system for education and manpower programs

that would determine which program strategies work best in meeting the

needs of specific groups under various labor market conditions. Many

evaluations have been made of the total impact of each program. However,

they have not addressed the question of which program is most effective

for specific groups, such as black teenagers with certain specified labor

market handicaps. In addition, we need to know, within a program, which

techniques and strategies are working best for each group.

This evaluation system should focus in particular on identifying

program strategies that are successful in increasing the average job

tenure and the wage advancement of their participants. The number of

immediate job placements gives only a part of the picture and, without

additional information on job tenure, leads to overemphasis on filling

short-term, dead-end jobs.

<u>Interactions Between Proposed Programs</u>

Recommendations dealing with individual specific areas have been

drawn from the labor market analysis. However, the recommended activities

interact strongly and to obtain maximum effectiveness should be designed

to complement each other. We now consider some of the interactions

between programs.

In matching workers and jobs, particular attention should be paid

to workers from high unemployment groups and to long duration vacancies.

Also in matching, special consideration should be given to workers from

high unemployment areas and to vacancies from low unemployment areas. In monitoring the worker-job matching process, evidence of discrimination and other barriers should be noted and corrective actions taken.

Similar considerations apply in matching workers and employers to various service programs. Groups with high unemployment rates, (women, minorities, and youth), should receive special attention in counseling, placement, training, mobility, and removal of barriers. Employers with long duration vacancies should receive special consideration in mobility support and reduction of employment barriers.

Because workers in their job searches tend to be attracted by prospects of employment at high wages, they will be attracted to regions and industries with relatively high vacancies and with relatively high wages. To a degree these two attractions are substitutes, so sectoral wage rates and unemployment rates tend to be positively correlated in equilibrium. However, a sudden increase in sectoral demand can run unemployment down and drive wages up. Similarly, sharp declines in sectoral demand can raise unemployment and force wages down. The combination of low unemployment with high and rising wages is clear evidence of sectoral disequilibrium as is the combination of high unemployment with low and falling wages. Unfortunately direct movements of workers from such slack to tight segments are not likely to be generally feasible because of the occupational or geographic distances involved.

However, young people just entering the permanent work force have the maximum of ease and flexibility in selecting occupations and in geographic movement.[1] Hence by combining mobility and training programs

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[1]Movement obviously becomes increasingly difficult and costly as the worker gradually acquires a spouse, children, furniture, and a house.

it may be feasible to move new workers from regions of high unemployment
directly to fill the skill shortages in regions of low unemployment.
Thus by good information and coordination, it should be feasible with
minimal economic and social cost to channel the flow of new workers in
such a way that the flexibility and responsiveness of the labor market
is substantially improved.

Of course, the inflationary shortage occupations may occur at high
skill levels that cannot be readily filled by inexperienced workers. Then
the response should be to restructure the jobs to demand less skill, to
move skilled workers, and to offer the training required to upgrade
workers from lower skill levels in the local market. The newly upgraded
workers could be replaced by training the women and youth that are re-
entering or entering the labor force in the local community. Additional
placements could be supplied by attracting young workers from other
preferably slack areas.

Clearly the timely and smooth operation of such restructuring,
upgrading, training, and moving can be achieved only if advance prepara-
tions and communications are good and institutional barriers are not
allowed to inhibit the cooperation of employers, workers, and governmental
programs.

Although turnover has been criticized because it produces unemploy-
ment, it does have the positive aspect of facilitating rather painlessly
the reduction of work forces that are no longer needed -- women get
married and retire to raise families and young workers may return to their
home communities. Thus it is feasible to achieve the needed adjustments
in the occupational and regional composition of employment by concentrating
attention on the inflows of workers.

Program Phasing

If a decision were made to implement the proposed program, considerable time would be required -- first to develop and test it and then to institute a gradual buildup to full operation. During the buildup phase attention would need to be given to the manpower requirements of the programs themselves, including their regional and occupational impacts. This is especially important for programs such as training which involve initial investments that then yield streams of future benefits. Dynamic programming techniques could be used for determining a buildup plan that optimally balanced short-run costs against longer-term benefits.[1]

Whether the initial diversion of resources into manpower programs would contribute temporarily to excess demand would, of course, depend on the level of aggregate demand in the economy. An ideal time for the programs to be expanded to their full size would be when resources in the economy are underutilized.

Implementation of the programs will require the close cooperation of federal, state, and local officials. Currently many of the federally sponsored manpower programs, such as MDTA skill training, are operated by state and local agencies and there is a trend toward further expanding their roles. Therefore, although the federal government would be providing the public funds to operate the proposed programs, state and local agencies should be closely consulted in planning their implementation.

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[1]For some relevant techniques see A.R. Dobell and Y.C. Ho, "An Optimal Unemployment Rate," _Quarterly Journal of Economics_, Nov. 1967, 81, pp. 675-83, and O.E.C.D., _Mathematical Models in Educational Planning_, Paris, 1967.

X.   Qualifications and Budget Implications

As is pointed out in the Appendix, the theory of segmented markets is complex and still incomplete. Hence in estimating the effects of the programs we have to rely on the existing theory of the labor market[1] in which it is divided into compartments whose interactions are limited.

The compartmentalized model of the labor market can be interpreted as a complete theory in which the only interactions between compartments occur through governmental training and mobility programs. This is not very plausible, so the alternative interpretation of the model is preferable, namely that spontaneous movements of workers and vacancies do occur across the occupational and geographic compartments, but then the theory is incomplete in not describing the disturbances that induce these movements or the dynamic responses to them. Hence the theory does not enable us to predict the distribution of compartmental imbalances or the dispersion of unemployment in equilibrium. The exclusive dependency of the compartmental wage response on the compartmental vacancy-unemployment ratio also is an oversimplification. Nevertheless with all its limitations it does allow us to make preliminary estimates of program requirements and impacts. Also it shows rigorously the conditions under which the aggregate inflation rate is minimized by equalizing compartmental unemployment rates, even though differences in compartmental turnover rates tend to cause them to differ. See Section D of the Appendix fo   formal statement of the compartmental model of the labor market.

Actually labor markets would be more accurately described by a segmented model than the compartmental model that we have used. But as we try to make

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[1]This is particularly important in the estimates of the impacts of skill shortage and mobility programs.

clear in Section C of the Appendix, the theory of a segmented labor market

with various spillover and interaction effects between segments will be

much more complex which probably accounts for the fact that it has not yet

been adequately developed.

Hence our estimates were constrained to use the compartmental model,

but available data would not allow us to use its power fully.

The available evaluation studies of manpower programs confine them-

selves to _direct_ impacts on participants which can be seriously misleading

for macro estimates. There are, of course, no evaluation studies for novel

programs.

The interactions between programs seriously complicates the estimation

of their costs and benefits. The programs for geographic and occupational

dispersion illustrate the problem.

When both occupational and geographic mobility programs are needed,

they complement each other. Dispersing unemployment regionally will reduce

the occupational dispersion, because as the unemployed workers of the slack

occupation are spread geographically they come into contact with more job

vacancies in that occupation. Thus, moving towards geographic equalization

of the probability of placement of workers in each occupation, will lower

unemployment. However, the minimization of unemployment and inflationary

pressure will require occupational transformations as well. The comple-

mentary interaction between the programs designed to reduce occupational

and geographic dispersion will decrease the programs required and hence

decrease the costs in comparison with what would be needed in the absence

of interaction.

However, another approximation has the opposite effect on our estimates.

Our dispersion measures are based on ten occupational categories and fifty

states. Program costs are estimated in terms of equalizing the unemployment
rates of these categories. Actually the one hundred fifty
Major Labor Market Areas probably constitute a better count of the
number of relevant geographic labor markets. The twenty-five-odd thousand
occupational titles contained in the Dictionary of Occupational Titles may
be on the high side, but it certainly better reflects the number of job
movements which might be likely to require training. Thus the geographic
and occupational resources required to equalize the unemployment rates would
certainly be greater for the larger number of segments than our estimates
indicate.

Viewed from the points of view of efficiency and growth, the training
and mobility programs are designed to increase the investment in human
capital and to move segmented markets toward balanced equilibria. However,
the persistent dispersion that is observed of geographic and occupational
unemployment rates could result from sluggish movements toward equilibrium
or from a fully adjusted equilibrium that did not equalize unemployment.
Our analysis has favored the former interpretation although neither the
theory of the adjustment processes nor relevant data for testing it are
adequately developed.

It is important that the overall program be designed to complement move-
ments toward equilibrium, or to improve the equilibrium by better information
and decisions, or by offsetting the effects of externalities. While we are
convinced that grounds are strong for supporting increased governmental
intervention, the knowledge base certainly is not adequate for designing
optimal programs.

Budget Implications

In financing the programs some provision presumably would be made for sharing program costs with employers and workers who were direct beneficiaries, taking into account their abilities to pay. This would lower governmental expenditures on the programs and would contribute to achieving an equitable income distribution. The degree of cost sharing is, to a large extent, a matter of value judgment. Perhaps a reasonable government contribution would be two-thirds of the costs with the balance coming from employers and workers each contributing one-sixth of the costs. Thus of the total estimated social cost of the programs of $14 billion, government expenditures would come to approximately $9 billion.

Offsetting this partially is the increase in tax revenues which would be attributable to the rise in GNP which accompanies the reduction in unemployment. Assuming an incremental tax rate of one-fifth, the predicted $30 billion rise of GNP would yield $6 billion of increased revenue. Thus the net drain on the budget would be approximately $3 billion per year. What proportion of total costs actually should be borne by the government and what proportion of the total benefits would be returned to the government in increased revenues are, of course, issues yet to be resolved.

XI. Inflation, Unemployment, and Income Distribution

The basic objective of the proposals presented in this paper has been the improvement of the inflation-unemployment trade-off, but there will be important impacts on income distribution as well.

One rationale for government intervention is that the actions of employers and workers have external effects that adversely affect others. The degree of public intervention should be sufficient to offset the external effects and motivate individual behavior to be consistent with that which is socially desired. The implementation of such proposals should reduce inequities and uncertainties through inflation reduction, and should increase economic efficiency through unemployment reduction, and better information.

However, the programs would have additional important impacts on income distribution. The reduction of inflation pressure would allow increases in aggregate demand which would reduce the unemployment of all groups by about the same proportions. For example, a group that has double the average unemployment rate will enjoy a reduction in its unemployment rate that is twice the average reduction. Studies of the effect of increases in aggregate demand on poverty, reflecting wages as well as unemployment, show that the low income groups benefit disproportionately when demand increases. But profits and other property income also will benefit from increased demand. The _direct_ impact of the proposals that emphasize skill shortages may well benefit high income workers relatively more.

Although the proposed programs are designed primarily for their macro impacts rather than their effects on income distribution, it is quite reasonable to tailor their administration so that the disadvantaged and the poor share less of the costs and more of the benefits. For example, high income workers could be asked to share higher proportions of the cost of training, travel and day care compared to lower income workers. While this would bring some marginal reductions in the effectiveness of reducing inflation and unemployment, it would have the advantages that governmental costs would be lower and an additional direct contribution would be made to the more equitable distribution of income.

Since our prime stress has been on the macro objectives rather than income distribution, our proposals incorporate only a mild degree of progressivity in their direct impacts. Much more research is needed on both behavioral responses to various incentives and changes, and on the direct and indirect impacts on income distribution.

Older workers who are geographically and occupationally less mobile, and those suffering from educational, health, or motivational handicaps can become trapped in poverty and chronic unemployment. Poverty oriented manpower programs are certainly needed by this group and direct income transfers as well, but their objectives are distinct from those aimed at the macro problems of inflation and unemployment.

As we pointed out above, the increase in aggregate demand that the downward shift of the Phillips curve should allow will, of course, benefit disproportionately the high unemployment groups, including the disadvantaged. In addition the upgrading and mobility programs aimed at skill shortages should reduce the difference between the unemployment rates of high-skill

and low-skill groups. This will tend to reduce wage disparities. As the
relative excess supply of low skilled workers is gradually absorbed, the
wages and quality of jobs will improve for those remaining. Both of
these effects will reduce excessive turnover and thereby reduce the unequal
burden of unemployment.

XII. Concluding Observations

In view of the similarity of our recommendations to some existing programs, it may be useful to discuss the differences. Our evaluation of existing manpower programs is that they have not been large enough, effective enough, or targeted on macro objectives sufficiently to have important impacts on inflation and unemployment -- nor were they instituted with this intent. By concentrating on upgrading the disadvantaged, the current manpower programs have been subjected to some special handicaps which the proposed programs will not encounter to the same degree.

The better understanding of labor market friction and structure that is only now emerging enables us to analyze the indirect impacts of manpower programs that in the aggregate are very important.

A functionally integrated Employment Service of full occupational coverage and national scope fully utilizing behavioral science and computers would be a tremendous innovation. The objective of computer matching is not new, but the weakness in its implementation to date has been to think of matching as primarily a computer problem.

The weakness of our educational system in failing to provide an effective transition between school and work has been recognized, but the relation has not been systematically addressed in action terms between information and experience on the one hand, and high turnover and high youth unemployment on the other.

Our proposed introduction of a strong emphasis on inflationary skill shortages -- with approaches on both the supply side through training, mobility, and day-care centers, and on the demand side by services to help employers solve their manpower problems through restructuring jobs -- would constitute a sharp break with present manpower programs.

A geographic mobility program is not presently a part of our manpower policy. Of course, unemployment, inflation, and poverty are hardly the only considerations in formulating a policy on population location, so the impacts of the proposed mobility programs on other objectives must be examined.

Present manpower programs are oriented toward the disadvantaged. They are certainly needed and should be continued. The prime objective of this study is different, however. The broad and comprehensive program that is proposed should improve efficiency by contributing to general job satisfaction, productivity, income upgrading, and speed of adjustment. The concentration of efforts on inflationary labor market segments should make it possible to increase aggre;ate demand without inflation. The unskilled and disadvantaged who ara particularly vulnerable to unemployment will benefit disproportionately from the vacuum effect of general upgrading and the overall reduction of unemployment that can occur. This macro economic impact on the poverty problem should strongly complement the direct approach of present antipoverty programs. Indeed, the achievement of a full employment economy is essential for the success of manpower programs directed at the disadvantaged, and the success of the employment component of income maintenance programs.

The government's unique responsibility for stabilizing demand has long been accepted. Now we need to recognize the parallel proposition that full employment and price stability are likely to be unattainable unless government intervenes to prevent excessive structural friction in the labor market. For economic efficiency, relative prices need to regulate the allocation of resources, but these changes in particular

prices, however, also affect the general level of prices. To minimize
inflation and unemployment, the economy must be flexible so that necessary
changes in the composition of production and employment are made quickly
without requiring the inducement of large price changes.

Although governmental responsibilities have been stressed, it is
evident that the success of the recommended programs depends on the
active participation and cooperation of both workers and employers -- but
not necessarily on their altruism.

These proposals require further refinement in spelling out more
clearly what the division of costs should be between government and the
particular workers and employers who benefit from the initial impacts of
these programs. The government's contribution should be directed pri-
marily to supplying sufficient aid and incentives to achieve the national
objectives of full employment and price stability, but in addition some
consideration needs to be given in their design to equity of income
distribution.

Although the funding requirements are significant, these recommen-
dations make sense if the alternative is the indefinite continuance of the
inflation-unemployment dilemma, possibly accompanied by recurrent alter-
nating excursions into extremely high inflation and unemployment.

If manpower policy has a crucial role to play in macro-economic
policy, as others besides us have argued, then United States policies in
this area should be strengthened and fundamentally redirected.

THEORETICAL AND EMPIRICAL APPENDIX

In Chapter I a nontechnical discussion of the functioning of the labor market was presented. This Appendix[1] provides a more rigorous theoretical and empirical basis for this study's proposals. Section A presents a graphic analysis of the vacancy-unemployment and wage response relations from which the Phillips curve is derived. Section B extends the analysis to show the implications of the nonlinearity of the Phillips curve when the labor market is compartmentalized. Section C presents a schematic interpretation of market segmentation as it relates to the operation of manpower programs. Finally, in Section D, the compartmentalized model is used to estimate the impact of demographic, occupational, and geographic dispersion on the aggregate inflation-unemployment relation. The relationships estimated in this section are used in the cost and benefit estimates of skill training and mobility programs in Chapters VI and VII.

A. Graphical Analysis of the Problem

In our view, the relationship between inflation and unemployment largely reflects the interaction of two fundamental labor-market relationships, the vacancy-unemployment relation and the wage response relation. Our ability to understand the Phillips curve, and hence our ability to improve it, hinges on understanding these underlying relationships.

The first of these, shown in Figure 1, describes the inverse relation-

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[1] Much of this analysis appears in "Manpower Policies to Reduce Inflation and Unemployment," op. cit., and "Manpower Proposals for Phase III," op. cit.
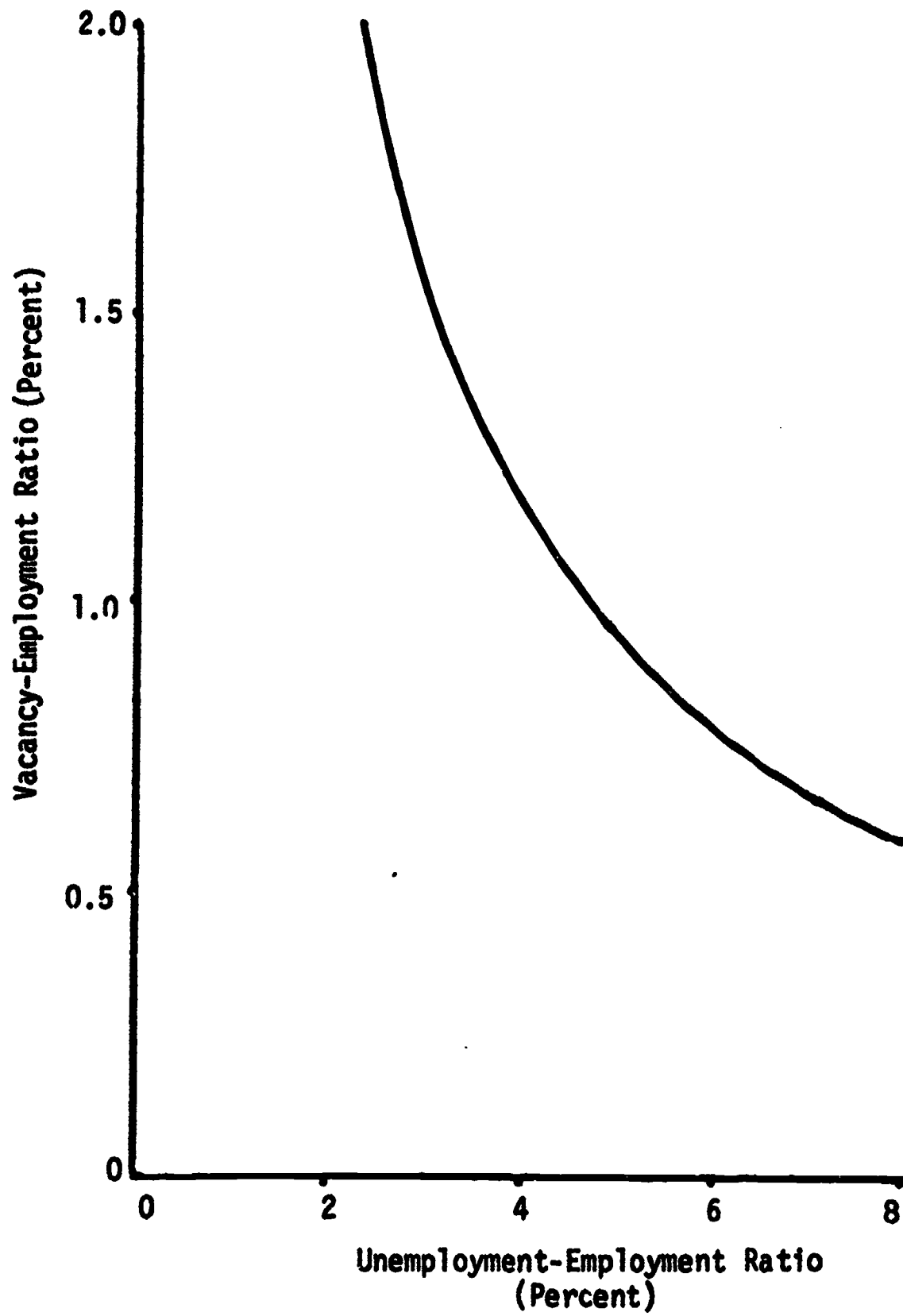
VACANCY-UNEMPLOYMENT
RELATION

FIGURE 1

ship between job vacancies and unemployment.[1] This relationship depends
on the labor turnover rate and search efficiency. A rise in vacancies
is associated with a decline in unemployment and _vice versa_. This occurs
because the flow of new hire matches that is necessary to offset the
turnover flow can be obtained either from many vacancies and few unemployed
workers, or few vacancies and many unemployed workers.

The second relation, shown in Figure 2, determines the response
of wages to market tightness. The tighter the labor market, as evidenced
by a relatively high ratio of vacancies to unemployment, the faster wages
and prices will rise. Conversely, a slack market, as evidenced by a
relatively low ratio of vacancies to unemployment will tend to be
accompanied by low or negative rates of wage inflation.

Once vacancies are determined through aggregate demand policies,
the unemployment rate is determined through the V-U relationship, and
hence the ratio of V to U is determined. And this ratio determines,
through the wage response relationship, the rate of wage inflation. Thus
the rate of unemployment is related to the rate of wage inflation. It is clear
that a shift in the inflation-unemployment trade-off would result from shifts
in either of the two underlying relationships, and this has implications for
the design of a manpower policy intended to reduce inflation and unemployment.

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[1]The axes measure vacancies and unemployment in rate form with employment
rather than labor force in the denominator.

For a discussion of the estimates and data plotted in Figures 1, 2, 3, and
5 see particularly equations (14), (20), and (23) in "Job Search, Labor Turn-
over, and the Phillips Curve: An International Comparison," by C.D. MacRae,
S.O. Schweitzer, and C.C. Holt, (American Statistical Association: Washington,
D.C., pp. 560-564), 1970 Proceedings of the Business and Economics Section.
This paper estimated structural relations and derived the Phillips relation
from them.
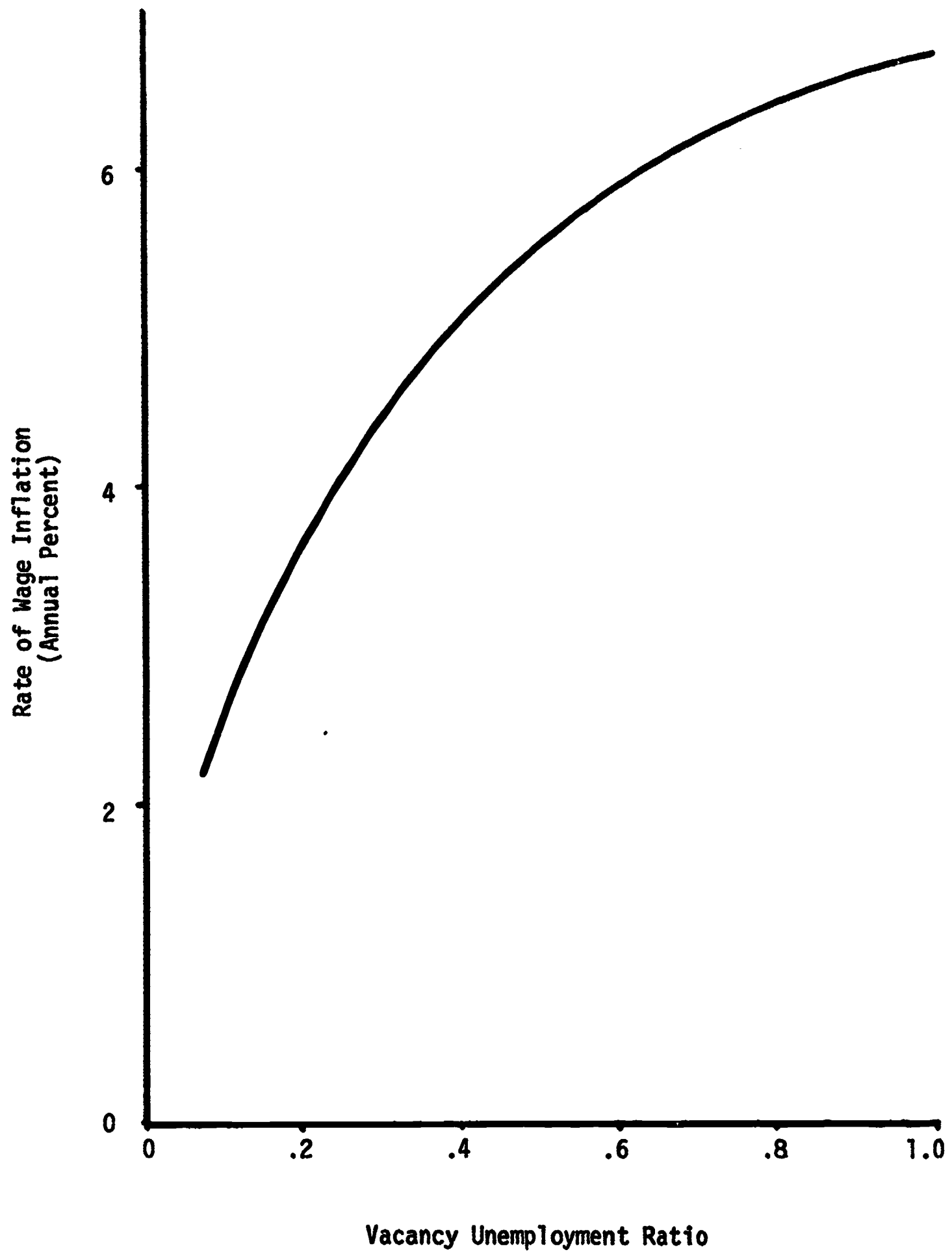
WAGE RESPONSE
FIGURE 2

We now combine Figures 1 and 2 to determine the Phillips relation. We
see from Figure 1 that when vacancies rise and unemployment falls the ratio
of vacancies to unemployment rises even more sharply. This is shown on
the right side of Figure 3. When the wage response of Figure 2 is plotted
on the left side of Figure 3, we can see how unemployment relates to
the inflation rate. Thus the labor market interpretation of the
inflation-unemployment trade-off relation is summarized quantitatively
in its simplest form in Figure 3. As we seek full employment by increasing
aggregate demand, the reduction in unemployment requires an increasingly
large increase in the vacancy-unemployment ratio which in turn puts
upward pressure on wages so that a continuing inflationary movement of
wages and prices occurs.

B.   Compartmentalization

This graphical analysis can be extended to show the implications of
the curvilinear shape of the inflation-unemployment trade-off when the
labor market is compartmentalized. Each of the non-interacting compartments
is assumed to have its own Phillips curve. Clearly such a model is overly
simplified, but the degree of interaction, or flow between market segments
may, in fact, be small enough that useful results can be obtained.

Figure 4 shows an inflation-unemployment trade-off. For ease of
exposition, imagine the labor market to be divided into only two equal-
sized compartments, A and B, each subject to the same inflation-unemployment
trade-off shown in Figure 4. If the unemployment rates of the two compartments
are represented by U_A and U_B, respectively, then their average (or the
"national" average) will be $\bar{U}$ (midway between U_A and U_B). The respective
rates of wage inflation in the compartments will be $\dot{W}_A$ and $\dot{W}_B$ which, when

Figure 3

UNEMPLOYMENT, VACANCIES, AND
WAGE INFLATION
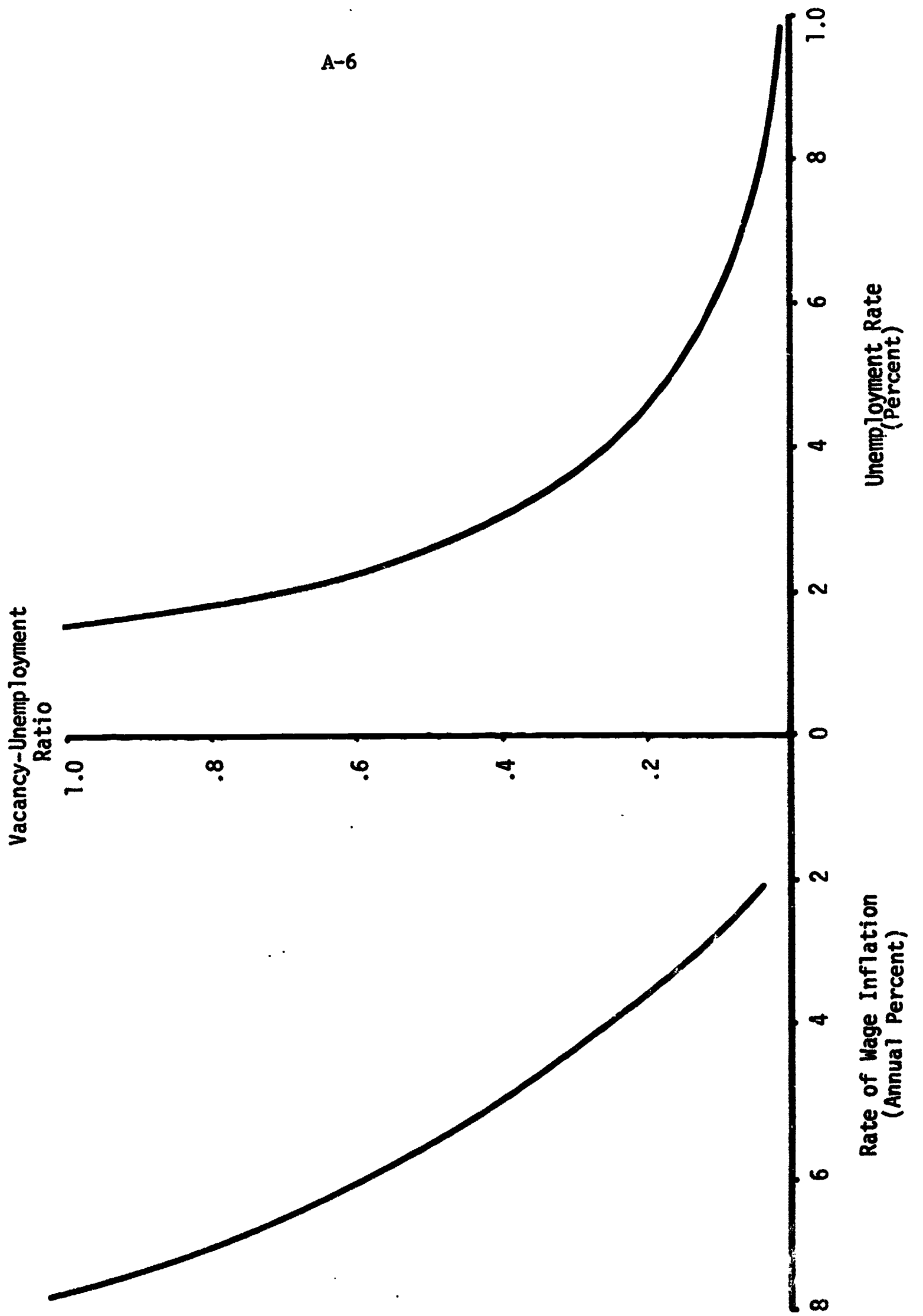
A-6
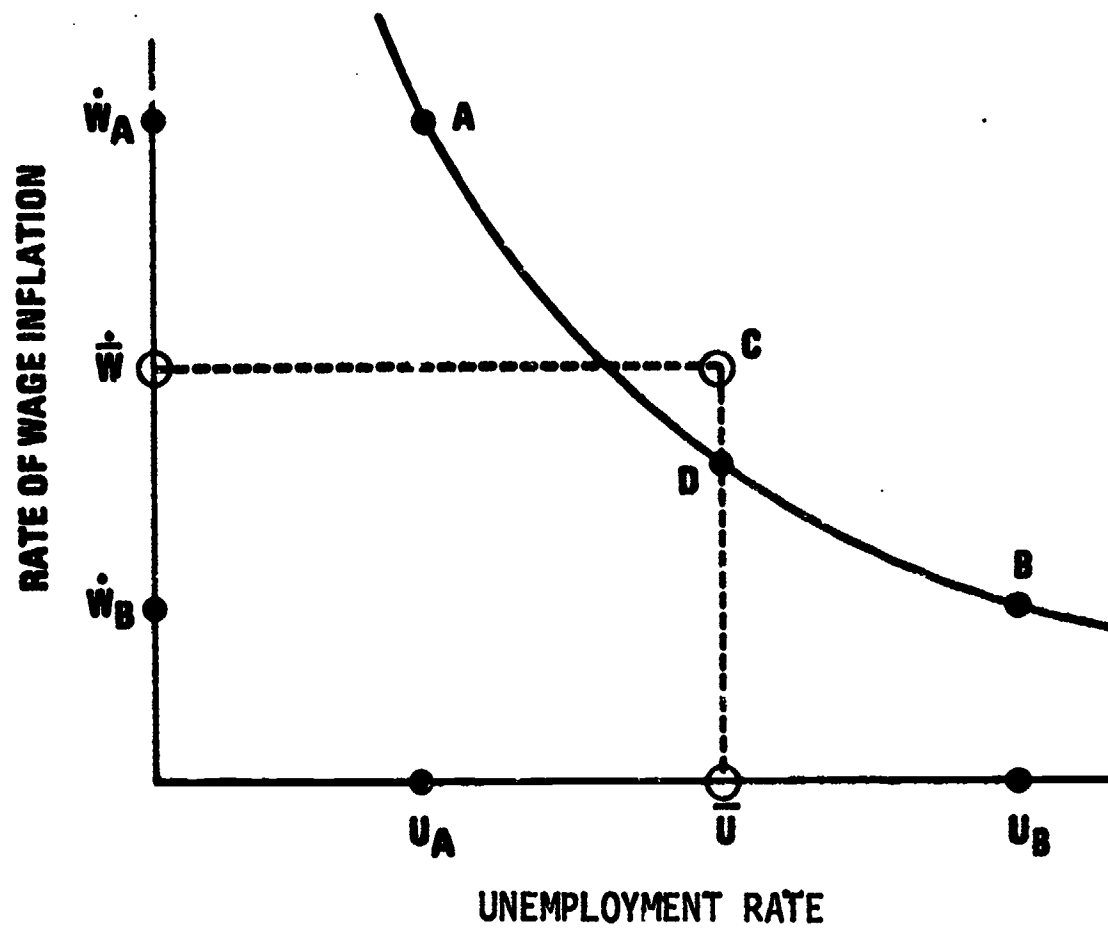
EFFECT OF UNEMPLOYMENT IMBALANCE ON INFLATION

IN A COMPARTMENTALIZED MARKET

Figure 4

averaged together yield $\overset{+}{\text{W}}$ (midway between $\dot{\text{W}}_A$ and $\dot{\text{W}}_B$). Thus, the

"national" Phillips curve would pass through point C, even though C

lies _above_ point D which is on the curve to which each compartment in-

dividually adheres. What we see is that imbalance in unemployment rates

among compartments worsens the national trade-off, for the tight area

contributes _more_ to inflation than the loose area restrains it. The

strength of this effect depends on the degree of curvature of the trade-

off relations. This result readily generalizes to many compartments.[1]

Thus any program which reduces the degree of dispersion of compartmental

unemployment rates would tend to improve the national Phillips curve.

We have assumed the labor market to be divided into compartments --

occupational, geographic, or demographic -- and have analyzed the effect

on aggregate wage inflation of eliminating unemployment imbalance among

the compartments. This determines a maximum, potential improvement in the

aggregate Phillips curve for programs operating along each of these dimensions.

Whether or not this potential can be reached depends on the effectiveness of

the programs in reducing unemployment dispersion.

There is another way in which a reduction in dispersion can improve

the aggregate trade-off. If mobility programs can improve the flow of workers

from one occupational or geographic compartment to another, the search

efficiency and quality in matching jobs and workers will be improved. Both

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[1]Where the Phillips relations of the compartments are approximated by
logarithmic curves, the relevant measure of dispersion for predicting the
contribution to inflation is the logarithmic average of the ratios of the
national unemployment rate to the compartment rates. A linear approximation
is the weighted average of the difference between national and compartment
unemployment rates divided respectively by the compartment rates. See
the empirical section, below.

of these effects will lower the V-U curve and improve the national inflation-unemployment trade-off still further.

Finally, policies that reduce barriers between market segments will contribute to the elimination of inflationary imbalances by increasing the range of search. Thus, market segmentation influences both the vacancy-unemployment relation and the wage response relation.

The whole graphical analysis can be summarized in one figure which relates the wage inflation rate to the unemployment rate. Figure 5 shows that the inflation-unemployment trade-off will be improved by measures that lower both unemployment and vacancies, i.e., shift the U-V relation to the left and down (to the dotted curve), and by measures that reduce the wage response for any vacancy-unemployment ratio (to the dotted lines).[1] With this analysis we have tried to show the basic mechanisms by which the inflation-unemployment trade-off operates. But more than that, we have tried to show how manpower programs can have an impact on this trade-off, through altering these underlying relationships.

In the next section we examine the complex interactions of a segmented labor market. Since its complete analysis unfortunately is not yet available, we will, in the following section, fall back as a first approximation to the analysis of the compartmentalized labor market, which excludes interactions between compartments.

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[1]Since the straight lines represent constant inflation rates, structural change will allow higher vacancy-unemployment ratios without increasing inflation. By expanding aggregate demand these changes can be readily converted into lower unemployment. The wage response relation is shown in Figure 5 as depending only on the V/U ratio. However, there may be scale effects so that the wage response is influenced by the sizes of the stocks as well as their ratio. The wage change might be more accurately predicted by a ratio with exponential weights (V^a/U^b) where a and b are constants. However, the U-V curve does not shift enough to get a very good econometric estimate of the exact shape of the wage response function.
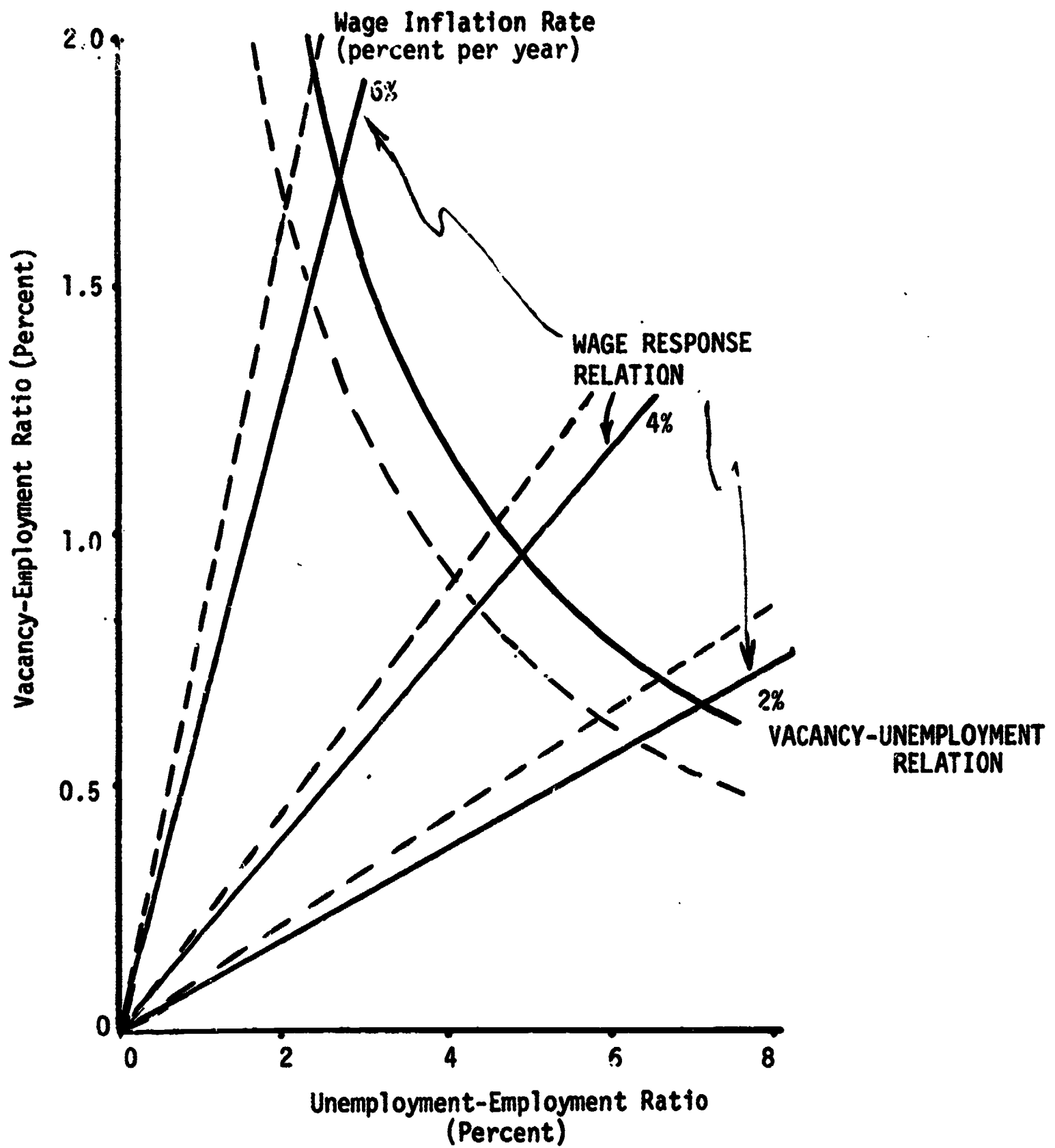
UNEMPLOYMENT, VACANCIES AND
WAGE CHANGE

FIGURE 5

C. The Segmented Labor Market and Manpower Programs: A Schematic Interpretation

The purpose of this section is to formulate a picture of the complex

processes in the labor market taking account of the interactions between

market segments.

External and Internal Labor Markets

In order to predict the impacts of manpower programs it is essential to

analyze the complex labor market and employment environment in which they operate.

Figure 6 sketches the major states and processes through which workers and

job vacancies flow. The boxes represent stocks of workers and jobs and processes

that occur between the stocks. Most flow lines are identified by pairs of

letters that indicate for each flow its source and destination. For example

the vertical line ET is the flow of workers from the status of Employment into

that of Training. In order to get a feel for the relationships embodied in this

diagram, we start by discussing the repercussions of an increase in demand that

induces an increase in the number of jobs. Then we go on to consider market

segmentation.

The flow of new vacancies C enters the diagram at the lower left. (A decrease

in demand, of course, would make this flow negative as the stock of job oppor-

tunities contracts.) When demand increases, the new vacancy flow C augments the

upward flow of vacancies into the vacancy stock in the external labor market

where employers search for workers. As vacancies are matched in pairs with unem-

ployed workers by placement transactions, the New Hire flow H goes into Employment.

Eventually these employment pairings terminate either by employer-

initiated lay-offs or by employee-initiated quits, with the results that the

vacancy flow (EV+JV) goes back from employment to the external labor market

if not canceled by a negative C which decreases the total number of jobs in

the system. A corresponding flow of workers (EU+ET) enters Unemployment and

Manpower Markets and Programs
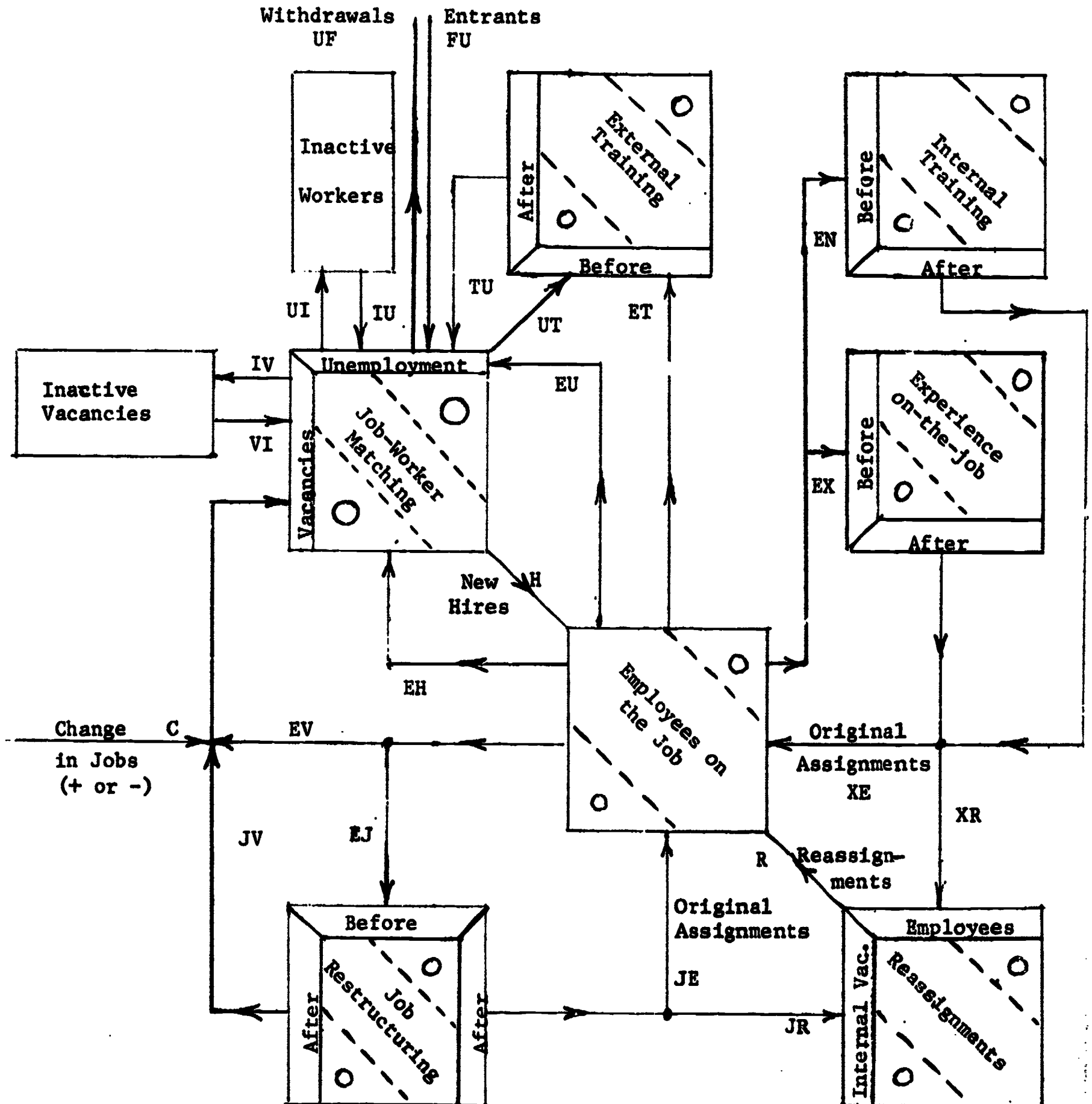
Figure 6
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External Training.[1] On the termination of external training, the flow

into unemployment TU occurs. "Training" here is interpreted broadly

to include any program that "transports" the worker occupationally,

geographically, or otherwise between market segments.

The stock of Unemployment also is influenced by the net flow from

Inactive Workers who are not searching, (UI - IU) and by the net flow

of entrants and withdrawals from the family, (FU - UF). The stocks of

Inactive Workers and Inactive Vacancies indicate that, as the result of

discouragement, workers and employers have ceased to search for employment

placements and are not effectively in the market. Estimates have been made

of such net changes in worker "participation" in job search and hence

inclusion in the "labor force." We assume that the same phenomena occurs

when employers after long search despair of finding workers to fill certain

job vacancies, and stop searching.

Some employed workers search for new jobs while still employed and

do not quit their old jobs until they can start on new ones. This job-

change flow of workers is shown as EH.

The internal labor market within the firm (on the right side of the

diagram) operates formal and on-the-job training. The increased cap-

ability of the worker may result in an upgraded reassignment R, but

this is not always the case. In spite of increased experience or training,

some workers are left on (or returned to) their original job assignments

XE -- especially when employment is not growing.

When increased experience and training do not lead to better jobs

internally, workers may use these skills to enable them to move on to

other firms. This is one reason that employers tend to underinvest in

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[1]That is, training or other programs that are not sponsored by the
individual employer.

training.

As the labor force develops through the accumulation of experience, employers may engage in job restructuring in order to keep up with their workers increasing skills, JE, or to adapt the jobs for reassignment to other employees JR. Also when the structure of vacancies in the external labor market does not match well the capabilities of the unemployed workers, the employers may adapt the vacancies to the available supply by restructuring jobs JV.

The reason that the flows in the labor market are given such emphasis here is that they are surprisingly large relative to the sizes of the stocks. For example, the total annual flow of separations is almost half the size of employment. Indeed the relationships that govern the flows together with the externally given stocks of jobs and labor force determine levels of employment, unemployment, and vacancies.

Market Segmentation

It is essential to recognize that workers are highly differentiated by skills, abilities, experience, locations, preferences, races, and sexes. Similarly, jobs are highly differentiated by skill requirements, inducements, locations, and perhaps extraneous restrictions. As a result, it is useful to distinguish among many classes of workers, (symbolically $m = 1, 2, \ldots, M$) and many classes of jobs ($n = 1, 2, \ldots, N$) in the various activities in the labor market system. The interactions in the labor market that are influenced by these factors have the effect of segmenting the market. Hiring, reassignments, employment and separations inherently involve pairs of workers and jobs. The behavior of a pair can be analyzed in terms of its composition,

i.e., a worker of type m and a job of type n. Hence it is useful to think about these activities in terms of rectangular arrays identified by type of worker and type of job.

For example, Figure 7 shows a segmented array of workers paired with jobs in the employment relation.

Training, experience and restructuring involve "transformations" of workers or jobs from one type to another. That is, such activities involve transitions from one kind of worker to another, or one kind of job to another. For example, Figure 8 shows the transition of workers from one (row) category before training to another (column) category after, where the transition is expressed in probability terms.[1]

The stocks of inactive workers and vacancies involve only the worker or the job classifications. Except for these two stocks, all of the boxes in Figure 6 involve row and column identifications corresponding to various worker and job types.

To illustrate the significance of segmentation we examine the market search and hiring process a bit more deeply. If the workers and vacancies are ordered in terms of their geographic and occupational "closeness" to each other, with "high" skill on one end and "low" skill on the other end of the m and n classes, we would expect to find most of the placements resulting from market search to pair workers and jobs of "similar" skill levels or locations. Although not impossible, it is unlikely that a worker of low skill will land a job requiring high skill. This is indicated in

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[1]Actually each type of training program would have a different transition matrix of this type. Also health service, rehabilitation, and other types of employment related "transformation" programs can be described in this way.

THE SEGMENTATION OF HIRING

Worker Type

	m=1	m=2	·	·	·	m=M
n=1	H_{11}	H_{12}		0	0	0
n=2	H_{21}	H_{22}			0	0
·						0
·	0		H_{mn}			
·	0	0				
n=N	0	0	0			

Job Type

H_{mn} is the number of workers of type m hired to work on jobs of type n.

Figure 7

TRANSFORMATION OF WORKERS
BETWEEN SEGMENTS BY TRAINING

Worker Type Before Training	k=1	k=2	·	·	·	k=K
m=1	P_{11}	P_{12}		0	0	0
m=2	P_{21}	P_{22}			0	0
·						0
·	0		P_{mk}			
·	0	0				
m=M	0	0	0			

Worker Type After Training

P_{mk} is the probability that a worker of type m will be transformed to type k as a result of a particular Training Program.

Figure 8

the box representing the job-worker match process in Figure 7 by
showing zeros in the off-diagonal cells. More crudely it is   ʌn in Figure 6
by large zeros in the off-diagonal corners.

Because of the heterogeneity and complexity of jobs and workers and
the costs of obtaining and analyzing the relevant information, the search
and matching processes involve large chance elements, hence any relation-
ships are likely to hold only in probability terms. The match probabilities
are highest in the diagonal band where jobs and workers are in the relevant
sense "similar."

The off-diagonal zeros in Figure 8 reflect the fact that very
large changes in occupation as the result of training are extremely unlikely,
if not impossible. Patterns of zeros within the diagonal band, however,
result from discrimination or exclusion in hiring on racial, sexual,
union, or other grounds.

The productivity and satisfaction of employment matches and hence the
durations of the employment relationships depend on the interactions between
the hiring, internal training, experience, job restructuring and reassignment
processes of the firm. The speed of placement depends on interactions between
search efficiency, external training, and job restructuring.

Since the analysis of the interactions between segments is not
available, we turn to the analysis of three different kinds of dispersion
in a compartmentalized labor market.

D.   Job Search, Labor Turnover, and the Dispersion of Unemployment

The job search labor turnover model of the labor market permits the

tradeoff between the rates of inflation and unemployment within a labor

market compartment to be derived from two behaviorally based labor-market relation-

ships: a dynamic vacancy-unemployment relationship and a wage response relation-

ship. Then by aggregation we obtain a national Phillips relation, from which

the impact of reducing the dispersion of unemployment can be measured.

The Vacancy-Unemployment Relation

The vacancy-unemployment relation depends on the interaction between

turnover flow and the placement process.

The flow from employment arises from layoffs, quits and other separations.

This flow, designated turnover flow F, responds to fluctuations in the vacancy-

unemployment ratio with a small elasticity r. This flow does not change much

over the cycle because fluctuations in quits are largely offset by those in

layoffs. However, quits are somewhat more volatile than layoffs. The turnover

flow is given by the following relation:

$$(1) \qquad F = f\left(\frac{V}{U}\right)^r E$$

where V and U are stocks of job vacancies and unemployment, respectively, and

f is the parameter reflecting the probability per period that an employee will

be involved in the turnover flow. Since turnover flows will be greater for large

market compartments than for small ones, we include employment in the compartment,

E. Random fluctuations are suppressed.

The size of the flow of new hires H into employment depends on the

efficiency h of matching workers and vacancies. Furthermore, the more workers

that are in the stock of unemployed, the greater the hire flow. Similarly, the

larger the number of vacancies, the higher the flow -- but both are subject

to diminishing returns reflected in elasticity parameters u and v that are

less than unity. Thus the new hire flow depends on the following relation,

(2) $\qquad H = hu^u v^v$

where random variations are suppressed.

When the employment stock is in growth equilibrium in the sense that

employment E is growing at the steady rate g, then the expected inflow H, into

the employment stock will approximately equal the expected outflow F plus

gE:

(3) $\qquad H = F + gE.$

Because the flows through the vacancy, unemployment and employment stocks

usually are large compared to the changes in the stocks, deviations from this

equilibrium condition usually are not great.

Combining these three equations yields the following relation between

vacancy and unemployment stocks:

(4) $\qquad u^{(u+r)} v^{(v-r)} = \left[\dfrac{f}{h} + \dfrac{g}{h}\left(\dfrac{u}{v}\right)^r \right] E$

Vacancies and unemployment are high when the turnover flow parameter f is high,

when growth is high, and when the efficiency of placement h is low.

Thus we see that the turnover and placement processes interact to determine

an inverse relation between the equilibrium levels of vacancies and unemployment.

So, when one is high, the other tends to be low, and vice versa.

It is convenient to normalize our variables by expressing them as ratios

to a common base. Usually, labor force is used for the unemployment rate, but

for this model it is more appropriate to normalize it by dividing all stocks by

employment, E.

Now equation (4) can be rewritten in normalized form:

(5)
$$U^{(u+r)}V^{(v-r)} = \left[\frac{f}{h} + \frac{g}{r}\left(\frac{U}{V}\right)^r\right]E^{(1-u-v)}$$

where U and V are unemployment and job vacancy "rates" (with employment the denominator rather than labor force or job stock). If the sum of u and v were unity, there would be no economies or diseconomies of scale which depend on the size of the market and hence employment E would not affect the vacancy-unemployment relation shown in (5).[1]

The parameter r is small because turnover is cyclically rather stable, so that $\left(\frac{U}{V}\right)^r$ is close to unity. Making this approximation, which is not critical because g is small relative to f, and assuming no scale effects, (5) can be rewritten

(6)
$$U^{(u+r)}V^{(v-r)} = \frac{f+g}{h}$$

The Wage Response Relation

Wage pressure depends on the relative sizes of vacancy and unemployment stocks or equivalently their relative durations.

When the vacancy-unemployment ratio is high, employers are under pressure to grant increases in money wages to their existing employees and to make high offers to new employees. Conversely, when this ratio is low, there is a downward pressure on wages

Even though wage changes are passed along in price changes and expectations adapt, frictions in the wage-price change process will continue to resist the pressure of excess or deficient demand. Consequently, there is a long-run relation between the ratio of money wages in successive periods and the vacancy-unemployment ratio.

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[1] If there were significant scale effects in equations (1) or (2), then the national aggregate Phillips relation (12) will include terms that reflect the aggregate employment level and the dispersion of employment across labor markets. Such considerations may have some relevance for policy relating to population location, city size, etc.

(7)
$$\frac{W_t}{W_{t-1}} = \left(\frac{V}{U}\right)^w A$$

Only in the absence of frictions that are rampant in the labor market would wages __accelerate__ upward or downward in response to excess demand or excess supply.

The variable A reflects exogenous variables such as union effects in the wage response relation. Wage responsiveness is reflected in w.

This equation can be interpreted as implicitly reflecting price as well as wage dynamics with the price relation having been used to eliminate the price variable. We make no attempt here to deal with the lag in the wage-price response which yields a short-run as well as a long-run Phillips relation.

Also, in a more complete analysis the flow and stock relations could be influenced by wage variables. For example, h would be reduced if both workers' wage aspirations and employers' productivity aspirations were increased.

The Phillips Relation

The vacancy-unemployment relation (6) and the wage response relation (7) can be combined to eliminate the vacancy rate.

Natural logarithms yield a Phillips relation which relates the inflation rate to the unemployment rate.

(8)
$$\frac{W_t - W_{t-1}}{W_{t-1}} \approx \ell n \left(1 + \frac{W_t - W_{t-1}}{W_{t-1}}\right) = \left(\frac{w}{v-r}\right)\ell n\left(\frac{f+g}{h}\right) - w\left(\frac{1}{v-r}\right)\ell n U + \ell n A$$

From this derivation we see that the Phillips relation is not a structural relation, but is a relation between two endogenous variables that depends on four distinct relationships in the labor market, (1), (2), (3), and (7), between

flows, stocks and wage changes.[1]

Econometric estimates of aggregated versions of the basic behavioral relations leading to equations (6) and (7) have been made for three countries and reasonable Phillips curves have been obtained by combining the estimates algebraically.[2]

To derive the implications of labor market compartmentalization and imbalance we simplify (8). Subscripts are introduced to make explicit that we are describing the wage inflation-unemployment trade-off for a compartment. We can write $\ell n\left(1+(W_t - W_{t-1})/W_{t-1}\right)$ as $\Delta\ell n(W_i)$, with the t subscript implicit,

(9) $$\Delta\ell n(W_i) = a_i - b_i \ell n(U_i),$$

where W_i is the wage rate in the ith compartment and U_i is the corresponding unemployment rate as a proportion of employment. The greater the turnover rate and the lower the efficiency of search in the ith compartment, the larger is a_i. The greater the elasticity of wage change with respect to market tightness, the larger are a_i and b_i. For simplicity's sake we assume that the wage elasticity is the same in all compartments so that $b_i = b$ for all i. However, we do not assume that the turnover rates and search efficiencies are the same in all compartments, so that the a_i can be different.

The national inflation rate, $\Delta\log(W)$, is a weighted average of the compartmental inflation rates, $\Delta\log(W_i)$, where the weights, e_i, are the proportions of the national wage bill in each compartment,

(10) $$\Delta\ell n(W) = \sum_i \Delta\ell n(W_i)e_i,$$

---

[1]This analysis depends on the flows into and out of the employment stock. Fluctuations in labor participation that occur in response to the changes in the vacancy-unemployment ratio do not, in this analysis, significantly affect the long-run Phillips relation. However, the relation between aggregate demand and unemployment is strongly affected by changes in participation.

[2]See MacRae, Schweitzer and Holt, "Job Search, Labor Turnover, and the Phillips Curve: An International Comparison," 1970 Proceedings of the Business and Economics Section, (American Statistical Association: Washington, D.C.), pp. 560-564.

and $\sum e_i = 1$. However, for simplicity, employment weights are used as a proxy

for earnings weights in this paper. Substituting (9) into (10) we obtain

$$(11) \qquad \Delta \ell n(W) = \bar{a} - b\sum_i e_i \ell n U_i,$$

where $\qquad \bar{a} \equiv \sum_i a_i e_i.$

We can express the Phillips relation in a compartmentalized economy in terms

of the national unemployment rate U (expressed as a proportion of employment) and

the dispersion of unemployment, Dis(U). We rewrite (11) as

$$(12) \qquad \Delta \ell n(W) = \bar{a} - b\ell n(U) + c \text{ Dis } (U),$$

where $\qquad \text{Dis}(U) = \sum_i e_i \ell n(U/U_i)$, and $c = b$.

Dis(U) is the sum of the relative unemployment rates in the compartments

weighted by their importance in the national inflation rate. For a given distribu-

tion of employment and aggregate unemployment rate, U, inflation is minimized when

the labor force is distributed so that the unemployment rate is the same in all com-

partments.[1] Then Dis(U) = 0. Note that Dis(U) is not influenced by proportional

movements of unemployment rates, although the variance of unemployment does change.

Wage Inflation and the Dispersion of Unemployment

Some of the manpower programs discussed in this paper are designed to

reduce the dispersion of unemployment. The purpose of this section is to

measure the effect of a reduction in the demographic, occupational, or geographic

dispersion of unemployment on the Phillips curve.[2]

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[1]Since the distribution of employment is influenced to a small degree by the
distribution of labor force, in this statement we implicitly are assuming a com-
pensatory demand policy that maintains the given distribution of employment. Thus,
if unemployed workers were moved from a compartment, enough new vacancies would be
added to maintain its employment level. This amounts to a "hold harmless" policy
for the employment in each compartment where labor force is reduced.

[2]For a discussion of previous theoretical research on the effect of the distri-
bution of unemployment on the Phillips curve see C.C. Holt, C.D. MacRae, S.O.
Schweitzer, and R.E. Smith, The Unemployment-Inflation Dilemma: A Manpower Solution,
op. cit.

Using the compartmentalized model of the Phillips curve we can
describe the relations between wage inflation and the demographic,
occupational, and geographic dispersion of unemployment, as shown in
Table 1. Wage inflation is measured in terms of average gross hourly
earnings in private nonagricultural industries.[1] The measure of demo-
graphic dispersion describes only the divergence between teenage (16-19)
and non-teenage (20+) unemployment.[2] Occupational dispersion, however, is
measured across the ten occupational categories within the four main occu-
pational groups of white-collar workers, blue-collar workers, service workers,
and farmers and farm laborers.[3] Geographical dispersion is measured in
terms of the unemployment rates for the 50 states and the District of
Columbia.[4]

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[1]U.S. Council of Economic Advisers, The Annual Report. Washington,
D.C.: U.S. Government Printing Office, 1970. Table C-29.

[2]U.S. Department of Labor, Manpower Report of the President. Washington,
D.C.: U.S. Government Printing Office, 1970. Tables A-3 and A-14.

[3]Ibid., Table A-15.

[4]Ibid., Tables D-3 and D-4. The demographic and occupational data on
labor force, employment, and unemployment are derived from the Current
Population Survey (CPS); and, thus, the demographic and occupational measures
of dispersion are related to the national rate of unemployment derived from
the CPS. The geographical data, however, is derived from estimates of
Employment Service offices in each state, and, thus, the measure of geo-
graphic dispersion is related to a weighted average of the state unemploy-
ment rates. There is a difference between the CPS rates and the ES rates,
particularly in the early 1960's. Note that all unemployment rates are
expressed as a proportion of employment, not labor force.

TABLE 1

WAGE INFLATION AND THE DISPERSION OF UNEMPLOYMENT

Year	Inflation rate	Unemployment rate		Dispersion of unemployment		
		CPS	BES	Demographic	Occupational	Geographic
1958	3.1	5.8	-	.04	.32	-
1959	3.5	7.3	-	.07	.32	-
1960	3.4	5.8	6.2	.06	.31	.10
1961	2.4	7.2	7.7	.06	.35	.11
1962	3.7	5.8	6.2	.05	.31	.10
1963	2.7	6.0	5.9	.10	.33	.09
1964	3.4	5.5	5.3	.10	.33	.08
1965	3.7	4.7	4.6	.11	.32	.07
1966	4.4	4.0	3.8	.14	.32	.07
1967	4.6	4.0	4.0	.12	.31	.07
1968	6.2	3.7	3.8	.16	.31	.07
1969	6.5	3.6	3.7	.15	.31	.06

Note. - All rates are measured in percent.

There is a striking contrast in the behavior of the three measures of dispersion. Reflecting the relative increase in teenage unemployment rates, the demographic dispersion of unemployment has tripled in the past decade. Meanwhile, occupational dispersion has remained approximately constant, while geographical dispersion has declined about 40 percent.

Whether these trends will continue is problematic, particularly in light of the coincidence of the secular forces of growth and the cyclical forces of expansion during most of the period of our observations.[1] Nevertheless, it is possible to measure the impact of changes in the dispersions of unemployment on the Phillips curve using the compartmentalized model described above.

Estimates of the Phillips curve (11) using annual U.S. observations are shown below. Figures in parentheses are t-statistics. Significance at the five percent level is denoted by *, and at the one percent level by **. All rates are measured in percent. $\bar{u} = \Pi u_i^{e_i}$.

For demographic dispersion 1958-1969

$$(13) \quad \Delta \ell n(W) = 9.927 \quad - 3.871 \quad \ell n(\bar{u}),$$
$$(9.684)** \quad (-5.912)**$$

$$\bar{R}^2 = .755, \quad S.E. = .622, \quad D.W. = 0.914.$$

For occupational dispersion 1958-1969

$$(14) \quad \Delta \ell n(W) = 9.939 \quad - 4.540 \quad \ell n(\bar{u}),$$
$$(9.509)** \quad (-5.808)**$$

$$\bar{R}^2 = .748, \quad S.E. = .631, \quad D.W. = .932.$$

For geographical dispersion 1960-1969

$$(15) \quad \Delta \ell n(W) = 11.354 \quad - 4.788 \quad \ell n(\bar{u}),$$
$$(7.557)** \quad (-4.892)**$$

$$\bar{R}^2 = .718, \quad S.E. = .715, \quad D.W. = 0.937.$$

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[1] For an extensive discussion of changing patterns of unemployment using arithmetic measures of dispersion, see R.A. Gordon, The Goal of Full Employment, (New York: John Wiley & Sons, 1967).

Note that estimating a and b in 11), a compartmentalized Phillips curve, is equivalent to estimating a, b, and c in 12), an aggregate Phillips curve with compartmental dispersion included, subject to the theoretical constraint that b = c. Moreover, separate estimates of b and c in 12) were made, but b and c were not significantly different at the 5 percent level, which gives some empirical support to the model specification.

Interpreting 13)-15) in terms of 12) we can now estimate the effect of changes in the dispersion of unemployment on the aggregate Phillips curve.

We estimate that the tripling of the demographic dispersion, which occurred from 1960 to 1969, either increased the inflation rate by 0.4 percentage points for a constant unemployment rate or increased the level of unemployment 12 percent for a constant inflation rate.[1] Moreover, a complete elimination of demographic dispersion from the 1969 level would reduce either the inflation rate by 0.6 percentage points or the level of unemployment 14 percent. The latter amounts to a reduction by .56 percentage points from a 4 percent unemployment rate.

The occupational dispersion of unemployment has not changed significantly in the past ten years. However, we estimate that the elimination of occupational dispersion would either reduce the rate of wage inflation 1.4 percentage points or reduce the level of unemployment 25 percent.

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[1]For a similar conclusion see G.L. Perry, "Changing Labor Markets and Inflation," Brookings Papers on Economic Activity, 1970, 3, pp. 411-41.

Finally, the 40 percent decrease in the geographical dispersion of unemployment has reduced either the inflation rate by 0.2 percentage points or the level of unemployment ¼ percent. In addition, a total elimination of geographical dispersion would reduce either the inflation rate by 0.3 percentage points or the level of unemployment 7.0 percent.

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