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## *Manpower Proposals for Phase III*

WITH THE GROWING UNDERSTANDING THAT THE CONTROL of aggregate demand is limited in its ability to regulate both unemployment and inflation has come the recognition that structural changes in the economy must be sought if continuing full employment and price stability are to be obtained. Our work at the Urban Institute supports this conclusion and has convinced us that structural changes in the labor market are essential to the resolution of the inflation-unemployment dilemma.<sup>1</sup>

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1. An earlier policy monograph by the authors on the same subject, *The Unemployment-Inflation Dilemma: A Manpower Solution* (Urban Institute, 1971), presented broad policy recommendations. This led to a number of requests for the development of specific programmatic proposals for implementing the recommendations. Although it was clear that much essential research was needed in the development of the theory of the inflation process, in its econometric testing and estimation, and in the evaluation of programmatic impacts, the authors undertook to respond on the basis of present, incomplete knowledge to the policy issues posed. A very tight time schedule added another constraint. Although we tried to be both concrete and quantitative, the study must be considered exploratory. While the knowledge base that underlies the programmatic recommendations is insufficient to support them as *the* right answers, they are, nevertheless, offered seriously as first approximations. We hope that this work will stimulate the interest of others in these problems.

This paper briefly summarizes the analysis and programmatic recommendations of our study. The graphic analysis and discussion of market segmentation are stressed in

President Nixon's wage-price freeze of August 15, 1971, 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 powers. However, *atomistic* market processes that contribute to inflation and unemployment are likely to be little affected. Despite the real hope that Phases I and II will succeed in restraining inflation so that unemployment can be reduced, there is a genuine risk that the relationship between inflation and unemployment is so deeply rooted in the frictions and structural imperfection of the market process that the tradeoff will prove highly resistant to control for any extended period by means of an incomes policy. Hence it is appropriate to propose that structural programs be considered for Phase III. There is evidence that the Phillips relation is more adverse in the United States than it is in other industrialized countries and that it is getting still worse.<sup>2</sup> Therefore, it would be wise to focus attention as soon as possible on fundamental structural measures, which, in the quest for programs that work quickly, so far have been neglected. The urgency of considering such measures is heightened by the fact that their effective operation probably cannot be quickly expanded.

The crux of the inflation-unemployment dilemma is that government attempts to increase production and attain full employment by expanding aggregate demand create frictions in the labor market that progressively deflect the extra demand into upward pressure on wages and prices rather than into real output.<sup>3</sup> The result is that excessive inflation occurs under conditions of sustained full employment. Our analysis of the labor market

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Charles C. Holt, C. Duncan MacRae, Stuart O. Schweitzer, and Ralph E. Smith, "Manpower Policies To Reduce Inflation and Unemployment," in Lloyd Ulman (ed.), *The Interaction of Manpower and General Economic Policies* (forthcoming). The details of the programmatic analysis, recommendations, and evaluation are presented in Holt, MacRae, Schweitzer, and Smith, "Manpower Programs To Reduce Inflation and Unemployment: Manpower Lyrics for Macro Music," Institute Paper 350-28 (Urban Institute, 1971; processed).

2. See Erich Spitaller, "Prices and Unemployment in Selected Industrial Countries," *International Monetary Fund Staff Papers*, Vol. 18 (November 1971), and George L. Perry, "Changing Labor Markets and Inflation," *Brookings Papers on Economic Activity* (3:1970), pp. 411-41.

3. For earlier work on the determinants of the Phillips relation by other researchers as well as ourselves, and for references to the literature, see Edmund S. Phelps (ed.), *The Microeconomic Foundations of Employment and Inflation Theory* (Norton, 1970). Also see R. A. Gordon, "Some Macroeconomic Aspects of Manpower Policy," in Ulman (ed.), *Interaction of Manpower and General Economic Policies*.

structure, however, indicates that this deflection could be significantly parried with the use of broadened and redirected manpower programs. This strategy holds promise for reducing inflation and unemployment at the same time, provided that the programs are implemented effectively and on a sufficient scale. To design effective programs requires, first, identification of those aspects of the economy that need to be changed.

The next section presents the theory of the labor market upon which our proposals are based. Then the policy implications of our analysis are derived. Following this, the specific program recommendations are set forth, with estimates of their expected costs and benefits. Last, we discuss the difference between our recommendations and existing manpower programs.

### A Job Search-Labor Turnover Analysis

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 relationships: a dynamic vacancy-unemployment relationship and a wage response relationship. By aggregation a national Phillips relation emerges.

#### 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,  $\mathfrak{F}$ , responds to fluctuations in the vacancy-unemployment ratio with a small elasticity,  $r$ . It 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 relation,

$$(1) \quad \mathfrak{F} = f \left( \frac{\mathfrak{V}}{\mathfrak{U}} \right)^r,$$

where  $\mathfrak{V}$  and  $\mathfrak{U}$  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, employment in the compartment,  $\varepsilon$ , is included. Random fluctuations are suppressed.

The size of the flow of new hires,  $\mathcal{H}$ , 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 relation,

$$(2) \quad \mathcal{H} = h\mathfrak{U}^u\mathfrak{V}^v,$$

where random variations are suppressed.

When the employment stock is in growth equilibrium in the sense that employment,  $\varepsilon$ , is growing at the steady rate,  $g$ , then the expected inflow,  $\mathcal{H}$ , into the employment stock will approximately equal the expected outflow,  $\mathcal{F}$ , plus  $g\varepsilon$ :

$$(3) \quad \mathcal{H} = \mathcal{F} + g\varepsilon.$$

Because the flows through the vacancy, unemployment, and employment stocks usually are large compared with 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:

$$(4) \quad \mathfrak{U}^{(u+r)}\mathfrak{V}^{(v-r)} = \left[ \frac{f}{h} + \frac{g}{h} \left( \frac{\mathfrak{U}}{\mathfrak{V}} \right)^r \right] \varepsilon.$$

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 the turnover and placement processes interact to determine an inverse relation between the equilibrium levels of vacancies and unemployment. When one is high, the other tends to be low, and vice versa.

It is convenient to normalize these 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 by dividing all stocks by employment,  $\varepsilon$ .

Equation (4) can be rewritten in normalized form:

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

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 that depend on the size of the market and hence employment,  $\delta$ , would not affect the vacancy-unemployment relation shown in (5).<sup>4</sup>

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

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

#### 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 current 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 to these changes, 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.

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

where  $W$  is the money wage rate and  $t$  is a dating subscript. The variable  $A$  reflects exogenous variables, such as union effects, in the wage response relation. Wage responsiveness is reflected in  $w$ . 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.

4. If there were significant scale effects in equation (1) or (2), the national aggregate Phillips relation (equation 12 below) would 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, and so forth.

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. No attempt is made 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 that relates the inflation rate to the unemployment rate:

$$(8) \quad \frac{W_t - W_{t-1}}{W_{t-1}} \approx \ln \left( 1 + \frac{W_t - W_{t-1}}{W_{t-1}} \right) = \left( \frac{w}{v - r} \right) \ln \left( \frac{f + g}{h} \right) - w \left( \frac{1}{v - r} \right) \ln U_t + \ln A.$$

This derivation makes it plain that the Phillips relation is not a structural relation, but one between two endogenous variables that depends on four distinct relationships in the labor market—(1), (2), (3), and (7)—among flows, stocks, and wage changes.<sup>5</sup>

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.<sup>6</sup>

To derive the implications of labor market compartmentalization and imbalance, (8) is simplified. Subscripts are introduced to make explicit that

5. 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.

6. See C. Duncan MacRae, Stuart O. Schweitzer, and Charles C. Holt, "Job Search, Labor Turnover, and the Phillips Curve: An International Comparison," in American Statistical Association, 1970 *Proceedings of the Business and Economic Statistics Section* (1971), pp. 560-64.

the expression describes the wage inflation-unemployment tradeoff for a compartment. We can write  $\ln[1 + (W_t - W_{t-1})/W_{t-1}]$  as  $\Delta \ln(W_i)$ , with the  $t$  subscript implicit,

$$(9) \quad \Delta \ln(W_i) = a_i - b_i \ln(U_i),$$

where  $W_i$  is the wage rate in the  $i$ th 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  $i$ th 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 it is assumed that the wage elasticity is the same in all compartments so that  $b_i = b$  for all  $i$ . However, the turnover rates and search efficiencies are not assumed to be the same in all compartments, so that the  $a_i$  can be different.

The national wage inflation rate,  $\Delta \ln(W)$ , is a weighted average of the compartmental wage inflation rate,  $\Delta \ln(W_i)$ , where the weights,  $e_i$ , are the proportions of the national wage bill in each compartment and  $\sum e_i = 1$ :

$$(10) \quad \Delta \ln(W) = \sum_i \Delta \ln(W_i) e_i.$$

However, for simplicity, employment weights are used as a proxy for earnings weights in this paper. Substituting (9) into (10),

$$(11) \quad \Delta \ln(W) = \bar{a} - b \sum_i e_i \ln U_i,$$

where

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

The Phillips relation in a compartmentalized economy can be expressed in terms of the national unemployment rate,  $U$  (expressed as a proportion of employment), and the dispersion of unemployment,  $Dis(U)$ . Equation (11) can be rewritten as

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

where

$$\text{Dis}(U) = \sum_i e_i \ln(U/U_i), \text{ and } c = b.$$

$Dis(U)$  is the sum of the relative unemployment rates in the compartments weighted by their importance in the national inflation rate. For a given distribution of employment and aggregate unemployment rate,  $U$ , inflation is minimized when the labor force is distributed so that the unem-

ployment rate is the same in all compartments.<sup>7</sup> 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

The compartmentalized model of the Phillips curve assists in describing the relations between wage inflation and demographic, occupational, and geographic dispersions of unemployment.<sup>8</sup> For reasons related to the data, they were studied independently.

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 observation. 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.

According to these estimates, the tripling of the demographic dispersion, which occurred from 1960 to 1969, either increased the annual inflation rate by 0.4 percentage point for a constant unemployment rate, or, viewed alternatively, increased the *level* of unemployment 12 percent for a constant inflation rate.<sup>9</sup> Moreover, a complete elimination of demographic dispersion from the 1969 level would either reduce the inflation rate by 0.6 percentage point or reduce the level of unemployment by 14 percent.

The occupational dispersion of unemployment has not changed appreciably in the past ten years. However, it is estimated here 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.

7. Since the distribution of employment is influenced to a small degree by the distribution of the labor force, this statement implicitly assumes a compensatory 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.

8. Empirical estimates of dispersion and aggregated Phillips curves are presented in our "Manpower Policies To Reduce Inflation and Unemployment," in the Ulman book.

9. For a similar conclusion see Perry, "Changing Labor Markets and Inflation."



Finally, the 40 percent decrease in the geographical dispersion of unemployment has reduced either the inflation rate by 0.2 percentage point or the level of unemployment by 4 percent. In addition, a total elimination of geographical dispersion would reduce either the inflation rate by 0.3 percentage point or the level of unemployment by 7 percent.

While this model of the labor market has much to recommend it in terms of incorporating behavioral relations and in treating market compartmentalization simply, it does not take adequate account of the linkages that occur among compartments.<sup>10</sup> A manageable analysis of interacting market segments is badly needed.

### Policy Implications of the Analysis

The foregoing section provides the basis for identifying policies and programs that could shift the inflation-unemployment tradeoff. A retracing of the steps from the aggregate Phillips relation of equation (12) successively backward to equation (8) makes it apparent that the Phillips curve would be moved downward, corresponding to lower inflation for any given unemployment rate, if (1) the turnover rate,  $f$ , were reduced; (2) the search efficiency,  $h$ , were increased; (3) the responsiveness,  $w$ , of wages and prices to the vacancy-unemployment ratio were reduced; (4) exogenous pressures toward inflation,  $A$ , were reduced; and, finally, (5) dispersion of unemployment between compartments were reduced.<sup>11</sup>

Reducing turnover points toward higher *quality* of the individual worker-job matches and the broad match of the distribution of worker capabilities. Increasing search efficiency is a matter of *speeding* placements. The issues of speed and quality of placements argue for 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 an incomes policy or union policy. The dispersion of unemployment among compartments reflects a mismatch between the distribution of worker capabilities and preferences on the one hand and the distribution of job requirements and rewards on the other. Reduction of dispersion would re-

10. See our "Manpower Policies To Reduce Inflation and Unemployment: Manpower Lyrics for Macro Music," pp. A-11-A-17.

11. A lower employment growth rate would improve the tradeoff by reducing the unemployment of new entrants in the labor market, but we do not propose to lower the birth rate to accomplish this.

quire occupational and geographic movements of people and restructuring of jobs. Thus, improved training, mobility, and industrial engineering would be indicated.

These estimates of the amount of dispersion that exists in the economy permit rough estimates of the costs involved in reducing it. Then, estimation of the parameter that indicates the inflation response to dispersion permits derivation of the benefits of reducing dispersion. They can be expressed in terms of reducing inflation or reducing unemployment. Similar estimates of costs and benefits can be made for other programs.

Ideally, occupational and geographic compartmentalization would be considered jointly. A worker who doesn't find a job in his compartment could escape either by training or by travel. Unfortunately, the data are insufficient for such an analysis. Consequently, the various components of dispersion were analyzed independently and no evaluation could be undertaken of the extent to which the proposed programs produce an unnecessary and inefficient overkill of dispersion by overlapping, or, conversely, of the extent to which, by being complementary, they are more effective than estimates of their independent impact would indicate. Until more theoretical and empirical work is done, these points must remain uncertain.

### **Summary of Program Recommendations**

The 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 support of geographic mobility 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.

#### **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 that the federal-state Employment Service 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 (IV-a).<sup>12</sup> In order 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, we recommend the use of incentive formulas that are suggested by labor market theory (IV-b). 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 that fee splitting, standards, and so forth, be established so that the public and private agencies can cooperate in achieving a flexible *nationwide* placement system (IV-c).

Since some of the Employment Service functions are amenable to automation, we recommend the urgent development and installation of a nationwide computerized man-machine system for matching workers, jobs, and services (IV-d). 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 upgrading and expanding its staff and establishing salary levels to attract and retain well-qualified professionals (IV-e).

We recommend 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 (IV-f).

#### 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 a good vocational start can produce lifetime benefits. For both teenagers and blacks, more emphasis needs to be

12. The numbers and letters associated with each recommendation correspond to the recommendation numbers in our "Manpower Programs To Reduce Inflation and Unemployment: Manpower Lyrics for Macro Music," where the detailed proposals and their analyses are presented.

placed on preparation for jobs that will last and be worth keeping, and less on simply producing short-term placements. Their high unemployment is due largely to high turnover rates, not to prolonged job search.

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

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 more cooperation between schools and the Employment Service, doubling the number of school vocational counselors, and improving their training (V-b).

To improve the transition from school to work, we recommend that school work-study programs be available 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 are recommended (V-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 accomplish this we recommend a data and analysis effort to anticipate or, at least, quickly identify the occupations that are in short supply (VI-a).

To respond to these scarcities we recommend a major expansion of training that is closely tied to anticipated needs for skilled workers (VI-b). Only about 70,000 unemployed workers who are not disadvantaged now receive training annually in government-sponsored programs. We recommend that the number be increased by 1.1 million trainees—both advantaged and disadvantaged; in both on-the-job and institutional slots—with training oriented toward skilled-labor shortages. Even though labor demand is always in flux, the occupational composition of job vacancies remains quite stable from one year to the next.

Many shortages of skilled workers could be avoided by restructuring jobs so that they could be filled by available workers. We recommend 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 (VI-c).

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 to enable these mothers to become skilled workers and to help ease skill shortages (VI-d).

#### REDUCING GEOGRAPHICAL IMBALANCES

The long distances between job markets mean that able workers and good jobs go begging simultaneously. Self-adjustments of the market are inhibited. The travel hurdle is especially high for the poor and disadvantaged. We recommend a new mobility assistance program for regional labor shortages and the disadvantaged (VII-a). About 200,000 workers and their households (about 10 percent of the migration flow) might be aided annually.

To implement this program, we recommend an Employment Service that will function nationally to help workers move (VII-b) and supply financial assistance to aid them in doing so (VII-c).

#### 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, thereby increase unemployment and skill shortages, and thus contribute to inflation. We recommend that a presidential commission develop active and effective governmental policies for dissolving artificial barriers to employment (VIII-a). An across-the-board manpower program aimed at general upgrading and at augmenting 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.

#### RESEARCH: DESIGN, EXPERIMENTATION, EVALUATION, AND DEMONSTRATION

Knowledge to implement fully effective programs of the type we have outlined is still inadequate. Hence we recommend a carefully designed, integrated, and expanded program of basic and applied research, including

large-scale field experimentation and evaluation (IX-a and IX-b). Behavioral research for computer matching, training, and motivation is especially important, as is the prediction of the macro impacts of programs. Increased emphasis needs to be given to the practical problems of applying research findings quickly and effectively.

### **Estimates of Costs and Benefits**

This section indicates briefly 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,<sup>13</sup> 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 above. Assuming that this component of inflation would be largely eliminated by the proposed programs to reduce imbalances, we determine the extent to which unemployment could be reduced by increases in aggregate demand before the inflation rate was restored to its original level.

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

13. In most cases it was assumed that the unit costs of our proposal would be much higher than those of 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 may not be possible directly to retrain persons in loose markets to fill jobs in tight ones.

**Table 1. Summary of Estimated Incremental Annual Costs and Benefits of Proposed Manpower Programs**

Dollar amounts in billions of 1971 dollars

<i>Program</i>	<i>Social cost</i>	<i>Percentage decrease in unemployment</i>	<i>Percentage point decrease in unemployment rate from 4.5 percent</i>	<i>Increase in GNP</i>
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			
Identification of, 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 <sup>a</sup>	2.1	\$30 <sup>a</sup>

Source: Charles C. Holt, C. Duncan MacRae, Stuart O. Schweitzer, and Ralph E. Smith, "Manpower Programs To Reduce Inflation and Unemployment: Manpower Lyrics for Macro Music," Institute Paper 350-28 (Urban Institute, 1971; processed).

a. Combined multiplicatively; for example,  $47 = 1 - (1 - 0.10) \times (1 - 0.15) \times (1 - 0.25) \times (1 - 0.07)$ .

Since the details of these estimates are presented elsewhere, only a brief summary is given here. The "ball park" estimates of the costs and benefits of the individual proposals and their totals are presented in Table 1.<sup>14</sup>

The total estimated social cost of the recommended programs is approximately \$14 billion. These programs could decrease the unemployment rate by roughly 2 percentage points with an increase of real GNP of about \$30 billion in today's prices. Alternatively, this unemployment decrease could be converted, by aggregate demand measures, to a reduction of the inflation

14. 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. The proposed programs are in addition to the present manpower programs which are oriented primarily toward the disadvantaged. Costs and benefits are in 1971 dollars per year.

rate by about 1½ percentage points per year with a substantially smaller increase in real GNP.<sup>15</sup>

A perspective on the cost of this manpower approach requires recognition of the financial and other costs of continuing to fight inflation and unemployment with fiscal and monetary measures alone. During the time these policies have been in force, national production losses have been an estimated \$68 billion per year.<sup>16</sup>

It may not be necessary or desirable for the government to incur all of the costs of the programs recommended here. Individuals or firms that benefit directly could be called on to share them. In addition, to the extent that GNP is increased, the government will recapture some of its costs through increased revenues. For both reasons, the cost to the government may be less than the total \$14 billion estimated here. For example, if private individuals and firms paid one-third of the total cost, the required governmental expenditures would be \$9 billion. And if the 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.

Calculation (from Table 1) of the 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, results in 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 at this stage to urge an attack on a broad manpower front rather than to pinpoint individual targets. While we have considerable

15. This estimate is made by moving along the new Phillips curve back to the original 4.5 percent unemployment rate.

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 additively. However, the logarithmic inflation-unemployment relation indicates that when the additive inflation impacts are converted to unemployment terms, they also interact multiplicatively. Hence, the estimation of the total impact of all programs uses their multiplicative combination.

In common sense terms, this means that the unemployment 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 calling this to our attention.

16. This is the average over the last five quarters from 1970:3 to 1971:3 of the gap between potential and actual GNP in 1958 dollars estimated in the Bureau of the Census publication, *Business Conditions Digest* (October 1971), Table E1, converted to current prices using the GNP deflator.



confidence that some actions are needed in each of the areas urged, the exact program allocation might well be improved.<sup>17</sup>

The estimates given here of the costs and impacts of these recommendations should be treated with caution for several reasons. Since the theory of segmented markets is complex and still incomplete, estimates of program impacts must rely on the existing theory of the labor market in which it is divided into *noninteracting compartments*.<sup>18</sup> The available evaluation studies of manpower programs confine themselves to the *direct* impacts on participants, which can be seriously misleading in macro estimates. For novel programs there are no evaluation studies.

The *interaction* among 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 encounter more job vacancies in their field. Thus a shift toward 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 complementary interaction among the programs to reduce occupational and geographic dispersion reduces the number of programs required and hence the cost in comparison with what would be needed in the absence of this interaction.

However, an opposite effect must be considered. The dispersion measures used here 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 200-odd Standard Metropolitan Statistical Areas probably constitute a better count of the number of relevant geographic labor markets. The Manpower Administration's 35,000 occupational titles may be on the high side, but they certainly better reflect the number of job movements that might be likely to entail training.<sup>19</sup> Thus, the geographical and occupational program resources required to equalize

17. No effort has yet been made to equalize the marginal costs and benefits.

18. This is particularly important in the estimates of the impacts of skill shortage and mobility programs.

19. U.S. Department of Labor, Manpower Administration, *Dictionary of Occupational Titles, 1965* (3rd ed., 1965), Vol. 1.

the unemployment rates would certainly be greater for the larger number of segments than the estimates here indicate.

Viewed in terms of efficiency and growth, the training and mobility programs are designed to increase the investment in human capital and to shift segmented markets toward balanced equilibria. However, the persistent geographic and occupational dispersion that is observed in unemployment rates could result from sluggish movements toward equilibrium or from a fully adjusted equilibrium that did not equalize unemployment.

The stress on reduction in the dispersion of unemployment as a means of decreasing inflation implicitly assumes that (1) fluctuations in the mix of regional and industrial demand continually introduce labor market imbalances, and (2) the speed of the adjustment processes is such that full equilibrium adjustments are not quickly attained. The determination of the adequacy of the above dispersion indices in measuring disequilibria requires more study of the equilibrating properties of a segmented labor market. For example, a persistently high unemployment rate could indicate a high unemployment equilibrium or a very slow adjustment process, with somewhat different implications for policy. However, a component of dispersion that persisted in equilibrium might well be made the target of improvement by manpower programs if thereby the socially undesirable effects of externalities were lessened.

### **New Departures**

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 their breadth, efficacy, and precision of aim on macro objectives have been inadequate to mobilize significant impacts on inflation and unemployment; furthermore, they were not instituted with this intent. By concentrating on upgrading the disadvantaged, manpower programs have been hobbled by special handicaps from which the proposed programs will not suffer.

The better understanding of labor market friction and structure that is only now emerging permits analysis of 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 the conception of matching as primarily a computer problem.

The weakness of the nation's educational system in failing to provide an effective transition between school and work has been recognized, but no systematic attack in action terms has been made on the relation between information and experience, on the one hand, and high turnover and high youth unemployment, on the other.

A sharp break with present manpower programs is entailed in our proposed strong emphasis on inflationary skill shortages—with approaches both on 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.

A geographic mobility program is not now 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 comprehensive program that is proposed should contribute 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 aggregate demand without inflation. The unskilled and disadvantaged who are particularly vulnerable to unemployment will benefit disproportionately from the vacuum effect of general upgrading and the overall reduction of unemployment that can occur. This macroeconomic impact on the poverty problem should strongly complement the direct approach of present anti-poverty programs. Indeed, the achievement of a full employment economy is essential for the success of both the manpower programs directed at the disadvantaged and the employment program of proposed income maintenance plans.

The unique responsibility of the government for stabilizing demand has long been accepted. Now the need is to recognize the parallel proposition that full employment and price stability are likely to be unattainable unless the government intervenes to prevent excessive structural friction in the labor market. For economic efficiency, relative prices must regulate the al-

location of resources, but these changes in specific prices 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 can be made without the inducement of large wage and price changes.

These proposals require further refinement in spelling out more clearly the appropriate division of costs between government and the workers and employers who would benefit initially from the programs. The governmental contribution should be directed primarily to supplying sufficient aid and incentives to achieve the national objectives of full employment and price stability, although some consideration, in terms of cost sharing, should be given to equity of income distribution.

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

If manpower policy has a crucial role to play in macroeconomic policy, as others besides us have argued, the U.S. policies in this area should be strengthened and fundamentally redirected.