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Adjustments to Labor Shortages

Problems of labor stringency in construction are the source of continual public comment. President Johnson has referred to the paradox of simultaneous unemployment and labor shortages in construction.² In 1966, for example, there were, on annual average, 297,000 construction unemployed, or 7.1 percent of the wage and salary work force in the industry. Construction trade journals continually refer to serious shortages of building tradesmen.³ The adequacy of trained manpower has become an issue of importance in the prospects for a significant campaign to rebuild the cities. The level of public interest in the manpower situation in construction requires that some analysis of manpower patterns be attempted.

The labor shortages which occur in construction are generally confined to certain crafts and to specific areas. The simultaneous existence of areas of labor shortage and of significant unemployment results primarily from less than perfect geographic mobility of craftsmen, and from the differing occupational requirements of jobs. The construction industry is characterized by remarkably swift variations in the geographic locus and composition of building activity. Thus, in construction a high degree of worker mobility and labor force elasticity to variations in demand, relative to other industries and occupations, might be inadequate to prevent transitional shortages and surpluses.

In the short run, the construction labor force appears considerably more flexible than is commonly supposed. Indeed, flexibility of the labor force as compared with other industries is an outstanding characteristic of construction.⁴ A considerable degree of flexibility is due to the seasonal expansion of employment which occurs in construction. For example, for construction craftsmen other than carpenters, expansion in the construction labor force has averaged some 76.5 percent of the net increase in employment in spring months, 1961-1966, (reduction in the numbers of the construction unemployed has accounted for the remaining 23.5 percent of the increased number of the employed). For carpenters the statistic is identical (76.5); for laborers it is 161.9 percent.⁵ However, the large non-seasonal variations in construction demand which occur in local areas and rapid shifts in the composition of output also contribute to variations in the industry's labor force. Thus the ratio of persons employed at some time during the year to annual full-time jobs is quite high for construction. In 1963, some 5.4 million workers were employed in contract construction to fill 3.0 million full-time jobs -- a ratio of 1.8 workers to jobs. In manufacturing the ratio was about 1.30 for that year.⁶ Certain building trades skills seem widely

distributed throughout the economy, 7 and the construction industry seems able to increase its work force in brief periods at a fairly rapid rate and to a very large degree.

The number of man-hours available to construction firms may be increased within a brief period either by expanding the number of persons available for employment or by more intensive utilization of the existent labor force. This paper is concerned with increasing the supply of labor. However, the number of man-hours obtained by better utilization of the work force (for example, continuing operations further into the winter than is customary)⁸ might be large. In fact, it appears that one might distinguish two construction labor forces.⁹ The one consists of journeymen fairly regularly employed by a contractor or homebuilder -- his key men. The contractor is often quite reluctant to allow these employees to go elsewhere, and may even be willing to undertake jobs simply to keep them on his staff during slack in the building market.¹⁰ Alternatively, there are craftsmen who follow the traditional pattern of the journeyman, following the work and going from employer to employer (and, perhaps, industry to industry). It is possible, if a man is a desirable employee and fortunate, to accumulate considerable working time in this manner -- it is also possible to be out of work a good part of the year. Department of Labor surveys indicate, for example, that a construction worker (defined by industry of longest job during the year) who has experienced any unemployment is very likely to have had two or more spells of unemployment during the year. (Only in agriculture is the likelihood of repeated spells of unemployment sometimes higher than in construction.)11 Consequently, work scheduling, with a view toward reduced seasonality of employment, for example, could significantly increase the degree of utilization of the existent labor force either in an area or nationally.

Expanding the Supply of Labor

The number of employees of a particular craft working on a particular type of construction in a given area might be expanded by attracting workers from other types of construction, from non-construction industries, from other occupations, or other areas.¹² For example, the work force of carpenters on residential jobs might be increased by drawing carpenters from employment on commercial construction in the same locality. Or carpenters might be drawn from the maintenance crews of local manufacturers. Again, carpenters from residential construction in other geographic areas might arrive for employment; or persons employed in other occupations might be induced to take carpenters' jobs. An occupational change might involve mobility from other construction crafts, or from non-construction occupations. Workers might have had prior experience with some or all of the skills required of a residential construction carpenter -- or they may have had none. Thus, the mobility of workers may include any or all of the four basic dimensions listed above. In the usual case, the shift of workers into construction jobs probably includes movement along more than one of these dimensions. In analyzing the mobility of construction workers, the most interesting cases involve the interactions among geographic, occupational, and industrial mobility.

Currently we possess only the most rudimentary information concerning the size and character of manpower flows to and from construction. At best, we are able in some cases to measure flows along a single dimension. A very simple calculation indicates that there are some 15 combinations possible of the four basic types of flows mentioned.

The importance of certain types of manpower flows to construction is apparent even from the primitive sources of information now available. For example, the inter-industry mobility of construction workers is relatively high. During 1962, men who were employed in contract construction at some time during the year averaged employment in 1.204 industry divisions.¹³ Those employed in manufacturing averaged employment during the year in only 1.090 divisions; those in mining, 1.008 divisions; those in wholesale and retail trade (second to contract construction in this measure), 1.114 divisions.¹⁴

The industrial distribution of earnings among contract construction workers also indicates considerable mobility. In 1957, only 72.3 percent of the approximately five million male wage and salary workers employed in contract construction earned most of that year's income from contract construction employment. With the exception of the service industries, this was the lowest reported percentage.¹⁵ In 1963, for persons whose major source of earnings was general building construction, mean annual earnings from all employment were 13 percent higher than mean annual earnings in general building; for heavy construction the figure was 14 percent; for highway and street construction, 13 percent. For workers in blast furnaces and steelworks, the statistic described above was 2 percent; in motor vehicles and equipment, 2 percent. The extent to which construction workers report earnings outside a specific construction industry is more apparent when all employees who worked in the industry (not simply those the majority of whose earnings are from the specified industry) are considered. In 1963, for all who worked for general building contractors, median earnings in general building were exceeded by all reported earnings by 62 percent; in highway and street construction by 67 percent; in heavy construction by 72 percent; in blast furnaces,/steelworks, etc., by 4 percent; in motor vehicles and parts, by 8 percent.16

Apparently there is a great deal of occupational mobility for construction craftsmen. A survey of job shifts by men in 196117 indicated that approximately one-third of job shifts by persons initially employed as carpenters were to non-construction occupation groups (e.g., to occupations other than those of construction craftsmen or laborers). Similarly, of 562,000 shifts from construction craft occupations other than carpenters, 25 percent were into nonconstruction occupations. Conversely, over onequarter of shifts into carpentry were from nonconstruction occupations, and one-quarter of shifts into other craft occupations in construction were from non-construction occupations. On the other hand, only 1.5 percent of shifts from carpenters' jobs were to other construction occupations; and 1.2 percent of shifts from noncarpenter construction trades were into carpentry.16 This single survey, virtually all the available information on the occupational mobility of construction craftsmen, suggests that occupational mobility within the building trades is significantly less important than interindustry movement.

Considerable research into manpower flows in construction is needed. Investigators might begin by specifying the factors which determine the adequacy of the labor force nationally or in a particular area to an expected level of construction activity. Among the more important are the composition of construction demand, the level of employment in non-construction industries, the relative wage between construction and other industries (both among and within occupations). traditional patterns of labor mobility, and the size of the labor pool possessing construction skills.¹⁹ Pressures on the supply of manpower in construction undoubtedly affect the channels and determinants of manpower flows. It is likely, for example, that the tightening of construction labor markets in recent years is directly due to the improved unemployment situation nationally. The 3.2 percent general unemployment rate for males 16 years and older in 1966 undoubtedly reduced the supply of manpower to construction. Presumably, tightened labor markets have been partially responsible for recent rapid wage increases negotiated in the industry. However, models specifying the character of the wage-unemployment connection in terms of craft and locality cannot now be constructed.

The Limitations of the Data

Virtually any hypothesis offered concerning manpower patterns in construction industries may find support somewhere in the practices of the industry. Consequently, data on manpower become essential to a critical analysis of the industry. Only with reliable data can the relative importance of different labor market patterns and their determinants be assessed. Unfortunately, the existent data are inadequate for many important analytic purposes.

Most importantly, data on construction employment and unemployment by detailed craft are remarkably sparse. In the absence of these data it is virtually impossible to have a quantitative impression of the state and direction of the construction labor market. The only important current sources are the Current Population Survey and the decennial censuses.²⁰ The Current Population Survey is too limited in sample size to bear extensive disaggregation by craft, locality, demographic features, etc. The Census, of course, occurs only infrequently.

Employment data by detailed craft for persons employed in contract construction are generated by the records of trust funds established under collective bargaining agreements in construction. These data include counts of the number of hours worked by craftsmen covered by the funds, hours worked by individual employees, and demographic information concerning these craftsmen. At present, neither the government nor any other institution samples these data on a continuing basis. Such sampling could usefully supplement existing employment data on construction by providing: (1) employment data by detailed occupation; (2) information on the degree of utilization of the employed (in terms of hours worked); and (3) estimates of employment disaggregated by geographic locality, craft, and, in some cases, type of contractor.

Sampling of the records of private health, welfare and pension funds for manpower information would require extensive work in sample design. Most importantly, efforts are necessary to extend estimates based on fund data to the non-union sector of construction. Only about half of the employees in construction are currently covered by the funds.²¹ However, coverage in major cities is virtually complete, and the number of funds is increasing. Second, the records of the fund would require adjustment to a wage period basis. Currently employers are often in arrears to funds, and when payment of contributions is made, the contribution hours are included in the current month's total. The simple stratagem of requiring contractors, if errant, to specify the earnings period of contributions could correct the misallocation of hours worked by time periods.

In addition, current employment data do not allow adequate analysis of manpower flows in construction and between construction and other industries. The Social Security Administration's Continuous Work History Sample is the most promising source of inter-industry and geographic mobility data.²² Unfortunately, the Social Security Administration collects no occupational information. However, extensive data on industrial and geographic mobility by craft for construction workers might be obtained by utilizing the records of private trust funds and the Social Security Administration in concert. Private fund records normally contain the Social Security number of persons reported to the funds. With these numbers, the work experience, in terms of industry of employment, number of employers, earnings, etc., of craftsmen could be traced in the records of the Administration. A final possibility is to tap

the records of the Internal Revenue Service (IRS) for occupational information. The IRS collects on an annual basis the occupation of taxpayers as well as considerable information as to their sources of income. Currently, however, IRS does not publish data on an occupational basis.

Conclusion

Future research into manpower in construction must undertake to describe and analyze the flow of craftsmen among industries, occupations, and areas. Models relating the flow of construction manpower to the all-industry rate of unemployment, relative wages among crafts and industries, traditional patterns of mobility, training and education efforts, and the level and composition of construction demand are urgently needed. In order to facilitate this research, measures of the flow of manpower must be developed. Data currently available are inadequate to isolate the direction, magnitude, or determinants of these flows. Both the federal government and the industry itself are collecting, in one form or another, a large body of information relating to manpower in construction. Considerable effort is now required to make these data accessible to scholars in a form usable for economic analysis.

Footnotes

¹I should like to thank John T. Dunlop, Donald E. Cullen, and Joe Russell for their comments on earlier drafts of this paper. ²See the President's remarks at the appoint-

ment of Stanley Ruttenberg to be Assistant Secretary of Labor, June 17, 1966.

³See, for example, "Manpower Crisis Ahead?" <u>American Builder</u>, 99, 1 (January, 1966), 70-71; "The Building Trades Shortage," <u>Practical</u> <u>Builder</u>, 31, 4 (April, 1966), 65-67; and "AGC Rises to Labor Challenge," <u>Engineering News-</u> <u>Record</u> (October 5, 1967), 17-18.

⁴There are, of course, limitations to entry to building trades employment in certain areas and among specific crafts. The recent controversy over the proportion of Negroes in building trades employment has been concentrated on the specialty trades, especially the plumbers, sheet metal workers, electricians and ironworkers. See Ray Marshall and Vernon M. Briggs, Jr., <u>The Negro and Apprenticeship</u> (Baltimore: John Hopkins University Press, 1967).

⁵These figures are from the Monthly Survey of the Labor Force and refer to the allconstruction definition rather than to contract construction. Wage and salary workers in construction include those employed both in contract construction and government construction agencies. The labor force is defined, of course, as the sum of the employed and the unemployed attributed to the industry.

⁶These figures are extensions of a series first presented by David Farber and Elsa Loewenstein in <u>Annual Paid Man-Hours of Employment</u> and <u>Annual Wages, 1946-54</u> (Washington, D.C.: U.S. Department of Health, Education and Welfare, Social Security Administration, 1962), 40-41; and updated by Farber, "Apprenticeship in the United States: Labor Market Forces and Social Policy," Journal of Human Resources, 2, 1 (Winter, 1967), 88. The full-time job measure is actually average annual employment, which Farber argues effectively to be a job -- not persons -- concept. See Farber and Loewenstein, op. cit., 29ff. (The employment figure is derived from the records of the Social Security Administration.)

⁷At any given moment, a considerable number of persons trained in construction occupations are employed in non-construction industries. For example, among carpenters, on annual average for 1966, some 30 percent were employed in nonconstruction sectors of the economy. And, in 1966, on annual average, over 30 percent of all construction craftsmen other than carpenters were employed in non-construction industries. These data are estimates of the number of persons employed in non-construction industries doing work of comparable skill and job content to the work of a building tradesman in construction. They do not include, of course, those persons with building trades skills employed in other occupations.

These data are from unpublished estimates of occupation by industry made from the Monthly Survey of the Labor forme by the Bureau of Labor Statistics. I am most grateful for their being made available to me for this paper.

See also Allan F. Salt, "Estimated Need for Skilled Workers, 1965-75," <u>Monthly Labor Review</u> (April, 1966), 365-71. Mr. Salt reports 1965 annual average employment in construction and non-construction industries for eleven building trades (368).

⁸The degree of employment seasonality in construction nationally has remained wirtually unchanged in the post-World War II period. See Robert J. Myers and Sol Swerdloff, "Seasonality and Construction," <u>Monthly Labor Review</u>, 90, 9 (September, 1967), 1-8.

⁹This dichotomy is not original. See A. H. Belitsky, "Hiring Problems in the Building Trades," unpublished Ph.D. dissertation, Harvard University, 1960; also Maurice Parodi, "Wage Drift and Wage Bargaining: A Case Study of the Building Industry in Marseilles," British Journal of Industrial Relations, 1, 2 (June, 1963), 213-227.

¹⁰See Belitsky, <u>op. cit.</u>, for a discussion of the efforts of contractors to keep their key people.

¹¹See the annual Work Experience Surveys of the Bureau of Labor Statistics, "Extent of Unemployment by Industry: Wage and Salary Workers, by Longest Job in 19_." These data are published annually in the <u>Monthly Labor</u> Review or are available from the Bureau.

¹²The process of attracting and holding workmen in construction jobs may be accompanied by wage increases offered by contractors. Nonwage incentives are also offered. The nature and relative importance of special incentives in attracting labor are not described in the text. This paper attempts to describe the flows into the industry, the current pattern of incentives taken as given.

13This figure is obtained by dividing the number of men for whom earnings were reported in contract construction into the total number of industry divisions (two-digit SIC classification) in which they had earnings reported. The use of industry divisions as the unit of measurement here suppresses the considerable rate of job transfer which occurs between branches of contract construction itself.

14These data are from tabulations made from the Social Security Administration's One Percent Sample. They are published in Sebastia Svolos, "Measures of Labor Mobility and OASDHI Data," Social Security Bulletin (April, 1966), 42.

¹⁵See the <u>Handbook of Old-Age</u>, Survivors, <u>Disability Insurance Statistics: Employment</u>, <u>Earnings and Insurance Status of Workers in</u> <u>Covered Employment, 1957</u> (Baltimore, Md.: Social Security Administration, 1965), 34 and 42.

¹⁶These estimates were made for the Bureau of Labor Statistics from the Social Security Administration's One Percent Sample.

17Gertrude Bancroft and Stuart Garfinkle, "Job Mobility in 1961," <u>Monthly Labor Review</u> (August, 1963). Note: one person could have had several job shifts, as the terms are used in this study.

¹⁸These statistics were tabulated by the author from Bancroft and Garfinkle, <u>op</u>. <u>cit.</u>, Table A-9.

¹⁹See, e.g., Donald E. Cullen, "Labor Market Aspects of the St. Lawrence Seaway Project," <u>Journal of Political Economy</u>, 68, 3 (June, 1960), 232-251.

²⁰In 1966, the Bureau of Employment Security discontinued collection of monthly employment figures by detailed occupation from the records of the Unemployment Insurance System. Currently, therefore, the only central source of unemployment estimates by craft are those of the Current Population Survey.

²¹This is the author's estimate, based in part on Daniel M. Holland, <u>Private Pension Funds</u>: <u>Projected Growth</u> (New York: Columbia University Press [NBER Occasional Paper 97], 1966), 27.

²²Social Security data are seriously deficient, however, with respect to analysis of both industrial and geographic mobility. The classification of firms by type of contractor (following the Standard Industrial Classification) restricts analysis by type of construction done, such as residential construction, demolition, commercial construction, etc. With respect to geographic mobility, our sources of employment data are biased in an unknown manner by the character and location of the reporting establishments. Employment is attributed to the place of the reporting unit, which may or may not be near the construction site.